

Lorenzo Bini Smaghi: Basel III and monetary policy

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Introduction

Ladies and gentlemen,

In the past three years, researchers have made considerable progress in explaining the causes of the recent financial turbulence and the mechanisms by which instability spread through the financial system. The events have spurred thinking on banks' risk management practices, on the incentives for excessive risk-taking, and on the reasons for the failure of regulation and supervision of the financial sector to prevent such events. Numerous national and international bodies have proposed new regulations. This conference provides an excellent opportunity to reflect on the impact of the new banking regulations.

In my remarks today I will focus on the one aspect of the proposed regulation put forward by the Basel Committee on Banking Supervision which has received less attention from the international media, but which is very relevant for monetary policy, i.e. liquidity standards.¹ The implementation of those standards will cause banks to change their investment behaviour and may change the structure of some financial market segments, thereby affecting the transmission channels of monetary policy. It is very important that any such changes are well understood if they are to be factored into monetary policy decisions.

After briefly describing the proposed measures, I will first focus on the impact of the regulation on financial markets, then analyse the implications for economic activity and the financial system, and finally, turn to the implications for monetary policy, including the possible interactions with the central bank's operational framework.

1. The proposed liquidity regulation

One of the key problems that financial institutions faced when the financial turbulence started in mid-2007 was the urgent funding need that resulted from a high degree of maturity mismatch. While assets tended to have a rather long-term horizon, funding of these investments was often done at the very short end of the yield curve in the wholesale markets for liquidity. This implied a need to rely continuously on the roll-over of short-term liabilities in the wholesale money market. Prior to the crisis, this posed no problem. The financial system had ample liquidity, as measured, for instance, by compressed spreads and low volatility. Financial innovation, in particular asset securitisation, and the rapid growth of the so-called shadow banking system were the main drivers. However, they also became the main cause of banks' fragilities. The financial crisis has exposed the inadequacy of banks' liquidity

¹ See “International framework for liquidity risk measurement, standards and monitoring – consultative document”, Basel Committee on Banking Supervision, 17 December 2009, and annex to “The Group of Governors and Heads of Supervision reach broad agreement on Basel Committee capital and liquidity reform package”, 26 July 2010.

risk-management practices. It has shown that the build-up of contingent liquidity claims, arising for instance from off-balance sheet financing vehicles, and excessive reliance on financial markets for providing funding are conditions doomed to generate financial instability.

When the markets for liquidity dried up suddenly and unexpectedly – most markedly at the beginning of the crisis, and after the bankruptcy of Lehman Brothers – many institutions faced difficulties in refinancing the large amounts to be rolled over. The resulting funding problems spilled over to other segments of the financial market. The state-dependent nature of market liquidity took many by surprise. Markets that seemed to be working smoothly suddenly dried up. Indeed, many securities that were regarded as highly liquid in pre-crisis times suddenly became illiquid. The underlying characteristics of the assets, such as their complexity, turned out to be crucial for their liquidity under stress. This points to the fact that the concept of liquidity itself is not straightforward. What seems liquid today may be less liquid tomorrow or under specific circumstances. We witnessed this phenomenon also in the market for some sovereign signatures in Europe, which abruptly became illiquid.

The causes and consequences of this sudden drying-up of liquidity have been discussed extensively in the academic literature of the past two years.² New regulations have been proposed. I will consider the liquidity regulation proposed by the Basel Committee of Banking Supervision.

The Basel proposal is centred on two new standards to establish minimum levels of liquidity for internationally active banks. The standards aim to promote the resilience of banks' liquidity risk profiles. The first standard aims to raise the buffer of high-quality liquid assets so that the banks can withstand stress scenarios. This standard, called the liquidity coverage ratio, measures whether banks hold an adequate level of unencumbered, high-quality liquid assets to meet net cash outflows under a well-defined stress scenario persisting for a period of one month.

The second standard is of a more structural and longer-term nature. It tries to ensure a closer alignment of the funding of longer-term assets or activities with more stable medium or longer-term liability and equity financing. The standard, called net stable funding ratio, sets a minimum amount of funding that is expected to be stable under conditions of extended stress. This minimum amount depends on the liquidity characteristics of various assets that the institutions hold over a one-year horizon.

The two standards are complemented by a set of tools for monitoring the liquidity risk exposures and for exchanges of information among supervisors. The two standards aim to make banks more resilient to liquidity shocks by matching the maturity profile of in- and outflows more closely, and by setting aside a buffer of high-quality liquid assets. The overall goal is to strengthen the resilience of the individual financial institutions and, more broadly, markets, and to avoid illiquidity spillovers to other institutions or market segments, which could lead to a systemic crisis. Their implementation should be seen in the context of broader regulatory reforms, in particular those agreed upon by the Group of Governors and Heads of Supervision earlier this month.

An issue to be considered is whether the *intended* changes in banks' behaviour resulting from the new regulation may have some *unintended* consequences. Since market participants will adjust to the new regulation, it is possible that the changes affect market structures, perhaps fundamentally so, and not necessarily in ways that are foreseen or desired by the regulators. Therefore, it is necessary to think carefully how banks may change their behaviour and to make sure that the new regulation will achieve its goal. From a central

² For instance, G. Gorton (2009) "Information, Liquidity, and the Panic of 2007", *American Economic Review*, Papers and Proceedings, forthcoming; R. Rajan (2010), *Fault Lines*, Princeton University Press; M. Brunnermeier (2009): "Deciphering the Liquidity and Credit Crunch 2007–2008"; *Journal of Economic Perspectives*, 23(1), 77–100.

bank perspective, it is also important to assess the implications for the conduct of monetary policy. In particular, the new rules are likely to impact on the markets for liquidity and on the demand for central bank refinancing, thereby affecting the transmission mechanism of monetary policy.

Below, I will mainly focus on the impact of the liquidity coverage ratio, as its implementation is likely to have the most relevant effects for central banking, and its formulation is currently more advanced than the one for the other liquidity standard.

2. Implications for financial markets

Markets will be affected by the new regulation in several ways. One way is the categorisation of assets into liquid and illiquid assets for the numerator of the liquidity coverage ratio. The currently foreseen regulation includes cash, central bank deposits, and high-quality government securities in the “liquid assets” category. Corporate and covered bonds are included with a haircut. The choice of the assets to be considered as liquid is consistent with the evidence during the recent crisis, which has confirmed that the degree of liquidity can vary enormously across markets in periods of stress.

The implementation of the new liquidity standard is intended (and expected) to favour those assets that are counted as liquid, and at the same time reduce incentives to hold assets that are considered less liquid. This will affect the functioning of the underlying markets. In particular the yields of liquid securities are expected to decline relative to those of illiquid ones, so that yield spreads between liquid and illiquid assets would become wider.

At the moment, it is difficult to quantify the impact on the different market segments, or to judge whether the adjustment will take time or be abrupt. But it can be expected that the categorisation of assets into certain classes of liquidity will lead to a “cliff effect”, by which the regulatory categorisation of assets as either liquid or illiquid plays a crucial role for the future of their market. Moreover, it implies that changes in market conditions, such as a downgrade, can move assets from one category into the other, leading to sudden changes in banks’ fulfilment of the liquidity coverage ratio. This could make their fulfilment somewhat unpredictable. The cliff effect could also imply sudden changes in the market conditions for the asset in question, which could suffer from a sudden drying-up of market activity or liquidity. In the latest revision of the proposal of the liquidity coverage ratio, some attempts were made to introduce intermediate categories of liquidity. This somewhat reduces the cliff effect, but it still remains significant.³

Another way in which different segments of financial markets will be affected in an asymmetric manner by the regulation is the maturity profile, which is key for the denominator of the liquidity coverage ratio. Since the denominator consists of expected outflows in a stress situation over the following 30 days, shorter-term funding that needs to be repaid within that period will be penalised relative to long-term funding. This is an intended effect. The implication is that the relative size of wholesale funding markets for different maturities will change. Ultimately, the interaction of demand and supply effects will determine the overall impact on the volume and liquidity of the different segments of the money market. At this stage it is difficult to draw clear conclusions, but it may well be the case that activity at the short end of the money market will decline. As regards interest rates, the increased demand for and lower supply of longer-term financing (relative to short-term financing) stemming from the introduction of the liquidity coverage ratio is expected to lead to a relative

³ As the previous narrow definition of liquid assets only included government bonds with a 0% risk weight in the Basel II standardised approach, a level 2 liquid asset category was introduced. This includes both government bonds with a 20% risk weight in that approach, and covered and corporate bonds with an external rating of at least AA-.

increase of interest rates for maturities longer than the threshold established by the regulation (30 days) as compared with shorter maturities. This would imply a steeper money market yield curve.

Such effects are important for central banks – a point I will consider later on. First, less active money markets, and a corresponding higher volatility of short-term interest rates, could make the transmission of monetary policy signals more difficult and less precise. Second, an increase in the steepness of the money market yield curve would affect the transmission mechanism and the information extracted from the yield curve for monetary policy purposes. To the extent that this effect is well understood and anticipated, central banks will be able to adjust their policies to the changed market environment. Transitory changes during an adjustment period may pose however some challenges.

3. Implications for economic activity

Let me now turn to the implications for real economic activity associated with the new regulation. There is a widespread perception that the new measures will act at the macroeconomic level as a significant negative supply shock.⁴ Higher bank holdings of liquid-and-low-return assets and higher funding costs due to the lengthening of the maturity structure of banks' liabilities are regarded as additional operating costs that banks will try to pass on to their retail business along all margins: higher lending rates, tighter lending standards, and active shedding of loans in order to leave room for liquid assets in banks' balance sheets – something akin to a credit crunch.

According to this mechanistic view of the impact of the new measures, policy-makers face a trade-off between the degree of safety of the banking system and economic activity. I believe that this reasoning suffers from what I would call a “partial equilibrium” and “static” perspective. It is “partial equilibrium” because it does not allow for banks' adjustment to the potentially higher costs of intermediation in other ways, such as efficiency gains, reductions in compensations, business restructuring. And also because it does not consider that the higher degree of banks' safety brought about by the new regulation implies that premia required by investors to fund banks may undergo a generalised decline. It is a “static” perspective because it does not balance the transient costs that may arise along the transition phase with the permanent benefits associated with a more stable and safer financial environment. More generally, any analysis of the costs of achieving a sounder financial system for economic activity should take into account the costs that taxpayers have to bear when a financial crisis occurs, and the impact it has on growth potential.

Recently published studies carried out by the working groups established by the Basel Committee on Banking Supervision and the Financial Stability Board attempted to perform such a cost/benefit analysis.⁵ The benefits are measured by combining the decline in the probability of banking crises made possible by the new regulation with the average output losses associated with banking crises. It is found, for instance, that a 25% increase in the ratio of liquid assets over total assets could reduce the probability of banking crises by about one percentage point.⁶ This result has to be combined with the other finding that, for each percentage point reduction in the probability of a banking crisis, the expected annual

⁴ See, for instance, the “Interim Report on the Cumulative Impact on the Global Economy of Proposed Changes in the Banking Regulatory Framework” (2010) published by the Institute of International Finance.

⁵ See, Basel Committee on Banking Supervision, 2010, “An assessment of the long-term economic impact of stronger capital and liquidity requirements”, BIS; Macroeconomic Assessment Group, (2010), “Assessing the macroeconomic impact of the transition to stronger capital and liquidity requirements”, August Interim Report, BIS.

⁶ It should be noted that the precise figure depends on the assumed interaction with the capital requirements.

economic benefit ranges from 0.2% of GDP (if the crisis results only in temporary output losses) to 1.6% of GDP (if output losses are permanent).

As regards the costs, it has been found that a 25% increase in banks' holding of liquid assets over total banks' assets would lead to a loss in GDP of about 0.1% per year.⁷ I should add, though, that these results are characterised by high uncertainty because of the lack of consistent historical data. In addition, the methodology used to quantify the costs is likely however to overestimate the true costs. First, it assumes that premia embedded in banks' funding costs will not decline. Second, it assumes that banks will respond mechanically by maintaining their return on equity at pre-crisis levels. Third, it does not consider that banks may fully adjust by downsizing the trading book with little impact on their retail business, as the recent Swiss experience with the new capital requirements seems to suggest.⁸ Fourth, the analysis does not consider that there may be offsetting factors. For instance, it is likely that the new regulation will lead to a higher demand from banks for government bonds to fulfil the liquidity ratios. This could exert downward pressure on "risk-free" interest rates, especially at medium and long-term maturity. These generally form the basis for pricing mortgages and other banks' lending rates with long-term initial rate fixation. Finally, the results are predicated on the assumption of no monetary-policy reaction. This modelling choice helps to clearly distinguish macroeconomic developments from a possible policy reaction to such developments. However, this implies that the results may overestimate the costs associated with the new measures, if they affect risks to price stability and monetary policy reacts to them.

4. Longer-term implications for the financial system

It might be argued that my discussion of the net benefits associated with the new regulation still suffers from some "partial-equilibrium" shortcomings. It does not consider that the endogenous banks' response to the new regulation may run against the ultimate goal of making the financial system more stable. The fear is that liquidity risks may be simply shifted outside the perimeter of regulated entities. Such regulations could simply end up inflating the unregulated sector.

The assumption here is that the total amount of risk in the financial system is somehow exogenously given, and that the amount of risk in the banking sector and in the unregulated sector are inversely related. Therefore, a pessimistic assessment of the new regulation may contend that it will only lead to a transfer of risk, trading off a reduction in the risk borne by the banking sector with a corresponding increase in the one borne by the unregulated sector. To put it differently, policy-makers may choose the desired point on the downward sloping frontier linking the amount of risk in the regulated and unregulated sectors, but might not be able to shift the frontier downward.

While I agree that any banking regulation may set in motion some form of risk transfer across sectors, I believe that the new framework takes a step forward in making the financial system more stable. Let me provide two examples of how the new measures aim at preventing banks from simply transferring their risk to the unregulated sectors. First, banks may try to unload part of their risk via off-balance sheet constructs. But the new regulation makes it harder to do so. Both the liquidity coverage ratio and the net stable funding ratio take into account the potential impact of off-balance sheet exposures on banks' liquidity conditions. In particular, the stress scenario underlying the liquidity coverage ratio includes an increase in derivative collateral calls and substantial calls on contractual and non-contractual off-balance

⁷ Again, the precise figure depends on the assumed interaction with the capital requirements.

⁸ See Annex 3 of the Report of the Macroeconomic Assessment Group, (2010), "Assessing the macroeconomic impact of the transition to stronger capital and liquidity requirements", August Interim Report, BIS.

sheet exposures, including committed credit and liquidity facilities. And the net stable funding ratio determines, for each off-balance sheet class, a reserve of stable funding, which depends on the characteristic of each off-balance sheet exposure. Having said that, one has to admit that there are probably no limits to creativity when it comes to financial innovation.

Second, banks may try to reduce the maturity of the loans they grant to corporates, small and medium-sized enterprises, and households in order to shift the roll-over and liquidity risk to the final users of financial services. But the new regulation is designed to make this strategy unattractive for banks, as only a part of these loans needs to be financed by stable funding. Furthermore, the Governors and Heads of Supervision have decided that the final implementation of the new liquidity measures will be preceded by a long “observation period” during which supervisors will monitor any unintended consequences of the new measures and modify the regulation accordingly. The observation period for the liquidity coverage ratio is from 2011 to 2014, after which it is to be applied as a minimum regulatory measure. For the net stable funding ratio, the observation period starts in 2012, and it won’t become a minimum standard until 2018.

5. Implications for monetary policy

What would be the implications of the new liquidity regulation for the central bank’s operational framework and for the conduct of monetary policy?

5.1 Implications for the central bank operational framework

I will first turn to the possible interaction of the new regulation with the central bank operational framework. Let me remark that here, as a benchmark scenario, I’ll consider a hypothetical situation in which the ECB has returned to the pre-crisis framework. That is, to a system whereby it determines the aggregate liquidity provided to the banking sector in each open market operation by conducting variable rate tenders, with a fixed liquidity supply and a variable rate.

There are three areas in which the new regulation can interact with the central bank’s operational framework. First, the demand for reserves. Second, the participation in the central bank’s longer-term operations. Third, the impact on the collateral pledged to the central bank.

5.1.1 Demand for reserves

The changes in the liquidity regulation can have an effect on the demand for central bank liquidity, because funds on central bank accounts obtained through open market operations or through a lending facility (discount window) will count as liquid assets for the liquidity coverage ratio. Therefore, the newly proposed regulation would make it more attractive to acquire liquidity from central banks. A structurally higher demand for central bank refinancing combined with an unchanged liquidity supply by the central bank would however cause tender rates at central banks’ open market operations to increase. The ECB could accommodate this demand by increasing the size of its open market operations. While in times of crisis, a stronger intermediation role by the central bank can be beneficial, in the long run it might crowd out market activity, and reduce incentives for peer monitoring. This could in turn increase risk-taking behaviour. These are of course side-effects of the proposed regulations which should not be neglected.

Not only the volume, but also the variation, of demand for central bank funding over time could be affected by the regulation. This might also play a role in determining the appropriate size of open market operations. It’s possible that on some days banks will seek financing from the central bank for regulatory purposes more than they do on other days. This would lead to a time-varying demand for liquidity in central banks’ open market operations and a higher volatility of interest rates. In particular, such effects would depend on the enforcement

of the regulatory measures, whereby calendar effects with temporary peaks in demand could arise, which tend to “pollute” the control of short-term interest rates.

5.1.2 *Participation in longer-term operations*

A second area of interaction of the new regulation with the central bank’s operational framework arises from the maturity structure of the central banks’ operations. Let me point out that in the liquidity coverage ratio, banks’ liquid assets are put in relation to expected outflows over a 30-day horizon; for higher outflows within this period, banks would need to hold more liquid assets. Thus, the question of whether funds obtained in open market operations need to be repaid to the central bank before or after this horizon will play a role in the fulfilment of the ratio.

This will make central bank refinancing for longer maturities more attractive than for shorter ones. In particular, liquidity obtained in the Eurosystem longer-term refinancing operations, which have a three-month maturity, would *not* count as liquidity outflow, at least not for the first two months in which the outstanding maturity is still longer than 30 days. For regulatory purposes, banks might thus try to shift their participation in the ECB’s open market operations from the one-week to the three-month operations. The expected increase in total demand for central bank refinancing, which I mentioned before, is therefore likely to materialise, especially in longer-term operations.

With an unchanged composition of the maturity structure of ECB operations, shifts in the demand from short- to longer-term funds would lead to changes in marginal auction rates. Tender rates for longer-term operations would increase, and those for shorter-term operations would be reduced. Thus, the “term structure of tender rates” would become steeper, similar to the term structure of money market interest rates.

However, the rates on the main refinancing operations (with a one-week maturity) convey the monetary policy stance. For this reason, the ECB will monitor carefully whether a shift in demand from short-term to longer-term operations will take place that could lead to reduced participation in the main refinancing operations. Should this reduction occur – which seems highly unlikely, but at this juncture it is difficult to quantify the precise extent – the ability of the central bank to control short-term rates, and thus to signal its monetary policy stance, might be affected. The ECB could adapt its liquidity management practices in order to guarantee a continued high demand for short-term refinancing.

5.1.3 *Collateral pledged to the central bank*

The third area in which the new regulation could interact with the central bank’s operational framework is the collateral pledged to the central bank. As you know, all refinancing by the Eurosystem is provided only against the provision of adequate collateral, so as to protect it from losses should a counterparty default. At the same time, collateral should be available to a wide set of counterparties.⁹ For this purpose, the criteria for assets to be eligible as Eurosystem collateral are quite broad. Government securities, corporate and bank bonds, as well as high-quality asset-backed securities and some other assets are accepted as collateral. In addition, risk management tools are applied to ensure protection of the Eurosystem against credit risk. The wide range of eligible assets proved to be extremely valuable in recent years, when markets for certain types of security became very illiquid, but banks continued to refinance themselves via the Eurosystem.

As discussed before, the liquidity coverage ratio is supposed to induce banks to hold more liquid assets. One way for banks to boost their ratio is to keep their most liquid assets on their balance sheets, and to pledge the more illiquid ones as collateral in ECB liquidity-supply

⁹ See European Central Bank, Annual Report 2009, p. 102.

operations. This is possible as long as the definition of liquid assets is narrower than the criteria for eligibility in Eurosystem operations. This implies that banks may try to circumvent the spirit, if not the letter, of the new regulation by shifting more of their risky assets to the Eurosystem. The argument that central banks are in a better position to bear *liquidity risks* by their ability to create money should not be turned into a justification for regulatory arbitrage. This is especially true when considering that also *credit risk* could be shifted to central banks as a consequence of this (mis)behaviour.

5.2 Monetary policy and the build-up of financial risk

The interaction between monetary policy and the amount of risk in the economy is not confined to the details of the collateral framework. It extends also to the interest-rate setting itself.

Unfortunately, most macromodels are not well suited to analyse the relationship between monetary policy and the build-up of financial imbalances. They generally assume that monetary policy works via the impact of the short-term policy rate on long-term interest rates and the exchange rate, possibly amplified by the so-called credit channel. However, recent research has challenged the traditional wisdom by suggesting that in reality there are other channels at work which are relevant to understanding the interaction between monetary policy and financial imbalances.¹⁰

First, it has been suggested that policy rates would be crucial in their own right. The reason is that financial institutions normally tend to maintain very low spare capacity on their balance sheets – for cost reasons – making wholesale funding the only readily available source of funds to finance at the margin an additional unit of investment. The close association of money market rates to policy rates implies that the central bank has a direct grip on the marginal price of financial institutions' leverage. And leverage is one of the key factors that determine the amount of risk and the extent of vulnerability present in the financial system. Second, it has been suggested that monetary policy works also via the so-called "risk-taking" channel, whereby low levels of policy rates tend to induce excessive risk-taking by financial institutions.¹¹

These new insights can shed light on the effects that very expansionary monetary conditions can have on financial imbalances, fuelling in particular the build-up of maturity mismatches via excessively low interest rates. And these insights also make clear the hazard to which the central bank is constantly exposed. If a liquidity crisis occurs, the central bank may have to step in and provide abundant liquidity to preserve the functioning of the transmission mechanism and counteract risks to price stability emanating from systemic instability. Anticipating this policy response, the private sector may in normal times under-price the value of liquidity, which in itself increases the probability of a liquidity crisis in the future.

¹⁰ See Adrian, T., and H. Shin, (2010), "Financial Intermediaries and Monetary Economics", forthcoming in *Handbook of Monetary Economics*, edited by B. Friedmann and M. Woodford; Borio, C., and H. Zhu, (2008), "Capital regulation, risk-taking and monetary policy: a missing link in the transmission mechanism?", BIS Working Papers No 268.

¹¹ See, for instance, G. Jiménez, S. Ongena, J.-L. Peydró and J. Saurina, "Hazardous Times for Monetary Policy: What Do Twenty-Three Million Bank Loans Say About the Effects of Monetary Policy on Credit Risk?", CEPR Discussion Paper, No 6514, 2007; V. Ioannidou, S. Ongena and J.-L. Peydró, "Monetary Policy, Risk-Taking and Pricing: Evidence from a Quasi-Natural Experiment", NBER Summer Institute, 2009; A. Maddaloni and J.-L. Peydró, "Bank risk-taking, securitisation, supervision and low interest rates: evidence from lending standards", ECB Working Paper Series, forthcoming.

Giavazzi and Giovannini¹² have recently described this hazard as a “trap”, which ultimately arises from an asymmetric response of monetary policy to liquidity conditions: benign neglect during the build-up of liquidity risk, and forceful interventions during a liquidity crisis. They conclude that monetary policy can avoid this situation by setting the interest rate at a higher level than the one suggested by macroeconomic conditions, as measured by standard indicators. In particular, they recommend following a Taylor rule appropriately modified to counteract excessive liquidity transformation by the financial sector. They do not discuss however how to make this prescription operational. But I am sure that these insights will spur further research and policy discussions.

Since the inception of monetary policy in the euro area in 1999, the ECB has taken a pragmatic approach to limit asymmetries in its policy response. Its two-pillar monetary policy strategy accords a prominent role to the analysis of money, credit and liquidity conditions, thus explicitly including in its assessment factors that tend to be empirically associated with the build-up of risk and financial imbalances.

Conclusion

The regulation proposed by the Basel Committee on Banking Supervision should not be assessed in isolation, but in the context of the comprehensive set of measures to strengthen the resilience of the financial sector and to reduce its overall level of risk. Real economic activity will profit from such increased stability and, in my view, outweigh the direct cost of the regulation, especially in the long run.

To be sure, the new regulation will have an impact, in particular on banks’ liquidity management and the markets for liquidity along several dimensions. This is actually the aim of the regulation. Had the result been “business as usual”, this would have probably made some market participants quite happy, but would have been a sign of failure. There is of course an issue of gradualism and calibration, with a view to avoiding the two extremes – an excessively abrupt adjustment and an everlasting phasing-out. But it seems to me that this issue has been dealt with in a reasonable way.

The changes in the financial system caused by the regulation will have to be factored in also by the policy authorities. For central banks, the changes may be far-reaching, ranging from the transmission mechanism of monetary policy to interactions with several aspects of the operational frameworks. At the ECB we are actively working on these issues to ensure that our monetary policy continues to be conducted in an effective way, also in the new environment, so as to maintain price stability, our primary goal.

Thank you for your attention.

¹² Giavazzi, F., and A. Giovannini, (2010), “Central Banks and the Financial System”, NBER Working Paper Series No 16228.