

TIGER

TRANSFORMATION, INTEGRATION and GLOBALIZATION ECONOMIC RESEARCH
CENTRUM BADAWCZE TRANSFORMACJI, INTEGRACJI I GLOBALIZACJI

TIGER Working Paper Series

No. 113

Why Is This Financial Crisis Occurring? How to Respond to It?

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Warsaw, July 2008

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Abstract. A combination of cyclical and structural factors has led to a situation which could threaten financial stability worldwide. As the current financial turmoil is unfolding it becomes clearer that the effects of the initial sub-prime crisis, which originated in the US, are spreading across other asset markets worldwide, increasing the likelihood of a global credit crunch and an economic downturn. In the light of these developments there is a need for the implementation of strategies for action. This paper focuses on structural causes of the current crisis and on policy issues such as enhancing transparency, resolving conflicts of interest, incentives structures in the financial industry and, not least, improving the existing regulatory and supervisory frameworks.

JEL Classification: G18, G28.

* Background paper prepared for the ALDECON seminar on the international financial crisis, 27th February, 2008. We thank for very helpful comments to Sharon Bowles, Wolf Klinz and Patrick Minford. We also thank Eric De Keuleneer, Nigel Phipps, Robert Priester, Ray Kinsella, John Purvis, Ieke Van den Burg and other ALDECON seminar participants for their useful comments. We assume full responsibility for the content of this paper.

Summary

Increasing innovation in financial markets together with rapidly growing cross-border transactions aided by favourable low-interest rate conditions in developed markets, against the background of precarious regulatory frameworks, have created the premises for a potentially devastating financial crisis.

Financial innovation brings about benefits when it fosters dynamism and economic growth. But it also entails significant risks; the more complex financial innovations are and the more broadly based their use is, the more ensuing, systemic risks can be. In other words, the fragility of financial systems can increase substantially. Recent events in international financial markets show it amply. As a matter of fact, complexity has become a key issue to deal with in both internal risk management (by banks) and in the overall functioning of financial markets.

Addressing the challenges posed by risky financial innovations and misconduct by market participants is not an easy task. When handled in an inappropriate way positive innovation stifled. On the other hand, not taking appropriate measures would be quite damaging under the current circumstances and might lead to massive erosion of confidence in the financial sector.

At the time of writing, a combination of cyclical and structural factors has led to a situation which could threaten financial stability worldwide. As the current financial turmoil has been unfolding it becomes clearer that the effects of the initial sub-prime crisis are spreading across other asset markets, increasing the likelihood of a global credit crunch and an economic downturn. The breadth of the ongoing crisis has brought into attention, once again, issues related to the transparency and liquidity of financial systems. Excessive risk taken by lenders, at the expense of necessary prudence, together with a high degree of financial engineering have allowed complex investment products to be sold to a wide range of investors. The emergence of the so called 'shadow banking system' - which is exempt, to a large extent, from regulation and supervision (as it is experienced by the banking system) - has facilitated the proliferation of highly leveraged investment vehicles and has accentuated systemic risks. With the implicit lengthening of the intermediation chain, it becomes increasingly difficult to assess the nature and magnitude of the risk involved or to locate those who bear the risk; markets have become opaque. These effects have been compounded by the lack of adequate due diligence by banks and investors.

Ironically, financial innovation that was designed to diminish risk at the individual or micro level has ended up in exacerbating it at the macro level, thus increasing systemic risk. Two of the most important policy challenges ahead are those related to transparency and liquidity. But, arguably, the most arduous task is to combat the scope for higher systemic risks when financial innovation is very intense.

In hindsight, recent crises, such as the LTCM or Enron, can be seen as stress tests for the financial system. Although these crises were quite severe, their global effects were contained in the end because, at those periods of time, the financial markets' degree of sophistication did not, arguably, reach the level and depth as witnessed nowadays. Delays in the effective implementation of changes in regulatory systems, as flagged

out by these warning signs, are partially, at the root cause for the turmoil we are witnessing nowadays.

One feature of the current crisis is the high degree of uncertainty regarding the distribution and extent of incurred losses. This uncertainty, lack of trust, have made investors to take a flight for quality, which, in turn, has led to an increased liquidity demand. Central banks have responded to that by injecting large amounts of liquidity in the money market. However, the pursuance of such a policy is unlikely to bring an end to the current crisis for two reasons. First, this measure does not address the root of the problem, namely that of the underlying fear that banks' balance sheets are in a precarious position. At the moment, the existence of counterparty risk is prevailing in the money markets. And second, the liquidity does not reach the market participants which mostly need it – i.e. the 'shadow banking system'.

In the light of the developments mentioned above there is a need for the implementation of appropriate strategies for action. This paper brings together points of view expressed by academics, market participants or analysts. These views focus on a few directions centered on issues such as enhancing transparency, resolving conflicts of interest, incentive schemes that encourage excessive risk-taking at the expense of prudence, and, not least, improving the existing regulatory and supervisory frameworks. This crisis is an additional strong proof that free markets are not tantamount to completely deregulated markets. This paper also reflects our own thinking on how to respond to the current crisis.

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”While the Committee strongly believes that large, deep, liquid and innovative financial markets will result in substantial efficiency gains and will therefore bring individual benefits to European citizens, it also believes that greater efficiency does not necessarily go hand in hand with enhanced stability” (Alexandre Lamfalussy)¹

1. Introduction

Increasing innovation in financial markets together with rapidly growing cross-border transactions (globalisation) aided by favourable low-interest rate conditions in developed markets, against the background of inadequate regulatory frameworks, have created the premises for a potentially devastating financial crisis (more severe than the ongoing current crisis). It is too early to tell what the consequences of a full blown crisis would be as it is quite difficult to assess its impact on both the financial sector and the real economy; what is certain, however, is that this impact would be very damaging.

The purpose of this policy paper is to have a look at the main causes that have triggered the current crisis and then review some of the suggestions to tackle it as highlighted by various market participants. From the start it looks as if at the roots of today’s unfolding crisis has been market participants’ behaviour of making reckless lending, often against no collateral, while regulatory and supervisory institutions were failing. But equally important it has been the very intense financial innovation of the past decade, which has allowed a wide dissemination of risks together with a blurring of the line delimiting who bears them. Without this wide dissemination the sub-prime mortgage crisis could, presumably, have been contained to a large extent, to the US markets. Ironically, what was thought to diminish risks at individual (micro) level has turned out to increase systemic risks; the latter have to be examined in conjunction with the expansion of global markets.

It has to be said, however, that elements of the ongoing crisis make integral part of the long standing pattern of booms and busts in asset markets. Often, the mechanism through which these financial crises develop is, as mentioned by Michael Bordo (2007), the emergence of new financial instruments. The latter are often designed in such a way as to avoid regulation and necessarily require a test of financial stress in order to be proved successful or not. Initially, the euphoria of the boom, financed through credit, blurs the distinction between sound and less profitable prospects, a situation which could induce an asset price bubble. Information asymmetries compound the initial problem leading to moral hazard² and adverse selection³. The bust – often triggered by an increase in interest rates - brings an end to the lending cycle. In hindsight, recent crises, such as the LTCM or Enron could be considered as stress tests for the financial system. Although they were quite severe, their global effects could be contained in the end because, at that time, the financial markets’ degree of sophistication did not, arguably, reach the level and depth as witnessed

¹ Alexandre Lamfalussy making a reference to the final report of the Committee of Wise Men on the Regulation of European Securities markets (15 February 2001), p.2, 2008

² See Mishkin (1997).

³ Moral hazard refers to a situation when market participants take excessive risks, if they believe someone will bail them out if things go wrong. Adverse selection occurs when buyers/traders are unable to differentiate between the quality of financial products, ie loans for instance.

nowadays. It seems that delays in the effective implementation and enforcement of changes in regulatory systems, as flagged out by these early warning signs⁴, are at least partially, at the root cause for the turmoil we are witnessing nowadays.

Financial crises are powerful events and can have very serious implications. If the effects of the crisis affect the real economy, this could in turn trigger a fall in consumers' wealth and consumption and it might take years until the economy settles back to the economic path at the point preceding the crisis. In effect, this is one of the main questions addressing the existing situation. Given the current state of short-term credit concerns in an economic environment where GDP has still been growing and house price declines have been rather modest, the question posed is what can be expected if the US enters a full-blown recession and average real estate values fall by a large amount. Spillover effects to other global asset markets would, undoubtedly, magnify the outcome of such a scenario.

The paper proceeds as follows. Next section deals briefly with the issue of classification of financial crises, as documented in the literature. It also highlights similarities the current financial crisis has with more recent episodes of this kind. Section 3 describes what is particular of the current crisis. Finally, the last section summarises points of view expressed in the literature and the media about what can be done to avert the occurrence of such a crisis in the future.

2. A Classification of Financial Crises

2.1 What Causes Financial Crises?

Financial crises are recurring phenomena which can have a significant impact on the economy. Depending on how one defines a financial crisis, there are various ways in which these can be classified. For instance, Anna J. Schwartz, a reputed US monetary economist, argued that a financial crisis should involve a run on the monetary base. Otherwise it would be difficult to distinguish between a pseudo-crisis and a real one. In practice, however, things are more difficult to assess once a crisis is unfolding. Financial crises could involve either bank or currency crises or indeed, both of them could take place at the same time.

Historically, credit booms – that fuelled unsustainable rates of economic growth - seemed to have preceded financial crises. Delargy and Goodhart (1999) argue that both the late 19th century crises and those in the late 20th, were more likely when loose credit conditions in the lending countries were in place. Subsequently, when credit conditions suddenly adversely changed it generated a boom and bust economic cycle.

The causes for financial crises are multiple and nowadays, a standard classification of currency crises revolves around one of the three generational models.

⁴ By making reference to the LTCM episode Krugman said, years ago: “The hedge fund scare revealed that modern financial markets, by creating many institutions that perform bank-like functions...have in fact reinvented the possibility of traditional financial panics” (1999, pp.162)

The first generation models, pioneered by Krugman (1979) and Flood and Garber (1984) deal with crises that are mainly caused by macroeconomic vulnerabilities. In essence, at their origin is the government's need to finance constantly higher deficits, eventually resorting to monetisation. Because these crises necessarily envisage a dynamic path for economic policies, they are therefore predictable. Classic examples are recent crises in Russia (1998) and Argentina (2001). Moreover, these type of crises could include a broader array of factors that trigger them, including monetary policy indiscipline, overvalued exchange rates and contagion from crises in relevant trading partners countries. Because of improved macroeconomic policies at the global level however, the frequency of these crises tend to be more rare nowadays.

The second generation crises models focused on macroeconomic trade-offs and decisions. They emphasise non-financial conditions that may abruptly turn adverse in such a way that would present the authorities with a range of policy choices. As an example of the second generation crisis is the series of attacks on some European currencies within the European Monetary System in 1992-1993. Obstfeld (1986) has shown how crises can be self-fulfilling in such a situation. They also exhibit multiple equilibria and occur mainly because market participants expect them to materialise.

The third generation crises address the balance sheet problems. A distinctive feature of those is that their causes reside in the financial sector vulnerabilities (Kaminsky and Reinhart, 1999). At the root of these vulnerabilities are mismatches between assets and liabilities, whether they are held by financial institutions or by the non-financial sector, and irrespective whether they are a matter of concern for the public or private sectors.

The frequency of this later strand of currency crises has become higher recently, as financial markets have become increasingly integrated. Different third-generation models explore various mechanisms through which balance-sheet exposures may lead to a currency and banking crisis. Thus, according to Mark et. al (2002) there are four types of balance sheet mismatches that can be identified:

- *maturity mismatches*, where the gap between short term liabilities and liquid assets leaves an institution incapable to pledge its contractual commitments if lenders refuse to roll over debt or if creates exposure in the face of interest rate rising
- *currency mismatches*, where sudden changes in exchange rates lead to a capital loss;
- *capital structure problems*, where excessive leverage leaves a firm or bank exposed to uncertain revenue shocks in adverse market conditions
- *solvency problems*, in cases where assets are insufficient to cover liabilities. Solvency risk can arise from various reasons. For instance, Chang and Velasco (2001) show that a liquidity exposure leads to the possibility of a Diamond and Dybvig (1983) style bank run. In Caballero and Krishnamurthy (2001) firms face a liquidity problem because they finance risky long term projects with foreign loans but have access to limited amounts of internationally accepted collateral.

It is within the third generation models that most recent financial crisis are part of. A characteristic of the latest financial sub-prime crisis is the collapse of short-term commercial paper market, thus impeding the attraction of new financing or rolling over existing short-term liabilities.

There are quite a few episodes of financial crises in the economic history⁵. Probably the earlier classic example of a financial bubble is that of the Dutch tulip mania of 1634-1637⁶. A single bulb of *Semper Augustus* traded from a few florins in 1634 and rose to 6,390 florins in 1637, before collapsing to a tenth of a florin, at which price it traded for the next century.

But there are more other famous examples like the Overend and Guerney (1866), Barings Bank (1890 and 1995) or The Great Depression (1929-1933). Subsequent to these crises, landmark changes in the regulatory and supervisory rules were introduced.

2.2 Relevant History Lessons and Policy Implications

- After Overend and Guerney went bankrupt in 1866, Walter Bagehot advocated the 'lender of last resort' role for the Bank of England. Its main objective would be to avert a systemic crisis by providing liquidity to the financial system during crises.
- In the aftermath of the 1929 crisis, the so-called New Deal was introduced by the US President, Franklin Roosevelt. This included extensive regulation of financial markets and the banking system through the creation of the Securities and Exchange Commission (SEC) and the Federal Deposit Insurance Corporation (FDIC). It also led to a separation of banking activities through the Glass-Steagall Act.
- Subsequent to the Barings crisis in 1995, the Bank of England restructured its Supervision and Surveillance system. It implemented a new model (RATE) for assessing risk⁷ while increasing cooperation with other central banks supervisory departments. Its changes were followed suit by other national Supervisory institutions (for instance Germany's, which introduced minimum requirements for the trading activities of credit institutions).
- After the Black Monday crash of 1987, regulatory bodies introduced the so-called 'circuit-breakers' aimed at limiting programme trading and allowing them to suspend all trades for short periods.
- The seriousness of the LTCM crisis in 1998 prompted the US President's Working Group on Financial Markets to issue a report on the hedge fund implications for systemic risk in financial markets⁸. Its central policy recommendation was that regulators and supervisors should foster an environment in which market discipline constrains excessive leverage and risk-taking.
- Investigations by SEC in the Enron scandal (2001) revealed major flaws in the existing regulatory and supervisory system. Among these were rating agencies' conflict of interests, fraudulent management activities and the extensive leverage of the off-balance financial entities.

⁵ See Appendix 1 for a succinct description of the most recent financial crises and their economic consequences.

⁶ Kindleberger (2000) offers an account of this episode as well as other renowned financial crises in the history.

⁷ RATE = Risk Assessment, Tools of Supervision and Evaluation

⁸ Hedge Funds, Leverage, and the Lessons of Long-Term Capital Management (1999)

Obviously, there are many similarities among this crisis and previous episodes. Reinhart and Rogoff (2008), for instance, provide a historical comparison. They were preceded by periods of credit booms facilitated by low interest rate environments. Often the emergence of crises was facilitated by obsolete framework designs of institutions which have a regulatory and supervisory role. But there is also a number of issues, such as the workability of securitised lending and the roles of central banks and regulators, which makes this crisis different (Wolf, 2007).

Table 1 below provides a succinct explanation of the causes and consequences in recent crises. More about those is presented in Appendix 1.

Table 1. The Causes and Consequences of Recent Crises

	<i>Causes</i>	<i>Consequences</i>
The Enron Scandal, 2001	Conflicts of interest; complex structured finance transactions rolled via through off-books financial entities; fraudulent activities	Systemic effects – on creditors, banks and other energy trading companies.
The DotCom Crash, 2000	Limited investment knowledge of individual market participants	Temporary closure of the financial markets; business investment falling and the US economy slowing
LTCM crisis, 1998	High leverage factor; sophisticated computer models to assess investment strategies	Threatening systemic failure in international financial markets
Asian Crisis 1997	Indiscriminate investments due to cheap credit availability and premature opening of the capital account	Credit crunch and widespread bankruptcies; slower global growth
The ‘Black Monday’ Crash of 1987.	Programme trading strategies and market perception	The US stockmarket suffered its largest one-day fall
Latin American Debt Default of 1982	Economic and financial liberalisation; Indiscriminate investments due to cheap credit availability	Credit crunch and widespread bankruptcies; slower global growth
S&L crisis 1980	Unsound real estate lending	Potential systemic risk
The Penn Central crisis, 1970	Unable to roll over short term debt	Threat of the spill over into the banking system

3. The Current Crisis – What Has Triggered It and Implications

The first signs that signalled the emergence of the current financial crisis first surfaced in June 2007 when two hedge funds run by the investment bank Bear Stearns got into difficulty⁹. The funds borrowed against collateral which was held by the lenders - known as prime brokers. When one of the brokers tried to sell the collateral its actions succeeded only in driving prices sharply lower. More than eight months into the crisis it seems that it would continue well into 2008 and, possibly, 2009, and its effects could be felt for years to come.

Although the emerging markets do not seem to be affected so far substantially¹⁰ it might be only a question of time before the crisis would spill over into their markets because of globalisation effects,

The current financial crisis is so severe and manysided that its implications can hardly be underplayed. Policies and market structures (including supervision and regulatory frameworks) have to be re-examined and mended. This crisis prods us to return to tenets of pragmatism and open mindedness in policy making.

3.1 The Roots of the Current Crisis

The root causes of the current financial market turmoil are to be found at both macro and micro level¹¹. An analytical classification would identify structural and cyclical factors.

Structural Factors:

- A dramatic rise in the role of capital markets (non-banking financial institutions) in the financial intermediation process. The growing complexity of financial markets has become an issue in itself.
- An increasing use of new financial instruments (securitisation) which have spread out risks across national borders, but which have made markets more opaque (reduced transparency).). In part this was due to the lack of due diligence¹². However, the lack of effective trading of many of the new financial products has made rising opacity quite inevitable.
- Rising opacity of financial markets has accentuated systemic risks. There has been a fallacy of composition at play here. The ‘origination and distribution’ of synthetic products was meant to diminish individual (micro) risks by their diversification and spreading. But micro-rationality clashes with macro-rationality when markets lose transparency. As thoughtfully highlighted by Lamfalussy (2000, 2008) there is here an apparent trade-off between expected higher efficiency of financial intermediation and the stability of the financial system; the latter is becoming more fragile!
- The pressure of globalisation and the rise in cross-border operations. Transactions costs have been reduced constantly over the last years and, as a consequence, large volume of transactions can be carried out in short amounts

⁹ In March 2008, the precarious financial position of the Bear Stearns investment bank triggered a classic run-on-the-bank. The FED and JP Morgan, another investment bank, stepped in and the latter agreed to buy the 85-year-old Bear Stearns at a 93% discount.

¹⁰ There are of course, a few exceptions. Some of the emerging markets have experienced a depreciation of their currencies following a flight of money for safety.

¹¹ See, for instance Buiters (2007).

¹² As excellently pointed out by Sharon Bowles.

of time. Again, these evolutions may in fact, have enhanced a lack of due diligence.

- Inadequate quantitative methods (risk and econometric models) to the extent they are meant to replicate the functioning of actual markets and decision-making relies heavily on them.¹³
- Seemingly intractable conflicts of interest among market participants.
- Inadequate incentive structures (compensation schemes) in the financial industry that have encouraged excessive risk-taking at the expense of prudence.
- An excess of saving in a number of countries – notably China – and the global redistribution of wealth and income towards commodities exporting countries. But, also, one would have to mention, in this regard, the unusual situation of the US economy as the wealthiest and most developed in the world: instead of showing high domestic savings, and relatedly, substantial net capital outflows (which befits wealthy economies) its savings ratio is stunningly low and it relies on foreign capital in order to finance its large current account deficit; the US economy is overdriven by consumption.
- And most importantly, inadequate and obsolete worldwide regulatory frameworks; regulatory and supervisory failures have compounded the magnitude of the debt and credit risk.
- An over-reliance on the self-regulatory virtues of markets.

Cyclical Factors:

- Excessively low risk-free interest rates at all maturities in major economies (the US, Euro land and Japan)¹⁴. For instance, Taylor (2007) shows that a higher federal rate path would have averted much of the housing boom in the US. A higher interest rate would have decreased the supply of funds to the mortgage market. The excess liquidity was reinforced by countries with large exports to the US, such as China or Asian countries, those who had their domestic currencies pegged to the US dollar or the oil and commodities exporting countries which wanted to limit their appreciation of domestic currency against the US dollar.
- An unreasonable low credit risk spread across all instruments.

Structural factors create the general conditions favourable for potentially generating a crisis while cyclical factors are those which help triggering it. The history of financial crises shows in fact, that, with regard to cyclical factors, the current turmoil is no different from previous episodes. Thus, it is the gap between high returns on capital and the low cost of capital, with irresponsible lending, which sows the seeds for financial crises. For instance, Ferguson and Schularick (2007) argue that this gap has been widened over the last years due to the recent integration of Asian labour force into the world economy. This has increased global returns while the cost of capital was maintained at a low level – as measured by low real interest rates. This situation is no different from the Barings crisis (1890), Latin America debt default (1980) or the Asian crisis (1997) when low yield investment opportunities in developed economies made capital from these countries to fly to economies where higher return

¹³ “Also being questioned are the mathematically elegant economic forecasting models that once again have been unable to anticipate a financial crisis...”(Greenspan, 2008, pp.13)

¹⁴ See Wyplosz (2007).

on capital could have been earned. Eventually, indiscriminate lending led to defaults, bankruptcies and, finally, crises.

3.2 Features of the current crisis

One legitimate question to ask is what makes this crisis different. There is a combination of factors that have led to the current situation. Some of them are similar to the ones that caused previous recent financial crises – as mentioned in the earlier section. However, increased innovation in financial products and their growing **complexity**, together with the failure of regulatory and supervising institutions¹⁵ to keep up with those innovations, appear to have created the conditions for this crisis to emerge. Without being exhaustive, below are several characteristics that distinguish the current crisis from previous ones.

3.2.1 The ‘Shadow Banking System’.

What seems to have been happening is the irrevocable transformation of the modern-day banking system, as we knew it. Traditionally, the main source of credit was commercial banks which were attracting deposits and then made loans to companies or consumers. Banks, through their combination of assets (loans, secured or unsecured) and liabilities (deposits withdrawable at demand) were in effect borrowing short and lending long. Thus, they were vulnerable to bank runs by deposit holders. Implicitly, the credit risk was retained on their books. Because banks provided a public utility, they were deemed to be systemically important and, to protect them from bank runs, the government devised measures to protect them, the most common being deposit insurance.

However, over the past 10-15 years, this financial market model has changed substantially. On the one hand, banks have increasingly started to sell their credit risk to other investment groups, either via direct loan sales or by repackaging loans into bonds¹⁶. This process, known as securitisation¹⁷, allows banks to divide up the resulting residential mortgage-backed securities and place them in instruments called collateralised debt obligations or CDOs. The latter are then sold to a wide range of investors, depending on their appetite for risk. For instance, one set of securities, known as an equity tranche, pays the highest returns but is the first to suffer if the underlying bonds default. Other securities offer a lower yield but a triple-A credit rating, because a lot of defaults would be needed to trigger losses.

More generally, asset securitisation involves the sale of income generating from various financial assets (mortgages, car loans, leases) by a company or bank to a special purpose vehicle (SPV). SPVs are the broad category of vehicles that can qualify as off balance-sheet. They are used for a broad range of items, from term securitisation issuance, conduit securitisation issuance, and other entities. Many of the SPVs, which could be a trust or a company, have financed the purchase of these assets by the issue of short-term commercial paper, secured by those assets.

¹⁵ As Sharon Bowles observed to us “ and understaffing of supervisory institutions has weakened further surveillance operations”.

¹⁶ Mortgages were bundled into residential mortgage-backed securities or RMBSs.

¹⁷ The first companies to began the process of securitisation of residential mortgages in the 1970s were US government sponsored entities, Fannie Mae (Federal National Mortgage Association) and Freddie Mac (Federal Home Loan Mortgage Corporation).

Structures such as Conduit Financing Vehicles (CFVs) or Structured Investment Vehicles (SIVs) disintermediate banks by enabling a range of long dated debt instruments to be financed by short-term debt. A SIV is a type of SPV, most commonly associated with having CDOs and other longer-termed assets. The main benefit of SIVs is that they exploit an arbitrage, using higher-rate assets funded by short-term, lower rate, liabilities. SIVs are often called “conduits” because they create a channel through which the long-term debt they invest in can be funded by short-term debt. Because SIVs conduct their operations through capital markets – being often offshore entities – they evade the capital adequacy regulations to which banks are subject to!!!

Because of this, the resulting ‘shadow banking system’ – as it is often called¹⁸ – is exempt, to a large extent, to regulation and supervision as undergone by the banking system. And, as recent experience has shown, activities that involve a high degree of risk could take place undetected, or indeed ignored, until adverse conditions materialise – much in the same vein as in the LTCM or Enron crises. Moreover, recent regulatory reforms have even allowed some banks to reduce the amount of capital that they need to hold against the danger that borrowers default¹⁹. Moreover, recent regulatory reforms have allowed even banks to reduce the amount of capital that they need to hold against the danger that borrowers default.

In this respect, the recently introduced Basel II capital framework has been aimed at improving Basel I, which was adopted nearly two decades ago. Basel II is intended to provide a more conceptually consistent and transparent framework for evaluating systemic risk in the banking system, particularly through credit cycles. It represents a capital framework consisting of three pillars. Pillar 1 seeks to enhance the way minimum regulatory capital is calculated while Pillar 2 provides a supervisory review and oversight of the institution’s overall capital adequacy. The first two pillars are reinforced by the Pillar 3, which deals with transparency requirements. However, this approach is more focused on the microeconomic risk and less on the overall implications of systemic risks. A new approach towards including systemic risk in the design of regulatory institutions would be beneficial. This is, arguably, the crucial challenge in reassessing supervisory and regulatory frameworks.

One of the effects of the ‘shadow banking system’ is the lengthening of intermediation. With more market players, it becomes increasingly difficult to assess the nature and magnitude of the risk involved or to locate those who bear the risk. Securitisation of mortgages has spread the financial risks around the economy in such a way that banks were no longer deemed likely to go bankrupt because of holding the bad loans they originated. **The repackaging of mortgages in complex collateralised debt obligations has made it difficult to identify who is holding what.** As a consequence, this has led to fears of credit risk among banks when dealing in the interbank lending market, pushing up the spread between three-month interbank rates and the policy rate in the US, the UK as well as in the Euro-area²⁰. As a matter of fact, financial innovation of the less benign sort operates as an in-built destabilizer for the financial system (creating a *Minsky effect*²¹)

¹⁸ See Tett and Davis (2007)

¹⁹ This largely happens because of the Basle II regulatory framework, whose first pillar is risk based

²⁰ See Appendix 2.

²¹ See Minsky (1986)

The unexpected losses incurred by assets backed by US sub-prime mortgages have highlighted the potential high costs investors face regarding the type of loans underlying the assets they acquire. As a result, at the moment, the markets in these instruments have become extremely illiquid. Vehicles financed by short-term commercial paper, namely the SPVs, find themselves unable to issue more debt. More and more banks – which created the SPVs in the first place, are forced to take these losses on their balance sheets.

The current crisis resembles an old-fashioned bank run²² – in what a sudden demand for liquidity can lead to a fire sale of assets that depresses their price, making otherwise solvent institutions insolvent²³. The difference is that it takes place outside the banking system, namely in the ‘shadow banking system’. But the economic principles of the current crisis are still the same, it is only the market actors that have changed. In the traditional ‘banking system crisis’ the institution was a bank, its long term assets were loans, and its short term liabilities were deposits. In the ‘shadow banking system crisis’ the institution could be either a bank or an investment fund whereas the assets could be mortgage-backed securities or their derivatives, and the short-term credit is commercial paper.

3.2.2 The High Level of Concentration

According to a report by Autorité des Marchés Financiers (AMF, 2007), concentration has been one of the main characteristics of the structured finance market. In Europe for instance, the structured finance market grew by an impressive 25% in 2005 reaching Euro 450 bn. in 2006. Over 70% of these deals are structured by 12 banks and the three rating agencies, Fitch, Standard & Poor's and Moody's cover the whole market²⁴. The high level of concentration has also been identified as one of the main issues arising from changes in banking fundamentals in the Institute of International Finance report (2007). Nowadays, there are a few large firms which provide a large part of the volume and liquidity in specific markets. This aspect raises liquidity issues because of the way in which market players are interconnected.

3.2.3 The Breadth of the Crisis and the Lack of Trust

Another salient feature of the current crisis is its extensive breadth across a large spectrum of financial market products. Consumer confidence has already been affected beyond the home loan sector. The trend on losses on credit card and auto loans is going up. Moreover, mortgage-related losses have started to be felt outside the banking sector. For instance, widening credit spreads on senior tranches of structured instruments have resulted in marking to market losses on the value of insurance written on these products. This, in turn, triggered market concerns which increasingly have affected higher-rated products and assets other than credit (Fender and Hordahl, 2007).

The latest concerns relate to the impact of the subprime crisis on the Credit Default Swaps (CDS) market. If the current trend of increased insolvency rates in the economy is maintained, the impact on the CDS market, which is worth a staggering

²² See Krishna (2007)

²³ See Huberto and Todd (2007) for implications of the central bank's strategy in such a scenario.

²⁴ With Standard & Poor's and Moody's covering around 80% of the market.

US\$ 45 trillion, would be significant. Such a scenario could lead to contagion, an abrupt contraction in credit and a sharp downturn in both US²⁵ and, to a lesser extent, the eurozone economies.

Higher uncertainty regarding the distribution and extent of losses has made investors to take a flight for quality, which, in turn, has led to an increased liquidity demand. Central banks have responded to this by injecting large amounts of liquidity in the money market.

However, the pursuance of such a policy is unlikely to bring an end to the current crisis for two reasons. Firstly, this measure does not address the root of the problem, namely that of the underlying fear that banks' balance sheets are in a precarious position. Until banks, hedge funds, private equity funds and the rest acknowledge their losses, confidence will not be restored in the money markets and trading of structured finance products will continue to be impaired. Unfortunately, losses can be unduly magnified because of strong multiplier effects. At the moment, the existence of counterparty risk is prevailing in the money markets.

Secondly, the liquidity does not reach the market participants which mostly need it – i.e. the 'shadow banking system'. This happens because liquidity is offered by central banks mainly through their discounted window operations, where only the banks have access. Moreover, these banks seem to be reluctant to access the offered available credit due to the stigma associated with this action. At the moment this effect seems to be more predominant in the US than in the EU. A bank tapping into central bank's credit lines could be perceived as being in trouble by the other banks. The latter could cease of being involved in interbank transactions with the ailing bank.

3.2.4 Extensive Leverage on a Large Scale by Some Market Participants

An issue often raised during current debates concerning the causes of today's crisis refers to a certain class of investors and the incidence of their decisions on the financial markets. In recent years, highly leveraged vehicles, have been very active in foreign exchange transactions as globalisation spread and opportunities in more traditional markets became scarce due to reduced volatility and low returns. Carry trades, a preferred investment choice for hedge funds, for instance, seem to be an important driver of cross-border bank lending. This magnifies their exposure to exchange rate fluctuations. One of the reasons why hedge funds decisions could have a strong impact on financial markets – even with systemic consequences, because of the institutions which are counterparts to hedge fund transactions – is that they use a very high leverage, required to ensure a high return on investors' capital. True, so far, systemic risk has not been proven in this scenario but if hedge fund activities grow at the current rate it may well happen. In favourable times this strategy can multiply returns, but, if market prices move against the investment strategy, it also augments risk by the same measure.

Although hedge fund's capital under management is still modest relative to traditional investment vehicles²⁶, such as pension and mutual funds, because they are highly leveraged and their operations less transparent, their market impact can be

²⁵ See Pimco (2008).

²⁶ Hedge fund investor capital has grown from 0.2% of world's GDP in 1990 to more than 3% of world's GDP in 2006 (Becker and Clifton, 2006).

significant²⁷. However, hedge fund capital under management has posted a remarkably strong growth in recent years with investor capital increasing by more than three times between 2002 and March 2007, to well over US\$1.5 trillion.

As history shows, a small amount of hedging²⁸ could drive asset prices down significantly. In other words, the amount of asset selling seems not enough to explain large drops in asset prices, which were observed for instance in the 1929 or 1987 crashes. One reason why this could happen is because of the determinants of market liquidity (see Genotte and Leland, 1990) through asymmetries in investors' information sets, which works as follows Hedging plans²⁹ create additional supply as asset prices fall. Thus, a relatively minor change in the investors' information set could trigger lower asset prices, which, in turn, due to hedging, lead to an even higher excess supply and a further fall in asset prices. Moreover contagion is possible and the crisis could spread to foreign markets even in the absence of hedging programmes in these markets. The propagating mechanism is through the price signals. Foreign investors observe the drop in asset prices in the hedged market, but because they are unaware of the extent of hedging, revise downwards their expectations, leading to a global fall in asset prices.

Genotte and Leland's (1990) conclusion is that successful policies which would minimise the chance of future crashes occurring involve a wider dissemination of knowledge about hedgers' actions. The authors reckon that increasing market knowledge on the size and trading requirements of hedging programmes could lessen the impact of such trades by a factor greater than 100 and, thus, could radically reduce the likelihood of market crashes³⁰.

3.2.5 Rating Agencies Deficiencies

As in the Penn Central crisis back in the 1970s, most of the companies selling short-term commercial paper were able to do so because of the prime rating given to those securities by the international rating agencies such as S&Ps, Moody's, Fitch and others. In a number of cases, rating agencies rated investments without the ultimate investors knowing exactly what was behind the bonds³¹. In fact, as in the Enron's case, every market player had an incentive to make the deal, regardless of the homebuyers' ability to repay the loan. The buyer hoped to make a fast profit while the real-estate agent and mortgage broker were taking the fees. The banks in turn, by selling rapidly the loan, alleviated much of the implied risk.

One of the criticisms addressed to the rating agencies is the fact that they have been notoriously slow in spotting the signs of the crisis. This situation resembles once again that of Enron, where credit agencies failed to signal company's huge exposure. Then, the regulatory institutions all over the world designed a voluntary code for the agencies. But this was mainly aimed at sorting out the conflicts of interest whereby

²⁷ Recently, a number of hedge funds have agreed to voluntary disclosure procedures.

²⁸ As a percent of total financial markets transactions.

²⁹ It is worth mentioning that often, hedging plans and insurance are compulsory for some market players.

³⁰ Although Tobias (2007) finds that in the current crisis, there is an unusual high correlation among hedge funds, attributable to low hedge fund volatility. He argues that the current hedge fund environment differs from that existent in 1998, during the LTCM crisis. Also Kambhu et al (2007) suggest that counterparty credit risk management remains the best line of defence against systemic risk.

³¹ Often, they were not interested to find out this information.

agencies were being paid by the companies they rate. Moreover, the agencies have been criticised for giving upbeat assessments of investments which turned out to be linked to risky home loans in the US

The failure of rating agencies to warn over the sub-prime crisis has already made both US and EU to take steps to bring in legislation in order to improve and monitor the performance of the agencies and make them legally responsible for their actions³². Recently, the US Financial Services subcommittee on capital markets said that it would hold a hearing into the role of credit rating agencies in the structured finance market - including mortgage-backed securities.

4. How to Respond to This Crisis

Over the last years, there has been an increased interest on the issues concerning financial stability. However, in spite of the warning signals given by preceding crises, changes required to minimise the impact of future crisis have been slow to being implemented. Numerous recommendations have been made by various working groups, supervisory committees, etc. but decisive measures have, so far, been limited. The seriousness of the current crisis has pushed public policy and private initiatives to a new level. The Financial Stability Forum for instance, has released an updated report (FSF, 2007) on highly leveraged institutions in which the focus is on financial stability issues relating to the hedge funds. IMF (2007) published a comprehensive report analysing the causes and consequences of the current financial turmoil together with a list of suggested policy actions. In the UK, the Northern Rock episode is likely to lead to regulatory changes being implemented in order to avoid such events in the future³³, including credible deposit insurance arrangements and regulating the liquidity position of banks.

One reason why the changes have been slow to implement is the prevailing belief, by some market actors, that markets would sort themselves out in the end. This may well be true, up to a point. After that, however, the risks posed to the real and financial sectors of the world economy might threaten to become greater than the benefits of non-regulation³⁴. The practical difficulty is, however, in determining exactly where that point lies.

Structured finance instruments are useful because they offer a higher dispersion of credit risk. But higher dispersion is not automatically a better one; recent events have cast doubts over the functioning of securitised lending, as it is in its current form. One problem is that adding structured instruments to a bank's portfolio has proved that it can lead to unanticipated risk concentrations, which, given the existing state of market

³² So far neither the US nor the EU have actually brought about legislation. The US has Credit Rating Agency Reform Act of 2006 - but that was before the crisis. We are thankful for this remark to Wolf Klinz

³³ See Mervyn King (2007).

³⁴ In the aftermath of the Asian crisis, Fisher (1998) suggested that mitigating the crisis would be a better option than non-intervention. Although his remarks actually referred to the IMF role, the principle is the same.

knowledge together with the current supervisory and regulatory framework, are difficult to be dealt with (Fender and Mitchell, 2005). Another problem relates to various aspects pertaining to rating agencies in structured finance operations (BIS, 2005).

There are a number of proposed strategies for action that would lead to improved financial stability. Strengthening national supervisory and regulatory frameworks, improving transparency, regulatory and public disclosure and finally, adopting an international approach to exercising effective surveillance, regulation, and supervision of financial activity have been suggested quite a while ago³⁵. Two of the most important policy challenges ahead are those related to transparency and liquidity³⁶. But, arguably, the most arduous task is to combat the scope for higher systemic risks when financial innovation is very intense.

The policy actions which are mentioned below are aimed at dealing mainly with the structural factors identified in the previous section. The roots of cyclical factors are an inherent part of the business cycles and, therefore, more difficult to be dealt with. Nevertheless, sorting out issues relating to the structural factors would greatly enhance the stability of the global financial system.

4.1 Improving Transparency

- There are certain market players categories which have minimum disclosure requirements. Given the fact that their trading decisions have significant impact on the overall financial system, it would make sense to strengthen their disclosure requirements. For instance, hedge funds and private equity funds are only a few of the market players that have, at most, rudimentary reporting obligations. As mentioned earlier in the paper, increased transparency of highly leveraged institutions – such as the hedge funds – has the potential to reduce market volatility when market conditions become adverse. It could also lessen the impact of trades by a large factor, thus, lowering radically the likelihood of market crashes. Recently, a number of hedge funds seem to have agreed to make voluntary disclosures of parts of their activities.
- Identify the ‘needs’ of the ‘Shadow Banking System’. It has become clear with the current sub-prime crises that the regulators’ ability to monitor the financial system had been hampered by banks’ use of non-transparent off-balance sheet financing. Consequently, addressing this issue would necessarily involve finding the answer for the ‘needs’ to be addressed. Given the large exposure of the financial system to non-bank lenders another option could be to set some kind of ‘buyer of last resort’ to stand behind the markets, much as central banks do for the banking system. With lending becoming so disintermediated, in many sectors this is done by investors and not banks. Then, a run on the markets through the evaporations of liquidity raises the question of who is going to step in and provide that liquidity.
- Finding out who bears the risk. Over the last two decades the pace of product innovation in financial markets has by far outstripped regulators and supervisors capacity to keep up. Therefore, new mechanisms that would

³⁵ See for instance Schinasi (2005)

³⁶ See Dodge (2007).

address this gap might be necessary. Apart from not being able to set a price for those complex structured products, it is not known who bears the risk. Thus, being able to correctly evaluate the origin of the risk these products possess and who bears it, would be a step forward in aiding to a proper re-design of the regulatory and supervisory frameworks. Recently, the Committee on the Global Financial System (CGFS), which monitors financial market functioning for the central bank governors of the G10 countries, has established a working group to explore the structured finance instruments Fender and Mitchell (2005) highlight some of the group's principal findings pertaining to the complexity and riskiness of tranced products. An important result is that, in order to understand the risk properties of these products, the evaluation of the risks should be done according to their contractual structure – as allowed in Basel II. The particularities of transactions makes the mission of assessing the riskiness of tranced instruments even more difficult.

- Re-design of the risk assessment specification procedures. Quantitative models employed to model investment decisions and risk assessment in financial markets have, inherently, a built-in conceptual flaw. The main problem is that risk cannot be summarised in a few figures, entailing a more comprehensive description.
- Addressing the costs of failure. The bailout procedures by central banks or the IMF tend to be provided, in general, free of charge. Making the institutions who fail to pay for this would discipline their behaviour. One way to address this could be by imposing some sort of Tobin's tax, the equivalent to a transaction cost aimed at deterring speculation.

4.2 Resolving Conflicts of Interest Among Market Participants

- Credit rating agencies have, inherently, conflicts of interest. They act on behalf of investors but, often, they are being paid by the issuers. Being paid by those they rate, and not by the investors, the common view is that credit rating agencies are under pressure to give their clients a favourable rating. While some credit rating agencies openly acknowledge that they are dependant on investors' fees to stay in business, others argue that this income accounts for a small percentage of their total revenue and deny such conflicts of interest.
- Conflicts of interest between individual and company objectives. There have been several proved cases where individual managers engaged in fraudulent behavior for their own benefit. As a consequence, the punishment of fraudulent behaviour should be applied at both the institutional as well as individual level. There should be a set of rules which could tighten requirements for directors to be vigilant and also provide protection for those who bring improper behaviour to public attention. However, in the end, it is the integrity of directors and executives which would limit the emergence of such crisis in the future. The current credit crisis, LTCM, Enron all involved improper behaviour by individual decision-makers. Absent integrity and in a permissive environment, such individuals will find ways to conceal information or to engage in fraud. Introducing high punishment penalties for such improper behaviour could limit the scale of the problem.
- Perceived conflicts of interest in the current business model. For instance, a set of investors and the issuers have, in general, a clear interest to have a stable financial market and a wide range of high-rate graded assets. On the other

hand, the investors who take short-positions and the secondary market participants might have a higher interest to see downgrades so that they could pocket the ensuing financial gains. Financial markets tend to benefit from such speculative activities (though not always). The problem emerges when such actions are blown out of proportions, increasing uncertainty and spreading individual risks in such a way that systemic risk goes up incommensurately.

- Increased coherence between short-term corporate governance objectives and long-term planning strategies. Often, managers' incentives to achieve short-term performance indicators are not consistent with a company's longer term expansion plans. Thus, increased pressure on companies' management to deliver short-term results might not be beneficial in the longer run. Compensation schemes should be revised so that risk-taking be not rewarded at the expense of prudence.
- Increasing knowledge transfer to all market participants. Arguably, the poor knowledge of some of the market participants has a lot to do with the development of the current crisis. The shifting of the risk on to the shoulders of those least able to understand it ³⁷ has been a common feature of the existing crisis. Plans aimed at raising the knowledge base of all market participants, so that they would be aware of the potential risk entailed by their actions should, at least, help create a market awareness that higher risk could, in extreme circumstances, mean virtually negative returns.

4.3 Improving the Existing Regulatory and Supervisory Frameworks

- Collective regulation. The intrinsic workings of the current financial systems indicate that banking institutions can no longer be separated from the securities markets. If so, it follows that the best option is to create a regulatory framework that would regulate concerned institutions as a whole. The ongoing credit squeeze has proved that risk is apportioned to whoever market participant could bear it, so that regulating institutions individually would fail to close the gaps in the existing regulatory framework. A first step in this direction seems to be taken by the UK, where the Chancellor of the Exchequer has proposed changes to the regulatory regime which would involve all three participating institutions, the so-called tripartite system of HM Treasury, Bank of England and Financial Services Authority.
- Coordinating Supervision and Regulation Activities. Currently there are an increasing numbers of financial institutions which operate across many different national jurisdictions. Supervision and regulation are often organised at the national level, although in several instances national models share a large number of similarities³⁸. However, coordination attempts among national jurisdictions are difficult to achieve due to the ongoing creation of new institutions and new instruments. The development of an efficient EU-

³⁷ This has been predominantly a US phenomenon, but the crisis is still unfolding.

³⁸ Coordination among Central Banks in the EU seems to have already been working in a close and efficient manner and the challenge lies in the cooperation of supervisory authorities. Supervisory convergence has improved through the Lamfalussy process and the Level 3 Committees. However, coordination attempts among national jurisdictions are yet difficult to achieve. Supervisory cooperation and convergence in the EU is lagging behind as the possibilities of the current framework are not fully realised. We are thankful for this comment to Wolf Klinz. Furthermore, the EU and the G7 operate with different mandates. Some convergence of objectives and means of action has to be achieved in this respect.

wide supervision and regulation of financial institutions and markets should allow a reduction in the current number of arrangements to be concluded. In an article in the FT, Tommaso Schioppa (2007) argues for a supervisory structure for multinational financial institutions at the EU level. Moreover, international co-ordination of supervisory and regulatory policy has to become of commanding interest. The integration of the global financial system means that counterparty and systemic risks ceased to be a national or regional concern.

- Markets for Structured Finance Products. The sub-prime crises effects were compounded because there was no liquid market for the complex structured finance products issued by the banks. These products have tended to be frequently 'marked-to-model', with models whose intricate mathematical and computational features have been quite often beyond the grasp of institution's risk managers. Other alternative pricing methods, such as those used by credit agencies, proved to be flawed due to conflicting interests between the designers and the issuers of the instrument³⁹. One alternative to sort this out, as suggested by Buiter and Sibert (2007)⁴⁰, is through the creation of a market-maker of last resort. This institution would 'create' market prices for illiquid assets by purchases and sales of private sector securities and through the acceptance of a comprehensive range of private sector securities as collateral in repos. This could be done through the central bank but another institution could be as easily set up which would have the necessary reputation and credibility to perform those operations. Practical considerations, however, would make this suggestion difficult to implement.
- Steps to integrate banks' balance sheets. Some lessons from Japan's 1989 property bubble bear striking similarities with the sub-prime crisis. As highlighted in an article in *The Economist*⁴¹, one reason both crises were not detected earlier was because most of the warning signs were not at parent banks but down the intermediation chain, namely in affiliates, subsidiaries or other off-balance sheet vehicles. Pre-crisis condition shared similarities in that in both cases financial engineering made available easy credit which sparked a property-related bubble, commercial in Japan and residential in the US. Integrated balance sheets reflecting the whole picture of banks' lending would have aided in the identifications of the problems much sooner and would have allowed a timely intervention by the regulatory and supervisory institutions. Thus, measures to report integrated bank balance sheets could be taken to diminish the intensity of future crisis⁴².
- Deposit insurance versus Moral Hazard. As shown by Keely (1990) deposit insurance worked well prior to 1980's However, increased competition within the banking and financial service industry has led to a moral hazard problem, in fact rewarding banks who took an excessive risk taking. Thus, these

³⁹ Arguably, the rating quality during the subprime crisis has been questionable due to methodological aspects. Some argue that the conflict of interest seems to be a minor issue because of reputational aspects. Moreover, the credit rating agencies were only modeling credit default risk, not market liquidity risk.

⁴⁰ See Buiter and Sibert (2007).

⁴¹ *The Economist*, 'Lessons from Japan's financial crisis should worry, and embarrass, America', 13 December 2007.

⁴² Basel II provides, indeed, a framework for this

commercial banks were provided in fact with a ‘put’ in which the central bank was expected to bail them out in case they went into trouble. Banks could, in effect, borrow at the risk free rate through the issuance of insured deposits and then invest the proceeds in risky assets. This problem appeared to have been compounded in the early 1980’s when, increased competition in financial services industry caused banks charter values to decline (Keely, 1990). Thus, bank charter values, which previously were a high entry barrier in the industry, appear to have lost some ground in the face of demand for higher returns triggered by increased competition in the banking industry. One set of proposals is to give to some national authority enough powers to intervene in banking crises. Such models draws heavily on elements of the US, Canadian and Belgian where emergency roles are given to new institutions, such as Federal Deposit Insurance Corporation in the US, for instance. While this special insolvency regime for banks would allow a badly bank run to fail with diminished effects in triggering a systemic crisis caused by a loss of public confidence, this also compounds the moral hazard problem, and, as recent events in the US have shown, is of limited use when crisis spreads in other markets.

- Raising the capital requirements of the structured finance investment vehicles. This would reduce the liquidity risk – a major factor of concern in the current crisis. Again, these aspects are already covered under Basel II. But the challenge would be to enforce these rules and avoid loopholes to be exploited. Moreover, under Basel II banks were left with the impression that they have too much equity, thus encouraging excessive risk taking from their part.
- Enforcement of conformity and compliance systems. This is yet to be seen how would be resolved under the Basel II framework. It is true that, at the time when the crisis started, Basel II was half in half out. However, following recent developments, it becomes clearer that Basel II would need to be revised. The current crisis is different from the previous ones in what its spreading occurs in spite of the existing framework of accountancy and Basel II regulations. Therefore, it tends to suggest that these are inadequate to deal with the severity of the crisis. One drawback of the Basel II framework, for instance, is that it fails to incorporate systemic risks into the design of regulatory institutions and risk management (apparently, it relies too much on the efficient capital markets hypothesis⁴³). These aspects would need to be addressed.
- Risk management procedures and mechanisms in banks have to improve considerably.
- Use of counter-cyclical control mechanisms or instruments. Some authors argue that bank capital requirements should not only be contra-cyclical but also related to the rate of change of bank lending and asset prices in the relevant sectors⁴⁴. This is because risk models employed today undermine the assumptions that should make them work. They systematically underestimate risk in ‘good’ times and overestimate risk in ‘bad’ times.
- The timing of introducing new changes in the regulatory and supervisory systems is particularly important. Rushing radical changes overnight in these systems might actually exacerbate the crisis by worsening the credit crunch.

⁴³ This hypothesis is linked with the rational expectations theory.

⁴⁴ See for instance Charles Goodhart and Avinash Persaud “A proposal for how to avoid the next crash”, Financial Times, 31 January 2008.

Caution, is therefore, needed in the design and implementation phases of changing the regulatory and supervisory systems. At the same time, however, complacency and too slow change are not warranted. The flaws and creaks in the current supervisory and regulatory frameworks are quite visible and demand firm action.

- Cooperation between public and private institutions. This needs to be enhanced and re-designed to account for recent developments in the financial market innovations.

5. Summing up

As the current crisis unfolds and the time passes by, it becomes clearer that we are being confronted with an event whose implications are bound to be long lasting. Addressing the roots of the problem that have triggered this crisis in the first place should be of paramount importance. Otherwise, threats caused to the global financial system as a whole as well as the global real economy would be incommensurate.

In the past, such crises tended to be more localised and were dealt with more easily. The difference this time has been in the rapid spread of intense financial innovation which has occurred during the last couple of decades; this allowed dissemination of risks on a large scale at the expense of transparency. As a consequence, the emergence of the shadow banking system, largely unregulated and lacking appropriate supervision has brought about more opacity in financial markets transactions. In contrast to past crises, the excessive trust in the 'self-healing' power of markets has not yielded the expected result so far.

It follows from here that one line of action should, necessary, be the regulation of the shadow banking system. The intrinsic workings of the current financial system indicate that banking institutions can no longer be separated from the securities markets. Thus, one feasible option would be the creation of a regulatory framework that would regulate concerned institutions as a whole.

Securitisation of mortgages has spread the financial risks around the economy in such a way that banks' exposure to their bad loans has been minimal. But, the repackaging of mortgages in complex collateralised debt obligations has made it difficult to identify who is holding what. Ironically, financial innovation that was designed to diminish risk at the individual or micro level has ended up in exacerbating it at the macro level, thus increasing systemic risk. Two of the most important policy challenges ahead are those related to transparency and liquidity. But, arguably, the most arduous task is to combat the scope for higher systemic risks when financial innovation is very intense.

In these cases traditional ways of risk assessment become obsolete. The complexity of today's financial market instruments render risk assessment models unreliable. Thus, quantitative models employed to model investment decisions and risk assessment in financial markets have, inherently, a built-in conceptual flaw. One of the problems is that risk cannot be encapsulated in a few figures, asking for a more comprehensive description. There is a scope for a re-design of the risk assessment specification

procedures.

Another line of action should address the costs of failure. The bailout procedures by central banks or the IMF tend to be provided, in general, free of charge. Making the institutions which fail to pay for this would discipline their behaviour. One way to tackle this could be by the introduction of various measures aimed at deterring speculation. An issue closely related to this is managers' performance compensation packages. Often, managers' incentives to achieve short-term performance indicators are not consistent with a company's longer term expansion plans. Thus, increased pressure on companies' management to deliver short-term results might not be beneficial in the longer run. Compensation schemes should be revised so that risk-taking be not rewarded at the expense of prudence.

Although Basel II regulatory framework has been devised to prevent such events occurring, the current crisis has highlighted the existing flaws in its design. Regulatory measures aimed at dealing with liquidity and system risk ought to be revised. Moreover, the use of counter-cyclical control mechanisms or instruments should be seriously considered. Capital requirements should not only be contra-cyclical but also related to the rate of change of bank lending and asset prices in the relevant sectors.

Last but not least increasing coordination among national supervision and regulatory bodies should be enhanced. Global financial markets require a global approach in dealing with such issues. This cooperation is simply required in order to limit the potential devastating effects such crisis could have in the future on both the financial system and the real economy. Inside the EU this coordination is a must and Padoa Schioppa's proposals should be given a more sympathetic hearing.

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Appendix 1. The recurrence of financial crises in economic history

The Enron Scandal, 2001.

Enron, an American energy company, boasted revenues of more than US \$110 bn in 2000 and was named by Fortune 'America's Most Innovative Company' for six consecutive years. By November 2001, Enron was undergoing the largest bankruptcy in history. There are many causes of the Enron collapse, most of which could be found at the root of today's sub-prime crisis. Firstly, there was the conflict of interest between the two roles played by Arthur Andersen, as auditor but also as consultant to Enron⁴⁵. Secondly, the company presented false and misleading pictures of its financial health and results of operations. Most of these operations were complex structured finance transactions rolled via through off-books financial entities such as special purpose vehicles (SPVs). Thirdly, the objective of these fraudulent activities was twofold: to convince analysts and credit rating agencies that its reported earnings were real and to achieve its stated profit target which would allow company's employees to receive their bonuses. In some ways, the culture of Enron was in itself the primary cause of the collapse. This seems to become more apparent today when not a few companies are, sometimes, involved in a similar type of activities.

The DotCom Crash, 2000.

The public's increasing interest in the internet-based companies had pushed up their share prices at a very fast rate. People, having no prior knowledge of stock trading, bought technology shares based on expectations of higher returns generated by future profits. But in March 2000, the bubble burst, and the technology-weighted Nasdaq index fell by 78% by October 2002. The crash had wide repercussions, with business investment falling and the US economy slowing in the following year, a process exacerbated later by the 9/11 attacks. Subsequently, these events led to a temporary closure of the financial markets. The response of the Federal Reserve was to gradually lower interest rates throughout 2001, from 6.25% to 1%, in order to stimulate economic growth.

The collapse of the Long-Term Capital Management Fund (LTCM) in 1998.

Four years after its inception, the LTCM hedge fund collapsed, precipitating the first in-depth analysis by policymakers of the potential systemic risks posed by the hedge fund industry. Although LTCM had, at the beginning of 1998, a leverage factor of thirty to one⁴⁶, LTCM's partners believed, on the basis of their complex computer models, that the long and short positions were highly correlated thus, yielding a small net risk. While the LTCM problems started to emerge when Russia defaulted on its government obligations, its collapse was precipitated by the 'flight to liquidity' across global fixed-income markets, when investors started to shift their assets into more liquid assets. As a consequence LTCM's short positions were priced higher relative to its long positions causing the hedge fund to collapse. However, the LTCM crisis proved to be much deeper, threatening to pose a systemic risk to the financial system. This happened because other large hedge fund managers followed similar strategies as

⁴⁵ See 'SEC Settles Enforcement Proceedings against J.P. Morgan Chase and Citigroup', Press Release, 2003-87, <http://www.sec.gov/news/press/2003-87.htm>.

⁴⁶ In early 1998 LTCM had equity of \$5 billion and had borrowed over \$125 billion.

suggested by sophisticated computer models⁴⁷. Other reason was the similarity of positions held by a number of market participants, like investment banks.

After the fund had lost substantial amounts of the investors' equity capital, in order to avoid the threat of a systemic crisis in the world financial system, the Federal Reserve co-ordinated a US \$3.5 billion rescue package from leading U.S. investment and commercial banks.

The seriousness of the crisis prompted the US President's Working Group on Financial Markets to issue a report on the hedge fund implications for systemic risk in financial markets⁴⁸. As Ben Bernanke put it, 'The Working Group's central policy recommendation was that regulators and supervisors should foster an environment in which market discipline--in particular, counterparty risk management--constrains excessive leverage and risk-taking. Effective market discipline requires that counterparties and creditors obtain sufficient information to reliably assess clients' risk profiles and that they have systems to monitor and limit exposures to levels commensurate with each client's riskiness and creditworthiness'⁴⁹.

Although those recommendations seemed to have common economic sense, they have failed to be comprehensively applied. Much of the on-going subprime crises stems from excessive leverage and risk-taking by market participants against the background of reckless use of new financial instruments.

Asian Crisis 1997

This was caused by large private capital flows to emerging markets in the search of higher yields. The resulting large quantities of credit that became available in Asian countries ignored risks and induced a highly-leveraged economic climate which pushed up asset prices at an unsustainable level. Subsequently, asset prices collapsed, generating large credit withdrawals from the crisis countries which caused a credit crunch and widespread bankruptcies.

The 'Black Monday' Crash of 1987.

The US stockmarket suffered its largest one-day fall, dropping by more than 22% with European and Japanese markets following suit. The crisis was sparked by market participants' conviction that insider trading and company takeovers on borrowed money were dominating the markets. Programme trading strategies for selling stocks indiscriminately, as markets fell, also exacerbating the decline. In order to prevent major commercial banks to fail, the central banks cut interest rates aggressively. In the aftermath of the crisis, regulatory bodies introduced the so-called 'circuit-breakers' aimed at limiting programme trading and allowing them to suspend all trades for short periods.

Latin American Debt Default of 1982

During the mid 1970s many nations in Latin America, including Chile, Mexico, and Argentina introduced substantial economic reforms, involving the liberalisation of foreign trade, domestic financial markets, and privatisation of public industries. Exchange and capital controls together with other economic barriers were loosen without any increase in regulatory oversight.

⁴⁷ Garleanu and Pedersen (2007) suggest that there may have been a multiplier at work.

⁴⁸ Hedge Funds, Leverage, and the Lessons of Long-Term Capital Management (1999)

⁴⁹ Ben S. Bernanke – 'Hedge Funds and Systemic Risk' Speech at the Federal Reserve Bank of Atlanta's 2006 Financial Markets Conference, Sea Island, Georgia May 16, 2006.

As a result of financial reforms foreign capital became easily available to domestic banks. The borrowing frenzy led Latin America to quadruple its external debt from US \$75 billion in 1975 to more than US \$314 billion in 1983, equivalent to 50% of the region's gross domestic product (GDP). As interest rates increased in the US and Europe in 1979, Latin America countries found more difficult to finance their interest payments. As most foreign banks refused to roll over Latin America debt – most of which was short-term – many banks became close to being insolvent until a massive rescue was engineered between the Federal Reserve and the IMF. In this case the traditional banking crisis was compounded by the effects of the subsequent currency crisis. As in the S&L case (see below) irresponsible lending was the prime cause for the crisis.

The Savings and Loan (S&L) Crisis of the 1980s.

This represented the failure of the savings and loan association in the US when, over 1,000 savings and loan institutions ended up with a position of net equity. However, this did not prevent them from being able to borrow large sums at favourable rates, thanks to deposit insurance. That recklessness in lending was a factor aggravating both the boom and the subsequent bust of the S&L crisis. As in the current subprime crisis, the banking problems of the 1980s came primarily – although not exclusively - from unsound real estate lending. The final cost of resolving failed S&Ls was estimated at over \$160 billion, with much of this cost being paid with taxpayers money⁵⁰. Probably the most important lessons to be taken from this crisis are those pertaining to regulatory issues. The S&L crisis highlighted the need for strong and effective supervision of insured depository institutions. Moreover, it showed that sorting out ailing financial institutions requires that the deposit insurance fund be strongly capitalised with real reserves, not just governmental guarantees.

The Penn Central crisis, 1970.

The Penn Central Transportation Company, was, at that time, the largest nonfinancial company in the United States to go bankrupt. It had massive amounts of short-term commercial paper outstanding⁵¹ when the interest on its loans became an unbearable financial burden. The ensuing collapse of the railroad company led to a panic in the commercial paper market. Although an attempt was made by the government to save the company by guaranteeing its loans, it failed. This episode has striking similarities with the subprime crisis. The creditworthiness of the rating agency ensured the issuance of large amounts of commercial paper which, subsequently, could not be rolled over. Then, as today, the Federal Reserve opened the discount window, fearing that the crisis would spill over into the banking system.

The Great Depression (1929)

The Great Depression triggered by the 1929 crash is another benchmark episode in the history of financial crashes. At that time, the bull market prevailing prior to the crash seemed to be fully justified. The post war economic boom spurred by new technologies were promising large increases in sales and corporate profits. The stockmarket fall was massive, by the time it reached bottom in 1932, 90% had been wiped off the value of shares⁵². The effects on the economy were severe, by 1932 the

⁵⁰ The roots of the early 1990's recession can be traced to the S&L crisis.

⁵¹ Commercial paper was rated as 'prime' by Dunn & Bradstreet.

⁵² It took 25 years before the Dow Jones industrial average recovered to its 1929 level.

US economy had declined by half, and one-third of the workforce was unemployed⁵³. In March 1933 the US President, Franklin Roosevelt took office and launched the New Deal, which addressed landmark changes in regulatory and supervisory rules.

Barings crises (1890 and 1995)

In 1890, losses by a leading UK bank, Barings, made on its investments in Argentina forced a massive sale of securities in the United States. These were mainly triggered by the liquidity problems of British banks. In England, the Bank of England acted in its 'lender of last resort' role and intervened in financial markets in order to prevent a systemic collapse of the UK banking.

More than a century later, the same bank went bankrupt due to an explosive combination of financial and organisational shortcomings. Fraudulent activities of the bank's management were facilitated by weak internal and external controls. Important supervisory and supervision rules were introduced by central banks in the aftermath of the 1995 Barings crisis.

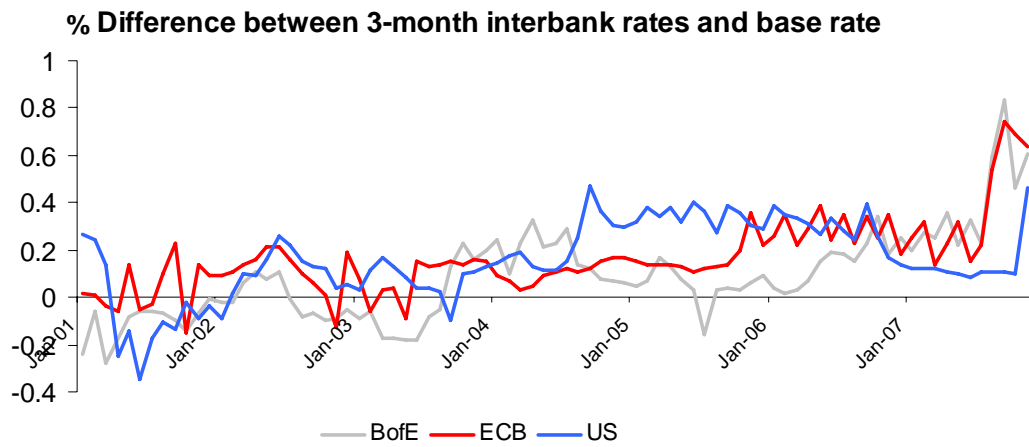
Overend and Guernsey 1866.

Overend and Guernsey was a discount bank which was supplying cash to London's commercial and retail banks⁵⁴. A large number of these were left without access to funds when Overend and Guernsey went bankrupt in 1866. It was then when Walter Bagehot advocated a new role for the Bank of England, namely the "lender of last resort". Its objective would be to avert a systemic crisis by providing liquidity to the financial system during crises.

⁵³ But the effects of the US stockmarket crash were felt strongly throughout the world. Economic hardship generated by this crisis was in fact sowing the seeds for the World War II.

⁵⁴ At that time London was the world's financial center.

Appendix 2. Three-Month Interbank Spread Rates Over The Base Rate



BofE – Bank of England
ECB – European Central Bank
US – The US Federal Reserve