States, Banks and the Financing of the Economy: Monetary Policy and Regulatory Perspectives

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1. INTRODUCTION

Morten Balling, Ernest Gnan & Patricia Jackson

On 5-6 September 2012 SUERF organised its 30th Colloquium *"States, Banks, and the Financing of the Economy"* at the University of Zürich, Switzerland. The papers included in this SUERF Study are based on contributions to the Colloquium.

Chapter 2, "Taming the financial cycle" is based on the keynote speech by *Jean-Pierre Danthine,* Vice-President, Schweizerische Nationalbank. The US subprime crisis has had lasting consequences. The ongoing financial crisis has very high costs. There is no room for complacency. Systemic risk arises because an optimising financial institution does not take full account of its influence on other financial institutions. Banking is a high-levered activity and there is a tendency to excess risk taking in good times. During down turns, pro-cyclical behaviour is reflected in the sale by banks of risky assets in order to maintain the capital base in line with regulations or internal risk measures. This implies asset price declines and further worsening of the banks' capital situation etc. A more comprehensive financial stability framework is needed. It should strengthen the resilience of the financial system and prevent the build-up of imbalances in line with the principle "Leaning against the wind". In Switzerland, the interest rate instrument is not available to put a brake on the upturn in the property- and mortgage market due to the situation in the foreign exchange market with upward pressure on the Swiss Franc. So, in June 2012 a new package of measures including counter cyclical buffers (CCBs) was introduced. In boom periods additional capital buffers can be built up, and they can be diminished in down turn periods. The Swiss National Bank can propose to the Swiss Federal Council to activate CCBs, when there is a need to do it. The goal is to smoothen the cycle, but realistically not to remove it. The availability of a tool such as the CCB is a significant step forward. It can and will be used in a balanced and flexible way to deal with specific cyclical risks to financial stability.

Chapter 3, "Liquidity and interbank markets" is based on the keynote speech by *Jean-Charles Rochet,* Professor of Banking, University of Zürich. Repo markets have played a big role during the financial crisis. Central banks have established temporary repo facilities in order to provide liquidity to market participants. In the US, a few large institutions have a dominating position in the interbank market. There is a risk of contagion through OTC derivatives dealers. In Europe, there is fragmentation of settlement procedures. The traditional role of banks is maturity transformation – short-term deposits are transformed to long-term opaque loans. We need a new model for dealer banks. In the Northern Rock case,

the run was lead by wholesale depositors. There is a complex nexus of OTC transactions, where market participants do not know who their counterparties are. There is uncertainty about loss-sharing rules. A solution could be to adopt a Central Counterparty Model for vital market participants. This would reduce contagion risk and provide more transparency. But of course the centralised clearing process should be regulated.

Chapter 4, "Money and banking in times of crisis" is the 2012 SUERF Marjolin Lecture by *Lorenzo Bini Smaghi,* Harvard University. He compares Europe with a journey. The Common Market, EMU and maybe a forthcoming fiscal union are bringing people closer together. The journey entails further political integration. In the US, Alexander Hamilton convinced the Congress to merge the debts of the states. This was vital for the formation of the United States of America. Perhaps something similar could happen in Europe. In solving the current European problems the key questions are: What shall be done? Who should do it? And how? The ECB can only aim at the average economic situation in the Euro area as a whole, but there is wide dispersion in the Eurozone. Seventeen governments are accountable to their citizens. The ECB has adapted its monetary policy during the crisis. The move to a system where counterparties can apply for liquidity was intended to be temporary. The unlimited provision of liquidity allowed banks to postpone needed structural changes. With the benefit of hindsight, the ECB Governing Council underestimated the full extent and long-lasting nature of the crisis and initially insisted too much on the temporary nature of non-conventional measures. Cross-border money market flows have declined. Banks refrain from placing funds in stressed countries. We no longer have a single euro area money market. The ECB plays a large role as intermediary in the money market. Claims are safe if channelled through the ECB. More supervisory powers should be transferred to the ECB. In the bond markets, the prevailing spreads are out of line with equilibrium in the Euro area. The monetary policy transmission mechanism needs to be fixed. Markets must be convinced that the ECB and the governments will do what is needed. Politicians cannot at the same time ask for more "Europe" and more "sovereignty". The Euro area crisis has reached a stage where member states must commit themselves to deeper European integration and transfer of sovereignty.

Chapter 5, "Marriner S. Eccles and the 1951 Accord – Lessons for central bank independence" by *Thorvald Grung Moe,* Norges Bank, deals with an important period in recent American economic and fiscal history. The chairman of the Board of Governors of the Federal Reserve System from 1934 to 1948, Marriner S. Eccles, was a close adviser to President Roosevelt and played a key role in the reforms of the Banking Act 1935. He was the main architect of the new Federal Reserve System. After the Second World War under President Truman, he was deeply involved in a conflict over coordination of monetary and fiscal policies

between the US Treasury and the Fed and also in the formulation of the Accord in March 1951, which solved the conflict. The author gives an overview of some lessons from the 1951 Accord with relevance for the current fiscal and financial crisis in Europe. There is a permanent need for coordination between fiscal and monetary policies. Central banks should not be omnipotent. Central banks should fight inflation but also prevent deflation. Central banks need to regain control of the money supply. Central banks should support fiscal policy in a depression. Against this background, the author concludes that a change in the current central banking paradigm is needed. It is time for a more balanced central banking paradigm supporting compensatory policies – in the spirit of Eccles.

In chapter 6, *Jerzy Marzec* and *Malgorzata Pawlowska,* National Bank of Poland, look at the substitution between trade credit and bank credit during credit rationing. Their econometric model uses panel data for 2001 to 2009 from information reported by Polish enterprises. The study shows that substitution of bank credit by trade credit is intensified in times of financial crisis (2008 and 2009). Companies for which access to credit is limited raise funds through trade credit, i.e. they borrow from their suppliers of goods and services. Small companies are influenced by restrictive credit policy to a greater extent than large companies.

Chapter 7, "Bank resolution reform as a commitment device against bailouts" by *Andrew Gimber,* European University Institute, looks at the design of bank resolution regimes. He presents a theoretical model in which a government must decide how much to invest in the efficiency of its resolution regime. In the presence of moral hazard, the optimal policy can depend on whether or not the government can costlessly commit not to bail out failed banks. The benefits of improved bank resolution regimes and similar reforms may be greater than a consideration of their ex post benefits alone would suggest. The author was awarded the 2012 SUERF Marjolin Prize for having made the best contribution to the Colloquium by an author below the age of 40.

In chapter 8, "Regulatory reforms and the independence of central banks and financial supervisors", *Alex Cukierman,* Berglas School of Economics, CEPR and Tel-Aviv University, looks at institutional arrangements with implications for the independence of monetary and supervisory authorities. One beneficial effect of the recent crisis is that it induces institutional changes designed to reduce the likelihood of systemic crises through reforms of the regulatory and supervisory systems. The short-run response of monetary policy, and subsequently of fiscal policy, has created a new state of affairs in which the central bank holds a large share of debt in the economy and in which the share of public debt in GDP is expected to increase substantially. When the economies emerge from the crisis, this new state of affairs may create a painful trade-off between price stability and

financial stability. The central bank's role as owner of many sovereign bonds and its potential role as macroprudential regulator have implications for central bank independence and the independence and professionalism of other financial regulators.

Edward J. Kane, Boston College, discusses in chapter 9, "Gaps and wishful thinking in the theory and practice of central-bank policymaking", the interplay between safety nets and the potential burden of these nets on taxpayers. Safety net subsidies are characterised by the author as the favourable side of an implicit political contract that allows regulators at their discretion to transfer losses incurred by large and politically powerful institutions to ordinary taxpayers. There exists in fact a shadowy "taxpayer put", which is not reported in government or bank accounting statements and therefore not understood clearly by those who are obliged to pay the bill for its exercise (i.e. the taxpayers). The author proposes that banks and their regulators should be obliged to measure and disclose variations in the size of the taxpayer put, when the safety nets are adjusted, and to strengthen regulators with technical expertise and sufficient ethical commitment to control the regulated on behalf of the public.

Chapter 10, "Bail-ins and the appropriate size of financial sectors" is based on contributions to a panel discussion by *D. Wilson Ervin,* Credit Suisse, and *Stephen Cecchetti,* Bank for International Settlements. When a bank becomes insolvent, an option can be to recapitalise it through a bail-in of stock and bond owners. An important advantage of such a solution is that injection of government funds is avoided. Contingent capital can be thought of as a structured, contractual form of a bail-in mechanism. Stephen Cecchetti argues that financial sectors can become too big. Over-developed financial systems could in his view if appropriate be reduced by applying the tax system. Not surprisingly, other participants in the panel discussion disagreed.

All the papers in this publication discuss from different angles the complex interrelations between states and financial systems, which have developed in recent years with economic, financial and sovereign debt crises. The contributions look primarily on the monetary policy and financial regulation and supervision perspectives. In the preceding SUERF Study (2013/2), the focus of the contributions also delivered at the 30th SUERF Colloquium is on fiscal policy and sovereign debt perspectives.

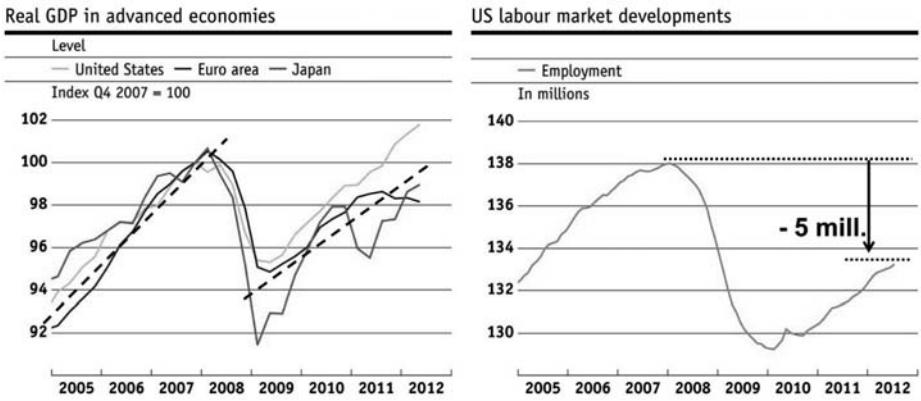
2. TAMING THE FINANCIAL CYCLE

Jean-Pierre Danthine[1]

2.1. INTRODUCTION

The global financial crisis has been weighing heavily on the world economy since 2007. The crisis was severe. In most advanced countries, the recovery has been weak in historical comparison. Many of these economies are struggling hard to regain the jobs lost during the last four years (Figure 1)[2].

Figure 1. Consequences of the subprime Crisis



Source: SNB

The crisis originated in the bursting of a house price bubble driven by an excessive credit expansion in the US, which eventually pushed the global financial system to the brink of collapse. In some countries, such as Spain or Ireland, the crisis was further compounded by the bursting of their own housing bubbles. In this regard, the current crisis is an excellent example. Historical evidence shows that the macroeconomic cost of an asset price bubble that bursts is particularly severe when the property market is affected. Moreover, such events tend to be more costly when the bubble is financed through credit and when leveraged financial institutions are directly involved[3].

1 I would like to thank Till Ebner for his valuable support in drafting this speech. My thanks also go to Robert Bichsel, Maja Ganarin, Terhi Jokipii and Claudia Strub for their helpful comments.

2 In the US, for instance, it is already three years since the recession ended, in technical terms. Economic growth has settled at a modest 2% on average and only about a third of the jobs chopped during the downturn have been restored (approx. 2.5 million, compared to 7.5 million). Even worse, growth in the euro area has now all but come to a halt, and the currency union is faced with increasing unemployment.

3 Crowe *et al.* (2011).

Switzerland has been less affected by the recent crisis and has recovered more quickly from it. There is no room for complacency, however. The recovery has been boosted by a thriving housing market and strong credit growth. In the wake of this, the medium-term risk to financial stability has been increasing. The dismal consequences of the recent global crisis as well as of our own housing market crisis experience in the early 1990s are stark reminders that we should not take any chances in this regard. We must ensure that a similar crisis does not materialise in our country again.

How can we improve our ability to contain risks to system-wide stability knowing that, in case of adverse shocks, these risks can materialise with devastating consequences for the broader economy?

In the first part of my speech, I argue that what is referred to as a macroprudential approach to financial regulation is an important missing link in our quest for a more comprehensive financial stability framework. It provides the necessary complement to sound microprudential regulation and supervision as well as to a monetary policy that focuses primarily on price stability.

I argue, in the second part of my speech, that the case for macroprudential policies applies strongly in Switzerland. Against a background of persistently strong growth in the Swiss credit and property markets, the availability of a new macroprudential instrument, a countercyclical capital buffer (CCB), is an important step forward. I will describe the key features of this important new instrument.

2.2. How to Deal with Systemic Risk: The Case for Macroprudential Regulation

Let me proceed straight to the key problem at hand: the issue of systemic risk in financial markets.

In general terms, systemic risk arises because an optimising financial institution does not fully account for the cost that its behaviour imposes on other financial institutions. That is, at heart, systemic risk originates in a negative externality imposed by individual financial firms on the system. The underlying sources of systemic risk can be either structural or cyclical.

The structural dimension of systemic risk is linked to spillovers associated with three key properties of modern banking: high leverage, limited liability and interconnectedness.

On its own, high leverage implies a higher risk of insolvency. Combined with limited liability, high leverage often leads to excessive risk-taking. This is because, with limited liability, the diverse set of stakeholders (managers, owners, creditors)

benefits from the upside of risk-taking but does not fully bear the cost when these risks materialise. As a consequence, there are strong incentives to leverage the balance sheet beyond the level which would be chosen if the individual stakeholders were fully exposed to the associated increase in the risk of default.

This problem of socially excessive risk-taking is particularly damaging in the case of large interconnected institutions whose failure would endanger other institutions, with adverse consequences for the broader economy. Finally, the issue is further exacerbated if an implicit or explicit guarantee of state support is extended to such institutions. The chain of distorted incentives which has just been described, and, in particular, the moral hazard issue implied by the guarantee of state support, is now well recognised and is being addressed energetically by the various regulators[4].

The second source of systemic risk has a cyclical dimension (Figure 2, p. 14). This is the aspect on which I would like to focus today. Here, systemic risk arises from the procyclicality of financial agents' behaviour, leading to the amplification of financial cycles[5]. Procyclicality can arise, for instance, from the tendency to underprice risk during booms and to overprice it in downswings. Sometimes exacerbated by regulatory requirements, it causes agents to take similar actions in case of an adverse shock, namely to dispose of risky assets when prices fall. While this behaviour may be individually rational, the outcome can be socially devastating. Indeed this collective reaction tends to amplify an initial price movement, thus leading to another round of asset selling, in particular if the boom is mainly financed through credit. A financial system facing such strains is forced to retrench further from risk-taking and eventually from credit intermediation, leading – in extreme cases – to an outright credit crunch.

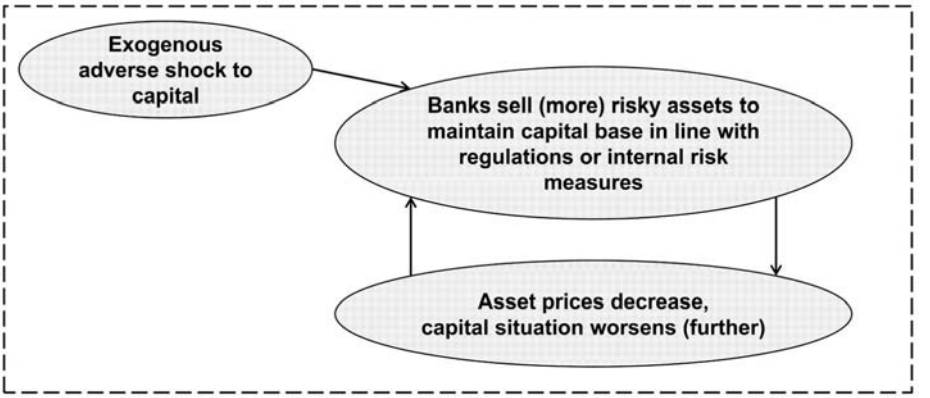
2.2.1. How to Deal with Systemic Risk – the Traditional Approach

While these arguments are not profoundly new, the policy consensus before the current crisis was dominated by a reluctance to address systemic risk issues directly. This consensus was based on two key arguments.

First, it was largely assumed that securing the solidity of individual financial institutions would also grant system-wide stability and thus that regulation at the level of individual firms – micro-regulation – would suffice. The crisis has shown that this view is clearly questionable. As just described, risk in a financial system can arise quasi endogenously, even if individual financial institutions appear to be robust.

4 For more details, namely on ways to address TBTF issues, *cf.* Danthine (2011).
5 Bank of England (2011).

Figure 2. Pro-cyclical behaviour and systemic risk



Source: based on Danielsson, Shin & Zigrand (2011)

The second critical element of the pre-crisis policy consensus is known as the 'Greenspan Doctrine'. This states that pricking an asset price bubble is in general more costly than cleaning up after the bubble has burst. The foundation of this doctrine is that it is simply too difficult to identify ex ante when a bubble is forming. Specifically, it is inherently difficult to disentangle situations where a credit or asset-price boom is justified by fundamentals from those where it is based on misplaced expectations and is thus a threat to financial stability. As a result, an attempt to prick a bubble may lead to an intervention that puts a halt to 'a good boom' which would have pushed the economy towards a higher level of development. The cost of such unwarranted interventions in the form of foregone growth could be substantial[6].

2.2.2. How to Deal with the Cyclical Dimension of Systemic Risk – a Macroprudential Approach

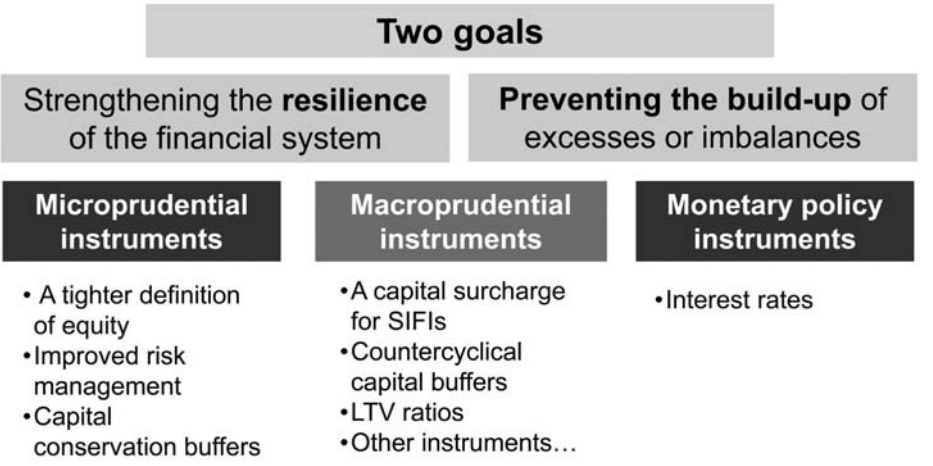
The immense cost of the global crisis has led to a thorough rethinking of this traditional view on financial regulation and macroeconomic policy. For instance, estimates have been provided suggesting that the cumulated output loss incurred by the recent crisis could amount to 90% of 2009 world GDP[7]. Naturally enough, the afore-mentioned approach of 'benign neglect' is no longer seen as an acceptable way to deal with potential excesses building up through the financial cycle.

[6] Blinder and Reis (2005).

[7] Haldane (2010); Calculations based on former banking crises suggest that, on average, about 10% of GDP is lost initially (peak-to-trough) and that the cumulated (longer-term) cost may have added up to 20-100% of pre-crisis GDP (BCBS (2010)).

Given that the cost of inaction when imbalances develop in the credit market can be huge, a more precautionary approach is indispensable (Figure 3). In general, its goal should be, first, to enhance the resilience of the financial system to adverse shocks, and second – to the extent possible – to try and preventively contain the build-up of systemic risk. This is the thrust of the macroprudential approach. For instance, in order to address the root cause of cyclical systemic risk directly, the goal of this approach should be to reduce the procyclicality of financial agents' behaviour.

Figure 3. Macroprudential approach: towards a more comprehensive financial stability framework



Can we hope to achieve this with monetary policy instruments, or do we need new specifically designed instruments?

Monetary policy comes to mind since it is conceivable that we might use the interest rate instrument more aggressively in the face of mounting cyclical excesses in the credit and real estate markets. Raising interest rates in the case of a credit boom – leaning against the wind – is a natural response, as the higher market borrowing rates would exert a dampening effect on credit demand and – eventually – on real estate prices[8].

Using the interest rate to contain asset price growth would, however, regularly lead to deviations from the interest rate path that would be optimally justified by the pursuit of the price stability mandate. This is an illustration of the well-known principle according to which the number of policy tools should equal the number of policy goals.

[8] White (2009).

At a more practical level, empirical evidence suggests that the interest rate may be an inefficient tool when used single-handedly for the purpose of dampening the financial cycle. That is, containing a boom may require very large interest rate movements, leading to commensurate output losses[9].

In sum, while interest rate policy may at times be counted on to support efforts to contain financial stability risks, it is unlikely to suffice as the main, or sole, instrument in doing so.

Thus the deployment of specific macroprudential instruments, targeted directly at the specific source of systemic risk, seems appropriate. There are several potential candidates – ranging from capital and liquidity oriented tools, to taxation or outright bans on certain financial activities[10]. Ex ante it is difficult to single out *the* best instrument, independently of the context and the targeted source of systemic risk.

I will abstain from an in-depth discussion of the catalogue of proposed tools and rather focus on a practical case study, namely the macroprudential instrument introduced in Switzerland earlier this year, the countercyclical capital buffer (CCB).

2.3. MACROPRUDENTIAL REGULATION IN SWITZERLAND

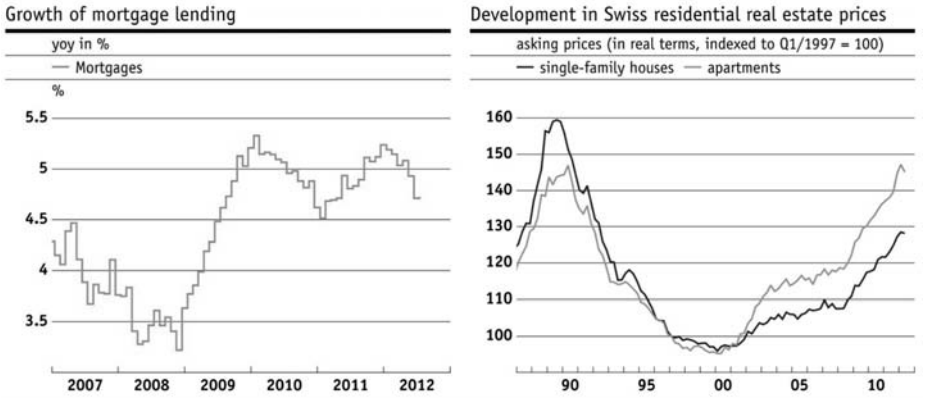
Why do we need this instrument?

In Switzerland, the indications of a gradual build-up of cyclical imbalances in the mortgage and real estate markets have become increasingly evident over the past few years (Figure 4). In the last three years, yearly growth rates of mortgage lending and real estate prices have amounted to about 5% on average[11]. These numbers may not be spectacular compared to the double-digit growth rates often observed during later build-up stages of a bubble. However, these growth rates are atypically high when compared to the below average economic growth observed during the last three years. As a consequence, the mortgage-lending-to-GDP ratio has reached historical heights while, in some segments and regions, residential real estate prices exceed levels that can be justified by fundamental factors such as demographics or income.

Given these developments, Switzerland is facing an increasing risk, both of defaults in the mortgage market and a sizable correction in property prices, either

[9] Danthine (2012).
[10] Taxonomy as proposed in De Nicolo *et al.* (2012). For an overview on macroprudential instruments and international experiences, *cf.* CGFS (2010).
[11] Over the past three years, annual real growth amounts to, on average, 4.4% (houses) and 5.5% (apartments). Annual real mortgage growth over the past three years amounts to, on average, 4.8%.

Figure 4. Macroprudential in practice: The Swiss case



Sources: SNB, W&P

of which might impair financial stability in the medium term. Specifically, an adverse shock – such as rising interest rates, lower growth or increasing unemployment – would leave some borrowers unable to service their loans, increasing the possibility and number of defaults, and ultimately leading to a vicious feedback loop of falling property prices and impaired balance sheets throughout the banking sector.

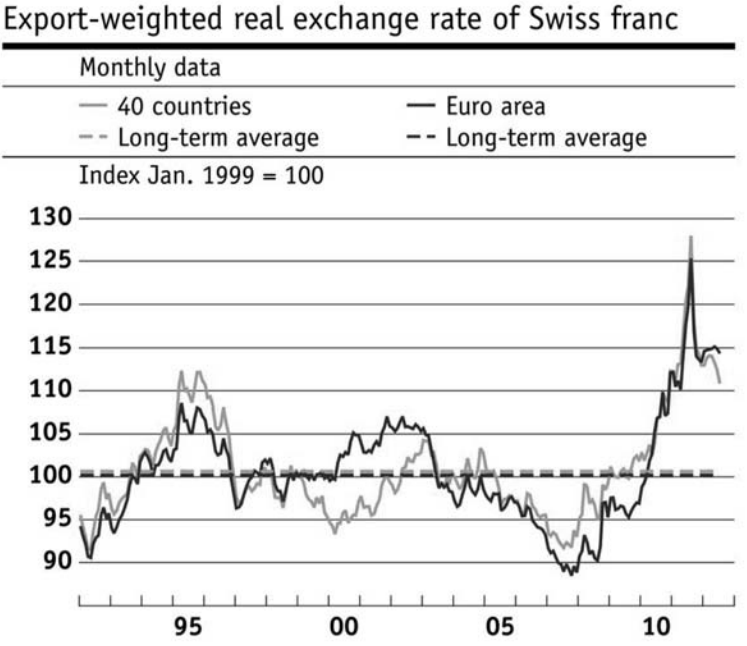
At the same time, Switzerland currently serves as perfect example for the aforementioned argument that the interest rate is unlikely to suffice as instrument to ensure financial stability (Figure 5, p. 18). Notably, it is clear that the current exchange rate situation invalidates the interest rate as an available instrument to dampen the persistently strong growth in credit volumes. At present, the interest rates required for monetary policy objectives differ considerably from those required for financial stability policy objectives. This perfectly demonstrates the need for specific instruments to be able to address both policy objectives – financial and price stability – simultaneously.

Against this background, the Federal Council announced a package of measures in June 2012 addressing these risks in the mortgage and real estate markets.

In addition to the CCB, this package consists of a structural revision of capital requirements for residential mortgage lending as well as a revision of the banking industry's self-regulation guidelines. The first of these measures consists of a permanent increase in the risk-weighting[12] for the loan tranche exceeding the 80% loan-to-value ratio. The second measure requires a 100% risk-weighting for new

[12] The risk-weighting is increased from 75% to 100%.

Figure 5. Swiss case: Interest rate not available due to unfavorable exchange rate situation



Source: SNB

mortgage loans which do not meet tighter minimum requirements stipulated in the banks' revised self-regulation guidelines[13].

The CCB, for its part, is a pre-emptive measure that allows authorities to temporarily raise capital requirements in the banking system as imbalances in the credit market develop. When activated, banks will be required to gradually build up an additional capital buffer of up to 2.5% of total domestic risk-weighted assets during the upswing in the credit cycle. The CCB requirement is a supplement to other capital requirements. Once risks have materialised, or if the intensity of risk is subsiding, the capital buffer generated from the CCB is released, either immediately or gradually.

2.3.1. The Key Features of the CCB

The CCB combines several key features that directly address the problem of cyclical risks to financial stability.

[13] These minimum requirements are twofold: First, at least 10% of the value of the collateral must be provided in equity from sources other than borrower's pension assets. Second, the mortgage debt on residential properties has to be repaid such that it amounts to no more than two-thirds of the collateral value after 20 years.

In particular, when activated, the CCB should help reduce the amplitude and the consequences of imbalances for financial stability. The CCB should increase resilience by ensuring that an additional buffer of capital is built up gradually during the boom, a buffer that can then be released to cushion losses in an eventual downturn. It thus limits the threat of vicious fire-sale spirals. Moreover, by increasing the relative cost of providing credit, the CCB should help to lean against the build-up of excesses.

In addition, the buffer is designed in such a way that it can be implemented on a broad basis or can target specific segments of the credit market only. Currently, for instance, signs of a build-up of excesses in the Swiss credit market merely relate to the domestic mortgage and residential real estate markets. Thus, if the buffer were to be activated, it would be aimed solely at this segment of the credit market.

Not least, a CCB is one of the key components of the reforms of international financial regulation (Basel III framework). It will be introduced by most countries within the next few years. In this context, criticism has been raised that an early introduction of the CCB would cause competitive disadvantages for the Swiss financial sector in international comparison. For various reasons, this criticism is invalid. First, the CCB will be activated only if deemed necessary; most of the time, it is likely to remain turned off. Second, if activated, the CCB would be applicable to Swiss banks and to subsidiaries of foreign banks in Switzerland, ensuring a level playing field. Third, given the geographical diversification of the two big banks, an activation of the CCB focused on domestic risk-weighted assets would not have a material impact on these banks' overall capital situation. Finally, by contributing to financial stability and hence reducing the risk of domestic banking crises, the CCB should help increase the overall long-term attractiveness and competitiveness of the Swiss financial sector.

2.3.2. How the CCB Works

Let me now address four key questions pertaining to the functionality of the CCB; and, for that matter, of any macroprudential instrument targeted at containing the cyclical dimension of systemic risk.

First, how do we know that imbalances have reached a level such that an activation of the CCB is warranted?

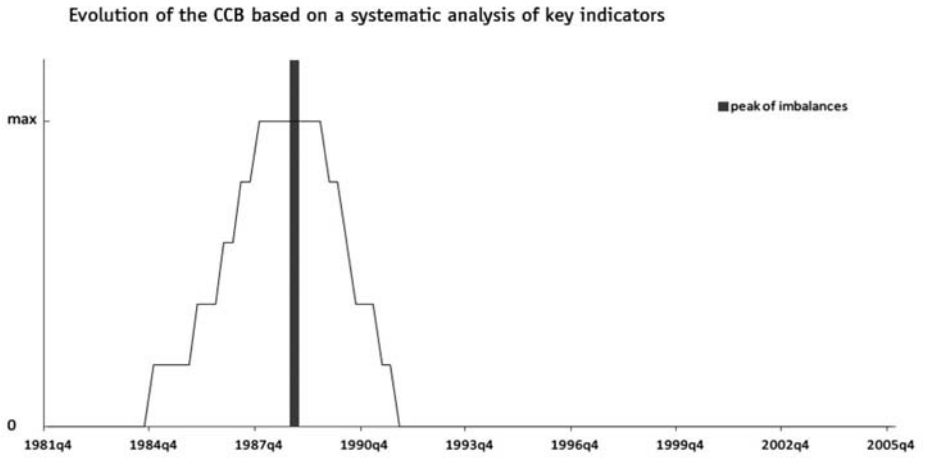
As mentioned earlier, identifying unsustainable developments in asset and credit markets is inherently difficult. Thus, the aim cannot, and should not, be to surgically prick bubbles or to fine tune asset-price or credit market developments.

It is easier, however, although not trivial, to identify situations of intensified financial stability risk. In such cases, taking precautionary action is fully justified.

The question should thus be rephrased as 'How can we identify that the build-up of risk is approaching a critical stage?' International evidence suggests a palette of quantitative early warning indicators that are reliable with respect to predicting banking crises and financial instability. For instance, real estate boom-bust cycles are particularly damaging when associated with increased leverage in both the real and financial sectors. To obtain a more accurate picture of the intensity of systemic risk, a combination of indicators should be monitored simultaneously[14].

In this spirit, the Swiss approach relies on a combination of indicators to assess whether, and to what extent, the activation, adjustment or deactivation of the CCB is warranted[15]. These indicators have been chosen based on their past performance as early warning indicators both for Switzerland and internationally (Figure 6).

Figure 6. How the CCB works: Principle of "guided discretion"



Source: SNB

Still, a purely mechanical response to financial stability risk depicted by a set of indicators, while providing a certain degree of transparency, is risky. For instance, it would leave no room for considering the influence of developments not captured by these indicators. As a consequence, an element of discretion should be embedded in the decision to activate the CCB, or not, at a given point in time[16].

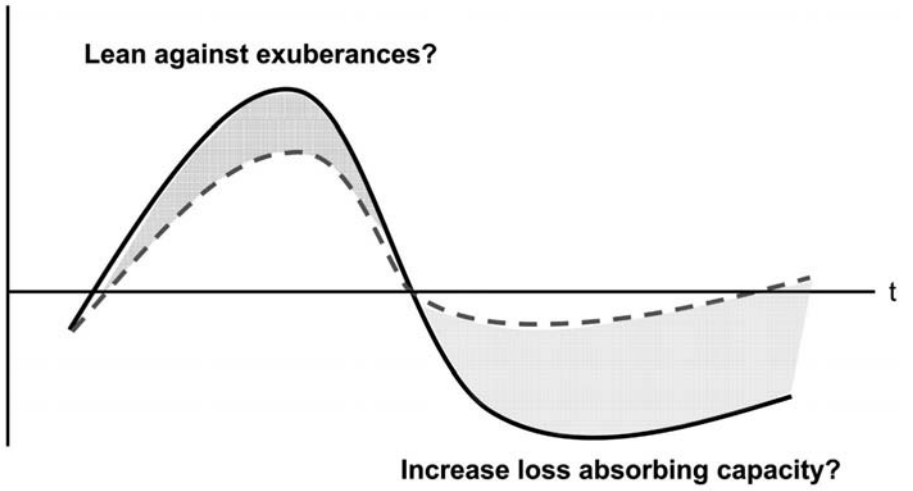
The current situation provides a good example: The medium-term risks to financial stability remain high, with imbalances in certain segments persisting. Some

[14] IMF (2011), Drehmann *et al.* (2011).
[15] Namely, domestic mortgage volume indicators and domestic residential real estate price indicators.
[16] For a detailed description of this principle of 'guided discretion', *cf.* SNB (2012).

recent data releases, however, indicate a possible slowdown in momentum in Swiss mortgage and real estate markets during the second quarter of 2012. In addition, the effect on credit momentum of the other measures announced by the Federal Council in June 2012, namely the revision of the risk-weighting and the self-regulation rules, remains to be seen[17]. Taking these issues into consideration, the SNB decided in August 2012 not to issue an immediate proposal to the Federal Council for activation of the CCB. It will reassess the situation regularly.

The second key question pertaining to the functioning of the CCB is whether it is an effective instrument to strengthen the resilience of the financial system and thus help to limit negative spillovers (Figure 7).

Figure 7. How effective is the CCB? Expectations must remain realistic



The impact of higher capital ratios and more provisions on the resilience of banks is self-evident. This is also the case from a system-wide perspective. To assess the effectiveness of the CCB in strengthening resilience, we can draw some lessons from historical experience, namely the Swiss real estate crisis in the early 1990s. Internal calculations suggest that, had the proposed CCB regime been in place in the run-up to that crisis, the resilience of the system as a whole would have increased significantly. From an aggregate perspective, this additional capital would have absorbed a large portion of the losses that were reported as a result of the crisis.

[17] Both measures are designed to have a dampening effect on house prices and mortgage volume momentum. The former will be effective from January 2013, the latter already from July 2012 with a transition period until November 2012.

The third key question is: To what extent the CCB is able to contain the build-up of excesses?

Here, international empirical evidence suggests that tighter capital requirements have, on average, a dampening impact on credit volume. This impact of tighter capital on lending is greater when the implementation period is shorter[18]. Moreover, the increase in capital requirements may lead to a significant reduction in the likelihood of a systemic crisis[19].

Expectations concerning the effectiveness of leaning against the credit cycle must remain realistic, however. There is no guarantee that activating the CCB will fully eliminate future imbalances in the Swiss mortgage and real estate markets. Inherent uncertainty regarding the strength of its impact and hence the appropriate calibration remains. Moreover, if banks hold significant capital cushions even before the CCB is activated, the desired countercyclical effect on credit growth may be weakened. We can note, however, that even if the CCB has no effect on aggregate credit growth, it will nonetheless be useful if lending is shifted from relatively weak banks (constrained by the CCB) to more resilient banks (benefitting from a sufficient capital buffer).

Let us now turn to the fourth question pertaining to the functioning of the CCB: How does it perform with respect to potential side-effects?

The most important concern in this regard is that, if the CCB generates capital constraints at some banks, these banks will need to decide which sector to keep lending to. It may seem reasonable that institutions will prefer to keep lending to the booming sector, while cutting back on lending to other sectors.

The design of the CCB takes such undesired side-effects into account. In particular, the sectoral approach alleviates this problem to some extent. By increasing the cost of granting credit to a given sector (real estate lending) relative to others, it should discourage lending to the former as it is 'penalised' in terms of higher capital requirements. And, thanks to its dynamic nature, the CCB can be flexibly adjusted, should it still have undesired consequences in other segments of the credit market.

2.4. CONCLUSION

To sum up, the global crisis has clearly stressed the need for a more comprehensive approach to financial stability. The potential cost of a systemic crisis is sig-

[18] BCBS (2010) and BIS (2010). These estimates suggest that the median impact of increasing capital ratios by 1pp is a 1-2% reduction in lending.
[19] BCBS (2010).

nificant. Remaining idle is no alternative. We must insist on addressing systemic risk issues head-on. This is the intent of macroprudential instruments.

In Switzerland, financial stability risk is currently building up, driven by persistently strong momentum in the mortgage and real estate markets. Against this background, the availability of a tool such as the CCB is a significant step forward. The CCB is a 'soft', incentive-oriented instrument based on the principle of prudence. It can and will be used in a balanced and flexible way to deal with specific cyclical risks to financial stability.

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3. Liquidity and interbank markets[1]

Jean-Charles Rochet

My objective here is to examine two questions:
- What's wrong with interbank markets (and especially repo markets), on both sides of the Atlantic?
- Why is the current regulatory perspective ill-suited to deal with systemic risk?

3.1. Repo Markets: a Reminder

A repo is a sale of securities coupled with an agreement to repurchase the securities at a specific price on a later date. Repo markets perform essential functions:
- they provide secured investments to cash investors (money market);
- they allow borrowing/lending of securities;
- they indirectly boost liquidity on some financial markets (Treasuries, derivatives).

To avoid the collapse of these markets during the crisis, Central Banks have taken extraordinary actions:
- the Fed has established temporary facilities to provide liquidity to market participants: PDCF, TSLF;
- the ECB and the BoE have accepted to lend to more counterparties, and enlarged the scope of eligible collateral.

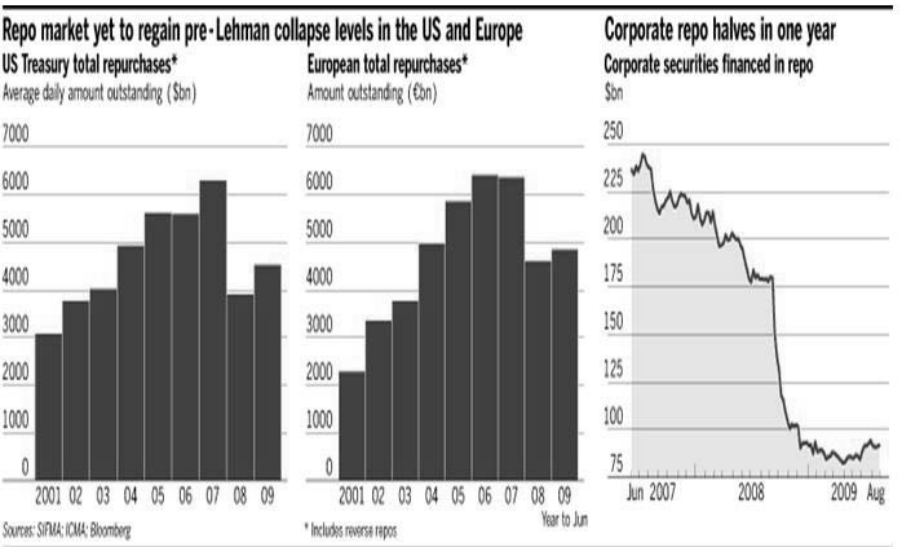
This has not prevented a sharp reduction in the activity of these repo markets (see Figure 1, p. 26).

A special form of repos, the tri-party repos, is particularly popular in the US (they represented roughly USD 1.7 trillion in 2010 Q1, roughly ⅓ of the overall market) but they are less so in Europe (roughly 8% of the overall market). In tri-party repos, an intermediary (the clearing bank) facilitates transactions by providing operational services:
- custody of securities;
- settlement;
- valuation of collateral;

and, more importantly, by extending intraday credit to market participants.

[1] This is the text of the presentation I gave at the 30th SUERF Colloquium. It relies heavily on my paper "Regulating Systemic Institutions"(2009), *Finnish Economic Papers, 22(2),35-46*. Many thanks to Quynh Anh Thi Vo for her wonderful research assistance.

Figure 1



Several concerns have been expressed about tri-party repos (NY Fed White Paper, 2010)

- US market is dominated by 2 clearing banks: BONY Mellon and JPMorgan Chase;
- the activity is very concentrated: 10 biggest dealer banks represent 85% of cash borrowing, 65% of security lending and large dealer positions around USD 200billion);
- main actors are big on other markets: JP Morgan Chase is largest OTC derivatives dealer (USD 79 trilliion notional position, end 2009) and largest manager of hedge funds (USD 53.5 billion assets under management (AUM) at end 2009). This generates a risk of contagion across markets;
- the European market plagued by fragmentation of settlement. There is a need for efficient cross-border securities transfer (see European Repo Market Survey: ICMA 2010 and White Paper of European Repo Council, 2009).

Other concerns are also important (see NY FED White Paper 2010):

- the market relies on huge amounts of intraday credit: this is because all tri-party repos are unwound each morning, even if most are renewed later in the day;
- there is no regulatory oversight, the market is opaque, and some big banks are foreign;
- some risk management practices of cash lenders and clearing banks are inadequate: huge maturity mismatch, high leverage, loose collateral policies;

– there is a lack of contingency plans for sharing losses and collateral management in case a large participant defaults.

The Fed study group has proposed several recommendations:
– automatic substitution of securities when repo renewed (would reduce need for intraday credit);
– risk management practices of dealers and clearing banks should be improved;
– transparency should be increased, for example by disclosing aggregate statistics on collateral and haircuts.

But even if these measures are implemented, they would not eliminate the main issues:
– the two clearing banks are Too-Big-To-Fail;
– the risks taken by large banks on other markets can spill over to the repo market;
– there is a risk of a run on a large dealer at the slightest suspicion on its solvency.

3.2. NEED FOR A NEW PARADIGM

Recall the main features of the standard model of banking (Diamond and Dybvig (1983)):
– commercial banks transform short term retail deposits into long term opaque loans;
– socially optimal degree of maturity transformation results from preferences (liquidity insurance needs of depositors) and technology (investment needs of borrowers);
– the intrinsic instability of this fractional reserve banking calls for some form of regulation;
– runs can be prevented by adequate combination of deposit insurance, solvency regulation and micro-prudential supervision.

This model does not correspond to the behavior of large modern banks. We need to build a different model that truly represents what dealer banks are doing:
– dealer banks intermediate the "backbone" markets for securities and derivatives;
– they invest in marketable securities and also provide a whole bundle of services to investors (collateralized lending, asset management, brokerage services…);

– transformation is used to provide more liquidity to investors (but how much is too much?).

There are different sources of fragility: ill-designed market infrastructures and excess transformation. In a recent book "How Big Banks Fail", Duffie (2009) has shown the existence of new forms of bank runs:
– wholesale deposits (Northern Rock);
– repo runs;
– novation demands for OTC contracts (Bear Sterns);
– flight of prime brokerage clients (Morgan Stanley).

Moreover there are new sources of fragility:
– collateral triggers after down-grades (AIGFP);
– loss of clearing/settlement privileges (Lehman)

3.3. How to Limit Contagion Risk?

Risk of contagion on interbank markets is largely due to two difficulties:
– default externalities due to complex nexus of OTC transactions;
– uncertainty about loss sharing rules in case a large participant defaults (incentive to run at the slightest suspicion of problems).

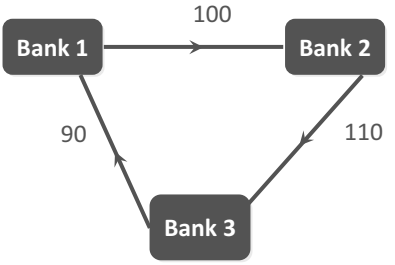
Proposed remedies are too radical (Volcker rule) or difficult to implement:
– living wills (Herring 2009);
– additional regulatory requirements for firms identified as "systemic";
– international harmonization of resolution procedures (Avgouleas, Goodhart and Schoenmaker 2010);
– international cooperation between supervisors (unlikely to be effective when needed: Dewatripont, Rochet and Tirole 2010).

There are simpler (but more radical) ways to solve these difficulties:
– adopt Central Counterparty model (CCP) for "vital" market infrastructures;
– change regulatory perspective (platform-based instead of institution based) (see Figure 2).

3.4. A New Regulatory Perspective

Traditional prudential regulation is targeted at *financial firms* (institutions-based). New regulation would be targeted at *infrastructures* (platform-based).

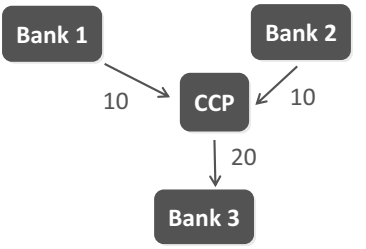
Figure 2



Decentralized version

PROS
Peer monitoring
Central Bank bears no risk (in theory)

CONS
Bundling of liquidity and credit risks
Price discovery impossible
Contagion risk
Public bail-out likely in case of crisis



Central Counterparty Model

PROS
No contagion risk
Compensation of Flows
More transparency

CONS
Moral Hazard?
CCP bears counterparty risk
CCP must be regulated (TBTF)

Each systemic authority would be mandated to guarantee (separately) the safety of the small number of infrastructures (exchanges, CCPs, LVPSs) that are deemed "vital" within its jurisdiction (political decision).

- There is no need to reinvent the wheel for regulatory requirements: one can simply adopt market best practice by private CCPs;
- there would be no need for "living wills": loss sharing procedures would be specified ex ante at the level of each platform;
- there would be less need for international cooperation of supervisors: each "platform" must be sound independently of what is going on elsewhere;
- finally this would eliminate the rationale for splitting or downsizing banks (and thus would preserve scale and scope economies).

Note that this perspective differs from "functional supervision": several activities can be performed on the same platform, while the same activity can be performed on several platforms.

For tri-party repos, this would imply moving from duopoly to monopoly: Duffie-Zhu (2009): counterparty risk (for a single type of security or contract) is always reduced by a single CCPs but not necessarily by several.

In case of large macro shocks, CCPs would need to be supported by some outside source: "contingency fund" financed by insurance premiums, liquidity support by central bank (LOLR), credit line by the Treasury.

4. Money and Banking in Times of Crisis

Lorenzo Bini Smaghi

It is a great honor and pleasure to be here today to deliver the 2012 SUERF Marjolin Lecture.

Robert Marjolin was a great European and dedicated most of his life to the building of Europe. Looking at his professional life, in particular his writings, it does not appear that he – like many others – had clearly in mind how the United Europe would ultimately look like. He knew that Europe is – to some extent – a Journey, the main objective being that of bringing the people closer together, as is stated in the Rome Treaty. How we will get there, and how quickly, is much less clear, unfortunately.

This is the way Europe has been built. The Single Market was created in 1985 as a way to overcome the limits of the Common market and to extend its reach to services and labor markets. The Monetary Union was created with a view to overcome the limits of the Single market, and the inconsistency of having a multiplicity of currencies so as to ensure a level playing field. We are now discussing about a Banking union and a Fiscal Union as ways to overcome the limits of Monetary union in the face of asymmetric shocks and imperfect convergence. All these steps have entailed, and will entail, further political integration among the member states, into an entity which may be difficult to define *ex ante*.

This is not peculiar only to the European Union. After all the United States of America developed into an economic and political structure which was difficult to forecast at the very start. By merging the debt of the States, Alexander Hamilton never imagined that this would bring later on to several defaults and banking crises which led to the adoption of budget rules by the various states, later to the creation of the Federal reserve, over 100 years after independence, and only in the mid-thirties to the structure of a federal economic Government similar to the one we know today. It took several defaults, banking crises, a civil war and a great depression to get to what seems today as the "end game" for the US; an end game which, incidentally, has not proven to be particularly efficient in dealing with the current crisis, the worst since World War II.

The work of Robert Marjolin is an inspiration for those who are currently working in the day-to-day construction of Europe, solving problems one after the other.

I would like to discuss today the conduct of monetary policy in times of crisis, as this seems to be a very topical issue. It is also an issue in which I have been deeply

involved during my tenure at the ECB and that I have continued to follow in my academic experience over the last few months. I would like to focus on the euro area, which is currently facing a much more complex crisis than most other countries.

What characterizes the euro area crisis, from a monetary policy point of view, is that many of the key assumptions which underpin Central banks' decision making process have fallen apart. In normal times, the central bank uses the main monetary policy instrument, typically the rate at which it refinances the banking system, with a view to achieve its primary objective of price stability. One objective and one instrument – as suggested by an optimal allocation of resources.

Underlying this policy framework are a series of assumptions that economists are used to make. Economists often forget that they have made such assumptions. Let me mention a few.

The first is a stable relationship between the key policy rate and the whole structure of interest rates prevailing in the financial markets, and in turn with the savings and investment decisions made by households and firms. Another, related assumption, is that markets are efficient and agents are rational, in anticipating monetary policy decisions and in pricing assets on the basis of their expectations. Another key assumption is that the economy disposes of a risk free asset that agent can hold a reference for their portfolio allocation decisions.

The model that central banks use in order to calibrate their monetary policy decisions, with a view to attain their statutory objective, are based on these assumptions. Some of these assumptions do not hold any more in the euro area. Traditional monetary policy instruments cannot be used as expected in order to achieve central bank objectives. Something has to be done about it. The question is not only what should be done, but who should do it and how. This is the current problem for the conduct of monetary policy in the euro area.

To be sure, the Treaty assigns to the ECB the task of defining and implementing the monetary policy of the union. This presumes that there is only one monetary policy for the entire euro area.

This does not necessarily mean that monetary conditions are the same throughout the euro area, as the whole "one size fits all" debate has shown. It depends on whether economic conditions across the area differ and thus whether the single interest rate level decided by the central bank can lead to price stability in each and every part of the euro area. Given that such an event is highly unlikely, the ECB can target price stability only for the aggregate of the euro area, and cannot give too much importance to specific developments in the different corners of the area.

That was the assumption at the start of the union. It proved to be simplistic. Developments across the union need to be carefully monitored, and corrected if needed, because they may produce contagious effects on the rest of the union, especially after boom-and-bust cycles. Furthermore, the aggregate euro area data, calculated on the basis of a weighted average of national data, may not necessarily represent an economically significant concept because of the wide dispersion across the regions of the union.

The current crisis has raised challenges for all central banks, leading them into uncharted waters. It requires rigorous analysis but also out-of-the-box thinking. For the ECB the challenges have been even greater, because the monetary union has turned out to function differently than expected, especially in crisis times.

I would like to focus today on two main issues which are currently distorting the way in which monetary policy is being implemented in the euro area. I will examine these distortions and try to assess what *can* be done to overcome the problem, what *has* been done and what still *needs* to be done.

As can easily be imagined, as soon as we depart from the optimal frictionless and efficient market environment, there is no first best solution, but only trade-offs. Only second, or even third best solutions, are available. This means that the solution cannot be only in the hands of the central bank but requires some form of cooperation with the other policy authorities.

Such cooperation is not easy to achieve. In the euro area it is particularly complicated because the central bank has to deal with the authorities of 17 different countries, which are themselves accountable to their own citizens.

Let me focus on two of the main assumptions underlying the conduct of monetary policy which are currently not met in the euro area. I will consider the very short end and the long end of the yield curve, which are key components of the transmission mechanism of monetary policy.

Let's start with the very short end of the yield curve, the short term interbank money market rate. This is typically the operational target of the central bank. The short term rate at which banks exchange funds typically affects the yield curve, and thus the various rates at which banks lend to their customers and firms borrow in the international markets. Think for instance about the role that Euribor has on the indexation of mortgage rates. Changes in the short term interbank rate affect the whole yield curve, on the basis of expectations about future changes in the short term rates.

In normal times the central bank tries to influence the interbank money market by setting the rate of its regular refinancing operations. There is normally a one-to-one relationship between the two rates, which is determined by arbitrage

operations conducted by the banks which refinance themselves at the central bank.

Two sorts of instabilities emerged during the crisis.

First, after the summer of 2007 the amount of central bank money requested by banks for precautionary reasons became unstable. Some banks, which were in danger of losing access to the money market, started to overbid at the regular weekly auctions. This forced the ECB to change the way in which it injected money in the system. In normal times, the central bank would estimate the liquidity deficit in the banking system, and auction it on a weekly basis. The banks would bid at a rate very close to the prevailing money market rate. With the increased instability in the demand for central bank money, due in particular to the greater precautionary holdings, the quantities auctioned turned out to be insufficient and rates increased, pushing market rates up. This move sent a tightening signal to the market which was contrary to the intention of the central bank.

In the course of 2008 there were lengthy discussions on whether the tensions in the money market required some changes in the operational procedures of the central bank. One view was that the prevailing market turbulence had not affected the link between the various maturities and any instability would be transitory. Changing the operational procedures under such circumstances would give a wrong signal. The alternative, of targeting the interbank money market more directly, as was done by other central banks, like the SNB for instance, was considered as too intrusive and taking away the incentive for market participants to restart a better functioning of the market.

This view – which turned out to be wrong – prevailed until the Fall of 2008.

After long discussions, the ECB decided to move to a system of fixed-rate-full-allotment tenders (FRFA), as the crisis accelerated as a consequence of Lehman brothers' bankruptcy. Under the new system, which is still in place, the central bank sets the interest rate at which counterparties can apply for unlimited amounts of financing, as long as they have adequate collateral. The move to the new operational procedure aimed at reassuring banks that if they faced an unforeseen shortage of liquidity, they could refinance themselves at the central bank at a known rate and without any penalty nor stigma.

I said that it aimed at reassuring, because it really didn't. The reason is that the move to a FRFA mode was communicated as being temporary. Soon after the ECB introduced its non-standard measures, it made it clear that they were temporary and would be withdrawn at a certain point in time. This has been a typical central bank mantra. Up until July this year, the introductory statement to the Press conference which follows the Governing Council meeting repeated the

mantra that "*all our non-standard monetary policy measures are temporary in nature*" (fortunately the sentence was dropped in August 2012).

In fact, the discussion on the so-called exit-strategy started soon after the new – so-called "non-standard" – measures were introduced.

There were several reason for communicating the temporary nature of the non-standard measures. The first, already mentioned, was to encourage a restart of the normal functioning of the money market, by creating the right incentives for market participants. The second reason was the expectation that the tensions experienced in 2008-09 were temporary and that the euro area could rapidly return to more normal conditions. The third reason was to avoid moral hazard, as the provision of unlimited liquidity risked reducing the incentive for banks to adopt more fundamental measures, such as the strengthening of their solvency positions, which was one of the main reasons for the market malfunctioning.

With the benefit of hindsight, these concerns were probably overstated. Restarting the normal functioning of the money market is much more complicated than we thought. At that time, it was considered that one of the main obstacles was asymmetric information, related to the insufficient knowledge, and trust, in the solvency of counterparties. The ECB – and myself – advocated already in 2008 strong action by national authorities in order to recapitalize the banking system with rapid and decisive injections of capital across the board[1]. However, the process of bank recapitalization turned out to be too slow and based on a system of stress-test which was inefficient and biased towards the worst performer. The crisis developed into new stages, as the economic downturn worsened the balance sheets of the banking system and of the public sector in a much more dramatic and interconnected way, as it became evident a few months later.

The unlimited provision of liquidity enabled the banking system to postpone addressing the solvency issue and took away the pressure from national supervisors to act more promptly. On the other hand, given the systemic nature of the crisis, the ECB could not have acted differently.

To be sure, had the ECB been given more powers in the supervisory field, it would have been able to force recapitalization of the weakest banks in a more effective way, along the lines followed by the Federal reserve, rather than relying on the good will of national authorities. The experience during the crisis proves that the lack of supervisory powers represents a disadvantage for the conduct of monetary policy, contrarily to what is often contended.

[1] See L.B. SMAGHI, "Restarting a Market: The Case of the Interbank Market", *ECB Conference on Global Financial Linkages, transmission of Shocks and Asset Prices, Frankfurt, 1 December 2008* (www.ecb.int/press/key/date/2008/html/sp081201.en.html).

Insisting so much on the temporary nature of the non-standard measures might have been a mistake. It may have increased uncertainty among market participants and lead to overbidding behavior and rapid de-leveraging, which may have accelerated the credit crunch. To counter these fears the ECB finally decided to extend the maturity of the FRFA operations, first to 3 months, then six and further to one-year and more recently to three years. The longer the maturities of these operations, the greater the concerns about the possible distortions. However, the reminder that these operations are "by definition" temporary, is not credible any more.

A more credible message is that these measures will be implemented for as long as needed.

The second change which has occurred, more recently, is the re-nationalization of the money markets and the emergence of sovereign risk. There are currently very few cross-border flows and the direction of these flows is opposite to the financing needs arising from the intra-euro area current account in-balances. In other words, the banking systems of countries which need to refinance themselves, because of their net debtor position, are experiencing capital outflows, while those which have net creditor position are experiencing capital inflows. The money market is simply not working. The reason is the risk of convertibility. Depositors in debtor countries fear that their bank holdings might not be valued at par one day, and thus withdraw their accounts from domestic banks and deposit them with banks located in creditor countries.

The main reason for this capital outflow is the fear of sovereign default, which would in turn produce a default of the banking system and possibly the exit from the euro area.

The paradox is that banks in creditor countries are actually being discouraged from lending to banks in debtor countries, or to creditors located in these countries, including the sovereign. They are discouraged from lending to debtor countries not only because of the risk that I just mentioned but also because of the regulatory constraints that national supervisors are putting on their investment behavior. Regulators in some creditor countries – in particular Germany - are using the margins of discretion allowed by the European legislation to prevent banks from using their liquidity pools in creditor countries to finance their branches in debtor countries. In theory such practice is against the single market principle, but is nevertheless tolerated by the European authorities, including the European Commission and the EBA.

The matter of the fact is that in the current situation we don't have a single euro area financial market, even in the most liquid segment. This is partly due to the behavior of the national authorities which have reintroduced artificial barriers to

capital mobility. Here again, if the ECB was given supervisory powers, it could eliminate such distortions.

As a result of the inefficiencies prevailing in the money market, the ECB has to step in and operate as the settlement agent, absorbing the liquidity from the banking system of the surplus countries and providing the liquidity to that of the deficit countries. The central bank is dis-intermediating the markets and its balance sheet has grown enormously as a consequence.

The main reason is that under the current state of uncertainty the only safe asset left is central bank money, which has a status comparable to banknotes. Banks' expectations that they can use their accounts with the Eurosystem to settle payments to their counterparts underpins the stability of the system. Without such a confidence the system would disintegrate.

In a fiat money system, the central bank cannot set limits to its willingness to convert bank liabilities into central bank money, to the extent that the banks are solvent. Any limit to banks' balances within the Eurosystem payment system (Target2 exposure), as suggested by some academics, would fuel bank runs and lead to the disintegration of the euro area.

There is no justification for setting artificial limits to central banks' balance sheets. On the other hand, there is no evidence of any relationship between the size of central banks' balance sheets and inflation. Furthermore, the exposure of the central bank with the banking system throughout the euro area is fully collateralized and thus much safer for creditor countries than the direct exposure among the private sector.

In fact, a creditor country like Germany is much more protected by channeling its excess savings through the ECB and its payment system than by lending directly to the debtor countries. First, the credit is collateralized, as I just mentioned. Second, any loss would be shared between the ECB's shareholders and Germany's share of the ECB's capital is much smaller than the share of the overall credit position in the Target2 exposures.

To sum up, there is currently no alternative for the ECB than providing unlimited funding to the banking system, and declaring that its stands ready to do so as long as needed. There is no point in continuously mentioning in public that this is a temporary measure, unless one really believes that we will be out of the woods soon. There is also no reason to raise the concerns about the potential risks for the central bank over the medium term. The ECB has all the instruments it needs to withdraw the liquidity at any point in time, if it wishes to do so in order to counter inflationary pressures. The moral hazard issue should be dealt with by providing more supervisory powers to the ECB. With such powers the ECB would foster faster and stronger recapitalization of the banking system in weaker coun-

tries and eliminate the artificial barriers to the single money market that some national supervisors have raised.

We also need more courage on the side of the European Commission, to fight attempts to re-nationalize markets and ensure a level playing field.

Let me now move to the other end of the yield curve, i.e. the medium to long term. Conditions at that end are strongly influenced by the Government bonds markets. Given the central role of Government bonds in the financial markets and the levels of spreads we are observing, we can state that there is currently no such a thing as a single monetary policy in the euro area. More seriously, the monetary conditions which prevail in some parts of the area are not consistent with the fiscal adjustment programs which have been negotiated and are being implemented. Any textbook analysis suggests that fiscal retrenchment can succeed if it is accompanied by an accommodative monetary policy. The monetary policy which is currently implemented in the euro area is not sufficiently accommodative, i.e. it is restrictive, and thus hampers the adjustment.

The key factor affecting the transmission of monetary policy is the market assessment of the credit risk and currency risk associated with investing in any of the periphery countries. If markets are considered to be efficient and rational, the current pricing should be considered as appropriate and in line with fundamentals. Nothing can reduce the current spreads between Government bond yields except changes in the fundamentals. If, on the contrary, markets are assumed not to be always rational and efficient, the current spreads are probably overestimating the currency and credit risk, as much as they were underestimating it between 1999 and 2008. As has been the case during several crises of the past, markets tend to finance imbalances for longer than expected, as long as the other market participants act accordingly, but once countries' access to financial markets starts being impaired financing becomes more difficult an may even stop suddenly. This is a typical situation in which multiple equilibria tend to arise. Under such circumstances an international institution is required in order to catalyze markets towards the good and sustainable equilibrium. Without such an intervention liquidity problems become solvency problems and the country's financial system may collapse.

This is probably the situation we are currently experiencing in the euro area. The prevailing spreads are out of line with market fundamentals and the risk of multiple equilibria exists as a result of uncertainties about how liquidity problems will be addressed in the euro area. The absence of a crisis management mechanism, with sufficient size and effectiveness, capable of deciding rapidly, is adding to this uncertainty.

The transmission mechanism of monetary policy is impaired if the central bank cannot affect the key market rates, including at the long end of the curve. As a result, monetary policy cannot contribute to the achievement of price stability.

The excessively high rates on the key asset, which affects the rate at which banks can borrow and thus lend to the real economy, determine an excessively restrictive monetary policy and hampers the success of the fiscal adjustment in some parts of the euro area. Symmetrically, monetary policy is – involuntarily - excessively expansionary in other parts of the area, as risk aversion determines very low – or even negative – interest rates, which create distortions in the financial system.

As I already mentioned, it was known from the start that monetary conditions could not be homogeneous throughout the area, because of the potential divergences in underlying economic fundamentals. These divergences should have been monitored more carefully. However, the divergences that we are currently experiencing have become so polarized as to make monetary policy ineffective and inappropriate for most of the Union.

The transmission mechanism of monetary policy needs to be fixed. But whose task is it?

Central bankers tend to think that the responsibility lies primarily with national Governments and supervisors, given that the malfunctioning of the financial markets is mainly due to the heightened banking and sovereign risk. Governments, on their part, contend that they have already taken strong action, and have committed to more, but markets are too slow to recognize progress. If markets are too slow, the situation may become unsustainable. Only the central bank has sufficient firepower to push markets towards the sustainable equilibrium.

Both views are right, to some extent. But there can be no viable solution without actions being taken at the same time by Governments and by the central bank, each in their own field of competence. In allocating responsibilities, the euro area can build on the experience gained by the International Monetary Fund in dealing with crises for over 40 years. On the one hand, strong conditionality is needed to ensure that Governments consistently implement their adjustment programs over time. On the other hand, liquidity has to be provided in sufficiently large amounts so as to catalyze private financial flows and convince market participants that the system is stable.

To be effective, the solution requires confidence and trust between the policy authorities. The central bank has to be reassured that the conditionality adopted by the member states is sufficiently stringent, lasting and irreversible. In this respect, the experience which followed last Year's ECB's intervention in the secondary market for Spanish and Italian Government debt has left a sour

aftertaste. Furthermore, the experience in Greece, Ireland and Portugal has shown that Governments have been too late in asking for the conditional assistance of the European authorities and the IMF. The fear of losing sovereignty has given a political connotation to the adjustment program. The delay has led the private sector to withdraw completely from the markets once the official funds were made available. As a result, the financing required to support the adjustment program has increased enormously, compared with the past, and has not been able to play the traditional catalytic role for private funds.

Governments, on their side, want to be reassured that the tough measures that they have committed are supported by the provision of sufficient liquidity to guarantee success over time. To be sure, the fiscal adjustments which are currently being implemented have little chance of succeeding unless the interest rates prevailing in these countries are rapidly brought down more in line with the rest of the euro area. This can hardly be done without the direct involvement of the central bank.

The strategy is successful if market participants are convinced that policy makers stand ready to do all that is needed to solve the crisis. Communication is key, and needs to be consistent with this requirement. In this respect, focusing on what the central bank should *not* do or does *not* intend to do – rather than what it *might* eventually do, if necessary, in order to address the problem – can be counterproductive. For example, repeatedly raising concerns in the public about the size and the risks for the central bank balance sheet, about the dimension of the cross-border payment imbalances (Target2 balances) or about the limited ability of monetary policy to solve all problems can only fuel doubts among market participants about the determination of the monetary authorities. In a fiat money system, even the slightest doubt that the central bank may face constrains in ensuring the convertibility of the currency can fuel bank runs and generate financial turmoil.

The decisions recently announced by the ECB should contribute to reduce the stigma attached to an adjustment program. The ECB's readiness to intervene in the short end of the market to improve the transmission mechanism of monetary policy should reduce uncertainty and avoid the self-fulfilling destabilizing behavior of financial markets, once a country implements the agreed program. The large firepower available to the ECB should be sufficient to significantly reduce the risk of exit from the euro. Giving up the preferred creditor status should also help catalyze private sector flows and avoid that the country is totally cut off from the markets.

There is also an issue of political stigma to address.

One of the main reasons why the policy actions implemented in the Eurozone over the last two years have been ineffective in addressing the crisis is that the

decisions were often taken too late. In particular, countries experiencing financial difficulties only requested support when market conditions had deteriorated to a point of no-return. The Greek Government, for instance, continued to deny that it needed the assistance of its European partners throughout the Spring of 2010, in spite of the rising tensions in financial markets. On 8 March 2010 – only six weeks before officially requesting the help of the IMF and the European union – George Papandreou, Greece's then Prime Minister, and Angela Merkel, the German Chancellor, standing side by side in a joint press conference stated respectively that "Greece doesn't *want* financial aid" and "Greece doesn't *need* financial aid".

Ireland and Portugal went through a similar state of denial, delaying the request for support until the interest rate on the respective Government bonds skyrocketed and access to financial markets vanished. The late application for financial assistance exacerbated market instability which spread to the other Eurozone countries.

The reluctance to request financial assistance from the IMF or the European union can be explained by the stigma which is attached to it. By asking for external support a Government implicitly recognizes its incapacity to act autonomously. It has to agree to the terms and conditions of an adjustment program designed by a supranational institution. It has to accept the monitoring of the implementation of the program by a group of "inspectors" (the Troika) regularly visiting the country. All these constraints represent a domestic political cost for the Government.

This is an issue which needs to be addressed. One way is to change parts of the procedure.

In the current system the request for financial assistance is made to the Eurogroup, which comprises the Finance ministers of the Eurozone. However, some national parliaments are sometimes given the "last say" and allowed to request additional conditions, giving the impression that some countries – rather than the European institutions – define the terms of the program. The experience of the Greek or Portuguese programs being suspended to the ratification votes of the German or Finnish Parliaments has fuelled tensions across countries and created the feeling that policies are "imposed" by foreigners. This should be avoided in the future, as ownership of the adjustment program is key for success. Finance ministers participating in the Eurogroup should discuss with their respective parliaments about the position they will take on specific cases ex ante rather than retrospectively. This is the way it works in the IMF, for instance, where there is no need for parliamentary ratification for each adjustment programme.

Furthermore, in order to reduce the political cost suffered by Governments implementing an adjustment program, the latter should be underwritten by the major

parties of the country requesting assistance, not only those who form the prevailing majority, as was the case in Ireland, Portugal and Greece, with a view to ensure irreversibility in case of elections.

The request for EFSF/ESM assistance could be further de-politicized, and de-dramatized, by setting a threshold, in terms of bond spreads, beyond which the procedure would be triggered in a semi-automatic way. This would be analogous to the excessive deficit procedure, which also implies strict conditionality and monitoring and is launched as soon as deficits rise above the 3% threshold. After all, the spread between long term bonds (200 basis points) is – together with the 3% budget deficit - one of the Maastricht criteria for assessing the convergence of countries required for entering the euro. It could also be used to monitor convergence and to trigger procedures aimed at fostering adjustment within the euro.

If the survival of the euro requires further political integration – as many suggest – what is needed is not only that the member states share a greater number of decisions at the European level but also that they stand ready to accept greater interference by European institutions in policy areas which were previously considered to be the responsibility of national authorities. Politicians and opinion makers cannot ask for more Europe and then complain for the loss of sovereignty when Europe is called to solve problems. The real issue is the democratic legitimacy and accountability of the European institution which is responsible for the relevant decisions in this policy area, i.e. the Eurogroup. Either the Eurogroup is considered legitimate, and accepted as such, or it should quickly be made legitimate by a rapid reform.

The euro area crisis may have reached a point in which it can hardly be resolved unless the policy authorities are determined to take bold actions. This may require that the member states further strengthen their policy commitments, concerning in particular the structural reforms aimed at improving competitiveness and growth, and make these commitments irreversible, consistently with their membership of the euro area. It also requires that the central bank takes drastic measures to ensure that there is a single monetary policy throughout the euro area, consistently with its mandate.

It's no time for "games of chicken" between the various authorities, trying to push the other to move first. Too much is at stake. Cooperation must prevail.

5. Marriner S. Eccles and the 1951 Treasury–Federal Reserve Accord: Lessons for Central Bank Independence

Thorvald Grung Moe[1]

Abstract

The 1951 Treasury-Federal Reserve Accord is an important milestone in central bank history. It led to a lasting separation between monetary policy and the Treasury's debt-management powers and established an independent central bank focused on price stability and macroeconomic stability. This paper revisits the Accord history and elaborates on the role played by Marriner Eccles in the events that led up to the Accord. This paper shows that Eccles' support for the Accord – and central bank independence – was clearly linked to the strong inflationary pressures in the US economy at the time, and that he was equally supportive of deficit financing in the 1930s. This broader interpretation of the Accord holds the key to a more balanced view of Eccles' role at the Federal Reserve, where his contributions from the mid-1930s up to the Accord are seen as equally important. Accordingly, the Accord should not be seen as the eternal beacon for central bank independence, but rather as an enlightened vision for a more symmetric policy role for central banks, with equal weights on fighting inflation and preventing depressions.

JEL Classifications: B31, E52, E58, E63, N12

Keywords: Marriner Eccles, Central Banking, Monetary Policy, Fiscal Policy.

5.1. Introduction

The Accord announced between the US Treasury and the Federal Reserve on March 4, 1951 has been hailed as "the beginning of modern central banking" (Hetzel and Leach 2001, 53) and as "a major achievement for the country" (Meltzer 2003, 712). It led to a lasting separation between monetary policy and the Treasury's debt-management powers and established an independent central bank focused on price stability and macroeconomic stability.

Marriner S. Eccles was a key player in the events that led up to the Accord. As Chairman of the Board of Governors since 1934, he was instrumental in drafting key banking legislation in the mid-1930s that enabled the Federal Reserve System to take on a more independent role after the Accord. He was reappointed twice

[1] The views expressed in this paper are those of the author and do not necessarily represent the position of Norges Bank.

as Chairman by Franklin D. Roosevelt, but not by President Truman in 1948. He remained on the Board as a regular member, where he increasingly opposed the administration's inflationary war financing policies. When the conflict with the Treasury came to a head in the spring of 1951, he acted with integrity and determination to save the independence of the Federal Reserve. His role in this drama is somewhat surprising, since he started his career at the helm of the Fed as a "fiscalist" who preached deficit financing and monetization of government debt. But as we shall see, his position was quite consistent when seen in a broader cyclical perspective, as he was equally concerned with inflation and deflation.

Before the recent financial crisis, the history of the Accord and the importance of the conflict between the Fed and the Treasury were largely relegated to the history books[2]. But the global financial crisis has generated renewed interest in the Accord and its relevance for current policy making. The huge expansion of central banks' balance sheets has led some to question the wisdom of unconventional monetary policy, arguing that the independence of central banks is at risk (Goodfriend 2011). A new Accord could, according to Goodfriend, "clarify and limit the Fed's credit policy powers and preserve its independence on monetary and interest rate policy." In his view, "an independent central bank cannot be relied upon to deliver or decide upon the delivery of fiscal support for the financial system" (*Ibid.*, 3).

This interpretation of the 1951 Accord as the ultimate inspiration for central bank independence – at all times – is in my view somewhat ahistorical. Eccles' support for the Accord – and central bank independence – was clearly based on the fact that the economy at that time had close to full employment and strong inflationary pressures. Thus, his support for tight monetary policy in the early 1950s was perfectly consistent with Fed support for government deficit financing in the 1930s when there was enormous slack in the economy. For him, it was "the duty of the Government to intervene in order to counteract as far as possible the twin evils of inflation and deflation" (Eccles 1935b, 1). The Accord "solved" the acute conflict with the Treasury and gave the Federal Reserve control of monetary policy to fight inflation. But the Accord should not be seen as the eternal beacon for central bank independence, but rather as an enlightened vision for symmetric policy response, with equal weights on fighting inflation and preventing depressions.

This broader interpretation of the Accord holds the key to a different view of the Accord, where Eccles' contributions from the mid-1930s up to the Accord are

[2] The key resource for a study of the Accord is Meltzer (2003). There is also a special issue of the Economic Quarterly of Richmond Federal Reserve Bank commemorating the 50th anniversary of the Treasury-Federal Reserve Accord (Kramer 2001). The electronic archive of the St. Louis Federal Reserve Bank contains a wealth of relevant information; http://fraser.stlouisfed.org/. The autobiography by Marriner Eccles (1951) and the later biography by Sidney Hyman (1976) give a more personal perspective on the creation of the Accord.

seen as equally important[3]. Central bank independence is important, but not as an absolute virtue. Eccles favored a broad objective for central banks, including maximum employment and price stability, and he valued the Fed's independence if it could support this broad objective. He therefore preferred a coordinated approach between fiscal and monetary policy to achieve full employment and "a decent living for every working man and woman." This strong moral stance is his lasting legacy and also his main message to policymakers facing depressed economies and mass unemployment.

This paper is structured in five parts. First, I give an overview of Eccles' early "Keynesian" views and his theory of compensatory monetary and fiscal policies. Then I review Eccles' views on war financing and the way World War II was actually financed in the US. This leads into a discussion of the "the battle of the peg" and the drama that led to the 1951 Accord. The last part concludes with an assessment of Eccles' role in the making of the Accord, and a discussion of the lessons we should draw today for central bank independence and the conduct of monetary policy.

5.2. MARRINER ECCLES – A HETERODOX CENTRAL BANKER

Marriner Eccles was born in 1890 in Logan, Utah. His parents settled there when they came from Scotland in the 1860s, together with other Mormons who were looking for a better life in the United States. Through hard work and perseverance, his father became a leading industrialist, with numerous enterprises in lumber, construction, livestock, and sugar refineries. Marriner was only twenty-two years old when his father died (in 1912), but he was quick to take command of his father's extensive business interests. He stabilized the business and soon expanded into banking. With a string of bold acquisitions, he built the first bank holding company in the United States, the First Security Corporation, and thus became the leading banker in the West.

The Great Depression hit the banking industry hard, but Eccles was able to keep all his banks open, against all odds. But he observed how his customers were struggling with no end in sight. As the crisis dragged on, he gradually became convinced that private thrift and hard work were not enough to get the economy out of the depression. Able, thrifty people could not find work and private relief was like a drop in the bucket. He thus gradually developed a more radical view of the defects of the capitalist economy and concluded that only the government could initiate a recovery.

[3] Vernengo (2006) provides supporting evidence for this interpretation of Eccles' policy views.

5.2.1. Eccles in Congress

In Early February 1933, one month before Roosevelt was sworn in as president; Eccles was invited to present his views before the Senate Committee on Finance. All the other two hundred invited speakers from banking and industry preached the gospel of balanced budgets. Eccles, on the other hand, noted that unemployment resulted in lack of purchasing power and the inability of consumers to purchase the goods necessary to sustain production. And he challenged the politicians in Congress: "Is there any program of our Government as important as to stop this great loss and all the attendant human suffering, devastation, and destruction?" (Eccles 1933, 719).

Eccles wanted "bold and courageous leadership" that could increase government spending on a scale sufficient to increase incomes and the demand for goods. This would absorb unused capacity and make it profitable for business to expand. And more jobs would give more incomes that would increase the need to build new homes, which could help the construction industry regain its profitability (Eccles 1935a, 14).

He argued forcefully that only the US Government had the money-creating powers that could end the depression by the use of public credit on a national scale. Individual (US) states could not act in this way. They could not call men to war or provide billions for that purpose. Only the federal government had this power. And, Eccles added, "the longer it waits, the greater will be its difficulties when it gets around to doing it" (Eccles 1951, 106).

5.2.2. The Transition to Washington, DC

After his presentation before Congress in February 1933, Eccles went back to Utah and continued his business affairs. The next month, on March 5, Franklin D. Roosevelt declared a nationwide banking holiday two days after his inauguration. Four days later Congress passed *The Emergency Banking Act* that gave the President emergency power to regulate credit, currency, and foreign exchange. After the bank holiday, most sound banks were reopened with Government guarantees, while some banks remained closed and were wound down. Eccles supported these policy measures, but was appalled by the continued balanced budget rhetoric of the Roosevelt administration. He wrote an angry note to his business associates, with copies to his political friends in Washington, stating that "it seems to me that if the proposed budget-balancing policy is carried out, it can only result in further drastic deflation, a further decrease in buying power and a great increase in unemployment" (quoted in Hyman 1976, 117).

His perseverance and constructive criticism finally landed him an appointment in the new administration. After a string of meetings in Washington, DC later that

year with key New Dealers, Eccles was finally convinced to act, and not just talk. And so, starting February 1, 1934, Marriner Eccles, the millionaire and industrialist from Utah, was appointed assistant to the Secretary of the Treasury at a salary of USD 10,000 per annum. His assignment in the Treasury was meant to last only one year, but later that year the Governor of the Federal Reserve Board resigned and the administration started looking for a replacement. Eccles was one of the candidates considered, but when the President asked if he was interested, he politely rejected the offer (Hyman 1976, 155)[4]. He told the President that private banking interests, particularly from the large New York banks, currently dominated the Board. The Board was therefore not in a position to impose public control on monetary policy. It could suggest open market operations, but the regional banks could decide not to go along (*Ibid.*).

But Eccles added that if Roosevelt would support changes at the Federal Reserve System, then he would "welcome any consideration you might give to my personal fitness to serve as governor of the Federal Reserve Board" (*Ibid.*). The President was intrigued by this unconventional reaction and asked Eccles which specific changes he had in mind. Eccles asked for some time, and went back to work on a proposal for a radical overhaul of the Federal Reserve System. In a meeting with the President on November 4 of the same year, he brought with him a memorandum called "Desirable Changes in the Administration of the Federal Reserve System." This was to form the backbone of Title II of the new Banking Act of 1935 that would create a new and more accountable Federal Reserve System.

5.2.3. Agitation for Central Banking

The memorandum argued that the monetary system should be used to promote business stability. Experience had shown that without public control, the supply of money tended to expand in booms and contract in depressions. Production, employment, and national income were determined by the available supply of cash and deposits, and the supply should be adjusted to achieve the desired level of income and employment.

The Federal Reserve Board should be strengthened to secure the required degree of centralized control of monetary policy to support the ongoing emergency program. The Board (in Washington, DC) should be given complete control over the timing, character, and volume of open market operations, and regional Governors should be appointed annually and be subject to approval from the Federal Reserve Board.

[4] He told the President that he "would not touch the position of Governor with a ten-foot pole unless fundamental changes were made to the Federal Reserve System" (Hyman 1976, 155).

These changes were necessary to give the Board full control of the open market operations, since such policy decisions at the time included some hundred persons at the regional level. The reform proposed by Eccles would instead concentrate the authority and responsibility for monetary policy in Washington, DC.

5.2.4. The Fight in Congress

The passage of the Banking Act was by no means assured. Senator Glass was in a bad mood after Eccles had failed to provide him with an advance copy of the bill. Glass was a former Treasury secretary under President Wilson, "father" of the Federal Reserve Act of 1913, and the most senior member on the Senate Banking and Currency committee. He did not look favorably on Eccles' attempt to reform the Fed, and wanted to make sure that the bill would not be adopted. He enlisted the big banks in this fight, since most of them were also skeptical of the bill. They feared too much political control of the Federal Reserve, too much deficit financing, and the loss of private control of open market operations.

The bankers' resistance to the bill confirmed Eccles' concern that they could block any attempts by the Administration for large-scale public works. He figured that the Federal Reserve would have to absorb a large part of the securities needed to finance such works, but with private banks in control of the regional Reserve banks, this source of financing could easily be blocked (Hyman 1976, 165). This made the passage of the bill all the more urgent for him.

In the House of Representatives, the bill was pushed through aggressively with the help of representatives Steagall. After direct intervention by the president, the Senate also passed its version of the bill. According to Eccles, "it was woefully inadequate and a world apart from the aggressive version that had passed the House of Representatives" almost two month earlier (*Ibid*, 219), but still better than nothing. When President Roosevelt finally signed the Banking Act of 1935, the press portrayed it as "Senator Glass Wins Victory," and the senator himself gloated by saying: "We did not leave enough of the Eccles bill with which to light a cigarette." But Eccles was satisfied with the new Act and noted that the Federal Reserve Board now was in firm and formal control of monetary policy, including the setting of reserve requirements and the formulation of open market policies[5]. This would provide the Federal Reserve System with the necessary, although not sufficient conditions, for its future independence.

[5] During passage in Congress, the previous practice of representation on the Federal Reserve Board by the Treasury and FDIC was discontinued. This certainly strengthened the Board's independence.

5.3. WAR FINANCING AND INFLATION FEARS

In September 1938, a conference of presidents of the Federal Reserve banks met to consider options for wartime policy. They agreed that it was important to stabilize the government securities markets, to avoid the problem of rising interest rates as investors deferred purchases of bonds in anticipation of still higher rates (Eichengreen and Garber 1991, 180). And early next year the Federal Open Market Committee (FOMC) was authorized to buy government securities to prevent their prices from falling (= rates from increasing). This was a continuation of the low interest policy of the 1930s, but now in a more formalized way.

Treasury wanted low rates to support the sale of bonds to finance the war. Treasury Secretary Morgenthau's goal was to finance at least 50 percent of the war by direct taxes and the rest by voluntary purchases of bonds, at the lowest possible rates (Meltzer 2003, 588). The final result was more like 40 percent tax financing and a large part of the bonds sold to banks[6]. This low share on nonbank absorption of government securities was to become a constant source of friction between the Treasury and the Fed during the war, and would become the prelude for the fight over interest rates that eventually led to the 1951 Accord.

5.3.1. War Financing: The Peg

After the US had entered the war, the Federal Reserve System agreed in March 1942 to fix the rates on government securities at ⅜ percent for Treasury Bills and 2 ½ percent for long-term bonds. The long-term rate would remain at this level up to the Accord in March 1951. The Reserve banks offered to purchase all securities offered to them at these prices to prevent interest rate increases[7].

The agreed yield curve reflected the market at the time, but soon afterwards, the newly "guaranteed" rates led to massive rebalancing of private portfolios from short- to long-term securities. Investors sold bills for higher yielding bonds, forcing the Fed to do the converse. By the end of the war, the Federal Reserve System held virtually the entire supply of Treasury Bills (Eichengreen and Garber 1991, 181). "Bills ceased to be a market instrument" (Eccles 1951, 359) and the System became an indirect source of government finance (Meltzer, 2003, 598)." It would soon become a direct source, as well.

In March 1942, the Second War Powers Act authorized Federal Reserve banks to acquire US securities directly from the Treasury. Eccles informed the Board that

[6] J.M. Keynes advocated a compulsory saving scheme to finance the war in the UK. Morgenthau argued that this was not required in the US since there was still unused capacity in the economy (Meltzer 2003, 588n8).

[7] Eichengreen and Garber (1991, 180n8) argue that there was only an informal agreement on the bond rate of 2 ½ percent, although there was no convincing explanation of the decision to settle on just that rate. Britain had pegged consoles at 3 percent, and US officials argued that superior US credit justified a lower rate. Eccles and the Board thought the rate had been set too low (Hyman 1976, 283).

"the use of the new power would arise only in exceptional circumstances as, for instance, in a situation where a Treasury issue temporarily could not be sold and the Treasury was in need of funds, in which case the Federal Reserve banks would take the issue and resell it to the market" (Board of Governors of the Federal Reserve System – BGFRS 1942, 3).

Whereas Eccles downplayed the decision as "merely a change in the method of distribution," Alan Sproul from the Federal Reserve Bank of New York opposed the proposal. He considered the change to be "somewhat revolutionary" since the System would be transformed to a distributing agent for Government securities. "This method of operation might have inflationary effects and could cause the public to lose confidence in US securities" (*Ibid*., 6). Sproul was, however, the only dissenting voice and the policy change was adopted.

At the end of the meeting, Eccles noted that exceptional times required exceptional actions. Any attempt by the System to assert its independence and oppose the new policy "would result in the loss of authority and influence that it otherwise might have." It would be a mistake for the central bank to regard itself as being completely independent, and "the kind of independence a central bank should have was an opportunity to express its views in connection with the determination of policy, and that after it had been heard it should not try to make its will prevail, but should cooperate in carrying out the program agreed upon by the Government (*Ibid*., 8). His rather servile interpretation of central bank independence must have been influenced by the war situation and his views would gradually change as the potential for post-war inflation became more imminent.

The change in operating procedures were indeed quite revolutionary, and not just a technical change, as alluded to by Eccles. The new policy would stay in place long after the war had ended. The War Powers Act expired after the war ended, but the Board requested renewal for two more years; and later the authority became permanent (Meltzer 2003, 599). This permitted the Treasury to continue to borrow limited amounts directly from the Federal Reserve. Beginning in 1979, the length of such loans and other conditions for use of the facility were restricted, and in 1981 the authority for such direct loans to the Treasury was revoked permanently.

5.3.2. Eccles' Inflation Fears

5.3.2.1. Early Concerns

Marriner Eccles had been concerned about inflation long before the war. He strongly adhered to the view that there needed to be a balance between the amount of money and the availability of goods. As much as he wanted deficit

financing in the 1930s, he favored balance budgets "in time of high business activity" and noted with regret that "many of those who in the depression years talked the loudest about inflationary dangers are the most reluctant to do anything about it now" (Eccles 1951, 346). And as the months passed and wartime expenditures continued to accelerate he "lived in great concern lest the dam that held back the inflationary pressure should give away" (Eccles 1951, 404).

For Eccles, inflation was not just a matter of economic policy, it was also unjust. "It injures most the aged, the pensioners, the widows, and the disabled, the most helpless members of our society. It diminishes the desire to work, to save, and to plan for the future. It causes unrest and dissension among people and thereby weakens our productivity and hence our defense effort. It imperils the existence of the very system that all of our efforts are designed to protect" (Eccles 1951a, 2).

So Eccles' pressure on the Treasury to raise taxes to pay for the war was fully in line with the principles of compensatory policy. According to Eccles, this "implies a willingness to run counter to private business behavior not only in the downswing but also in the upswing" (Eccles 1937, 14). This was a position he had flagged already during the Depression: "There can be, I think, no question of our ability to prevent recovery from becoming inflation, and I assure you that there is no question of the Administration's desire to promote stability once recovery has been fully secured" (Eccles 1935a, 16).

5.3.2.2. Monetary Policy Locked to the Peg

The agreement between the Treasury and the Federal Reserve to support the low interest rate policy of the Administration had, however, the unintended consequence of greatly increasing bank reserves. Eccles noted with regret that "the potential credit which the banking system can extend today is almost without limit" (Eccles 1951a, 12). But he was reluctant to move against the Treasury. He noted that the System had "adequate powers to stop a further bank credit inflation right in its tracks, but to do so they would have had to withdraw support for the Government market" (Eccles 1948, 12).

He added that around 60 percent of the public debt (of USD 250 billion) was held by the banking system and that an increase in the long rate would have a negative impact on their balance sheets. Thus, "the debt must be managed and the long term rate [the 2 ½ percent rate] must be protected" (*Ibid*., 12). An increase in the rates would also raise bank earnings, which were already very high and further act as a disincentive for them to lend to the private sector. Therefore, concluded Eccles, "to raise the discount rate was purely academic and would not be effective anyway" (Eccles 1948, 13).

Eccles also wanted to maintain cordial relations with Treasury Secretary Morgenthau, although this proved to be hard during the war. There were numerous skirmishes between them, as the Treasury was bent on selling bonds at low rates to finance the war effort, and the Federal Reserve was increasingly concerned with the extent of bank financing. Thus, they were deadlocked on changing any rates.

5.3.2.3. The Fed is Reluctant to Act

Hamstrung and unable to use its main policy instruments, the Federal Reserve pressured Congress for supplementary powers. It repeated these demands in its annual reports in 1946, 1947, and 1948 without much reaction from Congress or approval by the Administration (Eccles 1951, 426). So, whereas Eccles desired to reestablish the Fed's core monetary function, he also remained committed to protecting the long-term rate of 2 ½ percent[8]. As a result, the Fed ended up monetizing all the debt that others were unwilling to hold at the given yield pattern.

In retrospect, Eccles "regretted that the Board did not take a more independent position [during this period] despite Treasury resistance. There was no justification for our continued support of the Treasury's wartime cheap-money policy" (Eccles 1951, 425). Still, Eccles' position at the time was not unique. It was a widespread view that monetary policy should support the Administration's budgetary policy, and fiscal policy was believed to have a much more powerful effect on prices and economic activity than changes in money or the interest rate (Meltzer 2003, 581)[9].

5.3.2.4. Inflationary Pressures

When the war ended, Congress wanted to remove all wartime price and wage controls straight away. The Administration was hesitant and extended some of the controls, but finally gave in. To balance the price impact, they tightened the budget, but this effect was nullified by strong credit growth by the banking system. The result was strong inflationary pressures; US wholesale prices rose by 25 percent on a yearly basis (Eichengreen and Garber 1951, 183).

Eccles and the Board opposed the termination of price and wage controls, and also the premature repeal of the excess profit tax in 1945 (Meltzer 2003, 608). Eccles argued that "when the war is over, it should be apparent to everyone that the need of controls is much greater, if anything, than during the war" (Eccles

[8] "The one thing you cannot do is to have confidence shaken in that 2 ½ percent rate. If you let that go below par, there is always a question, where does it go? Because people remember, a great many of them, what happened after the last war when they let those securities go below par" (Eccles 1947, 620).

[9] Meltzer notes that "this belief in the impotence of monetary policy was so widely held that is was hard to find any memo suggesting the opposite" (Meltzer 2003, 634).

1948, 5). He felt that the government did not appreciate the seriousness of "the inflation problem." It would have been much better to retain the controls and delay tax reductions "until such time as supply was more nearly in balance with demand" (Eccles 1951, 411).

Eccles raised the issue several times with Treasury Secretary Vinson, but the response was always the same: "The proposal would increase the already large interest charge on the public debt" (Eccles 1951, 423). Eccles explained that the Federal Reserve had a mandate from Congress to control inflation, and that the current policy of pegged rates added to the inflationary pressures. But the Treasury was sold on "the philosophy of low and lower rates of interest; that low rates have little effect on inflation, and that inflation has to be dealt with by direct, rather than monetary measures" (Eccles 1949, 5). As a result, interest rates remained low, prices continued to rise, and finally President Truman called for a special session of Congress (in the fall of 1947) to restore wage and price controls. Congress did not approve of his proposals, but instead authorized the Federal Reserve to control consumer credit and installment loans in an attempt to curb the very rapid growth in credit from the banking sector.

Then, in 1948, a brief recession led to a brief respite from inflation. Wholesale prices stopped rising and industrial production leveled off. As the demand for loans softened, banks and insurance companies once again began to purchase Treasury bonds (Eichengreen and Garber 1991, 184). The Board regarded the recession as temporary, and also as a welcome interlude in the inflation fight. It therefore tried to prevent interest rates from falling by selling bonds during the recession. It even considered raising reserve requirements (Meltzer 2003, 668). The Fed's action was widely criticized for aggravating the recession (Eichengreen and Graber 1991, 184) and it also showed how difficult it was for the Board to transcend the policy agenda of the past.

By early 1950, industrial production had rebound and consumer prices started to rise. The resurgence of inflationary pressures resulted in renewed bond purchases by the Federal Reserve System. The Board continued to press for slightly higher rates, but the Treasury resisted as before. But by now the budgetary situation added to the worries of the FOMC members. After three years of surpluses, the 1950 budget showed a deficit, and with defense and foreign aid spending on the rise, there seemed less scope for reduction in the monetary base (Meltzer 2003, 680). The Treasury was again issuing new securities to finance the deficit, and permitted only very modest increases in short-term rates. The long-term rate remained between 2.38 and 2.43 percent for the entire year.

The return of expansion and inflation led Alan Sproul of the New York Federal Reserve to press for a firmer Board policy, to give "a signal to the whole financial community and to the public that there has been a change in our policy in light

of the changed business and credit situation" (Meltzer 2003, 682). He was willing to confront the Treasury, by increasing the short rates and, if need be, let the long-term bonds go below par (i.e., their rate go above 2.5 percent). Eccles gave Sproul limited support and other members feared that "a large Treasury issue under these conditions might set off an over-rapid readjustment in the corporate bond market with undesirable effects on business psychology" (BGFRS 1950a, 7). The issue remained unresolved, as Treasury Secretary Snyder refused to raise the offering rates on the new issues. The System was not prepared to let the new issues fail, so it purchased heavily, offsetting part of the purchases with sales of bills. "So in this way the first real skirmish between the Fed and the Treasury ended with the System supporting the rates set by the Treasury" (Meltzer 2003, 683).

5.4. THE 1951 TREASURY–FEDERAL RESERVE ACCORD

5.4.1. The Battle of the Peg

The Treasury-Federal Reserve debate over monetary policy was characterized as "a violent conflict" (Sproul in BGFRS 1951b, 9), "a confrontation" (Hetzel and Leach 2001, 4), "a war" (Timberlake 1999, 6), and "a dispute" (Eccles 1951b, 1). Sproul later dismissed the association with "a battle that the Federal Reserve won," since "the System may have won a battle, but Governments always win the wars" (US Congress 1952a, 535). He noted that there had been "difference of opinion between the Treasury and the Federal Reserve System, both of them representing the Government, and you can call it a triumph of reason, if you want to, but not the winning of a battle" (*Ibid.*).

Internally, the Board would also play down the controversy, noting that "difference of opinion between the Treasury and the Federal Reserve over interest rates does not seem to be of epic dimensions" (BGFRS 1951a, 14). Still, many still consider this event "the greatest political battle in the history of central banking" (Davis, 2012) and the "battle of the peg" certainly has all the ingredients of a classical drama: The early skirmishes; the diversions; the parading; the attempts to win the public opinion and the stubborn and strong-willed actors. Of particular interest is the evolution of views on monetary policy during this period among the key Federal Reserve actors, including Eccles, especially regarding the need for a more flexible interest policy[10].

[10] Eccles favored fiscal policy to stabilize the economy and control inflation. But with inflationary pressures building after the onset of the Korean War and Congress reluctant to grant further administrative powers to control reserves, he gradually came to believe that a more flexible interest policy was required (Hetzel and Leach 2001, 37n8).

But Meltzer notes: "The accord was not inevitable. The Truman Administration could have appealed to patriotism, to the exigencies of war and to populist sentiment against higher interest rates to keep the support program in place" (Meltzer 2003, 712). But four factors worked to the benefit of the System. First, it found support within the administration. Second, the financial press took its side. Third, opinion in the Senate was shifting towards a more independent policy, and inflation was rising rapidly (Meltzer 2003, 702). In the end, the System prevailed and a new era of central banking would begin. (BGFRS 1951e, 12).

5.4.2. Early Skirmishes

As the economy recovered from the 1948-49 recession, inflationary pressures were again building and Eccles was repeating his calls for balanced budgets and monetary restraint. The Treasury remained unmoved by repeated request for rate hikes. As President Sproul of the New York Fed would later say about this period: "We came over [to the Treasury] and laid down our programs with them time and time again, but the Secretary usually turned to an associate and then told us that he would let us know what he was going to do, but his announcements then differed almost completely from our recommendations" (BGFRS 1951a, 36). Patience at the Federal Reserve Board was about to run out, and over the next two years, the two parties would be engaged in several early skirmishes.

5.4.3. The Douglas report

The ongoing Treasury-Federal Reserve tensions led Congress to appoint "the Douglas Committee" in 1949 to study the "Monetary, Credit, and Fiscal Policies" of the United States. Senator Paul Douglas had been a professor of economics at University of Chicago and was elected to the US Senate in 1949 as a Democrat. As chair of the Sub-committee he conducted the hearings during 1949 with considerable skill and the report did its part in changing the political balance in Congress in favor of the Federal Reserve (Meltzer 2003, 582).

When Senator Douglas appeared on the Senate floor to defend the report, he noted that as long as the Federal Reserve remained "the residual buyer of Government securities," every security the Federal Reserve buys adds to bank reserves, or "high-powered money" that the bank could use to lend. "This is the royal road to inflation" (BGFRS 1951c, 10). The pegging of the rate structure should therefore not be allowed to persist forever. Even though both agencies had voiced opposite positions in the hearings, he sensed that there could be "a meeting of minds" (*Ibid*., 14). The Federal Reserve System needed to be freed from "support operations which continue week in and week out to feed high-powered

dollars in the market where inflationary pressures are rampant and where bank loans alone have gone up by 10 billion dollars since Korea" (*Ibid*., 15). In order to avoid inflation, it was essential that the Federal Reserve could restrict credit and raise interest rates "even if the cost should prove to be a significant increase in service charges on the Federal debt…" (*Ibid*., 16).

> *It is the will of Congress that the primary power and responsibility for regulating the supply, availability, and cost of credit in general shall be vested in the duly constituted authorities of the Federal Reserve System, and that Treasury action relative to money, credit, and transactions in the Federal debt shall be made consistent with the policies of the Federal Reserve. (US Congress 1950, 31)*

This "Douglas resolution" asserted the primacy of the Federal Reserve in open market operations and credit policies, and directed the Treasury to adjust its debt management policies in the light of their policies (US Congress 1949, 390). Thus, the Committee supported the view that the interest rates should be determined by monetary rather than by fiscal authorities.

The subcommittee's report helped shift public opinion in favor of the Federal Reserve's point of view. Even though the instructions and new mandates proposed by the committee were never passed, it probably stiffened the Federal Reserve's resolve in the subsequent conflict with the Treasury (Tobin 1953, 119).

5.4.4. The Korean War

The other event that changed the Treasury–Fed balance this spring was the start of the Korean War (Meltzer 2003, 582). President Truman's attention was suddenly diverted when South Korea was invaded on June 25, 1950. The Korean Peninsula had been divided along the 38th parallel after the Japanese surrendered in September 1945, but failure to hold free elections in the North in 1948 led to tensions with the Soviet supported communist regime. With the outbreak of war, there was an urgent need to switch US production from civilian to military use again. Expectations of shortages and possible rationing led to sharp price increases, and wholesale prices increased by 17 percent between June and December 1950 (Hyman 1976, 341). With upward pressures on interest rates as well, System purchases of Treasury securities continued on an accelerating pace.

Eccles had strong reservations about the war and feared that the US "was stumbling into an uncharted Asian morass without reckoning the costs" (Hyman 1976, 339)[11]. He was also concerned that the US would "be weakened by a military program which we cannot maintain indefinitely without regimentation or

[11] Eccles would later oppose the war in Vietnam based on the same concerns.

inflation" (Eccles 1951a, 1). With the government budget in rough balance, it was primarily the growth in private credit that needed to be reined in: "To prevent inflation we must stop the over-all growth in credit and the money supply whether for financing Government or private deficit spending. The supply of money must be controlled at the source of its creation, which is the banking system" (*Ibid.*, 4). If required, interest rates should be allowed to go higher by withdrawing Fed support from the government securities market and penalizing borrowing by member banks from the System. A continuation of the current policy of "frozen pattern of interest rates" would be highly problematic.

In the fall of 1950 Chinese forces entered the war, and in January 1951 US forces were engaged in heavy fighting in and around Seoul. During this period, the tension had been building between President Truman and General Douglas MacArthur. MacArthur opposed Truman's policy of limited war and even wanted to use nuclear weapons if required. The dispute came to a head in mid-February, when MacArthur called Truman's policies "unrealistic and illusory" (Hetzel and Leach 2001, 53).

The Korean War influenced Truman's priorities; he could not fight two wars at the same time. He probably felt that the infighting between the Treasury and the Federal Reserve was of lesser importance and left it to the two parties to sort out their differences. But it would still take some fighting before the final truce was signed.

5.4.5. Fed Flexing Muscles

In late 1950, the conflict between the Federal Reserve and the Treasury intensified and became quite public (Meltzer 2003, 699). With inflationary pressures mounting, the Federal Reserve Board's patience with the Treasury's foot-dragging was about to end. At the August 18 FOMC Meeting, New York Fed President Sproul voiced his support for a more flexible rate policy and noted that the Treasury was unwilling to sop up available nonbank funds by issuing long-term securities. Eccles agreed with Sproul, and noted that he also felt "it was time the System, if it expected to survive as an agency with any independence whatsoever, should exercise some independence," particularly since the military expenditures was greater now and the budget deficit larger, adding to the money supply. He supported an increase in the discount rate, as well as increased reserve requirements to immobilize reserves of the banks.

The same day, the Board announced an increase of the discount rate to 1 ¾ percent and the FOMC let the short-term rate increase to 1 ⅜. This was the first such change in two years. Furthermore, they noted that they were "prepared to use all the means at our command to restrain further expansion of bank credit" while

"maintaining orderly conditions in the Government securities market" (BGFRS 1950b, 24).

After the meeting, Chairman McCabe and Sproul met with the Treasury Secretary and his staff and informed them about the rate increase. Snyder made no comment at the meeting, but announced right afterwards that the Treasury financing for September–October would take place immediately at the old rate of 1 ¾ percent. This was in direct conflict with the recent System announcement, and as a result, the Federal Reserve was forced to buy most of the new Treasury issue (Meltzer 2003, 693).

5.4.6. Pressure from the President

In early 1951, Chairman McCabe met with the President and Secretary Snyder at the president's request. Truman's main concern was to maintain the peg at 2 ½ percent. McCabe noted that their main problem was the surplus of restricted long-term bonds that carried a premium. The System greatly added to the reserves of the banking system by large buying of such bonds from insurance companies and savings banks, which at the time were very inflationary as the demand for bank credit was exceptionally strong (BGFRS 1951a, 12).

Snyder reiterated the Treasury's desire for a clear statement from the Fed on the 2 ½ percent rates, and he added that "the sooner we let the public know that the 2 ½ percent rate was going to be maintained, the better" (*Ibid*., 13). He noted that there was a lot of psychology involved and argued that investors would stop selling their bonds if the Fed would just reassure them that it would maintain the peg (Hetzel and Leach 2001, 42).

The meeting ended inconclusively, but again McCabe was of the understanding that a compromise was within reach. He was therefore greatly surprised when he read in the newspapers the day after that Treasury Secretary Snyder had announced that the long-term peg would be maintained for the foreseeable future.

Eccles noted that this was "an extraordinary event in the history of relations between the Treasury and the Federal Reserve" and he quoted the New York Times journalist Edward H. Collins, who wrote:

> *Last Thursday constituted the first occasion in history on which the head of the Exchequer of a great nation had either the effrontery or the ineptitude, or both, to deliver a public address in which he has so far usurped the function of the central bank as to tell the country what kind of monetary policy it was going to be subjected to. (Eccles 1951, 484-85)*

The announcement came as a special shock to the Federal Reserve System. They were under the impression that there was an ongoing dialogue with the Treasury

on the design of the war financing program. But officially, the Federal Reserve kept a low profile after Snyder's speech. An exception was Eccles, who appeared before Congress shortly after.

5.4.7. Eccles in Congress, again

Eccles had at this time already drafted his resignation letter to the President (his term expired in 1958), so when he appeared before the Joint Committee, he spoke out honestly and clearly. He urged Congress to control expenditures and balance the budget. The financing of war expenses was more complicated (now) than in World War II, as the economy then had idle resources. If the budget wasn't balanced: "We shall lose the fight against totalitarianism, even though our military and foreign policies are successful in maintaining peace, if we permit inflation to sap the strength of our democratic institutions" (Eccles 1951a, 110).

The large holdings of liquid assets among households and companies added to the inflation pressure, and "makes the entire banking system (into) *an engine of inflation"* (*Ibid*., 116). He added that maintaining the interest peg was equivalent to issuing interest-bearing cash, since the Fed was in effect guaranteeing a 2 ½ percent demand liabilities. At those rates there were far more sellers of Government securities than buyers, indicating that the public was not willing to hold at the existing rates. "The only way to restore the balance is to let interest rates go higher to meet public demands" (Eccles 1951a, 116).

5.4.8. FOMC meeting with the President

As tensions rose between the Treasury and the Federal Reserve System, Eccles was soon to play a pivotal role in the unfolding drama. When the FOMC next met on January 31, McCabe informed them that the president wanted to meet with the entire committee later that same day. This was an exceptional request, and the first and only meeting of this kind in the history of the Federal Reserve System (Meltzer 2003, 703).

In preparing for the meeting, Sproul reiterated that it was important for the Federal Reserve to "maintain public confidence in the real value of the dollar and the Government credit and not in a fixed interest rate or in fixed prices of Government securities." They should argue strongly for more flexibility in short-term rates and reiterate the need for a higher long-term rate to make these securities more acceptable to the public (BGFRS 1951a, 18). Before they left for the meeting, they agreed to leave the talking to McCabe, and say as little as possible.

The meeting itself was inconclusive. The President talked at length about the war effort and the need to maintain confidence in government paper and that he

expected the Federal Reserve System to play its part. But at no point was the issue of maintaining the peg explicitly brought up, and none of the participants from the FOMC mentioned it either.

For whatever reason, the President left the meeting with a feeling that Federal Reserve had committed to maintain the rate structure, while the FOMC members was relieved since they had not committed to maintaining the long-term rate.

Even though Treasury Secretary Snyder had not been present at the meeting, the Treasury immediately began to tell its version of what had taken place at the meeting, including the Federal Reserve's continued support for the 2 ½ percent long-term rate. These stories infuriated Sproul and other Reserve officials (Meltzer 2003, 705).

But they were even more surprised when Chairman McCabe received a letter from the President the day after, where he thanked them for their assurances "that the market for government securities would be stabilized and maintained at present levels" (Quoted in BGFRS 1951b, 3). The letter was a crude attempt (by Snyder) to coerce the Federal Reserve to support the present yield structure, but without any basis in what had been said at the meeting. McCabe's immediate reaction was to ask the White House to withdraw the letter. This, he noted, could be done without embarrassment for the President, since the letter had not yet been made public.

5.4.9. Eccles goes public

But later on Friday afternoon, when everybody had left their offices for the weekend, the White House released the President's letter to McCabe. Without consultation and with no possibility for the Federal Reserve to respond, this was the Treasury's "ultimate attempt to impose its will on the Federal Reserve System" (Hyman 1976, 347). This was too much for Eccles. If the Treasury view prevailed, the Fed's most important function – open-market operations – would be reduced to the level of a Treasury bureau.

It was seven o'clock in the evening and all the other members of the Board, including McCabe, had left town. Eccles was also about to leave when he was called up by the press for a comment on the letter. He reflected on the situation for a while, before deciding that the best way for the System to respond would be for him to release the confidential memorandum from the meeting with the President. It would set the record straight and show that the attempts by Treasury to impose its views had no basis in reality.

As a former Chairman of the Board, it was hard for him to breach the confidentiality rules that he so strongly had advocated earlier. However, at this stage of his

career in Washington, "he was driven by the conviction that if men lose their minds as well as their souls, there would be nothing left for the times to try" and he knew that he had to assume the responsibility of releasing the memorandum (Hyman 1976, 347). Thus "Eccles made a momentous decision" to go public (Hetzel and Leach 2001, 46).

The story was front-page news on Sunday, February 4. As Eccles noted, the general impression was that the President's letter did not give an accurate description of what had happened in the White House. As a result, the public got the impression that the White House was putting pressure on an organization that was meant to be independent of political influence. "As a result of this, public sentiment, and hence congressional sentiment, swung to the support of the Federal Reserve" (*Ibid.*).

5.4.10. Next move by FOMC

By Monday morning "the fat was in the fire" (Eccles 1951, 496). McCabe called for an immediate extraordinary meeting. This would be a crucial meeting he noted (BGFRS 1951b, 2). At the start of the meeting, Eccles explained his motivation for releasing the memorandum:

> *I have no regrets. I did what I think was right. If I had to do it over, I would do exactly what I did. I think under the circumstances it was the way that I could best discharge my public responsibility, the way I could best protect the position of this System, as well as to protect my own record. I regret exceedingly that the situation developed to a point where releasing what was to be a confidential document seemed to me to be absolutely essential under the circumstances. (Ibid., 16)*[12]

He went on to explain why he felt it was important for the System to resist the pressure from the Treasury for maintaining the fixed rates. He noted that when the peg had been decided back in 1942, there was a great deal of slack in the economy. There were still ten million unemployed and in idle capacity. "The situation today is exactly the opposite." Despite a budget surplus, private credit is fueling inflation (*Ibid.*, 17).

> *We cannot wait to act. Action is far overdue. In retrospect, I would say if anything, that we have been derelict in not acting sooner and more aggressively. We have failed to take as drastic and strong and aggressive action as the situation has been calling for. (Ibid., 17)*

To those committee members who favored caution, he noted that they had already tried to argue reason with the Treasury for more than a year without

[12] Sproul supported Eccles' publication of the memorandum. No other members voiced support or opposition.

achieving any results. "We no longer have time to work it out in this way. I, for one, feel that the issue has to be faced" (*Ibid*., 18).

McCabe then read out a reply to the President's letter stating the committee's support for the government securities market, but voicing disagreement with his interpretation of the meeting and what had been agreed (or rather not agreed) upon there. All but one of the members agreed to the letter, which was duly dispatched to the White House. He then presented a supplementary letter to Secretary Snyder inviting the Treasury to discuss what policies might be advisable in the immediate future" and laying out the System's positions for these discussions (*Ibid*., 30):

– the Federal Reserve would for some time continue to support the par price of the longest-term restricted bonds;
– the Treasury would offer a longer-term bond with more attractive returns to non-bank investors;
– the Federal Reserve would limit its purchases of short-term Treasuries.

These terms would become the basis for the subsequent agreement between the Treasury and the Federal Reserve. With this change in policy, member banks would instead be expected to obtain their needed reserves primarily by borrowing from the Federal Reserve banks (*Ibid*., 32).

The committee also agreed that the price of the long-term bond should be allowed to fall towards par in small but predicable steps. McCabe noted, however, that as long as the Fed could be instructed by the Treasury to buy at par and 22/32, they had to proceed carefully. They would have to "… exercising extreme care to assure that in carrying out the policies of the Committee no grounds be given for a charge by the Treasury or anyone else of bad faith on the part of the Committee" (*Ibid*. 40).

5.4.11. The Accord

Despite this attempt by the FOMC to clarify policy, the next day the President reiterated his understanding (in a press conference) that "the majority of the Federal Reserve Board agreed with him on his interest rate views" (*Ibid*., 37). McCabe was obviously not getting his message across. In addition, Secretary Snyder announced that he would be going into hospital for an eye operation, and he therefore asked them to keep rates on hold until he was back. McCabe responded "unless someone in Treasury was authorized to work out a prompt and definitive agreement, we will take unilateral action" (Meltzer 2003, 708)[13].

[13] McCabe was favorable to a postponement, but Sproul was opposed. He wanted to go ahead with discussions with the Treasury right away. There was also strong pressure from Congress to postpone (Meltzer 2003, 708n230).

This then set in motion the consultations that would lead up to the Accord. Snyder appointed assistant undersecretaries Edward Bartelt and William McChesney Martin, Jr. to negotiate with the Federal Reserve. The System appointed Riefler, Thomas, and Rouse (Meltzer 2003, 708)[14].

5.4.12. Technical discussions

The technical discussions started in earnest on February 20 and then continued with intensive consultations between the two sides in good spirits. When the FOMC next met in early March, Riefler was able to report on the substantial progress made by the group. He noted in particular that "both sides agreed that monetization of debt must be stopped as far as possible" and that it was essential to proceed carefully, "since that the so-called feud between the Treasury and Federal Reserve was a most significant psychological factor in the current situation" (BGFRS 1951d, 10-11). The Treasury had also accepted, after extended discussions, that the Federal Reserve proposal was "essentially a package and not susceptible to very much compromise" (*Ibid*., 11)[15].

When the FOMC reconvened the next day, Riefler briefed the committee on the ongoing discussions with the Treasury. He noted that the sticking point was the possible effect of the program on interest rates and that it was important that both sides understood what a change of policy would mean in terms of market price and rates (*Ibid*., 32). It was especially important for the Federal Reserve to note that support for an orderly market did not imply support of the par value. He noted that under the new framework, the Treasury would have to offer issues at attractive rates, not relying on the System for support (*Ibid*., 33). There was also agreement that the limited support for the current peg would be desirable during the new bond issue, but that the Treasury did not see the need for support for long after the new offering. "We would not find ourselves going into May or June with a peg at that end of the market" (*Ibid*., 34).

5.4.13. The Treasury – Federal Reserve Accord

When the FOMC's executive committee met on March 3, McCabe refereed to his conversation with the President, who was still concerned about what would happen to the long-term bonds. McCabe had responded that it was difficult to know what might happen, but he was confident that "as the public came to feel that the Government market was no longer regulated, there would be greater confidence

[14] Woodlief Thomas was the Board's chief economist; Winfield Riefler was adviser to the Chairman; Robert Rouse was manager of the System Open Market Account.

[15] At this stage, Eccles withdrew from the meeting to go to Chicago for a speaking engagement; he was thus not present for the second day of the meeting, but he gave his support to the draft accord before leaving.

in it" (BGFRS 1951e, 3). They then discussed how rapidly the market could move, and agreed that the System account would have to be "played by the ear" during the very first days (*Ibid*., 4).

Chairman McCabe then referred to the announcement that would be issued jointly by the Treasury and the Federal Reserve, the statement read as follows:

> *The Treasury and the Federal Reserve System have reached full accord with respect to debt-management and monetary policies to be pursued in furthering their common purpose to assure the successful financing of the Government's requirements and, at the same time, to minimize monetization of the public debt. (Ibid., 6)*

Eccles supported the agreement and noted that "it was a very important step in the direction of a more flexible market and greater freedom in the determination of System open market policies." McCabe added that "the biggest hope in the agreement was the fact that it marked a new era in Federal Reserve–Treasury relations," but he also noted that "it was only a beginning of a period of better understanding" and both parties would have to work hard "to see to it that this new spirit of cooperation succeed" (*Ibid*., 12).

The FOMC then approved the agreement. And the next day Treasury Secretary Snyder approved it, as well. The joint statement was then published on Sunday, March 4[16].

5.4.14. Aftermath

Even though the Treasury lost the battle of the peg, they did not give up the fight. Secretary Snyder let the President know that he no longer had confidence in Chairman McCabe. Without a working relationship with the Treasury, McCabe could no longer function. He sent a bitter letter of resignation, but later resubmitted a bland version when asked to do so by the White House (Hetzel and Leach 2001, 51). Shortly afterwards, the President appointed William McChesney Martin, Jr., the Treasury assistant undersecretary who had so ably conducted the discussions on the Accord, as the new Chairman of the Board of Governors.

In the press, this was widely understood to be Treasury's revenge, and that the Fed had won the battle but lost the war. That is, the Fed had broken free from the Treasury, but then the Treasury had recaptured ground by installing its own man at the helm (*Ibid*., 52). But ironically, Martin turned out to be just as eager in

[16] At the time, press reports of the Accord did not view it as a major change in either policy or Fed independence (Meltzer 2003, 712n234).

defending the Fed's independence as his predecessors[17]. He would go on to serve as Chairman for almost nineteen years; the longest term of any chairman to this time[18].

The market reaction to the Accord was modest. The refunding into the 2 ¾ percent nonmarketable bonds in April did not greatly change the yield on other long-term debt (Meltzer 2003, 713). The Fed declined to support the market beyond the agreed amount, and there was nothing more the Treasury could do about that matter. Henceforth, the Federal Reserve ceased to be party to the system of pegged prices, with their inflationary consequences. "Eccles had won his last battle in Washington" (Hyman 1976, 351).

5.5. LESSONS FOR CENTRAL BANK INDEPENDENCE

Gavyn Davis (2012) claims that the battle of the peg "was probably the greatest political battle in the history of central banking." This "epic struggle between a US president who stood on the verge of a nuclear war, and a central bank that was seeking to establish its right to set an independent monetary policy resulted in an improbable victory for the central bank" (*Ibid.*) Davis thinks the Accord provides important lessons for central banks today that are under increasing pressure to support their sovereigns and cap bond yields. He believes that "this is dangerous territory, which lies right at the heart of a government's relationship with its central bank."

But as we have seen, the history of the Accord can also be read differently, with different lessons to be learned. Seen in a wider historical context and in light of the actions of Marriner Eccles, it is my contention that the Accord should be interpreted as part of a broader vision for a compensatory central bank. According to Eccles, the central bank should be as concerned with depression as inflation. Thus, the lesson today is that central banks should be more concerned with the unemployment problem and supportive of countercyclical fiscal policies. As Eccles noted before Congress in 1933:

> *Unless we adopt the necessary corrective measures, we can only expect to sink deeper in distress, with possible revolution, with social disintegration, with the world in ruins, the network of its financial obligations in shreds, with the very basis of law and order shattered. Under such a condition nothing but a primitive society is possible. Why risk such a catastrophe when it can be averted by aggressive measures in the right direction on the part of the Government? (Eccles 1933, 705)*

[17] Leon Keyserling, chairman of the President's Council of Economic Advisors at the time, said that "Martin promptly double-crossed the President" after becoming Chairman (Hetzel and Leach 2001, 52).

[18] Alan Greenspan served for nearly as long: 18.5 years; Eccles for almost 16 years.

The lesson I draw from the Accord is for a less independent but more effective central bank that acts in a truly countercyclical fashion in tandem with aggressive fiscal policies, when needed. To achieve its objective of business stability, the central bank will also have to gain more control over private credit creation. Only in this way can the central bank be a truly compensatory force in the economy.

5.5.1. Different Lessons from the Accord

Lesson 1: It is remarkable how widely different lessons can be drawn from the history of the Accord. As noted, the Accord can be interpreted quite differently. Many seek to invoke the Accord as support for more independent monetary policy, free from fiscal dominance. Davis (2012) views the Accord as the final "victory over fiscal dominance" and "as the moment when the modern, independent Fed came into existence."

McCulley and Pozsar (2012) provide another interpretation of the Accord history and the lessons from the 1930s. They support the current ultra-loose policy of the Federal Reserve, and note that "it is actually somewhat similar to the framework of bond-price pegging that occurred during the years before the Federal Reserve-Treasury Accord of 1951" (McCulley and Pozsar 2012, 5n3). By keeping rates low for an extended period of time, the central bank supported the government's long-term borrowing program. Unfortunately, fiscal authorities these days are obsessed with balanced budgets. "The problem for central banks currently is therefore not to protect their independence, but to help governments let go of their fears of false orthodoxies that hold them back from borrowing and investing" (*Ibid*., 5).

Still, the Fed's new policy of fixing the expectations of long-term rates at a low level marks the end of a long period of "tussles" between the US Treasury and the Federal Reserve System, where the fiscal authority would have to guess how the monetary authority would react to its fiscal policy decisions. "The decades-long era of Sargent and Wallace's 'Unpleasant Monetarist Arithmetic' (1981) is over" (McCulley and Pozsar, 2012, 6).

The Accord history can indeed be interpreted differently, with different lessons to be learned. One group sees the Accord as the end result of an epic struggle to gain central bank independence and price stability. Another interpretation would set the Accord in a broader historical context and view it as a necessary step at that time to fight inflationary pressures, but would refrain from drawing universal lessons about central bank independence from this specific historical experience. Rather, the lesson is that central bank and treasury policies normally need to be coordinated, and that an independent central bank focused on (only) price stability is only one of many possible configurations for such coordination.

5.5.2. Treasury and Central Banks Need to Coordinate Policies

Lesson 2: There is a permanent need for coordination between fiscal and monetary policy.

During the Patman Committee hearings, Senator Douglas noted the "inevitable conflict" between the Treasury and the Federal Reserve, and the potential of the two agencies running at cross-purposes (US Congress 1952a, 489).

This policy coordination problem has been extensively discussed in the academic literature. Woodford (2001, 70) notes: "Our results imply that a central bank charged with maintaining price stability cannot be indifferent as to how fiscal policy is determined." Sargent and Wallace (1981) discussed this coordination problem in their classical article "Some Unpleasant Monetarist Arithmetic. They showed that monetary and fiscal policy should interact in a coherent way in order to deliver a unique equilibrium. They also noted that the public's demand for interest-bearing government debt might bind the monetary authority and thus possibly limit its ability to control inflation permanently (Sargent and Wallace 1981, 1). The outcome would very much depend on the way fiscal and monetary policies are coordinated: "Like two samurai facing each other in a duel."[19]

The coordination problem was "solved" with the Golden Rule of balanced fiscal budgets. As Woodford noted, "commitments to budget balance or to deficit limits have achieved new prominence in macroeconomic policy in the same period that has seen increased emphasis upon central bank independence and actively anti-inflationary monetary policy, both in the US and in the European Union" (Woodford 2001, 71). Committing the Treasury to balanced budgets should enable the independent central bank to stabilize the price level. "Establishing and maintaining clear boundaries between monetary and fiscal policies protects the independence of the central bank and its ability to carry out its core mandate – maintaining price stability" (Plosser 2012, 4).

The global financial crisis has led to renewed discussion about the best way to coordinate fiscal and monetary policy. Goodfriend (2001, 24) would prefer "the Fed to perform only those functions that *must* be carried out by an independent central bank," and Lacker (2009, 7) adds that, "the Fed's primary focus should be the management of its monetary liabilities" (and nothing else). They are concerned about the quasi-fiscal liquidity operations during the crisis and think that such credit policies could compromise central banks' independence and even their inflation targeting credibility. Peter Praet from the ECB adds that central bankers

[19] "A Japanese Duel", *Financial Times* June 17, 2012, (www.ft.com/cms/s/0/6ee02358-b6eb-11e1-8c96-00144feabdc0.html#axzz25Pk8F4gq), in a discussion of the policy standoff between the Bank of Japan and the Diet.

have to be "especially vigilant to shield monetary policy from attempts to engross it into inappropriate financial stability tasks" for such attempts may turn out to be "disguised aspirations to drag the well-established paradigms of monetary dominance towards the realm of fiscal dominance" (Praet 2012, 5).

But as we discussed earlier, this view of central banking elevates the Accord experience to a universal truth valid in all cyclical stages. Such an interpretation is in my view incorrect. And as Kocherlakota (2011, 3) recently observed: "It may turn out to be optimal for central banks to guarantee fiscal authority debts in some situations. If so, we again have to think of price level determination as something that is done jointly by the fiscal authority and the central bank – just as Sargent and Wallace taught us 30 years ago."[20]

5.5.3. The Central Bank is "Independent within the Government"

Lesson 3: Central banks should not be omnipotent.

According to President Sproul of the New York Federal Reserve Bank: "The independence of the Federal Reserve System does not mean independence from the Government but independence within the Government" (US Congress 1952a, 983).

The Subcommittee endorsed this view, since the Federal Reserve had substantial independence but was nevertheless accountable to the Congress and also affected by the President's appointments of its board members. Despite these relations, they noted that the Federal Reserve was formally independent and could make its own policy decisions without interference from the Administration.

But, the Committee added, "this formal independence of the Board of Governors from the President is inevitably limited by the hard fact that fiscal and monetary policy must be coordinated with each other and with the other policies and objectives of the Government" (US Congress 1952b, 52). According to the Committee, there should be more discussion of economic policies between the Executive agencies, since "what is needed is not the best monetary policy or the best fiscal policy, but the best over-all economic policy (*Ibid.*). The question was how this policy coordination should best take place.

Senator Douglas characterized the potential conflicts between the Treasury (wanting to issue debt at low rates) and the Federal Reserve (wanting to curb inflation with higher rates) as: "Here you are, twins, Siamese twins, but with no central coordinating nervous structure to dictate a uniform policy" (US Congress

[20] Narayana Kocherlakota is president of the Federal Reserve Bank of Minneapolis.

1952a, 489). His solution was a clearer mandate for the Federal Reserve – "to be a counterweight to cyclical economic fluctuations" (*Ibid*., 76). Clearer demarcations of each agency's prime responsibility would be better than the Committee's vague "common responsibility" theory of the Treasury–Federal Reserve System relations. And he noted in his written dissent to the report that the proper principle was "Good fences makes good neighbors" (*Ibid*.)

Despite his (and Eccles') efforts, the Federal Reserve's objective was not changed. But the Committee endorsed the Feds newly gained independence, even though they added that

> *"the independence of the Federal Reserve System is a relative, not an absolute, concept. It is good insofar as it contributes to the formulation of sound policy, and bad insofar as it detracts from it. Measured by this standard, the Subcommittee is inclined to believe that a degree of independence of the Board of Governors about equal to that now enjoyed is desirable" (Ibid., 52).*

5.5.4. The Central Bank Should Support Business Stability

Lesson 4: Central banks should fight inflation ***and*** *prevent deflation.*

The Accord was a solution to a specific coordination problem. At the time, the US economy was close to capacity and there were strong inflationary pressures. Today, many countries are facing mass unemployment and low inflation. This is certainly a situation in which Eccles would have advocated fiscal expansion supported by central bank monetization. But central banks are currently strongly opposed to such action, as they continue to support their narrow mandates of inflation targeting.

There is, however, a growing debate about the inflation targeting paradigm. Jeffrey Frankel noted recently that the current policy regime failed to respond adequately to asset market bubbles and also give inappropriate policy responses to supply shocks and terms of trade shocks[21]. Blanchard (chief economist at the IMF) raised the question two years ago: "To be concrete, are the net costs of inflation much higher at, say, 4 percent than at 2 percent, the current target range? Is it more difficult to anchor expectations at 4 percent than at 2 percent?" (Blanchard *et al.*, 2010, 11).

Nobel Prize winner Robert Engle recently observed that "a little bit of inflation would do a whole lot of good for the US economy, would certainly do a lot of good for the housing market. If we had just a little bit of inflation and house

[21] J. FRANKEL, "The death of Inflation Targeting." *VOX.EU* June 19, 2012. www.voxeu.org/index.php?q=node/8106.

prices went up, all the sudden they'd be above the mortgages."[22] But such suggestions have so far been met with massive silence or have been described as irresponsible and "reckless."[23]

Eccles favored a broader central bank objective that would "promote business stability and moderate fluctuations in production, employment, and prices" (US Congress 1935, 290). Senator Douglas wanted the Fed to be "a counterweight to cyclical economic fluctuations" (US Congress 1952b, 76). Both would probably have endorsed the leading candidate to take the position of preferred nominal anchor – Nominal GDP Targeting.

As Frankel notes, there is still strong resistance among central bankers to give up the hard fought anchor of 2 percent inflation; but pressure is building for a change in the prevailing inflation targeting paradigm.

5.5.5. Control of Private Finance Is a Prerequisite for Financial Stability

Lesson 5: Central banks need to regain control of the credit cycle.

Excessive private credit creation was the key policy challenge facing the Federal Reserve after WWII. The Truman administration ran budget surpluses for several years, but strong bank lending neutralized their effects. "The banks, in other words, created an amount of money just about as fast as the Federal Government, through its fiscal policy, contracted the money supply" (Eccles 1948, 8).

Eccles and his contemporaries were very concerned about the banks' ability to "create money." This quote from a Federal Reserve paper to Senator Douglas in 1951 illustrates their thinking:

> *Most of us… are likely to suppose that the banker lends to other people the money that we deposit in his bank. That is not the case if we look at the banking system as a whole. The outstanding fact, which is so little comprehended, even among bankers who are supposed to know about such things, is that the banking system creates money. (BGFRS 1951a, 3)*

Over time, the concern with excessive money growth has shifted more towards control with the fiscal deficit and how to constrain the Treasury's ability to crate reserve money. For example, Woodford (2001, 70-71) notes that "a central bank charged with maintaining price stability cannot be indifferent as to how fiscal

[22] Quoted in S. RASTELLO, "Engle Joins Krugman Suggesting Higher Inflation for U.S.," *Bloomberg*, May 1, 2012, www.bloomberg.com/news/2012-05-01/engle-joins-krugman-suggesting-higher-inflation-for-u-s-.html.

[23] Paul Krugman's suggestion that the Federal Reserve tolerate inflation of 3 percent to 4 percent to boost the economy was rejected by Fed Chairman Ben S. Bernanke, who said such a policy would be "reckless".

policy is determined. A desirable solution will be to constrain fiscal expectations so that stable prices will not require explosive debt dynamics."

But the recent crisis showed that a rapidly growing banking system can push the financial system over the brink through uncontrolled money growth and additional expansion of "near-moneys." This was a policy problem that was very much discussed by Eccles and his colleagues, as they tried to figure out how the government could regain control of the (growth of) society's money supply. They recognized that it was private credit that was the big problem, not fiscal deficits. This was also the key dynamics of the recent crisis in many countries; massive leverage and credit expansion, propagated by the shadow banking system contributed to a housing bubble and the crash. Excessive leverage and speculative finance are central in the theoretical tradition of Keynes and Minsky. Now these insights have to be integrated into a new paradigm for central banking that focuses as much on controlling private credit as it is concerned with public deficits.

5.5.6. Deficit Financing and the Challenges for Central Bank Independence

Lesson 6: Central banks should support compensatory fiscal policy in a depression.

Eccles argued forcefully that only the government had the money-creating powers that could end a depression. He argued correctly that a nation that borrows in its own currency can never go bankrupt, since "it owes the debt to itself." The central bank should therefore support such fiscal efforts through monetization, since there will be no immediate risk of inflation.

Eccles' heterodox policy position is at odds with current central banking doctrine, as articulated by Fed President Plosser:

> *When the Fed engages in targeted credit programmes that seek to alter the allocation of credit across markets, it is engaging in fiscal policy. While it is popular to view such blurring of the boundaries as "co-operation" or "co-ordination" between the monetary and fiscal authorities during a crisis, ignoring the boundaries puts an economy's longer-term performance at risk*[24].

This awareness of the negative consequences of excessive money growth is the reason that country after country has moved to establish and maintain independent

[24] Ch. PLOSSER, "When a monetary solution is a road to perdition", *Financial Times* May 17, 2012, www.ft.com/intl/cms/s/0/59e7a6f0-9f40-11e1-a455-00144feabdc0.html#axzz25in0pvrP.

central banks, according to Plosser. Without independent central banks, the temptation to use the printing press in the absence of fiscal discipline would just be too great.

According to the prevailing paradigm the bulk of the responsibility for resolving this crisis lies with national governments and "pressing the ECB into the role of ultimate buyer of public debt of individual member states would create the biggest conceivable moral hazard ever; … the prohibition of monetary financing is an indispensable element for a stable currency" (Issing 2011). And Peter Praet of the ECB adds: "It is essential that the clear demarcation lines provided in the Treaty are not violated or shifted. This would constitute a lasting damage and institutional regress to our well-serving monetary policy framework, which would be intricate or even impossible to reverse" (Praet 2012, 5).

But what will happen if the current austerity policy does not work and the crisis deepens? The current policy mix of ultra-loose monetary policy and tight fiscal policy is not working. McCulley and Pozsar (2012, 45) notes that "what is missing (in the US) today is "a fiscal authority with a willingness to spend and respond to the Federal Reserve's unprecedented stance to willingly encourage and accommodate fiscal expansion to facilitate the private sector's deleveraging without depression."

What we need now, as in the 1930s, is forceful monetary stimulus, both through fiscal and monetary means. The Federal Reserve is waiting for the government to do its part in the US, while the ECB has been doing its part only reluctantly so far, partly with reference to the treaty's provisions on central bank independence. Unfortunately, therefore, fiscal stimulus seems to be far away in Europe due to the current strong embrace of the doctrine of "balanced budgets." In due course someone will hopefully heed the lessons from the 1930s and adopt compensatory monetary policies more in line with Eccles views.

5.5.7. Monetary Policy Should Not Be Set in Stone

Lesson 7: We need a change in the current central banking paradigm.

The Patman Committee concluded that central banks should not be independent of the government (US Congress 1952b, 51). The Federal Reserve was accountable to Congress, which had delegated its right to issue money, and the Fed also needed to heed the views of the President and his Administration, even if at a safe distance. A review of the Douglas and Patman reports today reveal how closely intertwined monetary policy and politics was and is, and also how similar the policy issues are today.

The current crisis has led to renewed requests for more political control over the Federal Reserve (and some other central banks as well), and there have been several attempts to rein in their independence[25]. Sproul discussed these same issues in 1948, when he observed that:

> *I don't suppose that anyone would still argue that the central banking system should be independent of the Government of the country. The control which such a system exercises, over the volume and value of money is a right of Government, and is exercised on behalf of Government, with powers delegated by the Government. But there is a distinction between independence from Government and independence from political influence in a narrower sense. The powers of the central banking system should not be the pawn of any group or faction or party, or even any particular administration, subject to political pressures and its own passing fiscal necessities. (quoted in Meltzer 2003)*

This interpretation of central bank independence was supported by the Patman committee in 1952, but would not be consistent with the "omnipotent" role of the ECB. But as we have noted above, the independence of central banks can only be viable if it delivers superior policy outcomes over time. Today the current paradigm of an independent central bank targeting a narrow price goal is under renewed pressure because the model is increasingly seen as an obstacle to optimal policy execution. And, as our discussion of the Accord has shown, the current view of central bank independence is based on a misreading of the historical evidence.

Ugolini (2011, 23-24) argues that "organizational structures for the provision of central banking functions vary over time in response to changes in the surrounding political and financial environment, and the present form is certainly not the only viable institutional solution." Therefore, "the current organizational structures should not be seen as set in stone." He adds that:

> *The same is the case for the implementation of government deficit monetization. In the long history of sovereign borrowing, periods of predominantly direct recourse to financial markets have alternated with periods of debt monetization – the latter being the norm in times of market dysfunctionality. As a result, monetization should not necessarily be seen as evil, but rather as an option to be subjected to a benefit-cost assessment – in the light, of course, of the constraints imposed by the institutional arrangements in force. (Ibid.)*

[25] After the recent crisis, Congress was successful in having the Government Accounting Office to conduct an independent review of the books of the Federal Reserve and the Fed was forced to reveal detailed customer information related to its crisis management operations.

On the whole, he concludes, "historical evidence suggests that the efficiency of any solution (concerning both organizational forms and monetary policies) crucially depends on the sustainability of the institutional arrangement backing them." Eccles would have agreed. The history of the Accord should teach central bankers that independence at times is crucial for fighting inflation, but also encourage them to be more supportive of government efforts to fight deflation and mass unemployment when needed.

It is time for a more balanced central banking paradigm supporting compensatory policies – in the spirit of Eccles.

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6. Trade Credit and Bank Credit Substitution Hypothesis: Case of the Polish Companies

Malgorzata Pawlowska[1] *and Jerzy Marzec*

Summary

The aim of the study was to conduct an in-depth analysis of the phenomenon of trade credit and bank credit substitution hypothesis in the context of credit rationing. The research by sector (industry) was conducted on the basis of panel data for 2001-09, derived from the information reported by Polish enterprises. The results showed a significant effect of the scale and nature of the company's activities on the level of substitution of bank credit by trade credit.

On the basis of econometric model following conclusions were obtained that (1) there was substitution of bank credit by trade credit in Polish companies which (2) intensified in times of financial crisis (in 2008 and 2009) (3) this phenomenon applied to a greater extent to small companies rather than large ones. An empirical confirmation was obtained that during the analysed period rationing occurred and it applied to both small and large enterprises, however the scale of rationing varied significantly. Evidence was obtained that irrespective of the economic situation in Poland, banks pursued a restrictive credit policy more often towards small enterprises rather than large ones.

Keywords: trade credit, substitution hypothesis, credit rationing.

JEL Classification: C32, D22, D50

6.1. Credit Rationing and Substitution between Trade Credit and Bank Credit

6.1.1. Introduction and Purpose of the Research

Do banks in Poland ration credit to companies? This is an interesting question, not only for researchers but also for economists representing the state institutions that have the tools allowing to exert an indirect influence on supply and demand in the credit market. Credit rationing is associated with asymmetry of information and the phenomenon of negative selection, which may manifest themselves particularly during the times of financial crises or restrictive monetary policy.

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Without access to external finance companies cannot fully utilise their production capacity in order to expand the production scale and scope. Their competitiveness and efficiency in relation to other companies decreases, the likelihood of mergers and acquisitions by stronger enterprises increases, which in extreme cases can lead to bankruptcies.

Bank credit is one of the main sources of external financing of Polish enterprises. Poland is a country with a relatively underdeveloped financial market, thus excessive restrictions of the availability of credit by banks causes problems with financing investment projects of companies. On the other hand, in business trading an important form of credit is trade credit which in the period of a limited access to bank credit may become its substitute.

The main purpose of the research project was to conduct empirical research consisting in the analysis of the phenomenon of substitution of bank credit by trade credit, in the context of credit rationing. The research was conducted on the basis of panel data, derived from reports filed by Polish enterprises (F01 and F02) for the years 2001-2009, and therefore the research period covered the financial crisis in 2008-2009. An achievement of the above goal required the accomplishment of the following specific objectives:

1. based on a statistical, measuring the strength and direction of the relationship between changes in trade credit, bank credit and inventories financed with them;
2. measuring the substitution between trade credit and bank credit by sector and by large and small companies;
3. identifying the impact of the economic environment (selected macroeconomic variables) on the selection of sources to finance the operations of enterprises.

The paper consists of four parts: The first chapter presents the purpose of the research and research hypotheses, and discusses the elements of the trade credit theory in the context of credit rationing. This chapter also contains a description and review of the literature on the subject and an overview of research on trade credit carried out globally. The second chapter describes econometric model used for empirical verification of formulated hypotheses, i.e. single panel regression model for trade credit. The third chapter contains a comprehensive description of the estimation results obtained from the model and the results of verification of the hypotheses. The study closes with a summary which presents empirical conclusions.

6.1.2. Research Hypotheses

The study verified a research hypothesis stating that there is a significant relationship between two primary sources of financing companies' current activities, i.e. trade credit and bank credit (see Kashyap *et al.*, 1994). Moreover, the nature of this relationship is closely linked with credit rationing. Companies for which the access to credit is limited, raise funds through trade credit, i.e. they increase liabilities to suppliers of goods and services in their debt; Petersen and Rajan (1994, 1995, 1997). It was assumed, in accordance with the literature on the subject, that when companies face finance constraints, the deterioration of their financial situation has a significant impact on changes in inventory levels. In order to verify the main hypothesis, the following specific hypotheses were formulated:

– H1: *trade credit was substitute for bank credit in the analysed companies;*
– H2: *small companies were affected by substitution of bank credit to a greater extent than large companies;*
– H3: *during the period of the financial crisis (2008-2009), trade credit substituted bank credit to a greater extent.*

In order to test the above hypotheses the econometric model describing the substitution between sources of business financing was constructed. A measurement was performed of the substitution of bank credit by trade credit by sectors and by large and small companies, the impact of the economic environment (selected macroeconomic variables) on the selection of business financing sources was identified. The above research was repeated in this paper for micro-data on enterprises operating in Poland between 2001 and 2009 (therefore the research period covered the recent financial crisis in 2008-2009).

6.1.3. Connections with Global Research

There are two main streams of research on credit rationing in the literature. The first one, the theoretical line of research employing tools developed on the basis of mathematical economics, has been fully disseminated through the works of Stiglitz and Weiss (1981) and Hansen and Thatcher (1983). The second approach of a highly empirical nature is based on the so-called theory of trade credit and was initiated by Petersen and Rajan (1994). Historically, the basis for the development of microeconomic empirical models was created by, among others, Schwartz (1974), and Chant and Walker (1988). In this case, the starting point was a traditional microeconomic description of the behaviour of the manufacturer. It maximizes the gain resulting from an increase in sales of its goods as a result of trade credit granted to the purchaser under the assumption that prices of goods and interest rates (price of money from the perspective of both counterparties) are at arm's length (data). Similarly, Kim and Atkins (1978) presented a

theoretical discussion of the optimal level of (net) working capital from the viewpoint of the enterprise value.

This study refers to a greater extent to the second approach which has been developed for more than a dozen years and results of which were – and still are – presented in opinion-forming economic magazines such as "Journal of Banking and Finance", "Quarterly Journal of Economics", "Journal of Finance" and "Journal of Money, Credit, and Banking". The above studies refer directly to the concept of the research of Petersen and Rajan (1994, 1995, 1997) where a hypothesis is constructed that if firms have the credit rationed, then, as a result, they increase the share of trade credit in their liabilities (see also Hobdari, 2008). Previous studies have also shown that during the financial crisis and credit crunch, trade credit compensates companies for the unavailability of loans from banks (see Love *et al.*, 2007, Guariglia and Mateut 2006, 2010).

Unfortunately, it is difficult to verify this hypothesis in practice because it is based on the implication that if the volume of trade credit increases, rationing occurs. However, the theory of trade credit implies that there are other reasons causing an increased interest in the external source of business financing, i.e. credit extended by suppliers of materials, intermediate products and services. This approach is therefore not devoid of shortcomings.

It is worth mentioning that in the literature on the subject economic analyses focus exclusively on single-equation models describing changes in trade credit, investments or inventories. In such cases researchers consider regression equations for one of the above mentioned variables, while treating others as exogenous or random, but uncorrelated with the current random component. Single-equation models for inventories were used by, among others, Carpenter *et al.* (1994), Kashyap *et al.* (1994), Zakrajsek (1997), Cunningham (2004), Blasio (2005), Guariglia and Mateu (2006, 2010), Yang (2011). A single equation for trade credit granted or the two separate equations, for liabilities to suppliers and receivables from customers, also constitute the basis for conducting the research (see Delannay and Weill, 2004; Cunningham, 2004; Ge and Qiu, 2007, Love *et al.*, 2007, Paul and Wilson, 2007; Bougheas *et al.*, 2009). Dynamic Euler equation for investment is presented by: Bond, Meghir (1994), Hubbard *et al.* (1995), Wang (2003), Bond and Reenen (2007), Hobdari (2008). The results of empirical research that explores the use of regression equations for trade credit and inventories in order to examine the phenomenon of substitution in credit rationing, were described in more detail in the chapter dedicated to motives for the use of trade credit. Extensive research on the determinants of trade credit in Polish enterprises was conducted by Zawadzka (2009). She applied a single-equation linear regression model for cross-sectional data and the logit model for survey data. In her research she used two sets of data containing information on 5,335 small businesses from across Poland (including data on 1,799 micro enterprises)

and on 889 enterprises from the region of Central Pomerania, which by being originated from all sections were to provide a representative sample of the general population.

A classic, historically the first trend (dating back to the seventies of the twentieth century) of research on rationing used the concept of the disequilibrium in the market of goods and services, developed on the basis of mathematical economics. Systematic empirical research using credit market disequilibrium models has been conducted for many years. For example, the results of credit rationing in the markets of the economies of countries like USA, Japan and the Czech Republic, were presented by Sealey (1979), Asako and Uchino (1987) and Pruteanu (2004).

Research on the credit market in Poland were presented in the articles written by: Bauwens and Lubrano (2007), Hurlin and Kierzenkowski (2007), and Marzec (2011). The articles used data for the whole Polish banking sector from the perspective of time. An analysis of the rationing at the micro level was performed in the articles of: Perez (1998), Atanasova and Wilson (2004), and Ogawa and Suzuki (2000). For this purpose, unit panel data were used, obtained from companies operating in the market of a particular country. A concise list of research on credit market disequilibrium can be found in, inter alia, Pruteanu (2004).

6.1.4. Elements of the Trade Credit Theory in the Context of Credit Rationing

The phenomenon of the sale of products with deferred payment was and still remains an interesting area of research, both theoretical and empirical. Trade credit is a manifestation of cooperation between the producer and the customer of goods. Its role is strengthened when customers of goods encounter problems with obtaining bank loans due to, for instance, the information asymmetry in the relations between a banking institution and a prospective borrower. The trade credit theory in the context of bank credit rationing is based on the financial motive for using it. The motives for extending trade credit also result from: (i) the benefit for the manufacturer of possessing the current and complete information on the customer's standing, (ii) the opportunity of reducing transaction costs and costs of storing finished goods, (iii) the possibility of applying a flexible pricing policy for customers of goods and of ensuring the guarantee of quality of products sold (see Delannay and Weill, 2004; Paul and Boden, 2008). Rajan and Zingales (1995) estimated that trade credit in 1991 constituted 17.8% of total assets of US companies, and in Germany, France and Italy it was more than 25% of enterprises' assets.

Petersen and Rajan (1994) proposed to adopt the volume of trade credit as the measure of bank credit rationing. This follows from the premise that if a company

has credit rationed by banks, it is forced to borrow from alternative (more expensive) sources for as long as the return on investment exceeds the cost of capital derived from these sources.

The concept of credit rationing emerged as a byproduct of the thesis that monetary policy has a strong direct impact on the economy through spending mechanism. In the fifties of the twentieth century a predominant view was that monetary policy tightening may have a strong influence on the reduction of private spending, even if the expected changes in interest rates are small because banks reduce the availability of loans. This was the basis for the doctrine of availability based on the view that expenses always exceed available resources (*cf*. Matthews and Thompson, 2007).

Monetary policy affects the real economy by reducing financial resources available to businesses. In particular, when a restrictive monetary policy is applied, companies with a limited access to capital reduce their inventories. However, the impact of a restrictive monetary policy may be mitigated by the availability of trade credit. Companies with financial constraints may increase working capital, for instance by increasing the amount of trade credit contracted. Thus, the impact of a restrictive monetary policy depends on the extent to which trade credit replaces services of banks and other financial institutions.

The theory of credit rationing and other concepts related to supply-side restrictions on lending refer to the existence of information asymmetry in the financial system. This phenomenon consists in an unequal access to information on the financial situation of individual borrowers. The occurrence of high information asymmetry in financial markets leads to the emergence of two types of risk: negative selection (involving the displacement of better investment projects by worse projects) and moral hazard problem, i.e. a situation where the share of entities intending to deceive a credit institution in the general population of entities reporting demand for credit is very high. Both types of risk lead to high costs of obtaining information on potential borrowers.

The literature usually refers to two types of rationing (Keaton, 1979). Type I rationing occurs if all borrowers within a particular group are rationed. Type II rationing occurs when in a homogeneous group of entities applying for a loan, some entities receive credit while others do not. If credit rationing causes a complete cessation of lending by financial institutions, a credit crunch occurs. It should be noted that credit rationing and credit crunch are associated with the presence of the credit channel, however they are not a necessary condition for its functioning. This is because both phenomena can in fact occur independently of the functioning of the credit channel. This may be related to, among other things, regulations limiting possibilities of banks to grant loans or to a financial crisis (banks lose their liquidity).

6.1.4.1. Definition of Trade Credit

Trade credit, also known as commercial credit, is granted by the seller to the buyer and takes the form of a sale with a deferred payment. It is a preferred alternative to bank loans which are often obtainable depending on positive verification of banking procedures which require the borrower to meet numerous strict conditions. Trade credit may be regarded as a substitutional way to raise funds while skipping the bank path, which in turn allows to finance trade exchange between counterparties. Costs of trade credit are not straightforward. On the one hand, trade credit may be competitive to bank loans also due to lower transaction costs associated with its use. In order to obtain a loan from the bank, many time-consuming procedures must be undertaken which make its cost higher (*cf*. Howorth and Reber, 2003, Pike and Cheng, 2001; Wilson and Summers, 2002). In addition, the buyer has the opportunity to sell the product even before the due date, and thus does not need to engage its funds for this period or use working capital loans, which guarantees the maintenance of liquidity. Trade credit may also constitute a cheaper source of financing for customers with a poorer creditworthiness (Petersen and Rajan, 1997). However, deeming it a cheaper source of financing than bank credit depends on the use of a discount (rebate). On the other hand, there is evidence that trade credit is a more expensive source of financing than bank credit and its price depends on the value of collateral used. The empirical research measures trade credit usually as the value of short-term liabilities from recipients of services and finished goods (see Petersen and Rajan, 1997, Ge, and Qiu, 2007; Bougheas *et al.*, 2009). However, other concepts are also used. Researchers often also consider the difference between short-term liabilities (excluding loans, borrowings and issuances of securities) and the corresponding short-term receivables. This difference is the expression of the so-called net trade credit; see Delannay and Weill, 2004; Guariglia and Mateut, 2006; Ge and Qiu, 2007, Love *et al.*, 2007. The variable thus obtained indicates which companies grant trade credit and which companies receive it. This phenomenon may be also measured in another way, i.e. at a nominal scale. Ge and Qiu (2007), Elliehausen and Wolken (1993) and Ng *et al.* (1999) use in practical research a logit model and distinguish two situations: (1) short-term liabilities are greater than short-term receivables, (2) an opposite relationship occurs. The latter approach involves, however, a loss of information on the variability of the endogenous variable. The source of information on trade credit is financial statements. According to the accepted definition, this category includes short-term trade payables (regardless of maturity) to related parties and other entities as of the end of the year. Settlements with related parties play a minor role because they concern only a small group of companies.

6.1.5. Overview of Research on Trade Credit

The following motives may be distinguished in the research on trade credit:
– commercial (trading) motive – facilitating the exchange of goods;
– financial motive – a source of financing that is an alternative for bank credit which may vary over time depending on the conditions in the credit market.

6.1.5.1. Commercial (trading) Motive – Facilitating the Exchange of Goods

The market motive for using trade credit occurs when the asymmetry of information between the supplier and the buyer is high (i.e. when demand is variable or if the supplier applies high margins), it relates mainly to effective cash management in order to reduce transaction costs (*cf*. Dellannay and Weill, 2004). The value of trade credit is closely linked to the number of transactions and sales volume (*cf*. Nilsen 2002).

The literature presents three main market motives for using trade credit: reduction of the information asymmetry between the supplier and the customer, price discrimination, acquisition of shares in the company of the buyer receiving credit.

The use of trade credit reduces the transaction costs arising from the information asymmetry between the supplier (seller) and recipient (buyer). The reputation of the seller guarantees the quality of the product, while the rating of the buyer may reduce concerns about non-payment of trade credit at the seller (Ng. *et al*., 1999). The use of trade credit is an effective guarantee of product quality because it allows the supplier (who does not have sufficient reputation or whose products are not well known) to extend the repayment of the loan so that the buyer is able to verify product quality before payment (Long *et al*., 1993). In addition, special payment terms (e.g. discounts at the beginning) may allow customers to improve their credit standing (Smith, 1987).

The use of trade credit reduces transaction costs in paying bills for goods and allows the company to manage cash flows better, because the payments may be independent of the delivery schedule (Ferris, 1981). Instead of paying bills on each occasion, the buyer places an order for a supply of goods and pays once a month or once a quarter, while the seller develops a system to compare these payments. Trade credit allows to reduce transaction costs and costs of storing goods by smoothing out fluctuations in demand, particularly in situations where the product is subject to seasonality of demand and supply (Emery, 1984, Long *et al*., 1993).

Trade credit can also be used for price discrimination. Credit terms are usually independent of the creditworthiness of the buyer, therefore the use of trade credit allows to reduce the effective price of the actual low quality of borrowers

(Petersen and Rajan, 1997). Brennan *et al.* (1988) proved that if the competition in the product market is low, suppliers have an incentive to discriminate between customers paying in cash and using credit. Another motive for price discrimination is the fact that companies apply high margins between the selling price and variable costs. These companies have an incentive to sell products at a higher price to existing customers. Antitrust law often prevents price discrimination, however the use of trade credit can be used as so-called premium on risky customers.

In addition to short-term benefits arising from the provision of trade credit, such as an increase in sales, the supplier may pursue other objectives in the longer term. It is in the interest of suppliers to, for instance, support the functioning of purchasers of goods by providing them with regular funding. By providing trade credit the supplier may obtain a share in the capital of the recipient, especially when its deliveries of, for instance, materials or raw materials are very important in the production of the recipient and when it maintains close managerial relations with the recipient (Smith, 1987; Petersen and Rajan, 1997). Huyghebaert (2006) found that the desire to acquire shares in the purchasers' company allows to adopt more favorable conditions of default by creditor companies than by banks. In addition, he demonstrated that *start up* companies with a concentrated ownership structure use trade credit more often.

6.1.5.2. Financial Motive

Trading motive may result from the information asymmetry between sellers and buyers, while the financial motive is based on the information asymmetry between banks and companies which may prevent the financing of quality projects.

The financial motive for using trade credit specifies a deferred payment as a source of financing that constitutes an alternative for bank credit and may vary over time depending on the conditions in the credit market. Proponents of the financial motive state that owing to improvements in technologies used for banking transactions which minimise transaction costs through the so-called deferred payment, a decline in the use of trade credit should be observed. However, such trends have not been observed in markets, which suggests that there must be other motives for using trade credit than the trading motive (e.g. Frank and Maksimovic, 2005). The literature presents two main financial motives for using trade credit: information advantage of suppliers over banks and substitution of trade credit and other financing sources.

The information advantage offers to the supplier – compared with traditional lenders – more benefits from the financing. The advantages of such financing

relate to various aspects of the supplier – recipient relationship. Firstly, the supplier's costs of monitoring its customers may be lower than bank's costs (the supplier can collect customer information from, for instance, the business activity, dates and size of customer orders and the buyer's inability to take advantage of discounts for early payments) and the supplier can obtain customer information in a faster and cheaper manner than the bank (Mian and Smith, 1992, Petersen and Rajan, 1997, Jain 2001). Jain (2001) believed that both the bank and the seller may have access to customer information, however bank credit can be then offered to the buyer as trade credit, thus the buyer loses because it pays a higher interest rate than would be charged on direct loans from the bank. Secondly, Longhofer and Santos (2003) argue that the use of trade credit maximises social wealth. If the value of collateral for goods supplied is greater for the seller than for the bank, it gives the recipient of trade credit a better protection on assets and creates benefits for both trade creditors and other debtors. In addition, financial institutions may demand a return of company's assets to recover their debt claims (Mian and Smith, 1992; Frank and Maksimovic, 2005, Petersen and Rajan, 1997). Thirdly, the supplier may have an advantage in controlling the buyer, in particular if its products constitute a large share in the buyer's sales. In such cases the risk of future supplies being cut off due to a failure to meet the payment deadline may be more effective than a direct risk of being cut off from future funding (Petersen and Rajan, 1997; Cunat, 2007). Fourthly, the supplier has the information advantage over the bank because it knows more about the market, and this helps to identify the customer having financial problems (Ng *et al.* 1999).

The company may be more willing to extend credit to its customer than a financial institution. Numerous studies provide an empirical justification for the statement that trade credit is a substitution source of financing for companies which are not attractive borrowers for banks, due to, for example, a relatively high credit risk. When researching small businesses in the US, Petersen and Rajan (1997) showed that these companies use more trade credit if credit from financial institutions is not very accessible. Their results also indicate that companies with a better access to traditional financing offer provide more trade credit. Similar results were obtained in a research on a large sample of public and private companies in the UK which showed that the demand for trade credit decreases along with the possibility of the so-called institutional funding (Atanasova, 2007). The above research suggests however that trade credit financing is a secondary source of funding in relation to bank credit (Myers and Majluf, 1984).

Another position in the funding hierarchy is a consequence of relatively high costs of trade credit. Huyghebaert (2006) and Wilner (2000) argue that a higher price of trade credit reflects higher credit risk. However, most companies use both trade credit and bank credit. Biais and Gollier (1997) demonstrated that the use of trade credit is a signal for the bank of holding information on one's customers. In

their model, the availability of trade credit facilitates the access to relatively cheap bank loans, thus the authors suggest that the use of trade credit is complementary to bank loans. Burkart and Ellingsen research (2004) provides similar arguments. Although trade credit is usually considered to be a relatively expensive source of financing, opposite arguments can be also found in the literature. Trade credit can be seen as a cheaper source of financing especially for small companies because they are less reliable to banks (*cf*. Howorth and Reber, 2003, Pike and Cheng, 2001; Wilson and Summers, 2002).

After comparing state-owned enterprises and non-state owned enterprises in China, Ge and Qiu (2007) demonstrated that companies with limited access to bank loans took out more trade credit, which means that it was used for financial rather than transactional purposes. Frank and Maksimovic (2005) suggested that in developing economies if bank credit is less available, trade credit can be an effective tool for suppliers acting as financial intermediaries.

Fisman and Love (2003) showed that trade credit plays an important role in developing economies and found that in countries with a weaker financial system its dissemination could have a positive impact on economic growth. Research by Demirgüc-Kunt and Maksimovic (2001) showing the relationship between the development of the banking system and legal infrastructure and the use of trade credit demonstrated that in countries with an inefficient legal system, companies use more trade credit than bank credit. On the other hand, in countries with a developed banking system, trade credit and bank credit constitute complementary sources of business financing.

Most studies on the use of trade credit as a substitute for bank financing focus on changes in its use during the periods of restrictive monetary policy, however there are more and more works on the impact of financial crisis on trade credit.

Taketa and Udell (2007) observed that during the Japanese financial crisis, both the use of trade credits and short-term bank loans increased, suggesting that they are not substitutable. Love *et al.* (2007), by examining the impact of the financial crisis which took place in 1997 in the countries of East Asia and the economic crisis in Mexico, found that during credit crunch trade credit compensated for the lack of lending by banks. Pike and Cheng (2001) demonstrated on the basis of surveys of large British companies that the overriding objective of the use of credit in companies is to minimise risk, especially in the area of protecting receivables. Tsuruta (2007) showed empirical evidence that non-financial enterprises in Japan acted in the market as financial intermediaries. His research showed that during the recession the level of provided trade credit decreases and that suppliers reduce trade credit for manufacturing companies with a high level of receivables, regardless of how risky these companies are.

However, Yang (2011) showed that trade credit and bank loans are not merely substitutes for one another but also complements to one another. In conditions of tight monetary policy, trade credit becomes a cheaper alternative to bank loans and operates mainly as a substitute for bank loans. However, during looser monetary episodes, even when the economy is weak, trade credit is more expensive to obtain. Trade credit and bank loans are dominated by the complementary effect. The role of trade credit, either as a substitute for or complement to bank loans varies over time according to credit market conditions.

6.1.5.3. Theory of Trade Credit Channel

Although the trading motive suggests that the use of trade credit should be stable over time, according to the financial motive, depending on the availability and prices of other financing sources, demand for trade credit in the enterprise may change significantly.

Changes in demand for trade credit were first demonstrated by Meltzer (1960) who found that companies with a limited access to bank loans, increase the use of trade credit. In addition, Meltzer showed that during the period of a tightened monetary policy in the mid-50s of the last century companies with relatively high cash balances extended the average time for which trade credit was granted, and thus financed companies that were discriminated with credit constraints by banks. Meltzer's proposal (1960) was subject to a scientific discussion. Based on research on the behaviour of companies in the US between 1974 and 1991, Oliver and Rudebush (1996) and Gertler and Gilchrist (1993) demonstrated that there is no confirmation for Meltzer's thesis. In addition, Biais and Gollier (1997) found that the use of trade credit and bank credit is complementary because it constitutes a signal to the bank about the quality of the borrower and encourages to extend credit.

On the other hand there is research supporting Meltzer's hypothesis, including research performed by Duca (1986) and Nielsen (2002). Duca (1986) observed that companies are more willing to use trade credit if conditions for granting bank credit are more stringent. Based on a research of companies in the US, Nielsen (2002) found that the use of trade credit as a substitute for bank credit during the period of a restrictive monetary policy was significant for both small and large businesses that did not have access to the credit market. Fisman and Love (2002) confirmed Meltzer's thesis on the basis of international research. The results of cross-country analysis showed that trade credit is an alternative to bank credit as the source of financing.

Based on Meltzer's hypothesis (1960), Kashyap, Lamont and Stein (1994), observed a strong correlation between the internal liquidity of companies and changes in inventories during the period of a restrictive monetary policy on the

basis of the model of investments in inventories. Petersen and Rajan (1997) identified an increased use of trade credit in companies whose loan applications were rejected by banks. The phenomenon of substitution of bank credit and trade credit was analysed by Blasio (2005) based on panel data containing 3,862 Italian companies in the period of 18 years (Italy is a good example to test the substitution hypothesis because Italian companies report in their balance sheets large amounts of trade credit (25%-35%), alternative sources of funding are usually difficult to obtain). Blasio's research (2005) was based on the model of Kashyap, Lamont and Stein (1994) which is called in the literature the KLS model, however it was not possible to draw strong arguments to support the substitution hypothesis from the results of this research. Nonetheless it confirmed that the use of trade credit cannot be ignored.

A significant contribution to the development of microeconomic models of inventory changes was made by Lovell (1961) who used the production smoothing model to study changes in total inventories. In the literature on the determinants of inventories in companies there are many works analysing inventory changes with the use of a modified Lovell model (stock adjustment inventory model), extended by an analysis of the impact of the companies' financial situation in the context of bank credit rationing (e.g. Gertler and Gilchrist, 1994; Kashyap *et al.* 1994; Cunningham, 2004; Blasio, 2005). The above works are based on Meltzer's hypothesis. The Blasio research (2005) was a verification of the modified KLS model.

Previous studies on the impact of the company's financial situation on inventory changes have shown that financially stronger companies have better capabilities to absorb shocks in cash flows through better liquidity management. Therefore, in companies with a better financial liquidity inventory changes are less dependent on *cash flows* (*cf.* Choi and Kim, 2001 p. 17). Kashyap *et al.* (1994) and Gertler and Gilchrist (1994) showed that financial situation strongly contributes to the decline in inventories in companies which are affected by constraints in raising external financing.

Taking the above discussion into consideration, it seems that the theory explains the use of trade credit in various ways. The theory of transaction costs (Ferris, 1981) suggests that trade credit reduces the cost of paying bills. The theory of financial benefits (Petersen and Rajan, 1997) emphasises that trade credit should be seen primarily as a solution to information problems concerning product quality and buyer's creditworthiness. In this articles from the literature on the subject an empirical verification was performed of basic assumptions of trade credit which are based on motives for its use (e.g. Elliehausen and Wolken, 1993, Petersen and Rajan, 1994; 1997; Delannay and Weill, 2004; Paul and Boden, 2008, Paul and Wilson, 2007; Zawadzka 2009).

6.2. TRADE CREDIT MODEL

6.2.1. Description of the Relationship between Trade Credit and its Determinants

The starting point for empirical research which will allow to determine the differences in the level of trade credit in individual enterprise sectors is to formulate an equation (or equations) describing the optimal demand for this source of business financing. The works of Chant and Walker (1988) and Elliehausen and Wolken (1993) propose to consider the traditional equation of the conditional demand for trade credit as a function of, among other things, its price and the price of bank credit, as well as the sales volume. In specific empirical research it may be difficult to obtain detailed information on prices from many enterprises and for a long time interval the while these data are important from the perspective of the traditional microeconomic theory. Thus, in practice, a wider list of potential determinants of trade credit is proposed in the empirical model. With respect to the present research, this set was prepared on the basis of the experiences of numerous researchers (see Petersen and Rajan, 1997; Bougheas *et al.*, 2009; Delannay and Weill, 2004, Paul and Wilson, 2007). As a result, it included: inventories (materials, intermediate products, products and goods), liquid assets (short-term investments) or *cash flow* (depreciation plus net profit), bank loans (long-term or short-term), the size of the company (value of revenues from sales, number of employees, value of total assets) and macroeconomic variables informing of processes occurring in the economy.

On the accounting basis, inventories reflect the value of purchased materials, intermediate products, finished products and goods, as well as advances to suppliers. According to the theory of trade credit, inventories and sales are the components defining the transaction motive (see for instance Elliehausen and Wolken, 1993). Liquid assets include short-term investments, for instance cash and other monetary assets. Company size can be measured by the book value of assets (see for instance Petersen and Rajan, 1997) or as proposed by Ge and Qiu (2007) – by the number of employees.

This paper uses the division of companies resulting from the Polish Classification of Business Activities in order to determine the type of the sector. Furthermore, it was assumed that macroeconomic variables inform about the following: a) the situation on the bank credit market and banks' policies on providing loans to companies, b) the level of prices of bank credit, c) the size of the Polish economy (a proxy variable is gross domestic product).

The main category informing banks of the current financial condition of potential borrowers is the share of non-performing loans in their portfolio. A high level of

non-performing loans in total loans means a high level of credit risk. It reduces the security of banks and undermines the possibility of further intensive lending due to the obligation to establish specific risk provisions and freeze a part of working capital.

Credit rationing is affected by the level of competition in the banking sector. The lower the competition, the higher likelihood of rationing caused by price fixing by market participants. The present study uses the concentration ratio (*CR5*) which expresses the market share of five largest banks as a measure of competition in the Polish banking sector.

An important factor explaining the current increase in lending in Poland is the change of the interbank market interest rate which determines the marginal cost of funds for banks. From the standpoint of the trade credit theory the price of bank credit is one of the factors reflecting the financial motive (see Elliehausen and Wolken, 1993). It is assumed that 3M WIBOR is a proxy variable for the price of credit.

Models describing trade credit also include the information on business cycles (see Love *et al.*, 2007). Empirical research was conducted on the basis of data on Polish companies from the period of 2001-2009. Therefore, this research includes the information on the financial crisis in 2008-2009. This phenomenon is measured on a nominal scale.

In the literature on the subject, in order to describe the evolution of changes in trade credit and its determinants, a single regression equation is used which is estimated on the basis of panel data. Due to different definitions of trade credit, usually three specifications are considered which differ only in the definition of the endogenous variable. A response variable is usually trade credit extended or granted and the difference between them. In order to mitigate heterogeneity which results from, inter alia, a different scale of operations, all variables measured in monetary units are often expressed in relation to net revenues from sales (see Bougheas *et al.*, 2009).

6.2.2. Econometric Model Describing the Variability of Trade Credit

In order to describe trade credit, a power model was used. Variables were subjected to logarithmic transformation which allows to perform an analysis of long-term dependencies and reduces the heterogeneity of units included in the estimation sample. Parameters to be estimated and qualifying individual explanatory variables have in such a case an economic interpretation in terms of elasticity.

In the model, the response variable (*TC*) expresses the value of trade credit, i.e. short-term trade payables. Explanatory variables express the following accounting categories:

- liabilities arising from short-term and long-term loans (abbreviated name: kk and kd respectively);
- equity (*kw*);
- revenues from sales (*sprz*);
- total assets (*akt*);
- total inventories (*zap*);
- *cash flow* expressed as the sum of depreciation and financial result to the assets value (cf/akt).

In addition, selected macroeconomic variables were taken into account:

- concentration ratio of the banking sector in Poland (*CR5*);
- a binary variable informing of the financial crisis in 2008-09 (*Crisis*=1 if the crisis occurred in the period, 0 – if it did not occur);
- share of non-performing loans in the total loan portfolio of the Polish banking sector (*zagr*);
- annual growth rate of gross domestic product (GDP);
- average annual level of 3M Wibor (*Wib*; in percentage points).

Therefore, the econometric model took the following form:

$$\ln TC_{it} = \alpha_i + \beta_1 \ln kk_{it} + \beta_2 \ln kd_{it} + \beta_3 kap_{it}/akt_{it} + \beta_4 \ln akt_{it} + \beta_5 \ln sprz_{it} + \beta_6 \ln zap_{it} + \beta \ln cf_{it}/akt_{it} + \beta_8 \ln CR5_t + \beta_9 Crisis_t * \ln kk_{it} + \beta_{10} \ln zagr_t + \beta_{11} \ln PKB_t + \beta_{12} \ln Wib_t + u_{it} \quad (1)$$

where components α_i and u_{it} reflect respectively the effect not observed and not included in the equation, resulting from the assignment to the *i*-th group (the so-called individual effect) and a "purely" random component – a variable with a normal distribution with unknown variance. Index *i* is the number of the enterprise, *t* is the period.

The inference a substitution of short-term bank loan by trade credit is based on the verification of the direction and the strength of the impact of changes in bank credit on the size of the former. The information on this is carried by the β_1 parameter and in order to confirm the above hypothesis, its estimate should be negative. Another hypothesis is that the substitution (if any) concerns to a greater extent small (or medium) rather than large enterprises. An informal test is to compare whether the difference between estimates of β_1 parameters obtained from the estimation of two separate equations for small and large enterprises is statistically insignificant. In addition, using the above model it was examined whether in two years of the crisis the substitution between short-term bank credit

and trade credit was stronger than in the remaining seven periods (β_9 can be expected to be negative). Due to the fact that the "crisis" variable is measured on a nominal scale and shows no differentiation between enterprises (i.e. it equally applies to all units), a low precision of parameter estimation can be expected also for the estimation of the β_9 parameter. Ultimately, the elasticity of trade credit in relation to short-term bank credit is expressed by the following formula:

$$\frac{\partial \ln TC_{it}}{\partial \ln kk_{it}} = \beta_1 + \beta_9 Crisis_t \tag{2}$$

The size of assets, the value of inventories and goods and services sold will probably positively affect the value of trade credit. Thus, parameters β_4, β_6 and β_5 can take positive values. The increase in banking market concentration (*CR5*), i.e. a reduction of competitiveness, may result in a restricted access to bank credit for companies, and this in turn leads to an increase in demand for trade credit, therefore, $\beta_8 > 0$. If banks have a large share of bad loans in their portfolios, it is assumed that they pursue a tightened lending policy towards enterprises. Consequently, the sign of the β_{10} parameter should be positive. An increase in Wibor means an increase in the price of bank credit, which positively affects the size of trade credit, so $\beta_{12} > 0$. In the case of the β_{11} parameter there are no sufficiently strong reasons to determine its sign a priori.

One of the explanatory variables in the model is *cash flow* which primarily informs about the liquidity and solvency of the company. From the perspective of credit scoring a higher probability of company solvency encourages banks to extend credit to it, thus it potentially reduces the need to increase trade credit by the company. Thus, the sign of correlation between this variable and liabilities (and also trade credit) could be negative ($\beta_7 < 0$). On the other hand, in accordance with the principles of the preparation (with the use of the indirect method) of the cash flow statement, an increase in liabilities (e.g. short-term) is entered in it with a plus sign. From the accounting point of view the relationship between changes in trade credit and *cash flow* should be positive ($\beta_7 > 0$). An estimation of parameters on the basis of data will answer the question about which of these effects is dominant in the analysed enterprises sector.

One of the formulated hypotheses is that substitution between trade credit and bank credit applies to a greater extent to small companies rather than large ones. The simplest test used for verifying the hypothesis that the substitution relates to a greater extent to small companies rather than large ones is a standard test for the averages of two samples with unknown variances. The test is based on Student's t-distribution and in the case of regression models under consideration it assumes the following form (see Welch, 1947).

6.3. EMPIRICAL RESULTS

6.3.1. Description of the Sample of Polish Companies

The study involved a large group of Polish manufacturing companies, grouped by the industry and divided into large and small enterprises. Industries are understood as sections defined by the Polish Classification of Business Activities. This study focused on the following sections: 1) Mining and quarrying, 2) Manufacturing, 3) Electricity, gas and water production and supply, 4) Construction, 5) Wholesale and retail trade, 6) Transport, storage and communications.

The economic analysis was conducted on the basis of annual financial data covering the period of 2001-2009. Unfortunately, these data were incomplete. A lack of continuity in accessing data from different years was observed for many companies. Thus, the data set was an unbalanced panel in which the population of companies filing both reports in subsequent years was not identical.

Companies for which the values of the analysed variables took values that are hard to interpret from the economic point of view(for instance when the value of liabilities exceeded the value of assets) were removed from the estimation sample. A group of business entities undergoing restructuring or being insolvent debtors (e.g. in composition bankruptcy) was omitted.

In the case of model for trade credit the estimation sample included companies with short-term and long-term loans. The sample contained approximately 2,360 large enterprises and over 9,000 small companies. The basic characteristics used in the analysis of the data set are presented in table 1A in statistical annex, which provides the information on the largest sections, i.e. "manufacturing" and "wholesale and retail trade" and the aggregate data for all industries divided into large and small enterprises. Empirical distributions for the analysed variables differed significantly from normal distribution due to the asymmetry, leptokurtosis and fat tails; *cf*. results from table 1A (see: statistical annex). Robust statistics, i.e. the median and interquartile range (the difference between the 75th and 25th percentile) were also used for describing these variables. In accordance with the observations, the below indicators confirm that trade credit is the most popular among companies from the wholesale and retail trade industry.

The following tables present summary values of basic accounting categories averaged after observations, broken down into small and large enterprises.

Table 1. Average values of different categories of trade credit in particular periods – companies employing ≥ 250 persons.

Year	Contracted *TC* credit	*TC* (TD) granted	Net *TC*
2001	39,495	40,292	-797
2002	39,137	40,370	-1,233
2003	39,853	40,927	-1,074
2004	36,699	40,110	-3,412
2005	40,416	42,664	-2,248
2006	41,336	43,658	-2,322
2007	40,301	42,936	-2,635
2008	47,878	46,595	1,284
2009	52,278	49,760	2,518

Source: own calculations. Amounts in thousands of PLN.

Table 2. Average values of different categories of trade credit in particular periods – companies employing < 250 persons.

Year	Contracted *TC* credit	*TC* (TD) granted	Net *TC*
2001	4,126	3,965	160
2002	4,358	4,268	90
2003	4,477	4,495	-17
2004	4,703	4,985	-282
2005	4,897	5,070	-173
2006	5,084	5,159	-75
2007	5,131	5,248	-117
2008	5,292	5,246	46
2009	4,920	4,994	-74

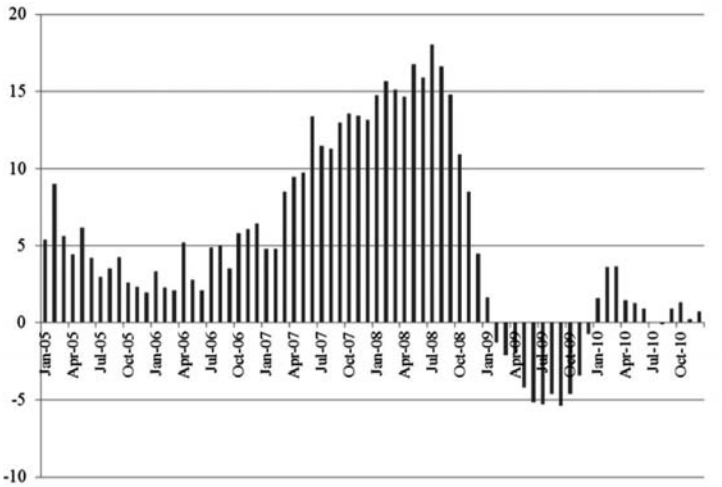
Source: own calculations. Amounts in thousands of PLN.

If we look at recent development in loans to non-financial corporations in Poland (see: figure 1), on the one hand prior the crisis, we observed rapid growth of loans which was stopped after Lehman collapse. On the other hand, the basic characteristics used in the analysis of the data set confirm that trade credit is the most popular among companies in Poland.

Figure 2 presents changes in the basic accounting categories in the analysed period collectively for all sections, by large and small enterprises. The most important component of liabilities is trade credit. These data suggest that in the case of small enterprises its role is more significant than in large companies. During the analysed period an increase in the share of long-term credit and a simultaneous decrease in the share of short-term credit were observed. In addition, at

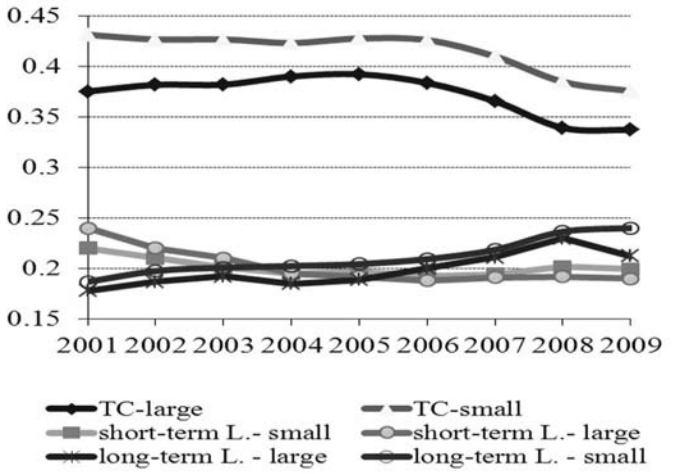
the turn of 2007 and 2008 there was a sharp drop in the share of trade credit in total liabilities which persisted in subsequent periods. A distinct slowdown in the flow of bank loans to enterprises was delayed – it occurred during the crisis, i.e. in the period of 2008-2009. However, despite of the rapid growth, the level of credit to GDP in Poland remained low compared to the euro-zone (see: figure 3). In Poland, in 2009, credit to firm amounted to 16% of GDP compared to 45% in the euro-zone (see: figure 4).

Fig. 1. Growth of Bank Loans for Non-Financial Corporations (y/y) in Poland



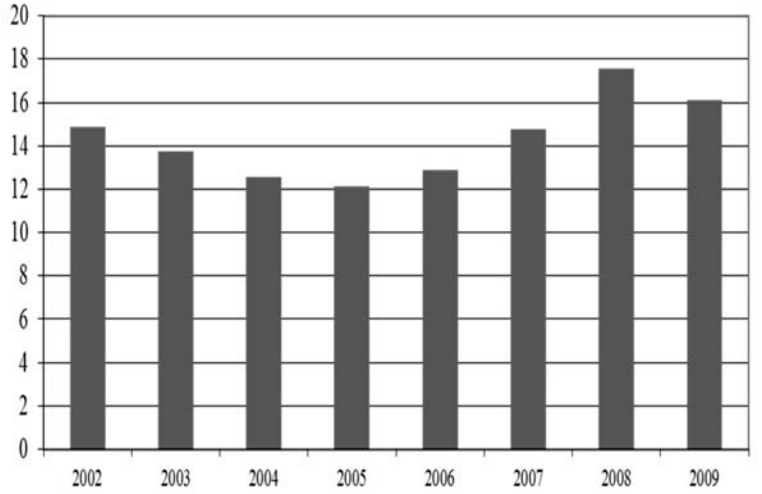
Source: own calculations based on NBP data.

Fig. 2. Average Shares of the basic sources of Financing in Total Liabilities (by large and small enterprises in 2001-2009)



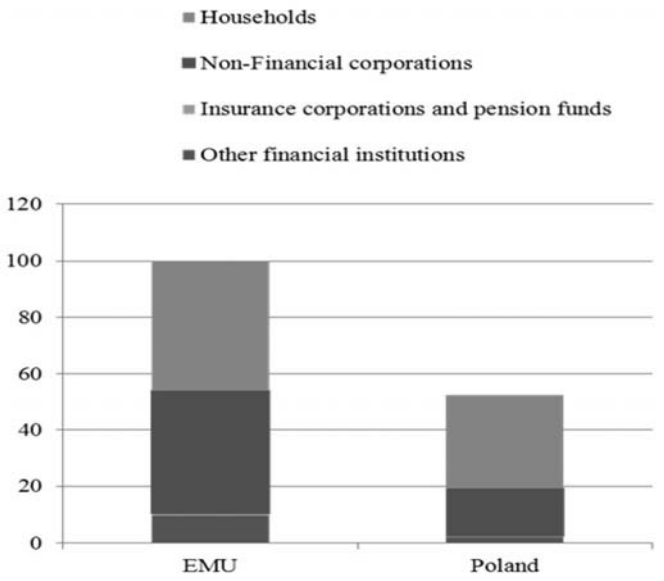
Source: own calculations based on CSO data.

Fig. 3. Bank Credit for Non-Financial Corporations % of GDP in Poland



Source: own calculations based on CSO reports, NBP.

Fig. 4. Structure of Bank Credit to the Private Sector (% of GDP), in Poland and in EMU (2009)



Source: own calculations based on ECB, Eurostat and NBP.

Table 3 presents the values of macroeconomic variables that describe the economic and financial environment of the analysed enterprises. It should be noted that two variables informing about the crisis is measured on a nominal scale.

Table 3. Information on the behavior of macroeconomic variables over time

Year	GDP change (in %)	Average annual 3M Wibor	Share of non-performing loans (in %)	Concentration ratio CR5 (in %)	Crisis
2001	0.5	16.1036	17.8	54.7	No
2002	2.2	8.9985	21.1	53.4	No
2003	4.7	5.6910	21.2	52.3	No
2004	4.0	6.2045	14.7	50.2	No
2005	4.4	5.2795	11.5	48.7	No
2006	6.6	4.2121	7.7	46.5	No
2007	6.5	4.7285	5.5	46.6	No
2008	2.9	6.3580	4.7	44.6	Yes
2009	1.8	4.4100	8.4	44.5	Yes

Source: own calculations.

6.3.2. Results of Estimation for the Trade Credit Equation

In order to estimate the equation describing the evolution of gross trade credit, standard techniques were applied which are used for panel data models (fixed or random effects)[2].

6.3.2.1. Interpretation of Estimation Results

Estimation covered parameters of equations describing the evolution of the value of trade credit contracted (*TC*) in enterprises in individual sections and by their size. First, equations containing a full set of micro and macroeconomic variables were estimated. Parameter scores were enhanced with critical values of the t-Student test which inform of the significance of the impact of a particular explanatory variable on *TC*. Based on these results, further conclusions were drawn about the phenomenon in question. To begin with, it is worth noting that in the twelve individual equations the model's goodness of fit to the data, measured by the coefficient of determination R^2 stood at between 0.52 and 0.89. In half of the cases R^2 was greater than 0.79. Furthermore, the proposed model described better the studied phenomenon in the case of large enterprises (employing at least 250 persons) than small ones (less than 250 persons and equal). In the models for large enterprises the R^2 value was always higher, although the number of observations was much smaller than in the case of small enterprises. This allows to conclude that since small companies vary significantly in terms of the production

[2] The model selection was based on the Hausman test and further inferences were made solely on the basis of the specification which is justified in the light of test results.

technology and management system (strategic decision making etc.), a systemic description of their behaviour and decisions in relation to the level of trade credit or inventory is difficult. Against this background, companies employing over 250 persons seem to be a homogeneous group, with a similar technology and organization.

Let us move to the analysis of detailed results of the estimation. As previously noted the impact of macroeconomic factors on the value of trade credit is only noticeable in the construction and manufacturing industry. An increase in the price of money in the interbank market and the deterioration of the quality of the bank's credit portfolio in Poland increases the demand for trade credit. This influence is particularly strong in construction enterprises. For instance, in large companies a one percent increase in the share of non-performing loans in the bank's portfolio will increase the value of their trade credit value by 0.58% (with an error of ± 0.22%). In the case of small entities this effect is greater because the elasticity is equal to 0.67 (± 0.23). From the perspective of the liabilities management the role of this factor is also important in companies from the 'manufacturing' and 'wholesale' industry. In the case of large and small companies from the "manufacturing" industry the elasticity value is respectively 0.18 (± 0.07) and 0.24 (± 0.05). The above examples show that the deterioration in the loan portfolio of the banking sector in Poland may be accompanied by some activities, such as a slowdown of lending by banks, which then result in an increase in demand for trade credit. In addition, small companies are affected more by this phenomenon than large ones. A potential impact of changes in Wibor which is directly correlated with the price of bank loans is also interesting. Obviously, its role is significant in the construction sector. A hypothetical one-percent (annual) increase in Wibor causes an increase in demand for trade credit by 1.17% (± 0.43%) and 1.47% (± 0.75%) on the average during the same period, respectively in the case of large and small construction companies. In the case of "manufacturing" companies, the impact of Wibor changes on trade credit is also important, though much smaller. The value of the direct multiplier is 0.42 (± 0.06) for small companies.

The calculations performed show that in accordance with intuition trade credit is positively correlated with the total value of assets and revenues. It is observed that in the case of small enterprises a change in total assets influences trade credit more strongly than in large entities. In the case of revenues, this relationship is reversed. A justification of the first relationship consists in the observation that the size of the company may be also measured with the value of assets. Thus the role of trade credit in business development is more pronounced for small companies than for large ones. The second relationship can be interpreted as follows. Larger companies can use their position of being "stronger" and "larger" in the relationship with suppliers of raw materials and services to raise trade credit in order to

finance selected current assets. With respect to another microeconomic variable – *cash flow* – obtained results strongly confirm the theory of credit scoring. However, the interpretation of the relationship between *cash flow* and *TC* in management accounting terms was not confirmed. This variable is negatively and significantly correlated with the size of trade credit, regardless of the nature of business and size of companies. For instance, in the "wholesale and retail trade" industry a one-percent increase in the ratio of *cash flow* to assets causes a drop in demand for trade credit by 0.61% (± 0.22) in the case of large companies and 0.51% (± 0.11) in small companies. The size of companies does not significantly alter the strength of the impact of cash flows on changes in trade credit. It should also be noted that the *cash flow* variable may be negative, and various industries within each section are in a different way dependent on external financing, which changes with the age of the company; *cf*. Rajan and Zingales (1998). The results for "Manufacturing" and "Construction" section were presented in table 2A and 3A (see: statistical annex).

6.3.2.2. Verification of the Substitution Hypothesis

Table 4 presents cumulative results concerning the verification of the hypothesis of substitution between trade credit (*TC*) and short-term bank credit (*kk*). Indeed, the negative sign of the marginal effect of *TC* relative to the second variable (*kk*) speaks for substitution. Based on model results it can be concluded that the phenomenon of substitution occurs in small companies in all industries. In such a case the rate of substitution varies in the interval of (0.088; 0.043), and thus is at a low level. However, in the case of large companies it can be definitely stated that the analysed phenomenon occurs in "manufacturing", and the rate of substitution is -0.015 (± 0.007). For example, a one-percent increase in the value of short-term credit in large companies from the "manufacturing" industry causes a drop in demand for trade credit by 0.015% *ceteris paribus*, while in the case of small enterprises the demand for trade credit will be lower by 0.043%.

The data suggest that substitution occurs also for large companies from the "construction" and "wholesale and retail trade" industries. However, this inference is burdened with a significant error. The hypothesis of substitution was also definitely verified negatively in the case of large business entities from the "electricity production and supply" and "transport" industries for which elasticity signs of *TC* in relation to *kk* are positive, albeit insignificant. Results obtained in this research speak strongly and unequivocally for substitutability (a negative relationship between both variables), which is further confirmed by statistical tests.

Table 4. Substitution between trade credit and short-term bank credit

	Enterprise size	
Section	**Employees ≥ 250**	**Employees < 250**
Mining and quarrying	Yes*	Yes
Manufacturing	Yes	Yes
Electricity production and supply	No*	Yes
Construction	Yes*	Yes
Wholesale and retail trade	Yes*	Yes
Transport	No*	Yes

Source: own calculations.
Symbol "" denotes insignificance at 0.1, "No" ("Yes") – parameter estimate for the "short-term credit" variable is positive (negative).*

The next step consisted in the examination whether during the financial crisis, i.e. in 2008 and 2009, when banks restricted lending, changes in short-term credit additionally and significantly affected the changes in demand for trade credit. Detailed results of the parameter estimation for the "short-term credit×crisis" variable are presented in Table 5. The negative sign of this parameter indicates that during the crisis the substitution between trade credit and short-term credit is stronger than in other periods. The impact of the crisis was confirmed on the basis of the estimation results only in selected industries, particularly in the "manufacturing", "wholesale and retail trade" and "transport".

Table 5. Impact of the financial crisis on the increase in substitution between trade credit and short-term credit

	Enterprise size	
Section	**Employees ≥ 250**	**Employees < 250**
Mining and quarrying	No*	No*
Manufacturing	Yes*	Yes
Electricity production and supply	No*	No*
Construction	No*	Yes*
Wholesale and retail trade	Yes	Yes
Transport	Yes*	Yes

Source: own calculations.
"" denotes insignificance at 0.1.*

In the case of small enterprises it is more often inferred that substitution between the two sources of business financing is stronger during the financial crisis. The authors speculate that this results indirectly from the rationing of credit by banks to companies. Thus, if it occurred during the financial crisis, then the presented

results confirm that it applied to selected industries, and in particular to small enterprises.

Table 6. Impact of the financial crisis on the increase in substitution between trade credit and short-term credit

	Enterprise size	
Section	Employees ≥ 250	Employees < 250
Mining and quarrying	No*	No*
Manufacturing	Yes*	Yes
Electricity production and supply	No*	No*
Construction	No*	Yes*
Wholesale and retail trade	Yes	Yes
Transport	Yes*	Yes

Source: own calculations.
"" denotes insignificance at 0.1.*

6.3.2.3. Verification of the Hypothesis on the Different Level of Substitution of Trade Credit and Bank Credit due to the Size of the Company

Another hypothesis states that substitution between trade credit and bank credit applies to a greater extent to small companies rather than large ones. Table 7 presents detailed results of the test of significance of the difference between the two averages. For this purpose, estimates of selected parameters from two models (for small and large companies), estimated on the basis of a different numbers of observations, i.e. see statistical annex tables 2A-3A.

In the case of substitution of trade credit and short-term credit results of the test speak for the above hypothesis in the case of four out of six industries. Only in the "mining and quarrying" and "construction" sections the hypothesis was not confirmed, i.e. differences in estimates of the rates of substitution are irrelevant. The hypothesis on differences in the substitution of long-term credit and trade credit due to the enterprise size was also verified. The analysed relationship was confirmed in all industries except for the "mining and quarrying" and "electricity producers and suppliers" sectors. Finally, results of the analysis confirmed the hypothesis that substitution of trade credit and any bank credit concerns to a greater extent small companies rather than large ones.

Table 7. Different levels of substitution due to enterprise size

	Elasticity of *TC* in relation to short-term loan (crisis=0)				
	Employees ≥ 250		Employees < 250		
Section	Estimate	Error	Estimate	Error	Is the difference significantly < 0?
Mining and quarrying	-0.033	0.030	-0.088	0.024	No
Manufacturing	-0.010*	0.006	-0.031	0.004	Yes
Electricity production and supply	0.005	0.024	-0.070	0.024	Yes
Construction	-0.033	0.022	-0.044	0.014	No
Wholesale and retail trade	-0.015	0.010	-0.058	0.008	Yes
Transport	0.012	0.017	-0.056	0.021	Yes
	TC elasticity in relation to long-term credit				
Mining and quarrying	-0.050	0.026	-0.044	0.021	No
Manufacturing	-0.036	0.000	-0.073	0.000	Yes
Electricity production and supply	-0.012	0.022	-0.013	0.023	No
Construction	0.000	0.017	-0.060	0.013	Yes
Wholesale and retail trade	-0.020	0.010	-0.042	0.007	Yes
Transport	-0.007	0.019	-0.081	0.019	Yes

Source: own calculations.
Symbol "Yes" means a confirmation of the hypothesis at the level of 0.05 and greater.

6.4. CONCLUSIONS

The motive for undertaking this research was the need to conduct a thorough scientific analysis of empirical nature of the phenomenon of trade credit and bank credit substitution hypothesis in the context of credit rationing. The relationships between economic variables under scrutiny were analysed by sector (industry). The impact of the economic environment on the selection of business financing sources by enterprises was determined.

The main hypothesis stating that there is a significant relationship between two primary sources of financing companies' current activities, i.e. trade credit and bank credit, was verified positively. The nature of this relationship was identified and it was found that substitution exists between them. The hypothesis was confirmed that the substitution of trade credit and bank credit applies to a greater extent to small companies rather than large ones.

During the period of the financial crisis, when access to bank loans was restricted, trade credit substituted to a greater extent the former. Deterioration of the banks'

loan portfolio in Poland in 2008-2009 and the slowdown in lending caused by the financial crisis were accompanied by the growing importance of trade credit with the proviso that it concerned small enterprises to a greater extent.

It should be stressed, that the above empirical results were obtained owing to the fact that appropriate econometric models were adapted. Simple statistical structures based on panel data were used, therefore further detailed and in-depth empirical studies require the application of generalisations of these models, e.g. a panel data model of interdependent equations for trade credit and inventories (GMM estimators) and advanced market disequilibrium econometric models.

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STATISTICAL ANNEX

Table 1A. Characteristics of the empirical distribution for the basic accounting categories of selected sections

Employees	≥ 250		< 250	
Statistics	**Median**	**Interquartile range**	**Median**	**Interquartile range**
Manufacturing				
Trade credit	10,920	19,002	1,966	3,292
Short-term credit	6,131	14,171	888	1,914
Long-term credit	4,494	12,574	822	1,998
Net trade credit	-1,217	9,465	-90	1,705
Equity/Assets (in %)	49	28	47	30
Assets	68,015	123,192	11,170	16,486
Sales	94,386	148,442	16,973	22,885
Inventories	11,212	20,113	1,697	3,265
Cash flow/Assets (in %)	9	10	10	12
Wholesale and retail trade				
Trade credit	24,249	50,447	3,864	7,090
Short-term credit	7,396	20,441	1,386	3,284
Long-term credit	3,834	12,368	804	2,373
Net trade credit	6,650	19,808	881	2,887
Equity/Assets (in %)	35	26	35	27
Assets	84,515	164,932	14,062	21,450
Sales	197,163	338,610	35,345	51,982
Inventories	20,092	45,501	3,341	5,980
Cash flow/Assets (in %)	8	8	8	9
All sections collectively				
Trade credit	11,409	23,976	2,168	4,036
Short-term credit	5,414	14,659	869	2,032
Long-term credit	4,253	14,296	816	2,215
Net trade credit	-930	10,260	4	2,006
Equity/Assets (in %)	50	31	46	32
Assets	75,278	170,383	12,373	20,166
Sales	102,159	191,226	19,322	28,108
Inventories	9,021	21,749	1,495	3,630
Cash flow/Assets (in %)	9	9	9	11

Source: own calculations based on F01 and F02 reports (in PLN '000).

Table 2A. Results of estimation of equation parameters for *TC* in the "Manufacturing" section

	Employees ≥ 250			Employees < 250		
Variables	**Estimate**	**Error**	**p-value**	**Estimate**	**Error**	**p-value**
Short-term credit (ln)	-0.010*	0.006	0.104	-0.031	0.004	0
Long-term credit (ln)	-0.037	0.000	0	-0.056	0.000	0
Equity/Assets	-0.416	0.017	0	-0.467	0.010	0
Total assets (ln)	0.374	0.022	0	0.577	0.014	0
Sales (ln)	0.480	0.021	0	0.377	0.012	0
Inventories (ln)	0.192	0.012	0	0.119	0.007	0
Cash flow/Assets	-0.494	0.082	0	-0.420	0.043	0
Concentration ratio (ln)	-0.029	0.015	0.059	-0.024	0.009	0.012
Crisis·ln(Short-term credit)	-0.011	0.004	0.004	-0.011	0.003	0
Share of non-performing loans (ln)	0.170	0.061	0.006	0.141	0.038	0
GDP (ln)	0.093	0.033	0.005	0.137	0.020	0
Wibor in t period (ln)	0.188	0.091	0.038	0.239	0.055	0
"1"	-0.850*	0.602	0.158	-1.212	0.361	0.001
Type of estimator and R^2	RE, R^2=0,80; $T{\cdot}N$=4544, N=1468			RE, R^2=0,69; $T{\cdot}N$=15164, N=5319		
Test αi=0	F_{emp}=7.16, p-value(F_{emp}) ≈ 0			F_{emp}=7.38, p-value(F_{emp}) ≈ 0		
Hausman test	Chi^2=68.2; p-value(Chi^2) ≈ 0			Chi^2=316; p-value(Chi^2) ≈ 0		

Source: own calculations.
"" denotes insignificance at 0.1.*

Table 3A. Results of estimation of equation parameters for TC in the "Construction" section

	Employees ? 250			Employees < 250		
Variables	**Estimate**	**Error**	**p-value**	**Estimate**	**Error**	**p-value**
Short-term credit (ln)	-0.033*	0.022	0.126	-0.044	0.014	0.001
Long-term credit (ln)	0.000*	0.017	0.982	-0.060	0.013	0
Equity/Assets	-0.406	0.060	0	-0.428	0.039	0
Total assets (ln)	0.757	0.066	0	1.036	0.051	0
Sales (ln)	0.389	0.068	0	0.234	0.044	0
Cash flow/Assets	-0.690	0.284	0.015	-0.592	0.153	0
Concentration ratio (ln)	-0.109	0.056	0.054	-0.156	0.064	0.015
Crisis×ln(Short-term credit)	-0.023	0.015	0.109	-0.010*	0.010	0.34
Share of non-performing loans (ln)	0.583	0.220	0.008	0.670	0.229	0.004
GDP (ln)	0.399	0.175	0.023	0.796	0.405	0.05
Wibor in t period (ln)	1.174	0.431	0.006	1.465	0.746	0.05
"1"	-1.926	1.627	0.237	-1.951	1.063	0.067
Type of estimator and R^2	RE, R^2=0.84; $T{\cdot}N$=293, N=129			RE, R^2=0.74; $T{\cdot}N$=2165, N=1082		

Source: own calculations. "" denotes insignificance at 0.1.*

7. Bank Resolution Reform as a Commitment Device Against Bailouts

Andrew R. Gimber

7.1. Introduction

Bank resolution regimes are designed to provide ways of winding up systemically important financial institutions without imposing undue costs on the wider economy. In November 2011, the Financial Stability Board published a list of "key attributes" that it believes all such regimes should have[1]. These include: ensuring the continuity of payment, clearing and settlement services, avoiding the unnecessary destruction of franchise value, and avoiding the reliance on and expectation of public support.

These principles are already reflected in two resolution regimes established in the aftermath of the recent financial crisis. The objectives of the United Kingdom's Special Resolution Regime, established by the Banking Act of 2009, include ensuring financial stability and public confidence in the banking system, protecting depositors, and protecting public funds. In the United States, the Dodd-Frank Act of 2010 created an Orderly Liquidation Authority, the stated purpose of which is "to provide the necessary authority to liquidate failing financial companies that pose a significant risk to the financial stability of the United States in a manner that mitigates such risk and minimizes moral hazard."[2] Bank resolution is also on the agenda at the European Union level as part of the move towards a banking union. One purpose of an EU resolution authority, according to the Commission, is "[t]o make sure that supervisory authorities have all the tools they need to deal with bank failures without taxpayers' money."[3]

A common theme in recent legislation and proposals regarding resolution regimes is that they should provide a credible alternative to taxpayer-funded rescues. The hope, as expressed in the passage of the Dodd-Frank Act quoted above, is that reform of bank resolution regimes will reduce moral hazard in the financial system. In a recent paper (Gimber, 2012), I address this issue in the context of a theoretical model in which the government chooses how much to invest in the effectiveness of its bank resolution authority. The paper demonstrates the value

1 *Key Attributes of Effective Resolution Regimes for Financial Institutions*. (Available online at: www.financialstabilityboard.org/publications/r_111104cc.pdf.)

2 Dodd-Frank Wall Street and Consumer Protection Act, Public Law 111-203, 124 Stat. 1454 (2010), Section 204(a).

3 "Towards a banking union". European Commission MEMO/12/656 (10 September 2012). (Available online at: http://europa.eu/rapid/press-release_MEMO-12-656_en.htm.)

of an effective bank resolution regime in reducing moral hazard by comparing the optimal investments for a government with commitment and for a government with discretion. For a government with discretion, bank resolution reform provides a way of committing itself to refraining from bailouts, and thus a means of reducing moral hazard.

Unlike many papers in the literature, my paper abstracts away from ex ante regulation of banks. Although several papers argue that such regulations can be welfare-improving, their effectiveness is undermined by both financial innovation and regulatory forbearance. Furthermore, if banks know that they will be rescued in the event that they get into trouble, they will have strong incentives to evade these restrictions. By reducing the likelihood of bailouts, bank resolution reform can mitigate this temptation.

7.2. A MODEL OF BANK RESOLUTION REFORM

The basic model consists of the following key players: a government, a bank and a group of investors. All agents in the economy are risk neutral: they care about the expected value of their payoffs, but they do not care how uncertain these payoffs are. The government wants to maximize the total value of resources under its jurisdiction, the bank wants to maximize its franchise value (the discounted sum of expected future profits), and investors simply want to maximize the expected return on their investments.

The timing is as follows. First, the government chooses how much to invest in reforming its bank resolution regime and (in the case with commitment) whether or not to adopt a policy of bailing out distressed banks. The cost of reform can be thought of as the opportunity cost of other items on the government's legislative agenda, or in terms of increased staffing levels at the regulatory authority. Next, the bank offers an interest rate to investors, who decide whether to deposit their funds in the bank or to reject the offer and pursue an alternative, non-intermediated investment opportunity with a fixed return.

Once the bank has raised funds from investors, it chooses its investment portfolio. As in Hellmann, Murdock and Stiglitz (2000), the bank has a simple choice between a safe ("prudent") asset and a risky ("gambling") asset. Although the guaranteed return of the prudent asset is higher than the expected return of the gambling asset, the gambling asset yields a higher return in the event that the gamble pays off. The model assumes that bank-intermediated investment yields a higher return on average than non-intermediated investment, but only if the bank invests prudently. If the bank gambles, the expected return is less than investors could have obtained outside of the banking system.

Once the bank's investment returns are realised, it must pay what it owes to investors. If it cannot do so, it will either be liquidated by the bank resolution authority or be bailed out by the government. In the former case, the proceeds from liquidation are distributed proportionally to investors and the bank loses its franchise. In the latter case, the government makes up the difference between what the bank owes and what it can pay, and the bank is allowed to continue operating. (Shareholders will not receive any profits in the period when the bailout occurs, but crucially they will be allowed to earn profits in the future.) In the model with commitment, the choice between liquidation and bailout is determined by the government's pre-announced policy. When the government has discretion, it must make this decision after the fact, that is, once a bank turns out to be unable to repay its investors in full.

Suppose initially that there is no prospect of a government bailout if the bank were to get into trouble. If the bank can credibly promise to invest prudently, then its profit each period will be the difference between the payoff from the prudent asset and the interest rate it promises to investors. Since the bank is a monopolist, it will offer an interest rate equal to the return on investors' alternative investment opportunity. The bank's franchise value will be the discounted present value of an infinite future stream of such profits.

If the bank were to gamble, it would have to promise a higher interest rate to compensate investors for the possibility that the gamble will fail and they will not receive the full amount. Since the expected return on the gambling asset is lower than that on the prudent asset, it must be that the bank would earn lower expected profits in every period by gambling than by investing prudently. This in turn implies a lower franchise value, so we can conclude that the bank will never choose to gamble when there is no prospect of a government bailout.

Since by assumption the prudent asset yields a guaranteed return greater than that of any other asset, the government would like to ensure that investors entrust their funds to the bank, and that the bank invests these funds prudently. It follows from the analysis of the case without bailouts above that the government can achieve this desired outcome by committing not to engage in bailouts. If the government can tie its hands with respect to bailouts, then there is no need for it to invest in the efficiency of its bank resolution authority: liquidation will never be necessary because a prudent bank will never fail. (We could relax this simplifying assumption and introduce some small probability of prudent banks failing without fundamentally changing the results of our model.)

Now suppose that the government is unable to commit to a no-bailout policy. Instead, it must decide after the fact whether or not to provide assistance to a distressed bank. In the basic version of the model, there are two competing considerations the government takes into account when making this decision.

The first of these is a non-pecuniary cost that is subtracted from the government's welfare function whenever it engages in a bailout. We can think of this cost as a stand-in for any of the reasons a government might wish to avoid bank bailouts, including: undesirable redistribution from poor taxpayers to rich investors (as in Cooper and Kempf (2011); the need to raise distortionary taxation in order to pay for bailouts (a case I treat explicitly in an appendix to my paper); and the electoral costs of reneging on an earlier promise not to engage in bailouts (akin to the fixed cost of abandoning an exchange rate peg in the Obstfeld (1996) model of currency crises).

The second fact the government takes into account is that liquidation of a distressed bank is costly. What this means is that the full economic value of a bank's assets can only be realised if the bank (and implicitly its existing owners and management) is allowed to hold the assets to term. We might interpret this as the bank having specialist knowledge about its portfolio of business loans, for example. New owners and managers cannot monitor such loans as well as their predecessors, and so average returns will be lower. Alternatively, we can think in terms of the costs of drawn-out legal battles between different groups of creditors or interruptions to payment services for the bank's customers.

The model stipulates that the size of these liquidation costs depends on the effectiveness of the bank resolution authority. This in turn depends on the investment the government makes in reform: a well-staffed authority with appropriate resolution powers at its disposal will be able to resolve a troubled financial institution more swiftly, with less damage to its franchise value and less collateral damage to the rest of the financial system. However, if the bank is simply bailed out, then these costly dislocations will be avoided entirely.

In making its decision about whether to bail a distressed bank out, the government compares the resources that will be saved by avoiding liquidation with the non-pecuniary cost of a bailout. If the former amount is the larger of the two, then the government will in fact want to bail the bank out if it gets into trouble. This fact is problematic for the government. If the bank anticipates that the government will provide it with a bailout ex post, its calculation about whether or not to gamble is fundamentally altered. Since it no longer has to worry about losing its stream of future profits if the gamble were to fail, the bank will be more likely to choose the risky asset. This is something a resource-maximizing government wishes to avoid, since the risky asset yields a lower expected return than the prudent one.

By investing up-front in reform of its bank resolution regime, the government can affect its own future decision-making in the event of a bank becoming insolvent. If the government knows that its bank resolution authority is well-prepared, it will be less fearful of the consequences of putting a bank through the resolution

process. As such, it will be less tempted to provide *ad hoc* rescue packages for systemically important banks that get into difficulty. Bank resolution reform has the potential, therefore, to address the "too big to fail" problem.

7.3. DEALING WITH THE POSSIBILITY OF SYSTEMIC CRISES

While smaller banks are less likely to bring the financial system down on their own, if enough of them fail at the same time the effect will be similar to the failure of a large bank. If the government is more likely to provide bailouts during systemic crises, this may create perverse incentives for banks to correlate their asset returns as in Farhi and Tirole (2012). This "too many to fail" problem (Acharya and Yorulmazer, 2007) can also potentially be addressed by bank resolution reform. In my paper, I consider two possible sources of strategic complementarity in banks' risk-taking decisions: fixed costs of bailouts and fire sale effects. When there is a fixed cost to the government of reneging on a promise not to provide bailouts, it is more likely to do so when there are many banks to save than when only one bank is in trouble. Similarly, when resolution costs are increasing in the number of banks being resolved at once (due, for example, to fire sale effects), the government will be less inclined to make use of its resolution authority when many banks are in difficulty. However, provided that the resolution authority can be made capable of resolving several banks at once, the government can still commit itself not to engage in bailouts by adopting the necessary reforms.

A reasonable objection to this line of reasoning is that it asks too much of the bank resolution regime. If a substantial number of banks were to fail more or less simultaneously, is it really plausible that the government would forswear rescue packages and let the resolution authority handle them? When many banks are in trouble, the government will indeed be inclined to bail a larger proportion of them out since, by assumption, the costs of liquidation are increasing in the number of banks being liquidated at once. However, beyond a certain threshold, the number of banks that are bailed out may be constrained instead by the government's available resources. If the banking sector is large relative to national income, the government may simply be unable to bail out all of its banks. A government with limited resources therefore benefits from a costless commitment not to engage in widespread bailouts during particularly severe financial crises. In this sense, the "too many to fail" problem takes care of itself in extreme cases where banks' asset returns are very highly correlated.

In the model, investing more resources in the bank resolution authority has two effects: it improves the authority's efficiency, and it reduces the resources the government has available for bailouts. For this reason, the expected fraction of banks that will receive a bailout is always decreasing in the government's up-front

investment in resolution reform. This ensures that there will always be some level of such investment that will effectively commit the government to avoiding bail-outs.

7.4. CONCLUDING REMARKS

In the model, it is assumed that costly reforms of the bank resolution regime do indeed make the process of resolution more efficient, and that all relevant entities are covered by the legislation. In practice, whether or not this is the case will depend crucially upon the implementation details of such reforms. A resolution regime that cannot wind up troubled financial institutions without imposing unacceptably large costs on the wider economy will not be used: the government will step in and provide a rescue package instead. This means any reforms that fall short of achieving the Financial Stability Board's definition of resolvability will be ineffective in reducing moral hazard[4].

Banks are not the only institutions that can occupy a systemically important position in the financial system. Accordingly, the Dodd-Frank Act covers not only bank holding companies, but also nonbank financial companies, subsidiaries, brokers and dealers. However, an important caveat to this legislation is that there is no federal receivership process for insurance companies, which remain subject to state law. For this reason, it is doubtful whether insurance giants like AIG would be treated any differently in future as a result of the Act. This is potentially troubling from the point of view of avoiding moral hazard.

Two prevalent themes motivate the European Commission's proposals for a banking union. The first is that the balance sheets of some countries' banking sectors are now large multiples of national income. (In 2010, the ratio of consolidated bank assets to GDP was 350% for the EU as a whole, 600% for the UK, 766% for Ireland and 1972% for Luxembourg[5]). The second is that national regulatory authorities are liable to neglect the spillover effects that the failure of financial institutions under their supervision might have on other countries' financial systems.

[4] "A SIFI [systemically important financial institution] is 'resolvable' if it is feasible and credible for the resolution authorities to resolve it in a way that protects systemically important functions without severe systemic disruption and without exposing taxpayers to loss. For resolution to be feasible, the authorities should have the necessary legal powers – and the practical capacity to apply them – to ensure the continuity of functions critical to the economy. For resolution to be credible, the application of those resolution tools should not itself give rise to unacceptably adverse broader consequences for the financial system and the real economy." *Key Attributes of Effective Resolution Regimes for Financial Institutions*, p. 27.

[5] Source: European Banking Federation's Banking Sector Statistics Database 2011 (18 October 2012). (Available online at: www.ebf-fbe.eu/index.php?page=statistics.)

The cautionary lesson from the model discussed above is that success in addressing these important issues will have the unfortunate side effect of worsening the authorities' commitment problem. Greater fiscal resources and a heightened sensitivity to spillover effects will increase both the capacity and the temptation to provide bailouts to troubled financial institutions. As such, it will be even more important to have a resolution regime that minimizes the social costs of imposing losses on banks' investors. Otherwise, banks will continue to enjoy an implicit government guarantee that allows them to take excessive risks at taxpayers' expense.

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8. Regulatory Reforms and the Independence of Central Banks and Financial Supervisors

Alex Cukierman[1]

8.1. Introduction

A multitude of factors combined to produce the subprime crisis in the US and the, still ongoing, European financial crisis. High on the list among those, particularly in the US, were the growth of an unregulated shadow banking system and regulatory forbearance[2]. In Europe the absence of a unified regulatory system along with the existence of international systemically important financial institutions (SIFI) still complicate the handling of the banking cum fiscal crisis. It is therefore not surprising that reforms of the regulatory and supervisory systems are high on the agenda in both the US and Europe as well as worldwide[3].

The global financial crisis led to the realization that traditional micro-prudential regulation and supervision do not suffice and that they should be supplemented by macro-prudential regulatory authorities[4]. This raises important questions about the institutional location of macro-prudential regulation cum supervision, the allocation of instruments, and responsibilities across those institutions and the extent of information sharing between them.

The conventional pre-crisis view was that monetary policy should aim at price stability and that financial stability could be assured *largely independently* by regulatory/supervisory authorities. The global financial crisis revealed that there are important interactions between the central bank (CB) monetary policy aimed at price stability and financial stability. For instance the crisis showed that low interest policy within an inflation targeting (IT) framework may reinforce a real estate bubble – increasing the severity of the downturn caused by financial instability once the bubble bursts[5].

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2 A fuller discussion appears in (Cukierman (2011)).

3 Although most emerging market economies were affected by the global financial crisis only indirectly the G20 put worldwide reform of financial regulation high on the agenda already at their London meeting (G20 (2009)).

4 Macroprudential regulation is a central element of the US post crisis regulatory reform as embodied in the Dodd-Frank Act.

5 See, for example Taylor (2009). In view of this some economists argue that, due to the interactions between aggregate monetary policy and regulation, both authorities should aim at both price and financial stability when setting their instruments (Brunnermeier & Sannikov (2012)).

Both regulators and central banks need to be sufficiently independent to achieve their respective functions of financial and price stability. There consequently are obvious similarities between the role of independence for these institutions but also some differences. This paper compares and contrast the role of independence for central banks and regulatory/supervisory authorities, the problems they encounter and the wider issues of how those institution should be devised, function and cooperate to achieve the dual goal of price and financial stability[6].

Section 8.2 describes the main challenges and pressures facing regulators. Section 8.3 then takes up the similarities between regulators and central banks and the role of independence in alleviating those pressures. Section 8.4 follows with practical recommendations designed to build up the independence of regulators. Section 8.5 discusses informational and other differences between regulators and central banks in their role as setters of aggregate monetary policy. Against the background of the recently recognized need to address systemic financial risks Section 8.6 argues that close cooperation between central banks and regulators is essential for achieving the twin objectives of price and of financial stability. The section concludes by discussing the institutional implications of this point of view. Section 8.7 discusses the tradeoff between the scopes of regulation and of financial intermediation and Section 8.8 reviews a recent proposal for regulatory reform of rating agencies in light of the experience accumulated during the global financial crisis. Section 8.9 evaluates the ongoing regulatory reforms in the US and the Eurozone in light of the growing recognition that macro-prudential regulation is essential.

8.2. MAIN CHALLENGES FACING REGULATORS AND SUPERVISORS

Regulators and supervisors have to confront a number of challenges the most important of which are: 1. Forbearance inducing regulatory capture, 2. A constant flow of financial innovations many of which are designed to evade regulation, 3. Fractionalized regulatory institutions, 4. Political pressures, and 5. International regulatory competition.

Regulatory capture: Regulatory capture occurs when regulators become, at least partly, advocates for the financial institutions they are supposed to regulate and supervise rather than being strict enforcers of rules. This leads to loose application of regulatory rules, forbearance to regulatory infractions resulting in poor

[6] The related issue of how monetary policy and institutions have and are likely to change as a result of the financial crisis is addressed in Cukierman (2013).

application of supervision. Frequent personal moves of individuals between regulatory institutions and the private financial sector, relatively higher pay in the private sector, limited tenures, political pressures and human nature combine to encourage regulatory capture and supervisory forbearance.

Financial innovations: During the last twenty years technological progress in the high-tech industry dramatically changed the modus operandi of banks and other financial institutions. It also made it easier for them to devise financial instruments and innovations aimed at bypassing or totally evading regulation. This process is partially responsible for the fact that, at the eve of Lehman's collapse in 2008, about half of financial assets in the US were unregulated.

Fractionalized regulatory systems: The regulatory systems of countries with major financial centers are highly fractionalized. In Europe different countries possess different regulatory systems in spite of the fact that, by the single act, there is a free flow of financial assets and banks can branch out across all the European Union (EU) countries. Obviously, given this structure, national regulators have difficulties in effectively discharging their supervisory duties. These difficulties are particularly important in the case of SIFI with many branches across national borders. Unlike Europe the US regulatory structure is not geographically fractionalized. But it is characterized by a multitude of regulatory institutions whose areas of responsibility often either overlap or leave regulatory "holes" in between.

Political pressures: Regulatory and supervisory activities usually have immediate distributional consequences for the regulated parties and/or their clients. When the supervised institutions are sufficiently large they often have political clout that can be used to exchange favors with politicians and to mobilize them in order to lighten their regulatory burdens.

A classic example is the case of the Government Sponsored Enterprises (GSE) – Fannie Mae and Freddie Mac – in the US. For many years the US congress was split about whether to create a program that would help low income people buy a first house. As a compromise Congress persuaded the GSE to loosen credit requirements to people with no credit history and low incomes. In return the GSE got an implicit bailout guarantee that was actually consummated in fall 2008 when the US government bailed out the failing GSE[7]. Although regulators of the US mortgage market were well aware of the excessive risks that the GSE were taking they were, by and large, silenced by the political clout of Congress.

[7] Since the GSE account for half of the mortgage market in the US this is no small matter.

International regulatory competition: Competition for business between major financial centers like London, New-York and Frankfurt tempers the regulatory reform fervor triggered by the global financial crisis.

8.3. SIMILARITIES BETWEEN REGULATORY AUTHORITIES AND CENTRAL BANKS AND THE ROLE OF INDEPENDENCE

The main similarity between central banks and regulatory authorities (RAs) is that both types of institutions are subject to pressures by interested parties. Consequently sufficiently high levels of independence from those parties are required in order to enable central banks and regulators to function efficiently. Although both types of institutions may be subject to pressures from both government and the private sector it would appear that the monetary policy dimension of central bank activity is subject mainly to pressures from government while the pressures on regulators emanate mainly from financial institutions in the private sector[8]. However, this distinction is not entirely clear-cut since businesses may push for lower interest rates (to reduce the cost of borrowing and to raise the competitiveness of their exports) and financial institutions often weigh in on the interest rate, which they would prefer to be higher.

Both the executive and legislative branches of government tend to exert expansionary pressures on monetary policy. They do that in order to ease pressures on government's finances by reducing the cost of government debt and to provide short term stimulus to economic activity. These motives for monetary expansion and the role of central bank independence (CBI) in addressing them in order to maintain price stability is well documented (Cukierman (1998) and others).

On the other hand less attention has been paid to regulatory avoidance tactics and pressures of financial institutions on regulators and to the importance of regulatory autonomy and determination in resisting those forces in order to protect the financial stability of the economy. Be that as it may, there is an analogy between the roles of independence with respect to the conduct of monetary policy and with respect to regulation/supervision. In both cases sufficient autonomy is a precondition for effectively resisting pressures from the financial sector in the case of regulatory authorities and from government in the case of monetary policy.

[8] Since banking regulation is often located in the central bank it is important to keep in mind that the relevant distinction here is between aggregate monetary policy and financial regulation rather than between the central bank and regulatory authorities.

Independence is particularly important when a RA or a central bank has to occasionally take unpopular steps against low probability adverse events during periods in which, due to expansion and optimism, such steps appear to most of the public as unnecessary. In the case of monetary policy this may consist of a preemptive strike against inflation (an increase in the interest rate) in spite of the fact that higher inflation is not in evidence yet. In the case of financial regulation this may involve a preemptive tightening of loan to value (LTV) ratios on mortgages in order to moderate an expanding real estate bubble before it bursts. The reluctance of regulators and central banks to act preemptively is reinforced by their uncertainty about the future.

8.4. HOW CAN INDEPENDENCE OF REGULATORS BE BUILD-UP IN PRACTICE?

Unlike aggregate monetary policy most of the activities of regulators/supervisors are at the micro level and have visible immediate distributional consequences for the regulated parties[9]. As a consequence the incentive of the latter to weaken the grip of regulation through various channels are likely to be strong (details on those channels are discussed in section 8.2). It is therefore important that the impartiality and independence of regulators be sufficiently well anchored to offset such strong incentives. This section proposes practical measures designed to achieve those objectives[10].

Given the rules on the books implementation of regulation depends to a large extent on the quality of the labor force that supervises financial institutions and applies the rules. It is therefore important to recruit competent individuals with adequate levels of integrity. To reduce the lure of the private sector regulators' renumeration should not be be too much below what they could have made in the private financial sector. Some of the remaining difference could be closed by cultivating a sense of mission and public duty among regulators[11].

It is often the case that, after the end of their tenure, high level regulators accept lucrative jobs in the private financial sector. In many cases the main value of former regulators to their new employers derives from the fact that they possess specialized knowledge and connections that facilitate regulation avoidance by the new employers. Obviously this tendency directly undermines the effectiveness of regulation. In addition it also induces regulatory forbearance on the part of the

[9] Monetary policy also has distributional consequences but they are not as obvious or clearly understood as the actions of micro regulators.

[10] Some of those recommendations bear obvious similarities to determinants of CBI as summarized in Table 19.1 of Cukierman (1998).

[11] Kane (2013) suggests that this could be achieved by setting up high prestige academies for training financial regulators.

regulator even when he/she is still employed by the regulatory agency. The reason, of course, is that well placed regulators do not want to overly alienate their future potential employers in the financial sector.

These phenomena can be reduced by providing sufficiently long tenure and cooling off periods for high level regulators. Recruitment of competent individuals toward the end of their active careers can also contribute to minimize the adverse effects of the above described processes on the effectiveness of regulation and supervision.

8.5. INFORMATIONAL AND OTHER DIFFERENCES BETWEEN CENTRAL BANKS AND REGULATORS

There are interesting informational and other differences between central banks in their monetary policy function and between financial regulators.

First, to conduct monetary policy the central bank mainly needs aggregate information and it usually has at least as good information about aggregate variables as agents in the private sector (Romer and Romer (2000)). Regulators, on the other hand, possess less information about the entities they are supposed to regulate than those entities.

Second, the distributional consequences of aggregate monetary policy are smaller and less visible than those of regulation which often has, immediate, highly focused distributional consequences. Specific examples include issues such as the setting of banks' capital requirements, setting of loan to value ratios and the regulation of executive compensation – all of which have immediate and clear distributional consequences for the regulated parties.

Third, national regulators and supervisors are subject to international regulatory competition. This tends to soften regulatory requirements and to encourage regulatory forbearance. Although there is no directly similar interference of international monetary competition among central banks on domestic monetary policies there is evidence that home interest rates are influenced by rates set in other major countries (Cukierman, Rodriguez and Webb (1998))). This phenomenon has been highly visible since 2008 as many central banks reduced their policy rates in order to maintain competitiveness of their respective countries' exports.

8.6. SYSTEMIC RISKS CALL FOR CLOSE COOPERATION BETWEEN CENTRAL BANKS AND REGULATORS

The global financial crisis alerted policymakers and economists to the importance of systemic risks in the creation, propagation and persistence of financial crises. This recognition raises three related questions: How to identify systemic risks early on, what types of policies should be deployed to reduce those risks and by whom? Comprehensive answers to these challenging questions are likely to be the subject of much research and debate over the upcoming years. My more modest objective in this section is to point out some lessons of the financial crisis for the desirable level of cooperation between the central bank and financial regulators in addressing systemic risks.

The crisis has shown that the actions or inactions of regulators affect systemic risks but also that aggregate monetary policy whether conventional or non-conventional affects the liquidity and solvency of regulated financial institutions. Hence the largely prevailing pre-crisis view that price stability can be assured by the central bank via some aggregate monetary policy rule like inflation targeting (IT) independently of financial stability and that the latter objective can be achieved by means of regulatory/supervisory instruments available to regulators independently of monetary policy has been discredited.

The evolving current consensus appears to be that central banks and regulators should cooperate in order to jointly attain the dual objectives of price and financial stability (Brunnermeier and Sannikov (2012)). Due to their specialized respective expertises those two institutions may continue to individually set their respective policy instruments subject, perhaps, to advance consultations and exchange of views. Furthermore, since some of the information available to the central bank is pertinent for regulatory decisions and vice-versa, information sharing between those institutions appears to be highly desirable.

This raise an important issue about whether the necessary coordination between the key financial regulators and the central bank should be done in one institution or by coordination among them in a third body. I believe that coordination outside an institution is much harder than that within an institution, creating a bias in favor of doing it in one place[12]. The new Bank of England model – of which the key feature is that the governor is chair of all three regulatory bodies embodies this point of view. The three regulatory bodies are the Financial Policy Committee (FPC) that is located within the Bank of England, the Prudential Regulation Authority (PRA), and the Financial Conduct Authority (FCA). The FPC will be

[12] However this may not be true for very big economies, where diseconomies of scale in managing institutions are relatively more important.

in charge of macroprudential regulation, the PRA will be responsible for microprudential regulation and the FCA for conduct issues across the entire spectrum of financial services. The FPC will have powers of recommendations and direction vis-à-vis the other two regulatory authorities (HM Treasury, Cm 8012, (2011)).

In practice there is no cross country uniformity with respect to the institutional location of regulation and supervision. Thus, in some countries banking supervision is within the central bank while in others it is in the Treasury or organized in the form of one or several separate authorities[13].

8.7. BUBBLES AND THE TRADEOFF BETWEEN THE SCOPES OF REGULATION AND OF FINANCIAL INTERMEDIATION

Tighter regulation reduces the likelihood of a bubble buildup and therefore of its subsequent burst. However it also reduces the volume of financial intermediation creating a tradeoff between more effective regulation and the volume of intermediation. An important illustration of this principle is the growth of Asset Backed Securities (ABS) and of Mortgage Backed Securities (MBS). The proliferation of ABS and of MBS substantially raised the volume of intermediation and fed the pre-crisis expansion at the cost of more opaqueness about such assets.

More generally, most expansions contain some self reinforcing bubbly credit increases. But in most cases those bubbly elements work themselves out without a financial crisis as the economy expands. However, as optimism and intermediation through credit buildup rise the likelihood of a crisis rises as well. Consequently policymakers (regulators and central banks) face a tradeoff between allowing a boom to continue unchecked at the cost of a rising probability of a burst.

However one should not conclude from the preceding discussion that all or most financial innovations should be prohibited. Comparison of the Canadian and US experience with MBS is relevant in this context. Prior to the crisis, MBS have been widely used in both Canada and the US but financial regulation in Canada was more comprehensive and tighter than that of the US. The fact that Canada did not experience a subprime crisis supports the view that the tradeoff between the scope of regulation and of intermediation can be improved by broader and more efficient regulation than those that existed in the US prior to 2008. Prior to the crisis Canada had integrated regulation of banks, insurance companies and large investment dealers. The Canadian Office of the Superintendent of Financial

[13] Details appear in Masciandaro *et al.* (2008).

Institutions (OSFI) regulated banks on a consolidated basis (retail, commercial, investment and wealth activities) worldwide. In contrast to the US Canada had a regulatory cap on leverage at an asset-to-capital ratio of 20 to 1. As a result, prior to the crisis, major Canadian banks had an asset-to-capital multiple of about 18 while for many US and European banks this ratio was 25 and 30 respectively (Lynch (2010)).

However, even within the most efficient regulatory/supervisory structure, a trade-off between allowing relatively free intermediation and keeping the probability of a painful bubble burst low remains. This begs the question of how to evaluate ex ante the likelihood that the bubbly parts of expansions will burst into a costly recession.

Although the economic profession is currently far from possessing a well founded answer to this important question recent work by Jorda, Schularick and Taylor (2012) on the behavior of the ratio between bank credit and GDP during 200 recessions and the preceding expansions in 14 advanced economies suggests that a stronger increase in this ratio during the boom tends to lead to a deeper subsequent downturn. Relatedly Borio and Drehmann (2009) find that, as an empirical matter, financial crises are more likely the larger are the rates of growth of the credit to GDP ratio and of real estate and financial assets prices.

Based on those findings Calomiris (2011, p. 66) argues that a simple dual threshold rule based on credit growth and either stock or real estate price increases can be used by the central bank and regulators to decide when to start to lean against a developing bubble. The work of Jorda, Schularick and Taylor (2012) also suggest that the larger is the buildup in the credit/GDP ratio during the expansionary phase of the cycle the more serious and prolonged are the recessionary effects of a potential bubble burst.

8.8. WHAT KIND OF REGULATORY DEVICES CAN ELIMINATE 'RATING INFLATION' BY RATING AGENCIES?

The subprime crisis exposed an important conflict of interest between the public interest on one hand and securitizers and rating agencies on the other. Securitizers have an interest in embellishing the prospects of the financial assets that they repackage. Since rating agencies were paid by securitizers they obviously had an interest in partially catering to those incentives of their clients within limits determined by the requirement that this did not visibly affect their ex ante credibility. The problem was compounded by the fact that regulators were using the *same* ratings to measure the risk levels assumed by regulated financial institutions –

thus adding an official stamp of respectability to the biased ratings (Cukierman (2011))[14].

Calomiris (2011) argues that the pressure to inflate ratings came from institutional investors because it reduced the amount of capital they had to maintain, increased the flexibility of their investment policy and increased their risk-adjusted profitability in the eyes of less sophisticated investors by making it appear that an AAA rated investment is earning an AA-rated return. He argues convincingly that any solution to the consequent distorted structure of incentives must make it profitable for rating agencies to issue high quality, non inflated ratings in spite of the demand for inflated ratings by institutional investors and some politicians.

To achieve this objective Calomiris proposes that all agencies wishing to qualify as Nationally Recognized Statistical Ratings Organizations (NRSROs) – the rating agencies whose ratings are used in regulation – should submit ratings that link letter grades to specific default probabilities. Once the rating is equated with a number it is possible to hold the issuing agency accountable for any discrepancy between the fraction of ex post default and the fraction predicted ex ante. To induce rating agencies to produce their best ex ante forecasts this should be accompanied by a schedule of penalties to be imposed when ratings are persistently exaggerated. The penalty could involve a temporary removal of the NRSRO license or a 'claw back' on fees earned. To enforce the second penalty agencies would be required to post some of their fees as a 'bond' to draw upon when ratings turn out to be excessively biased.

I should add to the above proposal that in order to prevent forbearance on the part of the authorities in charge of regulating the rating agencies the schedule of penalties should be established in advance and applied automatically. In extreme cases regulators could be given some discretion to waive the automatic penalty. However in such cases they should simultaneously explain why they deviate from automatic application of the penalties. In Goodhart's words "comply or explain".

8.9. CONCLUDING REFLECTIONS ON REGULATORY REFORM AND THE ROLE OF THE CENTRAL BANK IN THE US AND THE EUROZONE

The global financial crisis has triggered a process of regulatory reform in most if not all areas with major financial centers. Although regulatory reform through

[14] The recent discovery of Barclays Bank feeding biased data into the construction of the Libor index is a vivid reminder of the fact that, in the absence of appropriate safeguards, the incentives for misreporting are quite strong.

the legislative process is more advanced in the US than in the Eurozone (EZ) doubts about its effectiveness remain. The US reform is encapsulated in the gigantic Dodd-Frank Act of July 2010 (Dodd-Frank Act). The Act creates a Financial Stability Oversight Council (FSOC) made up of 10 federal financial regulators including the Federal Reserve Board and chaired by the Treasury Secretary. The Council is charged with identifying and responding to emerging risks throughout the financial system.

The Council majority has very broad powers including setting rules for capital, leverage and liquidity management, requiring large complex financial companies to divest some of their holdings if considered to be systemically dangerous and create orderly liquidation mechanisms through living wills for such institutions. Among the ten regulators the Federal Reserve and the FDIC are assigned particular roles – the Fed to regulate a non bank financial institution if the Council believes it poses systemic risks and the FDIC to unwind SIFIs.

Critics of the Act argue that it is overly complicated, that it does not adequately address regulatory forbearance and that the fact that, for some issues, correctives actions have to be approved by at least seven independent regulators may impede the prompt deployment of corrective measures when such measure are needed (Barth, Caprio and Levine (2012)). Furthermore, since it is often the case that the Act leaves many specific issues for further determination by the Council the scope for discretion leading to forbearance is wide. In view of the political clout of the US financial sector and the fact that the Council is chaired by the Secretary of the Treasury (a political figure) this concern is no small matter.

Calomiris (2011, p. 52) argues convincingly that regulatory reform should be "incentive-robust". An incentive robust reform has to satisfy two main criteria: (i) Financial institutions should find it difficult to circumvent it via regulatory arbitrage. (ii) Supervisors, regulators and politicians should have incentives to enforce it[15]. Whether the Dodd-Frank Act will live up to those criteria in practice remains to be seen.

Although various institutions like the European Stability Mechanism (ESM) are in the process of being established and there is talk of a "banking union", regulatory reform in Europe is lagging behind that of the US[16]. Regulatory reform in Europe is burdened by two main difficulties. First, in spite of initial attempts at unification, regulatory and supervisory authorities in the EZ operate at the national levels. A second, not unrelated, difficulty is that the charter of the ECB

[15] Calomiris (*o.c.*) proposes ten specific devices to achieve such an incentive robust regulatory reform.

[16] In November 2010 the European Parliament and the Council established the European Banking Authority (EBA) to monitor Europe's biggest banks. In line with this mandate the EBA conducted stress tests but failed to predict the current Spanish debt problems. This is now catalyzing German and French support for transferring this function to the ECB.

makes it responsible for price stability in first place, while the responsibility for financial stability resides mainly with the national regulators.

Nonetheless, in spite of its lexicographically mandated focus on price stability, the ECB recently demonstrated that when push comes to shove it is willing to perform the lender of last resort (LLR) function and to inject substantial amounts of liquidity into the economy. Two recent illustration of this growing tendency are the Long Term Refinancing Operation (LTRO) that offered up to one Trillion Euros of three years loans to EZ commercial banks and the Outright Monetary Transactions (OMTs) in secondary markets for sovereign bonds in the euro area. The second programs opens the door for unlimited purchases of sovereign bonds by the ECB.

As argued in section 8.6 the informational and other synergies between regulation and aggregate monetary policy in the face of systemic risk imply that concentration of regulation as well as monetary policy within the central bank is likely to increase the efficiency of both monetary policy and regulation. An added benefit is that, since many central banks already enjoy high levels of independence, transfer of regulation/supervision into the central bank is likely to automatically raise the autonomy of those authorities.

Those general principles apply, in particular, to the ECB. Circumstances have forced it to reluctantly act as a lender of last resort and in some cases also as a market maker of first resort. Engaging in such activities without having regulatory authority in the individual countries has already distorted some of the ECB's precautionary safeguards as national regulators in some countries allowed ECB money to be diverted toward institutions that the ECB would not have lent to directly (Bini Smaghi (2013)).

Importantly, the existence of SIFIs at the European level requires at least an EZ wide authority in charge of regulation and supervision of the financial system at the same level. The ECB is the natural institution to perform this function. Even if, due to the large varieties in institutional structures across countries within the area, detailed implementation is left to local regulators and supervisors the ECB should take the lead in devising and implementing those functions. Due to its monopoly over the creation of liquidity the ECB is also the natural candidate to act as a lender of last resort in the face of a financial crisis[17].

Ex ante regulation and supervision by the ECB should be aimed at minimizing the likelihood of contagion and the associated financial panics. However in the

[17] Ayadi *et al.* (2012) have recently found that, depending on the risk structure of their assets and liabilities, European banks can be classified into four types of business models. Based on those findings they call for the establishment of a European regulatory structure that would recognize those differences. Implementation of such a regulatory structure at the European level obviously requires a centralized European authority. Here again the ECB is the choice institution for performing this function.

(hopefully) few cases in which such panics materialize the ECB will have to perform the lender of last resort function. This implies that the financial stability objective in the ECB charter better be elevated to a status similar to that of the price stability objective.

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9. Gaps and Wishful Thinking in the Theory and Practice of Central-Bank Policymaking[1]

Edward J. Kane

Of men who have a sense of honor, more come through alive than are slain, but from those who flee comes neither glory nor any help… Ajax in *The Iliad*

Roles played by fear and disinformation and authorities' response to them are major gaps in conventional theories of crisis management. This is despite the fact that, in the midst of a crisis, the central goal of lobbyists for distressed firms and their various creditors is to magnify governmental fears as a way to secure bail-outs.

Detailed descriptions of the 2008 industry and governmental crisis-management environments painted by Bair (2012) and Sorkin (2010) depict a virtual epidemic of fear. While it is often said that fear makes cowards of us all, this is an overstatement. What fear does do is to increase the attraction of myopic actions over sounder, but immediately painful ones. In Europe and in the US, central bankers characterized themselves as wrestling in timely fashion with macroeconomic and financial forces that threatened to destroy prosperity as we know it. But arguably, in the months leading up to the crisis, authorities' fear that tougher supervision might engender political, bureaucratic, and career punishments intensified the forces they had to deal with. Supervisory forbearances extended the lives of bubbles in housing and in shadowy forms of financial transacting and this extension aggravated the effects that the crisis-generating bursting of these bubbles had on the real economy (Kane, 2012b). The problems that authorities feared came from the capacity of affected parties to mischaracterize needed discipline as profit-destroying overregulation. Fear of embarrassment led authorities to tolerate (and even to encourage) misrepresentation of Libor rates for years on end and to neglect the buildup of risk in seemingly profitable firms such as the American International Group (AIG). The result has been a slow breakdown in the ethics of financial management and government service. Regulatory complicity in the resulting flow of safety-net subsidies is rationalized politically by the unproven and increasingly unconvincing claim that elite financial institutions are economi-

[1] This paper refocuses Kane (2012a). The author wishes to thank Richard Aspinwall, Stephen Buser, Rex DuPont, Steve Hanke, Martin Hellwig, Richard Herring, Stephen Kane, James Moser, Michael Pomerliano, Reinhard Schmidt, Matt Stoller, James Thompson, and especially Robert Dickler for valuable comments on earlier drafts of this analysis.

cally so important that their managers' and creditors' concerns deserve to rank ahead of the interests of other citizens.

The opaque chain of deals and dealmakers involved in producing structured securitizations and other forms of shadowy finance undermined longstanding accountability restraints on self-serving industry and governmental behavior. The observable consequence of this loss of ethical restraint has been a tidal wave of de facto fraud and deception. With each new scandal, the public becomes more and more aware of the extent of regulatory capture and of authorities' unwillingness to own up to the shadowy deals they are making. Fraud and influence-driven incentive conflict are malignant phenomena that mainstream models of optimal macroeconomic and financial stabilization (e.g., Benigno and Woodford, 2003) studiously ignore or wishfully neglect. This paper seeks to demonstrate that the failure to take into account the impact of fear and disinformation has helped the financial industry to misrepresent the sources of its profits and to sow misconceptions, non-transparencies, and outright loopholes into the capital standards and regulatory definitions of capital and risk that – then, now, and in the foreseeable future – are supposed to keep financial instability in check. The author goes on to suggest two changes that would help to uncover the costs of fear and disinformation and to create a structure for confronting them directly.

9.1. THE TAXPAYER PUT AS OFF-BALANCE-SHEET EQUITY CAPITAL

This paper conceives of the capitalized value of safety-net subsidies as the flip side of an implicit political contract that allows regulators – at their discretion – to transfer losses incurred by large and politically powerful institutions to ordinary taxpayers. This contingent credit support enables any institution that benefits from this support to fund itself more cheaply, with fewer covenant restrictions, and in larger quantities than markets would otherwise offer. The existence of this shadowy and coercive "taxpayer put" is not currently recognized as an equitable interest in corporate law and its value is not reported in government or bank accounting statements. This prevents the put from being understood as a losing position that officials load onto the balance sheets of those who are obliged to pay the bill for its exercise (i.e., small banks and taxpayers). Whenever one side understands the terms and nature of a financial contract better than the other, opportunities arise for exploitive profiteering by the informationally advantaged party.

In principle, "capital" is a measure of a firm's ability to sustain losses as a going concern (Hellwig, 1995; Admati, DeMarzo, Hellwig, and Pfleiderer, 2012)). Acting in concert, market and regulatory discipline force a firm to carry a capital position that outsiders regard as large enough to support the risks it takes. When

institutions are protected by the safety net, not all of this capital comes from shareholders. Taxpayers become enmeshed in supplying capital to such firms because creditors and other counterparties regard the conjectural value of government guarantees as a valuable option – a "taxpayer put." The value of the government-contributed equity capital supplied by a firm's taxpayer put is a contra-liability that serves as a substitute for ordinary on-balance-sheet capital supplied by the firm's shareholders. It frees up opportunities for managers to dividend out capital that shareholders would otherwise have to leave in the firm.

To rebalance the safety-net contract, this paper proposes to refocus the process of financial regulation in two ways. The first is to oblige banks and their regulators to measure –as carefully and explicitly as they can – variation in the size of the taxpayer puts enjoyed by individual firms and to track the value of the portfolio of these puts across the finance sector as a whole. A straightforward method for doing this is explained in Hovakimian, Kane, and Laeven (2012). The purpose of this exercise is to gauge taxpayers' stake in the finance sector so that it can be used as a quantitative policymaking guide. Such a measure could help both to monitor the buildup of systemic risk in economic booms and to calibrate the benefits and costs of different ways to curtail this risk to minimize the danger of crisis. It could also help to target triage strategies in crisis circumstances.

Two attractive features of these authors' measure are that it can be calculated straightforwardly from readily available data and that it finesses the need to develop risk weights for particular assets and liabilities. Experience shows that the Basel Committee's efforts to calibrate a series of risk categories based on historical data generate inherently destabilizing regulatory arbitrage (Mariathasan and Merrouche, 2013).

The second proposal focuses on developing a coterie of professionally trained regulators who would have sufficient technical expertise, and more importantly, sufficient ethical commitment to control the regulated on behalf of the public. The goal is to not just to train would-be regulators, but to school them to think like firefighters and warriors, so that they run promptly toward dangerous situations, rather than away from them, and commit themselves to a lifetime career of guarding the public trust.

9.2. Misconceptions about Crises and Crisis Response

Deception harms those who rely upon it and may be regretted by the deceiver when and if the unpleasant truth comes out. But people lie regularly and usually for the simple reason that the deception is thought to benefit the would-be deceiver in the short run. The unpleasant truth about crisis management is that bailout schemes that purport to "lend" money to insolvent zombie institutions

are economically not loans at all. They are coercive equity investments in risky and unprofitable enterprises that are designed to give taxpayers a below-market return for the risks they assume.

Unless they are accompanied by triage, bailouts are half steps and the relief they buy is only temporary (Kane and Klingebiel, 2004). In an environment in which regulators are captured, policies that guarantee the debt of giant zombie institutions are giveaway programs that preserve the jobs of aggressive or incompetent financial-institution managers and promote go-for-broke risk-taking at the expense of solid portfolio management. The day-to-day and week-to week horizons that have characterized policymaking during the crisis and its aftermath result in short-sighted strategies of financial stabilization. such as those embodied in the Dodd-Frank Act (DFA) and Basel III.

Neither DFA nor Basel tries to define systemic risk operationally or to decide onto just which taxpayers' balance sheets the implicit debt created by US and European central bank credit support will finally settle. Both schemes ignore the time consistency and distributional issues that gaps in supervisory coverage and backdoor bailouts raise. Proponents of these policies presume that central banks can create enough liquid reserves to keep a growing horde of insolvent financial institutions afloat forever and that questions about the economic justice, efficiency, and time consistency of bailout strategies can safely be ignored.

Because insolvency and unemployment are hard to cure, they may be compared to a pair of grievous plagues. To alleviate the nasty side effects of would-be therapies, authorities must prescribe a *sustainable* cocktail of interacting reforms. In the US, strategies for dealing with regulation-induced innovation and for disciplining the institutions that recklessly spawned these plagues have been assigned to teams of incentive-conflicted and understaffed regulators to work out. Scandals such as the Keating 5 or Abscam episodes document the willingness of legislators to transmit lobbying pressure to regulatory personnel. Regulatory clienteles are using Congress to fan the flames of incentive conflict as the rule-making that the DFA requires creeps forward. For example, Congress is refusing to give understaffed or mis-staffed agencies charged with implementing the DFA (such as the Commodities Futures Trading Commission) the funds needed to carry out their putative assignments and has held up political appointments at safety-and-soundness and consumer regulatory establishments. In the end, US regulators are unlikely to devise and enforce rules or policies that crack down heavily on politically influential firms. Sadly, even more-stressful political biases, turf issues, and budgetary pressures undermine efforts to resolve bank and sovereign insolvencies in the European Union as well.

Distressed institutions continue to shift accumulated losses and the downsides of still-expanding risk exposures to taxpayers and other counterparties. Bankers

understand the financial safety net – *not* as something external to their economic balance sheet – but as a politically enforceable *implicit contract* that they have negotiated with national governments. This contract allows governments to impose capital requirements in exchange for committing itself to bail out large portions of the financial industry in crisis circumstances. But it has proved counterproductive to impose requirements as complex and politically driven as those devised in Basel. The absence of cross-country accountability for individual-country rules and enforcement encourages forum shopping.

The timetable for rule-making established by the DFA compels US regulators to act quickly. Lobbyists in other jurisdictions are encouraging their regulators to delay their rule-making. Foreign regulatory clienteles hope to extract rules that would encourage US deals to be booked in their particular markets and at the same time enable their clearinghouses to become important enough that the specter of their failure would scare US authorities into bailing them out in a crisis. This and other kinds of regulatory arbitrage enhance firms' ability to hide US taxpayers' stake in their risk-taking and to misrepresent the depth and timing of developing taxpayer losses in ways that vaporize the social benefits of capital requirements.

Financial crises are battles over loss distribution. If governments around the world want to fight these battles more effectively, they need to sharpen the risk-control missions of regulatory agencies and rework oaths of office and bureaucratic incentives at these agencies. They also need to refocus reporting responsibilities for regulators *and protected institutions* on changes in the value of taxpayer safety-net support.

9.3. DUTIES OF THE REGULATORS

Differences in the protections afforded stakeholders in Bear Stearns, Lehman, AIG, and Goldman Sachs clarify that creditors of some institutions are more fully protected than others. What we can call an "elite institution" is one that possesses political clout as well as economic importance. Regulators need to be trained and fortified to resist the malignant pressures that these institutions are apt to exert.

Given that financial safety nets transform taxpayers into unwitting *equity investors of last resort*, regulators and financiers owe taxpayer-investors duties of loyalty, competence, and care in return for their stakes in financial firms. The duties of care and competence imply three specific duties:

1. *a duty of vision*: Supervisors should continually adapt their surveillance systems to discover and neutralize innovative regulatee efforts to disguise their rule breaking;
2. *a duty of prompt corrective action*: Supervisors should stand ready to propose new rules and to discipline regulatees whenever a problem is observed;

3. *a duty of efficient operation*: Supervisors should strive to produce their insurance, loss-detection, and loss-resolution services at minimum cost.

In turn, the duty of loyalty entails both:
1. *a duty of conscientious representation*: Supervisors should be prepared to put the interests of the community they serve ahead of personal and bureaucratic interests;
2. *a duty of accountability*: Implicit in the other duties is an obligation for safety-net managers to embrace political accountability by bonding themselves to disclose enough information about their decision making to render themselves answerable for mishandling their responsibilities.

Unless these duties are honored on political battlefields and enforced in operational and accountable ways, it is unreasonable to believe that authorities can or will adequately measure and contain systemic risk as the next round of boom and bust unfolds.

A critical step would be to strengthen training and recruitment procedures for top regulators. Specialized educational programs are only beginning to emerge. For example, Macquarie University in Australia is planning a Masters in Financial Regulation and targeting it as an executive course for candidates currently employed as regulators. The most ambitious program is the European Supervisor Education Initiative (ESE). The ESE was formed in 2009 as a confederation of European supervisory authorities, central banks, and academic institutions. It seeks to promote "the concept of a joint supervisory culture in Europe." It organizes its curriculum in a modular fashion. Table 1 lists the subjects to be covered in 2012.

Except for including segments on negotiating and communication skills, the ESE program focuses on techniques of supervisory risk assessment and control. Missing from the curriculum is explicit training in the ethics of regulation and in how to prevent bureaucratic incentives from being distorted by the industry's revolving door and the shadowy influence it exerts in the appointment process. Incentive conflict is the number-one problem in regulatory and supervisory enforcement and placing political patronage rather than competence, character, and courage at the center of the appointment process amplifies incentive conflict.

One's ability to handle incentive conflict is shaped in large part by one's personal sense of honor and duty. In areas of public service that require individuals to put their lives on the line, a candidate's sense of honor and duty is honed by morale-centered training programs. Although helpful, it is not enough for consortiums of individual agencies or universities to offer specialized instruction in the theory and practice of financial regulation for existing staff. They must change the industry-centered culture of central banking.

Table 1: European Supervision Education Initiative Seminar Program For 2012

Topics	Number of Times Offered	Planned Dates	Length	Host/Venue
Interest rate risk and asset-liability management (ALM) in banks (Advanced Basel III Seminars)	Two	14-16.02.2012	2.5 days	Eltville
		19-21.09.2012	2.5 days	Eltville
Stress testing and capital management in banks (Advanced Basel III Seminars)	Two	30.01-01.02.2012	2.5 days	Eltville
		25-27.04.2012	2.5 days	Vienna
IFRS vs. Basel requirements for Banks (Advanced Basel III Seminars)	Two	20.-22.06.2012	2.5 days	Vienna
		14.-16.11.2012	2.5 days	Vienna
Negotiating skills for European supervisors	Six	12.-13.01.2012	2 days	Eltville
		02.-03.02.2012	2 days	Eltville
		22.-23.03.2012	2 days	Eltville
		03.-04.05.2012	2 days	Eltville
		06.-07.09.2012	2 days	Eltville
		18.-19.10.2012	2 days	Eltville
Case studies on the development and review of IRB models	Two	30.05.-01.06.2012	2.5 days	Eltville
		23.-25.10.2012	2.5 days	Luxembourg
Importance of the liquidity risk management for the stability of individual banks and the financial system	Two	24.-26.04.2012	2.5 days	Luxembourg
		15.-17.10.2012	2.5 days	Frankfurt
Risk models in banks	One	07.-09.05.2012	2.5 days	Frankfurt
Supervisory Colleges	Two	08.-09.03.2012	1 day	Berlin
		04.-05.10.2012	1 day	Frankfurt
Supervision of Credit Rating Firms	Two	26.-27.04.2012	1 day	Frankfurt
		26.-27.04.2012	1 day	Bonn
English & Communication Skills for Supervisory functions	One	23.-25.05.2012	3 days	Prague

Between them, the Federal Reserve and the European Central Bank have used risky forms of collateralized lending and swap facilities to support troubled institutions all over the globe. Their joint propensity to rescue mega-institutions not only keeps mega-firms' funding costs inappropriately low, it distorts the size distribution and increases the fragility of the financial-services industry.

As a long-run way to give European and US taxpayer interests the primacy they deserve, I believe that we need to establish a high-profile academy for training financial regulators modeled on West Point and admit cadets from around the world. This would forge connections between graduates at supervisory agencies in different countries and pave the way for more-effective information flows and

cross-border regulatory cooperation. Besides studying principles of financial engineering and the ways in which past crises have unfolded, students need to be drilled in the duties they owe the citizenry and in how to overcome the political pressures that elite institutions exert when and as they become undercapitalized. It is striking how effectively training for crises prepares police officers, firemen, and nuclear personnel to run without hesitation *toward* – rather than *away from* – danger when emergencies arise.

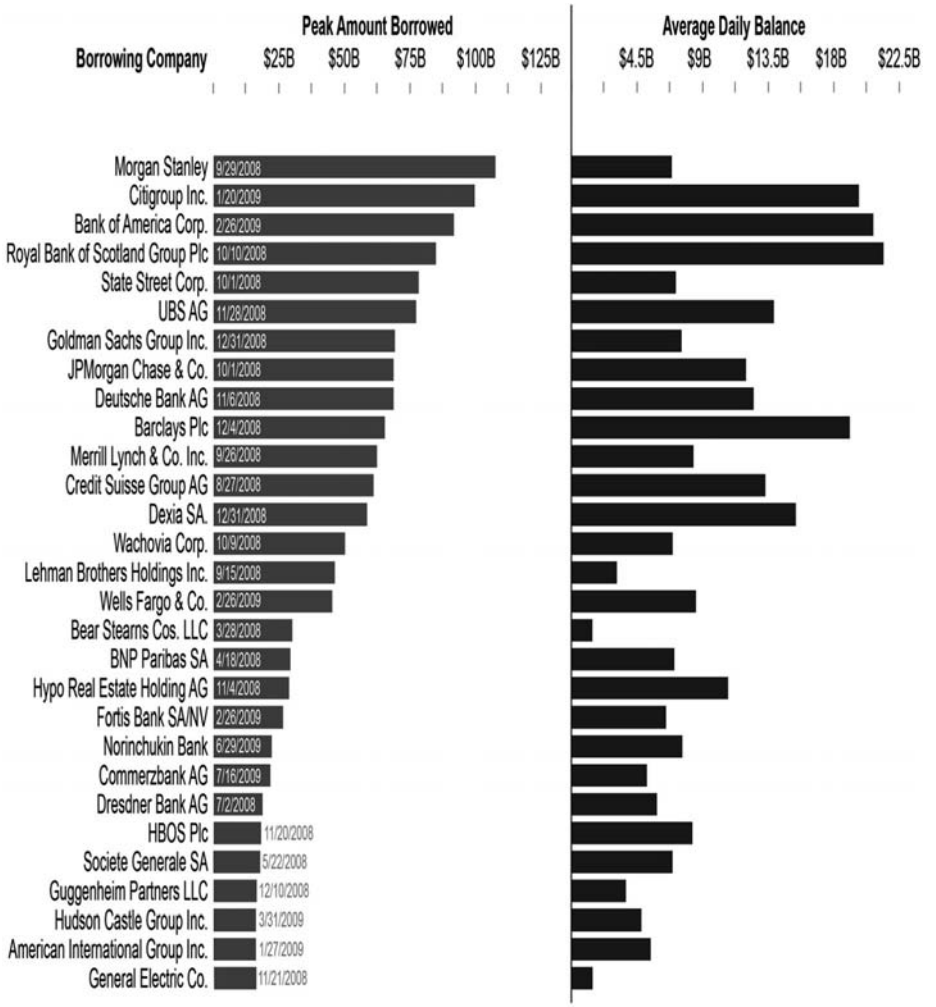
9.4. CENTRAL BANK AND GOVERNMENT RESCUE PROGRAMS

The worst aspects of the current system of regulation rush to the fore in times of crisis. When regulators pander to the expedient interests of loss-making institutions, they increase expected tax burdens on households and small business. The failure to perform triage prolongs economic malaise rather than cures it. Table 2 summarizes the depth and breadth of the subsidized credit support that the Fed supplied during 2007-2010. The voting and taxpaying public recognizes that central bank and government rescue programs have placed heavy – and not yet fully acknowledged – burdens on the citizenry of the US and EU. Evaluating bailout programs only against a totally irresponsible standard of doing nothing at all, high officials characterize financial crises as generating ruinous external diseconomies for viable financial firms, and go on to make two self-serving claims: (1) that the indiscriminate use of government credit support is *necessary* to save us from worldwide depression and (2) that bailout arrangements actually *make money* for the taxpayer. Both claims are false, but in different ways.

Without adequately measuring the holes in zombie balance sheets or considering distribution effects, authorities have undertaken restucturings that merge visibly weak firms into firms whose accounting numbers may only appear to be stronger. Such mergers eventually surface hidden weaknesses in both partners and require further taxpayer assistance down the line.

Bailing out firms without conducting careful triage and taking control of zombie firms is neither a reliable nor an efficient way to restore financial stability (Kane and Klingebiel, 2004). It wastes taxpayer resources by expanding the opportunity set of previously mismanaged firms and these firms' attraction to long-shot uses of funds undermines rather than promotes the job growth needed for economic recovery. The value of the zombie's long position in the taxpayer put increases with the volatility of its underlying asset values. This is because the bulk of very large favorable returns accrue to the shareholders, while everything else belongs to the taxpayers. Leaving zombie firms in private hands evokes reckless gambles for resurrection and creates uncertainty about who will finally bear bailout costs

Table 2: The Fed, showing great creativity, used its last-resort lending powers to fund many of the largest banks in the world (Fed Loans 8/2007-4/2010)



Source: Bradley Keoun and Phil Kuntz, 2011, "Wall St. Aristocracy Got $1 Trillion," Bloomberg.com, August 22 (transmitted to me by Richard Herring).

and about when and how triage will – as it must eventually – be accomplished. The US S&L mess shows that, until these issues are resolved, gambles and uncertainties will continue to disrupt the flow of credit and real investment necessary to trigger and sustain a robust economic recovery (Kane, 1989; Kane and Yu, 1995).

In the US, the claim that the Fed and TARP programs actually "made money" for the taxpayer is half-true. The true part of the proposition is that, thanks to the

heavily subsidized terms these programs offered, most institutions will be able to service the formal obligations they incurred. But the other half of the story is that US citizens had better ways to deploy bailout funds. Blanket rescue programs forced taxpayers to provide undercompensated equity funds to deeply troubled institutions, and the largest and most politically influential of these firms were allowed to gamble for resurrection. Government backing permitted insolvent financial firms to avoid having their debt explicitly downgraded to the junk status it deserved. It also allowed some of the largest zombies to absorb the assets of other troubled firms, making them even bigger and harder to fail.

The payoff structures of lifelines provided to an underwater firm are not those of a loan. They are those of a long-shot equity investment whose substantial downside easily justifies a 15% to 20% return. For example, 3-year Irish government bonds yielded as much as 14% in July 2011 and the yield on 3-year bonds issued by Greece reached 25% in October of that year. Hull, Predescu, and White (2005) calculate that during the noncrisis period of 1996-2003 the risk premium over Treasuries appropriate for comparably low-rated bonds averaged 13.21%.

Unbridled government credit support runs a tab for past and future losses at protected firms and posts the bill on taxpayers' account. Running such a tab is demonstrably a short-run path of political and administrative least resistance. But in the long run, this strategy breaches the public trust and creates hard-to-contain social unrest. US and EU authorities chose this path without weighing the full range of out-of-pocket and implicit costs of indiscriminate rescues against the costs and benefits of alternative programs such as prepackaged bankruptcy or temporary nationalization and without documenting differences in the way each deal would distribute benefits and costs across the populace over time.

9.5. ACCOUNTING FOR THE RESCUE OPTION ON BANK, GOVERNMENT, AND TAXPAYER BALANCE SHEETS

Both in the US and in the Eurozone, authorities have blamed the weak economic recovery on weaknesses in bank, customer, and government balance sheets. However, they are not coming clean about what these balance sheets truly look like. The problem is not just that the assets of many systemically important banks are overvalued. The larger problem is that banks and governments are not made to account for the way in which, when important firms fall deeper and deeper into distress, implicit and explicit taxpayer guarantees absorb much of the asset markdowns that would otherwise have to be booked.

In accounting parlance, a *contra-liability* is an item that is entered on a firm's balance sheet when and to the extent that responsibility for servicing some of its

debt falls on a third party. For banks, financial safety nets transform a block of unknown taxpayers into just such a third party. The unacknowledged value of taxpayer guarantees are, economically, an unbooked contra-liability of the modern commercial and investment bank and an unbooked, and uncertainly dated, liability of the taxpaying households and firms. Those taxpayers are the ones that troubled governments are likely to saddle with the final bill for the bailout support that pressure-group politics currently and surreptitiously dictates.

Taxpayers' side of the bailout is a huge drag on the world economy. This is because, with each further delay in resolving the insolvency of zombie banks, rational taxpayers (including solvent banks) have to cut their spending and investment activity to set aside more and more of their wealth in an implicit or explicit precautionary reserve that is large enough to cover their surging tax exposure.

This is why it is disgraceful for spokespersons for JPMorgan Chase (JPM) to claim that its suffering a six-billion dollar loss in derivatives bets in London markets had no effect on US taxpayers. This claim mendaciously ignores the way that observing so massive a failure in bank and regulatory risk management has increased taxpayers' estimates of their side of the taxpayer put and fanned taxpayer fears about other hard-to-observe forms of TBTF risk-taking.

Not having to account for taxpayers' equity stake in too-big-to-fail institutions generated by regulatory delay and forbearance undermines political accountability and limits deceiving management teams' exposure to fraud claims.

In the Eurozone, intense uncertainty exists about the size of the liabilities and the prospective identity of the particular creditors, taxpayers, and range of countries that will finally be made to cover the shortages of the zone's insolvent banks and sovereign nations. The inability of outside parties to size the insolvencies accurately fans taxpayer uncertainty and makes ordinary citizens' precautionary reserve all the larger in the aggregate.

Long and counterproductive delays in resolving the insolvency of large financial firms are the rule, rather than the exception. In the European Union today, laying more of the bailout burden on another country's taxpayers is the primary goal of both those pushing for a pan-European solution and those who are resisting their efforts. Whether we are talking about an expanded bank recapitalization fund, a joint deposit-insurance authority, a banking union, or a fiscal union, the issue is the same: Who will pay the bill and how large will it get before it is finally presented?

Seemingly endless negotiations over this issue support gambling for a hard-to-foresee economic recovery in members of the regulatory community and a go-for-broke casino mentality in the increasingly undercapitalized financial community. In the meantime, the job of the European Central Bank has become to issue

increasingly poorly collateralized loans to increasingly poorly capitalized and insolvent banks. In my opinion, this process is turning the ECB into the biggest and most dangerous zombie of them all. Moreover, its efforts to register a derivatives clearing organization (DCO) in the US to clear interest-rate and foreign-exchange swaps looks suspiciously like a devious way to extract subsidies from the US safety net.

9.6. RETHINKING SYSTEMIC RISK

This paper's title metaphor of "wishful thinking" puts one in mind of the middle stage of the Kubler-Ross model of how people work through the pain of emotional or societal crises. After first panicking over the crisis and denying its severity, individuals are deemed to bargain fruitlessly with God or other unseen forces to make the problem magically disappear. Central bankers' operative problem is to pass from the wishful-thinking stage to conceptualize the roots of the crisis realistically and to assess the risk that half steps of insolvency resolution and reform might make things worse in the long run.

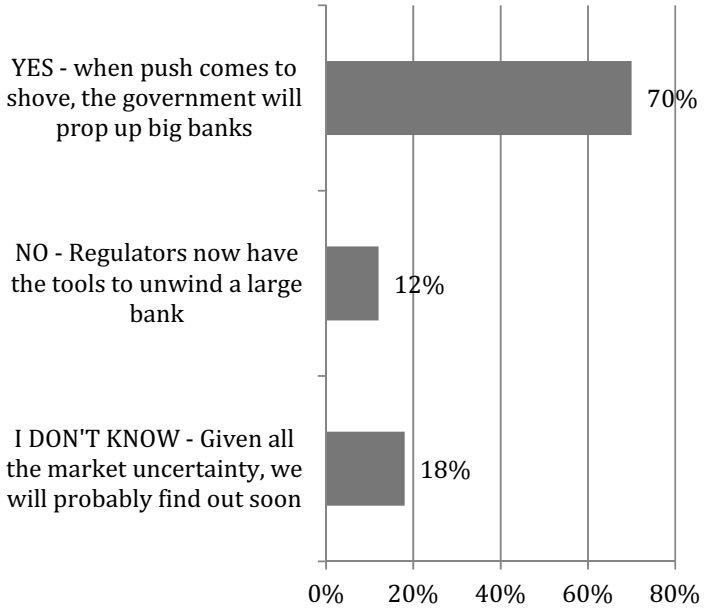
The root problem in supervisory conceptions of capital and systemic risk is that they shield government and industry officials from timely accountability for the roles they play in generating adverse movements in the true value of each variable. Politicians and regulators are reluctant to acknowledge regulation-induced elements in innovative forms of risk-taking and loss deferral undertaken by client firms or to report publicly on the ways in which the industry exerts perverse lobbying pressure upon them.

The industry reinforces authorities' disincentive to engage in careful crisis planning because the claim of unforseeability glorifies self-serving industry and regulatory responses to crisis pressures and makes it easier for that response to exploit ordinary citizens. The primary task of so-called Wall Street lobbyists is to foster among politicians and regulators an inordinate fear of letting either the reliability of industry accounting standards or the health of major industry segments be called into serious question. This fear leads central bankers to proclaim their willingness "to do whatever it takes". Such promises cement the taxpayer put and feed an expectation that officials will absorb losses and loss exposures in crisis situations. Despite the numerous changes promulgated in the DFA and Basel III, this expectation remains strong (see, e.g., Table 3). These fears and proclivities encourage opportunistic firms to cultivate turf battles and exploit incentive conflicts within the supervisory sector to make sure that tough decisions favor industry interests over those of other citizens.

Definitions of systemic risk used by the Basel Committee and other policymakers focus on *contagion* and *connectedness*: i.e., they treat systemic risk as coming

Table 3: Survey Evidence about the Credibility of Financial Reforms

Given Moody's recent downgrades and the passage of Dodd-Frank,
Does Too Big to Fail still exist?



Source: American Banker On-Line Subscriber Survey
Survey Questionnaire Was Posted online from 9/25/11 through 10/2/11

from unpredictable spillovers of institutional defaults across important firms in the financial sector and from this sector to employment and asset values in the real economy. This perspective conceives of safety-net costs more or less as negative externalities and fails to acknowledge that safety-net arrangements are rooted in an implicit political contract. In crisis circumstances, legislators and regulators renegotiate the terms of this contract and its enforcement with industry counterparties, with little input from taxpayers. The widespread understanding that authorities will be afraid to let creditors absorb potentially ruinous losses helps to complete financial markets by credibly segregating downside risk in protected institutions and assigning the deepest tail-risk exposures to taxpayers. When tail events do not materialize, the institution keeps the risk premiums their loss exposures generate. But when and if things go disastrously sour, the management "puts" substantial losses to taxpayers.

My two-piece contractual conception of systemic risk clarifies that it comes from a coercive option-like equity investment that government officials make in protected firms. As agents, government officials and the managers of protected firms owe their taxpayer principals complementary duties of loyalty, competence, and

care. Taxpayers' position in each protected firm provides an insurance-like benefit to shareholders and creditors that in a transparant and competitive guarantee market beneficiary firms would be required either to surrender or pay for. The value of this benefit can be shown to vary inversely with the risk that an institution might sustain a series of losses that exceed its ownership capital (i.e., with the expected value of a firm's deepest downside risks) and with the percentage of a firm's tail risk that the government is likely to absorb if this were to occur.

Research indicates that bond, stock, and swap markets reward elite institutions for increases in asset size and tail risk. See, for example, Brewer and Jagliani (2009), Penas and Unal (2005), and Völz and Wedow (2009). Hence, empirical research supports the common-sense view that implicit and explicit government guarantees distort the ways in which banks conduct and report their risk-taking.

Taxpayer exposure to loss from shadowy risk-taking is not an external diseconomy. This exposure is generated by an implicit market-completing contract whose exercise is under the control of government regulators. Unfortunately, regulatory cooperation in concealing tail risks at politically and economically important firms has been helping to sustain an exploitive contract structure.

The taxpayer put may be conceived alternatively as a reinsurance contract that makes taxpayers unacknowledged equity investors in protected firms when it is exercised. But this view still implies that policymakers should measure and collect compensation for taxpayers' exposure to tail risk at protected firms. As a matter of simple justice, the value of taxpayers' stake in such firms can and should be measured jointly by managers and regulators and be supported by an appropriate annual or quarterly dividend. This compensation should be framed as a user fee rather than a tax. Precisely as required by the contracting structures that have been worked out for other stakeholders, taxpayers deserve to have their stake in financial firms monitored and serviced fairly.

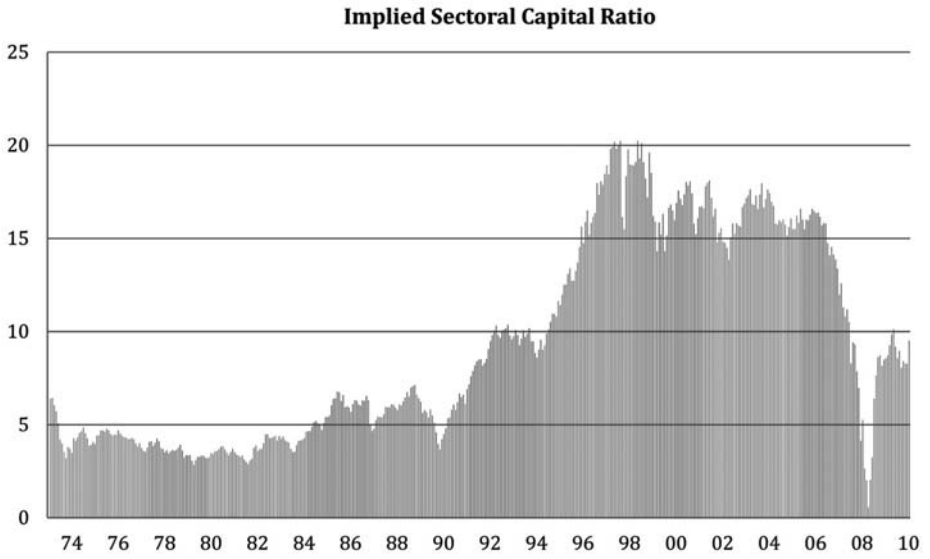
9.7. USEFULNESS OF CAPITAL REQUIREMENTS HAS BEEN OVERSOLD

Regulation may be likened to medicine and systemic risk to a disease. Medicines and other kinds of therapeutic treatments are bundles of good and bad side effects. Therapies seldom prove beneficial for all *intervals of time* or for all *types of patients*. In the financial sector, treatment protocols should be judged by their ability to create net value for patients and society through time.

To evaluate regulatory treatments properly, one must look beyond their immediate palliative effects. One must also worry about both the long-term comprehensiveness of the diagnosis regulatory "doctors" have adopted and the limitations

of the therapy they prescribe. In the laboratory in which global regulatory strategies are crafted today (the Basel Committee on Banking Supervision), the diagnosis that regulators are pursuing is misconceived. Their treatment plans inevitably misperceive capital and misweight risk. Authorities acknowledge that financial crises are socially costly to cure, but they pretend that crises can be avoided by aligning a firm's deceptively understated leverage with politically negotiated conceptions of its exposure to risk. Regulators profess to believe it is sufficient to force protected institutions to accept a marked increase in their equilibrium ratio of *accounting net worth* to total assets. But games that can be played with loan-loss reserves and other discretionary items make accounting net worth a loophole-ridden concept whose meaningful economic counterpart is ultimately driven by an institution's appetite for risk. In practice, a firm whose books make a show of higher capital is often riskier than a firm whose books show less. Hence, while accounting measures of US bank capital to assets have remained relatively flat in recent years, measures of the economic value of bank capital fluctuate a great deal. Table 4 shows estimates of the ratio of the economic value of US bank capital to assets prepared by Hovakimian, Kane, and Laeven (2012). This ratio increased in 2004 as investments in high-yield assets expanded and began to fall after 2006 as the low quality of many of these assets became increasingly clear.

Table 4: Behavior of the Synthetic Capital-to-Asset Ratio Implied for the Banking Sector by Hovakimian-Kane-Laeven contingent- claim model of asset value and stockholder equity (2012), 1974-2010 (quarterly in percentage points).



Hence, the preventive leg of the Basel III diagnosis is overly hopeful and not supported by empirical research. On the contrary, financial crises seem *inevitable*. Where data exist, they show that every country's financial sector passes through a succession of three-stage sequences: a pre-crisis bubble in credit, an actual crisis, and a post-crisis period of creative destruction and healthy recovery (Kindleberger, 1978; Reinhart and Rogoff, 2009). Of course, the durations of the different stages vary across countries and across time, and transitions from one stage to another become clear only in retrospect.

9.8. NEED FOR IMPROVED STATUS AND TRAINING FOR REGULATORS

Historical data do support a less sweeping hypothesis: namely that bubbles and crises can be amplified by weaknesses in insolvency detection and by subsidies to risk generated by zombie firms' ability to battle politically for bailouts. In practice, crises and subsidies arise dialectically from path-dependent collisions of efforts by: (1) regulators in their supervisory capacity to control leverage and other forms of risk-taking with (2) disruptive efforts by regulated and "shadowy" financial institutions to expand risks in nontransparent ways and to shift responsibility for ruinous outcomes onto national safety nets. Bank managers face a trinity of malignant incentives: to lobby for lenient standards, to hide and understate risk exposures, and to overstate accounting net worth. This set of incentives makes risk and stockholder-contributed net worth hard to measure accurately and reliable standards by which to judge improvements in incentive alignment difficult to set and enforce.

Because regulators have relatively short terms in office, they are attracted to temporary, rather than lasting fixes. The costs and benefits of capital requirements extend far into the future and are by no means fixed or exogenous. Regulatees search tirelessly for ways to reduce the burdens of regulation. Value maximization leads bankers to devise progressively lower-cost ways to exercise political clout, to adjust and report their asset and funding structures, and to choose the jurisdictions in which they book particular pieces of business.

This kind of financial engineering resembles what happens on a "makeover" television show. Top managers deploy the equivalents of fashionistas, cosmeticians, and hairdressers to revamp their firm's external appearance without changing the underlying character of the risk exposures that they expect taxpayers to support.

The endogeneity of regulatory burdens leads us to view: (1) ongoing negotiations in the Basel Committee on Banking Supervision that seek to establish global risk-based capital rules and (2) disruptive bank objections to – and circumvention of – emerging rules as *conflicting forces* in a dialectical evolutionary process:

- *Regulation* (e.g., Basel I) immediately begets and subsequently perfects patterns of *avoidance*;
- *Avoidance* begets (after a long gestation period) *re-regulation* (Basel II & III), often in response to *crisis pressures* and a *credit "crunch";*
- *Re-regulation* spawns further rounds of *avoidance*.

Weaknesses in the way US and EU regulators chose to implement Basel standards create differences in the costs of loophole mining that help explain why the crisis hit their financial systems harder than those of Canada, Asia, Latin America, and Oceania [see *Shadow Financial Committee Report* (2011), posted at aei.org]. Although Basel II ties risk weights for sovereign debt to credit ratings, it permits national authorities to go *below* those weights for central-government debt (or debt guaranteed by a central government) that is issued and funded in the currency of the country in question. For political reasons, US regulators assigned unrealistically low weights to mortgage-backed securities and EU officials set zero risk weights for member-state debt. The European Central Bank (ECB) contributed to the process by accepting the sovereign debt of all Eurozone countries at par value when posted as collateral for ECB loans. When and as the debt of the "GIPSI" nations of Greece, Ireland, Portugal, Spain and Italy began to be downgraded, the EU and the ECB failed to "haircut" their treatment of these countries' increasingly risky debt.

All this was part of a larger strategy of cross-country denial and concealment. EU stress tests and Basel's risk-weighted capital ratios (Demirgüç-Kunt, Detragiache, and Merrouche, 2011) failed demonstrably to distinguish between failing and viable banks. The fundamental weakness in Basel arrangements is their contractual incompleteness. Basel accords fail to make credit-rating organizations and individual-country regulators accountable either to the Basel Committee or to banking regulators in other member countries. Political interference in the risk-weighting process appears to have deepened the crisis by greatly expanding bank loans and securitizations in favored sectors, feeding bubbles in associated asset prices that burst disastrously.

Basel II experience with "risk-adjusted" capital requirements illustrates Groucho Marx's ironic contention that politics consists of misdiagnosing pressing policy problems and misapplying the wrong remedies. The three categories singled out for favorable risk weights in the 2004 accord were sovereign-government bonds, bank debt in OECD countries, and home mortgages. Because banks reacted to these special provisions by overlending to these sectors and because decision makers in the sectors chosen have a nearly insatiable appetite for leverage, the damage inflicted has proved unusually slow to heal.

9.9. UNDONE BY THE REGULATORY DIALECTIC

Contracting theory tells us that how fully regulators embrace their duties to the taxpayer and how well taxpayers can monitor their performance is important. Regulators need training to understand their duties and the activities they entail, while taxpayers require a transparent performance measure – one wrapped around the value of the taxpayer put – to know whether their interests are being properly served.

My Hegelian perspective dramatizes the incentive conflicts that regulators and regulatees face. Crises and subsidies arise in a path-dependent manner from prior tensions between efforts by *regulators* in their supervisory capacity to control leverage and other forms of risk-taking and efforts by *regulated and so-called "shadow" financial institutions* to *expand* risks in nontransparent ways and to *shift* responsibility for ruinous outcomes onto national safety nets.

Institutions' incentives to create and exploit loopholes make lobbyists' disinformational claim that tougher capital requirements will make banks pass up profitable financial opportunities seem distressingly dishonest. Accounting ratios are not – and will never be – difficult to overstate and bankers do not and will never accept high statutory burdens passively. Other things equal, higher capital requirements lead banks to choose riskier strategies and to strive harder to conceal the resulting loss exposures from regulators so as to curtail adverse pressure on bank profits and stock prices.

One can only hope that the crisis is teaching the public some important lessons about the game regulators and regulatees have been playing on them. A game-theory perspective clarifies that the Dodd-Frank Act and the Basel III framework are using stress tests and higher capital requirements to treat only a subset of the problem: the extent to which institutions expose themselves in *directly observable ways* to credit risks that transmit exposures to default across a chain of possibly fragile counterparties. But to be effective, the medicine of capital requirements must be adapted to take fuller account than the Basel Committee has of a firm's asset-liability maturity mismatch and also to treat a second and more shadowy source of subsidies. This second problem is the way in which regulatory arrangements create safe harbors for managers of undercapitalized institutions that use financial accounting tricks and innovative instruments to hide risk exposures. These safe harbors encourage managers at insolvent firms to adopt long-shot strategies that are likely to accumulate fresh losses and to pursue these strategies as long as they can. Their hope is that, if and when returns continue to turn out disastrously, enough other firms will also be in trouble that they can panic regulators and stampede them into providing indiscriminate life support.

The strength of authorities' politically driven *propensity for rescue* lies at the heart of the taxpayer put that individual institutions enjoy. Where the likelihood of rescue is small, creditors of weak banks face haircuts and excessively risky banks have risk retrenchment forced on them by market and regulatory discipline. Indiscriminate rescues cannot be justified solely on the grounds that disciplinary pressure is likely to lead to a "credit crunch" at troubled firms, because forbearance interferes with credit flows, too. The problem is that *indiscriminate* bailouts provide not discipline, but a commutation of the consequences for exploitive behavior. A zombie firm's unnatural lease on life leads its managers to eschew healthy positive net-present-value lending business in favor of negative-NPV "gambles for resurrection."

In good times and in bad, the "taxpayer put" allows elite private institutions to issue the equivalent of government debt and makes ordinary citizens uncompensated equity investors in risky firms. Offering long-lasting credit support to zombie firms impedes macroeconomic recovery by making crippled institutions look stronger than they are and turns a blind eye to the ways in which their underlying weakness creates additional damage by incentivizing managers of such firms to waste taxpayer resources by undertaking reckless long-shot investments instead of fostering flows of healthy business and consumer credit.

9.10. RECOMMENDATIONS FOR REFORM

My recommendations for regulatory reform are rooted in the straightforward ethical contention that protected institutions and regulatory officials owe the same fiduciary duties to taxpayers – as implicit equity investors – that corporations owe to stockholders. The existence of a safety net makes taxpayers silent minority partners in major financial firms. As de facto investors, taxpayers deserve to be informed by institutions and regulators at regular intervals about the value of their side of the taxpayer put. Consistent with US and European securities laws, managers of important financial firms should measure and report – under penalties for fecklessness, deception, and negligence – the value of taxpayers' stake in their firm on the same quarterly frequency that they report to stockholders. Estimates prepared by individual institutions ought to be vetted by regulators and aggregated within and across countries. To make regulators more accountable for their performance as supervisors, government officials *should be required to examine, challenge, and publicize* any concerns they may have about the assumptions used by different firms and regulators and to expose themselves to sanctions for defects in the ways in which they acquit these tasks.

Defining systemic risk as taxpayers' side of an unfavorably structured option claim also provides a metric for tracking systemic risk over time. Requiring

authorities to calculate and disclose fluctuations in the aggregate value of the taxpayer puts enjoyed by elite institutions would make regulatory authorities operationally accountable for the quality of their supervisory performance in booms and recessions alike.

Considerable disagreement exists about how to define and measure systemic risk. In reviewing the literature, Bisias, Flood, Lo, and Valavanis (2012) distinguish 31 different ways of measuring this variable. Still, nearly everyone agrees that it arises from mixing leverage with loan and investment strategies that create volatility in financial-institution returns. Most existing measurement strategies incorporate the pioneering perspective of Nobel Laureate Robert Merton (1977, 1978). Studies using his approach show that regulators could have tracked the growing correlation of institutional risk exposures and used it as an early warning system with which to track the increase in systemic risk that resulted in the current crisis. For example, research by Carbo, Kane, and Rodriguez (2011) indicates that at large US and EU banks during 2004-2008 safety-net benefits per dollar, euro, or pound of assets averaged about 15 basis points and that, in the years leading up to the crisis, estimated benefits were significantly higher at banks that eventually received bailout assistance.

9.11. TRADITIONAL REPORTING AND INCENTIVE FRAMEWORKS ARE INADEQUATE

The most difficult part of calculating the taxpayer put is to track the changing volatility of a firm's returns on assets. An effort to increase reporting frequency and expand the format for collecting information from covered institutions in individual countries is long overdue. Elite institutions ought to be required to report their best estimates of the actual and future variability of their earnings (i.e., the "volatility" of their balance-sheet positions over different horizons) and to certify a bracketed range of values for their taxpayer put. Making this information public could improve the precision of systemic-risk estimates and make officials more accountable for regulatory and supervisory performance.

Current accounting standards for recognizing emerging losses make evidence of an institution's insolvency inefficiently slow to surface. Moreover, during this and other crises, officials have proved reluctant to prepare and publicize timely estimates of the financial and distributional costs of bailing out firms that benefited from open-bank assistance.

By engaging in regulation-induced innovation, nurturing clout, and exerting lobbying pressure, a country's systematically-important-financial institutions (SIFIs) have kept their pursuit of tail risks from being adequately monitored and disci-

plined. The nontransparent role of political, bureaucratic, and career interests in regulatory decision-making is dangerous. It encourages elite firms to demand the right to screen regulatory appointments, to distort regulatory protocols, and to undermine strategies of enforcement.

In a world of derivatives transactions, top regulators need special training to understand – and considerable mental toughness to discipline abuses of – the incremental taxpayer exposures to risk that innovative instruments and portfolio strategies might entail. Efficient safety-net management requires a more sophisticated informational framework than current methods of bank accounting and examination provide. To protect taxpayers and to enhance financial stability, examinations and bank accounting reports should *not* focus narrowly on measures of tangible capital. They should also develop and report explicit estimates of the *intangible* value of an institution's evolving claim on taxpayer resources. To hold themselves accountable for carrying out these tasks conscientiously, regulators and protected institutions must accept a system of ethical constraints that would make them reveal and defend the forward-looking assumptions they use in calculating their enterprise's share of the taxpayer put.

Summarizing, regulators need to measure and publicize the implicit and explicit costs taxpayers incur in supporting national and international safety nets. To help authorities to do this skillfully and conscientiously, governments need to change both the way that banking information is collected and the way that regulators are trained, recruited, and incentivized. I believe that a National or International Academy for Financial Regulators could assist in these tasks.

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10. Bail-ins and the Appropriate Size of Financial Sectors

Morten Balling, D. Wilson Ervin & Stephen G. Cecchetti

10.1. Introduction by Morten Balling

The closing plenary session, chaired by *Haig Simonian,* most recently Swiss Correspondent for the Financial Times, featured four speakers from the central banking and financial practitioners' community.

D. Wilson Ervin, Senior Advisor to the Chief Executive Officer, Credit Suisse, opened the session with a presentation of Bail-in, an idea he launched in early 2010, Bail-in is a way to resolve banks safely and handle case of financial difficulty He pointed out the multitude of solutions on the table to solve the current crisis and to prevent future crises. Some of these proposals are good, many are irrelevant, and some are outright detrimental. The Financial Stability Board has devised three options in case a bank becomes insolvent: first, to sell the bank – this solution is useful only for small banks and may cause severe challenges as a consequence of the takeover. Second, bridge banks are a time-tested and useful tool but often the bridge bank relies on some sort of state protection. The third idea, which works without resorting to taxpayers' money, is to recapitalise banks through a bail-in of stock and bond owners. In effect it amounts to a high-speed recapitalisation of banks without the injection of government funds, while systemic functions and customer activities are unaffected, thus preserving the bank's franchise value for creditors. It may be seen as a US Chapter 11 procedure adapted to banks.

Using the example of the Lehman failure, he showed that a bail-in could have saved Lehman Brothers at a much lower cost to stock and bond owners, while in addition avoiding the huge systemic consequences caused by the failure of Lehman. Bail-in should work not only for individual situations, but also in the case of a larger systemic event. Bail-ins would solve many moral hazard problems associated with state-sponsored bank rescue actions, while at the same time avoiding contagion effects to be expected in the event of failure. Bail-in is now in effect official US policy, not least since there is no more public willingness to use any further public funds to rescue banks. Also in the euro area, bail-in is actively discussed. Switzerland was a very early mover in this discussion; contingent capital can be thought of as a structured, contractual form of a bail-in mechanism. The issue currently discussed actively is whether the mechanisms should only

relate to Switzerland itself or whether a global approach should be taken. In the view of the speaker, the latter route would clearly be preferable.

Stephen Cecchetti, Chief Economist, Bank for International Settlements, raised the issue as to whether, in the light of the crisis, we need to reassess the impact of finance on growth. On the one hand, well developed financial systems contribute to growth by reducing transaction costs and by improving the allocation of capital and risk. On the other hand, there is also a "darker side": the financial sector can detract resources from other important tasks. It can create vulnerability and misallocate resources. Thus, the current consensus is that the relationship between financial development (proxied e.g. by financial sector employment or financial sector value added) and labour productivity growth is inversely u-shaped i.e. beyond a certain point, further development of the financial sector becomes detrimental to growth, and therefore also undermines a state's tax base. The negative externality from over-developed financial systems would call for the introduction of a Pigovian tax to internalize these costs. In other words, one could argue in favour of something like a carbon tax on excessive finance. According to BIS estimates, the turning point may be in the order of magnitude of 3.2% of employment and 6.5% of value added by the financial sector in the total economy. Clearly, prior to the crisis, financial sectors in countries like Canada or Ireland were too big by this measure. Action by Switzerland and other states to reduce their financial sectors thus seems to be appropriate. On the other hand, Ervin pointed out that financial sectors may also be seen as an important export industry, which may justify big financial centres with a concentration of activity in a few places.

Martin Maurer, Secretary General, Association of Foreign Banks in Switzerland, pointed out the great uncertainty about banks' and other financial intermediaries' behaviour during the transition to tighter financial sector regulation. Herd behaviour may ultimately just move, rather than reduce, risk. He also argued for simpler supervisory rules. Current regulation also pushes out small banks. The current discussion of breaking up too-big-to-fail banks should also be seen in conjunction with the experience that most recent large bank mergers ultimately failed. Shareholders' interests should gain more weight compared to managers' in such far-reaching decisions.

Yves Robert-Charrue, CEO Switzerland, Bank Julius Baer, remarked that his institution is a mid-sized bank, "small-enough-to-fail", which focuses on private banking and operates globally. Any bank needs to sometimes balance conflicting interests of clients and shareholders. The larger the bank, the more difficult this trade-off may become to solve. Currently, there is too much credit in the financial system, an issue that needs to be resolved as a precondition for lasting economic recovery.

In the ensuing *discussion,* Haig Simonian asked the panellists about how worried they were about the current situation, in particular in Europe. After all, history – including the more recent examples of Iceland and Ireland – has shown that, albeit after severe downturns and with huge costs incurred, ultimately economies recover after financial crises. Ervin emphasized that there are important outstanding issues to be solved before financial markets become more confident. Before this, there may well be several further cycles of hope and disappointment. Cecchetti stated that regulation is never final, and will always provoke reactions by market participants, and thus needs to evolve continuously. Robert-Charrue expressed deep concern about the further development of European crisis countries.

Regarding the relationship between governments and banks, and government intervention to rescue banks, Simonian pointed out many possible examples of successful bank rescues. According to Robert-Charrue, more state intervention and regulation implies higher costs for banks, which ultimately will end up with customers. Maurer had no big concern about more post-crisis state involvement in banks. According to Cecchetti, states' involvement in banks varied across countries, but there has always and generally been substantial state involvement in banks, as part of industrial policy. This also reflects, according to Ervin, banks' involvement in money creation, but now, state involvement has gone too far.

With regard to the impact from financial markets on the real economy, Robert-Charrue saw substantial effects from the financial sector, both prior to and during the crisis (bubbles, recessions etc.). The coming challenge will be inflation. Maurer raised SMEs' insufficient equity in Switzerland which may hamper their credit financing as well. Cecchetti emphasized much further need for balance sheet repair both among banks and borrowers from the real economy. Ervin pointed out a tendency towards re-nationalisation of banking, with banks refocusing on their home core markets and, if squeezed, withdrawing from foreign markets.

10.2. BAIL-IN – A BRIEF GUIDE BY D. WILSON ERVIN

10.2.1. Is it Achievable?

First step: Defining "Success"

The Financial Stability Board (FSB) has the following Resolution Authority Objectives:

1) "preserve operations that provide vital services";
2) "avoid unnecessary loss of value and contagion":
3) "ensure losses are borne by shareholders & unsecured creditors – not taxpayers".

10.2.2. How To Do It?

– FSB Resolution Tools:
  - sale of firm;
  - create bridge bank for critical functions; wind down remainder;
  - recapitalize bank by restructuring liabilities: "Bail-in Within Resolution";
– bail-in Within Resolution:
  - a high-speed, pre-wired, forced recapitalization of the bank;
  - no government capital at risk – not a bail-out;
  - all systemic functions and customer activities continue as normal;
  - going concern approach preserves franchise value for creditors.

10.2.3. Bail-In – An Example

a) An example based on the Lehman Situation of 2008

Old balance sheet vs new balance sheet using bail-in

Old Balance Sheet		New Balance Sheet
$600 bn assets	→	$ 575 bn (i.e. $25 bn write-down)
$ 430 bn "franchise" liabilities (deposits, retail, swaps, payables)	→	No change – remains at par
$ 120 bn senior debt	→	15% new equity (85% unchanged)
$ 25 bn preferred & sub debt	→	new equity
$ 25 bn equity	→	write-off or warrants

Equivalent to a high-speed recapitalization for banks:
– "New Lehman" now well capitalized (well-priced assets and USD 43 billion fresh capital);
– no government capital at risk;
– customer activities continue as normal – going concern.

b) Impact on the System

Example – Impact on the System

	Actual Lehman	Bail-in Pro Forma
1) Equity	Wipe out	Warrants
2) Sub debt	Wipe out	Shares
3) Senior debt	10% to 25% recovery	~par (85% + shares)
Investor Impact	~$150bn of loss	~$25bn loss
	(= 5x – 6x asset loss)	(= 1x asset loss)

	Actual Lehman	Bail-in Pro Forma
- Customers*:	losses & fear	no loss
- Counterparties*:	losses & fear	no loss
- Markets:	massive unwinds & deleveraging	relief rally?
- Know result?	up to 10 years	now

Low "run" pressure

10.2.4. Systemic implications?

Lowers Contagion:

- no losses for retail clients – reduced pressure for "runs";
- no impact on counterparties or key market infrastructure;
- reduces losses dramatically for long term investors.

Less Pressure on Financial System:

- doesn't "push the problem" to other banks (mergers) or into troubled markets;
- avoids "deleveraging / liquidation cycle" - creates new equity at "point of failure";
- doesn't create ever bigger banks;
- avoids unstable "beggar thy neighbor" – globally constructive.

Lower complexity:

- relative simplicity – easier to execute;
- more predictable & transparent;
- better market signals can help discipline behavior.

10.2.5. Bail-In: A sustainable and powerful approach

- makes resolution "practical" via going concern approach:
  - not a taxpayer bail-out – uses a bank's own capital;
  - practical and effective with today's banks;
  - accesses huge capital resources - can handle crises bigger than 2008;
  - new for banks – but based on time-tested industrial strategies;
- improves outcomes for real economy:
  - maintains core banking functions – protects lending, markets & deposits;
  - reduces pressure on government finances – can help break the "doom loop" between banks and the state.

10.2.6. Recent Developments – Substantial Progress

Switzerland:

- Pioneered many elements of bank resolution, including bail-in concepts;
- expert Commission (2010):
  - innovative use of Contingent Capital – a limited form "bail-in" that could be adopted by a "first mover" single country;
- ongoing legal developments can expand capabilities to full Bail-in.

United States:

- Dodd Frank (2010) – legal basis for "Orderly Liquidation Authority" (OLA);
- Bail-In Within Resolution also can be executed within OLA;
- FDIC policy: "recapitalization" within OLA now US policy and extensively communicated.

European Union:

- EC Directive includes Bail-in as a core power (currently in Parliament);
- recommended by UK ICB "Vickers Report"; some existing powers;
- "Banking Union" – Bail-in as a key tool to break the bank-sovereign "doom loop" in Eurozone;
- New RRD law to establixh Bail-In across EU is making good progress.

10.3. REASSESSING THE IMPACT OF FINANCE ON GROWTH – STEPHEN G. CECCHETTI

Thank you for including the BIS in this year's SUERF Colloquium on "States, Banks, and the Financing of the Economy". Before getting to my remarks, let me quote from the theme of the conference:

> *Bankrupt states, failing banks, angry citizens – a toxic cocktail threatens the European and the world economy. The current global financial, economic and fiscal crisis reveals a complex interplay between states and financial markets: Instability in banking has spread to states and vice versa, with failures in both sectors looming. Economic and political fragility are feeding each other. The crisis increasingly hurts the real economy. This in turn further worsens public finances and bank balance sheets.*

I couldn't agree more. And, in the 2012 BIS Annual Report, we discussed the vicious cycles this implies[1]. But, since the papers in the colloquium are more research-oriented and long-term in their outlook, I thought I would move a bit past these short-term challenges and discuss something that is more about economic structure. With that in mind, I will use my time to comment on the linkages between finance and growth based on recent work that we have been doing at the BIS.

We have all been raised to think that one of the best ways to promote long-run growth is through financial development – that a well-developed financial system is one of the most powerful engines for economic growth that has ever been invented. Put differently, without a well-developed financial system, a country cannot grow at a healthy rate.

Where should we see the benefits of a well-developed financial system? There are two places. First, financial development helps to allocate capital to its most efficient uses. This increases the quantity and quality of investment and translates into higher growth. Second, it improves welfare because everyone – households, firms and governments – are able to smooth spending, reducing the volatility of consumption, wages, profits and the like.

So far, so good. However, in the aftermath of the financial crisis, many people have started to wonder about this. They have started to ask if there isn't a dark side to finance.

Even the smallest amount of reflection would lead one to realise that this is true at the individual level. It is great to be able to borrow, but only if you can repay.

[1] See Chapter 1 of BIS (2012).

Think of the good done by mortgage lending, and the damage done by foreclosure. Financial transactions are often poorly understood, so they are a fertile ground for the unscrupulous. Payday loans are one of my favourite examples – where weekly interest rates can be 3%. That's an annual rate of more than 350%. And this is actually legal in the United States.

Recent events have also shown that, reality being quite far from textbook predictions, too much financial development can actually make things worse. Look at the extraordinary amount of capital allocated to housing in the last decade in some advanced economies. That's surely not a case where the financial system improved the volume and quality of investment! And note that this would never have been possible without an already well-developed financial system.

Another example of how rapid financial development can lead to resource misallocation is the dotcom bubble of the late nineties: too many companies were formed, too much capital invested, too much fibre-optic cable was strung and too many people employed. After the bubble burst, we saw the result: scrapped equipment, empty buildings, and unemployed workers.

This means that financial development can create fragility. When credit is extended massively – and borrowing limits start to bind – the economy can end up being subject to greater swings and more frequent crises, where the now familiar results are bankruptcies, tightening of credit conditions, depressed spending, and the failures of lenders as well as borrowers.

Another implication is that, far from helping everyone to smooth consumption and improve welfare, credit can display a highly procyclical pattern, rising too high in expansions and falling too low in recessions. Not only is that the opposite of smoothing in the short run, but it is also bad for growth in the longer term.

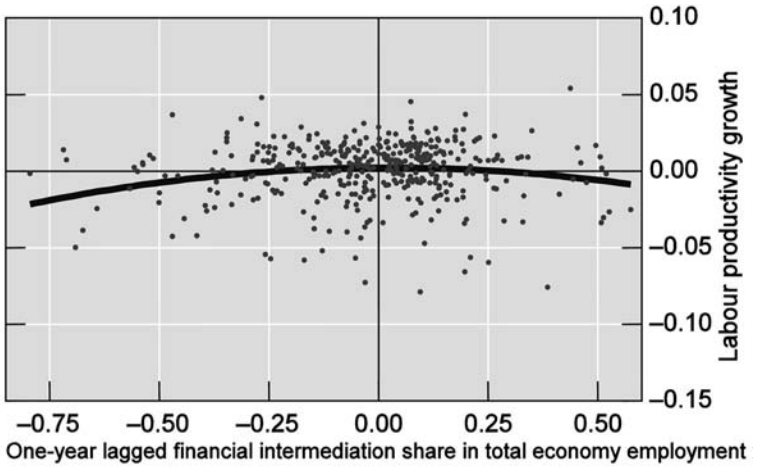
Last, but far from least, financial development is not costless. As it expands, the financial industry consumes scarce resources that could have been used elsewhere. And, in the light of the booms and busts the financial system can create, it is not clear that the financial industry can efficiently use all these scarce resources.

An important reason why a larger financial sector is good for growth relates to the presence of fixed costs. A larger financial sector means that more capital can be provided more cheaply, which inevitably translates into higher growth. However, as I have already emphasised, financial development is not a free lunch. It consumes resources that could be used elsewhere. By offering large rewards, the financial sector can attract the best and the brightest. When I was in college, people wanted to cure cancer, unify field theory, and fly to Mars. Today, students want to be hedge fund managers.

That is to say, while intermediation serves an essential function, beyond a certain point it steals resources from the rest of the economy. Finance can therefore turn from good to bad. But when? Our goal is to identify this tipping point.

Graph 1 plots average growth in output per worker against employment in the financial sector. We consider non-overlapping periods of five-year averages with the aim of focusing on long-run trends. Each point on this graph represents a five-year period pair for a given country[2]. Our sample covers OECD economies over the last 30 years, from 1980 to 2009. We have taken deviations from country means. The line is simply a fitted parabola. This parabola is very robust to all sorts of conditioning variables. But, more importantly, the estimated value for the peak is very stable at an employment share of 3.2%.

Graph 1 – Productivity growth and financial sector share in employment



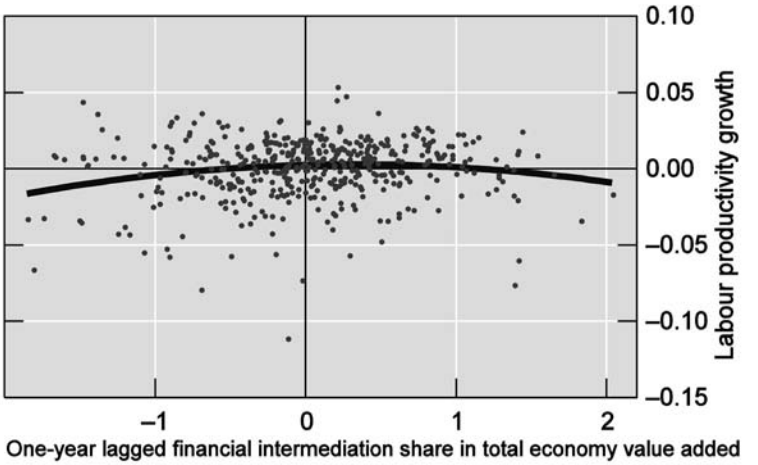
Source: Cecchetti and Kharroubi (2012).

Graph 2 is a similar picture for value added – the share of GDP accounted for by the financial sector. The main result highlighted above is still there: financial sector size displays an inverted U-shaped correlation with productivity growth. Here the implied peak is 6.5% of GDP.

Let me say a few things about the interpretation of these pictures. The peak is at 3.2% for the financial sector share in employment and at 6.5% for the financial sector share in output. To see what this means, let's look at a few examples. Using data from 2008, the United States, Canada, the United Kingdom and Ireland were beyond the turning point for employment (4.1%, 5.7%, 3.5% and 4.5%). And,

[2] Graphs 1 and 2 are both constructed using a multivariate regression, so that the parabola represents a slice out of a more complex surface. This means that we can interpret productivity as total productivity growth.

Graph 2 – Productivity growth and value added in the financial sector



Source: Cecchetti and Kharroubi (2012).

the United States and Ireland were also beyond the turning point for value added (7.7% and 10.4%).

We can use these results to figure out what productivity growth would have been had the financial sector been at the tipping point – 6.5% for value added – rather than beyond it. Focusing on the United States (value added in finance equalled 7.7%), we estimate that this reduction would lead to a 0.14 percentage point per year increase in productivity growth. This seems like a fairly sizeable impact.

I will simply note that a number of other results are interesting here. These include the fact that a faster-growing financial system is bad for growth and the fact that R&D-intensive industries are hurt relatively more by a large and fast-growing financial system.

What are the implications of these findings for the state? We already knew that an oversized financial sector or one that has grown rapidly can present a bill to the state in the form of costly institutional rescues and the fiscal costs of dealing with a deep and prolonged recession. What is new is that a bloated financial sector, by lowering productivity and growth, can undermine the state's tax base, ex ante, as well as imposing costs ex post. Here, state revenues suffer a shortfall that is just the state's share of this forgone growth, say, a quarter or a third of it.

When economists see a smokestack emitting pollution that imposes costly externalities on the rest of the economy, their inclination is to figure out a robust Pigovian tax to internalise these costs. What these results tell us is that a bloated financial system is like a smokestack. Maybe it, too, should be forced to pay something like a carbon tax.

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