

# The causes of the recent financial crisis and the role of central banks in avoiding the next one

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**Abstract** The recent financial crisis revealed that in a world of large asymmetries of information, of complex financial innovations and incomplete regulatory frameworks “self regulation” obviously does not work. But we have also seen that the governmental stabilisation policies have not worked well either. This paper argues that there have been, at least, two main contributors to the recent financial crisis. The one is supervision and regulation policy, the other is monetary policy. Easy monetary policy designed to ward off perceived risks of deflation in 2002–04 contributed to the boom in the housing market in 2004 and 2005 by keeping interest rates too low for too long. Particularly the US-Fed has played a crucial role by fuelling the asset-price, boom-bust cycle that led to the sub-prime crisis and the following global financial crisis. Moreover, this paper analyses what central banks can do to help avoid a next financial crisis. In particular, the role and limits of supplementary macro-prudential instruments are discussed.

**Keywords** Financial crisis · Prudential regulation · Monetary policy · Systemic risk

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## 1 Introduction

When the US subprime crisis occurred in August, 2007, it was first interpreted as an apparently rather small, regional brush fire. However, despite quick reactions from politicians, it soon developed into a global slump. In the face of tightening credit conditions, activity slowed and advanced economies fell into mild recession by mid-2008, whereas emerging and developing economies continued to grow. The situation worsened rapidly after the dramatic eruption of the financial crisis in September

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2008, following the default by Lehman Brothers, the rescue of AIG, and the intervention in a range of other systemic financial institutions in the US and in Europe. These events created a big increase in perceived counterparty risk when banks faced large write-downs and the solvency of established banks was questioned. This acceleration resulted in a flight to quality that depressed yields on government securities and diminished wholesale funding, prompting a disorderly deleveraging process that proliferated across the rest of the global financial system. Liquid assets were sold at fire-sale prices and credit lines to leveraged financial intermediaries in the shadow banking system were significantly reduced. Bond spreads widened sharply and the flow of trade finance was interrupted. Banks continued to tighten lending standards when equity prices plummeted (see, in more detail, e.g., IMF 2009).

The credit crunch has hit even the most highly rated private borrowers, who were hurt by sharp falls in equity markets as well as by continuing deflation of housing bubbles. The effects of the excesses and failures at the core of the banking system were quickly forwarded to all sectors and countries of the global economy. Furthermore, business and consumer confidence collapsed as doubts about economic prospects rose and uncertainty about policy responses became widespread. Due to this squeeze on credit, sharp falls in housing and equity prices and high uncertainty, not only the United States but many other countries not involved in the origin of the crisis were affected, mainly, given its heavy dependency on manufacturing exports, by the slump in global trade (*ibid.*).

Today, many ask what caused the financial crisis and all of the subsequent problems. Public opinion has charged several agencies at the cause of the trouble. At the top of the list of culprits is, of course, the private financial system. Financial managers and bankers were among the first and most heavily criticised agents blamed for the outbreak of the financial crisis. Nowadays, even top-politicians like President Barack Obama criticize private bankers as “fat cats” on Wall Street who are “greedy-for-money” who exclusively followed personal short-term profit interests without regard to risk or common sense. Doubtless, many of the financial managers and bankers deserve the “greedy” label. However, one should also take into account that they acted in an “individually rational” way—performing their specific functions—within the structural frameworks set by politicians. Moreover, it was expected that such “greedy” behaviour was not counter-productive for the functioning of a market economy, though it was understood that the market and, particularly, the financial system does not work perfectly. Even the modern macroeconomic textbooks are full of examples of imperfect information and other phenomena (such as moral hazard and adverse selection) afflicting the market/financial system. So we knew that in modern societies there is generally a high complexity of decision making that leads to an insufficient accomplishment of costly information processing. Thus it is difficult to process a huge and increasing amount of available information, particularly in a short period of time with a limited budget, and to permanently adjust or re-optimize decisions. Each individual, and even professional organizations, encounters the difficulty of efficiently processing the existing information on time and therefore tends to use second-best instruments, such as the rule of thumb. But perhaps this difficulty has been underestimated and—with added complexity and uncertainty—has increased over the past two decades in the context of increasing globalization that has headed towards liberalized,

deregulated market economies (see, for example, Wagner and Berger 2004; see also Caballero and Kurlat 2009). For the economic agents this relaxation and the ensuing global networking have raised the number of eventualities and new, unknown players. This uncertainty means, among other things, that one will have less expectation that externalities can be sufficiently internalized. One reason for this expectation is that globalization entails increasing *international* externalities.<sup>1</sup>

In view of this difficulty governments early on implemented risk management (supervisory and regulatory) agencies to handle such imperfections and distortions. Regulators were expected to help the private agents (by giving them the right incentives) to overcome or internalize externalities in order to avoid overall disequilibria and crises. The main task of supervision and regulation policy is to detect risks and to implement rules which function as the right incentives for or threats to the individual agents to internalize the externalities.

However, one has to accept that policymakers have basically the same problems in processing information as those confronting private agents. Therefore, it is not always guaranteed that supervisory and regulatory authorities perform their job perfectly or always head off crises. Still, when supervision and regulation policy fails and a financial shock occurs, monetary and fiscal policymakers are usually expected to manage the economic danger effectively, i.e. to minimise it and its costs and to avoid its escalation into a full-scale political disaster or even, a worst-case scenario, an undermining of the economic system.

But even if monetary policymakers apparently successfully manage a financial crisis, a certain link can be drawn from today's crisis management to tomorrow's risks, for even the best crisis management strategy can carry the virus for the next big slump if the strategists mistimed the exit. With regard to the current crisis, the attempt of the US-Fed to combat the 2001 recession efficiently and lastingly—in trying to avoid a continuation of the recession by excessively delaying the exit from the expansive monetary strategy—is regarded by many observers as a cause of the recent financial crisis.<sup>2</sup>

In the following I shall (in chapter 2) briefly list the failures of supervision and regulation policy, then (in chapter 3) more broadly focus on the role central banks played in causing the current crisis<sup>3</sup> and could play in avoiding future financial crises, and finally (in chapter 4) draw some conclusions and point out some lessons to be learned.

## 2 Failures on the part of supervision and regulation policy

There have been numerous failures on the part of supervision and regulation policy, particularly the ignoring of incentive distortions and information problems that were

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<sup>1</sup> On the other hand, this also means that denouncing single culprits in a global economy is pointless, i.e., the culpability increasingly can no longer be allocated to a single agent or group.

<sup>2</sup> In the US, meanwhile, the Fed is therefore reportedly more unpopular than the IRS.

Before the crisis, interestingly, there was only a small minority of the press (particularly *The Economist*), policymakers (particularly from the BIS), and academia (among the most prominent are Steve Cecchetti and Bob Shiller) who complained about central banks' not resisting a coming asset/housing bubble, and thus potentially causing a financial crisis.

<sup>3</sup> As stated before, central bank(ers) currently are often branded, especially in the US, as major culprits in causing the financial crisis.

intrinsic to the new process of financial intermediation. I shall merely list the major omissions.

### 2.1 The growth of poorly regulated segments

Particularly in the US the 1999 Gramm-Leach-Bliley Act, which repealed the separation between commercial banking and investment banking as previously established in the Glass Steagell Act of 1933, opened the door for a growing shadow banking system that led to regulatory arbitrage. A significant fraction of financial intermediation was thus transferred to non-banking financial institutions that established off-balance-sheet entities not required to hold capital in the same way as banks had to. This process is related to the attempt of the private financial system to circumvent—through financial innovations—the new regulations (such as Basel II) announced or already implemented in the aftermath of the Asian crisis.

### 2.2 The complexity and explosive power of recent financial innovations

These new instruments included the issuance of asset-backed securities (i.e., bundles of residential and commercial mortgages and loans to businesses that were sold on by the loan originator, so shifting the associated risks), CDOs, CDSs, and so on. Thereby, financial innovations—the process of securitisation, the spread of risk—allowed the financial sector to lend to risky borrowers who previously had been rationed. These extremely complex new instruments created information problems in assessing the risks, but nevertheless were accepted in the profession since they were supposed to spread risk more widely and thus stabilise the financial system. In the end, however, they resulted in a far too complex process of financial intermediation entailing information failings, collective action problems and network effects that exacted huge social costs. As a result, it is not surprising that supervision and regulatory agencies were not alert enough to reduce the (under-estimated) risks.

### 2.3 The interconnected nature of the financial system

A major failure of regulation was that because it did not focus on the externalities that contributed to systemic risk, the risk incurred by each bank was treated in isolation. It was not taken into account that banks forced into fire-sales also depressed prices for other banks or that banks that hoarded funds or hid their own commitments created other externalities by producing uncertainty for their counterparties. In other words, before the crisis too few stakeholders understood the interconnected nature of the financial system and its dangers: the holdings of securities issued by other parties, CDSs written by other parties, the high degree of exposure of financial institutions to each other as a result of interbank loans, and so on. When these networks and associated dangers became obvious, a crisis in confidence occurred. Unexpected losses on subprime mortgages and assets backed by them functioned as a trigger for generalised doubts about the applicability of a whole class of assets and a general reappraisal of risk premiums. Feedback loops, loss spiral and counterparty risks suddenly became the focus of attention. It was recognized that, given the use of mark-to-market accounting to assess trading books,

the decrease in asset prices worsened the balance sheets of other institutions too, which in turn reduced their capital ratios and increased their problems in raising funds and creating a further round of asset sales.<sup>4</sup>

Due to the fact that financial intermediation had evolved into a highly complex and inscrutable network and a major source of uncertainty, the near-meltdown in the financial sector then resulted in a more general increase in uncertainty, leading to a raise in precautionary savings and the postponement of planned investment projects.

#### 2.4 Incentive distortions in remuneration contracts

The large compensation packages of senior and mid-level financial executives, and particularly the bonus systems included, have been critically scrutinised during the current crisis. Financial executives were remunerated with bonuses in good years but not fined for poor performance in other years. This means that these remuneration contracts offered potentially unlimited upside rewards, but capped the downside losses; thus traders sought short-run profits and accepted excessive risk in the bargain.<sup>5</sup> This procedure led, among other things, to excessive leverage ratios for shareholders and the system as a whole.

#### 2.5 Procyclicality in the behaviour of financial institutions and investors

Financial institutions and investors accepted higher risks during the upper phases of the economic cycle, whereas the reverse happened during the down phases. As a consequence, credit and leverage enlarged during expansions and contracted during recessions. The procyclicality of leverage was reinforced by the procyclical behaviour of collateral (known as the “balance sheet effect”), meaning that the value of collateral goes up during expansions and goes down during recessions. An additional reinforcing factor was the Basel II requirement to mark collateral to market. Capital requirements have been pro-cyclical as well. Regulation focused on the asset side of the balance sheet, but it did not take into consideration the externalities that contributed to systemic risk.

#### 2.6 Interest conflicts connected with the operation of rating agencies

Another major problem arose from the fact that rating agencies have been paid by securitizers. Therefore, one can suppose that the rating agencies have been in a conflict of interest since they had to comply partially with the incentives of their

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<sup>4</sup> Furthermore, it was recognized that “if today’s maturing creditors anticipate that tomorrow’s creditors will demand a high threshold of safety, today’s creditors will demand an even higher threshold. This precipitates a dynamic rat race, such that if creditors anticipate a bad enough future scenario, lending could dry up today, even though fundamentals do not warrant it” (Rajan 2010, p. 4).

Caballero and Simsek (2009a, b) pointed to a related argument or recognition: As asset prices fall, more banks are likely to become distressed so that banks now need to monitor not only their immediate borrowers, but also borrowers of their borrowers, and so on. Thus the prospect of future fire sales can impair current lending.

<sup>5</sup> “This gave traders an incentive to take risks that were not recognized by the system, so that they could generate income that appeared to stem from their superior abilities, even though it was in fact only a market-risk premium” (Rajan 2010, p. 3).

clients. Since regulators were using some of these ratings to define the risk levels assumed by the regulated financial institutions, the problem was even compounded.

Finally one may also draw attention to more general failures (or, erroneous beliefs) that caused ineffective supervision, as reflected in these hollow shibboleths:

- Private financial institutions care about the long-term value of the firms they finance (some banks do care but others do not)
- The market imposes discipline on leverage
- Private rating agencies are always superior to government agencies in evaluating risk (de facto, regulatory capture of rating agencies apparently has been worse than capture of governmental supervision agencies, perhaps due to specific interest conflicts in the contracts with supervised institutions).<sup>6</sup>

After the crisis it is generally apparent, and broadly discussed, that major problems with current regulation still exist. Currently, a number of reform proposals are on the table, a few of which I will mention here.

Regulation should be reformed so as to eliminate regulatory “holes”, to monitor the evolution of financial innovations, to be made countercyclical, and—in addition to existing micro regulation—to adopt a “macro-prudential” approach implying leaning against “credit bubbles” and imposing capital requirements and other tax or insurance schemes. Central to this regulation is the improvement of instruments for detecting, assessing and warning against systemic risks. These instruments should include:

- Macro-prudential indicators indicating systemic risks regarding indebtedness, risk concentrations and so on
- Monetary and credit indicators indicating the development of asset price bubbles
- Early-warning models indicating that markets are approaching a danger zone
- Macro stress models assessing the resistance of the banking system to extreme events
- Contagion models attesting the interlacement of the financial sectors.

Such instruments should be developed or improved and (if possible) used independently of political pressures.

Widely-cited assessments and proposals have also been pointed out in the “Geneva-Report” (Brunnermeier et al. 2009):

“Macro-prudential regulation should be countercyclical and lean especially against bubbles whose bursting can impair the financial intermediation sector. (...) We argue that the best measures of an institution’s contribution to macro-prudential risk are its leverage, maturity mismatch and rate of expansion. (...) Institutions which are not individually systemic, but which are (a) highly

<sup>6</sup> In the literature, further conditions that may have encouraged the emergence of the housing bubble in the US are sometimes emphasized (see, e.g., Svensson 2010; Bean 2009), for instance:

- (i) the US housing policy that supported home ownership for low-income households, and
- (ii) the low risk perception in the general public before the crisis due to the macroeconomic environment of a long preceding period characterised by a high degree of macroeconomic stability, with steady growth and low and stable inflation in most of the advanced economies. This effect was strengthened by the Fed’s self-commitment to pump in liquidity when needed, i.e. in the case of a credit-crunch driven recessionary crisis (see the next chapter for further details).

leveraged with short-term debt and (b) hold assets with low market liquidity (at times of a crisis), can nevertheless have systemic effects via joint herd-type behaviour.” (pp. 60–61)

“We argue ... that credit ratings are systematically misused in the regulatory process ... We regard both the Basel II approach to the use of credit ratings and the European proposals for their enhanced regulation as misconceived. (...) Crisis prevention can, and should, be done internationally” (p. 62).

However, despite all these regulatory failures and the listed suggestions, we shall argue in the following chapter that not only regulatory policymakers but central banks as well (particularly the US-Fed) can be held responsible for having caused the financial crisis.

### 3 Role and auxiliary functions of monetary policy

#### 3.1 Criticism

Two critical points have been raised against monetary policymakers in the context of the development of the financial crisis:

First, monetary policy, particularly that practiced by the Federal Reserve, was from 2003 to 2006 too loose and held the policy rate below the level specified by a simple rule for reacting to an output gap and inflation (see Taylor 2007).<sup>7</sup> The Fed’s practice helped cause a bubble in house prices whose inevitable crash implied a major source of the financial and economic crisis costs of the past 2 years. The rise in asset/housing prices, and implicitly the current crisis, could have been avoided, so the argument runs, had monetary policymakers not deviated from a Taylor rule.<sup>8</sup>

Although there is arguably only a weak empirical connection between the measures of monetary policy stance and house price increases (see IMF 2009: Chapter 3), “it’s become conventional wisdom that Alan Greenspan’s Federal Reserve was responsible for the housing crisis” (D. Henderson in *Wall Street Journal*, 26. 05. 2009).<sup>9</sup>

Second, a monetary policy that looked only at consumer price index inflation and the output gap is argued to be too narrow an approach. Asset/housing price inflation should have also been taken into account.

Carl Walsh even concludes that “there seems little doubt that the consequences of allowing the bubble in housing prices to continue was a serious mistake in the U.S.

<sup>7</sup> “During the period from 2003 to 2006, the federal funds rate was well below what experience during the previous two decades of good macroeconomic performance—the Great Moderation—would have predicted...” (see Taylor 2007, p. 464; see also Taylor 2009, p. 2).

<sup>8</sup> “There would have been a much smaller increase in housing starts with the counterfactual simulation of a higher federal funds rate. Hence, higher federal funds rate path would have avoided much of the housing boom, according to this model” (Taylor 2007, p. 468).

<sup>9</sup> One instance of Greenspan’s perceived responsibility is the insult of having received this year’s “Dynamite Prize in Economics” (awarded to the economist who contributed most to enabling the Global Financial Collapse).

and many other countries. The often cited analogy that using monetary policy to deflate a bubble was like taking a pin to a balloon was seriously misguided. It failed to recognize that allowing a bubble to continue until it popped of its own accord allowed the misallocation of real resources to continue, resulting in an even larger collapse than would have occurred earlier. Even on a narrow mandate that ignored financial distortions, one could argue that the growth in construction employment was inconsistent with maintaining maximum sustainable employment” (Walsh 2009, pp. 32–3).

Though these criticisms—which require assessing what would have occurred had different policy choices been made—are difficult to evaluate, one can make some general observations.

One can understand Taylor’s critique mainly as a principle objection to a discretionary “boom-bust monetary policy”—a policy that was already strongly criticized by Milton Friedman in the 1950s and 1960s. Besides, many other proponents of the view that the Fed’s monetary policy was too loose and thus a possible contributor to the crisis argue for a greater role for monetary policy in preventing and controlling housing and other asset price bubbles.<sup>10</sup> In contrast, others have defended the Fed-policy of “benign neglect”—combined with aggressive relaxation in the event of asset prices falling sharply (see Bernanke and Gertler 2001; Greenspan 2002)—as appropriate for the macroeconomic conditions that prevailed.<sup>11</sup>

### 3.2 Justification and review of benign neglect

The Fed-chairman today still defends the pre-crisis policy of the Fed and claims that “it was neither a principal cause of the house bubble nor the right tool for controlling the increase in house prices” (see Bernanke 2010a, p. 2). Besides criticising Taylor on methodological grounds,<sup>12</sup> Bernanke maintains that the aggressive monetary policy response in 2002 and 2003 was motivated principally by two factors: the recovery in 2002 and 2003 remained quite weak and “jobless”; and policymakers worried that the United States may have followed the painful experience of Japan’s “lost decade” by experiencing “double dips”, thus sinking into deflation that might have caused the FOMC’s target interest rate to hit its zero lower boundary and limited the scope for further monetary accommodation. This policy conformed to the strong

<sup>10</sup> Borio and Lowe (2002, p. 26) stated that “periods of strong credit growth, booming asset prices and high levels of investment almost invariably lead to stresses in the financial system...These regularities can be discerned purely on the basis of ex ante information and pertain to horizons that would not necessarily rule out a monetary response”. See also Borio and White (2003) and Cecchetti et al. (2003), who warned of a dangerous credit/asset-price boom or bubble and therefore argued that central banks should “lean against the wind” by raising the interest rate above that warranted by inflation and output gap.

<sup>11</sup> Moreover, this view of “benign neglect” conformed with the then-conventional wisdom of central bankers and mainstream monetary economists who favoured such a reactive policy. Greenspan (2004, p. 4) remarked: “Instead of trying to contain a putative bubble by drastic actions with largely unpredictable consequences, we chose ... to focus on policies to mitigate the fallout when it occurs and, hopefully, ease the transition to the next expansion”.

<sup>12</sup> Bernanke argues that “the standard Taylor rule makes no distinction between increases in inflation expected to be temporary and those expected to be longer lasting. In practice, however, policymakers have responded less to increases in inflation that they expect to be temporary, a reasonable strategy given that monetary policy affects inflation only with a significant lag” (Bernanke 2010a, p. 9). And: “I have explained my preference for using inflation forecasts rather than actual inflation in the policy rule” (p. 19).



consensus among researchers that policymakers, when faced with the risk of hitting the zero lower boundary, should reduce interest rates pre-emptively and aggressively for an extended period of time (see, e.g., Ahearne et al. 2002; Nakov 2008).<sup>13</sup>

However, today even proponents like Lars Svensson confess that “it may be that, in retrospect, the risk of deflation was exaggerated, but there was no way to know this *ex ante*” (Svensson 2010, p. 3). Moreover, modern literature not only tells us that central banks, when faced with the risk of hitting the zero lower boundary, should respond aggressively and keep interest rates low past the point where the equilibrium real interest rate has risen above zero, but also that, once the policy rate is raised, it needs to be increased aggressively<sup>14</sup> (at the right time and with the right dose of “exit strategy” measures).

Another line of defence of the Fed policy is based on Ben Bernanke’s view of a “savings glut” in the surplus countries (Bernanke 2005). This view was advanced as an alternative explanation for the very low interest rates over the 2003–2006 period. This savings glut was supposed to result from the agglomeration of precautionary holdings of international reserves by several emerging market economies after the Asian Crisis, a lack of an adequate household safety net in China, and windfall gains from higher oil prices in oil-producing countries. One could also argue that this “savings glut” led to the decline in long-term real interest rates during the past decade. This in turn may have encouraged financial institutions to shift into other, riskier assets in the so-called “search for yield”. One counter-argument, however, is “the fact that the global saving rate was historically low, and that over 30% of housing was financed with adjustable rate mortgages at the time” (Taylor 2009, p. 3). Another argument is that “this increase in global saving starting in 2004 plays out largely *after* the period Bernanke (2005) discussed in his ‘saving glut’ speech, and arguably was triggered by factors including low policy interest rates” (Obstfeld and Rogoff 2009, p. 22).<sup>15</sup>

The question remains whether the central banks should continue to stick to a policy of benign neglect. This position was based on the view that detecting an asset price bubble was only possible in retrospect, since bubbles cannot be identified early in real-time; and that only a very large increase in policy rates could stop such a boom, a policy that risks creating exactly the shock to the real economy it attempts to avoid. That is, monetary policy was regarded to be a blunt weapon for stopping an asset/housing-price boom and could only be successful by involving substantial collateral damage to the real economy.

However, the arguments of the defenders of benign neglect are not fully convincing, and taking the following points into consideration will indicate why:

- Central banks already respond to variables that are difficult to measure in real-time (e.g., output gap);

<sup>13</sup> Greenspan (2003) called this procedure “risk management policy” intended to reduce the possibility of deflation.

<sup>14</sup> Cf. Walsh (2009).

<sup>15</sup> Others focused their explanations more on the global imbalances associated with the counterintuitive pattern of international capital flows from developing to advanced market economies. Some argue that the direction of savings into the US financial markets was driven by the comparative advantage of the US in the creation of “high quality” financial assets from real investments (see Caballero et al. 2008). Others see it as the result of strategic exchange-rate policy: Emerging-market central banks have bought US-dollars to avoid an appreciation of their currencies and thus support their export industries.

- Bubbles distort economic decisions, leading to capital misallocation and dangerous imbalances;
- Bursting bubbles can lead to recession, financial destabilization, or even depression;
- Throughout history, bubbles have been accompanied by outbreaks of fraud and scandal, followed by calls for more financial regulation once the bubble has burst;
- Financial crises can be predicted early enough by examining other variables, such as the rate of credit expansion.

The latter argument<sup>16</sup> is also implied in the approach of Bordo and Jeanne (2002). They implicitly argue that the focus should be on the underlying cause (indebtedness) rather than on one symptom (a specific asset price) of agglomeration problems. In other words, we should favour leaning against dangers of a credit crunch associated with debt agglomeration instead of advocating the “targeting” of asset prices. From this point of view, there is no need to choose which asset price to target, to calculate with accuracy the fundamental value of individual assets, nor to “prick” a bubble. Rather, it is simply necessary to tighten policy in a way to restrain the credit or debt cycle on the upside to avoid an excessive decrease of collaterals so that there will be no credit crunch. This kind of argumentation has raised further objections to the conventional wisdom and offered new arguments that favour a pro-active monetary policy response to asset price booms.<sup>17</sup>

A second problem associated with the policy of the US-Fed was the asymmetry of its strategy regarding its announcement of how to act if an asset price boom deflates. So the US-Fed combined its benign neglect behaviour with the commitment to an aggressive monetary easing in the event of asset prices falling sharply. If a monetary authority behaves in this way, it is effectively writing a “put” that allows financial markets to sell the “financial mess” to the authority ex post. However, “it can hardly be efficient for this insurance not to be priced...” (Nier 2009, p. 7). Or, as Rajan (2010, p. 3) noted: “Tail risk taking may not have been unprofitable for bank shareholders ex ante, especially if there were implicit guarantees from the authorities to bail out the system when a crisis occurred”. And it has proved that it is by no means always easy or without cost for the central bank to clean up the result ex post.

<sup>16</sup> See, for example, Schularick and Taylor (2009).

<sup>17</sup> In the Bordo-Jeanne study, a pro-active strategy that responds to a debt-driven asset price boom by pre-emptively raising interest rates may dominate benign neglect of asset price inflation. By using benign neglect in the boom phase, central banks take the risk that the boom will be followed by a bust. If the consequent fall in asset prices that threatens to diminish creditors’ collateral base is sufficiently severe, a credit crunch will occur and lead to a sharp reduction in real economic performance. However, this crisis scenario may be avoided by a pro-active strategy, i.e. by pre-emptive monetary restriction, thus deterring firms from accumulating too much debt. This would eliminate the preconditions for a slowdown in real activity in the aftermath of an asset price collapse. Hence, a pro-active monetary policy strategy is understood by Bordo and Jeanne as an insurance against the risk of an asset price collapse and the subsequent macroeconomic decline. However, this requires an interest rate hike that is associated with immediate costs in terms of output losses and a sub-optimally low inflation rate.

Even Svensson maintains that it is “possible that the Fed’s emphasis on its readiness to relax monetary policy aggressively in the wake of a sharp fall in asset prices, as expressed by Greenspan (2002) for example, may have induced expectations of a floor under future asset prices and contributed to the asset-price boom, the so-called Greenspan Put (Miller et al. 2002)” (Svensson 2010, p. 4). However, qualifying his point, he added that “arguably, this is more of a communication issue than one of actual policy, and less emphasis on the readiness to clean up after a sharp fall in asset prices might have been a preferable alternative” (see *ibid.*). This qualification may be correct, but central bank communication should always be a crucial element of “actual policy”, since it generally affects the impact of “actual” monetary policy measures. And it unavoidably is an important determinant of a central bank’s decision as to whether to react to asset price booms in a reactive or proactive way as well (see Knütter and Wagner 2010).

A third problem with the benign neglect policy was that it underestimated the real costs associated with stabilizing the system after the bust. Moreover it underestimated the possible “change in paradigm...[that] triggers massive uncertainty, indeed Knightian uncertainty” (Caballero and Kurlat 2009, p. 2). Correspondingly, after the recent bust, even the monetary and fiscal authorities misjudged the type of crisis (liquidity vs. credit or solvency crisis). It showed that after the development of massive uncertainty, the monetary policy rate increasingly became a blunt tool so that the central banks were forced to implement new (untested) “unconventional” instruments, thus again raising the general uncertainty. This uncertainty is particularly a problem when the interest rates are already relatively low when the bust is being entered, as was the case when the recent crisis occurred. This situation has raised a new discussion about raising central banks’ inflation targets: “higher average inflation, and thus higher nominal interest rates to start with, would have made it possible to cut interest rates more, thereby probably reducing the drop in output and the deterioration of fiscal positions” (Blanchard et al. 2010, p. 8; see—during Japan’s crisis in the nineties—Krugman 1998, who also argued for raising the inflation target). Raising the inflation target, however, would probably be very costly, since the stabilisation of market expectations reached by central banks only after long-term commitment to price stability could so quickly get lost.

To sum up, the recent financial crisis has shown that “cleaning up” after the burst of a credit-based bubble is much more difficult than just “lowering interest rates”. This means that not only pro-active policy but also reactive (benign neglect) policy has to struggle with problems of identification, instrument, and credibility.<sup>18</sup> (In the prior discussion about a pro-active strategy of the central bank in an asset-price, boom-bust cycle, these problems were usually only attributed to the pro-active strategy, and not to the mainstream re-active strategy.)

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<sup>18</sup> A reactive strategy is here understood as a policy that takes the probability of a future crisis as given and tries to avoid immediate costs—associated with a pre-emptive response—by mitigating only the consequences of an expected or actual asset price bust. In contrast, a proactive strategy is one that takes account how the policy instrument can influence the probability of a future crisis and counters pre-emptively the build-up of a crisis scenario by responding to an asset price boom.

All in all, it is still an open question in the literature whether a pro-active monetary policy strategy is superior to a re-active (or even a benign-neglect) one. However, recent analyses have put the pro-active strategy in a more favourable light.<sup>19</sup>

Bordo-Jeanne's approach has already been explained above. Berger et al. [BKW] (2007) extended their approach by introducing forward-looking expectations on the supply and demand side of the economy. Thereby, they could show that generally it is not optimal during an asset price boom to stick to benign neglect in the sense of completely ignoring the possibility of an asset price collapse. Then even a purely reactive monetary policy has to respond to the possible occurrence of an asset price crash *ex ante*. The reason for adjusting the interest rate in the boom phase, however, is not that the central bank tries to counter pro-actively the occurrence of an asset price bust. Rather, it has to react optimally to changes in the private sector's expectations.

The welfare losses of the reactive strategy increase in the BKW model when forward-looking expectations are taken into account. However, the welfare implications of a pro-active strategy are not affected by the introduction of forward-looking behaviour. Therefore, the case for a pro-active strategy is strengthened by the incorporation of forward-looking expectations. In different variants of this model type, Knütter and Wagner (2008, 2010) have introduced relevant phenomena such as globalization and central bank communication as further determinants of the (non-)superiority of a pro-active or leaning-against-the-wind strategy. They can show in such an extended model analysis that, on the one hand, globalization tends to increase the parameter range in which a reactive strategy is superior to a proactive one, whereas, on the other hand, central bank communication can broaden the range of cases in which a proactive leaning-against-the-wind strategy is superior.

In addition, the public pressure after the current crisis will also drive central banks toward considering a pro-active policy in order to prevent a new "credit-based bubble" (Blinder); future policymakers "undoubtedly ... will be more willing to risk undertaking policies to deflate incipient bubbles, though the difficulty of identifying them with certainty will always remain" (Walsh 2009, p. 33). And, indeed, in the light of the recent financial crisis, central banks have started to review the contribution that monetary policy can make to counter the build-up of financial imbalances.

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<sup>19</sup> The representation of policy choices in these recent analyses is perfectly in line with the modern interpretation of inflation targeting. (Flexible) Inflation targeting means that monetary policy aims at stabilizing (both) inflation around the inflation target (and the real economy, i.e. resource utilization around a normal level). More precisely, because of time lags between monetary-policy actions and their effect on inflation and the real economy, modern interpretation of inflation targeting can be described as "forecast targeting": the central bank chooses a policy-rate path so that the forecast for inflation (and resource utilization) effectively stabilizes (both) inflation around the inflation target (and resource utilization around a normal level). See, e.g. Svensson (2010).

#### 4 A future (extended) monetary policy approach: How to integrate credit-boom-bust dangers into the monetary policy strategy

Nonetheless, the mainstream conclusion of central bankers today still is, first and foremost, that supervision and regulation policy has to be reformed. For example, Ben Bernanke, concludes that his analysis “suggests that regulatory and supervisory policies, rather than monetary policies, would have been more effective means for addressing the run-up in house prices” (Bernanke 2010a, p. 16) and that “regulators, supervisors, and private sector could have more effectively addressed building risk concentrations and inadequate risk-management practices without necessarily having had to make a judgment about the sustainability of house price increases” (p. 20). Consequently, there is great hope that reforming supervision and regulation policy can avoid financial crises in the future.

However, one may be sceptical about this kind of defence of benign neglect as an instruction for the future. The reason is that it assumes some over-optimism regarding the effectiveness and the timely implementation of regulatory policy. Experience shows that regulatory policy is mostly too slow to be really effective, particularly if it has to be implemented in an internationally coordinated way.<sup>20</sup> Rational reactions of private financiers to regulatory reforms use to be quick and individually efficient—by creating financial innovations—in neutralizing the negative effects of regulatory reforms on individual financial institutions. (We need only think of the early past decade after the announcement of the Basel-II reform in the aftermath of the Asian Crisis.) In contrast, the adjustments/re-optimization of regulatory state controls usually are slow and can only be implemented as a weak compromise among various members with different interests. These problems are aggravated if the regulatory reforms have to be found and implemented on an international basis.

Even Ben Bernanke appears to have some doubts regarding his proposal of shifting the responsibility for the emergence of asset-price bubbles solely to regulation policy, since, in the end, he writes: “However, if adequate reforms are not made, or if they are made but prove insufficient to prevent dangerous build-ups of financial risks, we must remain open to using monetary policy as a supplementary tool for addressing those risks—proceeding cautiously and always keeping in mind the inherent difficulties of that approach” (Bernanke 2010a, p. 22). Carl Walsh rephrases this as follows: “But if regulation fails to do so, central banks cannot ignore financial frictions and financial stability. Dealing with distortions involves operating in the world of the second best, and financial market disturbances may force central banks to make trade-offs among their inflation and output objectives” (Walsh 2009, p. 28). Or, as Janet Yellen puts it: “I would not advocate making it a regular practice to use monetary policy to lean against asset price bubbles: However recent experience has made me more open to action. I can imagine circumstances that would justify leaning against a bubble with tighter monetary policy” (Yellen 2009, p. 5). These statements, however, are rather vague, and, therefore, as such, not likely to be very helpful for policymakers. What

<sup>20</sup> Regulation is here understood as a set of rules; however, in the political arena, rules are selected and implemented as a result of a compromise between different participants with various interest constellations; such a compromise is slow to find and install; and it is slow to change or re-optimize.

central bank(er)s really need is an elaborated approach of how, when, and with what instruments to react if such “circumstances” appear.

A major question arising, then, is whether the interest-rate instrument is sufficient for central banks leaning-against-the-wind. After the financial crisis, a kind of common sense appears to be emerging that, in order to target not only inflation but also credit growth/asset prices, central banks would need another instrument. This additional instrument needs to have a stronger and more direct impact on credit growth and asset price inflation than monetary policy. Many suggest this instrument could or should be “macro-prudential regulation” that indicates systemic risks. Particularly, co-operation between supervision or regulatory policymakers and the central bank on “macro-prudential supervision—to protect the system as a whole—is needed to mitigate financial crises” (Yellen 2009, p. 6). Such macro-prudential regulation has to be contingent on the business cycle and financial indicators, and to include various elements such as variable capital, margin, and equity/loan requirements.<sup>21</sup> The “Geneva Report” even suggests that “the application of macro-prudential measures should be by the Central Bank; for this purpose they should be able to undertake (on-site) supervision of individual systemic institutions, separately from the micro-prudential supervisor(s). Efforts should be made to limit the administrative burden of multiple supervisors, and reporting requirements and definitions should be harmonised” (Brunnermeier et al. 2009, p. 61). The IMF also emphasizes that “central banks are an obvious candidate as macroprudential regulators. They are ideally positioned to monitor macroeconomic developments, and in several countries they already regulate the banks” (Blanchard et al. 2010, p. 12).<sup>22</sup>

In this context, it is argued that central banks so far have not put enough energy into the development of macro-prudential tools: “central banks have not always been successful in promoting systemically robust procedures for the clearing and settlement of trades in rapidly-evolving financial markets” (for instance: there is “a lack of a robust infrastructure for credit derivatives”). And “the overall framework does not appear to have been fully conducive to achieving its objectives, often leaving ill-defined the responsibilities and tools of central banks in their pursuit of financial stability” (Nier 2009, p. 3).

A way out could be offered by suggesting that ECB’s “second pillar” could fill the gap and adequately perform the function as a second instrument: “indeed, the ECB’s monetary policy strategy is very well suited for the potential use of the interest rate instrument in order to ‘lean against the wind’ of financial market excesses, in a manner consistent with the preservation of price stability over the medium and longer term” (Papademos 2009, p. 5). It may, however, be argued that in order to do this job the two-pillar strategy of the ECB would have to be reformed substantially. In a new two-pillar strategy, the ECB would have to pursue two objectives, i.e. price stability and financial stability. For example, the interest rate could be used to

<sup>21</sup> Basic questions, however, are what a macro-prudential supervision exactly signifies and what co-operation between supervision or regulatory policymakers and central banks exactly means, particularly whether supervision and regulation perhaps should be located directly at the central bank.

<sup>22</sup> Blinder (2010, p. 12) notes that “central banks were working on financial stability long before any of them had any notions about monetary policy”. And he adds that “it seems sensible to assign to the Fed responsibilities for (a) monetary policy, (b) systemic risk, and (c) supervising SIFIs—which might mean the largest 15–25 financial institutions” (p. 13; SIFIs = “systemically important financial institutions”).

achieve the inflation objective, while other instruments (such as macro prudential control) should be used to achieve financial stability (see, e.g., De Grauwe and Gros 2009). As always, the devil is in the details, in particular in the implementation of such a reform. Moreover, one could argue that a central bank that faces two such balanced objectives may take a “softer” stance against inflation because of the detrimental effect of interest rate increases on bank balance sheets. In addition, the accountability and the independence of such a central bank that pursues two objectives may be hurt by the more complex mandate and since regulatory functions or responsibilities may have to be shared with other, less independent, authorities.<sup>23</sup>

In any case, if the central bank is given a stronger role in financial stability,<sup>24</sup> these powers need to be complemented by robust mechanisms that ensure transparency and a high degree of accountability (Nier 2009, p. 5). Moreover, a good policy strategy to prevent subsequent financial crises includes a certain sensitivity during the crisis for the right timing to exit from an extraordinarily expansionary crisis-management policy.<sup>25</sup> Currently, the question about the right exit strategy, including timing, is the crucial one for central banks worldwide. Only if they succeed in exiting early enough can they avoid sliding into another credit-based bubble. However, central banks here face a trade-off: if they exit too early, they risk falling into a “double dip” recession similar to Japan’s “lost decade” experience in the 1990s.<sup>26</sup> Therefore, the relevance of clear communication (transparency) about exit strategy considerations—including the perceived risks<sup>27</sup>—by central banks to minimize shock effects (confidence loss effects) in the event of a new crisis (“double dips”) is obvious. However, specific questions might arise, such as whether the exit strategies and their communication should be coordinated internationally in order to avoid carry-trades, exchange-rate imbalances and so forth or be carried out unilaterally by single countries.

## 5 Conclusions and lessons

What we have seen during the recent financial crisis is that in a world of large asymmetries of information, complex financial innovations and incomplete regulatory

<sup>23</sup> According to the recommendations of the Larosiere Report (2009), endorsed by the European Commission, a new body called the “European Systemic Risk Council” shall be responsible for systemic macro-prudential issues within the European Union. The ECB president shall chair this new institution and the ECB logistically support it.

<sup>24</sup> Even prominent proponents of mainstream NKM monetary inflation-targeting policy obviously have doubts “that familiar prescriptions that focus on inflation and real GDP alone, such as the Taylor (1993) rule or common accounts of ‘flexible inflation targeting’ (Svensson 1997), may be inadequate to circumstances of the kind recently faced” (see Curdia and Woodford 2009, p. 1).

<sup>25</sup> This means that, as we cannot trust model analyses alone to give us the answer regarding the appropriate timing of an exit strategy, the application of good judgement of political experts in fiscal and monetary authorities—regarding the cost-benefit-comparison of alternative exit dates—is essential. Additional lessons may imply or require longer forecast horizons, though in practice there is arguably little information about anything on longer horizons except the tendency to revert to the long-term average (Svensson 2010, p. 6).

<sup>26</sup> For a first outline of the Federal Reserve’s exit strategy from its unconventional monetary policy, see Bernanke (2010b).

<sup>27</sup> Central banks have to fear various obstacles to a smooth implementation of an exit strategy, the main obstacles being political ones (particularly due to recessionary effects and unintended wealth redistributions); see, e.g., Buiters (2009).

frameworks, “self regulation” obviously does not work.<sup>28</sup> But we have also seen that the governmental stabilisation policies have not worked well either. I have argued in this paper that there have been (at least) two main contributors to the recent financial crisis. The one is supervision and regulation policy, the other is monetary policy. Regulatory agencies faced, and did not or could not prevent: (a) the emergence of poorly regulated shadow banking institutions; (b) remuneration contracts that encouraged short-termism and excessive risk taking; (c) the emergence of securitization, related to (d) systemic or macroeconomic risks; (e) interest conflicts connected with the operation of rating agencies; (f) the procyclicality in the behaviour of financial institutions and investors. On the other hand, easy monetary policy designed to ward off perceived risks of deflation in 2002–04 contributed to the boom in the housing market in 2004 and 2005 by keeping interest rates too low for too long. This tardy reaction time caused external effects on financial stability. The resulting crisis (in its size and global distribution) may have appeared to the parties affected as something new and confusing, a rare event, leading to strong uncertainty and a (perhaps temporary) change in the paradigm, in reality and in economic and financial theory<sup>29</sup>:

Reality is immensely more complex than models, with millions of potential weak links. Ex-post, it is easy to highlight the one that blew up, but ex-ante is a different matter. Each market participant and policymaker knows their own local world, but understanding all the possible linkages across these different worlds (which are mostly irrelevant except during a severe crisis when they turn critical) is too complex. This change in paradigm, from irrelevant to critical linkages, triggers massive uncertainty, indeed Knightian uncertainty (when the unknown shift from known to unknown), and unleashes destructive lights to quality (Caballero and Kurlat 2009, p. 2).

This change in paradigm has, in part, been created or, at least, strengthened through the process of financial globalization. Globalization leads to increasing, and increasingly unfamiliar, linkages and interdependencies that can easily turn critical (see, e.g., Wagner 2001; Wagner and Berger 2004).

Political reactions to such a new situation (that is, a new paradigm, rare events, no reliable and guiding experiences, and a loss of confidence in conventional views and theories)<sup>30</sup> are—and have to be—based, to a certain degree, on trial-and-error for the following years or even decades. This observation also applies to monetary and financial regulation policy. In such a situation of massive uncertainty, it is likely that we will see some over-regulation, i.e. too many (rigid) rules that could be dangerous or costly. Of course, we need to face up to needed structural changes, and place them into law (rules). However, the probability of having to re-adjust such policy rules in

<sup>28</sup> Cf. Cukierman (2009).

<sup>29</sup> This does not exclude that there have been *some* parallels with other prior financial crises (see, e.g., Reinhart and Rogoff 2009).

<sup>30</sup> The crucial question here is how to react to such a new situation of Knightian uncertainty. Should the agents act as before? This would be shortsighted. Most obvious would be a more/very aggressive reaction to shocks. This is obviously the main lesson from robust control (RC) theory: optimal monetary policy is very aggressive in the respective RC-models; i.e., the weights on inflation and output gap are multiples of those in the standard Taylor rule. However, this RC-result is sensitive with respect to the chosen model assumptions (see, e.g., Leitmo and Söderström 2008; see also Wagner 2007).



times of extreme uncertainty is high; the cost of sticking to rules is also high: “invariant and rigid policy responses raise the risk of policy errors that could lower, not raise, macroeconomic stability. Hence, discretion would be required” (Kannan et al. 2009, p. 4).<sup>31</sup> Therefore, politicians should think twice before binding their hands in times of massive uncertainty. It may be better if they try to implement diligent and, however easy-to-understand, flexible strategies and simultaneously combine them with a new and rigorous transparent communication policy. Such a policy strategy would, of course, have to include interest-rate policy in order to be able to react promptly to unforeseen events (which are an implicit part of massive or Knightian uncertainty).

This policy may accomplish its goal even though the interest rate is “a poor tool to deal with excess leverage, excessive risk taking, or apparent deviations of asset prices from fundamentals” (Blanchard et al. 2010, p. 11). That is, even if a higher interest rate decreases excessively high asset prices, it will likely do so at the cost of a larger output gap. And one can also agree that

there are other instruments at the policy maker’s disposal—call them cyclical regulatory tools. If leverage appears excessive, regulatory capital ratios can be increased; if liquidity appears too low, regulatory liquidity ratios can be introduced and, if needed, increased; to dampen housing prices, loan-to-value ratios can be decreased; to limit stock price increases, margin requirements can be increased (Blanchard et al. 2010, pp. 11–12).

Nevertheless the inclusion of interest rate policy may be seen as relevant because we should have learnt from the recent financial crisis that, as already mentioned, one cannot rely on supervision and regulation policy to act timely and effectively, since both have partly to be based on international coordination, which is extremely difficult and time-consuming to implement. On the other hand, the search for an appropriate second instrument of the central bank (in addition to interest-rate policy)—based on macro-prudential components—to counter-act financial market instability may be very difficult and time-consuming as well. As a result one may tend to follow John Taylor’s assessment that “it is wishful thinking that some new and untried macro-prudential systemic risk regulation will prevent bubbles” (Taylor 2010, p. A19). Hence, there seems to be no alternative to searching, first of all, for an appropriate proactive monetary policy strategy—which still relies on the interest-rate instrument—against future perceived excessive asset and housing price booms in the (likely) case that supervision and regulation policy again will not act opportunely and effectively

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<sup>31</sup> Unfortunately, discretion might carry a virus, namely a time-inconsistency problem. Regulators and supervisors have, for instance, incentives to announce a no-bail-out policy to encourage their charges to behave prudently. As soon as the crisis breaks out, the optimal choice for policymakers will differ from the pre-announced policy. Banks will anticipate this and run even more risks as a result. But independence of regulators may help reduce both time inconsistency and capture. Of course, it is difficult to introduce independent supervisors and regulators. One way out of this dilemma is to make the central bank responsible for these tasks as well. Then, however, there may be an interest conflict for the central bank that may also hurt its independence. An alternative way may be to delegate power to supranational bodies. The questions here are how independent these supranational bodies can really be, and whether this proposal is politically feasible, which seems more than doubtful.

enough to avoid a further credit boom-bust cycle.<sup>32</sup> And benign neglect obviously is not a useful option for a central bank, since monetary interest-rate policy always has effects—often unintended—on financial stability. Thus a central bank should not ignore the effects of monetary policy on financial stability.

But one has to take into account crucial political and economic incentives against central bank(ers)' choosing a pro-active strategy during an asset/housing price boom, even when such a strategy is socially advantageous. This incentive is that individual central bankers are unlikely to gain much by choosing this strategy, but they can lose a lot. If they are successful, very few observers may notice the dangerous situation that has masterfully been counter-acted by the central bank. But more than a few will notice the recessionary cost of a successful action, namely the stalling of the economic engine by the central bank's raising the interest rate or reducing the money and credit supply or both. On the other hand, if the central bank again follows a benign neglect strategy so that the next credit crunch and consequently another financial crisis ensues, the central bankers might claim that the responsibility was not theirs but rather that of supervisory and regulatory authorities (as long as the responsibilities are separated). Moreover, they may profit from choosing a benign neglect strategy by being recognized and remembered after the crisis as "heroes and saviours", in plain terms as successful crisis managers who avoided the worst in the crisis through flooding the market with money/liquidity. (And they may well enjoy this status despite the fact that they prepared the ground for the next credit-based bubble and consequently the next financial crisis; we should remember Greenspan's cult status during the early years of the 2000s.)

This political-economic obstacle to a socially preferable pro-active management of credit-boom dangers by monetary policymakers could only be overcome if rules are implemented that require central banks to step in pro-actively if, say, some credit and asset prices are growing at some defined above-average rate for an extended period. Such a (conditional) rule could be established either by the government or an authorized group of independent experts. This enacting of rules, of course, would not come without a cost: it would reduce flexibility and lower central bank independence. Nevertheless, it might well prove to be welfare-enhancing.

To the public, the guilty culprits are obviously greedy bankers who followed personal short-term profit interests without regard to risk or common sense; eccentric financiers who invented new financial instruments—complex new assets intended to spread risk more widely but ended up in information failings, collective action problems and network effects resulting in huge social costs—that even they did not understand; sluggish supervisors; and at best negligent central bankers who allowed an excessive increase in liquidity, credit and asset prices. To be sure, all of them played a definite role in triggering the fatal process that created the global financial crisis. However, we should avoid early assignment of guilt, and we should avoid looking for a single guilty culprit. There has been a fatal "cooperation" of various players sharing the vices of carelessness, over-optimism and imperfect and asymmetric information. In this paper I have particularly focused on the role which major central banks (mainly the US-Fed) have played in this process of fuelling the asset-price, boom-bust cycle that led to the sub-prime crisis and the following global financial crisis.

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<sup>32</sup> Research on this topic should be intensified. The present author favours conducting such research along the lines of Bordo and Jeanne (2002), Berger, Kiffmer and Wagner (2007), and Knütter and Wagner (2008, 2010).

I would like to conclude with an even more general point. Not only monetary and regulatory policymakers have to learn their lessons from the financial crisis and to rethink their strategies. The macroeconomics profession as well has to reorientate its goals. Here it would be important to recognize that we can learn a lot from history, that we should bring financial intermediation back into macroeconomics in a meaningful way, that we should introduce psychology and the insights of behavioural economics into economic studies, and that we ought to learn from developing macroeconomic studies that include a sufficiently rich specification of the financial intermediation sector.<sup>33</sup> This reorientation alone may not afford us more beneficial practical solutions, but it would avoid our losing focus and relying too much on highly stylized model-based results in political consultation.

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<sup>33</sup> These kinds of general lessons were also drawn by Bean (2009).

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