

Thomas Url

Financial Market Crisis: Origin, Short-Term Reaction and Long-Term Adjustment Requirements

The beginning of the financial market crisis can be dated February 2007. At that time the first defaults on subprime mortgages in the USA were reported. The crisis then spread to the market for mortgage-backed securities and subsequently to the whole financial system. Economic policy makers' swift and determined reaction prevented the ensuing recession from reaching the proportions of the world economic crisis of the 1930s. Current economic policy measures are targeted at a long-term stabilisation of the financial markets by dampening pro-cyclical elements on all regulatory and supervisory levels, by extending of the regulation to hitherto unregulated activities, by improving co-ordination of supervisory authorities, by strengthening internal controls in the financial sector and by taking risks caused by its remuneration system into account.

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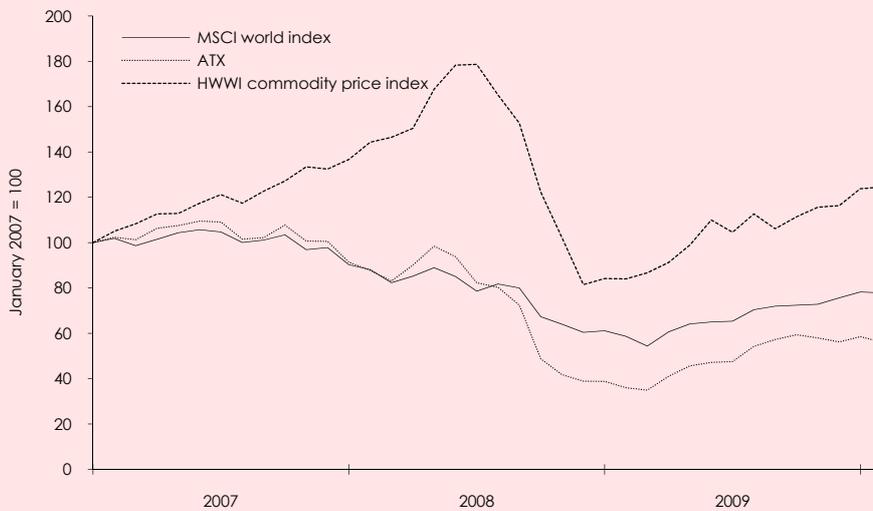
The current financial crisis originated in the US real estate market and spread to the rest of the world in the wake of the collapse of the market for mortgage-backed securities. Already in February 2007 the first signs of high default risks of mortgage-backed securities appeared in the USA, when specialised lenders with a focus on the subprime segment of mortgages for the first time reported large losses (*Brunnermeier, 2009, Cecchetti, 2009*). In June 2007 the investment bank Bear Sterns revalued two of the hedge funds under its management, which mainly invested in mortgage-backed securities, and reported an almost complete loss. In the following months, the special purpose vehicles established for the securitisation of mortgages could not raise any refinancing in the money and bond markets and had to resort to lines of credit provided by investment banks and commercial banks. The two large public refinancing institutions for mortgages, Freddie Mac and Fannie Mae, also suffered losses from write-offs and had to be put under the control of the Federal Housing Finance Agency in September 2008 despite being subsidised by the government. Continuing liquidity problems finally led to the collapse of Bear Sterns and a take-over by the Federal Reserve in March 2008.

During the next few months intensive interventions by central banks succeeded in calming the situation on financial markets, but this period ended with the bankruptcy of the investment bank Lehman Brothers in September 2008: banks' refinancing via emissions in the money market ground to a halt all over the world. All of a sudden, banks with a high share of short-term liabilities could not roll over loans any more. Financial institutions in the mortgage business were particularly affected (e.g., Northern Rock in the UK, Hypo Real Estate in Germany, Glitnir banki and Landsbanki in Iceland, Anglo Irish Bank in Ireland). In addition to their refinancing problems in the money market, financial institutions had to write off part of their assets which jeopardised their capital adequacy (e.g., ING in the Netherlands, Kommunalkredit in Austria, Société Générale in France, UBS in Switzerland). The International Monetary Fund (IMF) currently estimates the total required write-offs at \$ 3,400 billion (IMF, 2010) of which \$ 814 billion are located with European banks. The IMF assumes that financial institutions wrote off \$ 1,300 billion globally until mid-2009 and another

Origin

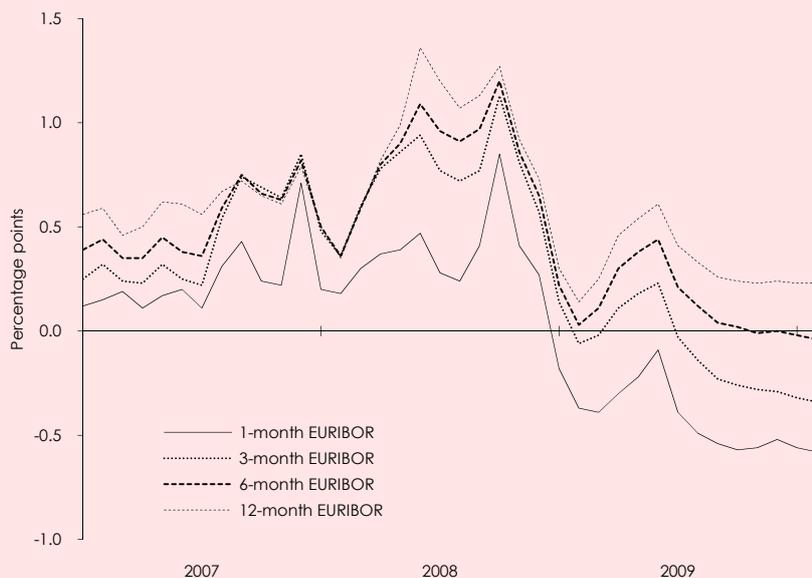
\$ 1,500 billion in the second half of 2009. However, these estimates are subject to substantial uncertainties.

Figure 1: International asset and commodity prices in euros



Source: MSCI, Vienna Stock Exchange, HWWI.

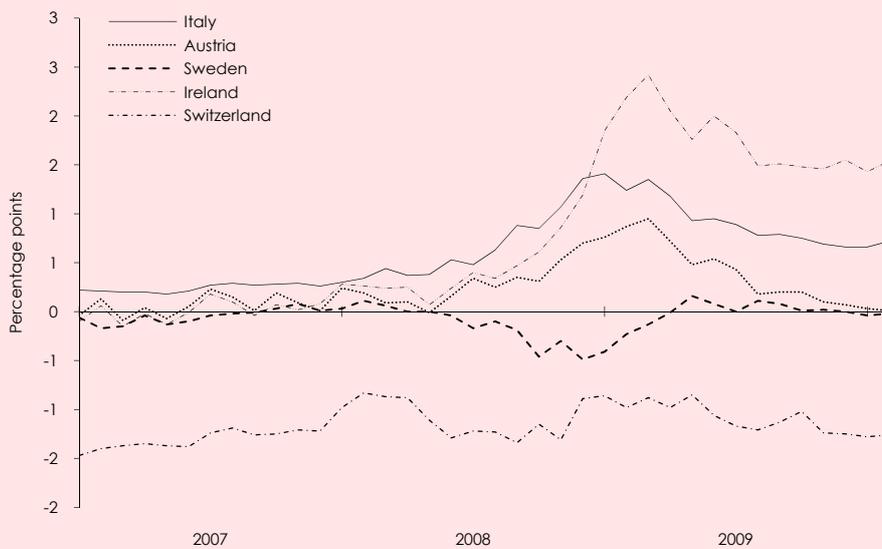
Figure 2: Spread between money market rates and the ECB refinancing rate



Source: ECB.

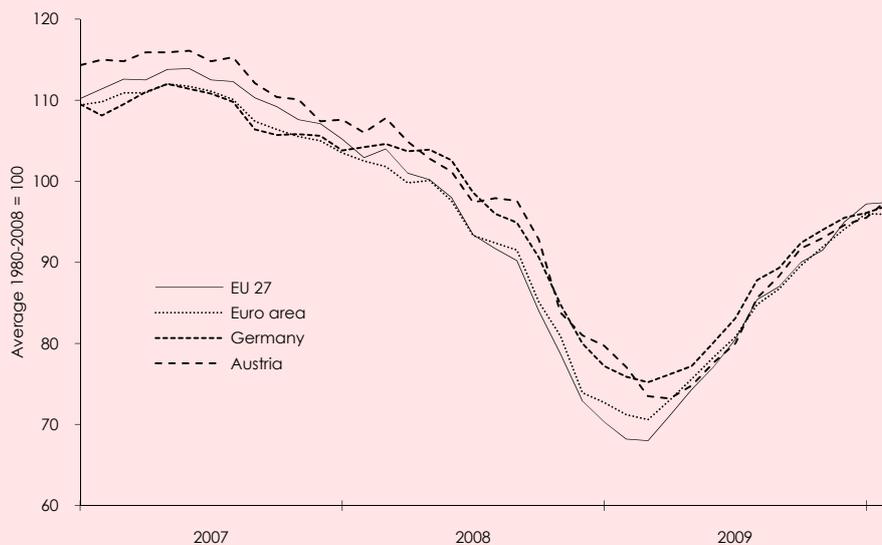
The growing uncertainty about the liquidity of structured products caused a severe deterioration of ratings of these financial products. Thus write-offs became necessary and investors had to provide additional funds for derivative transactions. As a consequence, the ongoing liquidity crisis of the financial institutions was complemented by signs of a solvency crisis (Eichengreen et al., 2009). Outsiders could no longer differentiate which problems actually affected an institution and investors lost confidence. Finally, both direct financing in the capital market and indirect financing in the credit market became difficult for non-financial corporations.

Figure 3: Interest spread relative to Germany measured by benchmark 10-year bonds



Source: OeNB, ECB.

Figure 4: Economic sentiment indicators



Source: European Commission.

Parallel to the crisis in the real estate and credit markets share prices collapsed. After a peak in summer 2007, they entered a period of decline (Figure 1). The prices of bonds issued by banks also reacted swiftly, as the increase of the spread between the EURIBOR rates and the ECB's main refinancing rate shows (Figure 2), and did not begin to stabilise until early 2009. Even government bonds followed this pattern. Only few countries with an outstanding reputation for stable fiscal policies or countries that are home to traditional "safe haven" currencies were an exception (Figure 3). The surge of commodity prices in the wake of the upswing in Asia reached its peak in mid-2008. The decrease of commodity demand due to the economic slump and the declining attractiveness of investments in commodities for financial investors caused a correction of prices even in this market (Figure 1).

Figure 5: Industrial production and exports in Austria



Source: Statistics Austria; industrial production including energy, adjusted for working days.

Table 1: Comparison of GDP growth forecasts for 2009

	OECD	IMF	Joint forecast	WIFO forecast
	Percentage change from previous year Euro area			
Autumn 2007	+ 2.0	.	.	+ 1.7
Spring 2008	+ 1.4	+ 1.2	+ 1.6	+ 1.1
Autumn 2008	- 0.6	+ 0.2	+ 0.2	- 1.2
Spring 2009	- 4.8	- 4.2	- 4.5	- 3.0
Autumn 2009	.	- 4.2	- 3.9	- 4.0
	Germany			
Autumn 2007	+ 1.6	.	.	+ 1.8
Spring 2008	+ 1.1	+ 1.0	+ 1.4	+ 1.1
Autumn 2008	- 0.8	- 0.0	+ 0.2	- 1.2
Spring 2009	- 6.1	- 5.6	- 6.0	.
Autumn 2009	.	- 5.3	- 5.0	.
	Austria			
Autumn 2007	+ 2.5	.	.	+ 2.0
Spring 2008	+ 1.7	+ 1.7	+ 1.9	+ 1.4
Autumn 2008	- 0.1	+ 0.8	+ 0.6	- 0.5
Spring 2009	- 4.3	- 3.0	- 3.2	- 2.2
Autumn 2009	.	- 3.8	- 3.6	- 3.4

Source: OECD, IMF, Joint forecast for the German government, WIFO calculations.

In many countries the international turbulences resulted in a more cautious lending practice. In part even inter-company finance through trade credit broke down, so that trade of goods and services was impaired. The collapse of stock and house prices entailed substantial losses for private households' wealth. The negative wealth shock dampened consumption expenditures and created liquidity constraints for private households. In the business sector the focus of attention has returned to the structure of liabilities. The intended reduction of borrowing can be achieved via a delay of investment projects which put a strain on the cash flow. Business surveys on current production and orders on hand did not provide clear signs of a slowing economic activity until late summer 2008 (Figure 4). By the end of 2008 the decline of industrial production and exports of goods was obvious (Figure 5). The growth forecasts for 2009 and 2010 had been cautious for some time, but very pessimistic assessments by all economic research institutes did not occur until spring 2009 (Table 1).

The current financial crisis cannot be attributed to a single cause, but originated from the coincidence of several factors. For this analysis a rough classification into three categories seems sensible: macroeconomic, regulatory and microeconomic causes.

The large international external imbalances combined with fixed US dollar exchange rates, carry trades between high and low interest rate currencies, and the strongly accommodating monetary policy of the Federal Reserve (Taylor, 2009) are regarded as macroeconomic causes for the financial market crisis.

Countries with a high current account surplus simultaneously act as investors abroad. If they pursue a fixed exchange rate regime and generate a surplus vis-à-vis the country of the anchor currency, the surplus is invested in the anchor country's currency. A surplus country like China simultaneously invests in the USA and accumulates currency reserves in US dollars, even if this is only an unintended side-effect of economic policy (Corden, 2009). In addition to the South East Asian economies, the oil-exporting countries, too, invested their surpluses in industrialised economies. By the end of 2008 58 percent of US government bonds were held by foreigners or foreign central banks – at the beginning of the 1990s this share had been only 28 percent. The share of foreign liabilities of all US liabilities rose from 7 percent (1991) to almost 16 percent (2008).

Arbitrage operations between currencies were caused less by fixed exchange rates than by the exploitation of persistent international interest differentials. The Bank of Japan, for example, tried to achieve a lasting upswing by means of a low interest policy. However, low money market rates also induced international investors to borrow in yen and invest these funds abroad (carry trades). The interest rate differential with Japan was sufficiently large and persistent for profitable arbitrage operations. A large part of these funds was invested in the USA.

Finally, the Federal Reserve kept money market rates at a comparatively low level between 2003 and 2006 (Taylor, 2009), because the objective of price stability for goods and services was not under threat and the increase of asset and house prices was deliberately accepted.

All three factors resulted in comparatively low interest rates for securities of public issuers. The high capital supply in the USA and in international capital markets led to correspondingly low risk premiums on government bonds of the main industrialised countries until mid-2007. Combined with comparatively stable macroeconomic conditions and buoyant business activity this situation tempted non-financial enterprises, private households and unregulated financial intermediaries such as investment banks and hedge funds to increase their leverage. Low interest rates and a strong inclination to borrow in turn laid the foundation for an increase of asset prices and a decrease of risk premiums.

In search of higher yields investors relied on two strategies: higher borrowing to increase their leverage and shifting assets towards newly developed financial products which promised high yields at low risk, such as structured products with good ratings. In most cases these were mortgage-backed securities from the USA, which did not compensate the asymmetric information between borrower and creditor by a liability of the financial intermediary. The direct transfer of the default risk to the capital market caused a moral hazard problem for the financial intermediary. The loosening of credit conditions was no longer balanced by a higher default risk (Hellwig, 2008). Since around 2005 neither a down payment nor an income confirmation was required for purchasing real estate in the USA (Mayer – Pence – Sherlund, 2009). Even the repayment conditions were designed in a way that repayment and interest would only be due after several years (teaser rates). Lax lending practices remained unnoticed for a long time, and a reliable assessment of borrowers was replaced by the judgment of rating agencies and tradable credit insurance products (credit default swaps, CDS). The prices and ratings of these products were based on a mark-to-model approach, i.e., the prices of the underlying assets were not derived from observed market transactions but were simulated using indicators and models. The models in turn were based on the assumptions that the historical default ratios would continue to be valid, that real estate prices would rise further, and that sec-

Causes of the financial crisis

Macroeconomic causes

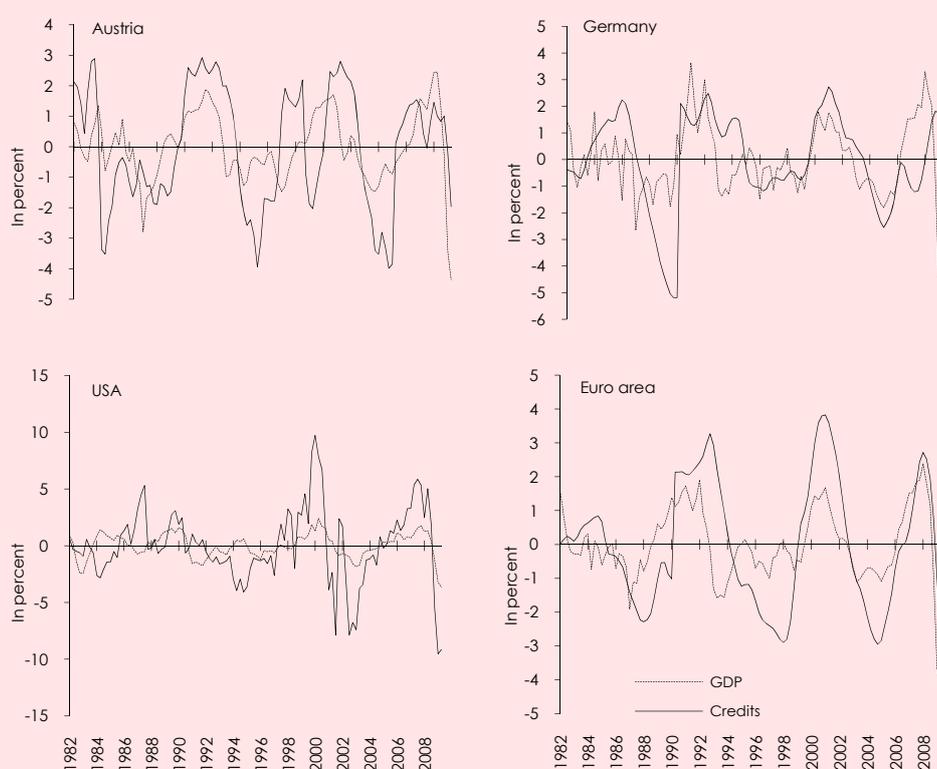
ondary markets will remain liquid (Coval – Jurek – Stafford, 2009). In retrospect, these assumptions proved wrong, so that even today valuations are difficult due to a lack of transactions. In addition, there was a conflict of interest for rating agencies who served both as suppliers of ratings and as consultants for the design of the same financial products.

Originally, recent financial innovations were credited with the advantage of removing risks from banks' balance sheets and spreading them more widely across international capital markets (Hahn, 2003). Although a higher dispersion of risks strengthens the financial system; at the same time, it weakens the information available to supervisors, because financing is shifted outside the banking sector. With the shift of loans from banks' balance sheets to special purpose vehicles, the requirement of capital adequacy for investments by banks, a central element in the current regulatory philosophy, became obsolete.

Failures of regulation and supervision

Figure 6: Evolution of the detrended GDP and credits to the private sector

Deviation from trend in percent applying the HP-filter, $\lambda = 1,600$



Source: WIFO calculations based on Hahn (2003). Credits to the private sector for Austria, Germany and the euro area correspond to the trend component of the TRAMO-SEATS seasonal adjustment procedure.

In addition to wide-spread securitisation, large financial services companies purposefully shifted activities to less regulated or unregulated subsidiaries. Financial innovation created new products outside the regulatory framework which served as substitutes for regulated products: mortgage-backed securities transfer conventional loans from a regulated balance sheet of a bank to an unregulated special purpose vehicle. CDS replace classical regulated credit insurance. In contrast to classical life insurances with strict investment regulations, banks' capital guarantees for old age saving vehicles are subject to no or insufficient regulation. The CDS issued in the USA by insurance group AIG, for example, were issued by its subsidiary AIGFP, which was subject to the inexperienced savings bank supervision. Another example is the holding company of Lehman Brothers which comprised 200 companies, of which 193 were not subject to any supervision. The unregulated units became so large and significant, that they had a systemic impact and thus affected other financial markets. The globalisation of financial markets also weakened na-

tional supervisory authorities' control. Insufficient communication between supervisory authorities enabled AIGFP and two monoline insurers from the USA to underwrite a substantial volume of CDS so that instead of the expected diversification of risk across global financial markets a new risk concentration on a few US-firms resulted.

From a macroeconomic point of view, one side-effect of the new regulatory philosophy under the Basel II Capital Accord is of particular importance: under Basel II the required capital base for banks' assets depends on a risk assessment of these assets. Depending on the creditworthiness of the debtor, different risk-weights have to be applied. Higher risks require a higher capital base (*Borio – Furfine – Lowe, 2001, Lowe, 2002, Hahn, 2003*).

Because internal assessments of creditworthiness strongly refer to the current situation of the debtor (*ECB, 2001*), banks' internal risk assessment models tend towards an underestimation of risk in upswing periods and thus facilitate an over-proportional expansion of assets. During downturns the opposite occurs, so that assets are reduced more than proportionately. The credit cycle, which already exists without this effect (Figure 6), is thus reinforced.

Regulatory authorities deemed external assessments of the creditworthiness by rating agencies more stable than banks' internal assessments. However, they show an increased volatility during the financial market crisis (*Hahn, 2003*). Concerning banks' ability to manage risks, the Larosière Report comments that banks had shown an excessive confidence in their internal models' capacity to manage risks. Therefore they had underestimated the possibility of simultaneous shocks and low probability (tail) risks. The risk assessment focused too much on the situation of the individual bank, whereas general developments in the banking sector were given too little attention.

If all banks simultaneously try to get rid of a specific asset, which is suddenly considered too risky, a liquidity problem arises on the macro level (*Larosière Report, 2009*). Equally the maturity transformation breaks down in a crisis of confidence among banks, i.e., banks cannot refinance themselves in the money market (*Brunnermeier, 2009*).

The Basel Capital Accord – "Basel II"

The Basel Committee on Banking Supervision prepares proposals for the regulation of banks which serve as a blueprint for national directives throughout the world. Thus the European Commission, too, has integrated this proposal into the EU supervisory legislation. "Basel II" is to ensure financial market stability by raising the congruence of risks in banks' balance sheets and the counterbalancing capital base. The regulatory framework consists of three interdependent pillars. Pillar 1 requires a minimum capital of 8 percent of risk-weighted assets. To measure the risks of their assets, banks can either use a standard model or an internally developed model which has been approved by the supervisory authority. Pillar 2 stipulates that supervisory bodies are responsible for a qualitative monitoring as well as the supervision of banks' internal controls. This pillar also defines the competencies of the supervisory authorities. Pillar 3 defines disclosure requirements for banks which are to enable shareholders and other market participants to exercise control. A more detailed description of the Basel II regulatory framework can be found in *Hahn (2003)*.

Valuation gains and losses resulting from the application of the new International Financial Reporting Standards (IFRS) are closely linked to pro-cyclical capital adequacy requirements. The IFRS stipulate that banks have to report their assets at fair value in the trading book. Assets included in the banking book and investments held to maturity must be valued at amortized cost. Write-offs of credits (in the banking book) are made in the form of provisions, if it seems likely at the balance sheet date that all or part of the respective credit may not be paid back.

IFRS Procedure for the Calculation of the Fair Value of Assets

The fair value is defined as the value at which an exchange of assets would take place or a liability would be repaid. This transaction should occur between two well-informed and independent parties on a voluntary basis. Compared to the US GAAP standard this definition of the IFRS creates some room for interpretation, because the US GAAP demands an expected selling price at exit (Novoa – Scarlata – Solé, 2009). This difference could explain why the volume of write-offs is higher for banks in the USA than in the EU (IMF, 2010). For the fair value determination three methods have to be applied in hierarchical order: if there is an active market with an observable price, then this price is to be used (mark to market, level 1). If there is an active market for similar securities with an observable price, or if there is an inactive market, or if there are valuation models with observable price indicators, then prices derived from them are to be applied (level 2). Otherwise mark-to-model procedures with unobservable indicators have to be applied (level 3). With these models a present value of the risk-adjusted expected future payments of an investment is calculated.

The discussion about the pros and cons of fair value accounting has a long tradition and it is linked to the debate about the role of undisclosed reserves in companies' balance sheets. The ECB (2004) sums up the main advantages and disadvantages of fair value accounting: fair value accounting increases the volatility of the profit and loss account. Although the increased volatility may contain useful information for investors, its information content is lost rapidly, if prices are determined in illiquid markets. If prices of financial assets are endogenous, even liquid markets may suffer from self-reinforcing cycles, because incentive and risk management systems of financial intermediaries are based on market prices (Plantin – Sapra – Shin, 2008). In such systems price changes have immediate effects on investors' behaviour and lead to portfolio adjustments. If all financial intermediaries react in a sufficiently similar way, all market participants simultaneously try to implement similar portfolio adjustments and thus reinforce the initial price signal. As this situation favours those market participants who react first, there is potential for a price spiral.

In simulations of typical bank balance sheets the ECB (2004) and Novoa – Scarlata – Solé (2009) find pro-cyclical patterns assets and liabilities which are reinforced by cyclical movements of share, house and bond prices. A technical disadvantage of fair value accounting consists in the significant role played by the default probability in level 3 calculations of the fair value. The ECB (2004) questions the reliability and objectivity of results based on internal models or interest premiums. Already in the discussion of risk-based capital ratios according to Basel II it was pointed out that internal estimates of default probabilities by banks were disproportionately affected by the economic cycle (ECB, 2001).

The timely assessment of the risk profile of a financial institution is considered the main advantage of the fair value approach. Thus, theoretically, shareholders and creditors have the possibility to identify a deterioration of the creditworthiness at an early stage. The Savings & Loan crisis in the USA from 1980 until 1994 and the banking crisis in Japan from 1990 until 2000 are examples of financial crises, which would have entailed lower cost for governments under fair value accounting (ECB, 2004). This finding rests on the assumption that interested investors support or replace the supervision of financial markets. Via indirect influence on the management or indirectly by pulling out of the investment, shareholders or savers can enforce an early correction of corporate policies. This assumption forms the basis of the third pillar of Basel II (Hahn, 2003). The Financial Services Authority (FSA, 2009) challenges this optimistic view on shareholders' responsiveness to market signals. Although prices of banks' CDS and shares signalled the relatively high risk of exposed institutions, the market did not recognise the total liquidity and solvency risk – on the contrary: until 2007 the rise of banks' share prices convinced their management that a growth strategy with high leverage would be value enhancing and simultaneously shareholders demanded high capital payouts, because they served to increase the return on equity.

Insufficient governance principles, weak internal controls and badly designed compensation systems were an essential cause for the global spread of the financial crisis. Given low yields, financial intermediaries all over the world lowered their attention to the principle of commercial prudence. One important incentive for this behaviour already existed at the level of the management, whose salary was strongly linked to the performance relative to a peer group. If the business performance remained behind that of the peer group, these compensation systems lead to strong incentives for high-risk investments (*Stoughton, 1993, Das – Sundaram, 1998, Diamond, 1998, Palomino – Prat, 2003*). A high expected yield from a high-risk investment enables the management to catch up with the peer group. If, as in the case of the investment banks, the peer group invests particularly risky, other financial institutions will follow their lead. The levels below the executive management also had performance-related compensation systems based on meeting performance indicators which were adjusted only for short-term risk (*Diamond – Rajan, 2009*). Banks' employees thus had an incentive to carry out transactions, whose risk would not negatively affect the calculation of bonus payments. A typical example of such a transaction consists in insurances against low probability events entailing high potential losses. As an example CDS can be interpreted as credit insurance of corporate bonds which fall due only in case of bankruptcy. Bank guarantees for capital invested in pension schemes correspond to a classical life insurance with a guaranteed yield of 0 percent. If such insurance activities are classified as banking operations, the build-up of actuarial reserves and the related compulsory investment policy is not required. Thus the whole insurance premium can be classified as income and raises profits by the full amount in the short run. Even if executives recognise this risk, low probability risks are difficult to manage. In addition, high profit expectations of shareholders put the executive management under pressure and encouraged a wide interpretation of limits on highly profitable operations.

In a similar way, financing loans, which are illiquid in the long run, by rolling over short-term credits from the money market, facilitates a profitable exploitation of the usually positive spread between short- and long-term interest rates. This business model is profitable as long as liquidity in the money market is abundant. However, it breaks down, when liquidity becomes scarce, and the ensuing financial problems make it difficult both to borrow long-term funds and to raise new equity. As a consequence a bank may rapidly go bankrupt. In the years before 2007 massive capital inflows into the USA combined with relatively low interest rates (*Taylor, 2009*) and the expectation of an active reaction of the Fed to a potential downturn ("Greenspan put"). This caused a strong inclination towards extreme maturity transformation (*Brunnermeier, 2009*).

Flawed risk assessment was exacerbated by the failure of internal and external control systems. Only in a few cases internal control systems diagnosed the high risk of mortgage-backed securities. Moreover, internal control faces high pressure, if it tries to limit sales of highly profitable financial products¹. The absence of indications from internal control makes the external control by the supervisory board more difficult. In addition, however, the high risks of complex new financial products were probably not fully understood by members of the supervisory board (*Larosière Report, 2009*). Furthermore, *Aizenman (2009)* emphasises that risks were taken deliberately, because financial services companies expected a bail-out by the government. For big enough financial institutions, the macroeconomic costs resulting from a collapse are so high that the bail-out occurs irrespective of the government's attitude.

Since October 2007 the Federal Reserve accelerated its interest rate reductions; at that time the ECB simultaneously lowered interest rates for the first time. Since then key interest rates in the USA were reduced by 4.25 percentage points, those of the ECB by 3 percentage points. Parallel to the reduction of financial intermediaries' re-

Compensation systems with high incentives for risk-prone behaviour

Failure of internal and external controls

Short-term economic policy approaches

¹ Evidence of an AIGFP manager before the Committee on Oversight and Government Reform of the House of Representatives on 4 October 2008: <http://oversight.house.gov/documents/20081007102452.pdf>.

financing costs a series of short-term direct measures to raise liquidity in the banking sector began on a global scale (Cecchetti, 2009, Trichet, 2009). For the ECB this included a replacement of bidding for funds by an unlimited allocation of liquidity at a fixed rate, which is still in force. Both major central banks gradually began accepting illiquid securities with lower ratings for repo transactions. With respect to money supply figures this policy of liquidity expansion is neutral, but it substantially increases the central banks' balance sheet – the ECB's balance sheet total has risen by about two thirds since mid-2007 (Figure 7).

With the Troubled Asset Relief Program (TARP) the US treasury tried to remove mortgage-backed securities from banks' balance sheets. However, the existing funds of \$ 700 billion were hardly used for buying securities at risk, but mostly for capital injections and bond guarantees. Zingales (2009) points to the bad signalling effect resulting from repeated government transfers to the banking sector. As preferable short-term relief measures he suggests either debt to equity swaps or the break-up of financial institutions into a bad bank administrating troubled financial investments and a good bank continuing the regular lending business.

Figure 7: Total liabilities of the euro system



Source: ECB.

In the EU these steps were taken at the individual member state level. Already in October 2008 Austria, for example, established the legal framework for a clearing bank allowing for government guaranteed short-term inter-bank credits. Longer-term securities issued by banks were also endowed with government guarantees (Interbank Market Strengthening Act, Interbankmarktstärkungsgesetz, IBSG, Federal Law Gazette, BGBl. I, No. 136/2008). The IBSG limits total guarantees to € 75 billion, of which about € 20.4 billion were drawn on until mid-March 2010. The government's injection of equity capital into banks was limited to € 15 billion and is regulated in the Financial Market Stability Act (FinStaG, BGBl. No. 136/2008) and in the Austrian Industrial Holding Act (ÖIAG-Gesetz, BGBl. I, No. 136/2008). Despite rapid implementation in October 2008 the first guarantees and capital injections were not provided until the end of 2008. Another essential instrument to sustain confidence in the banking sector referred to banks' most important financing source: savings deposits of households and companies (Figure 8). The amendment of the Banking Act (BGBl. I, No. 136/2008) temporarily removed the € 20,000 threshold on deposit insurance for natural persons and provided an unlimited guarantee until the end of 2009. Modified thresholds apply to savers who are not natural persons. Banks' deposit insurance systems still have to disburse compensations of up to a maximum of € 50,000 per depositor. Any amount above this value was guaranteed by the Federal Ministry of Finance. Since January 2010 a new threshold of € 100,000 has been in force.

Figure 8: Share of domestic non-banks' total deposits as a percentage of outstanding loans



Source: OeNB.

An international analysis of the IMF shows that liquidity enhancing measures were only effective until the first concerns about a solvency crisis emerged. The EU's approach of an injection of capital, by contrast, was regarded as a successful instrument, whereas guarantees less often produced the desired effects. The IMF is critical of purchases of assets by the government or by the central bank.

Both the regulation and the supervision of financial service corporations have been undergoing an adjustment process for an extended period. This was triggered by the creation of the single market for financial services in 1994. Since then cross border sales of financial services have been possible. However, differing domestic supervisory practices distort competition between suppliers from different countries. At the same time the process of passing directives in the field of financial services proved sluggish. The implementation of adopted directives into the national legal systems differed between countries, lagged behind schedule, and was partly omitted altogether. In numerous fields no uniform Europe-wide regulations could be introduced (e.g., the duty to publish an issuing prospectus, abuse of market power, etc.). Thus the objective of efficiency gains from the establishment of the single market with free capital flows and cross border supply of financial services seemed at risk (Lamfalussy, 2001).

As a reaction to this deficiency the European Commission established a "Committee of Wise Men" which was to draw up measures for an accelerated creation of regulations, their uniform and timely implementation into national law and for the largely uniform interpretation by supervisory authorities. The committee's final report (Lamfalussy, 2001) drafted a regulatory system with four levels. It aimed at speeding up and harmonising decision-making within the complex European constellation of interests between the Commission, the Council, Parliament, national governments and supervisory authorities. A central element of the acceleration of decision-making was the establishment of two committees:

- The European Securities Committee (ESC) concentrates on regulatory activities; its members are nominated by the governments of the EU member states.
- The European Securities Regulator Committee (ESRC) consists of representatives of the national supervisory authorities and mostly plays an advisory role.

Long-term economic policy solutions

The ESRC is supposed to ensure a harmonised transposition of the directives into national law and to promote best practice via an exchange of experience between national regulatory authorities. The measures, which were subsequently taken under the Financial Services Action Plan include, e.g., the definition of uniform accounting rules (International Financial Reporting Standards, IFRS) and the currently effective regulatory framework for banks (Basel II). Solvency I was implemented in the insurance sector. The discussion of a risk-adequate capital requirement for insurers (Solvency II), a regulation similar to Basel II, has not yet been concluded.

The objective of the Lamfalussy Process was the complete convergence of supervision and regulation within the single market. This process coincided with the financial crisis, which further exposed some already known weaknesses of the regulatory system. In October 2008 the European Commission entrusted the Larosière team with the analysis and the preparation of proposals for a solution (*Larosière Report*, 2009). At the same time the British treasury commissioned a similar expertise (*FSA*, 2009) and in Germany the Issing Committee developed a white paper (*Issing*, 2009) with suggestions for long-term improvements.

The multitude of proposals made in these three studies cannot be reported and discussed in detail here. Rather the most interesting proposals will be classified into three areas with a strong need for reform:

- mitigation of pro-cyclical elements at all levels of regulation and supervision,
- extension of regulation to include lending activities of systemic relevance and improvement of the co-operation among supervisory authorities,
- enhanced internal controls combined with an improvement and, if necessary, a supervision of incentive systems.

The pronounced and world-wide economic upswing between 2003 and 2007 reinforced international imbalances, which are considered one of the main causes of the current financial crisis. Therefore an improvement of international economic policy co-ordination, e.g., by the IMF and the OECD, seems necessary, combined with more binding recommendations of corrective measures. Further institutional features increasing the pro-cyclicality can be located in the accounting rules and the capital requirements according to Basel II.

As international imbalances played a significant role in the emergence of the financial crisis, the *Larosière Report* (2009) proposes an enhanced macroeconomic surveillance and more binding economic policy recommendations of international organisations. An international early warning system is to be established to prevent financial crises. In this context the IMF is to adopt additional tasks and develop additional instruments for an early detection of systemic weaknesses. This includes the obligatory implementation of the *Financial System Assessment Program* (FSAP) by all IMF member states, the establishment of an international credit register and the creation of international risk maps (*Issing*, 2009).

Such risk maps would be based on a joint data base, which aggregates the risks of individual financial institutions and financial markets on the national and international levels. So far this type of information has been gathered and analysed by the national supervisory authorities. The Bank for International Settlements (BIS) partly processed the data further and provided international statistics of cross-border activities. Risk maps would sum up and assess the cross-border exposure of financial intermediaries. By transferring newly developed financial products to the shadow banking system, banks avoided the recording and reporting of outstanding amounts. This was also facilitated by shifting transactions from regular markets to over-the-counter transactions. Finally, supervisory authorities were no longer able to assess the scope of receivables and liabilities vis-à-vis the shadow banking system and the ensuing systemic risk. The current Global Financial Stability Report (*IMF*, 2009) already contains first steps towards such a risk map.

The European Commission published two proposals for the establishment of a European Systemic Risk Board with a secretariat at the ECB. In this board the president and the vice-president of the ECB, a member of the European Commission, the presidents of the three European supervisory institutions, the central banks as well as

Mitigation of pro-cyclical features

Macroeconomic surveillance and binding recommendations

the supervisory authorities of all EU member states will be represented. In the USA a similar construction within the Federal Reserve is taken into consideration. In retrospect, an improvement of the data base seems one of the most urgent tasks: the financial crisis could not be forecast on the basis of the data, which were available in 2008 (Rose – Spiegel, 2009).

The strong pro-cyclical reaction of the current regulatory system results from three interrelated regulatory frameworks. At the bottom level the reporting rules of the International Financial Reporting Standards (IFRS) with fair value accounting create pro-cyclical effects. Risk-adequate capital requirements according to Basel II reinforce this effect. Finally, transactions were shifted from the conventional regulated domain to special purpose vehicles outside the banks' balance sheets, which were not supervised and obtained short-term refinancing in the money market. This combination reinforced cyclical fluctuations in the banking and insurance sectors (Larosière Report, 2009, p. 17).

One possibility to mitigate the pro-cyclical effects of reporting standards would be a return to the principle of commercial prudence combined with an application of the lower of cost or market principle. This time-tested procedure, which is common in Germany and Austria, forbids the reporting of unrealised valuation gains and thus prevents their distribution or their addition to equity. The growth of financial intermediaries' potential thus remains unaffected during periods of strongly rising market prices. In a phase of declining quotations the fair value causes valuation losses, which diminish a bank's business potential. If the valuation would follow the lower of cost or market principle this effect only occurs, if the current market price falls below acquisition costs. Changing towards the lower of cost or market principle would thus dampen financial corporations' growth potential in an upswing. During downturns valuation losses would not reduce equity until prices fall below the acquisition cost.

In Anglo-Saxon countries the lower of cost or market principle is unpopular because of the outdated representation of the company's worth and difficulties for investors to assess undisclosed reserves. A general adoption of the lower of cost or market principle thus seems hardly realistic. Often, little attention is paid to the fact that even under fair value accounting the valuation of a company remains difficult. Especially asset prices which were indirectly derived or are based on model estimations lead to misjudgement. Therefore *Novoa – Scarlata – Solé* (2009) suggest to complement the model estimations by the variances, the full range of possible solutions, any annotations or assumptions required to derive a price estimate, and even a sensitivity analysis. Thus, the mark-to-model procedure obviously offers wide scope for valuation but additional documentation might rather spread disinformation and confuse investors.

As the demand of a change towards the lower of cost or market principle has little prospect of success, reforms should aim at an improvement of existing IFRS rules. An administratively simple and effective approach would be a special treatment of unrealised valuation gains: if they have to be fully appropriated to "cyclical provisions" and can neither be assigned to equity nor disbursed as dividends, this interrupts the positive feed-back process between valuation changes and banks' growth potential. Only when the valuation gain materialises due to the sale of the asset, the valuation gain would be transformed into an actual profit. Thus the valuation of assets would be up-to-date and undisclosed reserves would be replaced by "cyclical provisions". In the case of valuation losses the cyclical provision could be liquidated and booked against losses, so that equity would be much less affected from valuation adjustments.

With its recent proposal (press release of 12 November 2009) the International Accounting Standards Board moves into a different direction: in the new IFRS-9 a uniform method for the determination of a valuation method for securities is defined. Depending on the company's business model and the cash-flow properties of assets, valuation has to apply either fair value or amortised cost. The procedures to write-down assets will be standardised. The European Commission rejects this proposal, because the pro-cyclical properties of fair value accounting have not been

Mitigation of the pro-cyclical effects of accounting rules

sufficiently mitigated, and will only accept the altered financial reporting standards for European banks after a detailed analysis (Financial Times, 13 November 2009).

The current regulatory framework for the banking sector limits banks' expansion via risk-weighted capital ratios. The analyses prepared before the introduction of Basel II already criticised the potentially pro-cyclical element in risk-weighted capital ratios, because banks' internal valuation systems assess the default risk pro-cyclically. If the liquidity situation of debtors is good in an upswing, their default risk is assessed as low and the risk-adjusted capital requirement decreases accordingly. The lower capital requirement expands the lending potential and thus promotes lending in an upswing. Inversely, debtors' liquidity position and consequently their creditworthiness worsen in a downturn. This increases the capital requirements for outstanding loans and dampens lending in a phase, when an increase would be desirable from an economic policy perspective. The studies before the introduction of Basel II assumed that rating agencies ignore cyclical fluctuations when assessing creditworthiness and that rating fluctuated less over the business cycle (Hahn, 2003). However, in addition to their blatant misjudgement of the quality of structured products, ratings also proved to be pro-cyclical and thus exacerbated the liquidity crisis of non-financial corporations.

The pro-cyclical effect of Basel II can be remedied by various approaches. For example, the minimum capital requirement for transactions in the trading book could be raised. A lower estimated risk from the bank's internal model would then only be effective up to this minimum requirement. However, this would make banks' proprietary trading with securities more expensive and less attractive. Alternatively, a threshold for banks' leverage could be established (maximum leverage ratio). The leverage is the ratio of total assets to equity. A threshold would be independent of investment risk and valuation uncertainties and thus link the growth of assets directly to equity. A leverage ratio would thus offer a fall-back solution, which limits the scope for interpretation in the calculation of risk-adjusted capital.

Anti-cyclical capital requirements are another instrument being discussed. An anti-cyclical capital ratio would offset the pro-cyclical bias of banks' internal assessment of default probabilities. In an upswing the required capital ratio would be increased to limit credit expansion. Inversely, the capital ratio would be lowered in a downturn. The capital ratios could be managed via discretion or by automatic adjustment mechanism based on a formula. *Repullo – Saurina – Trucharte (2009)* suggest a procedure using a multiplier based on economic growth for an anti-cyclical smoothing of the required capital ratio.

A discretionary approach seems sensible, but is very demanding in terms of the forecast capacity of the supervisory authority. The latter would at least have to have sufficiently reliable information on the current economic situation. An accurate economic forecast would be helpful for the determination of the capital ratio. However, revisions of forecasts for 2009 in Table 1 show that this is difficult in a pronounced and simultaneously rapid downturn. At the same time, banks that are active in the whole of Europe have the possibility to shift funds between countries in different cyclical phases. For this reason, the model of the Bank of Spain seems more attractive. It resembles the idea of cyclical provisions discussed earlier but rests on changes in default probabilities rather than valuation gains and losses: in periods with below-average defaults banks build up reserves, which they can reduce again in a downturn.

A proposal which has already been implemented in Europe (Regulation (EC) 1060/2009 of 16 September 2009) envisages the extension of the regulation to rating agencies. In the USA a corresponding proposal of the House of Representatives has been presented². The regulation of rating agencies is to ensure that their rating is independent, impartial and of appropriate quality. The quality criteria include staff ro-

Mitigation of the pro-cyclical effects of Basel II

² http://financialservices.house.gov/Key_Issues/Financial_Regulatory_Reform/FinancialRegulatoryReform/Discussion_Drafts/Credit_Rating_Agencies_draft_10_16_09.pdf.

tation, the separation of sales and rating and the disclosure of the valuation methodology before the supervisory authority. From December 2010 onwards the EU will only recognise ratings of agencies, which are registered and supervised in the EU or located in a third country whose regulation is recognised by the EU.

It is the special financing structure of financial intermediaries which mainly justifies regulation in this field. Financial intermediaries acquire short-term funds via deposits or the issuance of own securities and invest these funds into long-term loans to businesses and households. This maturity transformation makes banks particularly vulnerable to crises of confidence. Their assets are tied up in long term credits, whereas deposits can be withdrawn at short notice and opportunities to refinance in the money or capital markets may disappear quickly. The longer the average maturity of a bank's liabilities is, the more it is protected against short-term crises of confidence. Multi-year deposits or bonds with a longer maturity provide such protection, but they usually entail a higher interest burden. Therefore financial corporations' incentives for short term financing vary with the interest cycle. At the beginning of an upswing the incentive for short-term finance is high, because money market rates are still low and all market participants are particularly optimistic. In downturns this incentive is reversed, but the liquidity preference of the investors also increases, so that shifting to a more long-term financing structure becomes difficult. Northern Rock or Hypo Real Estate, for example, extensively used cheap short-term financing and had to use substantial public funds in the wake of the financial crisis. Basel II only stipulates that investment risks be covered by risk weighted capital, but it does not take a bank's financing structure into account. As financial institutions with an extreme maturity transformation are particularly vulnerable in a crisis of confidence, supervision should also monitor the financing structure and have the right to intervene, if the share of short-term liabilities is particularly high.

In September 2009 the Basel Committee published a declaration of intent, which announced the implementation of most of the measures mentioned above (Press release of 7 September 2009):

- supplementation of risk-weighted capital by a threshold on leverage,
- introduction of a minimum liquidity requirement,
- build-up of anti-cyclical buffers of capital that exceed the minimum requirement and are to be accomplished via the prohibition of dividend distribution. Excessive dividends, share repurchases and bonus packages are explicitly mentioned.

In addition the Basel Committee intends to raise the quality of capital. In the future the bulk of equity is to be raised by issuing common shares. This is to reduce the importance of hybrid or participation capital for financing.

For banks Basel II already extended the definition of capital-relevant business activities to off-balance activities, e.g., credit lines to special purpose vehicles. The current discussions within the Basel Committee on Banking Supervision (2009A, 2009B) focus on complete and correct risk-assessment, a corresponding adjustment of capital requirements, and tightened disclosure rules. Additional capital requirements are defined above all for risks recorded in the trading book. From 2011 onwards the rules of the banking book are to apply to securitised products in the trading book. Thus the incentive for arbitrage between these two records is reduced. The pro-cyclical effect of the risk-based approach is to be mitigated via the introduction of a stressed value-at-risk measure. In a stress scenario the Value-at-Risk computation is to be based on data of a period of significant losses. Within the second pillar of Basel II, shortcomings of the present risk management are to be reduced via a company-wide risk management system. This system would integrate off-balance special purpose vehicles into the group valuation, put more emphasize on the risk concentration within a group, and foster incentives for a more balanced risk-profit profile of the group. Starting with 2011, additional disclosure rules will come into force for securitised products in the trading book, lines of credit to special purpose vehicles, multiple securitisation (CDO² etc.) and pipeline risks.

An extension of regulation to, e.g., investment banking, hedge funds or other non-regulated financial intermediaries is currently not envisaged and seems sensible

Extending supervision to the financing structure

Extension of regulation and improved coordination of supervision

only, if it concerns lending activities or feedback mechanisms into the commercial banking system of systemic relevance. The separation of commercial and investment banking in the USA was a reaction to the banking crisis of 1929 and had the purpose of separating business activities with high arbitrage risks from the business of lending which is vital for the economy. Any resulting losses were to be borne exclusively by investors and not by deposit insurance institutions or the government. The abolition of this separation seems sensible, because investment banks provide financing for high-risk investment projects and simultaneously generate numerous innovations. At the same time commercial banks, nowadays, offer non-financial enterprises integrated financial services including risk transfers, which could not be provided efficiently without commercial banks' proprietary activities in investment banking (FSA, 2009). A detailed material regulation would not only put an important source of finance at risk, but also overtax supervisory authorities. Instead of a direct regulation it seems more sensible to subject transactions between already regulated banks and non-regulated financial intermediaries to a notification requirement and stricter limits. In line with the Basel II philosophy this could be achieved via higher capital ratios for such transactions. Therefore, as envisaged for hedge funds, a central register containing information on the transaction volume, the investment strategy, key business partners and similar data would be sufficient.

Credit Default Swaps (CDS) indirectly remove risk from a bank's balance sheet. These insurance products are set up as derivative transactions and guarantee a payment to the holder, if a bond is not redeemed. In contrast to conventional credit insurance CDS are not subject to any regulation which would require the build-up of actuarial provisions or reserves to cover the underwritten risks. As with options, the issuer of a CDS has to deposit collateral which will be raised dynamically, if the risk worsens. If, due to insufficient liquidity or an issuer's bankruptcy, a margin call cannot be met, deposited collateral is used to settle the liabilities and the insurance cover ends prematurely. The liquidity of the main issuer of CDS (AIGFP), for example, could only be maintained by massive capital injections from the US treasury.

In the future credit insurances should be treated as insurance contracts independently of the design of the instrument. Thus not only a higher and more timely cover in the form of technical provisions and equity of an insurance company would be available, but this insurance contract would also be removed from daily trading in financial markets and the corresponding fluctuations in value would be avoided. Both CDS and conventional credit insurance should be banned as instruments to reduce risks in the computation of regulatory capital needs. This step suggests itself not only because issuers of CDS had insufficient liquidity in the downturn, but also because removing default risks from an asset produces negative incentives and hides real risk takers.

By contrast, the G-20's proposal focuses on shifting trade with standardised derivative products from over-the-counter transactions to exchanges or electronic trade platforms with a centralised counterparty. Non-standard derivatives will be subject to higher capital requirements. Derivative contracts traded over-the-counter should be recorded in a trade register (G 20, 2009).

Regulation standards and accounting rules for financial intermediaries are centrally defined by EU directives. The directives are based on Basel II and the IFRS. These sets of rules originate from international institutions and could also be applied in countries outside the EU. For the insurance sector the EU developed a regulatory framework of its own (Solvency II), which could equally be adopted by countries outside the EU (Elderfeld, 2009). Contrary to the supranational legal framework, financial intermediaries are supervised by national authorities. The Lamfalussy process initiated an enhanced co-ordination of supervisory authorities in the single market by the European Securities Regulator Committee (ESRC). Best practice supervisory techniques should be developed based on the exchange of experience in this committee. Despite the efforts the exchange of knowledge is still not working satisfactorily (Larosière Report, 2009). Measures to improve co-ordination may work at several levels and include varying degrees of federal elements. They range from enhanced communication within existing structures via colleges of national supervisory authori-

**Improved co-ordination of
supervisory authorities**

ties for individual multinational financial intermediaries to a fully integrated supervisory authority of the EU.

Currently, the full integration of supervisory authorities at the EU level does not seem desirable, because in EU legislation subsidiarity is a basic principle, from which one should only deviate, if the decentralised legal framework entails disadvantages. Shortcomings of communication can be remedied within the existing system, so that its advantage, namely the substantial knowledge about local financial services companies, can still be used by local supervisory authorities. From the current perspective the diversity of supervisory techniques may seem a disadvantage, from an evolutionary perspective, however, decentralised structures are more prone to innovation and thus improve the potential for further development of supervisory methods.

An important argument against a central authority is the non-existence of an economic policy infrastructure during emergency. As the current crisis shows, policy makers, the central bank and the treasury in the respective countries are strongly involved, both materially and personally, in crisis management. All mentioned short-term measures require rapid legislative action and, in part, substantial government funding commitments or guarantees. At the EU level, neither the political legitimacy nor the legal framework for such measures exists. The current revenue structure of the EU and the inability to incur debt would equally prevent bail outs. Directly linked to bail outs is the regional distribution of the financial burden. There will be hardly political support for taxing Austrian households and businesses in order to finance the restructuring of the British banking sector. Under these conditions the retention of national supervisory authorities increases incentives for diligent supervision.

Finally, the transition to a new supervisory structure entails high cost, also in the form of teething problems, which cannot be justified by the advantages of a centralised authority. It is still unclear how locally active financial services companies should be supervised by a European authority and how conflicts of competence between the local and the EU authority can be resolved. Finally, the existing EU institutions already lack legitimacy and further shifts of power towards central authorities need to be backed by an appropriate system of checks and balances.

There is substantial room for improving co-ordination within the existing structure of national supervisory authorities and the phase 3 committees (*Larosière Report*, 2009). For this purpose an institution from the Solvency II directive could be made to apply to all financial services companies with cross-border activities. For multi-nationally active insurers Solvency II envisages the establishment of colleges, which consist of representatives of the supervisory authorities of all member states, where the insurer is active. In these colleges the supervisory authorities of the home country would act as a leader and organise co-operation of national supervisory authorities. The example of the Icelandic banks shows that internationally active financial service companies create substantial risks in their host countries, that the exchange of information is insufficient in the initial phase of a crisis, and that the supervisory authorities of the host countries cannot take measures against decisions of the authorities in the home country. The close co-operation of supervisors within colleges can overcome these shortcomings. For this purpose, however, rapid decision-making is necessary, which would also trigger a mediation process in the case of conflict between the supervisory authorities of the home and the host country. At the end of this process an agreement should be reached or at least a higher-ranking institution, e.g., the ESRC, should be able to take a binding decision.

At the moment, three proposals of the Commission for new directives are circulating. They envisage the transformation of the level 3 committees into a European Banking Authority, a European Insurance and Occupational Pensions Authority and a European Securities and Markets Authority. These three new EU supervisory authorities will continue to enhance co-operation and implement supervisory activities consistently. Additionally, they will delegate members to individual colleges and will have the right, to take and enforce binding decisions in case of conflict between national authorities. They will also be in charge of the centralised gathering of micro data on

Fully integrated supervisory authority of the EU not sensible

Considerable potential for improved co-operation between national supervisory authorities

financial services companies. The three single authorities will be integrated in the European Supervisory Authority.

The USA is embarking on a similar path: the existing supervisory authorities will be combined into a common Financial Services Oversight Council. An agreement on the structure of this Institution to monitor systemic risk is still in the pipeline. The House of Representatives suggests a council under the joint leadership and control of the US treasury and the central bank.

In addition to the improved organisation of supervision at the micro level the assertiveness of supervisory authorities vis-à-vis regulated financial services companies also has to be strengthened. For this purpose the Larosière Report proposes uniform and stronger penalties throughout the EU. To guarantee the quality of supervision, the salary level of employees would have to be lifted to match that of the supervised banks. If the wage differential with respect to the private business sector becomes too large, there is a strong incentive for employees of the supervisory authorities to move to the private business sector. A move in the opposite direction, however, is unattractive, so that the knowledge transfer from practice to supervision is inhibited. The salary structure in the supervisory authorities should possibly be differentiated more strongly to match the complexity of the supervised sphere. In addition to the salary supervisory authorities could also make more use of non-monetary incentives.

The poor internal and external control of financial intermediaries shows that an important element of the Basel II system, namely the third pillar, does not work sufficiently. Basel II acknowledges an important role of internal and external control for the stabilisation of financial intermediaries. Internal control units were removed from the sphere of active departments and lifted to the level of the executive management. In view of the high pressure on internal control departments their independence is to be strengthened, e.g., via uniform rules for their tasks, sufficient resources or an intensified communication between the control department and the supervisory committee. The internal control system could become an object of supervision. The *Larosière Report* (2009) also proposes an adjustment of the remuneration structure for the internal control staff: the salaries should be raised to the level of those employees who are responsible for high risk-transactions.

Financial intermediaries had strong confidence in the results of their Value-at-Risk (VAR) models. However, these models could not properly reflect risks in extreme situations. In part the statistical basis of the VAR models was limited by short time series without extreme situations. In part the models did not reflect the high correlation of financial variables during crises. On this basis, actual risk was systematically underestimated in the trading and in the banking book. Often, the executive management and the supervisory committee did not understand the applied VAR models sufficiently (*Larosière Report*, 2009). In the future, the VAR model solutions of the risk departments are to be complemented by economic expertise to a larger extent, especially if the risk assessment is based on external ratings. The supervisory authority, the supervisory committee, and the executive management must fully understand new financial products and be able to assess the resulting risks. Therefore, the supervisory authority has to introduce competitive remuneration systems, and the qualifications for members of the supervisory committee as well as the executive management have to be raised to a level, which ensures the required expertise. Finally, it has to be ensured that members of the supervisory committee spend an adequate amount of time on their supervisory activities.

So far the remuneration systems of financial intermediaries have given their employees strong incentives for high-risk activities with high short-term profit potential, whereas long-term aspects of profitability and the maintenance of value are not considered (*Larosière Report*, 2009). This incentive structure changes the risk behaviour of employees and, consequently, the basis of financial intermediaries' risk management. To solve this problem the FSB (2009) suggests adjusting the reference values for bonus payments for risk, putting the remuneration system under the control of the supervisory committee, and a monitoring of the remuneration practice by the supervisory authority. As quantitative risk assessment is difficult, the indicators must

Strengthening financial intermediaries' internal controls

be complemented by personal judgement. An alternative would be the deferral of bonus payments until the date when the respective risk dissolves. The FSB (2009) emphasises that remuneration systems should be symmetric to the realised success, i.e., in the case of a bad business performance bonus payments should be correspondingly lower or cancelled. Overall, redesigning the remuneration structure seems difficult and can be expected to consume substantial resources. Furthermore, the first companies to establish a risk-oriented remuneration system are likely to lose valuable employees. The results of a survey among financial intermediaries presented in IIF (2009) show that only 11 percent of the surveyed companies adjust the basis of their salary payments for risk aspects or take the maturity of risks into account. Therefore the FSB (2009) proposes a coordinated course of action of the supervisory authorities to ensure an almost simultaneous implementation. This proposal has already been adopted by the Basel Committee and the FSF Principles of Compensation (FSB, 2009) have already been laid down as guidelines on the risk-oriented design of remuneration systems (Press release of 7 September 2009).

In addition to the consideration of risks in the calculation of bonuses, financial services companies should avoid compensation systems, which link bonus payments to the relative performance compared to a peer group, because such links increase the incentives for risk-prone behaviour. In their empirical analyses *Brown – Harlow – Starks (1996)*, *Chevalier – Ellison (1997)*, *Elton – Gruber – Blake (2003)* and *Goriaev – Palomino – Prat (2001)* find evidence that managers of investment funds align the risks of their portfolios with their position in external rankings or their compensation systems, respectively. Similarly, peer pressure is likely to have induced European financial intermediaries to engage in riskier investments (*Tichy, 2009*).

The current financial crisis began in the USA in the first half of 2007. Via international trade and financial integration it spread across the whole world fast and forcefully from autumn 2008. The dimension of the financial crisis, the high cost of stabilising financial markets, the negative repercussions on goods and labour markets and the ensuing losses of welfare demand a thorough analysis of the causes and the measures derived from them, to make the recurrence of such an event less likely. For this purpose several initiatives have been started at national and international levels. Their final reports with analyses and recommendations have meanwhile become available.

The most important combinations of measures with a focus on macro- and micro-economic aspects can be summarised along three categories:

- mitigation of pro-cyclical elements at all levels of financial market regulation and supervision,
- extension of the regulation to hitherto excluded activities typical of banks and of systemic relevance as well as an improvement in co-operation among supervisory authorities,
- enhanced internal controls combined with an improvement of incentive systems, which might even have to be subjected to supervision, too.

The proposals for reform which are summarised here include both ex-ante elements for stabilisation and early-warning systems for cross-border activities. They are well integrated into existing European and international structures and thus seem feasible easily and without substantial need for adjustment.

One issue, which is critical for Austria, however, remains unaddressed: are foreign activities of systemically relevant domestic banks to be limited? If a large share of international loans becomes non-performing, the Austrian government may have to save banks of systemic relevance. If in this case the required additional capital injections exceed the ability to raise funds, national bankruptcy looms (too big to save), Iceland. This potential source of instability was identified by the International Monetary Fund and the Austrian supervisory authority already at an early stage. In the most recent Financial Stability Assessment Program the foreign activities of Austrian banks were put to a model test of stability (*IMF, 2008*) with detailed scenarios of a recession in Central and Eastern Europe (*OeNB, 2009*). Under the assumptions

Conclusions

made only a few minor banks would have been threatened by insolvency. Probably not all potential extreme situations could be modelled accurately in the simulations. However, Austrian banks' receivables vis-à-vis foreigners of currently € 295 billion or 106 percent of GDP (2009) have probably not yet reached the critical size, which would cause an alarming deterioration of Austrian banks' capital base. From today's perspective, the instruments developed jointly with the IMF in the framework of the Financial Stability Assessment Program seem very valuable and should be promoted more actively on an international level. This would help to reduce the premium on Austrian bond yields further from its still high level.

Table 2: List of abbreviations

AIG	American International Group Inc.
AIGFP	American International Group Financial Products Corp.
CDO	Collateralised debt obligation; a superscript indicates the degree of multiple securitisation
CDS	Credit default swaps
ESC	European Securities Committee
ESRC	European Securities Regulator Committee
EURIBOR	European Interbank Offered Rate
ECB	European Central Bank
IFRS	International Financial Reporting Standards
IMF	International Monetary Fund
US-GAAP	United States Generally Accepted Accounting Principles
VAR	Value-at-risk

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Financial Market Crisis: Origin, Short-Term Reaction and Long-Term Adjustment Requirements – Summary

The beginning of the financial crisis is dated February 2007. At that time the first reports of defaults on subprime mortgages in the USA were published. Later on the crisis shifted to the market for mortgage-backed securities and spread to the whole financial system. All in all, the required valuation adjustments in the financial sector are estimated at \$ 3,400 billion. The resulting losses forced governments around the world to provide public funds and guarantees to banks. Key interest rates were reduced to almost 0 percent and central banks pumped enormous amounts of liquidity into the banking sector. Macroeconomic imbalances, carry trades between low and high interest currencies and an overly expansionary monetary policy of the US Federal Reserve can be quoted as the macroeconomic reasons for the financial crisis. However, the crisis also unveiled deficiencies within the control and supervision systems of financial intermediaries. The securitisation of mortgages and other financial instruments allowed financial intermediaries to shift business activities outside the regulated sphere. This move in turn required a fair-value assessment of securitised credits and pro-cyclically increased risk weighted capital ratios required by the Basel II standards.

Short-term incentive structures within the remuneration systems and disregard for systemic risks within the internal risk control system of credit institutions are held to be further sources of instability. An instant and powerful economic policy response averted a recurrence of the "Great Depression". The current efforts of G-20 governments already focus on the long-term stabilisation of financial markets. They encompass the dampening of pro-cyclical elements at all levels of the corporate control and supervisory system, the extension of supervisory activities to new areas, improved co-ordination of national supervisory authorities, enhanced internal control systems within financial services providers and due consideration of risks in their remuneration systems.

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