

CENTRAL BANKING IN A DEBT-DEFLATION CRISIS: A COMPARISON OF THE FED AND ECB

Robert Guttman

(Hofstra University, New York; CEPN, Paris XIII)

Ever since summer of 2007 we have faced a gradually deepening credit crunch which, emanating from the United States and undermining that country's long-standing role as the locomotive pulling along the rest of the world, threatens the health of the world economy. In the face of this difficult situation, central banks have had to deal with a triple challenge – how to contain the crisis and prevent a recessionary downturn while at the same time trying to avoid setting the seed for future incidences of financial instability in the form of revived inflation or renewed asset bubbles. In the process the Federal Reserve (Fed) and the European Central Bank (ECB) have had to face a major global financial crisis together, as crisis managers within their respective zones, while at the same time finding their institutional differences with regard to structure, governance, and policy magnified by the relentless pressure of financial markets and institutions under stress. Proper consideration of these differences is important, not least because of the complex relation these two central banks are bound to develop in the coming decades. They will compete against each other for dominance in the evolving multi-polar international monetary system following the end of the dollar standard. At the same time they are also institutions in need of cooperation to deal with the vicissitudes of financial globalization.

1. Institutional Differences between the Fed and the ECB

Even though they date from very different times (the Fed was set up in 1913, the ECB in 1998), the world's leading two central banks exhibit a remarkable degree of similarity, at least on the surface.

- They are both politically independent and hence shielded from direct control by either executive or legislature.

- They have similar structures, each comprising a decentralized system of national or regional central banks, making decisions in coordination with a strong central board of governors.

- Both target in similar fashion a couple of short-term money-market rates under their control on which the so-called interest-rate structure, a hierarchy of interest rates differentiated by liquidity, maturity, and risk, is based.

- And they use for that purpose the same three basic monetary policy tools, notably the setting of reserve requirements, administration of short-term loans to reserve-deficient banks (“discount window”), and open-market operations involving the buying and selling of government securities.

These similarities notwithstanding, the Fed and the ECB are also characterized by important differences that shape their respective *modus operandi* in fundamental fashion:

1.1. Policy Embeddedness and Coordination: For one, the ECB is not yet part of a fully developed supra-national European state akin to the Fed in the United States. This means that it faces less political pressure from the legislature, as its statutes can only be changed through inter-governmental conference rather than simple legislative action. While the Fed is obliged (by the Humphrey-Hawkins Full Employment and Balanced Growth Act of 1978) to coordinate its monetary policy with the rest of the U.S. government’s economic policy and does so in fairly tight cooperation with other governmental institutions (e.g. Treasury), the ECB has only a relatively weak EcoFin Council, composed of the finance and economics ministers of the EU’s member states, as a federal counter-part to deal with. That asymmetry is also evident in Europe’s failure to connect monetary and fiscal policies via automatic debt monetization (i.e. facilitation of financing budget deficits through the central bank’s purchases of new government securities) as is practiced in the United States where the Fed actually serves as the underwriter of new Treasury securities. The ECB cannot finance any Eurozone member’s budget deficits by buying up its sovereign debt.⁽¹⁾ In the absence of such automatic debt monetization the Eurozone countries have committed themselves through the Growth and Stability Pact of 1997 to limit their respective budget deficits and public debt (as a percentage of GDP), with an amendment in 2005 to apply those limits more flexibly.

1.2. Policy Objectives: Already in the Federal Reserve Act of 1913 the U.S. government committed its new central bank to pursue price stability on the one hand and “maximum”

employment as well as stable long-term growth on the other hand. While these two objectives may be in direct conflict at times, they typically emerge as policy priorities in sequential fashion during the course of the business cycle. Depending on the prevailing balance of inflation and growth in the U.S. economy, the governors and regional bank presidents grouped together in the Fed's policy-making Federal Open Market Committee (FOMC) will have the flexibility of counter-cyclical policy discretion.

Mindful that zero inflation is too costly and too close to potentially dangerous deflation, the Fed accepts a low level of inflation, provided it is steady. To give itself sufficient flexibility in the pursuit of two different (and sometimes conflicting) policy objectives, the Fed has refused to announce an explicit inflation target. The ECB, on the other hand, only has price stability to worry about and has thus been in an easier position to pursue an explicit inflation target of 2% per year.⁽²⁾ As we shall see further below, this bias has resulted in a relatively tougher policy stance.

1.3. The Central Bank as Lender of Last Resort: Ever since its inception in 1913 the Fed has been authorized to manage incidences of financial crisis by extending short-term credit to reserve-deficient banks. It failed, however, to do so in adequate fashion during the Great Depression, because it demanded commercial and industrial loans as the only acceptable form of collateral from cash-strapped banks, which at that point, during an downturn, were hard to come by. A post-Depression reform, the Bank Act of 1935, standardized open-market operations, allowing the U.S. central bank in this way to inject massive amounts of liquidity into the banking system through securities purchases. That same act also centralized the administration of the discount window from the regional Federal Reserve Banks to the Board of Governors in Washington. Since then the Fed has systematically opened up access to the discount window by enlarging the number of eligible borrowers, accepting a greater variety of borrower assets as collateral for its loans, and widening the reasons for qualifying for discount loans.⁽³⁾ The Fed's principal channel, so-called Primary Credit, involves very short-term funding assistance (typically overnight) to depository institutions (banks, thrifts, etc.) in generally sound condition at rates that are slightly above the prevailing Fed target for the Federal funds rate on overnight loans in the domestic inter-bank market. Such loans trigger tighter administrative standards in cases where funds are demanded recurrently by the same banks and/or for longer periods (up to two weeks). This lending channel is especially important in instances when there is a temporary shortage of liquidity in the banking system,

as is the case now. In the current crisis the Fed has extended the maturity on those loans first up to one month, more recently even longer.

In contrast, the Eurosystem comprising the ECB and the national central banks of the 15 countries having adopted the euro has yet to see the kind of centralization of its principal lender-of-last-resort mechanism, which the Fed undertook in the wake of the Bank Act of 1935. As of now, so-called Emergency Liquidity Assistance (ELA) in the face of a financial crisis within the EU is still the responsibility of the national central bank(s) even though the EU's single financial market created in the late 1980s has increasingly given rise to pan-European financial institutions bound to carry supra-national crisis potential should they find themselves in difficulty.⁽⁴⁾ The supposed cooperation between the Eurosystem's central banks in managing financial crises reaching beyond national borders, further anchored by memoranda of understanding, may not be as effective as centralized crisis management of the kind practiced nowadays by the Fed.

1.4. Banking Regulation and Supervision: An important difference between the Fed and the ECB concerns the crucial question of banking regulation and supervision. The heart of the economic system, banks must be looked after and given behavioral rules to stay healthy. They have special fiduciary responsibilities inasmuch as they are dealing with other people's money, and this quality alone justifies a close look at their actions by the government.

The United States has had a long and complex history concerning its banking system. This includes the regulatory dimension as well (Guttman, 1989; 1994). There are now several bank regulators with supervisory responsibilities, all of whom compete and cooperate with each other – the state banking commissions of America's fifty states for (mostly community and rural) banks having preferred a more lenient state charter to being licensed by the federal government, the Treasury's Comptroller of Currency for federally chartered banks, the Federal Deposit Insurance Corporation for banks participating in the federal deposit insurance scheme (98% of all U.S. banks), and the Federal Reserve for the (typically larger) super-regional and money-center banks having contracted the Fed's payments services as members of its system. In practice, each U.S. bank thus has at least two, sometimes three regulators to deal with who can also check its books and conduct other supervisory functions. Competition, among the three federal banking regulators (Comptroller, FDIC, Fed) in particular, has presumably kept each one of them sharper. The latest re-organization of U.S. banking

regulation in the Gramm-Bliley-Leach Financial Services Modernization Act of 1999, following a decade-long debate among those agencies and industry lobbies, has led to a better division of labor, with the Fed becoming principal supervisor and regulator for all bank holding corporations (i.e. parent companies of larger multi-product banks) and foreign banking aspects (US banks abroad, foreign banks in US).

Such centralization of regulatory and supervisory responsibilities, as recently encountered in the United States, has a long way to go in the European Union. Within the context of the EU's single financial-market space regulatory and supervisory responsibilities pertaining to financial institutions and markets remain a national affair, with the different EU countries demonstrating a great variety of practices and structures ranging from national central banks acting as regulators of local banks (Italy) to centralized regulators of banks and markets kept separate from the central bank (England's FSA) to decentralized regulators specializing on banks or markets (Germany's BaFin). Even though cross-border consolidation of the EU's banking sector and link-ups of its different national financial markets have taken longer and proven more difficult than initially anticipated, the creation of an integrated finance space across the EU, as part of the Single European Act of 1987, has given rise to EU-organized financial groups stretching across national boundaries. And these trans-national institutions are far less effectively monitored or constrained by national regulators, even when the latter intend to cooperate.⁽⁵⁾ More appropriately located at the level of the EU, we might as well give the ECB some regulatory and supervisory powers, akin to the ones exercised by the Fed over the bank holding corporations and foreign banking connections with the United States. The ECB could then take a continuous look at the central cores of pan-European financial groups and administer regulatory restraints that are essential to the health of the banking system and/or to the effectiveness of its monetary policy. Any resolution of the current financial crisis may very well end up depending on such institutional reform that would combine regulatory powers and monetary-policy transmissions under one roof, in the hands of the supra-national European Central Bank.

2. U.S. Monetary Policy and Asset Bubbles

The Fed abandoned the targeting of the money supply as principal policy objective in November 1982 when a whole new generation of "quasi-money" deposits, introduced in the aftermath of banking deregulation (in the Depository Institutions Deregulation and Monetary

Control Act of 1980 and in the Garn-St.Germain Depository Institutions Act of 1982), had rendered monetary aggregates more difficult to measure and more volatile in behavior, hence harder to control. The ECB, while still obliged to carry the legacy of its immediate predecessor, the Bundesbank, which was obsessed with monetary targeting, has come to a similar conclusion as regards the practicality of money-supply targets (even though it still publishes a desired growth range for M3).

The Fed and the ECB have in recent years focused instead on interest rates, in particular two short-term interest rates under their respective control. One concerns the rates they each charge banks when lending to them directly, known in the US as the discount rate and in the EU as the rate on the Marginal Lending Facility (MLF). The other is the inter-bank rate which banks with excess reserves charge when lending those funds (known as Federal funds in the US) to banks with reserve deficiencies. The Fed, for instance, sets a target range for this so-called Federal funds rate. If the actual rate threatens to move above the upper limit of the range, indicating a relative scarcity of excess reserves to loan out, the Fed simply adds reserves to the system by conducting open market purchases for which it pays by adding reserves to the banking system. If, by contrast, the rate threatens to fall below the lower boundary of the range in response to too many reserves, the Fed drains reserves out of the system by means of open market sales for which it gets paid by deducting reserves from the accounts of the buyers of these securities. In the ECB the same procedure centers on the main refinancing operations and the rate set for such operations by the central bank through fixed-rate or variable-rate tenders. That MRO rate is generally about 100 basis points lower than the MLF rate, the ceiling of money-market rates, while at the same time 100 basis points lower than the deposit rate, the third rate set by the ECB for reserve deposits the banks keep with the central bank.

2.1. The Taylor Rule: It has been by now widely accepted among specialists of U.S. monetary policy that the Fed's targeting of the Federal funds rate follows a certain logic known as the Taylor Rule.⁽⁶⁾ That formula has the Fed try to maintain a presumably normal real-rate level i^* , but be willing to set the actual Fed funds rate i either lower during periods of sub-normal growth (when the actual growth of GDP lies below potential growth so that the level of actual unemployment u is below the level of structural unemployment u_n) or higher during fast-growth periods threatening to push inflation π above the implicit- target level π^* . We can thus express this rule as:

$$i = i^* + \alpha (\pi - \pi^*) - \beta (u - u_n)$$

According to its own research, the Fed has in recent years followed this formula quite closely in its interest-setting decisions, without necessarily admitting so.

Being constitutionally obliged to balance its policy priorities between price stability (represented by policy weight α) and growth as well as employment (represented by policy weight β), the Fed has over the last three decades (since Volcker's infamous anti-inflation policy shift in October 1979) clearly given greater weight to α than β during normal times. On two occasions, however, the Fed seemed to have shifted its policy priorities towards emphasizing β by keeping interest rates comparatively low for extensive periods of time, lower and longer than would have been indicated by the logic of the Taylor Rule. Both of these times, in 1991-93 and 2001-04, the U.S. economy had just come out of recession.⁽⁷⁾ While these downturns were relatively short and shallow, they had hit the U.S. banking sector and/or financial markets very hard. And during each of these recessionary adjustments U.S. inflation rates had fallen to close to zero, raising the specter of sustained deflation. Given the horribly difficult deflation experience of Japan between 1990 and 2005, which Germany came close to repeat during the turn of the millennium (1998-2002), the Fed was at those points understandably concerned about not having the U.S. economy fall into the same dangerous spiral as well.

2.2. “Good” Deflation vs. “Bad” Deflation: While the ECB exhibits even today, in the face of a slowing world economy, a predominantly anti-inflationary policy bias which leads it to maintain relatively high rates and move them barely, the Fed abandoned its post-stagflation hostility to “tight money” in 1985 when it administered a sharp devaluation of the US dollar (under the Plaza Agreement of September 1985) and came to depend on net inflows of foreign capital. Since then the Fed has been increasingly conscious of forces in the world economy keeping costs and prices down, notably cheap-labor competition from the fast growing emerging-market economies and a new technological revolution pushed forward by rapidly advancing, radical innovations (e.g, internet, bio-genetics, nanotechnology). These arguably positive deflation forces had convinced Fed Chair Greenspan in the aftermath of the stock market crash of October 1987, triggered by overcautious interest-rate coordination

among the seven leading central banks (under the Louvre Agreement of February 1987), to let the U.S. economy grow a lot more rapidly.

During the 1990s, however, Japan's brutal experience had impressed upon the Fed how rapidly "good" deflation can turn into "bad" deflation. Once Japan's dual stock-market and real-estate bubbles had burst in 1989 following sustained monetary-policy tightening by the Bank of Japan to rein in run-away asset inflation, its economy was gripped by a decade and a half of near-depression conditions from which it only began to emerge recently, in 2005. Early on the Japanese public had allowed widespread deflationary expectations to take hold, which became self-realizing the moment such expectations were followed by purchase delays in anticipation of future price declines. Ongoing declines of money prices also had the most unwelcome side effect of increasing the servicing burden of existing debts. With debt servicing charges (especially repayment of principal) appearing more difficult while collapsing asset values reduced collateral and wealth, forced asset sales spread relentlessly among a growing number of households and firms – a modern manifestation of the debt-deflation spiral famously analyzed by American economist Irving Fisher (1933) in the midst of the Great Depression.⁽⁸⁾ Japan's banks thus ended up with huge piles of bad debt (non-performing loans) after having seen their securities and real-estate holdings collapse in value. With both purchase-delaying public and paralyzed banks hoarding cash, neither expansionary monetary policy nor trillions of yen in infrastructure investments could overcome a deeply ingrained "liquidity trap." Once interest rates reached zero, the Bank of Japan could no longer push them lower even though they were still too high in real-rate terms (of 2-3% when considering the negative inflation rates then prevailing). Not only did this searing experience with a decade and a half of uninterrupted economic crisis leave huge marks on Japan's collective psyche, but it also convinced the Fed early on of the dangers posed by a deflationary spiral – a sentiment only reinforced by Germany's dangerous flirt with deflation during a difficult downturn in 1998-2002. It is no coincidence that the recently appointed current Fed chair, Ben Bernanke, is a world-renowned specialist of deflation and its dangers (see Bernanke, 2002; 2005).

This anti-deflation bias also moved the Fed towards aggressive cutting of interest rates after the Tequila Crisis of the Mexican peso (December 1994-March 1995) and again three years later when the global financial crisis of the emerging market economies (1997-2001) necessitated a bail-out of leading hedge fund Long Term Capital Management in the wake of

Russia's debt moratorium of August 1998. Throughout this period Fed Chair Alan Greenspan had understood that rapid productivity growth in the wake of a revolution in information and communication technologies had much lessened the danger of inflation and moved the potential growth path to a higher level (thus also reducing the structural unemployment rate u_n).

The readiness of the Fed to lower interest rates aggressively at the first signs of slowdown and then to keep those rates low for extended periods of time into the recovery rests on two contextual facilitators, which the ECB does not enjoy (yet!?). The first is the fairly strong correlation between slowing growth and declining inflationary pressures, which we have been able to observe in the U.S. economy since 1980. This, I suspect, has much to do with the often-ruthless flexibilization of U.S. labor and product markets, fuelled over the last quarter of century by deregulation and massive intensification of competition (reinforced not least by the influx of foreign products and workers). The barriers to such free-market regulation seem more numerous and deeply embedded in the EU, leaving its economies with a higher level of price stickiness. The other facilitator supporting the Fed's preference for lower interest rates relates to the international role of the US-dollar as the world's principal vehicle currency, which removes any external constraint from the country of its issue. The United States is not only obliged to run chronic balance-of-payments deficits to transfer dollars into international circulation, but also enjoys the added advantage of having these external deficits automatically financed by all the foreigners using US-dollars (for reserves, as the currency of choice in international financial portfolios, or as international medium of exchange in trade). That benefit of global seigniorage enables the U.S. to borrow from the rest of the world practically unlimited supplies of funds denominated in its own currency whose creation it controls (including, if needs be, for debt servicing of its \$3 trillion foreign debt accumulated since 1985). This combination of structural flexibility and seigniorage privilege allowed the low-interest bias of the Fed to be extended to long-term rates in the early 1990s. These have remained historically low throughout, at least until the middle of last year when re-pricing of risk started to increase the risk premia demanded on securitized, municipal, and corporate bonds.

2.3. Asset Inflation: Cheap credit supplies made possible by the U.S. bias towards low interest rates fuelled a high level of money creation and credit extension in a strong-growth environment where risk was consistently underpriced. Much of that liquidity was directed

towards real estate and financial assets, setting off inflation in these segments of the economy rather than in the production process of the industrial economy where competitive pressures kept inflation in check. This propensity towards asset bubbles was in turn nourished by financial innovation which provided crucial new outlets for an investor community increasingly euphoric about the prospect for rapid capital gains.⁽⁹⁾

We have experienced at least three consecutive (dollar-denominated) asset bubbles over the last quarter of century, each triggered by extensive Fed easing and sustained by major financial innovations. All those bubbles burst eventually in painful fashion, requiring renewed monetary-policy easing which in turn set the stage for the next bubble.

*The first emerged during the 1980s in the form of leveraged buy-outs when corporate raiders (Carl Icahn, T. Boone Pickens, Ivan Boesky, etc.) used the important innovations of high-yield bonds (“junk bonds”) and hedge funds to launch attacks on undervalued U.S. corporations and so forced their major restructuring. This wave played a crucial role in a historically unprecedented merger boom and helped anchor shareholder value maximization as the overriding concern of corporate managers whose attachment to that goal was further reinforced by the rapid spread of paying them in stock options. The stock-market crash of October 1987 put an end to this bubble, followed by the crisis (and taxpayer bailout) of the savings & loans associations in 1989, the criminal indictments of raider Boesky and junk-bond inventor Milken for criminal market manipulation, and the collapse of investment firm Drexel in 1991.

•The second bubble drove forward the high-tech revolution of the late 1990s by funding a large wave of internet start-ups with venture capital assistance and lucrative initial public offerings (IPOs) that turned those firms into hot growth stocks. The Y2K challenge, which forced massive renewal of computer systems and accelerated innovation pertaining to information and communication technologies, served both as final bubble-accelerator and, once turned into a non-event at the turn of the millennium, bubble-buster. The collapse of NASDAQ’s high-tech stocks and a series of accounting, funding, and market-manipulation scandals at high-tech companies (Enron, Tyco, WorldCom, Global Crossing, etc.) brought this bubble to a rather unceremonious end in 2001-02.

•The third bubble concerned the U.S. housing market which, having had already mini-booms in 1985-88 and 1995-99, really took off during the 2002-07 recovery. Low interest rates combined with demographic shifts (immigration, intra-US population movements, smaller-sized households, etc.) and the Republican ideology of “ownership society” to create

a very large demand for housing. This historic boom, with double-digit asset-price increases accelerating over a five-year period, was nourished into a nationwide craze by two key innovations. For one, banks introduced ways to repackage pools of mortgages into securities that could be sold to a global public of investors looking for good returns. Such securitization, which enabled banks to move away from their traditional funding model of deposit-taking and loan-making into a more lucrative, fee-based “originate and distribute” model, succeeded to attract more funds than the American banks knew what to do with. A variety of new, more widely accessible mortgage products (e.g. subprimes, Alt-As, piggy-backs), becoming increasingly popular after 2004, extended the American Dream of home ownership to households previously shut out of access to consumer debt and home ownership – especially minorities and recent immigrants.⁽¹⁰⁾ That democratization of property ownership counteracted the New Economy’s tendency towards greater inequality of income and wealth while also doing wonders for the revival of long-neglected inner-city neighborhoods. The second innovation fuelling the housing boom allowed Americans to turn their home ownership into a large source of consumer debt by making it much easier to refinance mortgages (at lower rates and/or larger principals in line with the increase in the value of the house serving as collateral) or borrow for a second time against the house in the form of so-called home-equity loans. At the peak of the boom, in 2005, the home-equity withdrawals permitted by refinancings and home-equity loans amounted, according to the Fed’s estimates (Greenspan & Kennedy, 2005), to \$700bn. p.a. which represented about 6% of disposable household income and boosted consumption by an annual rate of 3%. This funding support, allowing millions of Americans to turn their capital gains into spendable (borrowed) income, played a major role in driving the U.S. personal savings rate to zero and funding continuous excess consumption. With Americans spending each year (during the 2002-07 recovery) about 7% more than they earned in income, they came to borrow an average \$2-3bn. per day from the rest of the world – with the ability to borrow from the rest of the world in one’s own currency (thanks to the international role of the US-dollar as primary form of international medium of exchange) making this an irresistibly easy proposition to “get rich quick.” To the extent that after 2004 foreigners provided this funding support increasingly by buying up higher-yielding mortgage-backed securities, the circuits opened up by the dual innovation of securitization and home equity withdrawals became dynamically inter-twined in support of a global growth pattern centered on excess US spending supporting export-led growth strategies elsewhere.

It is the collapse of this latest bubble, which concerns us most in this paper. In the face of the still-ongoing “subprime” crisis, which started in 2007 and threatens a global downturn over 2008 and 2009, the Fed has once again aggressively lowered interest rates (by 225 basis points between September 2007 and March 2008). Given that such aggressive interest cutting in the face of acute financial instability has already triggered highly speculative bubbles three times, there are a lot of critics who decry the current monetary-policy stance as setting the stage for the next bubble.⁽¹¹⁾ I tend to disagree with that type of criticism of the Fed’s strong policy stimulation. In my mind the current post-bubble crisis is far more serious than the previous busts. For the first time since the 1930s we find ourselves in a self-feeding debt-deflation adjustment of the kind famously described by I. Fisher (1933) in the midst of the Great Depression. In the face of forced asset liquidations by cash-strapped debtors into declining markets, Bernanke and other central bankers can barely keep up with cumulative needs for pumping liquidity into several shaken, if not altogether frozen, financial markets. Having to go through one difficult day after another, these leaders simply do not have the luxury of worrying too much what today’s action may bring tomorrow.

3. The Collapse of Securitization

For the last year or so we have referred to the crisis as the “subprime” crisis. This name belittles what is actually going on and so confuses the public. True, the crisis started in late 2006 when the first round of interest-rate re-sets (from initial “teaser” rates of 2-3% to the long-term 10-15% range, after 2 years) started kicking in for subprimes at a time when the housing market had just begun to cool considerably. Unable to escape the sudden surge in debt servicing costs through re-financings (as often promised by greedy loan officers at the time of closing the deal), many of the intrinsically more vulnerable subprime lenders could not keep up with payments. Today we have about 30 percent of the \$1.1 trillion in subprime mortgages in default. Even if this gets worse with lots of additional interest-rate re-sets scheduled throughout 2008 all the way to the middle of 2009, combined subprime losses should not exceed \$500bn. over a three-year period. That would correspond to a 3% decline (1% annually, if stretched over three years) in the stock-market capitalization of all U.S. corporations, something that can happen in a day on Wall Street.⁽¹²⁾ Why should such an arguably limited credit problem in a small segment of the U.S. credit system (amounting to barely one-fifteenth of US consumer debt) have caused the entire world economy to stagger to a screeching halt? The answer is that last summer the subprime crisis exploded into a much

larger problem, namely the collapse of three inter-related layers of securitization – mortgage-backed securities, collateralized debt obligations, and asset-backed commercial paper – which in effect has paralyzed a huge financial-intermediation network that bankers had set up in the wake of the American housing boom.

3.1. The Travails of Alternative Financial-Intermediation Systems: What we are facing today is certainly not the first major financial crisis with international repercussions in recent years. As a matter of fact, twice before we have seen alternative financial-intermediation models become victims of their own success by overextending and thereby setting the conditions for sharp reversals.

- First, the so-called Eurocurrency market of dollar-denominated deposits and loans outside of the United States, which US banks had set up in the 1960s to evade new US restrictions on cross-border capital flows and bypass domestic interest-rate ceilings, became a conduit for successful recycling of “petro-dollars” from OPEC to oil-importing lesser developed countries following the two oil-price hikes in 1973 and 1979. When hit by a double-whammy of sharply lower export earnings amidst a global recession and at the same time a sudden hike in their debt servicing charges following the tripling of short-term interest rates after the Fed’s dramatic October 1979 switch in US monetary policy, over fifty LDCs went into default after August 1982 and had to be “bailed out” by a new international lender of last resort created around assistance by the International Monetary Fund (IMF) in exchange for those debtor countries pursuing structural adjustment programs and negotiating debt-restructuring deals with their private lenders. The crisis subsided in the late 1980s when private lenders accepted swapping massive amounts of existing Euromarket loans for bonds of much lower par value.

- *In the 1980s US banks faced intense competition from mutual funds and pension funds both of which gained the trust of American savers no longer satisfied with skimpy returns on bank deposits. Banks responded to this challenge from an alternative financial-intermediation system by setting up their own mutual funds and taking over management of pension funds. Following risk-diversification strategies and seeking to benefit from new opportunities opened up by financial liberalization in previously closed (socialist, communist, post-colonial single-party) countries, those funds transferred massive amounts of capital to these newly emerging markets, especially to the so-called “Asian Tigers” straddling the western boundaries of the Pacific Rim (e.g. Korea , Taiwan, Singapore, Malaysia). But squeezed in their international competitiveness by a 40% devaluation of China’s yuan in 1994

and steady depreciation of Japan's deflation-gripped yen, those rapidly growing Asian tigers could not sustain their export-led growth strategies when their currency pegs came under pressure thanks to the steadily appreciating US-dollar. A botched devaluation of the Thai baht in July 1997 set off a panic flight of capital, which funds dumping securities could do a lot faster and further than banks sitting on bad LDC loans had been able to do fifteen years earlier. The totally unexpected swiftness and rapid geographic propagation of this currency crisis caught both the national authorities along the Pacific Rim and the IMF off guard, prompting hasty reactions from both camps that made the crisis only worse (as was the case, for instance, when a careless remark by an IMF official criticizing the handling of two bank failures by Indonesia's government set off a panic run on that country's banking system). Still, the IMF's expensive emergency assistance packages for Thailand, Indonesia, and Korea stemmed the crisis in East Asia within a year, as did China's willingness to deploy its large foreign-exchange reserves in defense of its peg. Still-shaky global investor sentiment then turned to other emerging markets facing similar predicaments and imbalances, forcing Russia's debt moratorium in August 1998, attacking Brazil's currency peg in early 1999, and finally spilling over to Mercosur neighbor Argentina where crisis pressures took down its supposedly iron-clad currency-board link to the US dollar a couple of years later (moratorium on foreign debt in December 2001, convertibility suspension and currency depreciation in January 2002). Following the Russia crisis, America's #2 hedge fund Long Term Capital Management paid dearly for disastrously wrong bets on sovereign debt spreads thrown into havoc by Russia's default and had to be bailed out in a hurry by a 14-bank consortium organized within 24 hours by the Fed for a \$3.625bn capital injection to avoid a huge disruption of financial markets had LTCM been forced to liquidate its positions through a forced asset sale to make up for billion-dollar losses from wrong bets.

Both of these crises concerned an alternative financial-intermediation network which banks had set up. Construction of these networks was arguably part of a broader transformation of financial capital, driven forward by a powerful combination of deregulation, globalization, and electronic revolution (see Guttman, 1996). Both Eurocurrency markets and portfolio globalization of mutual and pension funds were part of a regulatory dialectic whereby banks use financial innovation to escape or bypass existing regulation only to create crisis conditions that necessitate re-regulation. At this point an anachronistic regulatory regime is replaced with a new regime better fit for the emerging "*New Finance*" that organizes around multi-product financial groups, internationally connected financial markets, and replacement

of loans by securities as preferred method of funding.⁽¹³⁾ It should be noted that these consecutive incidences of regulatory dialectic played themselves out while we were deregulating money and banking across the globe. Such deregulation first applied during the neo-liberal Reagan/Thatcher Revolution in the US and Britain (containing New York and London as the world's leading financial centers) in the late 1970s and early 1980s, extended to the rest of the European Union through the Single European Act of 1987, pushed to many developing countries through IMF-supervised reform programs during the late 1980s in the wake of the LDC debt crisis, and further refined and extended as previously communist or socialist one-party states became transformed into emerging-market economies (e.g. Brazil, Russia, India, China) during the 1990s. This laissez-faire paradigm has given banks the freedom to develop new services and markets at break-neck speed, put financial engineers in charge of accelerated product development as a key tool of competition, and use increasingly sophisticated technologies of contract design, valuation, and funding as channels of income creation. In the process banks have found that financial innovation does not carry the kind of sunk costs often associated with industrial innovation, can be easily implemented but also easily copied, hence needs to be pursued continuously and in as customized a fashion as possible. While the major financial innovations of the 1980s and 1990s all helped engender acute incidences of instability, as indicated in our discussions of the three asset bubbles in section 2.3 and two alternative-intermediation crises (LDC debt crisis, East Asian crisis) in chapter 3, the reorganization efforts induced by these crises helped each time stabilize and solidify the funding circuits concerned.

It is not sure that we can, or shall be able to, say the same thing about this current global credit crunch. While it is still too early to say where this crisis will take us over the next couple of years, we know already that it has created huge losses among the world's leading banks and thereby triggered a credit crunch which, by throwing the U.S. economy into recession, has hit the central pillar of the world economy on which the export-driven economies of the European Union, emerging markets, and commodity producers have depended for a couple of decades now. Even more troubling, in my opinion, is that the crisis has revealed major structural weakness of the securitization circuit, yet another alternative financial-intermediation system, which will be difficult to recover from. As a credit crunch of major proportions, with severe real-economy effects across the globe, the crisis better be managed diligently, even though such crisis-management will challenge the capacities and powers of the world's leading central banks. Let me reiterate these conclusions by looking at

how a relatively limited problem, the subprime crisis, morphed into the most serious global banking crisis since the Great Depression.

3.2. Valuing Distressed Mortgage-Backed Securities: When a growing number of subprimes went into default, they threw into question the viability of the mortgage-backed securities (MBS) whose underlying loan pool they had been made part of. It is important to note here that the MBS market had undergone a profound, yet little noted change in the course of the housing boom, after 2002. Taking off in the early 1990s and reaching an annual issue volume in excess of half a trillion dollars during the second half of 1990s, MBS had until then been issued predominantly by government-sponsored lenders known as Fannie Mae and Freddie Mac. Funding over half of America's nearly \$10 trillion in outstanding mortgages, these two huge lenders followed stricter underwriting standards and issued mortgages that carried government insurance (either FHA insurance and/or Ginnie Mae guarantees). So-called "agency" MBS, which are composed of mostly such government-supported loans, were justifiably considered very safe. But after 2002, when the housing boom quadrupled the annual average of new MBS issues to \$2 trillion, commercial banks became more active in the securitization of their loan portfolios. Attracted by the success of MBS and given a chance for easier market entry by accounting scandals hitting Fannie Mae and Freddie Mac, they issued nearly 50% of all new MBS during the 2004-06 peak years of the boom.⁽¹⁴⁾ By 2005 these so-called "non-agency" MBS had nearly half of their underlying loan-pool portfolios composed of non-traditional mortgages (such as Alt-As or jumbo mortgages in excess of \$417,000 which were no longer eligible for government insurance), and it was precisely their ability to get top ratings (AAA or AA) for these riskier loan pools which gave banks the funding sources to push subprimes and other non-traditional mortgages aggressively. Of course, we now know that the banks hired Moody's and Standard & Poor's to help them design loan pools that would earn top ratings once securitized, rendering these rating agencies thus subject to a clear conflict of interest which left them incapable of independent and objective assessment when judging the riskiness of non-agency MBS.

Being pass-through securities, the income stream going to the holders of the MBS (after a hefty deduction in management fees and commission by the underwriting banks) depends on the performance of the underlying loans in the pool. When a rapidly growing number of subprimes suddenly face repayment difficulties, then the value of non-agency MBS containing them was bound to be put to doubt. This was going to be especially true for those

MBS rated AAA or AA by rating agencies (Moody's, Standard & Poor's) which helped banks design pools where default risk from higher-risk loans would be adequately reduced by diversification. So, if less than 5% of the loan pool is impaired, it might not matter. But if over 10% is in default or questionable, then the cumulative loss of these non-performing loans starts to weigh down the value of the MBS. In that case rating agencies will re-assess their ratings of the MBS and downgrade them, which is exactly what happened with billions of dollars worth of non-agency MBS in the spring of 2007.

The downgrades raised the fundamental question of how to price these securities under conditions of heightened uncertainty. The problem starts already with how the markets for securitized instruments are organized. Typically they are not public exchanges where continuous trading allows market participants to establish a consensus in collective fashion as to what the price should be at any given point of time. Instead they are over-the-counter markets which are organized by a tightly-knit network of underwriters and whose pricing is established by direct communication between potential buyers and sellers. Those prices are often quite opaque, neither publicly available nor valid for anyone other than those involved in the particular transaction concerned. In the absence of continuous market pricing by a large number of players involved, OTC-market prices instead depend very much on the use of mathematical valuation models to establish approximate value ranges. Underwriters try to make actual prices stick within that range, often by trading their securities packages with each other before (or instead of) distributing them to the public. Investors, knowing often too little about the precise conditions of the loans in the underlying pool, depend instead on the ratings of the securitized bonds by supposedly objective rating agencies. When these ratings are changed for the worse, investors will feel overwhelmed by uncertainty. They realize that they lack the means to assess which of the individual loans making up the securitization pool will stop performing when, how many of those loans will ultimately end up in default, to what extent the banks bothered to do due diligence on the borrowers in the knowledge that securitization would transfer the risks to others, and how realistic the rating agencies' assessments are. In that climate of radical uncertainty investors rapidly lost confidence in any non-agency MBS whose lack of transparency made it impossible to predict subprime-related losses. Such panicky reaction seemed confirmed by the collapse of two MBS funds of Bear Stearns in June 2007 and the closure of three MBS funds by BNP Paribas on August 9, 2007 due to "an inability to value assets in the face of disorderly market conditions." It was above all the latter announcement, pointing straight to the heart of the valuation problem for

impaired and downgraded MBS containing subprimes, which triggered the global credit crunch from which we have yet to emerge.

3.3. Disintegration of Collateralized Debt Obligations: The post-downgrade shakiness of the MBS market, with transaction volumes (and prices) falling sharply throughout 2007, had an immediate, and ultimately disastrous impact on a more recently established securitization layer, known as Collateralized Debt Obligations. Representing further securitization of already-securitized instruments, those CDOs could include in their pools – apart from corporate bonds and junk bonds – also MBS, even other CDOs.⁽¹⁵⁾ These even more complex and opaque bonds are part of a broader development known as structured finance which issues securitization instruments that are sliced up into tranches offering different risk-return combinations (e.g, ranging from low-risk, low-return tranches carrying top ratings of AAA all the way to unrated tranches carrying 12-15% returns). With tranches sharing the same underlying pool, their differentiation in terms of riskiness (and, related to that, ratings and returns) is mostly established by the sequencing of which tranches impose the first round of losses, the second round of losses, and so forth, on their respective holders. Most CDOs, reflecting the belief that diversification would keep losses from individual items in the pool limited, typically gave top triple-A ratings to 70-80% of its tranches. Therein also lied their popularity, namely as a cleverly designed manipulation to re-package a lot of higher-risk subprimes and Alt-As in such a way that they would merit top AAA ratings.

That kind of design made the proper functioning of CDOs utterly dependent on maintaining throughout a normal distribution of losses. What no one could foresee was a national housing crisis of such deflationary vehemence that it came to affect all non-traditional mortgages across the board and in the process triggered default losses that would overwhelm risk reduction by diversification. The prospect of losing more than 20% of your subprimes over the coming year effectively destroyed the design of the CDO as anticipated losses seemed large enough to spread into the top-rated tranches. In that situation Moody's and Standard & Poor's felt obliged to downgrade tens of billions worth of CDOs in the summer of 2007. Having thus been devalORIZED, investors found they could no longer get rid of their CDOs for lack of buyers.

The collapse of the CDO market in mid-2007 also had a paralyzing effect on the issue, trading, and valuation of so-called asset-backed commercial paper (ABCP), a trillion-dollar

market for short-term bonds backed by a collection of credit-card debt, home loans, car loans, etc. as collateral thirty percent of which is tied to mortgage-related pool items.⁽¹⁶⁾ Market paralysis there has forced ABCP issuers to roll over a much larger portion of their issues on a very short-term basis, to tap bank credit lines, and/or scramble for alternative sources of funding. It is this devastating sequence of market collapses from MBS to CDOs to ABCP that has put enormous pressure on the money markets in general and the inter-bank market in particular since late August 2007.

3.4. Investment portfolios as accounting manipulations: CDOs and other structured-finance instruments (such as so-called Structured Investment Vehicles or SIVs) were set up by banks as firms, as separate judicial and accounting identities, in order to keep those funds off dddddd their balance sheets. Banks wanted that type of set-aside arrangement so that they would not have to subject these complex portfolios to the risk-management and capital-adequacy regulations of Basel II, the new regime of banking regulation and supervision currently being implemented on a global scale under the auspices of the Basel-based BIS (see section 4.2 below).⁽¹⁷⁾ We have already seen in the Enron scandal how counter-productive and dangerous such constructs of accounting manipulation can be. Once they go wrong in the sense that their tradability or valuation collapses, they can impose devastatingly sudden losses both on unsuspecting investors and the firms launching them.

Too many banks obviously made the fateful mistake of believing that the transfer of risks made possible by securitization was tantamount to making those risks disappear altogether. By hiding their securitization products, from which they still booked underwriting-based capital gains and management fees as income, from the public's and regulators' view, they also lost sight of latent dangers that may arise if and when these funds stopped working properly. There are all kinds of contingent liabilities associated with various structured-finance and securitization funds whose true nature of contingency the banks are now forced to find out about in very painful ways.

4. Squeezed Banks

We have already had about \$285 billion in losses declared by banks all over the world from the U.S. housing crisis and collapse of three securitization layers, and there is probably much more to come. The problem is that no one knows for sure how many losses and when. The

banks themselves are scrambling to figure out how many losses they have incurred, are currently still bearing, and are likely to suffer further in the future. They have a hard time figuring out the capital losses suffered from the collapse of prices and trading volume of securitized instruments, using computer-generated estimates in the absence of reliable price information. They have an even harder time determining when they will have to bail out all those special-purpose entities they are carrying around off their balance sheets, such as Citibank and its three SIVs, and how much that will cost when in the process they are obliged to bring those funds onto their balance sheets. And they have the truly herculean task, perhaps impossible in the face of radical uncertainty now that the crisis has shown huge contagion and propagation potential as it deepens, of getting a sense of what is still in store for them.

4.1. Mark-to-Market Accounting: Many of the world's leading banks are in big trouble, some of them - Citibank, Merrill Lynch, UBS, et alii – already in the process of massive restructuring and recapitalization. As the crisis runs its course, getting deeper and propagating itself with considerable potential for contagion, banks are under enormous pressure to salvage some survivable parts of their collapsed off-balance-sheet affiliates, write off the dead parts, and reevaluate impaired assets on and off their balance sheets. This pressure comes not least from the now-common practice of *mark-to-market accounting* which obliges banks to assign values to financial instruments held in their portfolios based on the current market price for that or similar instrument.⁽¹⁸⁾ Losses from market downturns pushing current prices below the acquisition price (“historic cost”) thus have to be recognized early and recurrently, making mark-to-market accounting a highly pro-cyclical practice. To the extent that banks have to write down impaired portfolios early on, they will see their capital reduced just when the economy is turning down. Unless they recapitalize, they will then have to cut back on their assets to bring those in line with their lower capital base. And such retrenchment is bound to lead to a more serious downturn, exactly what is happening in the current credit crunch.

While it is easy to criticize the pro-cyclical nature of mark-to-market accounting, it is not so clear that there are better alternatives. When we still had historic-cost accounting, troubled lenders and investors were better able to hide losses and more tempted to keep doing so. In the “thrift” crisis of the 1980s hundreds of savings and loans associations hid their losses through accounting manipulation and so amassed much greater losses over a five-year period before collapsing in 1988-89, requiring a \$165bn. taxpayer bailout. And the decade-long banking crisis in Japan during the 1990s also got ultimately made worse by the fact that banks

did not declare their losses in a timely fashion and so failed to reorganize until much later when that task had already become much more difficult.

It must also be recognized that in the current crisis context mark-to-market accounting has its own specificities which afford banks a bit more flexibility than meets the eye. First of all, a lot of the damage for the banks has happened in special-purpose vehicles (e.g. SIVs, CDOs) outside of their balance sheets, and the banks have some degree of freedom as to the timing of bringing those back onto their balance sheets and recognizing losses in the process. When they do so, they are often not able to measure the losses precisely in the absence of exact price information. Hence they have to estimate valuations, using in the process their computational models. Much of their write-offs are hence more mark-to-model calculations, and those let them stretch out their losses to write them off more gradually. What we have thus seen so far, over the last year, are the banks declaring a bunch of losses every quarter and announcing that there will be more to come. This gives them the time to organize capital infusions (notably nowadays from the sovereign wealth funds of Eastern Asia and OPEC). There is, of course, competitive and shareholder pressure to be forthright and expeditious about loss declarations and restructuring, and there is a lot of reputational risk at stake if those issues are mis-handled.

4.2. Basel II: The subprimes-cum-securitization crisis has occurred just when the world's top central bankers, grouped together in the Basel Committee of Banking Supervision (BCBS) under the auspices of the Bank of International Settlements (BIS), are putting into effect an amazingly ambitious project of banking re-regulation known as Basel II. This initiative will put into place a new global regulatory regime which can best be characterized as a regime of "supervised self-regulation" with banks expected to manage credit, market, operational, and other risks while setting the own capital requirements based on their risk calculations. Regulators will evaluate risk-management models and verify adequacy of capital provisions while investors (shareholders, depositors, etc.) will have access to a lot more information from the banks about their positions in order to exercise their "market discipline" function.

The question arises naturally how the crisis and such re-regulation will interface. Their interaction is bound to be contradictory. On the one hand, it is quite likely that the critics of Basel II's pro-cyclicality will be proven correct, as the introduction of new capital-adequacy standards over the next couple of years will likely increase pressure on banks to recapitalize

(at a particularly bad time in terms of severely depressed bank stocks) or to cut back assets in proportion to their loss-reduced capital base. In other words, adherence to Basel II is possibly going to aggravate the credit crunch already under way, a danger especially acute if a newly found appreciation of how risky things can be in banking translates into higher capital provisions. On the other hand, the extremely detailed provisions of risk management contained in Pillar One of the Revised Capital Adequacy (“Basel II”) Framework of 2004 are bound to standardize the methods, rules, and performance standards pertaining to this task, and such harmonization of acceptable practices may be a good thing, not only in terms of re-establishing crucial trust among banks and public confidence about banks, but also by showing reeling banks a way forward as they embark on massive restructuring and recapitalization efforts to survive this crisis. It may also help that Basel II’s Pillar Two contains a blueprint for more active and focused prudential supervision by banking regulators. The implied requirement for improved regulatory performance, further reinforced by vivid reaction to the prevalence of regulatory and ethical failures laid bare by the crisis, has already led the different U.S. regulators grouped together in the Federal Financial Institutions Examination Council (FFIEC), notably FDIC, Fed, and Comptroller of Currency, to cooperate more tightly and effectively together in their shared task of effective banking supervision. Finally, Pillar III will force banks to do a better job about transparency and information disclosure about risk management which, when considering how many banks have proven much weaker than reputed in this area (see French bank’s Société Générale’s €4.9bn. loss caused by a single trader in January 2008), may be a prerequisite for any revival of the credit cycle.

Yet one may also argue that the current crisis puts to question the very logic of the Basel II initiative. We have a tendency to misjudge risks in a cobweb-like pattern. During booms we underestimate risks only to overestimate them during downturns in reaction to having been chastened by costly and stupid mistakes that we let happen in blind euphoria. It is not at all clear that this pro-cyclical sequence of misjudgments can be sufficiently lessened, if not altogether eliminated, by greater and/or better utilization of risk evaluation models, especially if we are talking here about the same models which the bankers have used to get us into so much trouble. I would be curious to know whether any of the models underpinning price formation in the new OTC markets for securitized instruments or derivatives was able to foresee what has happened since August 2007. Neither the provisions of Basel II nor the state-of-the-art models of risk management have given enough consideration to liquidity risks,

signifying the sudden disappearance of demand amidst spreading lack of confidence, which play a central role at the onset of a crisis hitting the entire credit-system, what we generally term a systemic crisis.⁽¹⁹⁾

5. Managing A Systemic Crisis

When the U.S. housing boom went bust in late 2006 and the first wave of interest-rate re-sets on subprimes triggered a wave of defaults, pressure built to downgrade mortgage-related securities (MBS, CDOs) which then seriously disrupted the over-the-counter markets for these and related securitization instruments. In some of the markets the volume (of issuance and trading) is down by 80%, with hard-to-know prices probably down by similar amounts. In many instances, where trading has ceased altogether, there are no prices anymore. Without trading, no price...but also without price, no trading. The collapse of confidence in any fixed-income instrument containing subprimes has also meant the utter disappearance of liquidity. Banks are sitting on top of a trillion dollars, perhaps even more, of sharply devalued paper. And they are going to have to write those down, take declared losses out of capital, and then restore capital adequacy.

5.1. Seizures in the Interbank Market: The collapse of liquidity, which makes this a systemic crisis, felled the entire architecture of markets for securitized instruments – from mortgage-backed securities to collateralized debt obligations to asset-backed commercial paper – like dominoes. This contagion of disorderly market conditions has, of course, triggered sharp hikes in demand for bank loans – from institutions to unload their asset-backed securities and/or in need of rolling over maturing short-term debt that they can no longer finance automatically, from investors in response to margin calls, from funds seeking cash to withstand a surge in withdrawals, from nervous traders seeking precautionary protection in piling up more cash, and so forth. Whenever trading in securities gets disrupted, emergency lines of credit backing those markets become more or less automatically activated. All this ripples eventually into the gigantic inter-bank market as a sharp hike in banks' demand for funds.⁽²⁰⁾ But those banks capable of meeting that demand are much less inclined to do so if they worry about the health of their counterparties. And worry they do nowadays – about the value of the pledged collateral, about likelihood of borrower's default, about future losses still hidden, about interest-rate squeezes during the time their reserves are loaned out,

about their own funding needs in the face of future losses, and many other troubling scenarios.

Whenever surging bank-loan demand and intensifying lender worries coincide, you can see the vast inter-bank market seize up, producing sharp hikes in relevant inter-bank rates (e.g. LIBOR) and growing spreads between those and the lower policy rates set by the central banks or the rates on T-bills. This has happened recurrently, in waves coming on average every six to eight weeks, whenever an accumulation of troubling news sets off new bouts of widespread panic. The first time such seizure hit, in late August 2007, the ECB injected from one day to the next \$48bn. into the system, followed shortly thereafter by other central banks with more moderate amounts. While the Fed injected not even half of that amount, it did at that point already make an important adjustment in recognition of the continuous nature of the banks' refinancing difficulties. It decided to extend discount loans for up to a month rather than just the customary few days. In October 2007, when the first round of huge write-off charges cost the heads of Merrill Lynch and Citibank their job, a new round of market jitters hit, with renewed liquidity injections by central banks now even using long-standing currency-swap agreements to provide each other with adequate supplies of foreign exchange (to fund, for instance, often massive refinancing operations of European banks denominated in US-dollars). In November 2007 the G-10 (Group of Ten) central banks met in Cape Town and negotiated a new lender-of-last-resort mechanism launched in mid-December, just before the critical end-of-year period threatened new global disruptions in the inter-bank market.

5.2. New Mechanisms for Liquidity Injection: This new lending facility, known as Term Auction Facility (TAF), was simultaneously put into place by the ECB, the Fed, the Bank of England, the Bank of Canada, and the Swiss National Bank on December 12, 2007. Under this new facility each of the central banks sets a calendar of regular auctions in which it would offer a certain pre-determined amount of funds newly created for that purpose and electronically transferred to the reserve accounts of winning banks having successfully bid for these funds. Those are term funds, made available to eligible depository institutions over relatively extended periods (of up to a month on average, but at times even longer) whereas previously discount loans or repurchasing agreements have had much shorter maturities. The program started with central banks committing themselves to four auctions each in bi-weekly intervals, for a total of \$110 billion. This is the first time central banks have ever joined forces in such coordinated fashion, facing a global credit crunch together.⁽²¹⁾

Before any scheduled money auction the central banks specify what will be the total amount made available, at what minimal rate it must be repaid, and over what period. Eligible banks then bid for whatever amount within the total they want. In the bid they also specify what interest rate they are willing to pay above the minimum set by the central bank at the onset of the auction. After collecting all the bids the central bank then decides how to allocate the funds bid for and at what respective rates.

The auctions have worked well, easing strains in the inter-bank market at crucial moments and allowing money-market rates to come down. With the first round of auctions, all of which were oversubscribed, three-month LIBOR rates fell between 20 and 40 basis points across the five different currencies. This was a welcome moment of relief for stressed banks just before the crucial end-of-year period. At one critical moment in that turbulent period of late December 2007 the ECB stepped beyond its four-auction calendar, which included \$28bn. in dollar-denominated funds swapped with the Fed, and launched an unlimited offer of two-week funds to cover the end of the year when banks had to book their loss positions. This offer saw it pump in an unprecedented €350bn. into the euro-zone banking system at an average rate of 4.21% (almost half a percent lower than the 3-month euro LIBOR of 4.78% at the time). Subsequently the ECB launched operations to mop up excess liquidity to ensure that overnight market rates would not fall below its policy target minimum of 4%. So it made a nice profit during the last week of the year when it reabsorbed nearly half of the funds loaned out (i.e. €141.6bn.) at 4%.

Still, the introduction of TAF was not going to be enough to remove the liquidity squeeze in the world's money markets. While the money auctions relieve pressure at crucial moments and keep the credit crunch from becoming much deeper by avoiding bank failures that could set off much bigger panics, they are not sufficient to re-build the confidence needed to revive inter-bank lending as a normal, automatic activity. When they ended in late January 2008, the Fed announced another \$100bn. liquidity injection via term repos, exchanging cash for bonds with the primary dealers to add reserves temporarily to the banking system. By early March 2008 conditions of stress had once again built up to dangerous level across the world's principal money-market segments. More bold action was needed, and it came in the wake of yet another G-10 meeting in Basel. On March 11, 2008 the five central banks launched a new initiative, known as the Term Securities Lending Facility (TSLF). Under this arrangement the

Fed would extend \$200bn. in 28-day funds to the primary dealers, comprising twenty of the world's leading (commercial and investment) banks authorized to trade directly with the Federal Reserve Bank of New York in its conduct of open market operations.⁽²²⁾ Unlike the cash-for-bond swaps of the term repos, TSLF auctions involve bond-for-bond swaps which have no impact on the aggregate level of reserve balances in the banking system. The Fed reduces its holdings of Treasury bills, making more of these liquid and safe securities available to banks, while absorbing in exchange onto its balance sheet more relatively illiquid assets such as agency MBS or top-rated non-agency MBS. This is the first step towards having the Fed buy impaired securities outright on its own account, a radical solution to the banking problem which may in the end become necessary to resolve what has already become the worst banking crisis since the Great Depression.

5.3. The Worst Is Yet to Come: The Fed's focus of its last two lender-of-last-resort extensions on the (just twenty) primary dealers reflects ever-growing concentration of lending and financial risk on a relatively small number of money-center banks. But this narrower focus also raises the question even more urgently whether central banks have the power today to control and counteract the spreading conflagration in the world's financial markets. What we are now facing quite obviously is a new debt-deflation spiral à la Fisher. The big banks have pulled back from lending, fearful of heightened credit and market risks while also intent on hoarding cash to face their own losses more easily in the future. Thus deprived of easy access to credit for trading, hedge funds and other bank clients are forced to sell their assets and so generate the cash needed to cover their own losses. Given the enormous degrees of leverage used by hedge funds, private-equity funds, and other financial-market intermediaries, it does not take much of a decline in the value of assets carried by these highly leveraged institutions in their portfolios to trigger margin calls from their lenders asking them to pay up the difference between their loans outstanding and the falling value of the collateral backing those loans. When the funds do not have the cash, they have to liquidate assets. Selling into declining markets makes prices drop even faster, setting off a new round of margin calls, pushing asset prices down even further, and so forth. Underneath the seemingly positive technical term of deleveraging lies therefore a vicious downward spiral which we now see take hold across the mortgage, municipal bond, corporate debt, interest-rate swap, and global credit derivatives markets.

Amidst such relentless pressure on a variety of interconnected financial markets we see new stress lines emerge every day – the failure of structured-investment vehicles; the dangers posed to the bond insurers whose downgrades would impose a whole new round of steep losses on banks; the collapse of auction-rate notes preventing America's cities and counties from easy access to cash, the stress due to surging costs for credit default swaps which are a flawed insurance program likely to implode with huge losses once the imminent downturn causes a rapidly growing number of defaults. Highly leveraged hedge funds and private equity funds are experiencing deep losses and are forced to unwind excess leverage while banks increasingly deny them swapping their assets for cash in the repurchase market. We are now seeing these cascades of margin calls, forced asset sales, and deepening losses wipe out major financial institutions such as Carlyle Capital, Thornburg Mortgage, and Bear Stearns all of whom collapsed just in the last couple of weeks. Many fires, already showing signs of smoke, have yet to be fully lit. And once they do, they force banks to continue pulling back and so make the credit crunch worse.

The Fed has shown that it can innovate and coordinate with others on short notice in the face of unprecedented situations of crisis, and it will surely innovate some more. But it cannot prevent the crisis from running its course, and there are real questions to what extent central banks can deal with the insane levels of leverage, structural flaws of financial innovations (securitization, structured finance, and derivatives above all), and criminal negligence in the realms of fiduciary responsibility and risk management. The crisis will only be resolved when the U.S. housing crisis has ended, Radical measures, such as Bernanke has proposed a couple of weeks ago in terms of forcing banks to reduce the principal of outstanding mortgages in line with reduced equity from falling housing prices or having the government buy up mortgage-related assets as a sort of taxpayer bailout may be necessary to bring this turnaround about before the world economy will have to face the prospect of a prolonged downturn emanating from the U.S. Then there will perhaps be time to put banking, financial markets, and credit allocation on a sounder footing in the interest of a socially more responsible system of finance.

Notes

1) In that capacity the Federal Reserve Bank of New York organizes weekly auctions of new Treasury securities. Responsible for maintaining an orderly market for Treasuries, the Fed conducts open market operations, its most widely used monetary policy tool consisting of buying and selling Treasury securities, in such a fashion that its purchases outweigh its sales over time. The resulting increase in the stock of Treasuries held by the Fed amounts to an automatic monetization of the government's debt to the extent that its purchases of securities boost bank reserves and thus add to the banking sector's money creation capacity. This makes it easier for the U.S. government to finance its deficits.

2) We should also note here that the Fed and ECB follow different definitions of inflation. See E. Diewert (2002) on ECB's "harmonized indices of consumer prices" (HICP) measure and T. Clark (1999) on Fed's "personal consumption expenditures" (PCE) index.

3) One facility of the Fed's discount window, known as Emergency Credit, can offer short-term loans to any firm, even those that are not financial institutions, but only under very exigent circumstances (no credit available elsewhere, and a majority of Fed governors judging such help essential) and at high interest rates that the Fed sets in those instances individually on a case-by-case basis. Another segment of the discount window, known as Seasonal Credit, offers special liquidity injections during pre-determined periods for (mostly rural) banks with large intra-yearly fluctuations of deposit supplies and/or loan supplies. See www.frbdiscountwindow.org for more details on the Fed's administration of its various discount-loan facilities.

4) See G. Schinasi and P. G. Teixeira (2006) for more detail on this institutional mis-match between national lender-of-last-resort mechanism and supra-national crisis potential in a single European financial space.

5) Efforts to streamline varied EU-wide banking regulation have crystallized around the Lamfalussy Process (ec.europa.eu/internal_market/securities/docs/lamfalussy/sec-2004-1459_en.pdf) and the Financial Services Action Plan (ec.europa.eu/internal_market/finances/actionplan/index_en.htm).

6) The interest-setting policy rule supposedly followed by the Fed has been so named after Stanford's John B. Taylor (1993).

7) See the Fed's own data comparing the Fed funds rate and the Taylor Rule rate presented in P.F. Asso, G. A. Kahn, and R. Leeson (2007)

8) Fisher's analysis of debt deflation centers on the notion that deflation increased the real value of debts fixed in dollar terms and that this increased debt burden would then risk triggering cascading sequences of insolvencies pushing the economy into depression. This contribution, long discounted because of Fisher's famous failures (of foreseeing possibility of a crash and as an investor in the aftermath of the 1929 crash), has now made something of a comeback, as indicated by the articles of R. Dimand (1994) and M. Wolfson (1996).

9) We should note in this context the long-standing U.S. policy of favorable tax treatment for capital gains which has become even more pronounced under subsequent tax reforms by Reagan (in 1981 and 1986), Clinton (1993), and Bush (2001)

10) Subprimes are mortgages offered to households with a troubled credit history. Alt-A mortgages carry less stringent eligibility conditions (income verification, personal information) than traditional prime mortgages. Piggy-backs allow prospective home-owners to borrow even their down-payment (which typically used to amount to 20% of the home's value but soon into the boom market came to approach zero). All of these non-traditional mortgage products carried higher yields (to compensate for greater risk) and proved even more attractive due to the higher commissions they earned the loan officers closing the deal. Each one of them has now become a major factor in the post-boom debt-deflation adjustment of the U.S. housing sector.

11) See P. Artus (2007) as an example of such criticism of the Fed's low-interest policy feeding consecutive asset bubbles.

12) According to Wilshire Associates, the total U.S. stock-market capitalization was approximately \$15.35 trillion in May 2007. According to the World Federation of Exchanges, global stock-market capitalization stood at 51.23 trillion in January 2007.

13) The useful notion of "regulatory dialectic," referring to the tension between regulatory constraints and financial innovation, was first elaborated by E. Kane (1977).

14) Commercial banks engaged at the same time also more actively in the issue of asset-backed securities of which there are now over \$2 trillion outstanding (a third more than all non-agency MBS issued by commercial banks). Those ABS pool together shorter-term loans, notably car loans, home equity loans, student loans, and credit-card debt.

15) For more details on the connection between MBS and CDOs see J. Rosner & J. Mason (2007) and R. Dodd (2007)

16) On the spill-over effects of devaluation and liquidity collapse hitting the trillion-dollar ABCP market in late summer of 2007 see M. Mackenzie (2007).

17) The Bank for International Settlements, based in Basel (Switzerland), is the central bank of (the world's thirteen leading) central banks and hence the best institutional framework for the coordination of international monetary-policy and banking-regulation initiatives. The Basel Accord of 1988 marked in this context the first major step towards a global regime of banking regulation and supervision by introducing a risk-adjusted minimum capital-asset ratio (of 8%) on all transnational banks operating in any of seventeen financial centers of the world. See R. Guttman (2007) for more.

18) Mark-to-market accounting replaced historic-cost accounting only fairly recently. It became part of the US Generally Accepted Accounting Practices (GAAP) as part of Reagan's 1986 Tax Reform Act (as Section 475 of the revised IRS Code). It then found its global extension by becoming part of the International Financial Reporting Standards (IFRS), as International Accounting Standard (IAS) #39 ("Financial Instruments: Recognition and Measurement"), in December 1998.

19) For more information on the concept "systemic crisis" as the most serious category of financial crisis see Aglietta (2003). See also R. Boyer, M. Dehove, and D. Plihon (2004) for an excellent discussion of the different types and degrees of financial crisis.

20) In the inter-bank market banks with excess reserves provide funds to banks with reserve deficiencies. This conduit of daily fund transfers between banks is what keeps the entire economy going in terms of allowing its actors to cover their cash-flow gaps. There is a domestic inter-bank market, known in the United States as federal funds, which the Fed manages directly. And there is a global inter-bank market, known as the International Money Market (IMM), which is part of the Eurocurrency market is beyond the reach of national central banks.

21) For more detail on the modus operandi of the Term Auction Facility see www.federalreserve.gov/monetarypolicy/taffaq.htm.

22) Of the \$200bn. pledged to this new facility, six-month swap agreements would provide \$30bn. to ECB and \$6bn. to the SNB. For more detail on how the TSLF will work see www.federalreserve.gov/newsevents/press/monetary/20080311a.htm. See also M. Mandel (2008) for an interesting explanation as to the historic significance of the TSLF as a new monetary policy tool.

Bibliography

Aglietta, M. (2003). Le risque systémique dans la finance libéralisée. *Revue d'Economie Financière*, **70**(1), 33-50.

Artus, P. (2007). *Les incendiaires: Les banques centrales dépassées par la globalization*, Perrin: Paris.

Asso, P.F., Kahn, G.A. and Leeson, R. (2007). The Taylor Rule and the Transformation of the Taylor Rule. *Research Working Papers* 07-11, Federal Reserve Bank of Kansas City: Kansas City, MO.

Bernanke, B. (2002). Deflation: Making Sure "It" Doesn't Happen Here. Speech given as Fed Governor on November 22, 2002 to National Economists Club in Washington, DC.

Bernanke, B. (2005). *Essays on the Great Depression*. Princeton University Press: Princeton, NJ.

Boyer, R., Dehove, M., and Plihon, D. (2004). *Les crises financières*. La documentation française: Paris.

Clark, T. (1999). A Comparison of the CPI and PCE Price Index. *Economic Review* #3/99, Federal Reserve Bank of Kansas City: Kansas City, MO.

Diewert, E. (2002). Harmonized Indexes of Consumer Prices: Their Conceptual Foundations, *Working Papers* #130, European Central Bank: Frankfurt.

Dimand, R. (2004). Irving Fisher's Debt-Deflation Theory of Depressions. *Review of Social Economy* **52**(1), 92-107.

Dodd, R. (2007). Subprimes: Tentacles of a Crisis. *Finance and Development* **44**(4), International Monetary Fund: Washington, DC
www.imf.org/external/pubs/ft/fandd/2007/12/dodd.htm

- Fisher, I. (1933). The Debt-Deflation Theory of Great Depressions. *Econometrica* **1**(4), 337-357.
- Greenspan, A. and Kennedy, J. (2005). Estimates of Home Mortgage Originations, Repayments, and Debt On One-to-Four-Family Residences. *Finance and Economics Discussion Series* 2005-41, Federal Reserve Board: Washington. DC.
- Guttman, R. (1989). *Reforming Money and Finance: Financial Institutions and Markets in Flux*. M.E. Sharpe: Armonk, NY.
- Guttman, R. (1994). *How Credit-Money Shapes the Economy: The United States in a Global System*. M. E. Sharpe: Armonk, NY.
- Guttman, R. (1996). Les mutations du capital financier. In. F. Chesnais (Ed.), *La Mondialisation Financière*. Syros: Paris, 59-93.
- Guttman, R. (2007). Basel II: A New Regulatory Framework for Global Banking. Paper presented at the Conference on Post Keynesian Economic Policies, Centre d'Etudes Monétaires et Financières, Université de Bourgogne, Dijon, Decmber 1, 2007 (www.u-bourgogne.fr/CEMF/php/index.php?lang=en&text=colloen.htm). To be published in Gnos. C. and Rochon, L.P. (2008). *Post Keynesian Economic Policies (vol. II)*. Edgar Elgar: Cheltenham, UK.
- Kane. E. (1977). Good Intentions and Unintended Evil: The Case Against Selective Credit Allocation. *Journal of Money, Credit and Banking* **9**(1), 55-69.
- Mackenzie, M. (2007). Asset-backed Commercial Paper Shunned. *Financial Times*, 4 September 2007 (www.ft.com/cms/s/0/2b33f77e-5b24-11dc-8c32-0000779fd2ac.html)
- Mandel. M. (2008). The Fed's Historic Innovation. *Business Week*, 15 March.
- Rosner, J. & Mason, J. (2007). How Resilient Are Mortgage Backed Securities to Collateralized Debt Obligation Market Disruptions? Presented at Hudson Institute, 15 February 2007 (www.hudson.org/files/publications/Mason_RosnerFeb15Event.pdf).
- Schinasi, G. & Teixeira, P. G. (2006). The Lender of Last Resort in the European Single Financial Markets. *IMF Working Papers* WP/06/127, International Monetary Fund: Washington DC.
- Taylor, J. B. (1993). Discretion versus policy rules in practice. *Carnegie-Rochester Conference Series on Public Policy* **39**, 195-214.
- Wolfson. M. (1996). Irving Fisher's debt-deflation theory: its relevance to current conditions. *Cambridge Journal of Economics* **20**(2), 315-333.