Bank of Albania

# MONETARY & FINANCIAL STABILITY - LESSONS FROM THE CRISIS

*Bank of Albania's 8th International Conference*
*17 September 2009*

# CONTENT

# PRIME MINISTER'S ADDRESS

*Sali Berisha**

*Honourable Mr. Governor, Mr. Minister, Ambassadors,*
*Honourable Governors,*
*Distinguished guests and friends,*

It is my great pleasure to address you today and start the first day of my second mandate with this event, a conference of the bankers of the region.

I take this opportunity to express my highest appreciation to you because this has been a very difficult time for the banks. As a matter of fact, more than anything else it was a crisis of human morale, which caused, with its flaws, a real tsunami in the banking and post-banking sector. Nevertheless, there has been an extremely inappropriate approach by numerous circles trying to stigmatise the banks, while the very key to exit from the crisis are the banks. Today, the world is recovering from its intensive recession; trust in the banking system is being restored; and the real economy has proved to be much more powerful than anticipated at the culmination of the crisis or even some months earlier. Albania is a small country, but it has an open economy.

I would like to extend once again my greatest appreciation to the Bank of Albania and the entire banking system in Albania for

succeeding in maintaining stability amid rather delicate situations, in a symbiosis with all significant factors. The Albanian banking system, after an initial moderate perturbation, managed to restore the full trust of investors.

Furthermore, the Albanian economy is one of the few economies of the world that, even during the current year, records a 10% increase in revenues and an economic growth that varies between 4-6% through quarters. FDIs in Albania, according to recent data from the Bank of Albania, increased by 59% in the first 6 months, compared to a year ago. Moreover, none of big investors withdrew from their projects to invest in Albania.

The Government of Albania has pursued a policy of large and intensive investments, as the infrastructure inherited was in unacceptable conditions. We invest 10% of GDP in road infrastructure, water supply systems, wastewater management, and other public works. Meanwhile, the crisis found Albania to be the country with the lowest fiscal burden in Europe and, at its peak, there were numerous voices that called for adopting a number of measures. In fact, we had already provided all the fiscal incentives. However, I have always underlined and continue to believe that the economy cannot make "Le Malade imaginaire".

Yet, Albania experienced a slight fall of exports, a decrease in lending to the economy; and a volatile exchange rate. We should be realistic; euro is becoming a major problem for our economies. I constantly think that the day will not be far away when we ought to surrender to the euro, not due to the currently acceptable exchange rate, but because this currency, sustained by the biggest economy of the world - EU economy - exercises pressure on our currencies. We shall have to give up the battle with the euro and instead get involved in the euro-zone. This is the only path left to us. Our countries, which are not members of the EU, account for a total of 1% of the EU's GDP. Therefore, it becomes indispensable to negotiate some financial relations with the European Central Bank.

Naturally, our economies are being euroized. This is welcomed, because this is our final destination. When I see that even the British

sceptics have begun to take a different stance on the euro, just imagine what we may think taking into account its pressures on our economies.

I would like to once again express my great respect for your excellent performance during this difficult year for the banking system. I would also like to call on you to boost lending as much as possible! No battle is won without courage. Courage is a prerequisite for victory. Your courage in lending is the absolute antidote to this crisis.

Thank you!

* Sali Berisha, Albanian Prime Minister

# SESSION I

# THE WORLD VS. CEE COUNTRIES: ARE WE LIVING THE SAME FINANCIAL/ECONOMIC CRISIS - WHERE DID IT COME FROM AND WHERE IS IT GOING?

# SPEECH

*Ridvan Bode**

*Dear Governor,*
*Dear friends from the region,*
*Dear participants,*

Let me express my pleasure at being invited to deliver a speech to the 8th Conference of the Bank of Albania, this year dedicated to monetary and financial stability policies.

I avail myself of this opportunity to express my conviction that this Conference will provide a real platform, where the regional countries share their experience with the recent financial crisis and pinpoint the new objectives for strengthening the buffering mechanisms of the financial system in the future.

The Government is aware that monetary and financial stability lies at the foundation of successful economic and financial policies, which may ultimately be costly to economic agents and the entire society. Therefore, the Government and its public authorities have aimed at pursuing economic and financial policies that support economic growth, seeking to improve its production capacity, output and competitiveness, support the private sector's competition by enforcing right laws, encourage the development of financial markets, strengthen instruments and structures to protect

those levels of the population that do not benefit properly from the economic development.

In addition, these policies aim at improving the financial system's resilience, mitigating risks and preventing them. Indeed, the risks that may jeopardize financial and monetary stability lie not only in the financial system's activity, but they also extend to elements that determine the interdependence between financial markets and the real economy, both at a macro and micro level. Globalization and economic integration has complicated this further. Economic priorities that relate to the liberalization of the movement of goods and capital and the enhancement of competition and efficiency are coupled with an ever-growing challenge to protect from risks emerging in the region and beyond.

When the last financial crisis, which became more evident in the second half of the past year, hit the world, the Albanian economy had been expanding for several years. It had been recording satisfactory growth rates and inflation had been low. Starting from 2005, the Albanian economy had benefitted more largely from reforms that aimed at: strengthening law enforcement, combating corruption and strengthening the legal mechanisms of control and accountability; improving the conditions for setting up and keeping a business going; formalizing the economy, achieving fiscal consolidation through appropriate policies that stimulated the collection and effective management of revenues. Businesses and households' expansion was controllable to financial debt. In addition, the financial system and the banking sector were sound, well-capitalized and liquid. These developments provided a fine and effective buffer, therefore the emergence of direct financial crisis effects was less evident.

Nonetheless, a financial crisis of this magnitude would clearly affect the real economy. Thus, as a measure of preliminary caution, the Government increased the reserve funds projected in the 2009 budget, setting aside 2% in order to compensate a possible decline in revenue and sustain domestic demand through the rise in wages and pensions for some parts of the population. In addition, the Government increased, in line with the budget projections, borrowing from the international markets, thus providing new opportunities

for the Albanian entrepreneurship to benefit from the Albanian banking sector lending. Due to better revenue management, public investment increased by as much as seven times during this year, focusing mostly on road and energy infrastructure, and accounted for 10% of GDP. These measures were taken at a time when financial stimulus in economy through bank lending began to slow down due to a particular liquidity situation facing the banking sector in the last quarter of 2008, when a portion of public deposits were withdrawn.

In order to shore up public confidence in the banking sector, the Government and the Bank of Albania formulated and submitted to the Albanian Parliament for approval the decision to permanently quadruple the deposit insurance scheme to ALL 2.5 million and closer to the other regional countries' level. These measures complemented the Bank of Albania's action to furnish the banking sector with ample liquidity. Thanks to these measures that provide greater fiscal and monetary stimulus, we expect the Albanian economy to continue to post a positive growth between 4% and 6%.

For the remaining of the year and the coming year, in the context of preparing to draft the 2010 budget, the Government will take the necessary measures to preserve the medium-term tendency of fiscal consolidation. In this endeavour, the Government will be sustained by the fine coordination with monetary policy. I believe the public authorities will engage in a professional discussion in order to determine some objectives of macroeconomic and financial indicators. This will contribute to setting up an action plan for safeguarding monetary and financial stability, and ultimately keep the Albanian economy growing at high rates.

Thank you.

* Ridvan Bode, Minister of Finance

# SPEECH

*Max Watson**

We need to understand how the crisis affected the region, and in these remarks I will concentrate on this issue, not on the global economy or on the origins of the crisis in the United States. I will concentrate on three key topics, concerning which the jury is still out:

Firstly, what have we learnt about the model of convergence under the acquis communautaire - that is, open capital account convergence among countries with quite low income levels that are also experiencing rapid financial integration. Is this acquis-based model of convergence riskier than we thought?

Secondly, what about national policies? We tend to consider the crisis in the region as a sort of exogenous shock. How much did national policies matter, and how much will they matter in the future?

Thirdly, what about external anchors: the role of the IMF and the European Commission? Are there lessons for them about the way they serve as an anchor for countries' policies in the future?

Let us begin, with the sources of the crisis, and the role of national policies. I would like to emphasize the importance of three overlapping

and mutually reinforcing shocks that affected this region, Eastern and especially South-Eastern Europe. These shocks were experienced at the time as essentially positive shocks. The first was global: this was the persistence and then the reversal of a period of high liquidity, low risk premia, excess savings from certain countries with fixed exchange rates, pro-cyclical fiscal policies in some major economies leading. That was a period that had led to a search for yield and, for a range of reasons, a shift of resources towards the non-traded goods sector in a number of economies, including those in Eastern Europe. So this was the regional macroeconomic backdrop.

At the EU accession level – that is, the regional convergence level – we can observe a second set of shocks, and they reinforced many of the facts of that global shock, including the reduction in risk premia and the promotion of capital flows. At the regional level in Eastern Europe, and notably in South-Eastern Europe, we can note the reform shocks, indeed the reform commitment shocks, associated at a regional level with EU Accession. And the backdrop to this included steep differentials in income within what was coming to be seen as a single market and a system of open capital accounts - no capital controls. But against that backdrop a very ambiguous set-up as regards cross-border banking supervision, and especially the extent to which supervisors were internalizing macro-prudential risks in host countries.

The third set of shocks which occurred, many of them positive shocks, were at a national level. These were reforms; and the EBRD data for transition scores suggested that these were reforms that were intended to be stronger in the macro area and the banking area, but somewhat weaker (especially in South-Eastern Europe) in the areas of enterprise reform and of competition policy. These were reforms that tended to reduce risk premia, drawing in capital – and especially to the non-traded goods sector. Meanwhile, the fiscal policy in the region was not bad; public deficits fell as the private sector expanded its deficits. But on the whole the policy tended to be pro-cyclical; it tended to be easier than it was desirable and especially true if you would just fiscal balances for the effect of the financial boom. As the traditions of literature that started with authors like Jaeger and Schuchknecht in the IMF and ECB, as well as authors in

the European Commission emphasized that during financial booms tax elasticity, the elasticity of government balances, is something like twice as large as a conventional business cycle. So fiscal performance in advanced economies and also in transition economies reflected a temporary element arising from the financial boom. Exchange rates were often pegged, which served as an anchor for policies but also tended to reduce risk premia quite sharply.

What did these circumstances give rise to? One could argue, as the IMF tended to argue at the time, that this was water flowing downhill from rich countries to less developed countries, that it was basically an equilibrium process. But it was also quite a risky process, it was a high risk trajectory particularly the extent that resources went heavily into the non-traded goods sector, went particularly into mortgages, residential investment. So countries were going to have a deeper and longer cycle because of that.

A very important question is: Could the national policies have made more of a difference? Every time we have a financial crisis from the 1980s onwards, we tend to say there were global elements but national policies were a core problem. This is something I was discussing in late August with some colleagues in the IMF, former colleagues with whom I shared some concerns about national policies in Southeast Europe in the past three years. But I think the truth is a mixed picture. National policies could only have helped to some degree. What I have just described at the global, regional and local level were really almost tectonic forces in financial markets and in real integration. This placed some limits on the reach of national policies.

But it also meant that some degree of risk mitigation through national policies was all the more important. Even in an earthquake, earthquake proofing helps. Clearly, stronger fiscal balances, higher external reserves, structural policies that encouraged foreign direct investment and export growth, these were elements that would have earthquake proofed national structures. Looking at countries like Estonia or Bulgaria, one naturally feels a little sceptical about this. A country like Estonia had excellent policies, yet has gone through a very steep cycle, traded and financial cycle. A country like Bulgaria

ran a very strong fiscal policy, used the currency board as an anchor, implemented good structural reforms. How could one do better than this?

But think about Slovakia for example. Slovakia which was also not a rich economy, but with a floating exchange rate, a very strong fiscal policy, a growth favourable fiscal contraction, and a huge early emphasis or emphasis from the mid '90s on attracting investment, on expanding the traded goods sector, a relatively late mortgage reform. The sequencing in Slovakia shows that in fact there were considerable differences in policies. Some of Slovakia's good experience was due to good luck. Moreover, Slovakia had a huge trade shock in the auto industry. Any open economy was going to suffer hugely in this crisis either through finance or trade or both. But I think national policies, especially, I would say fiscal policy, did afford some countries a better buffer at least in responding to the crisis.

What about the short-term outlook? The implications really are almost the opposite setting to what we have experienced in the past decade. We moved, and this is typical of international capital markets, from "feast" to "famine". And the concern must be, for this region, that famine will continue to some degree for at least two or three years. International banks are in a process of deleveraging as the major emphasis is now on stronger capital ratios. This is not a setting in which general purpose cross-border bank flows, flows to subsidiaries, flows to finance budget deficits, will resume strongly. It is not a setting in which those are going to resume like a river flood again.

So, I think that raises a question. It raises a question from Hungary to Albania across a range of different economies. Does Eastern Europe have to adjust its growth model? Does this different financial environment mean that there will have to be different priorities?

I think my answer to that would be "partly yes". Policies are going to have to favour the traded goods sector, the export sector, more as a driver of growth, productivity enhancement, and a better use of labour resources, of labour input. And these will also require changes in the structure of public expenditure. I also think back to the debt

crisis of the '80s, to the crisis in Latin America. You probably think of the Asian crisis. But the crisis in Latin America went though several stages; at the beginning it featured a few countries and a few banks. And the solution was a liquidity solution that helped the countries and bailed out the banks. But the aftermath was quite a soft patch in capital flows. There needed to be major official inflows, major medium-term official inflows, not just the IMF, the World Bank at that time. There needed to be deep structural reforms after the first phase of the crisis. There needed to be greater reliance, as Governor Fullani was saying, on project financing, on medium-term financing.

So I think that the lessons in the short-term are that policy is going to matter a great deal nationally. First and foremost, the policy mix - including a somewhat tighter fiscal policy for the region as a whole, with above all a deep restructuring of public expenditure to make it more growth-oriented. One also needs a stronger business environment: not just the Lisbon strategy, this is really Lisbon plus. It is the Lisbon strategy as it affects particularly the business environment and especially the traded goods sector. And I also think that in some cases there will need to be domestic debt restructuring. It is clear, in Albania credit has started to grow again, but in some countries credit is dead in the water. And there will have to be domestic debt restructuring, particularly if the incidence of balance sheet risk becomes worse over the next year.

Last thought, what about the external anchors? I believe that in the run-up to the crisis, as the IMF withdrew from a program relationship in many countries, those countries did not make a particularly good use of Commission procedures as an external anchor. I think there is much greater scope in the EU-Accession economic programs, in the PEPs and EFPs, for a dialogue with the Commission; and there is greater scope for the Commission to conduct a bilateral dialogue with the countries. It is never going to produce national fiscal targets like the IMF. It is a rule-based system that is cross-country in application. But there could be a much stronger dialogue with the Commission about risk management in policies and a much stronger dialogue about a sensible medium-term fiscal strategy and a bilateral dialogue. Not just a group of countries round a table in Brussels, but bilateral

dialogue with each of the countries over time and a better integration of IMF advice into that with the IMF's particular skills in terms of fiscal policy, macro-prudential issues and risk management.

I also think that the European Union probably needs to restore somewhat the credibility of the euro as a policy anchor. At the moment the euro seems to be almost off the agenda, but these countries have a euro destiny. I do not believe in necessarily the virtues of a very quick adoption of the euro, it depends on the circumstances. I prefer the formula that Governor Isarescu in Romania once used, which was to advocate moving towards the centre of gravity, moving into the gravity field, of the euro, and to use this to discipline fiscal and other policies - but then make the final adjustment only when some of the real sector changes and financial exuberance are through.

So I think the euro could be stronger as a policy anchor and the Commission and the Fund could play a stronger role as an external anchor for policies. I think specifically there is a need to foster stronger internal policy co-ordination in countries, stronger policy co-ordination mechanisms. If that does not happen then I am concerned, and especially concerned in this region, that reforms could slip backwards. The surveys by the EBRD a year ago told us that populations are not satisfied with what transition has delivered; and much of what transition did deliver was mortgage lending and cars. So now that the flow of mortgage lending and cars has dried up, we need to think very carefully about how we get support for reforms. The EU as an anchor can be powerful, especially working in harmony with the IMF. If that works, well then the results could be very good because there are many firms in Western Europe in the EU 15 that will be downsizing their activities, outsourcing activities. Countries like Albania could benefit hugely from that over the next few years but it will depend on maintaining and strengthening policies that are business-friendly. It will mean shifting towards a more balanced and sustainable growth model, one that it is also better earthquake-proofed in the event of future financial volatility.

Thank you very much.

* Max Watson, Fellow of Wolfson College

# THE FINANCIAL CRISIS AND CENTRAL BANKING

*Bill Allen**

## INTRODUCTION

The purpose of this presentation is to give a brief overview of the current global economic situation and to describe some of the issues which central banks and other official agencies are dealing with as a result of the credit crisis.

Not very long ago, central banking in some countries seemed to be about no more than deciding on what level of short-term interest rates was required to achieve the desired rate of inflation. Now it has become a lot more complicated. With the advent of the credit crisis, central banks have needed to supply unusually large amounts of liquidity to their banking systems, so as to support the flow of credit to their economies and thereby contain the depth of the recession. And in many countries, they have had to co-operate with their governments in re-capitalising banks which would otherwise have failed and caused economic disruption much more serious than that which has been experienced in the event.

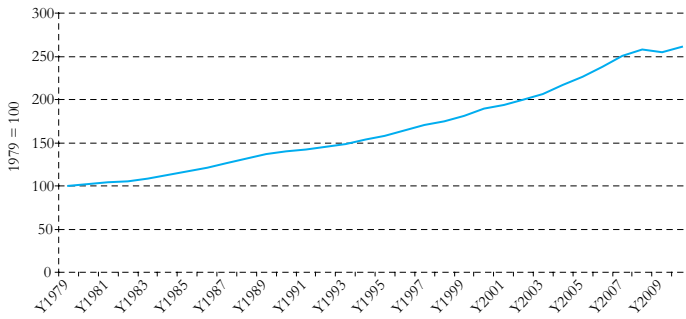
## THE WORLD ECONOMY

The chart shows the world GDP index since 1980, based on IMF data. It incorporates IMF forecasts for 2009 and 2010. Clearly this

is the worst recession since 1980. However, equally clearly, unless the forecasts are completely wrong, it will be nothing like as bad as the Great Depression of 1930s, when GDP in the USA fell by 25% between 1929 and 1932.

According to the forecast, world GDP in 2010 will be the highest ever, though not in all countries. There is a clear shift in income from rich to poor, and China is doing extremely well so far.

Chart 1 World GDP index 1979 - 2010




The current recession has been made in the private sector, specifically in the financial industry. The causes have included excessive optimism about the prospects for continuing economic growth, leading to underestimation of credit risk by banks and other lenders and investors. Most conspicuously, the development of sub-prime mortgages in the United States, which was expected to do good by extending the benefits of home ownership to poorer people, went too far. However there were other causes too, principally related to the management of banks and other financial institutions.

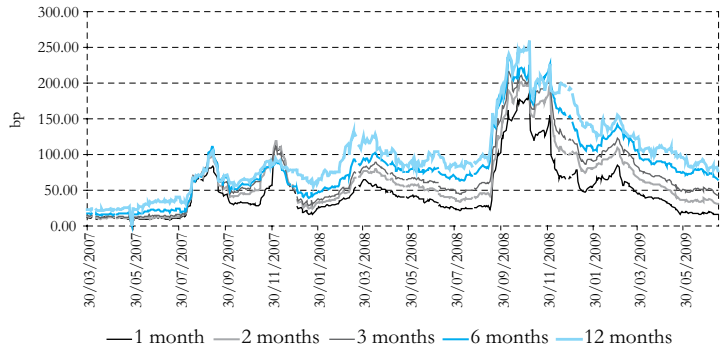
Uncertainty about the seriousness of the recession has been particularly great because it has been caused by a widespread malfunctioning of the financial industry, which is at the centre of the functioning of the economy, supposedly providing access to

the means of payment and allocating scarce resources to the most productive uses. If something goes seriously wrong with that, the consequences are likely to be much more serious than if something goes wrong in a different industry.

## DISRUPTION IN THE FINANCIAL INDUSTRY

The scale of the disruption in wholesale financial market can be measured by the margin between yields on bank liabilities and yields on government liabilities, shown in chart 2 on UK data. The spreads first increased in August 2007, and there was a further big increase in autumn 2008 after the Lehman's failure. Since then, spreads have fallen back a lot, but that doesn't mean that the problems have all be solved; it just means that the market is now convinced that the government will prevent any more bank failures.

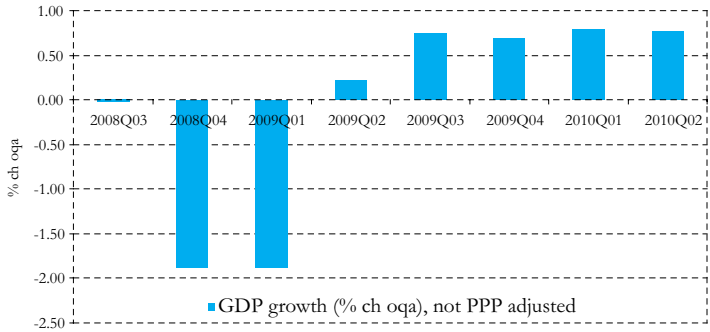
Chart 2 UK spread between bank & govt liabilities




Source: Bank of England

Global output fell very heavily in both 2008 Q4 and 2009 Q1 (see chart 3). This reflected the sudden cutting off of credit after the Lehman's failure in September. Investment fell very sharply and there were big cutbacks in inventories. Distributors and retailers made sales out of inventories and stopped ordering new product. That's why output fell so much. For example, many car factories simply closed down for a few months.

Chart 3 World GDP growth 2008Q3 - 2010Q2 (JPM forecast)




Source: J P Morgan, 10 July, 2009

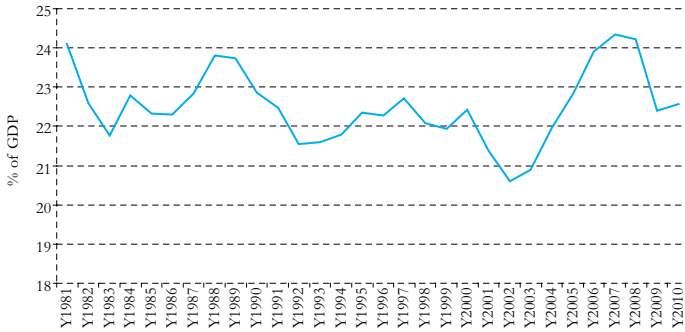
When inventories had been reduced to minimum levels, production had to restart in order to satisfy demand, and that's why output seems to have stabilised or even risen a bit in 2009 Q2. This is the reason why output is expected to grow in the second half of this year. However, the rate of growth over the next year or two will depend crucially on how fast final demand grows. The banking system is still damaged and many companies and households in the west are experiencing problems with outstanding debts. Therefore the rate of growth of final demand from now on is perhaps the biggest uncertainty about the recovery.

The financial crisis was caused by serious underestimation of risks. These included credit risks, which seem in many cases to have been assessed on the assumption that economic growth would continue for the indefinite future. But, in addition, the importance of market liquidity and its capacity to disappear suddenly were not fully recognised.

The function of financial markets is to allocate savings to investment projects which are inherently risky. And the amount of savings increased greatly between 2002 and 2007, as chart 4 shows. That reflected the accumulation of large surpluses by East Asian countries, which maintained pegged exchange rates, in some cases so as to accumulate reserves for precautionary reasons after their bitter

experience in the Asian financial crisis of 1997-98, and in other cases so as to sustain export growth.

Chart 4 World savings ratio 1981 - 2010




Source: IMF

The underestimation of risks is not historically unusual. The investment projects to which financial markets allocate savings are inherently risky. Although it involves risks, the allocation process is crucial to economic growth; and the risks have to be accepted if the benefits of growth are to be obtained. It is true that markets sometimes make big mistakes, but they still do a much better job of allocating resources than governments. Business cycle downturns follow the recognition of market mistakes. They cannot entirely be avoided. There were clearly serious defects in financial markets in the past several years, but I believe the right solution is to correct the defects, not to try to replace them with some other mechanism.

The first priority for monetary policy has been to limit the damage that the credit crisis has caused to the economy. Specifically:

- Central banks have lent more money to commercial banks to reduce the pressure on them to contract lending and to help them extend new loans. In order to do so, central banks have accepted a wider range of assets as collateral. As a result, central bank balance sheets have grown enormously, as chart 5 shows.

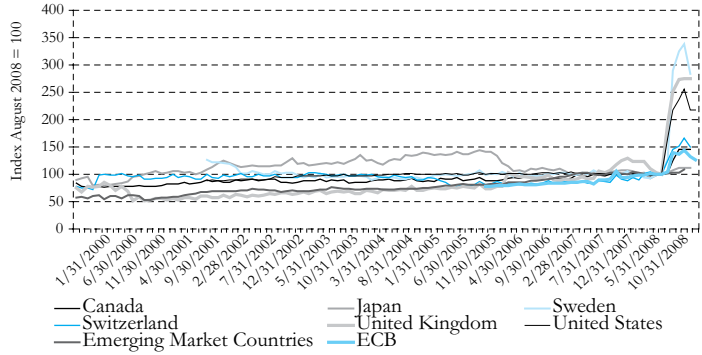
- New central bank swap facilities have been opened to ensure that liquidity can be distributed internationally, even though international commercial banking networks have become much weaker.

- Interest rates have been reduced to very low levels to encourage spending and in particular to reduce the burden of servicing existing debts.

- Where commercial banks have been threatened with failure, governments have provided them with new capital to enable them to keep going. The Lehman experience shows what the consequences are of letting a large financial company fail.

- Tax receipts have fallen everywhere and government spending, particularly to support banks, has risen. Therefore budget deficits have risen.

Chart 5 Real central bank assets of selected countries




Source: IMF Global Financial Stability Report, April 2009

According to the IMF, the financial industry has so far recognised in its accounting less than half of the write downs it should expect over the three years 2007 – 2010. These figures from the IMF Global Financial Stability Report suggest that there are about $1.4 trillion in write downs still to come, on top of the $1 trillion already recognised (see table 1).

*Table 1 Banks' and insurance companies' write downs ($ billion)*

| | Recognised so far | IMF estimate 2007 - 2010 |
|---|---|---|
| Banks | 1,117 | 2,470 |
| Insurers | 241 | 301 |
| Other | | 1,283 |

Source: IMF Global Financial Stability Report, April 2009.

Banks have so far received just over $1 trillion in new capital since the beginning of the crisis, roughly equal to the amount of write downs. The IMF reckons that they will need another $875 billion to get their assets/equity ratios down to 25, or $1.7 trillion to get the ratio down to 17 (see table 2). On top of that, governments are likely to want to sell their stakes in the banks at some point. In other words, the process of recapitalising the banking industry has a long way to go.

*Table 2 Commercial banks' equity capital needs ($ billion)*

| Assets/equity target | USA (current assets/ equity ratio =27) | Euro area (40) | UK (48) | Other mature Europe (43) |
|---|---|---|---|---|
| 25 | 275 | 375 | 125 | 100 |
| 17 | 500 | 725 | 250 | 225 |

Source: IMF Global Financial Stability Report, April 2009.

It is not going to be easy for commercial banks to raise new capital, for several reasons:

- Capital and liquidity requirements will surely be higher than in the past, and this will reduce the rate of return on capital employed.
- How much higher these requirements will be is unclear, and the associated uncertainty will act as a further deterrent to providers of capital.
- Many of the accounting issues that led to uncertainty about the true net worth of banks are still not yet resolved.
- Some Sovereign Wealth Funds have already lost large amounts of money by providing banks with new capital at an earlier stage in the crisis.

If the economy weakens further, then governments may need to provide additional capital in the interests of sustaining economic activity. Whether or not this happens, it seems very likely that much of the additional capital that banks need will have to come from retained earnings. This in turn has the following implications:

- Spreads between bank deposit and loan rates will be wider than in the past.

- In order to keep the cost of borrowing down, official interest rates will remain low for a long time.

- Banks' credit judgments will remain cautious for a long time.

- Banking will be a less competitive form of financial intermediation than in the past and capital market financing will become relatively more important.

## PROBLEMS FOR SMALL COUNTRIES WITH A LARGE FOREIGN BANK PRESENCE

There are likely to be particular problems in small countries in which foreign banks have a large market share, including Albania, where Austrian banks are very important.

One result of the credit crisis is that bank credit is likely to become less readily available. Moreover, official support from home-country governments is likely to be aimed principally at protecting flows of credit to the domestic economy.

Research done at the IMF shows that Albania is in relatively good shape compared to other small European countries, in the following respects:

- Total debt to foreign banks is only about 50% of GDP.

- Austria (which is Albania's largest creditor country) accounts for about half the total.

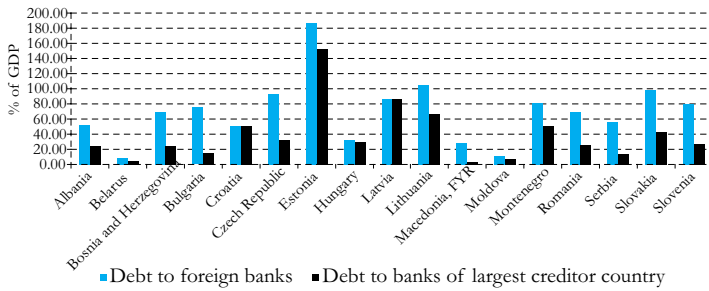
In dealing with the crisis, Albania has been helped by:

- Its floating exchange rate, which has protected the country from the liquidity drains that have been experienced in countries where a pegged exchange rate has come under pressure. It has been possible for monetary policy to be directed at domestic economic objectives and not at maintaining the exchange rate.

- Its good track record on inflation, which has meant that a depreciating exchange rate has not caused inflation expectations to become inflamed.

- Earlier official restraint on banking activities, as a result of which Albania's problems with existing debts are moderate in scale.

Chart 6 Debts to foreign banks




Source: Zofia Arvai, Karl Driessen and Inci Otker-Robe, 'Regional Financial Interlinkages and Financial Contagion within Europe', IMF Working Paper 09/6

Despite these advantages, Albania is experiencing a restricted flow of new credit, and this may retard economic development.

In the new post-crisis environment, with the global banking industry seriously weakened, the problem of ensuring an adequate banking system is a general one. It is much harder for countries where the banking industry is mainly foreign-owned than it is for other countries.

The immediate effect of the crisis must have been to constrain severely the supply of credit. Market forces will no doubt eventually ensure that an adequate credit supply is restored, but it might take a long time. In the meantime, official action can play an important role in supporting economic growth, in the temporary absence of private sector credit flows. There is both the scope and the need for financial diplomacy to sustain credit and economic growth.

* Bill Allen, Visiting Senior Fellow, Cass Business School, London

# THE INTERACTION BETWEEN MONETARY AND FINANCIAL STABILITY - SOME LESSONS FOR EMERGING ECONOMIES

*Meir Sokoler**

## I. INTRODUCTION

Until the current (2008) crisis, many academics and policy makers stressed the complimentarity of price stability and financial stability (one tool one target).According to the conventional view "there is no general trade-off between monetary and financial stability" (Issing, 2003). Likewise, it was argued that a central bank "that was able to maintain price stability would also incidentally minimize the need for lender-of -last-resort" intervention (Anna Schwartz, 2000).

The recent crisis, however, vividly demonstrated that a financial crisis can occur even after a relatively long period of world-wide low inflation, in which a growing number of developed countries, and emerging economies have adopted inflation targeting (IT) as their monetary policy framework. In fact, some economists like Stieglitz (2009) argue "that the excessive focus on inflation had diverted attention from the more fundamental question of financial stability".

The recent crisis and the reactions to it naturally raise three following questions in this regard: a) what are the possible trade-offs between monetary and financial stability? b) How are these trade-offs exacerbated in emerging economies? c) What can be done to improve the terms of the trade-offs?

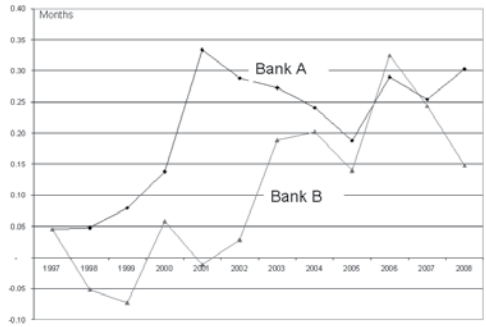
The purpose of this paper is to explore the trade-offs and to suggest measures and policies aimed to improve them, with particular focus on emerging economies. In section II, I discuss how monetary policy actions, which are effective in maintaining price stability, may nevertheless impact adversely the financial stability. In section III I describe how adverse financial stability conditions will greatly reduce the effectiveness of monetary policy. Section IV discuses several ways by which to improve the above mentioned trade-offs. I conclude in section V.

## II) MONETARY POLICY EFFECTS ON FINANCIAL STABILITY

### 1) MATURITY GAPS

At present (May 2009), because of the crisis, central banks, the world over, have lowered their key policy rates (KPR) to historical low levels. One day, however the crisis will end and the KPR in Nigeria and elsewhere will rise in order to guard against possible rising inflation. Some economists are already drawing attention to the spectre of high future inflation (Feldstein 2009). But when this occurs, the banks, both in developed and emerging economies, will still find themselves locked into assets, with longer duration than their liabilities, and hence rising refunding costs. The lesson from the S&L crisis in the US in the late 80's, ignited by rising interest rates, is not to ignore this possibility.

Diagram 1 – Changes in Duration Gaps of the 2 Largest Banks in Israel




Source: The Israeli Banking System, Annual Report 2008

Following the long period of historically low interest rates and a time of greater risk appetite, it is not uncommon to find banking systems with increased maturity gaps such as in figure1, which depict the evolvement over time of the maturity gaps of the two leading banks in Israel.

A question arises then as to what would happen to the financial health of banking systems, if/when the macro economic conditions in general and the inflation outlook in particular, call for sharp increases in the KPR? Will the level of the banks' capital be sufficient to absorb the losses which might be caused by the rising refunding costs? Should central banks postpone the increase in the KPR and miss the IT now, with the associated loss of credibility so hardly won, in order not to exacerbate the duration risk? This possibility is one example of the trade-off which might exist between a monetary policy focused on price stability, on the one hand, and the financial stability goal of central banks on the other. This dilemma may be particularly relevant for many emerging economies, with less developed financial markets, where conditions might call for rapid-large changes in the KPR.

### 2) THE FX INDUCED-CREDIT RISK

Another example of a possible trade-off between monetary and financial stability has to do with the interaction between warranted changes in the KPR and the effect of such changes on the foreign exchange rate. Assume that a central bank makes a timely decision and raises its policy rate in order to resist ensuing inflationary pressures. In many open economies, in which the exchange rate is a major part of the monetary transmission mechanism, much of the anti-inflationary force will come from a FX appreciation. While such an outcome will be favourable and welcomed as far as resisting inflation is concerned, it might simultaneously induce increased FX positions of domestic businesses and households which are not hedged against the FX risk. In the case of a sudden depreciation of the domestic currency, many domestic entities might suffer large balance sheet loses, which in turn may lead to severe credit loses of domestic banks and to systemic instability. The above scenario is not an imagined one but has been occurring time and again in many parts of the world (e.g. Argentina 1997-98, East Asia 2001, Hungary2009, to mention just a few), where the FX risk was not properly internalized.

## III) FINANCIAL STABILITY AFFECTS MONETARY POLICY

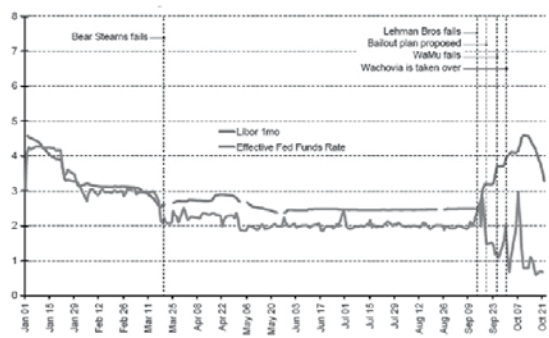
### 1) THE EFFECTS ON THE MONETARY - TRANSMISSION MECHANISM

Modern monetary policy relies on the central bank's using the KPR to affect other rates in the economy-short and long rates, loans and deposit rates, and other asset prices in the economy (e.g., the exchange rate, share prices, housing, etc.) and through them nominal spending -inflation and real activity.

The effectiveness, with which changes in the KPR are propagated efficiently into other rates and the rest of the economy, depends on how stable and well functioning (well oiled) is the monetary transmission mechanism. Put differently, for the monetary policy to be effective, the various links of the payment system and financial markets have to operate smoothly. The first link in the chain of the transmission process is the pass thorough from the KPR to very short run interest rates .An effective monetary policy has to rely on very tight relationship between the KPR and the rates in interbank market.

But as can be seen in diagram 2, the normal very tight link between KPR (the Fed fund rate) and the market rate (LIBOR) was completely broken in September 2008, at the time of the collapse

Diagram 2 – Libor and Fed Funds Rates in 2008




Source: Bloomberg

of Lehman Brothers. For emerging economies the consequences of the breakdown of the monetary transmission mechanism were even greater, because of lack of alternatives to banks' sources of finance and because of their reliance on capital inflows.

## 2) THE EFFECTS ON MONETARY POLICY OPERATIONS THROUGH CENTRAL BANK BALANCE

Prior to financial crisis, the day-to-day monetary policy operations of injecting and withdrawing liquidity consisted of selling and buying government bonds on a temporary basis (Repo's and Reverse Repo's) or by outright transactions. In addition, most central banks extended loans of various kinds (loans related to interest rate corridors, lender of last resort loans), which were collateralized almost exclusively by government bills and/or bonds.

As can be seen in table 1, the mode of central bank operations changed drastically, following their need to cope with seizure of the financial system.

Table 1 Changes in Central Bank Operations Since 2007

| | Lending Operations | | | | Outright Purchases | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | More Counter Parties | More Liberal Collateral | Longer Term | FX Swaps | FX | Equities | Private Debt | Government Debt | Bail-Outs Capital Injections |
| Australia | | ☑ | ☑ | ☑ | | | | | |
| Britain | | ☑ | ☑ | ☑ | | | ☑ | ☑ | ☑ |
| Canada | ☑ | ☑ | ☑ | ☑ | | | Possible | Possible | |
| Euro Area | | ☑ | ☑ | ☑ | | | Possible | Possible | |
| Japan | | ☑ | ☑ | ☑ | | ☑ | ☑ | ☑ | Possible |
| Sweden | ☑ | ☑ | ☑ | ☑ | | | | | |
| Switzerland | | ☑ | ☑ | ☑ | ☑ | | | | ☑ |
| USA | ☑ | ☑ | ☑ | ☑ | | | ☑ | ☑ | ☑ |

Source: The Economist May 2009

There are several important changes which are noticeable, both in kind and degree. First, the circle of central bank's counterparties to its transactions and operations has been widened and does not

consist any longer of banks alone. Second, the range of assets that central banks choose to transact has been increased considerably and includes not only private debt but in some cases even equity. Third, the scale of central bank capital injection to keep afloat commercial banks, investment banks, insurance companies, as well preventing the collapse of interbank markets (money market) has reached unimagined proportions.

These changes are likely to raise questions regarding the source of central bank institutional and legal authority to carry such operations in the future, if needed. It is no accident, for example that, prior to the crisis, almost all central banks were lending only against the safest collateral of government bonds. There was a compelling reason for this practice; after all, if central banks are granted operational independence to lend tax-payer money in order to carry out monetary and other operations, then it is only reasonable that these loans be protected by the safest existing assets. The widening of the range of assets, which can serve as collateral beyond government bonds raises therefore an important institutional issue with possible impact on central bank's ability to conduct freely monetary policy operations in the future.

Related to the point raised above is the issue of central bank financial independence. In other words, given the scale and the speed with which central banks had to react in the present crisis, is it not sensible to review the common practice where central bank seigniorage income is (normally) transferred annually to governments?

### 3) VOLATILITY OF COMMODITY PRICES

An additional source of impairment to the effectiveness of monetary policy, caused by the financial crisis, is through its effects on the collapse of commodity prices and the impact that it has on the governments' fiscal position in commodity exporting countries. The induced increases in fiscal deficits and the need to rely more on domestic sources to finance them, increased the dangers of monetary policy being threatened by fiscal dominance. Self insurance through accumulation of FX reserves in good years, in order to create a buffer in bad years, have proven only a partial solutions. The reason for this

is that during the financial crisis there was a high positive correlation between the yields on the assets in which the FX reserves have been invested and the prices of the commodities.

### 4) FOREIGN OWNED BANKS

The current crisis also unfolded a connection between foreign bank ownership, on the one hand, and the effectiveness of monetary policy on the other. If foreign owned banks are important financial players in the domestic economy, and if their lending and borrowing activity is affected more by conditions in the home country then by those in the host economy, then the effectiveness of monetary policy is impaired. In the 2008 crisis, the effect of foreign banks on the monetary transmission process in emerging economies was pronounced. There have been cases when central banks in emerging markets, where foreign owned banks play a dominant role, lowered key policy rates (KPR) but this was not followed by a parallel decline of lending rates. The main reason for this phenomenon was that domestic lending policies of foreign banks were decided by the mother bank, with little attention being paid to the domestic conditions.

Thus, along with the alluded advantages of the presence of foreign banks, in terms of know-how, better risk management techniques, and additional resources that they may bring to the domestic economy (Ramon and Villar 2005), proper realignment of their incentives and actions with the needs of the domestic economy is clearly an important policy issue. This need is especially important for emerging economies, which certainly were not the cause for 2008 near financial meltdown, but the ones which particularly suffer from the financial nationalism that was sparked by the crisis.

## IV) IMPROVING THE TRADEOFFS

### 1) DEVELOPING LONG-TERM STABLE DOMESTIC SOURCES OF FINANCE

Developing domestic long-term sources of finance, such as funded pension funds, improve the tradeoffs between monetary and

financial stability in several ways. First, it creates long-term sources to finance long-term project, thus contributing to lessen the maturity mismatch inherent in banking (short-term liabilities financing longer term assets). The narrower the maturity gap, the less exposed the banking system is to central bank's raising the KPR in response to inflationary shocks. That is, the existence of stable long-term savings increases the ability of monetary policy to react as needed with less concern on how it will affect financial stability. Second, the existence of a steady demand for domestic long term bonds reduces the risk of monetary policy becoming subservient to the needs to finance the government deficit - a problem common in many emerging economies, and a source of financial instability. Third, the creation of: a) a well developed interbank market b) a developed long-term government bond market c) well functioning secondary markets will result, among other things, in a yield curve stretching over a long range of maturities. This development in turn improves the trade-off between monetary and financial stability in at least two important ways. First, if there is a curve of CPI linked bonds, alongside regular bonds, it provides a source of useful forward-looking information on the credibility of monetary policy (Brenner and Sokoler 2009), and a source of information on term-risk premia (Soderlind 2006). Second, it enhances the expectation channel of monetary policy (Bernankee 2007), thus increasing the scope for more gradual changes of the KPR, in the face of shocks, thus reducing the likelihood of disrupting the financial markets.

In building up stable and efficient financial markets, it is important to ensure that a proper governance system is in place. For example, it is impossible to overstate the importance of the watch-dog role of the directors of financial institutions, the importance of transparency, and the appropriate structure of financial supervision. In this respect, careful considerations must be given to the choice of the structure of financial regulation (the FSA mode, the Dutch bi-polar model or others).

### 2) DEVELOPING MEANS TO COPE BETTER WITH THE VOLATILITY OF COMMODITY PRICES

The challenge is how to improve the functioning of the commodity future and derivatives markets, to improve the hedging

capacity (e.g. lengthening of future and option oil contracts) of emerging economies with volatile commodity markets. What role can international organizations play in this regard? How can their involvement contribute to strengthening the stabilizing elements in these markets as opposed to the destabilizing herding behaviour (See for example, Weiner 2006)?

Recently, the IMF established a flexible loan facility (FCL) which grants countries with "sound policies" lines of credit with no conditionality attached. Those lines of credit serve as a kind of insurance policy against adverse shocks for which the countries in question bear no responsibility. Isn't it possible to think of international agencies creating a more effective market mechanism where it would be possible to have long-term contracts to hedge against the volatile commodity prices? Although future and derivative markets for various commodities exist, the markets for long-term contract are thin. In June 2006, the World Bank published a 150 pages long document titled "Coping with Higher Oil prices". The document reviews the experience of 38 developing countries in dealing with rising oil prices and their main policy response. Surprisingly, it does not include the use of long-dated future and option contracts, as an effective mechanism to mitigate the impact of oil price movements on consumers and on the poor. The involvement of the world organization could also be to act as intermediary- a counter party- to long term swap agreements which would stimulate risk sharing between countries which are on both sides, of a rise or fall in the oil price, for example.

More efficient ways to cope with the volatility of commodity prices will improve the monetary stability-financial stability trade-off in at least two important ways. First, by insulating more governments' fiscal position from the volatilities of commodity prices, it will mitigate the fluctuations of government revenues and deficits, which affect adversely financial stability and increase the dangers of fiscal dominance. Second, long-term risk sharing arrangements will reduce the need to rely on self-insurance via FX reserves accumulation, thus giving monetary policy more degrees of freedom to react to inflation and financial stability shocks.

### 3) CHANGES IN THE REGULATORY ATTITUDE TOWARDS FOREIGN BANKS

In many emerging economies, foreign-owned banks are the backbone of the local monetary and financial system. In the face of the impact of the financial crisis on their financial system, emerging economies will have to review how to realign better the incentives of foreign-owned banks with the needs of the domestic economy, rather than the needs of the foreign mother company. An important issue in this regard is the future legal basis of their operations, and its impact on the stability-efficiency trade-off.

As pointed out by Goodhart (2009)

"I am afraid that one outcome from this crisis may be that national authorities will insist that foreign banks conduct local operations through a separately incorporated local subsidiary. While this will impede efficiency, it could enhance stability and make closure easier. More generally, any bankruptcy plan will have to address knotty issues, such as who has closure authority, what the loss-sharing arrangements between countries for closed banks will be, and how foreign operations of domestic banks will be treated. This is something that regulators have to pay far more attention to."

In addition, the issues of governance (e.g. should there be a role of a domestic observer on the board of a local foreign-owned bank and how to choose him?), internal control (e.g. how independent are the board of management of the local foreign owned bank with respect to the various risk that are undertaken in the domestic economy) and transparency.

### 4) CENTRAL BANK FINANCIAL INDEPENDENCE

Even before the 2008 financial crisis, there has increased interest in the importance of central bank financial independence for the effectiveness of monetary policy. Stella (2002) states that: "A financially independent central bank or equivalently a financially strong central bank is one that possesses sufficient resources to attain its fundamental policy objectives". The naïve view is that central banks enjoy a stable source of income through their seigniorage earnings. This view explains the common arrangement of central banks' transferring all or almost all their annual profits to governments.

While this view may be correct in regular times, the rapid expansion of central bank balance-sheets, in response to 2008 unprecedented financial crisis, demonstrated the need for central banks to have sufficient large resources to act on a large scale and swiftly in certain (hopefully rare) situations. Central bank financial independence is about ensuring that, when needed, such actions are taken with no questions of legitimacy. Put differently, the more legitimate are the central bank actions, the better the trade-off between monetary and financial stability.

Given the experience of the 2008 crisis, thought should be given to let central banks retain their incomes in order to build their capital. So, no question of legitimacy arises when central banks need to act again rapidly and on a large scale. One crucial lesson from the 2008 financial crisis is the need of central banks to inject rapidly substantial amounts of capital to financial entities. The vast amounts of capital and liquidity, which central banks have to inject in the face of a situation where confidence is deteriorating rapidly, require that central banks raise their capital, too. Any alternative to building up a large central bank capital base would necessitate entering into a myriad of institutional and legal details and is therefore less practical.

## V) CONCLUSION

Among the most important lessons of the 2008 major financial crisis is that successful Inflation Targeting regimes, which delivered long periods of low and stable inflation rates, are not sufficient to guarantee financial stability. As a consequence, policy makers in general and central banks in particular, have to face the reality that there exists a trade-off between price and financial stability and at times, it will be an acute one.

The present paper attempted to explore the nature of this trade-offs by pointing out the various interactions between monetary and price stability. One clear policy lesson from this analysis is that monetary policy instruments, such as the KPR, aimed at achieving price stability, may simultaneously necessitate adjusting other set of policy instruments (e.g. capital ratio requirements), which are aimed at maintaining financial stability.

The challenge for policy makers is to seek ways, which will improve the above mentioned trade-off. This in turn seems to force types of policy analyses which until the 2008 crisis were mostly carried out separately. For example, in considering the timing and magnitudes of interest rate changes in response to an inflation shock, little or no attention was paid in the past to how such changes may induce a widespread substitution of foreign for domestic lending and what it entails for financial stability. Following the crisis, this separation is no longer affordable.

Successful inflation targeting remains probably the best framework for conducting monetary policy in many countries, but it will not lead to nirvana.

Reality is both more complex and more interesting than we thought just two years ago.

* Dr. Meir Sokoler, IMF Monetary Policy Advisor to the Bank of Albania.

## REFERENCES

*Bernanke, B (2007) "Inflation expectations and inflation forecasting", Presentation at the Monetary Economics Workshop of the NBER Summer Institute;*

*Benner, M. and Sokoler, M (2009), "Inflation Targeting and Exchange Rate Regimes: Evidence from the Financial Markets, Review of Finance" (forthcoming);*

*Feldstein M. (2009), "Inflation is looming on America's horizon", Financial Times, April 19th;*

*Goodwater, C. (2009),"Procyclicality and Financial Regulation" Establidad Financiera, num 16, Banco De Espana;*

*Issuing, O. (2003) "Monetary and Financial Stability: Is There a. Trade-off?" BIS, Working Paper, No. 18 (September);*

*Moreno, R. and Villar, A. "The increased role of foreign bank entry in emerging markets", a chapter in Globalization and monetary policy in emerging markets, 2005, vol. 23, pp 9-16 from Bank for International Settlements;*

*Schwartz, A. (1988). "Financial Stability and the Federal Safety Net" in W. S. Haran and G. E. Kushmeider (eds), Restructuring Banking and Financial Services in America. Washington: American Enterprise Institute for Public Policy Research;*

*Sonderlind, P. (2008) "Monetary Policy Effects on Financial Risk Premia", The Manchester School, Vol. 76, pp. 690-707;*

*Stela, P (2005)," Special section on central bank financial independence and policy credibility: introduction" IMF staff papers, July 1st ;*

*Stiglitz, J. (2009) "Good news hard to find amid a litany of economic woes", Speech delivered at the Davos World Economic Forum, February 5th;*

*Wiener, R.J. (2006) "Do Birds of a Feather Flock Together?-Speculator Herding in the World Oil Market. Resources for the Future, Discussion paper 06-3131, Washington D.C, June.*

# SESSION II

# HOW HAVE THE EASTERN-EUROPEAN ECONOMIES BEEN AFFECTED BY THE WORLD CRISIS AND HOW HAVE THE MONETARY AND FISCAL AUTHORITIES RESPONDED TO THE WEAKENING OF THEIR ECONOMIES?

# CURRENT ISSUES OF FOREIGN BANK PRESENCE IN SOUTH EASTERN EUROPE

*Emidio Cocozza**

First of all I am very pleased to participate in this Conference and I thank the Bank of Albania for the invitation.

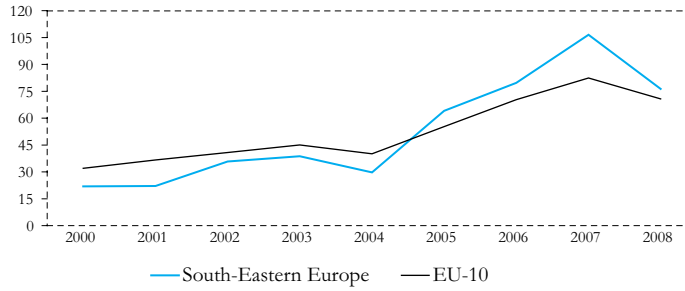
In this presentation, I will draw on some very preliminary findings of a piece of research on the financial system in South-Eastern Europe (SEE) currently in progress at the Bank of Italy. For the sake of clarity when referring to South-Eastern Europe, I mean Western Balkan countries that are prospective members of the European Union, that is Albania, Bosnia and Herzegovina, Croatia, FYR Macedonia, Montenegro and Serbia, with the exception of Kosovo, which was not considered owing to lack of data.

In the following slides I will present some stylized facts about the presence of foreign banks in the area. They are probably well known, but I think it is very useful to highlight them, just to understand the background against which financial developments in South-Eastern Europe are unfolding.

Foreign banks, mainly from the EU, dominate SEE banking systems. Up to the international crisis, foreign intermediaries invested massively in the region and foreign penetration in SEE has recently outpaced that in the New Member states in Central and Eastern Europe (EU-10). The slide shows the amount of foreign claims as a

share of GDP and two aspects are evident, that is the sharp increase of foreign penetration since 2004 and up to the crisis, and the very high level of this figure, considering that the EU-10 benchmark is itself high according to international standards.

Foreign bank participation(1)
(as a percent of GDP)




Source: calculations based on data from BIS and IMF.
(1) Consolidated cross-border claims and local claims of foreign affiliates.

Exposure to the international banking system
(as of December 2008)

| | Foreign claims(% of banking sector assets in the host country) | | | | | |
|---|---|---|---|---|---|---|
| | | of which: | | | | |
| | | Austria | France | Germany | Greece | Italy |
| South-Eastern Europe | 95.4 | 27.5 | 6.6 | 18.7 | 6.6 | 30.5 |
| EU-10 | 83.7 | 16.8 | 7.3 | 10.8 | 2.5 | 11.2 |
| Memorandum item | | | | | | |
| Exposure of reporting countries (% of banking sector assets in the home country) | | | | | | |
| South-Eastern Europe | - | 2.4 | 0.1 | 0.2 | 1.3 | 0.8 |
| EU-10 | - | 13.6 | 0.8 | 1.2 | 4.7 | 2.6 |

Source: calculations based on data from BIS, ECB and national authorities.
Notes: consolidated cross-border claims and local claims of foreign affiliates.

As of end-2008, outstanding consolidated foreign claims on SEE countries were equivalent to about 95 per cent of total domestic banking assets, a higher share than in EU-10. It should be noted that the numerator comprises cross-border claims that are not a component of domestic banking assets. So these figures are not comparable with the market shares of foreign affiliates. The table

also shows the relative exposure of main creditor banking systems to Eastern Europe, which was generally contained with the exception of Austria. Another thing that is important to highlight is that the exposure to the international banking system was highly concentrated: Austria, Germany, and Italy accounted for about 80 per cent of total foreign claims. As a comparison, the figure is 46.4 per cent in the EU-10.

In the literature there is variety of opinions about the effect of foreign banks presence on financial stability. I start pointing at potential benefits. First of all, entry of foreign players based in advanced economies is generally considered beneficial for the efficiency and sophistication of the host country's banking sector. Foreign banks may support higher levels of credit growth and smooth the cyclical pattern of lending in periods of distress in the host countries. Subsidiaries of large global groups may find it easier to raise funds in international financial markets, as information barriers are likely to be more limited.

Foreign presence in the banking system has contributed to the rapid financial deepening in the region as you can see in this slide. In particular, up to 2007, and in parallel with the increase of foreign banks penetration, there had been a sharp acceleration in credit growth in SEE.

Growth rate of credit to the private sector
(annual averages)

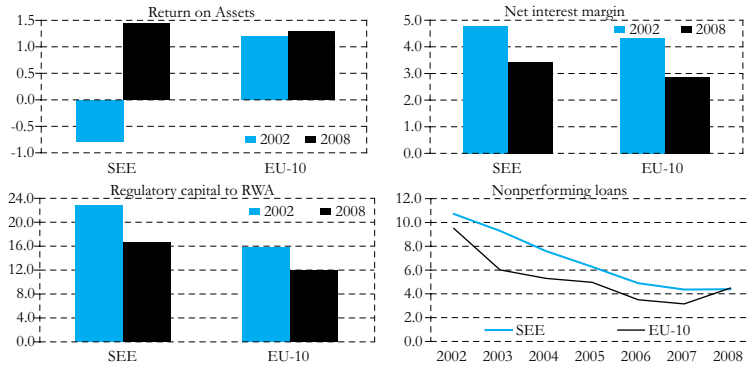
| Area | In nominal terms | | | In real terms | | |
|---|---|---|---|---|---|---|
| | (2002-08) | (2002-04) | (2005-08) | (2002-08) | (2002-04) | (2005-08) |
| South-Eastern Europe | 24.8 | 18.6 | 30.6 | 19.7 | 13.3 | 24.5 |
| EU-10 | 24.1 | 17.5 | 29.1 | 19.8 | 13.0 | 24.9 |

Source: calculations based on data from IMF and national authorities.

Foreign-owned banks may have a positive bearing on overall soundness of local banking systems. Indicators measuring banking sector profitability, capitalization and credit quality of SEE banking systems show a positive edge, or have improved substantially, in comparison to the counterparts in the EU-10. In this slide just a few indicators are presented which are commonly used in the literature to analyse financial soundness. It is worth noting that the edge in net interest margin, which represents the base of profitability in the region, probably reflects a weaker competition in SEE banking systems compared to those in EU-10. On the other side, this margin edge is partly eroded by a relatively low efficiency, as cost-to-income ratios are higher in the region. That said, the improvement in profitability recorded in SEE in this period was impressive.

The quality of financial intermediation was further enhanced by considerable efforts to upgrade the regulatory and supervisory framework, motivated by the prospect of EU membership and the need to ensure alignment with the acquis communautaire, that was remembered by the Chairman in his presentation.

Financial soundness indicators

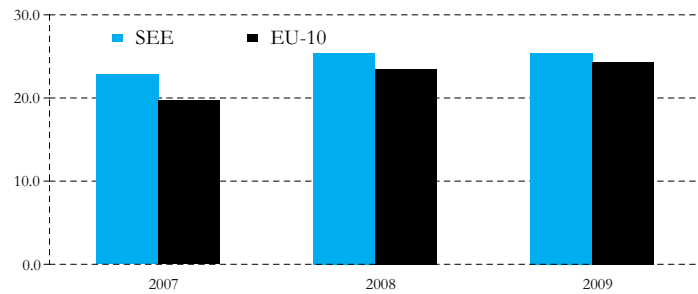



Source: calculations based on data from IMF, ECB and national authorities.

What are the potential risks for financial stability, from a host country perspective, arising from foreign banks presence? A dominant foreign participation alters the nature of stability risks faced by the financial system in host countries, and therefore implies new challenges for domestic authorities. Financial systems with

substantial foreign banks presence may be more prone to shocks that affect parent banks. These shocks may be large and more difficult for the local authorities to deal with by themselves.

A large proportion of new lending in SEE countries has been financed from abroad by borrowing in international interbank markets or directly from international banking groups' headquarters. In this slide you can see that, compared to the EU-10, banking systems in SEE countries are even more dependent on foreign funding.




Note: data for 2009 refer to end of March.
Source: calculations based on data from IMF.

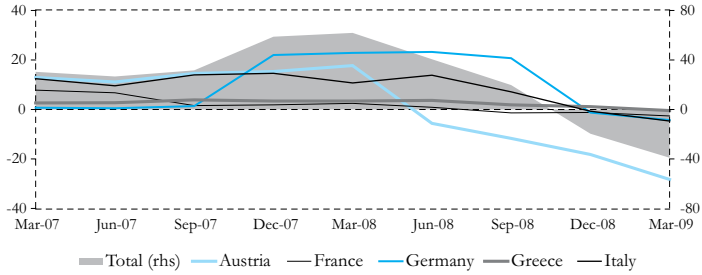
Banking systems that are dependent on foreign funding may face a shortfall of, or more costly access to, funds, in case of adverse developments in the broader banking group or in international funding markets. Potential spillovers arising from foreign banks may be exacerbated by the fact that their presence is highly concentrated, as in SEE banking systems.

The international crisis put to the test the resilience of the region's financial systems, owing to the high degree of dependence on foreign banks. Funding constraints and market concerns about banks' health have prompted international banking groups based in advanced economies to reassess their global balance sheet positions. The ongoing deterioration of the macroeconomic environment in the region added to these concerns, as the expected worsening of

credit quality could pose heightened pressure on parent banks to downscale their operations in Eastern Europe.

What is the preliminary evidence available so far? As shown by BIS statistics, international banks' credit to SEE held up remarkably well until the collapse of Lehman Brothers. In the last quarter of 2008, however, the volume of foreign claims on the region recorded a decline on an annual basis. The decrease in international bank credit continued in the first quarter of 2009. All major creditor countries reported a decline in their claims on the region, though the bulk of the reduction was reported by Austrian banks. It is worth noting that data presented in this slide are not corrected for evaluation effects of foreign exchange movements. Therefore, the decline is likely overestimated, as in the period March 2008-March 2009 the euro, in which a large share of foreign claims in SEE is denominated (and to which regional currencies, and consequently local claims in local currency, are more or less pegged) devaluated by 13 per cent compared to the US dollar.

Foreign bank lending flows to SEE countries
(changes in stocks in USD billions, end of period)

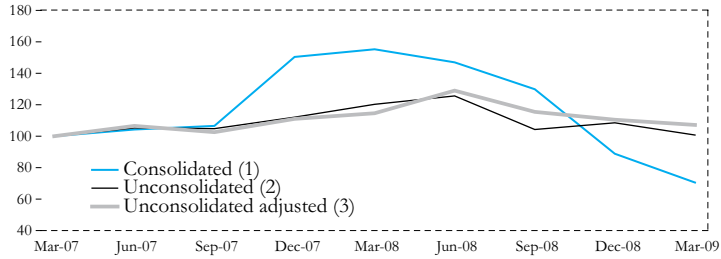



Notes: Consolidated cross-border claims and local claims of foreign affiliates on immediate borrower basis.
Source: BIS, Consolidated banking statistics.

Consolidated claims on banks in SEE countries declined sharply, reflecting the drying up of the international wholesale interbank market. Unconsolidated data, in which intragroup position are not netted out, recorded a much lower decline in cross-border claims to the banking sector, implying that parent banks financing to subsidiaries in the region has remained fairly stable. Data suggest that funding problems in interbank markets have mostly affected

unrelated counterparts, financed mainly on the basis of arm's length relationships. Moreover, to balance the decline in interbank lending, resident banks in SEE drew down their deposits in BIS reporting banks, driving an overall net inflow to the region's banking system.

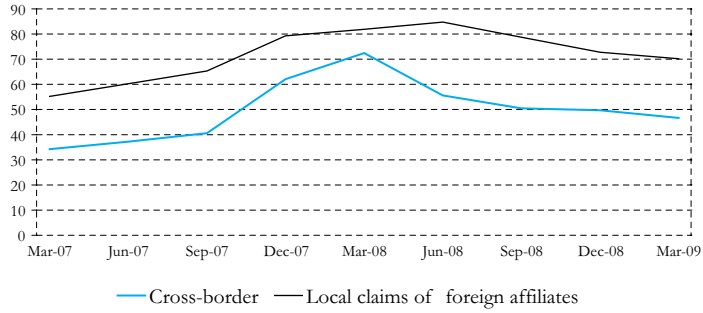
Claims on the banking sector
(indices, March-2007=100)



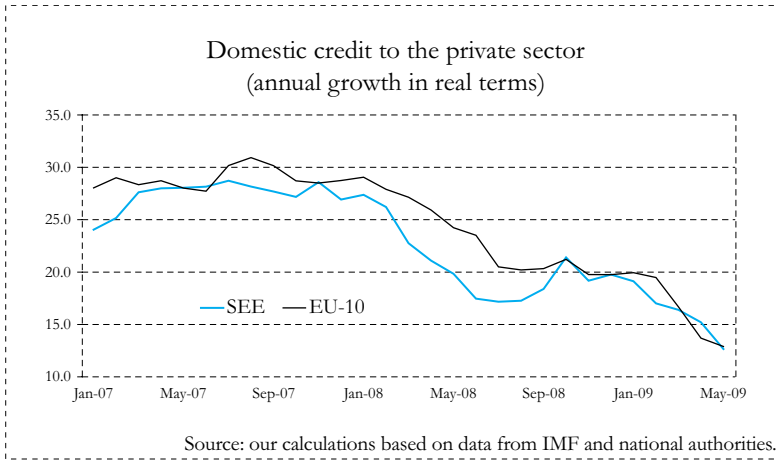

Source: our calculations based on data from BIS.
Notes: (1) Consolidated cross-border claims and local claims of foreign affiliates on banks, ultimate risk basis. (2) Cross-border claims on banks, including those vis-à-vis foreign affiliates. (3) Unconsolidated cross-border claims on banks corrected for exchange rate valuation effects.

Compared to cross-border financing, credit extended by local foreign bank affiliates was more stable. In particular, local positions on the non-bank private sector appear to have been relatively resilient, which would be consistent with continuing commitment to host markets by parent banks, even under stress. Data on domestic bank credit to the private sector support this view as, notwithstanding a sharp deceleration, real credit growth maintained a two-digit rate

Cross-border and local claims
(USD billions)




Source: our calculations on BIS, consolidated banking statistics on ultimate risk basis.




throughout the first half of 2009, in line with the EU-10. This is impressive, as the initial levels were already very high and in my opinion, unsustainable.

What are the conclusions we can draw from this very preliminary evidence? Thus far, available data point to a fairly orderly rebalancing of international banks' exposure towards SEE countries. This development is in line with the ongoing global deleveraging process. Efforts to coordinate the response of parent banks, for instance through the multilateral support by the IFIs, have contributed to avoid an abrupt slowdown.

Let me conclude highlighting that the statement that the internationalization of the SEE banking systems is a stabilizing force seems odd in this juncture, in which, according to many observers global banks' linkages have, quoting the IMF, "fuelled the fire of the crisis to emerging market economies". However, compared to the severity of the global crisis, and looking to past experience, banking systems in the region have been remarkably resilient. On the other hand, the crisis has changed the environment for financial deepening in the region and for the time being we should expect a more balanced banking model and possibly slower growth.

Thank you very much for your attention!

* Emidio Cocozza, International Economic Analysis and Relations Department, Bank of Italy

# SPEECH

*Boštjan Jazbec**

First, I would like to thank the Central Bank of Albania and specially Governor Fullani for this kind invitation. *Faleminderit shumë!* I also like to thank my colleagues at the Central Bank of Kosovo, Governor Rexhepi and the Deputy Governor Gërguri for this challenging and wonderful experience I am having since being with the Central Bank of Kosovo.

What I would like to do today in these few minutes is to guide you through developments in the financial sector of Kosovo. I just realized I made a mistake in my presentation; I put March 2009 on my slide. That was probably done subconsciously as it puts me at the beginning of the summer, which is full of lively experience for all those who have never been to Kosovo before. Why am I telling you this? Because one of the conclusions in my presentation is that the emigrants coming back to Kosovo just give serious push to the economy and also give a wonderful summer experience in Prishtina.

Why is Kosovo different?

There are two things that I would like to stress up and focus on in my presentation. First, because Kosovo is relatively isolated from international financial markets its economy behaves a little bit

different to financial crisis; and second, because Kosovo is using euro as official and legal tender. Consequently, this might help explain why there are different developments in the banking sector and in general macroeconomic situation. That mainly provides the explanation why Kosovo is probably the only country with still substantial positive growth rates in the region and helps Kosovo catch up the wave of probably new building up of the global economic growth, being relatively unhurt by the financial crisis. What is important in the development financial sector is the fact that because of the use of Euro, the Central Bank of Kosovo can not use some rather typical instruments for diffusing or helping or buttressing the independent monetary policy. And for that reason the Bank of Kosovo really has to focus on precautionary measures in terms of maintaining the financial stability.

Let me focus on developments in the banking sector now. Looking at data, one might get the feeling that things look too good to be true in some part, because we are reaching a capital adequacy ratio which is above 17%, which is something that other economies might be very envious of. We have loan to deposit ratio at around 80% and the maturity of loans is seriously growing up. Of course loans to GDP ratio is still very low but this only gives room for improvement. For that reason, Kosovo banking system still remains profitable, solvent and liquid at the time being. There are 8 banks in Kosovo, 6 of them are foreign ones. We are dealing with very strong mother-daughter relationship in foreign banks, which at a certain point of time also might generate a problem in improving the competitiveness in the Kosovo banking system, because we observe rather high transfer interest rates of foreign sources of funding for Kosovo commercial banks. And this is also something that affects the interest rate level in the Kosovo economy a great deal. Unfortunately, we still do not have a properly functioning interbank market. The largest source of financing is deposits from households. And this is why I mentioned the important role of emigrants in Kosovo and of remittances, which despite the developments in neighbouring countries are still pretty stable. On the other hand, I have to mention the international aid, which currently helps Kosovo on the path of independence, and contributes greatly to the development of the economy. As Kosovo does not have an open access to international sources of funding,

there is a strong competition for deposits. However, that also provides shield from the contagious effects of the financial crisis on international financial markets.

The next distinguishing characteristic of the Kosovo economy is that we still have positive growth rates of loans and deposits. We observe a bit of decrease in loans and deposits to be frank. However, annual figures are still positive. And that is something that generates promise for future development of the financial sector in Kosovo. And hopefully to the economy as a whole. And this is where the Central Bank of Kosovo is really playing a substantial role, namely, to maintain the financial stability.

Kosovo is just the late follower of everything that has happened in other transition economies. And if Kosovo doesn't repeat all the mistakes that other transition economies did, then one can expect nice development of the economy at broad in the nearest future. And that is exactly why conferences, like this one and the conference we are organising at the Central Bank of Kosovo next month for the 10th anniversary of the Central Bank of Kosovo are so important to exchange views and to learn what others do.

To continue, I will just quickly compare Kosovo to other economies in the region. Total loans to GDP are low but close to the average in the region. In that respect we are not that different. However, we do have higher ratio of deposits to GDP, because of the characteristics of our capital account which mostly consists of remittances and for the time being of the international aid. One can also observe the fact that commercial banks even improved their exposure in the last few months because of the precautionary measures that the Central Bank of Kosovo introduced.

When one looks at the balance of payments, one could worry a bit about our current account deficit. However, this deficit is still sustainable. Why? Because of the characteristics of its financing which is mainly due to constant inflows of remittances and international aid. Both flows remain pretty much at the same levels as in 2008 and 2007. Nonetheless, in the medium run both flows, of remittances and of international aid are respectively expected to decline. However, there is

room to improve as Kosovo's exports today are literally non-existent. Being optimist, this fact gives an enormous potential for the Kosovo economy in the nearest future. Why? Because if we start producing anything then we will have a serious impact on economic growth. However, if you look at foreign direct investments, of course, we are still probably riding the wave of the independence honeymoon and this would probably start to fade away soon, but still foreign direct investments are probably the only way of looking at how to improve the balance of payments and also how to impact the growth in the next few years. Remittances are officially estimated at around half a billion euros. However, unofficial data seem to raise this number to close to 800 million. If you add the international aid, then you get the cost structure of GDP consumption and also the aggregated demand in Kosovo. That is something that we at the Central Bank are really trying to focus on and to forecast developments in terms of their effects on the financial sector and macroeconomic stability.

Developments in the fiscal sector are a little bit worsening but with the help of the state-owned companies, we are still able to cover up most of the budget deficit and this for the time being still prevents Kosovo from entering a dangerous circle of dual deficits.

Now we come to the challenges.

Kosovo needs serious strategic investment projects and this is something the Government is currently occupied with. The Central Bank of Kosovo, being a fiscal agent and an advisor to the Government is deeply involved and engaged in all discussions. There are needs for infrastructure projects which will physically integrate Kosovo into the region. This is something that is also visible on the Albanian side. The new highway to Kosovo border, being opened few months ago, will help a great deal. The way things look like for the time being are favourable for the development of the Kosovo economy. And there are large external imbalances, which we inherited in Kosovo and which we are slowly correcting, especially with the development of the financial sector.

To conclude: Financial stability proved to be an anchor for the economy of Kosovo and the Central Bank of Kosovo really did

a great deal in this regard, preventing and then introducing the precautionary measures. We are still on the Basel I standards, which proved to be a better framework than Basel II standards during the financial crisis. We were lucky in Kosovo because we were less developed, but in this sense we might provide the good example for other countries that maybe Basel I standards still work better in terms of such a huge financial turmoil as we experienced in the last years.

Euro credibility. Kosovo is a role model. That's something that I should say really loud, but still if you read the news in the last two months, especially if you read what Rubini was saying about the Baltic countries, especially Latvia. He predicted that Latvia would have to unilaterally introduce euro at some point to stabilize its economy. This is exactly what happened in Kosovo. Introduction of euro really stabilized the economy and helped a great deal in supporting the macroeconomic stability. If you fix the exchange rate either through currency board or introduction of euro, especially in the small open economy, and we are not talking about small, but we are talking about tiny economies, then running an independent monetary policy might really be too costly to make great and beneficial effect. So, maybe there is a point for further discussion on how euro might help these economies.

Thank you very much!

* Boštjan Jazbec, Advisor to the Governor, Central Bank of the Republic of Kosovo

# ROMANIA IN THE CONTEXT OF THE GLOBAL FINANCIAL CRISIS

*Cristian Bichi**

*Ladies and Gentlemen,*

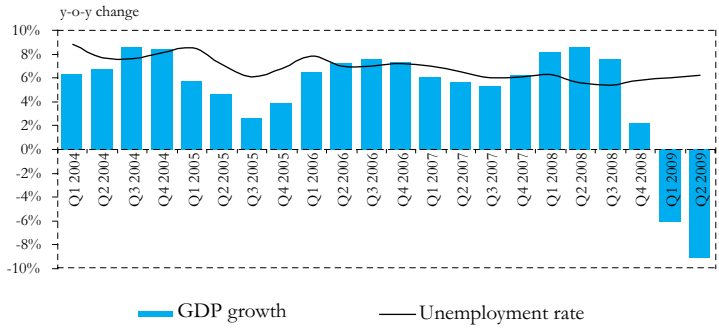
It is a great pleasure to be here in Tirana to address such a distinguished audience. I would like to thank the Bank of Albania for organizing this special event. This morning, I intend to present to you to what extent the global economic and financial crisis spilled over to Romania and the policy responses to these developments. I will also make some remarks on the challenges ahead.

## 1. MACROECONOMIC SITUATION

During the early stages of the current global financial crisis, the Romanian economy performed well. However, with the deepening of the crisis in the fall of 2008, the collapse in global trade and the increase in risk aversion on the international financial markets, a multi-year sustained economic growth in Romania came to a halt. In the first quarter of 2009, the Romanian real GDP decreased by 6.2 percent (year–on-year), the primary source of the economic downturn being a pronounced decline in domestic demand. According to preliminary data, the annual growth rate of real GDP fell even further in the second quarter of the current year, to -8.8 percent. The pace of economic activity is expected to return to

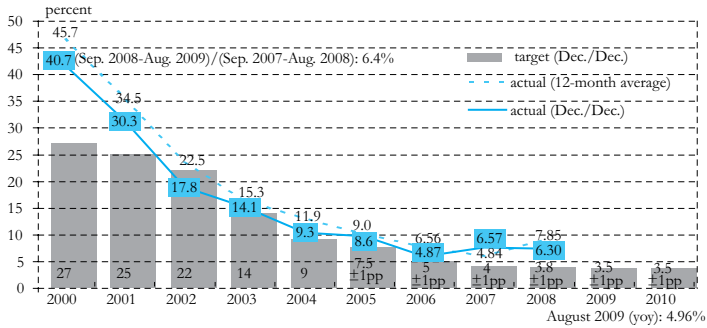
positive territory in late-2009 or early 2010. The economic downturn has caused deterioration in the labour market. The unemployment rate has increased to 6.6 percent of the labour force in August 2009, up from 3.8 percent one year earlier.

Chart 1 Real GDP and Unemployment rate




Amid weak demand and stabilization of the exchange rate, inflationary pressures are easing. The 12-month CPI inflation rate decelerated from 6.3 percent in December 2008 to 4.96 percent in August 2009. The inflation rate is projected to be 4.3 percent for end-2009, within the variation band of the central bank under the inflation targeting regime. In 2010, the inflation rate is forecasted to fall below the central target of 3.5 percent to as low as 2.6 percent.

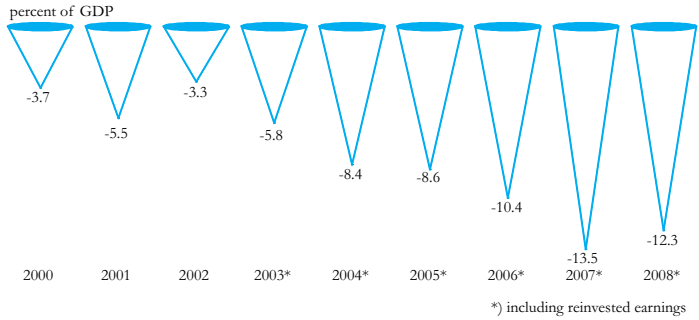
Chart 2 Inflation Rate




Source: National Institute of Statistics, National Bank of Romania

The strong economic growth over the last few years, which was fuelled by large foreign direct investments and other capital inflows, as well as by a domestic credit boom, has been accompanied by widening external imbalances. At the end of 2008, the current account deficit reached 12.3 percent of GDP. Romania is now in the midst of a sharp adjustment. Through the first six months of this year, the current account deficit stood at EUR 2.4 billion, reflecting a fall by 73.3 percent compared with the same period of the previous year. This substantial adjustment mainly reflected a rapid reduction in the trade balance, as imports contracted faster than exports (around 20 and 35 percent y-o-y, respectively). The significant narrowing of the current account deficit has eased concerns over the financing requirements and the vulnerability of the country to capital outflows. It also contributed to the easing of pressures on the exchange rate and inflation.

Chart 3 Current Account Balance

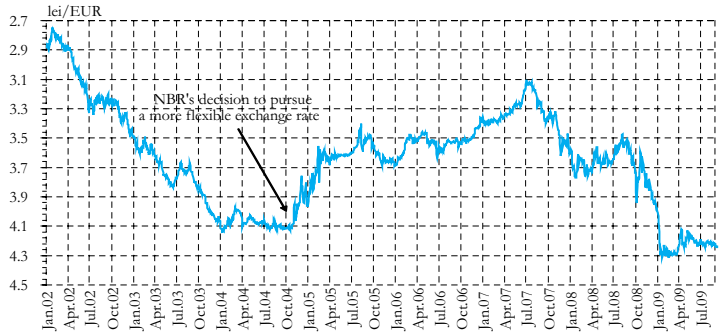



Source: National Institute of Statistics, National Bank of Romania

The exchange rate of the Romanian leu against the euro remained broadly stable after the announcement, in spring 2009, of the economic program of the Romanian authorities supported by international financial assistance.

Despite tight global liquidity conditions and elevated risk aversion, FDI inflows remained above expectations. Net FDI stood at EUR 2.9 billion over January-June 2009, down 44.7 percent y-o-y.

Chart 4 Nominal Exchange Rate (daily data)




Source: National Bank of Romania

Loose fiscal and income policies also contributed to the increase in the vulnerability of Romanian economy to adverse developments, with government deficit rising from 2.5 percent of GDP in 2007 to 5.4 percent of GDP in 2008.

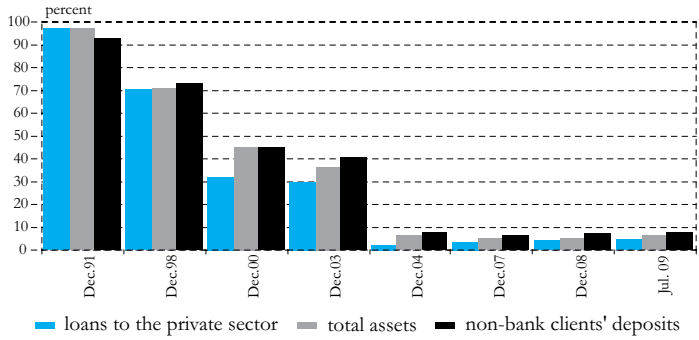
At the end of August 2009, the international reserves of Romania (foreign currencies and gold) stood at EUR 29.5 billion, compared with EUR 27.2 billion at the end of the previous year.

## 2. BANKING SECTOR DEVELOPMENTS

The Romanian banking system is dominated by foreign banks, most of which are based in the euro area. At the end of July 2009, banks with majority foreign capital accounted for 85.1 percent of the total assets of the banking system. These banks had also taken 81.6 percent of non-bank clients' deposits and granted 87.2 percent of the loans to the private sector. Banks with majority state-owned capital held a market share of 6.7 percent of banking system assets. Financial intermediation, while on the rise, is still relatively low compared with more developed countries. At the end of 2008, loans to the private sector represented only 39.3 percent of GDP. Banks with majority foreign-owned capital played an important role in sustaining rapid credit growth in Romania in the years preceding the economic downturn, attracting funds from abroad and lending them

domestically. The relatively strong reliance of banks in Romania on external funds and a high share of foreign currency loans in the loan stock added to the vulnerabilities of the country.

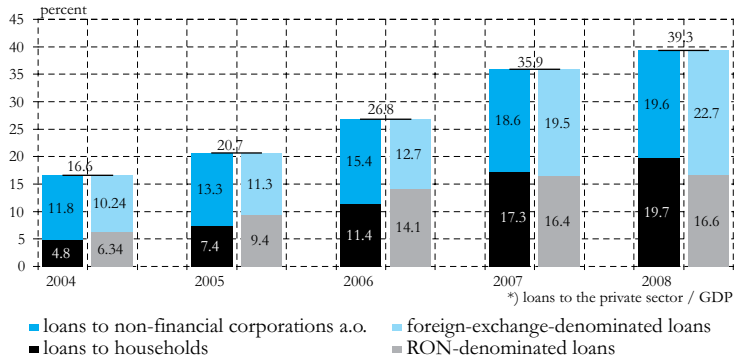
Chart 5 Share of Majority State-owned Banks in Total Credit Institutions




Source: National Bank of Romania

| share in total banks (%); July 2009 | | | |
|---|---|---|---|
| | Total assets | Loans to the Private Sector | Non-bank clients' deposits |
| Banks with majority foreign capital | 85.1 | 87.2 | 81.6 |
| Banks with majority domestic private capital | 8.2 | 8.2 | 10.6 |
| Banks with majority domestic state-owned capital | 6.7 | 4.6 | 7.8 |

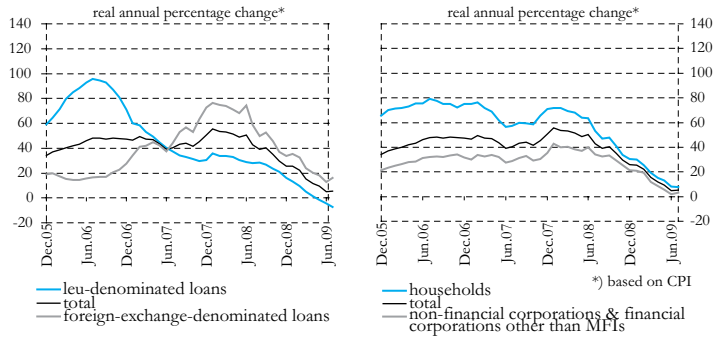
Chart 6 Financial Intermediation*




Source: National Institute of Statistics, National Bank of Romania

The economic downturn led to lower credit demand and tighter lending standards. As a result, bank lending to the private sector decelerated. The growth of total loans to the private sector was only 5.4 percent in real terms in July 2009, year-on-year.

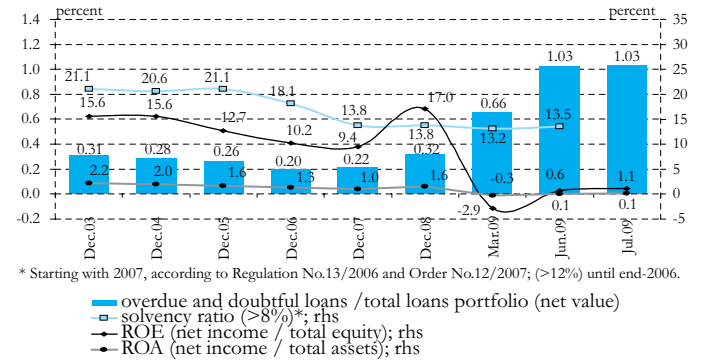
Chart 7 Loans to the Private Sector




Source: National Institute of Statistics, National Bank of Romania

The Romanian banking system proved to be resilient during the crisis thanks to the absence of toxic assets, strong balance sheets in the financial sector and strict supervision by the central bank. It has so far weathered relatively well the shock generated by deeper than anticipated contraction in the economic activity. Although non-performing loans (measured as a ratio of overdue and doubtful

Chart 8 Analysis Ratios for the Banking System




* Starting with 2007, according to Regulation No.13/2006 and Order No.12/2007; (>12%) until end-2006.

Source: National Bank of Romania

loans to total loans, at net value) have increased from 0.24 percent in September 2008 to 1.03 percent in June 2009, the profitability of the banking system remains in positive territory. As of end-June 2009, the average capital adequacy ratio was 13.5 percent, up 0.35 percentage points since March 2009, and all the banks recorded solvency ratios above 10 percent. On the same date, the liquidity indicator was 2.39, a level which is well above the prudential requirement of 1.

## 3. ECONOMIC REFORM PROGRAM

In response to the perceived vulnerabilities and deteriorating prospects, the government and the National Bank of Romania have developed a comprehensive economic policy program comprising measures to address the external and fiscal imbalances and strengthen the financial sector. Its immediate objective was to facilitate an orderly adjustment of the external deficit, thus easing excessive pressures on the exchange rate which could otherwise cause severe balance-sheet effects on the corporate and household sectors, resulting in a sharper downturn and tensions in the banking sector. Specific program objectives aim at: (1) reducing the fiscal balance to bring the deficit below 3 percent of GDP by 2011; (2) maintaining adequate capitalization of banks and liquidity in domestic financial markets; (3) bringing inflation within the target range of the central bank by end-2009 and maintaining it there; (4) securing adequate external financing and improving confidence.

In support of this program, announced in early-May 2009, a joint financial assistance of up to EUR 20 billion was provided to Romania by the EU, the IMF, the World Bank and the EBRD.

## 4. MAIN ACTIONS IN THE BANKING SECTOR

The specific objectives for the banking sector under the economic program supported by IMF, EU, EBRD and World Bank are the following: (1) maintain a strong capitalization of the banking system over the medium term; (2) improve the capacity of the Romanian authorities to respond in a timely and effective fashion in the event

of bank distress; (3) ensure the confidence in the banking system; (4) continuously improve the supervisory and regulatory framework; (5) promote some measures to ease the debt servicing by borrowers during the crisis.

In recent months, the Romanian authorities have taken several actions to implement the objectives mentioned above.

A key measure undertaken by the Romanian authorities to maintain a strong capitalization of the banking system was the preventive increase in own funds and solvency of fundamentally sound credit institutions operating in Romania in order to allow them to withstand the negative effects of the financial crisis. This capitalization program was also seen as a tool to strengthen the capacity of these institutions to finance the real economy.

Under the program, the National Bank of Romania has used stress testing techniques to assess the vulnerability of the capital positions of 29 banks, Romanian legal persons. The stress tests were conducted in March-April 2009, in accordance with a methodology agreed with IMF. Based on the stress tests results, additional capital requirements were identified for a number of banks (subsidiaries of EU credit institutions and domestically- owned banks) in order to maintain at least a 10 percent capital adequacy ratio in the period September 2009 - May 2011. These banks were asked to ensure the required capitalization by end-September 2009 and end-March 2010, respectively. Under the so-called "Vienna Initiative", the parent undertakings of the largest nine foreign banks incorporated in Romania, met in March, May, and August 2009, on which occasions they committed to maintaining their existing overall exposure to the country and to increasing capital of their subsidiaries as needed. The steady involvement of these foreign banks (from Austria, Greece, France and Italy), representing more than 70% of the domestic banking sector assets, is crucial for the successful implementation of the macroeconomic reform program of Romania.

In the area of crisis management, Government Emergency Ordinance No. 25/2009, amending the existing banking law, empowered the National Bank of Romania to request capital

increases and restrict dividend distribution for credit institutions in distress. New amendments to the banking law and the special bank insolvency law are planned in the near future, with the objective to improve the special administrator's ability to deal with banks in weak financial position and to simplify and strengthen the court proceedings for winding-up of banks.

In order to further underpin public confidence in the banking sector, amendments to the existing legal framework regarding the bank deposit guarantee scheme were introduced in June 2009, by government ordinance. The new legal provisions ensure the full transposition into the national law of the recent EU requirements in the field of deposit protection, providing for increasing the coverage level for small and medium size enterprises to EUR 50,000 (in lei equivalent)[1] and reducing the payout delay to a maximum of 20 days. The ordinance also introduces a new mechanism of declaring deposits unavailability by the central bank and improves the financing regime of the bank guarantee scheme providing for a state loan, in extraordinary situations, when the resources of the scheme are insufficient.

The NBR is continuing to improve the banking supervisory and regulatory framework. The liquidity regulations were recently enhanced, while raising the minimum level of the capital adequacy ratio from 8% to 10% remains a medium-term objective. Negotiations are underway with the Romanian Banking Association as regards the timetable for the adoption of the International Financial Reporting Standards (IFRS).

## 5. MONETARY POLICY MEASURES

The conduct of monetary policy during the current financial crisis has been characterized by a prudent management of interbank market liquidity, combined with successive reductions of interest rates and minimum reserve ratios. The downward trend of the monetary

[1] In October 2008, the Romanian government increased the deposit guarantee ceiling for natural persons to the lei equivalent of EUR 50,000 (previously the lei equivalent of EUR 20,000 per account holder and per bank).

policy rate has been consolidated during the current year, its level being gradually decreased to 8.5 percent. The minimum reserve ratio (MRR) for FX-denominated liabilities with a maturity lower than two years was reduced down to 30 percent in two stages with equal magnitude of 5 percent, following the MRR reduction to 0 percent for FX-denominated liabilities with a maturity over two years in May 2009. At the same time, the MRR for local currency liabilities with maturities lower than two years has been decreased in two stages from 20 to 15 percent, while the maturity of the main monetary policy instrument (auction-based repo operations) was increased up to one month. Through these measures – adopted in the context of persisting low volatility of the exchange rate of the domestic currency and ongoing economic contraction – the NBR sought to calibrate the broad money conditions with a view to consolidating the inflation rate convergence towards its medium-term targets and to securing the necessary conditions for a sustainable revitalization of the lending process.

## 6. FISCAL POLICY MEASURES

The economic program of the Romanian authorities includes also a strong fiscal policy package aimed at achieving a necessary short-term fiscal adjustment and introducing reform measures to make public finances more sustainable in the longer term. The government deficit target for 2009, initially established at 4.6 percent of GDP, was revised in August 2009 to 7.3 percent of GDP to take into account the larger-than-expected economic contraction. Achieving this objective will still require further significant adjustment efforts, including measures to reduce the wage bill and implementing the announced spending cuts in goods and services. For the next year, the Romanian authorities are committed to taking further measures to bring the deficit down to 5.9 percent of GDP.

## 7. FUTURE CHALLENGES

Maintaining a coherent policy mix is essential for the smooth restoration of the macroeconomic equilibrium in Romania and

achievement of a robust growth rate in the future. Structural reforms are needed in order to remove the existing economic imbalances. They can add flexibility to the labour market, boost productivity and foster external competitiveness. A large budget deficit must be avoided. In this context, it is important to have in place an appropriate balance between fiscal policies' short-term response to the economic downturn and the medium-term consolidation objectives.

Thank you for your attention!

* Cristian Bichi, Head of Financial Crisis Management Unit, National Bank of Romania

# THE ROLE OF CENTRAL BANK TRANSPARENCY FOR GUIDING PRIVATE SECTOR FORECASTS

*Michael Ehrmann,*
*Sylvester Eijffinger,*
*Marcel Fratzscher**

ABSTRACT

*There is a broad consensus in the literature that costs of information processing and acquisition may generate costly disagreements in expectations among economic agents, and that central banks may play a central role in reducing such dispersion in expectations. This paper analyses empirically whether enhanced central bank transparency lowers dispersion among professional forecasters of key economic variables, using a large set of proxies for central bank transparency in 12 advanced economies. It finds evidence for a significant and sizeable effect of central bank transparency on forecast dispersion, be it by means of announcing an inflation target, other forms of communication, or by publishing central banks' inflation and output forecasts.*

*However, there are also limits to central bank transparency, with decreasing marginal returns to enhancing (economic) transparency, and with disagreement among the general public's inflation expectations generally being unresponsive to central bank transparency measures.*

*JEL classification: E37, E52, C53.*

*Keywords: central banking, transparency, disagreement, survey expectations, monetary policy, inflation targeting, central bank communication, forecasting.*

Deviating from the assumption of rational expectations, e.g. by assuming costs of information processing, leads to macroeconomic models that can generate disagreement among economic agents. In such models, there is a role for central bank transparency and communication to reduce the cost of information processing, either by increasing the precision of signals received by economic agents, or by making the information acquisition less costly. Over the last decades, central banks have undertaken great efforts in that direction, leading to major improvements in the predictability of their decisions and/or in the anchoring of inflation expectations.

This paper studies to what extent greater central bank transparency and communication have contributed to a convergence in expectations of economic agents, by testing for their effects on the disagreement in forecasts of key macroeconomic variables. Compared to earlier contributions to this literature, our tests and proxies for central bank transparency and communication are substantially broader and more systematic. The paper finds empirical evidence that several of these measures (in particular the announcement of a quantified inflation target and enhanced transparency about economic dimensions of the conduct of monetary policy, such as the release of the central bank's internal forecasts of inflation and output) are effective in that regard, and that the effects are partially additive. The reduction in forecaster disagreement is not only statistically significant, but also economically important. The findings of the paper indicate that this reduction has been achieved because forecasters in countries with more transparent and open central banks manage to update their forecasts in response to news in a smoother fashion, generating less disagreement.

At the same time, the findings of the paper also point at limits to the effects of central bank transparency. Increasing economic transparency is particularly powerful at low levels of transparency. Yet at higher levels, the additional effects that can be reaped by further enhancements of economic transparency are much smaller. Another important limitation regards the capabilities to reduce disagreement among the general public (rather than professional

forecasters). The present paper does not detect any evidence that central bank transparency affects the dispersion in expectations among the general public.

## 1. INTRODUCTION

Many modern macroeconomic models assume that all agents form full-information rational expectations. Under this assumption, all economic agents share a common information set and form expectations conditional on that information, indicating that everyone has the same expectations, and there are no disagreements. However, this assumption is easily rejected when looking at forecast survey data, where disagreements, e.g. in inflation forecasting, appear to be particularly substantial. A variety of explanations have been offered to explain these findings. For example, Mankiw and Reis (2002) propose a sticky-information model, in which economic agents update their expectations only periodically because of costs of collecting and processing information. Using this model, Mankiw, Reis and Wolfers (2003) show that disagreement exhibits substantial variation through time, moving with inflation, the absolute value of the change in inflation, and relative price variability. Woodford (2001) argues for an imperfect-information model, in which agents observe a noisy signal about the current state. Sims (2003) argues that individual agent has limited capacity for processing information, and we must thus add information-processing constraints to model behaviour in macroeconomic models.

In all these cases, economic outcomes could be improved if it was possible to ensure that agents update their information sets more frequently, that the signals were observed with less noise, or if the cost of information processing was reduced. Accordingly, there might be a role for central bank transparency and communication in shaping better economic outcomes. Of course, neither is relevant when assuming that the public has full-information rational expectations. If the public understood monetary policy perfectly, any systematic pattern in the way that policy is conducted should be correctly inferred from the central bank's observed behaviour (Woodford, 2005). Thus, when predicting future interest rates,

it suffices to interpret (forecasts of) economic data in view of the central bank's policy rule. On the contrary, the assumption of imperfect information is crucial for central bank communication and transparency. Imperfect information generates disagreements among forecasters, making the economy volatile. Via communication and transparency, central banks may anchor market expectations, reduce volatility in the economy, and thus achieve a better economic (inflation) performance.

Central banks have over the last decades started to play this role, by becoming remarkably more transparent, and by actively using communication as an instrument to steer agents' expectations. A large academic literature has accompanied these processes, and has identified numerous ways in which they have turned out to be beneficial to the conduct of monetary policy. As pointed out, e.g., in the survey of the literature on central bank communication by Blinder et al. (2008), the anchoring of inflation expectations has been one point in case, and an improved predictability of monetary policy decisions another.

In this paper we investigate whether and to what extent central bank communication and increased transparency have affected the disagreement among private agents' forecasts of inflation, interest rates, and other macroeconomic variables. Our hypothesis is that we should see a reduction in forecast dispersion if i) information-related deviations from the rational expectation assumptions outlined above hold, and if ii) central banks manage to increase the signal-to-noise ratio of their public communication, or alternatively to reduce the cost of information processing by making relevant pieces of information available more readily.

For that purpose, we use two kinds of datasets in our empirical analysis. The first one is the Consensus Economics forecast data from 1990 to 2008, which covers professional analysts' forecasts of various macroeconomic variables for 12 advanced economies, over different forecasting horizons. The second is the European Commission household survey data (Eurobarometer) from 1985 to 2008, which measures inflation expectations of the general public. We find that central bank transparency and communication are

indeed powerful tools to reduce the dispersion of professional forecasters' views. These effects can be generated by announcing an inflation target (or a quantitative definition of price stability), by being transparent about the economic data and the policy models, as well as by publishing internal forecasts, and are therefore based on a broad set of central bank policies. They are also economically large, with reductions in dispersion reaching up to 20%.

How is this reduction in heterogeneity brought about? The paper shows that the updating process of forecasts in response to macroeconomic news generates less dispersion in the case of more transparent central banks, or if the news are accompanied by explicit central bank communication. This suggests that the private sector can gain a clearer understanding of the implications of news on the future evolution of the economy if aided by central banks. At the same time, the paper also identifies limits to the effectiveness of these central bank measures. In particular, there is some evidence for diminishing marginal returns in (economic) transparency, and no effect is found on the disagreement among the general public, while the levels of inflation expectations of the public are responsive to the announcement of an inflation target or increasing economic transparency.

This paper relates to an emerging literature that studies the determinants of disagreement among economic agents, and the role of central banks (for a detailed overview of the respective papers, see Table A1 in the Appendix). As to the determinants of disagreement, Coibion and Gorodnichenko (2009) use three different surveys of economic forecasts to assess both the support for and the properties of informational rigidities faced by agents. Specifically, they track the impulse responses of mean forecast errors and disagreement among agents after exogenous structural shocks. They conclude that after structural shocks, agents fail to adjust their forecasts by a sufficient amount, inducing a non-zero response of forecast errors. As time goes by, forecast errors converge monotonically to the full information outcome. They interpret these results as providing a robust empirical basis for models of informational rigidities that has previously been sorely lacking.

Capistran and Timmermann (2009) go beyond the models that base different views of forecasters on differences in information sets and assume that agents weight the consequences of over- and under-predictions differently and, as a result, calculate their forecasts under asymmetric loss with a shape of the loss function that differs across agents. The authors find empirical evidence of such asymmetries in forecasters' loss functions. Finally, Dovern, Fritsche and Slacalek (2009) investigate determinants of disagreement about six key economic indicators using the Consensus Economics dataset from G7 countries. Their estimates document a dichotomy between disagreement about real variables (GDP, consumption, investment and unemployment), which is more strongly affected by real factors, and disagreement about nominal variables (inflation and interest rate), which reacts to the institutional setting of monetary policy (in particular central bank independence). Disagreement about real variables intensifies strongly during recessions. Disagreement about nominal variables is considerably lower under independent central banks. Cross-sectional dispersion for both groups increases with uncertainty about the underlying indicators. Their findings suggest that more credible monetary policy can substantially contribute to the anchoring of expectations about nominal variables; however its effects on disagreement about real variables are moderate.

Other papers on the role of central banks for forecaster disagreement can be divided by the central bank measures that are analyzed. Swanson (2006) focuses on central bank transparency in general, and finds that with increased transparency of the US Federal Reserve, private sector forecasts of US interest rates have become more precise, both by improving the average quality of forecasts as well as by reducing their dispersion across forecasters. A related finding is presented in Bauer et al. (2006), who show that since 1994 (when the FOMC began to release statements accompanying changes in the policy rate) forecasts for key macroeconomic variables by market participants have become substantially more synchronized. Fujiwara (2005) examines how a central bank's economic forecasts affect forecasts by professional forecasters and vice versa, looking at the case of the Bank of Japan. Empirical results show that while central bank economic forecasts are not significantly influenced by professional forecasts of inflation, they have a notable effect on

professional forecasts. Furthermore, tests on the second moment suggest that the Bank of Japan's forecast reduces professional forecasters' uncertainty about the future.

A number of studies relate to the announcement of an inflation target, or a quantitative definition of price stability. Beechey, Johannsen and Levin (2007) compare the recent evolution of long-run inflation expectations in the euro area and the United States as provided in the respective Surveys of Professional Forecasters. They reveal substantially greater dispersion across forecasters' long-horizon projections of US than of euro area inflation, and relate this to the fact that the ECB has announced a definition of price stability, whereas the Federal Reserve has not. Crowe (2006) test whether inflation targeting (IT) enhances transparency, using inflation forecast data obtained from the Consensus Economics dataset for 11 IT adoption countries. The paper outlines a simple signal-extraction model and derives a testable proposition: if IT enhances transparency in the manner assumed in the model, then its introduction should promote convergence to lower forecast errors. The author finds that convergence occurs in all countries due to mean-reversion, but that the adoption of IT leads to greater convergence, as predicted by the model, which serves as strong evidence that IT does indeed enhance transparency. In a similar vein, Crowe and Meade (2007, 2008) find that enhanced transparency practices are associated with the private sector making greater use of information provided by the central bank, which supports Crowe's (2006) finding that the introduction of inflation targeting (thereby increasing in their transparency score) is associated with a convergence in forecast errors among the private sector.

All the studies listed so far relate to the disagreement among professional forecasters. Much less work has been done with regard to the views of the general public, most likely given the lack of data availability in this context.[1] Two exceptions are Maag and Lamla (2009) as well as Badarinza and Buchmann (2009), both of which find

[1] In this respect it should be noticed that the effects of central bank transparency and communication on professional forecasters are likely to be more direct and significant than those regarding the general public, given that the latter receive their information indirectly via the media or via professionals (Carroll 2003). Van der Cruijsen and Eijffinger (2007) show, using household survey data, that actual and perceived transparency in the general public may deviate, making the effects of transparency on the public less obvious.

evidence that media coverage affects inflation forecast disagreement of households.

This paper contributes to these strands of the literature by expanding the relevant tests. Whereas most papers focus on one measure of central bank transparency or communication, we broaden the analysis in this respect, allowing for a comparison of the relative strengths of the effects. We will do so for a large set of countries, and furthermore comparing the responsiveness of professional forecasters to the one of the general public. The paper is organized in the following way. Section 2 discusses the data used in the empirical analysis. Section 3 reports on the effects of central bank transparency and communication on private sector forecasts. Section 4 summarizes the findings and draws some policy implications.

## 2. THE DATA AND THE ECONOMETRIC MODEL

To test for the effects of central bank transparency on private sector forecasts, we employ various data sets. This section provides a detailed description of the private sector forecast data, our measures for central bank transparency and communication, and other control variables.

### 2.1 PRIVATE SECTOR FORECAST DATA

As to the private sector forecasts, we focus on the data provided by Consensus Economics. These comprise professional forecasts for a large range of variables, for different horizons, and are available for a reasonably long history for a set of industrialized countries. They have also been used in the related studies by Crowe (2006) and Dovern et al. (2009).

In particular, we have available the micro data for 7 countries of the European Union (France, Germany, Italy, the Netherlands, Spain, Sweden and the United Kingdom) and 5 other countries (Canada, Japan, Norway, Switzerland and the United States). The data are monthly, starting from January 1990 (January 1995 for the Netherlands, Spain and Sweden; June 1998 for Norway and Switzerland) and running through November 2008.

To cover a broad range of economic indicators, we will analyze forecasts for consumer price inflation (% change p.a.), real GDP growth (% change p.a.), unemployment (% of labour force), 3-month interest rates and 10-year government bond yields. Importantly, the first three forecasts are made for the end of the current year and for the end of the next year, whereas interest rate forecasts are made for a fixed horizon of 3 and 12 months. In particular the year-end forecasts therefore require careful modelling: over the course of a given year, the forecast horizon decreases; whereas a year-end forecast in January spans nearly an entire year, the forecasting problem in November is much simpler, as much of the year's data are already realized and released. A model of dispersion or forecast errors will therefore have to control for the forecast horizon, as we would expect both to decline over the course of a year. As we will describe below, all econometric models will therefore contain a full set of month-fixed effects.

On average, the dataset comprises 18 forecasters per country and month, although there is some variation. For instance, survey participation is relatively smaller in the Netherlands and Norway, with 10 forecasters on average, whereas the number of forecasters in the United Kingdom is relatively large, with 29 on average. Table 1 provides an overview of the forecaster coverage.

*Table 1 Coverage of the Consensus Economics Dataset*

| Country | No of forecasters | | | Sample | | Max. no of forecasts |
|---|---|---|---|---|---|---|
| | Average | Min | Max | Start | End | |
| Canada | 15 | 11 | 20 | 1990:1 | 2008:11 | 3439 |
| France | 18 | 11 | 24 | 1990:1 | 2008:11 | 4085 |
| Germany | 27 | 20 | 33 | 1990:1 | 2008:11 | 6219 |
| Italy | 14 | 6 | 21 | 1990:1 | 2008:11 | 3168 |
| Japan | 20 | 12 | 26 | 1990:1 | 2008:11 | 4456 |
| Netherlands | 10 | 7 | 14 | 1995:1 | 2008:11 | 1610 |
| Norway | 10 | 6 | 12 | 1998:6 | 2008:11 | 1219 |
| Spain | 14 | 7 | 19 | 1995:1 | 2008:11 | 2344 |
| Sweden | 13 | 7 | 18 | 1995:1 | 2008:11 | 2226 |
| Switzerland | 12 | 6 | 17 | 1998:6 | 2008:11 | 1503 |
| UK | 29 | 19 | 39 | 1990:1 | 2008:11 | 6621 |
| US | 26 | 19 | 33 | 1990:1 | 2008:11 | 5915 |
| **Total** | **18** | **6** | **39** | **1990:1** | **2008:11** | **42805** |

Notes: The table provides an overview of the coverage of the Consensus Economics Forecast Dataset. Column "Max. No. of forecasts" denotes the maximum number of forecasts that is available in a given country for a given variable (note that forecasters need not give a forecast for every variable and for every forecasting horizon).

Note that analysts need not give their forecast for every single variable and every forecasting horizon each time. Accordingly, the number of actual forecasts differs slightly across variables. Our dataset contains around 41,000 to 42,000 observations for inflation and GDP forecasts, whereas the number of forecasts for unemployment and interest rates is somewhat lower, at around 31,000 to 38,000.

For the purposes of this paper, we are interested in measures of cross-sectional dispersion on the one hand, and of forecast accuracy on the other. As explained in the introduction, our focus is on the effects of central bank transparency and communication on cross-sectional dispersion, as we are interested in the extent to which central banks can make the information acquisition of the private sector more effective. At the same time, however, it is also important to test how forecast accuracy is affected, as we need to ensure that transparent and communicative central banks do not align forecasts at lower levels of accuracy. While we would expect that more transparency and communication improves accuracy, this need not necessarily show up in our econometric estimates, for the following reason: Forecasts with more transparent and better communicating central banks might be qualitatively more accurate than otherwise ex ante. What we observe, however, is only forecast accuracy ex post, i.e. after the realization of shocks. The ex ante forecast accuracy is not observable. If it were the case that central bank transparency and communication is correlated with the incidence of large, unexpected shocks (for instance, because central banks in small open economies – which are more subject to shocks and therefore more volatile – are more inclined to stabilize agents' expectations by being more transparent), ex post forecast accuracy might turn out to be lower under more transparent central banks.[2] We will consequently take the analysis of forecast accuracy as a robustness test rather than as the focal point of this paper.

Our preferred measure of cross-sectional dispersion is, in line with the literature (Mankiw et al. 2003, Dovern et al. 2009), the inter-quartile range of forecasts in a given country and month. The advantage of this measure over the simple standard deviation is that it is insensitive to outliers, which might be important in the analysis of survey data.

[2] For this and other reasons, our econometric models will include country fixed effects. Still, the same argument might apply if the change in central bank transparency is correlated with the change in an economy's exposure to shocks.

We will, in any case, check for robustness of our results by using the standard deviation.[3] For a measure of forecast accuracy, we will calculate the average absolute forecast error per country and month.

Table 2 provides some summary statistics for the resulting variables. The dataset comprises 2342 country-month observations for most forecasts (albeit for unemployment, only 1589 observations are available). The inter-quartile range is on average around 0.2 to 0.5 percentage points, although it ranges from forecasts where the 25th as well as the 75th percentile of forecasters expressed the same view to those where the differences amounted to around 2 percentage points. Mean absolute forecast errors are comparably scaled, ranging on average from around 0.4 to 1.2 percentage points, and spanning for the individual variables a broader range from 0 to 6.7 percentage points.

*Table 2 Summary statistics for cross-sectional dispersion and forecast accuracy in the Consensus Economics Dataset*

| | Observations | Mean | Std | Min | Max |
|---|---|---|---|---|---|
| **Inter-quartile range** | | | | | |
| CPI - current year | 2342 | 0.21 | 0.14 | 0.00 | 1.20 |
| CPI - next year | 2342 | 0.40 | 0.21 | 0.00 | 1.90 |
| GDP - current year | 2342 | 0.33 | 0.21 | 0.00 | 1.60 |
| GDP - next year | 2342 | 0.48 | 0.23 | 0.00 | 2.00 |
| Unemployment - current year | 1589 | 0.21 | 0.19 | 0.00 | 2.00 |
| Unemployment - next year | 1589 | 0.40 | 0.21 | 0.00 | 2.50 |
| Short-term interest rates - in 3 months | 2342 | 0.25 | 0.17 | 0.00 | 2.00 |
| Short-term interest rates - in 12 months | 2342 | 0.51 | 0.27 | 0.00 | 2.00 |
| Long-term interest rates - in 3 months | 2342 | 0.28 | 0.13 | 0.00 | 1.50 |
| Long-term interest rates - in 12 months | 2342 | 0.46 | 0.21 | 0.00 | 1.60 |
| **Mean absolute forecast error** | | | | | |
| CPI - current year | 2342 | 0.31 | 0.34 | 0.00 | 2.53 |
| CPI - next year | 2210 | 0.66 | 0.52 | 0.00 | 3.69 |
| GDP - current year | 2342 | 0.74 | 0.54 | 0.00 | 3.45 |
| GDP - next year | 2210 | 1.16 | 0.86 | 0.00 | 4.49 |
| Unemployment - current year | 1589 | 0.53 | 0.68 | 0.00 | 3.93 |
| Unemployment - next year | 1512 | 0.76 | 0.66 | 0.00 | 3.58 |
| Short-term interest rates - in 3 months | 2341 | 0.38 | 0.45 | 0.00 | 5.62 |
| Short-term interest rates - in 12 months | 2268 | 1.01 | 0.85 | 0.00 | 6.41 |
| Long-term interest rates - in 3 months | 2342 | 0.48 | 0.45 | 0.00 | 6.06 |
| Long-term interest rates - in 12 months | 2266 | 0.92 | 0.73 | 0.00 | 6.69 |

Notes: The table provides summary statistics for the inter-quartile range (top panel) and the mean absolute forecast error (lower panel) of the various forecasts obtained in the Consensus Economics dataset.

[3] It is important to note that this measure is not necessarily a good proxy for uncertainty about the variable to be forecasted. As shown by D'Amico and Orphanides (2008), disagreement across forecasters is not necessarily equivalent to the inflation uncertainty expressed by forecasters in the form of probabilistic responses, as in the Survey of Professional Forecasters. While this is important to keep in mind when interpreting our results, we are primarily interested in the determinants of disagreement rather than uncertainty.

In order to contrast the results for the professional forecasts to those for the general public, we will also make use of a second dataset, which is based on the European Commission's Consumer Survey. This survey is also conducted monthly, covering around 1000 respondents in 20 European Union countries. The data are available to us starting from January 1985 at the earliest, through November 2008.[4] Different to the Consensus Economics dataset, only inflation forecasts are contained in the consumer survey – and furthermore, these are not quantitative, but rather only qualitative. Respondents are asked to indicate whether, in their view, prices will, over the next 12 months, i) increase more rapidly, ii) increase at the same rate, iii) increase at a slower rate, iv) stay about the same, or v) fall.

While the micro data are not directly available, the share of responses in the various categories is mostly substantial. This allows us to construct a measure of dispersion, which needs to reflect the qualitative nature of the responses. We therefore opted for the measure proposed by Lacy (2006), and also applied in Badarinza and Buchmann (2009):

$$d^2 = \sum_{j=1}^{4} F_j(1-F_j) \tag{1}$$

where Fj is the cumulative relative frequency of the jth category. Note that the 5th category can be excluded, given that its cumulative relative frequency is equal to one, and accordingly does not provide any relevant information about the distribution of the variable.[5]

Unfortunately, the qualitative nature of the question does not allow constructing a measure of forecast accuracy. The European

[4] More precisely, the data cover Belgium, Ireland, Greece, France, Italy, the Netherlands and the United Kingdom since 1985m1; Spain (1986m6); Latvia (1993m1); Hungary (1993m2); Estonia (1993m4); Czech Republic (1995m1); Austria and Sweden (1995m10); Finland (1995m11); Slovenia (1996m3); Cyprus, Lithuania, Poland and Romania (2001m5). The remaining countries (amongst which, for instance, Germany) conduct the survey, but do not make the breakdown of the response shares per answer category available on the Eurostat website.

[5] To construct this measure, we have excluded the "don't know" response shares, and calculated the cumulative relative frequencies just taking into account the response shares of the remaining answer categories. This measure has the advantage that it does not require the quantification of the distances between the various answer categories. The measure will be equal to zero if all responses fall into a single category, and it will be equal to one, its maximum value, if 50% of respondents expect prices to rise more rapidly and 50% expect prices to fall.

Commission releases a balance statistic that is supposed to provide an aggregated measure of the responses, based on the formula

$$B = (PP + 0.5P) - (0.5M + MM) \tag{2}$$

where PP denotes the share of responses expecting prices to increase more rapidly, P the share of responses that prices will increase at the same rate, M equivalently for expectations of prices to stay about the same, and MM referring to expectations that prices will fall. We will analyze this balance statistic to test whether central bank transparency and communication can affect the level of inflation expectations. Given that quantitative surveys on inflation expectations have typically concluded that consumers tend to overestimate inflation by non-negligible amounts (Bryan and Venkatu 2001), we take this to suggest that a reduction in the level of inflation expectations is equivalent to an improvement in forecast accuracy. For both measures (d2 and the balance statistic), our dataset comprises 3967 country-month observations.

It is of course apparent that the two datasets differ along various dimensions. Our main interest are the different target groups across the two data sources, with professional forecasters in the Consensus Economics survey, and the general public in the EC's Consumer Survey. At the same time, however, the latter survey asks a qualitative question, whereas the former is interested in a quantified forecast, and the coverage of countries and across time differs. This of course limits the comparability of results. At the same time, we are not aware of any other consumer survey that is done in a comparable fashion across countries, asks quantitative questions, and spans a sufficiently long time sample.

## 2.2 MEASURES OF CENTRAL BANK TRANSPARENCY

Being interested in how central bank transparency and communication affect private sector forecasts, we need to define measures for the former. To be as broad as possible, we have constructed four such measures. The first one relates to whether or not a central bank has announced an inflation target, or a quantitative definition of price stability. This measure is constructed as a dummy

variable, taking the value of one as of the month when the inflation target was adopted (as, e.g., in Ball and Sheridan 2005), according to the central bank websites. Alternatives to the adoption dates might be the announcement date (as, e.g., in Bernanke et al. 1999), or alternatively a later date to allow for a build-up of credibility (see, e.g., Goldberg and Klein 2005 for the ECB). By opting for the adoption date, we place ourselves in the middle of these alternatives. For the Consensus Economics dataset, 7 out of the 12 countries move to an inflation targeting regime over the course of our sample period, two countries (Spain and Sweden) are considered to be inflation targeters throughout (note that their data only start in 1995), and the remaining three countries (Switzerland, Japan and the United States) do not have a quantified inflation target over the entire sample.

A second set of variables relates to more general measures of central bank transparency. Eijffinger and Geraats (2006) have developed a central bank transparency index, which is an aggregate of sub-indices relating to (1) political, (2) economic, (3) procedural, (4) policy and (5) operational transparency. This index has recently been extended and updated for a large set of countries by Dincer and Eichengreen (2009). The data is annual and covers the period from 1998 to 2006. In light of the large number of sub-indices, we will concentrate on the overall index, as well as the sub-index related to economic transparency.[6] A detailed explanation of the construction of these data is provided in Eijffinger and Geraats (2006); for the purposes of this paper, it shall suffice to state that central banks are given ranks between 0 and 3 for economic transparency, depending on (a) whether they provide timely information on key economic data (money supply, inflation, GDP, unemployment rate and capacity utilization), (b) whether or not central banks announce what policy models are employed internally, and finally (and probably most important for our purposes) (c) whether or not central banks release numerical internal forecasts for inflation and/or output. The overall index is a simple aggregate of the 5 sub-indices, each of which can vary from 0 to 3, such that the overall index is defined over a range from 0 to 15. For the Consensus Economics dataset, the economic transparency index ranges from 1 to 3, whereas the overall index takes values in between 6 and 15.

[6] It should be noted that we have tested also the sub-indices for political, procedural, policy and operational transparency, which didn't prove to be significant in reducing the dispersion among professional forecasters.

One important issue relates to the relatively short time sample for which these data are available. To maintain a maximum number of observations, we have decided to use the 1998 data for all earlier years, and to assume that in the years 2007 and 2008, the 2006 indices are still applicable. Of course, we have tested for the robustness of our results using only the actual transparency data.

A last measure for central bank transparency is closely related to one aspect of the economic transparency index, namely whether central banks publish their internal forecasts for inflation and output. We have constructed a variable (which we will label central bank communication) that is equal to one in those months where such forecasts are published, and zero otherwise. For the countries of the euro area, we consider both the relevant publications of the ECB as well as of the National Central Banks. Whereas the former provides staff projections for the euro area as a whole, we prefer to treat this as relevant information also for the national forecasts, given that this potentially allows forecasters to better assess the future course of monetary policy, which in turn might allow for more accurate (or more aligned) national forecasts. A robustness test for the inclusion of ECB staff projections for the euro area will be conducted. A final note on the construction of the central bank communication variable relates to the precise timing. Given that the Consensus Economics survey takes place at the beginning of a month, we have made sure that the central bank publication can affect the survey. If it takes place after the collection of the Consensus Economics data, we enter it in the subsequent month.[7]

One might expect that these four variables measure related concepts, and are therefore positively correlated. Table 3 displays the correlation coefficients, some of which are indeed relatively large. It is apparent that central banks with a quantified inflation target are on average more transparent. At the same time, the correlation coefficient with economic transparency is not that high, presumably because also many other central banks fare relatively high on the

[7] Another type of central bank communication that could turn out to be relevant relates to the publication of an own forward interest rate path, as practiced by the central banks of Norway and Sweden (and others not included in our sample). Given that this practice is very recent, and only applied in two of our 12 countries, the dataset does not contain sufficient variation to test for these effects.

economic transparency ranking. Central bank communication is least correlated with the other measures, which is explained by the fact that it contains much more time variation: whereas all other measures are best described by step functions, our communication measure switches between the values zero and one repeatedly (in many cases, the relevant publications take place quarterly, or semi-annually, leading to non-zero entries for 4 or 2 months a year, respectively). These correlation coefficients suggest that in our empirical analysis it will not always be possible to clearly identify which measure is triggering an effect. At the same time, we are comforted by the relatively low correlation measures between inflation targeting, economic transparency, and central bank communication. Note that we will subsume all of these variables under the heading of central bank transparency, even though we will use the term also for the narrower definition of the central bank transparency index.

*Table 3 Correlation between measures of central bank transparency and communication*

| | **Inflation Targeting** | **Transparency** | **Economic Transparency** | **Communi-cation** |
|---|---|---|---|---|
| Inflation Targeting | 1.00 | | | |
| Transparency | 0.56 | 1.00 | | |
| Economic Transparency | 0.27 | 0.53 | 1.00 | |
| Communication | 0.22 | 0.14 | 0.06 | 1.00 |

Notes: The table displays the correlation coefficients between the various measures for central bank transparency and communication, for the sample of the Consensus Economics dataset.

## 2.3 CONTROL VARIABLES

When explaining cross-sectional forecaster dispersion, a number of other factors need to be considered. Most straightforwardly, it is important to include month fixed effects, as well as country fixed effects in any model. The former are necessary due to the changing forecasting horizon in the Consensus Economics survey, as discussed above. The latter can take account of a myriad of issues that might have a bearing on the dispersion that we observe on average in a given country, such as the quality of the forecaster pool,

the difficulty in forecasting a given economy (e.g. because smaller economies are more prone to shocks, and as such might ceteris paribus be relatively more volatile), or possibly the availability of a well-established forecasting institution that might affect the views expressed in this survey.

Following Capistran and Timmermann (2009), we also include the conditional volatility of the variable that needs to be forecasted, for instance because higher volatility can imply a more difficult forecasting task that, in turn, might increase cross-sectional dispersion. In concordance with their approach, we estimated GARCH (1,1) models (where for our purposes 2 lags proved to be sufficient to reduce remaining serial correlation), and extracted the estimates of the conditional volatility. Adding the level of the variable to be forecasted (e.g. because inflation might be more difficult to forecast when it is high) does not affect our results, and generates issues of correlated regressors, given that the conditional volatility and the level of the variables are highly correlated. We have, therefore, decided to only include the conditional volatility measure. The actual data on the variables to be forecasted was sourced from the OECD's Main Economic Indicators database.

Furthermore, we include the absolute change in oil prices (sourced from the Bank for International Settlements) that was observed prior to the survey, to incorporate possible effects this variable might have on the evolution of forecasts, and the disagreement among forecasters in particular. Importantly, the inclusion of this variable does not change our results.

A final set of variables that we include in the extension of the empirical models relates to the news component of macroeconomic announcements. With new macroeconomic data arriving, forecasters need to update their information set and adjust their forecasts. This in itself might affect forecaster disagreement; an interesting hypothesis in that respect is whether the adjustment in forecasts can take place in a "smoother" fashion under transparent central banks, and as such would lead to a relatively smaller increase in cross-sectional dispersion.[8]

[8] This test is related to the influential work by Gürkaynak, Sack and Swanson (2005), who show that, in response to macroeconomic news shocks, long-term inflation expectations are better anchored in inflation-targeting countries.

To test for this possibility, we have constructed a series of macroeconomic announcements and the surprise component contained therein. Following the standard in the announcement literature (see, e.g., Andersen et al. 2003), we deduct the expectation of the announcement from the actual announcement value of the variable to get a measure of the surprise component, and standardize these surprises by their own, national, standard deviation. Due to this standardization, the regression coefficients for each series can be interpreted as a response per one national standard deviation surprise. As is standard in this literature, we obtained data on expectations of the macroeconomic releases from a survey among financial market participants conducted by Bloomberg Financial Services, and use the median response as our measure of expectations. It is important to note, however, that these data are not available for the entire sample period. To maximize the sample, we focus on the releases of inflation and unemployment, for which the Bloomberg surveys have the longest history. As with the central bank communication variable, we ensure that the data release is appropriately assigned to the relevant Consensus Economics forecast round.[9]

## 3. THE EFFECTS OF CENTRAL BANK TRANSPARENCY ON PRIVATE SECTOR FORECASTS

What effects do central banks exert on private sector forecasts by means of their transparency and communication? This section presents the empirical results. We will first focus on a benchmark regression that analyzes the determinants of the inter-quartile range in the Consensus Economics forecasts, before expanding the analysis and testing its robustness in several ways. Following this, we will turn to an analysis of the responsiveness to news shocks, and then probe the limits of the effects of central bank transparency.

[9] An alternative might be to use the magnitude of the change in the announced values for the macroeconomic releases, assuming that larger changes require more substantial forecast revisions, and as such could raise disagreement. Our preferred measure is based on the shocks – assuming that if large parts of a macroeconomic release have not been foreseen, this should trigger more substantive revisions, whereas a large change in the announcement could have been foreseen, and therefore already factored into the earlier forecast rounds.

## 3.1 OVERALL EFFECTS

Our benchmark econometric model is given as

$$\Omega_{i,c,t} = \alpha_c + \alpha_m + \beta\ x_{c,t} + \gamma_1 \Omega_{i,c,t-1} + \gamma_2 \Sigma_{i,c,t} + \gamma_3 \left|\Delta oil_{t-1}\right| + \varepsilon \quad (3)$$

where $\Omega_{i,c,t}$ denotes our dependent variable, i.e. the cross-sectional forecast dispersion for forecast $i$ in country $c$ at time $t$, or alternatively the absolute mean forecast error, and $\alpha_c$ and $\alpha_m$ stand for the country and month fixed effects. Our measures for central bank transparency and communication are given by $\chi_{c,t}$; $\sum_{i,c,t}$ marks the conditional volatility of the variable to be forecasted, and $\left|\Delta oil_{t-1}\right|$ denotes the absolute change in oil prices in the preceding month. As outlined in detail in section 2, our hypotheses are that disagreement among forecasters should depend negatively on central bank transparency and communication ($\beta<0$), that disagreement is likely to be persistent ($\gamma>0$), and that higher volatility of the variable increases disagreement ($\gamma_2>0$), as do larger oil price changes ($\gamma_3>0$).

We estimate different variants of this model, including different measures of $\Omega$ (inter-quartile range and mean absolute error), for different forecasts $i$ (varying the variable to be forecasted as well as the horizon), and different central bank transparency and communication measures $x$ each time (although we will also estimate a joint model for three central bank measures for each forecast). The models will be estimated by simple OLS. Since our observations are clustered by country, the standard errors are estimated taking the cluster structure into account.[10]

Table 4 provides the results parameter estimates obtained in the benchmark model. Column (1) contains the estimates testing for the importance of inflation targeting; column (2) for overall transparency; column (3) for economic transparency; and column (4) includes our central bank communication variable. Column (5) combines

[10] This assumes that errors are correlated within, but uncorrelated across countries. For the euro area countries, it might be possible that errors are also correlated across countries, given that the central bank measures are partially identical. We have therefore tested whether allowing for correlated errors within the non-euro area countries and within the euro area affects our results, and note that this is not the case. If anything, the standard errors when clustering by country are slightly more conservative, and are therefore reported in this paper.

inflation targeting, economic transparency, and communication (the three central bank measures with the lowest correlation coefficients) in a joint model.

*Table 4 Central bank transparency and forecaster dispersion, benchmark model*

| IQR | (1) | (2) | (3) | (4) | (5) | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|---|---|---|---|---|
| | **CPI - current year** | | | | | **CPI - next year** | | | | |
| Inflation Targeting | 0.004 | | | | 0.011 | -0.019 | | | | -0.008 |
| | 0.016 | | | | 0.016 | 0.020 | | | | 0.021 |
| (Ec.) Transparency | | 0.000 | -0.019* | | -0.020* | | -0.007 | -0.049** | | -0.047** |
| | | 0.004 | 0.009 | | 0.009 | | 0.006 | 0.020 | | 0.020 |
| Communication | | | | -0.011* | -0.011* | | | | -0.013 | -0.006 |
| | | | | 0.005 | 0.005 | | | | 0.010 | 0.010 |
| Own Lag | 0.396*** | 0.397*** | 0.390*** | 0.396*** | 0.389*** | 0.660*** | 0.657*** | 0.636*** | 0.661*** | 0.636*** |
| | 0.036 | 0.036 | 0.032 | 0.035 | 0.032 | 0.067 | 0.064 | 0.058 | 0.068 | 0.058 |
| Cond. volatility | 0.127*** | 0.126*** | 0.118*** | 0.123*** | 0.117*** | 0.139*** | 0.151*** | 0.127** | 0.138** | 0.125** |
| | 0.021 | 0.022 | 0.027 | 0.024 | 0.023 | 0.039 | 0.048 | 0.047 | 0.048 | 0.042 |
| Oil Prices | 0.001 | 0.002 | 0.001 | 0.003 | 0.001 | 0.165*** | 0.159*** | 0.158*** | 0.164*** | 0.161*** |
| | 0.050 | 0.049 | 0.049 | 0.049 | 0.048 | 0.048 | 0.046 | 0.044 | 0.045 | 0.046 |
| Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 |
| R2 | 0.54 | 0.54 | 0.54 | 0.54 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 |
| | **GDP - current year** | | | | | **GDP - next year** | | | | |
| Inflation Targeting | -0.025* | | | | -0.016 | 0.000 | | | | 0.009 |
| | 0.013 | | | | 0.013 | 0.011 | | | | 0.013 |
| (Ec.) Transparency | | -0.007* | -0.045*** | | -0.042*** | | -0.001 | -0.042*** | | -0.042*** |
| | | 0.003 | 0.010 | | 0.009 | | 0.005 | 0.013 | | 0.013 |
| Communication | | | | -0.018*** | -0.011* | | | | -0.011* | -0.008 |
| | | | | 0.005 | 0.005 | | | | 0.006 | 0.006 |
| Own Lag | 0.526*** | 0.525*** | 0.509*** | 0.529*** | 0.507*** | 0.593*** | 0.593*** | 0.577*** | 0.592*** | 0.577*** |
| | 0.026 | 0.025 | 0.024 | 0.025 | 0.025 | 0.021 | 0.021 | 0.017 | 0.021 | 0.017 |
| Cond. volatility | 0.038* | 0.041* | 0.035 | 0.044* | 0.029 | 0.050* | 0.049* | 0.040* | 0.049** | 0.042 |
| | 0.018 | 0.021 | 0.021 | 0.020 | 0.018 | 0.023 | 0.022 | 0.021 | 0.021 | 0.024 |
| Oil Prices | 0.019 | 0.012 | 0.015 | 0.017 | 0.021 | 0.079 | 0.079 | 0.080 | 0.081 | 0.080 |
| | 0.051 | 0.050 | 0.053 | 0.049 | 0.054 | 0.048 | 0.050 | 0.049 | 0.049 | 0.049 |
| Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 |
| R2 | 0.60 | 0.60 | 0.61 | 0.60 | 0.61 | 0.55 | 0.55 | 0.56 | 0.55 | 0.56 |
| | **Unemployment - current year** | | | | | **Unemployment - next year** | | | | |
| Inflation Targeting | -0.033** | | | | -0.032** | -0.040* | | | | -0.029 |
| | 0.010 | | | | 0.010 | 0.017 | | | | 0.015 |
| (Ec.) Transparency | | -0.009** | -0.013** | | -0.003 | | -0.012* | -0.037* | | -0.026 |
| | | 0.004 | 0.005 | | 0.003 | | 0.005 | 0.019 | | 0.016 |
| Communication | | | | -0.010** | 0.000 | | | | -0.028** | -0.015 |
| | | | | 0.004 | 0.005 | | | | 0.011 | 0.008 |
| Own Lag | 0.763*** | 0.775*** | 0.779*** | 0.781*** | 0.763*** | 0.650*** | 0.658*** | 0.652*** | 0.661*** | 0.644*** |
| | 0.098 | 0.096 | 0.099 | 0.099 | 0.098 | 0.029 | 0.032 | 0.039 | 0.034 | 0.034 |
| Cond. volatility | 0.356** | 0.371** | 0.378** | 0.361** | 0.352** | 0.856** | 0.865*** | 0.870*** | 0.799** | 0.806** |
| | 0.119 | 0.131 | 0.135 | 0.126 | 0.118 | 0.246 | 0.229 | 0.211 | 0.262 | 0.226 |
| Oil Prices | -0.016 | -0.024 | -0.025 | -0.025 | -0.016 | 0.114 | 0.105 | 0.106 | 0.104 | 0.116 |
| | 0.015 | 0.016 | 0.016 | 0.017 | 0.015 | 0.082 | 0.076 | 0.075 | 0.076 | 0.079 |
| Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 1582 | 1582 | 1582 | 1582 | 1582 | 1582 | 1582 | 1582 | 1582 | 1582 |
| R2 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.53 | 0.53 | 0.53 | 0.53 | 0.54 |

| IQR | (1) | (2) | (3) | (4) | (5) | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Short-term interest rates - in 3 months | | | | | Short-term interest rates - in 12 months | | | | |
| Inflation Targeting | -0.048** | | | | -0.039* | -0.065** | | | | -0.053** |
| | 0.020 | | | | 0.019 | 0.022 | | | | 0.020 |
| (Ec.) Transparency | | -0.008 | -0.038*** | | -0.031*** | | -0.013** | -0.058*** | | -0.049*** |
| | | 0.005 | 0.010 | | 0.008 | | 0.005 | 0.017 | | 0.015 |
| Communication | | | | -0.026** | -0.016* | | | | -0.034** | -0.019 |
| | | | | 0.010 | 0.008 | | | | 0.014 | 0.012 |
| Own Lag | 0.460*** | 0.476*** | 0.464*** | 0.478*** | 0.443*** | 0.584*** | 0.598*** | 0.585*** | 0.603*** | 0.567*** |
| | 0.044 | 0.036 | 0.032 | 0.032 | 0.044 | 0.043 | 0.043 | 0.039 | 0.043 | 0.041 |
| Cond. volatility | 0.074*** | 0.080*** | 0.082*** | 0.081*** | 0.075*** | 0.059*** | 0.067*** | 0.070*** | 0.070*** | 0.059*** |
| | 0.014 | 0.014 | 0.014 | 0.014 | 0.013 | 0.011 | 0.011 | 0.010 | 0.011 | 0.010 |
| Oil Prices | 0.132** | 0.121** | 0.125** | 0.129** | 0.135** | -0.028 | -0.042 | -0.037 | -0.031 | -0.027 |
| | 0.044 | 0.046 | 0.049 | 0.046 | 0.047 | 0.054 | 0.063 | 0.064 | 0.061 | 0.056 |
| Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 |
| R2 | 0.41 | 0.40 | 0.41 | 0.40 | 0.41 | 0.55 | 0.54 | 0.55 | 0.54 | 0.55 |
| | Long-term interest rates - in 3 months | | | | | Long-term interest rates - in 12 months | | | | |
| Inflation Targeting | -0.032** | | | | -0.021* | -0.032* | | | | -0.022 |
| | 0.011 | | | | 0.011 | 0.017 | | | | 0.015 |
| (Ec.) Transparency | | -0.014*** | -0.057*** | | -0.052*** | | -0.018*** | -0.055*** | | -0.051*** |
| | | 0.003 | 0.010 | | 0.008 | | 0.005 | 0.013 | | 0.012 |
| Communication | | | | -0.018** | -0.009 | | | | -0.017 | -0.007 |
| | | | | 0.008 | 0.007 | | | | 0.010 | 0.008 |
| Own Lag | 0.316*** | 0.306*** | 0.286*** | 0.321*** | 0.279*** | 0.540*** | 0.528*** | 0.523*** | 0.544*** | 0.519*** |
| | 0.046 | 0.042 | 0.039 | 0.044 | 0.041 | 0.038 | 0.036 | 0.031 | 0.036 | 0.034 |
| Cond. volatility | 0.056* | 0.057** | 0.058** | 0.070** | 0.046* | 0.103** | 0.101*** | 0.107*** | 0.118*** | 0.095** |
| | 0.030 | 0.024 | 0.020 | 0.029 | 0.022 | 0.040 | 0.032 | 0.029 | 0.037 | 0.032 |
| Oil Prices | 0.090* | 0.080** | 0.087** | 0.089** | 0.091** | -0.056 | -0.068* | -0.062 | -0.057 | -0.058 |
| | 0.041 | 0.035 | 0.033 | 0.036 | 0.037 | 0.033 | 0.033 | 0.036 | 0.033 | 0.035 |
| Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 |
| R2 | 0.21 | 0.22 | 0.23 | 0.21 | 0.23 | 0.41 | 0.42 | 0.42 | 0.41 | 0.42 |

Notes: The table shows results of the benchmark model $\Omega_{i,c,t} = \alpha_c + \alpha_m + \beta\, \chi_{c,t} + \gamma_1\, \Omega_{i,c,t-1} + \gamma_2 \sum_{i,c,t} + \gamma_3 \left| \Delta oil_{t-1} \right| + \varepsilon$, where $\Omega_{i,c,t}$ denotes the inter-quartile range. Numbers in italics denote standard errors, which allow for clustering by countries. Column (2) contains results with the overall transparency index, columns (3) and (5) with the sub-index for economic transparency. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

All models contain the various control variables discussed in the preceding section. To save space, the regression coefficients for the month and country fixed effects are not provided. It is important to note, however, that especially the former are extremely relevant for the year-end forecasts. Not only are they highly statistically significant at the 1% level and large in magnitude (the inter-quartile range in December is up to 80% lower than in January for the current-year forecasts, and up to 20% for the next-year forecasts), but their importance also increases monotonically over the course of the year. Country effects are at times significant, but not as consistently so as the month effects.

The results for the other control variables show that disagreement is indeed persistent. The own lag has statistically significant and sizable

coefficients. As these are significantly smaller than one, disagreement is, however, not described by a unit root process. Also the conditional volatility of a variable is apparently an important determinant of disagreement, with large and (for all forecasts) statistically significant effects. Oil prices, in contrast, seem to affect only a number of forecasts, such as interest rate forecasts at the 3-month horizon and inflation forecasts for the subsequent year. In these cases, larger oil price changes do, as to be expected, increase disagreement.

Turning to our variables of interest, the central bank transparency and communication measures, it is apparent that there is a large majority of cases where more transparency reduces disagreement.[11] In many cases the effect is statistically significant, and the coefficients are furthermore always negative. The largest effects are exerted by the introduction of inflation targeting and by increasing the level of economic transparency: with a quantified target, the inter-quartile range of forecast dispersion is reduced by 7 to 19% (depending on the variable we look at), and an improvement in the economic transparency index by one lowers the inter-quartile range by 6 to 20%. This compares to a reduction of up to 5% if the overall transparency index increases by one, and of up to 10% in the central bank communication months.

In addition, these effects are partially additive, especially when it comes to the interest rate forecasts. The models in column (5) show that in many cases, there are joint effects of inflation targets, economic transparency and/or communication, which add to larger reductions than estimated in the separate models. Another important result is that the dispersion-reducing effect, which is apparent for the overall transparency index is nearly entirely generated by the contribution of economic transparency. Constructing an overall transparency index excluding economic transparency, and re-estimating the econometric models shows that the other dimensions of transparency manage to reduce dispersion only in the case of long-term interest rate forecasts.

[11] It might be surprising to find that the disagreement in CPI forecasts is not affected by all central bank transparency measures. At the same time, however, it is important to note that monetary policy affects inflation only with rather long lags, which are often estimated in the range of 1.5 to 2 years. The forecast horizons in this dataset might therefore be too short to reflect possible effects of enhanced central bank transparency.

These results are robust to a number of model variations, such as using the standard deviation instead of the inter-quartile range, or allowing for correlated errors within the non-euro area countries and within the euro area (i.e. dropping the assumption of uncorrelated errors across the euro area countries). Similarly, a reclassification of the Deutsche Bundesbank (prior to 1999) as an inflation targeter, given that it had released the so-called "inflation norm", does not affect results. What is important, though, is the treatment of the ECB. Excluding the ECB staff projections from the communication variable, or dropping the inflation targeting status for the ECB (given that its quantitative definition of price stability is not a formal inflation target) implies much reduced effects for the communication variable and the inflation target on dispersion, respectively. Against the background that 5 of our 12 countries in the sample are members of the euro area, this change in results is not all too surprising, and suggests the following. First, the ECB staff projections, although for the euro area, are useful information in predicting the main macroeconomic variables in the euro area national economies. Second, for the purpose of aligning agents' expectations of these variables, the ECB's price stability definition performs similarly to an inflation target. For brevity, these robustness tests are not reported in the paper.

Another robustness test is contained in Table 5. As mentioned above, we have expanded the sample for the transparency indices beyond those originally available, by extrapolating using the first observation forward, i.e. for the years prior to 1998, and the last observation backward, for 2007 and 2008. Using only the original data covering the years 1998 to 2006 reduces sample size by around half. Accordingly, there are fewer statistically significant effects. However, for a number of forecasts, statistical significance remains, and with only one exception, these cases point to a reduction in forecaster disagreement when transparency is enhanced. This is particularly the case for the interest rate forecasts.

*Table 5 Central bank transparency and forecaster dispersion, 1998-2006*

| IQR | (2) | (3) | (2) | (3) |
|---|---|---|---|---|
| **CPI** | **Current year** | | **Next year** | |
| (Ec.) Transparency | 0.007** | 0.000 | 0.005 | -0.020 |
| | 0.003 | 0.013 | 0.005 | 0.017 |
| Own Lag | 0.339*** | 0.345*** | 0.494*** | 0.492*** |
| | 0.043 | 0.043 | 0.040 | 0.044 |
| Cond. volatility | 0.145*** | 0.159*** | 0.007 | 0.013 |
| | 0.027 | 0.026 | 0.034 | 0.033 |
| Oil Prices | -0.020 | -0.031 | 0.006 | -0.013 |
| | 0.039 | 0.041 | 0.039 | 0.038 |
| Fixed effects | Yes | Yes | Yes | Yes |
| Observations | 1284 | 1284 | 1284 | 1284 |
| R2 | 0.55 | 0.54 | 0.38 | 0.38 |
| **GDP** | **Current year** | | **Next year** | |
| (Ec.) Transparency | 0.002 | -0.023 | -0.007 | -0.052* |
| | 0.004 | 0.017 | 0.009 | 0.024 |
| Own Lag | 0.418*** | 0.412*** | 0.501*** | 0.484*** |
| | 0.026 | 0.024 | 0.019 | 0.023 |
| Cond. volatility | -0.014 | -0.023 | -0.008 | -0.018 |
| | 0.014 | 0.014 | 0.017 | 0.016 |
| Oil Prices | -0.017 | -0.031 | -0.024 | -0.035 |
| | 0.072 | 0.071 | 0.066 | 0.065 |
| Fixed effects | Yes | Yes | Yes | Yes |
| Observations | 1284 | 1284 | 1284 | 1284 |
| R2 | 0.59 | 0.59 | 0.55 | 0.55 |
| **Unemployment** | **Current year** | | **Next year** | |
| (Ec.) Transparency | -0.003 | -0.014* | -0.006 | -0.050*** |
| | 0.005 | 0.007 | 0.006 | 0.012 |
| Own Lag | 0.462*** | 0.457*** | 0.556*** | 0.532*** |
| | 0.042 | 0.044 | 0.025 | 0.021 |
| Cond. volatility | 1.712** | 1.743** | 1.074 | 1.235 |
| | 0.472 | 0.474 | 1.299 | 1.142 |
| Oil Prices | 0.005 | 0.002 | 0.031 | 0.022 |
| | 0.042 | 0.044 | 0.048 | 0.046 |
| Fixed effects | Yes | Yes | Yes | Yes |
| Observations | 756 | 756 | 756 | 756 |
| R2 | 0.57 | 0.57 | 0.43 | 0.44 |

| IQR | (2) | (3) | (2) | (3) |
|---|---|---|---|---|
| **Short-term rates** | **In 3 months** | | **In 12 months** | |
| (Ec.) Transparency | -0.012*** | -0.035** | 0.006 | 0.002 |
| | 0.004 | 0.013 | 0.004 | 0.007 |
| Own Lag | 0.380*** | 0.375*** | 0.485*** | 0.488*** |
| | 0.040 | 0.039 | 0.046 | 0.046 |
| Cond. volatility | 0.187*** | 0.206*** | 0.094** | 0.082** |
| | 0.047 | 0.055 | 0.042 | 0.037 |
| Oil Prices | -0.049 | -0.044 | -0.006 | -0.017 |
| | 0.050 | 0.050 | 0.078 | 0.076 |
| Fixed effects | Yes | Yes | Yes | Yes |
| Observations | 1284 | 1284 | 1284 | 1284 |
| R2 | 0.35 | 0.35 | 0.46 | 0.46 |
| **Long-term rates** | **In 3 months** | | **In 12 months** | |
| (Ec.) Transparency | -0.010** | -0.039** | 0.004 | 0.001 |
| | 0.005 | 0.017 | 0.006 | 0.015 |
| Own Lag | 0.256*** | 0.247*** | 0.443*** | 0.444*** |
| | 0.030 | 0.031 | 0.041 | 0.043 |
| Cond. volatility | 0.272* | 0.231* | 0.310 | 0.265 |
| | 0.130 | 0.111 | 0.214 | 0.181 |
| Oil Prices | 0.065* | 0.068* | 0.079 | 0.072 |
| | 0.034 | 0.037 | 0.060 | 0.056 |
| Fixed effects | Yes | Yes | Yes | Yes |
| Observations | 1284 | 1284 | 1284 | 1284 |
| R2 | 0.16 | 0.17 | 0.28 | 0.28 |

Notes: The table shows results of the benchmark model $\Omega_{i,c,t} = \alpha_c + \alpha_m + \beta\, \chi_{c,t} + \gamma_1\, \Omega_{i,c,t-1} + \gamma_2 \sum_{i,c,t} + \gamma_3 \left| \Delta oil_{t-1} \right| + \varepsilon$, where $\Omega_{i,c,t}$ denotes the inter-quartile range. Numbers in italics denote standard errors, which allow for clustering by countries. Column (2) contains results with the overall transparency index, column (3) with the sub-index for economic transparency. All models are estimated for the years 1998-2006. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

*Table 6 Central bank transparency and forecast accuracy, benchmark model*

| Mean abs. error | (1) | (2) | (3) | (4) | (5) | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|---|---|---|---|---|
| | **CPI - current year** | | | | | **CPI - next year** | | | | |
| Inflation Targeting | -0.021** | | | | -0.020** | -0.011 | | | | -0.005 |
| | 0.008 | | | | 0.008 | 0.009 | | | | 0.009 |
| (Ec.) Transparency | | -0.008*** | -0.021* | | -0.019* | | 0.000 | -0.013 | | -0.009 |
| | | 0.002 | 0.010 | | 0.011 | | 0.002 | 0.008 | | 0.008 |
| Communication | | | | 0.004 | 0.010 | | | | -0.021*** | 0.019*** |
| | | | | 0.006 | 0.007 | | | | 0.006 | 0.006 |
| Own Lag | 0.835*** | 0.833*** | 0.834*** | 0.839*** | 0.831*** | 0.914*** | 0.915*** | 0.913*** | 0.915*** | 0.913*** |
| | 0.019 | 0.021 | 0.021 | 0.020 | 0.020 | 0.009 | 0.010 | 0.010 | 0.009 | 0.010 |
| Cond. volatility | -0.032 | -0.020 | -0.039 | -0.028 | -0.038 | -0.016 | -0.014 | -0.021 | -0.020 | -0.025 |
| | 0.042 | 0.039 | 0.036 | 0.031 | 0.043 | 0.051 | 0.054 | 0.055 | 0.053 | 0.053 |
| Oil Prices | -0.156** | -0.162*** | -0.160** | -0.161** | -0.158** | -0.122 | -0.124 | -0.125 | -0.121 | -0.122 |
| | 0.053 | 0.052 | 0.052 | 0.053 | 0.053 | 0.087 | 0.087 | 0.087 | 0.087 | 0.088 |
| Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 2330 | 2330 | 2330 | 2330 | 2330 | 2198 | 2198 | 2198 | 2198 | 2198 |
| R2 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| | **GDP - current year** | | | | | **GDP - next year** | | | | |
| Inflation Targeting | -0.016 | | | | -0.017 | -0.003 | | | | -0.001 |
| | 0.012 | | | | 0.015 | 0.017 | | | | 0.016 |
| (Ec.) Transparency | | -0.003 | -0.004 | | -0.002 | | 0.003 | -0.016 | | -0.016 |
| | | 0.006 | 0.009 | | 0.008 | | 0.007 | 0.016 | | 0.017 |
| Communication | | | | 0.003 | 0.006 | | | | -0.003 | -0.002 |
| | | | | 0.017 | 0.018 | | | | 0.016 | 0.016 |
| Own Lag | 0.877*** | 0.878*** | 0.878*** | 0.878*** | 0.877*** | 0.926*** | 0.926*** | 0.925*** | 0.926*** | 0.925*** |
| | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.006 | 0.007 | 0.007 | 0.007 | 0.006 |
| Cond. volatility | 0.004 | 0.007 | 0.008 | 0.010 | 0.003 | -0.004 | 0.000 | -0.008 | -0.003 | -0.008 |
| | 0.029 | 0.030 | 0.031 | 0.030 | 0.030 | 0.021 | 0.017 | 0.017 | 0.019 | 0.021 |
| Oil Prices | 0.171 | 0.166 | 0.167 | 0.166 | 0.170 | -0.228 | -0.227 | -0.228 | -0.228 | -0.228 |
| | 0.117 | 0.117 | 0.117 | 0.117 | 0.117 | 0.218 | 0.218 | 0.217 | 0.218 | 0.217 |
| Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 2330 | 2330 | 2330 | 2330 | 2330 | 2198 | 2198 | 2198 | 2198 | 2198 |
| R2 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 |
| | **Unemployment - current year** | | | | | **Unemployment - next year** | | | | |
| Inflation Targeting | -0.002 | | | | -0.007 | 0.006 | | | | -0.001 |
| | 0.015 | | | | 0.011 | 0.018 | | | | 0.011 |
| (Ec.) Transparency | | 0.001 | 0.012 | | 0.015 | | 0.005 | 0.026 | | 0.026 |
| | | 0.006 | 0.013 | | 0.011 | | 0.011 | 0.027 | | 0.025 |
| Communication | | | | 0.000 | -0.001 | | | | 0.002 | -0.003 |
| | | | | 0.007 | 0.003 | | | | 0.025 | 0.023 |
| Own Lag | 0.964*** | 0.965*** | 0.964*** | 0.965*** | 0.962*** | 0.942*** | 0.942*** | 0.939*** | 0.942*** | 0.939*** |
| | 0.014 | 0.012 | 0.009 | 0.012 | 0.011 | 0.018 | 0.017 | 0.015 | 0.017 | 0.016 |
| Cond. volatility | -0.325*** | 0.316*** | 0.300*** | 0.321*** | 0.312*** | -0.482* | -0.474* | -0.452 | -0.487* | -0.461 |
| | 0.069 | 0.069 | 0.080 | 0.065 | 0.076 | 0.227 | 0.226 | 0.262 | 0.250 | 0.272 |
| Oil Prices | 0.033 | 0.031 | 0.032 | 0.032 | 0.034 | 0.120 | 0.121 | 0.124 | 0.122 | 0.124 |
| | 0.074 | 0.072 | 0.072 | 0.072 | 0.074 | 0.108 | 0.106 | 0.105 | 0.106 | 0.106 |
| Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 1582 | 1582 | 1582 | 1582 | 1582 | 1505 | 1505 | 1505 | 1505 | 1505 |
| R2 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |

| Mean abs. error | (1) | (2) | (3) | (4) | (5) | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Short-term interest rates - in 3 months** | | | | | **Short-term interest rates - in 12 months** | | | | |
| Inflation Targeting | -0.021 | | | | -0.019 | 0.003 | | | | -0.001 |
| | 0.021 | | | | 0.021 | 0.022 | | | | 0.021 |
| (Ec.) Transparency | | 0.006 | -0.012 | | -0.009 | | 0.008 | 0.006 | | 0.005 |
| | | 0.005 | 0.015 | | 0.015 | | 0.005 | 0.012 | | 0.012 |
| Communication | | | | -0.004 | 0.000 | | | | 0.015 | 0.015 |
| | | | | 0.011 | 0.011 | | | | 0.012 | 0.009 |
| Own Lag | 0.749*** | 0.752*** | 0.750*** | 0.751*** | 0.749*** | 0.923*** | 0.924*** | 0.923*** | 0.923*** | 0.924*** |
| | 0.033 | 0.031 | 0.032 | 0.031 | 0.033 | 0.014 | 0.015 | 0.015 | 0.014 | 0.015 |
| Cond. volatility | 0.050 | 0.057 | 0.053 | 0.054 | 0.049 | 0.035*** | 0.038*** | 0.034*** | 0.035*** | 0.035*** |
| | 0.041 | 0.039 | 0.041 | 0.041 | 0.041 | 0.010 | 0.009 | 0.010 | 0.010 | 0.010 |
| Oil Prices | -0.105 | -0.104 | -0.108 | -0.107 | -0.106 | 0.129 | 0.141 | 0.131 | 0.128 | 0.129 |
| | 0.073 | 0.073 | 0.073 | 0.072 | 0.073 | 0.168 | 0.167 | 0.167 | 0.168 | 0.168 |
| Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 2328 | 2328 | 2328 | 2328 | 2328 | 2255 | 2255 | 2255 | 2255 | 2255 |
| R2 | 0.61 | 0.61 | 0.61 | 0.61 | 0.61 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 |
| | **Long-term interest rates - in 3 months** | | | | | **Long-term interest rates - in 12 months** | | | | |
| Inflation Targeting | 0.000 | | | | 0.016 | -0.028** | | | | -0.019** |
| | 0.010 | | | | 0.013 | 0.010 | | | | 0.008 |
| (Ec.) Transparency | | -0.010** | -0.045*** | | -0.044*** | | -0.010** | -0.050*** | | -0.046*** |
| | | 0.004 | 0.008 | | 0.007 | | 0.004 | 0.012 | | 0.011 |
| Communication | | | | -0.028** | -0.025* | | | | -0.017 | -0.009 |
| | | | | 0.010 | 0.012 | | | | 0.010 | 0.010 |
| Own Lag | 0.749*** | 0.747*** | 0.743*** | 0.748*** | 0.743*** | 0.900*** | 0.898*** | 0.894*** | 0.901*** | 0.893*** |
| | 0.056 | 0.058 | 0.059 | 0.056 | 0.058 | 0.010 | 0.009 | 0.010 | 0.009 | 0.010 |
| Cond. volatility | -0.116*** | 0.130*** | 0.133*** | 0.122*** | 0.128*** | 0.077** | 0.082** | 0.082*** | 0.089*** | 0.071*** |
| | 0.012 | 0.007 | 0.009 | 0.013 | 0.010 | 0.029 | 0.027 | 0.023 | 0.029 | 0.023 |
| Oil Prices | 0.060 | 0.055 | 0.058 | 0.064 | 0.060 | -0.084 | -0.099 | -0.101 | -0.082 | -0.100 |
| | 0.098 | 0.098 | 0.101 | 0.097 | 0.102 | 0.199 | 0.201 | 0.201 | 0.200 | 0.201 |
| Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 2330 | 2330 | 2330 | 2330 | 2330 | 2254 | 2254 | 2254 | 2254 | 2254 |
| R2 | 0.68 | 0.68 | 0.68 | 0.68 | 0.68 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 |

Notes: The table shows results of the benchmark model $\Omega_{i,c,t} = \alpha_c + \alpha_m + \beta\, \chi_{c,t} + \gamma_1\, \Omega_{i,c,t-1} + \gamma_2 \sum_{i,c,t} + \gamma_3 \left| \Delta oil_{t-1} \right| + \varepsilon$, where $\Omega_{i,c,t}$ denotes the inter-quartile range. Numbers in italics denote standard errors, which allow for clustering by countries. Column (2) contains results with the overall transparency index, columns (3) and (5) with the sub-index for economic transparency. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

The final robustness test is provided in Table 6. Here, we attempt to explain the mean absolute error, i.e. a measure of forecast accuracy, rather than the inter-quartile range, our measure of dispersion, in otherwise identical models. As we had conjectured in the preceding section, there is some, but weaker evidence that central bank transparency and communication improves (ex post) forecast accuracy.

Taken together, these results suggest that there are various ways through which central banks can reduce forecast dispersion, with the announcement of an inflation target and enhanced economic

transparency being the most potent channels. Additional effects can be achieved in the months when central banks communicate their inflation and output forecasts.

### 3.2 THE RESPONSE TO SHOCKS

What are the underlying mechanisms by which enhanced central bank transparency and communication leads to a convergence in the views of the private sector? We try to shed light on this question by studying the responsiveness of forecasters' views to shocks, i.e. macroeconomic announcements as outlined in section 2. In the light of a changed information set, agents need to reassess their earlier forecasts, and possibly revise them. This in itself is likely to generate disagreement among forecasters outside a rational expectations world. In the presence of a more transparent central bank, agents might be in a better position to infer on the likely response of the central bank, and/or might possess better information on the shock absorption processes in the economy. Accordingly, the disagreement might be less pronounced with more transparent central banks.

*Table 7 Central bank transparency and forecaster dispersion, response to CPI surprises*

| IQR | (1) | (2) | (3) | (4) | (1) | (2) | (3) | (4) |
|---|---|---|---|---|---|---|---|---|
| | **CPI - current year** | | | | **CPI - next year** | | | |
| Inflation Targeting | 0.028 | | | | -0.010 | | | |
| | 0.026 | | | | 0.028 | | | |
| (Ec.) Transparency | | 0.005 | 0.001 | | | 0.003 | -0.004 | |
| | | 0.003 | 0.008 | | | 0.004 | 0.014 | |
| Communication | | | | 0.010 | | | | -0.029 |
| | | | | 0.007 | | | | 0.024 |
| Shock | -0.027 | 0.185*** | 0.190** | 0.047 | -0.008 | 0.184 | 0.245*** | 0.034 |
| | 0.057 | 0.055 | 0.065 | 0.030 | 0.038 | 0.150 | 0.050 | 0.023 |
| Shock*CB measure | 0.070 | -0.016*** | -0.071** | -0.086** | 0.078 | -0.013 | -0.084*** | 0.120 |
| | 0.082 | 0.005 | 0.026 | 0.037 | 0.058 | 0.016 | 0.026 | 0.119 |
| Own Lag | 0.323*** | 0.334*** | 0.331*** | 0.335*** | 0.474*** | 0.473*** | 0.466*** | 0.476*** |
| | 0.030 | 0.027 | 0.027 | 0.027 | 0.059 | 0.057 | 0.060 | 0.056 |
| Cond. volatility | 0.130*** | 0.154*** | 0.157*** | 0.158*** | 0.117* | 0.126** | 0.123** | 0.123** |
| | 0.037 | 0.034 | 0.037 | 0.040 | 0.059 | 0.049 | 0.048 | 0.049 |
| Oil Prices | -0.013 | -0.009 | -0.015 | -0.006 | 0.158* | 0.155* | 0.148* | 0.156* |
| | 0.070 | 0.071 | 0.073 | 0.073 | 0.079 | 0.079 | 0.080 | 0.077 |
| Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 1444 | 1444 | 1444 | 1444 | 1444 | 1444 | 1444 | 1444 |
| R2 | 0.55 | 0.55 | 0.55 | 0.55 | 0.42 | 0.42 | 0.42 | 0.42 |
| | **GDP - current year** | | | | **GDP - next year** | | | |
| Inflation Targeting | 0.029** | | | | 0.000 | | | |
| | 0.012 | | | | 0.019 | | | |
| (Ec.) Transparency | | -0.010*** | -0.048*** | | | 0.002 | -0.027* | |
| | | 0.002 | 0.012 | | | 0.005 | 0.013 | |
| Communication | | | | -0.032** | | | | 0.007 |
| | | | | 0.014 | | | | 0.017 |
| Shock | 0.056 | -0.183 | -0.057 | -0.025 | 0.033 | 0.095 | 0.008 | -0.020 |
| | 0.050 | 0.115 | 0.045 | 0.026 | 0.047 | 0.128 | 0.037 | 0.030 |
| Shock*CB measure | -0.072 | 0.018 | 0.023 | 0.114 | -0.082 | -0.013 | -0.019 | -0.079 |
| | 0.050 | 0.011 | 0.021 | 0.079 | 0.046 | 0.013 | 0.020 | 0.083 |
| Own Lag | 0.492*** | 0.484*** | 0.472*** | 0.491*** | 0.596*** | 0.595*** | 0.584*** | 0.594*** |
| | 0.036 | 0.034 | 0.035 | 0.036 | 0.031 | 0.031 | 0.027 | 0.031 |
| Cond. volatility | 0.019 | 0.017 | 0.009 | 0.019 | 0.041 | 0.040 | 0.033 | 0.042 |
| | 0.022 | 0.018 | 0.018 | 0.022 | 0.040 | 0.042 | 0.036 | 0.039 |
| Oil Prices | -0.070* | -0.069* | -0.074* | -0.065* | 0.160** | 0.159** | 0.155** | 0.164** |
| | 0.033 | 0.033 | 0.034 | 0.032 | 0.064 | 0.064 | 0.064 | 0.064 |
| Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 1444 | 1444 | 1444 | 1444 | 1444 | 1444 | 1444 | 1444 |
| R2 | 0.60 | 0.61 | 0.61 | 0.61 | 0.49 | 0.49 | 0.49 | 0.49 |
| | **Unemployment - current year** | | | | **Unemployment - next year** | | | |
| Inflation Targeting | 0.011** | | | | 0.017** | | | |
| | 0.004 | | | | 0.005 | | | |
| (Ec.) Transparency | | 0.005 | 0.017 | | | 0.003 | -0.009 | |
| | | 0.007 | 0.024 | | | 0.003 | 0.027 | |
| Communication | | | | 0.007 | | | | -0.004 |
| | | | | 0.009 | | | | 0.008 |
| Shock | 0.015 | 0.130 | 0.312** | 0.002 | 0.004 | -0.040 | 0.228 | -0.053** |
| | 0.030 | 0.095 | 0.108 | 0.012 | 0.039 | 0.248 | 0.135 | 0.015 |
| Shock*CB measure | -0.022 | -0.013 | -0.121** | -0.043 | -0.071 | -0.001 | -0.108* | -0.014 |
| | 0.034 | 0.009 | 0.042 | 0.026 | 0.039 | 0.025 | 0.050 | 0.035 |
| Own Lag | 0.497*** | 0.497*** | 0.498*** | 0.498*** | 0.553*** | 0.554*** | 0.548*** | 0.554*** |
| | 0.039 | 0.035 | 0.039 | 0.039 | 0.043 | 0.044 | 0.039 | 0.042 |
| Cond. volatility | 0.690*** | 0.694*** | 0.607*** | 0.662*** | 1.100*** | 1.106*** | 0.966*** | 1.059*** |
| | 0.124 | 0.128 | 0.154 | 0.120 | 0.210 | 0.221 | 0.226 | 0.204 |
| Oil Prices | -0.039 | -0.036 | -0.037 | -0.037 | 0.039 | 0.040 | 0.034 | 0.041 |
| | 0.030 | 0.027 | 0.031 | 0.031 | 0.092 | 0.091 | 0.097 | 0.092 |
| Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 911 | 911 | 911 | 911 | 911 | 911 | 911 | 911 |
| R2 | 0.56 | 0.56 | 0.56 | 0.56 | 0.43 | 0.43 | 0.43 | 0.43 |

| IQR | (1) | (2) | (3) | (4) | (1) | (2) | (3) | (4) |
|---|---|---|---|---|---|---|---|---|
| | **Short-term interest rates - in 3 months** | | | | **Short-term interest rates - in 12 months** | | | |
| Inflation Targeting | -0.001 | | | | 0.051*** | | | |
| | 0.025 | | | | 0.016 | | | |
| (Ec.) Transparency | | 0.005 | -0.002 | | | 0.004 | -0.001 | |
| | | 0.004 | 0.011 | | | 0.005 | 0.018 | |
| Communication | | | | -0.005 | | | | -0.014 |
| | | | | 0.011 | | | | 0.018 |
| Shock | -0.063 | 0.151 | 0.119* | -0.008 | 0.077** | 0.271* | 0.155*** | -0.008 |
| | 0.054 | 0.101 | 0.059 | 0.013 | 0.030 | 0.136 | 0.041 | 0.027 |
| Shock*CB measure | 0.054 | -0.017* | -0.061** | -0.055 | -0.109*** | -0.029* | -0.075*** | -0.032 |
| | 0.058 | 0.009 | 0.022 | 0.047 | 0.021 | 0.014 | 0.017 | 0.039 |
| Own Lag | 0.501*** | 0.499*** | 0.494*** | 0.498*** | 0.553*** | 0.554*** | 0.551*** | 0.554*** |
| | 0.023 | 0.024 | 0.026 | 0.024 | 0.047 | 0.046 | 0.046 | 0.047 |
| Cond. volatility | 0.186*** | 0.184*** | 0.181*** | 0.181*** | 0.131*** | 0.110*** | 0.111*** | 0.112** |
| | 0.031 | 0.030 | 0.032 | 0.030 | 0.036 | 0.033 | 0.035 | 0.037 |
| Oil Prices | 0.098 | 0.098 | 0.093 | 0.103 | 0.074 | 0.074 | 0.072 | 0.085 |
| | 0.075 | 0.072 | 0.074 | 0.072 | 0.077 | 0.074 | 0.076 | 0.074 |
| Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 1444 | 1444 | 1444 | 1444 | 1444 | 1444 | 1444 | 1444 |
| R2 | 0.41 | 0.41 | 0.41 | 0.41 | 0.51 | 0.51 | 0.51 | 0.51 |
| | **Long-term interest rates - in 3 months** | | | | **Long-term interest rates - in 12 months** | | | |
| Inflation Targeting | -0.034*** | | | | -0.038 | | | |
| | 0.009 | | | | 0.036 | | | |
| (Ec.) Transparency | | -0.007** | -0.033** | | | -0.016*** | -0.026 | |
| | | 0.003 | 0.012 | | | 0.004 | 0.018 | |
| Communication | | | | -0.025* | | | | 0.003 |
| | | | | 0.013 | | | | 0.014 |
| Shock | -0.052 | -0.105 | -0.023 | -0.015 | -0.061 | -0.408** | -0.139* | -0.013 |
| | 0.038 | 0.086 | 0.053 | 0.023 | 0.069 | 0.167 | 0.070 | 0.034 |
| Shock*CB measure | 0.059 | 0.010 | 0.009 | 0.067* | 0.048 | 0.040** | 0.052 | -0.041 |
| | 0.034 | 0.008 | 0.018 | 0.036 | 0.062 | 0.018 | 0.037 | 0.040 |
| Own Lag | 0.299*** | 0.300*** | 0.295*** | 0.297*** | 0.546*** | 0.545*** | 0.549*** | 0.549*** |
| | 0.041 | 0.041 | 0.039 | 0.042 | 0.039 | 0.037 | 0.036 | 0.038 |
| Cond. volatility | 0.720* | 0.638* | 0.573 | 0.721* | 0.970 | 0.833 | 0.878 | 0.967 |
| | 0.351 | 0.342 | 0.330 | 0.341 | 0.637 | 0.612 | 0.646 | 0.632 |
| Oil Prices | 0.088** | 0.079** | 0.075** | 0.086** | -0.020 | -0.029 | -0.028 | -0.022 |
| | 0.038 | 0.034 | 0.034 | 0.033 | 0.044 | 0.047 | 0.045 | 0.044 |
| Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 1444 | 1444 | 1444 | 1444 | 1444 | 1444 | 1444 | 1444 |
| R2 | 0.25 | 0.25 | 0.26 | 0.26 | 0.45 | 0.46 | 0.45 | 0.45 |

Notes: The table shows results of the benchmark model $\Omega_{i,c,t} = \alpha_c + \alpha_m + \beta\, \chi_{c,t} + \gamma_1\, \Omega_{i,c,t-1} + \gamma_2 \sum_{i,c,t} + \gamma_3\, \left| \Delta oil_{t-1} \right| + \varepsilon$, where $\Omega_{i,c,t}$ denotes the inter-quartile range, and the surprise component contained in the releases of CPI inflation. Numbers in italics denote standard errors, which allow for clustering by countries. Column (2) contains results with the overall transparency index, column (3) with the sub-index for economic transparency. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

*Table 8 Central bank transparency and forecaster dispersion, response to unemployment surprises*

| IQR | (1) | (2) | (3) | (4) | (1) | (2) | (3) | (4) |
|---|---|---|---|---|---|---|---|---|
| | **CPI - current year** | | | | **CPI - next year** | | | |
| Inflation Targeting | 0.109*** | | | | 0.066** | | | |
| | 0.020 | | | | 0.026 | | | |
| (Ec.) Transparency | | 0.003 | -0.009 | | | 0.002 | -0.021 | |
| | | 0.003 | 0.011 | | | 0.004 | 0.017 | |
| Communication | | | | -0.008 | | | | -0.012 |
| | | | | 0.006 | | | | 0.011 |
| Shock | 0.117*** | 0.016*** | 0.004*** | 0.001*** | 0.072** | 0.044*** | 0.013*** | 0.003*** |
| | 0.026 | 0.003 | 0.001 | 0.000 | 0.025 | 0.011 | 0.004 | 0.001 |
| Shock*CB measure | -0.116*** | -0.001*** | -0.002*** | 0.000 | -0.069** | -0.004*** | -0.006*** | 0.000 |
| | 0.026 | 0.000 | 0.001 | 0.000 | 0.025 | 0.001 | 0.002 | 0.000 |
| Own Lag | 0.374*** | 0.386*** | 0.382*** | 0.392*** | 0.639*** | 0.614*** | 0.591*** | 0.642*** |
| | 0.051 | 0.043 | 0.041 | 0.045 | 0.098 | 0.082 | 0.074 | 0.095 |
| Cond. volatility | 0.054 | 0.106** | 0.107** | 0.109** | -0.019 | 0.031 | 0.029 | 0.017 |
| | 0.075 | 0.043 | 0.039 | 0.036 | 0.101 | 0.081 | 0.075 | 0.070 |
| Oil Prices | -0.021 | -0.020 | -0.020 | -0.023 | 0.168* | 0.172** | 0.178** | 0.169** |
| | 0.078 | 0.083 | 0.085 | 0.085 | 0.079 | 0.077 | 0.072 | 0.075 |
| Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 1211 | 1211 | 1211 | 1211 | 1211 | 1211 | 1211 | 1211 |
| R2 | 0.57 | 0.56 | 0.56 | 0.56 | 0.55 | 0.55 | 0.56 | 0.54 |
| | **GDP - current year** | | | | **GDP - next year** | | | |
| Inflation Targeting | 0.014 | | | | 0.005 | | | |
| | 0.011 | | | | 0.021 | | | |
| (Ec.) Transparency | | -0.008* | -0.049*** | | | 0.000 | -0.038 | |
| | | 0.004 | 0.015 | | | 0.006 | 0.023 | |
| Communication | | | | -0.010 | | | | -0.010 |
| | | | | 0.011 | | | | 0.010 |
| Shock | -0.007 | 0.004 | -0.002 | 0.000 | 0.057 | 0.012** | 0.002 | 0.001 |
| | 0.026 | 0.003 | 0.001 | 0.000 | 0.048 | 0.005 | 0.002 | 0.000 |
| Shock*CB measure | 0.007 | 0.000 | 0.001 | 0.000 | -0.056 | -0.001** | -0.001 | -0.001** |
| | 0.026 | 0.000 | 0.001 | 0.001 | 0.048 | 0.000 | 0.001 | 0.000 |
| Own Lag | 0.545*** | 0.541*** | 0.523*** | 0.546*** | 0.623*** | 0.622*** | 0.600*** | 0.624*** |
| | 0.050 | 0.048 | 0.051 | 0.049 | 0.026 | 0.024 | 0.018 | 0.025 |
| Cond. volatility | 0.040 | 0.035 | 0.027 | 0.040 | 0.051 | 0.052 | 0.043 | 0.051 |
| | 0.024 | 0.020 | 0.020 | 0.023 | 0.044 | 0.047 | 0.042 | 0.045 |
| Oil Prices | -0.003 | -0.009 | -0.007 | 0.000 | 0.135 | 0.138 | 0.143 | 0.139 |
| | 0.061 | 0.059 | 0.060 | 0.059 | 0.101 | 0.103 | 0.099 | 0.099 |
| Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 1211 | 1211 | 1211 | 1211 | 1211 | 1211 | 1211 | 1211 |
| R2 | 0.62 | 0.62 | 0.63 | 0.62 | 0.52 | 0.52 | 0.52 | 0.52 |
| | **Unemployment - current year** | | | | **Unemployment - next year** | | | |
| Inflation Targeting | 0.034 | | | | 0.065 | | | |
| | 0.020 | | | | 0.077 | | | |
| (Ec.) Transparency | | -0.006 | -0.016 | | | -0.003 | -0.044* | |
| | | 0.008 | 0.015 | | | 0.010 | 0.022 | |
| Communication | | | | 0.003 | | | | -0.013 |
| | | | | 0.008 | | | | 0.008 |
| Shock | 0.015 | -0.011 | -0.001 | 0.001*** | 0.052 | 0.010 | -0.001 | -0.001** |
| | 0.028 | 0.006 | 0.001 | 0.000 | 0.099 | 0.009 | 0.002 | 0.000 |
| Shock*CB measure | -0.015 | 0.001* | 0.001 | -0.001* | -0.053 | -0.001 | 0.000 | 0.000 |
| | 0.028 | 0.001 | 0.001 | 0.000 | 0.099 | 0.001 | 0.001 | 0.000 |
| Own Lag | 0.456*** | 0.450*** | 0.453*** | 0.457*** | 0.595*** | 0.589*** | 0.566*** | 0.595*** |
| | 0.030 | 0.039 | 0.036 | 0.031 | 0.044 | 0.044 | 0.044 | 0.044 |
| Cond. volatility | 1.215*** | 1.206*** | 1.183*** | 1.233*** | 1.139*** | 1.157*** | 1.122*** | 1.103*** |
| | 0.045 | 0.058 | 0.069 | 0.046 | 0.165 | 0.217 | 0.239 | 0.183 |
| Oil Prices | 0.018 | 0.017 | 0.020 | 0.020 | 0.071 | 0.082 | 0.091 | 0.080 |
| | 0.033 | 0.033 | 0.033 | 0.032 | 0.102 | 0.106 | 0.103 | 0.108 |
| Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 838 | 838 | 838 | 838 | 838 | 838 | 838 | 838 |
| R2 | 0.60 | 0.60 | 0.60 | 0.60 | 0.49 | 0.49 | 0.49 | 0.49 |

| IQR | (1) | (2) | (3) | (4) | (1) | (2) | (3) | (4) |
|---|---|---|---|---|---|---|---|---|
| | **Short-term interest rates - in 3 months** | | | | **Short-term interest rates - in 12 months** | | | |
| Inflation Targeting | -0.019 | | | | 0.024 | | | |
| | 0.018 | | | | 0.027 | | | |
| (Ec.) Transparency | | 0.000 | -0.004 | | | 0.003 | -0.007 | |
| | | 0.003 | 0.011 | | | 0.005 | 0.020 | |
| Communication | | | | -0.015 | | | | -0.013 |
| | | | | 0.010 | | | | 0.019 |
| Shock | 0.007 | 0.009*** | 0.004*** | 0.000 | 0.021 | 0.027*** | 0.007** | -0.001 |
| | 0.037 | 0.002 | 0.001 | 0.000 | 0.047 | 0.006 | 0.003 | 0.000 |
| Shock*CB measure | -0.006 | -0.001*** | -0.002** | 0.002** | -0.021 | -0.002*** | -0.004*** | 0.000 |
| | 0.037 | 0.000 | 0.001 | 0.001 | 0.047 | 0.000 | 0.001 | 0.001 |
| Own Lag | 0.467*** | 0.467*** | 0.464*** | 0.465*** | 0.589*** | 0.581*** | 0.575*** | 0.588*** |
| | 0.038 | 0.037 | 0.037 | 0.036 | 0.050 | 0.051 | 0.051 | 0.051 |
| Cond. volatility | 0.205*** | 0.209*** | 0.207*** | 0.208*** | 0.189** | 0.190** | 0.182** | 0.185** |
| | 0.043 | 0.044 | 0.043 | 0.043 | 0.067 | 0.067 | 0.062 | 0.066 |
| Oil Prices | 0.127 | 0.131 | 0.136 | 0.134 | -0.018 | -0.010 | -0.004 | -0.015 |
| | 0.090 | 0.093 | 0.095 | 0.093 | 0.108 | 0.107 | 0.105 | 0.106 |
| Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 1211 | 1211 | 1211 | 1211 | 1211 | 1211 | 1211 | 1211 |
| R2 | 0.41 | 0.41 | 0.42 | 0.42 | 0.57 | 0.57 | 0.57 | 0.57 |
| | **Long-term interest rates - in 3 months** | | | | **Long-term interest rates - in 12 months** | | | |
| Inflation Targeting | -0.012*** | | | | 0.010 | | | |
| | 0.003 | | | | 0.019 | | | |
| (Ec.) Transparency | | -0.003 | -0.016 | | | -0.001 | -0.001 | |
| | | 0.006 | 0.017 | | | 0.005 | 0.015 | |
| Communication | | | | 0.007 | | | | 0.005 |
| | | | | 0.007 | | | | 0.011 |
| Shock | -0.041*** | 0.001 | 0.001 | 0.000 | -0.088* | 0.023*** | 0.008*** | 0.002*** |
| | 0.011 | 0.003 | 0.001 | 0.000 | 0.044 | 0.003 | 0.001 | 0.000 |
| Shock*CB measure | 0.040*** | 0.000 | -0.001 | -0.001*** | 0.089* | -0.002*** | -0.004*** | -0.002*** |
| | 0.011 | 0.000 | 0.001 | 0.000 | 0.044 | 0.000 | 0.001 | 0.001 |
| Own Lag | 0.310*** | 0.308*** | 0.304*** | 0.310*** | 0.507*** | 0.504*** | 0.500*** | 0.509*** |
| | 0.020 | 0.021 | 0.023 | 0.020 | 0.041 | 0.043 | 0.044 | 0.042 |
| Cond. volatility | 1.316*** | 1.255*** | 1.138*** | 1.331*** | 1.595*** | 1.474*** | 1.441** | 1.605*** |
| | 0.174 | 0.206 | 0.224 | 0.168 | 0.389 | 0.390 | 0.484 | 0.394 |
| Oil Prices | 0.057* | 0.055* | 0.059* | 0.055 | 0.039 | 0.041 | 0.053 | 0.036 |
| | 0.030 | 0.030 | 0.029 | 0.031 | 0.075 | 0.074 | 0.069 | 0.066 |
| Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 1211 | 1211 | 1211 | 1211 | 1211 | 1211 | 1211 | 1211 |
| R2 | 0.31 | 0.31 | 0.31 | 0.31 | 0.47 | 0.47 | 0.47 | 0.47 |

Notes: The table shows results of the benchmark model $\Omega_{i,c,t} = \alpha_c + \alpha_m + \beta\, \chi_{c,t} + \gamma_1\, \Omega_{i,c,t-1} + \gamma_2 \sum_{i,c,t} + \gamma_3 \left| \Delta oil_{t-1} \right| + \varepsilon$, where $\Omega_{i,c,t}$ denotes the inter-quartile range, and $s_{c,t}$ the surprise component contained in the releases of unemployment data. Numbers in italics denote standard errors, which allow for clustering by countries. Column (2) contains results with the overall transparency index, column (3) with the sub-index for economic transparency. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Tables 7 and 8 provide a set of results for this hypothesis. The estimated models include the surprise component contained in the releases of inflation data (Table 7) and unemployment figures (Table 8), as well as the various central bank measures (as before, one at a time) along with an interaction of the two. The model is therefore estimated as

$$\Omega_{i,c,t} = \alpha_c + \alpha_m + \beta_1\, \chi_{c,t} + \beta_2\, s_{c,t} + \beta_3\, s_{c,t}\chi_{c,t} + \gamma_1\, \Omega_{i,c,t-1} + \gamma_2 \sum_{i,c,t} + \gamma_3 \left| \Delta oil_{t-1} \right| + \varepsilon \quad (4)$$

where $s_{c,t}$ denotes the surprise component contained in the macroeconomic releases. Our hypothesis is that $\beta>0$ and $\beta<0$ . The joint hypothesis is confirmed in a large number of cases, suggesting that central bank transparency can contribute to more homogeneous shock absorption of forecasters.

### 3.3 PROBING THE LIMITS

While the evidence provided so far points to a powerful role of central bank transparency and communication in affecting disagreement among forecasters, in this last subsection we turn to the question whether there are limits to this role. In the first step[12], we will ask whether economic transparency, a key driver identified in the previous analyses, carries diminishing returns, or whether the same benefits can be reaped regardless of the level of economic transparency that has already been established by a central bank. For that purpose, we will split the economic transparency index into four levels, with the thresholds roughly coinciding with the 25th, 50th and the 75th percentile of the distribution.[13] The estimated model is

$$\Omega_{i,c,t} = \alpha_c + \alpha_m + \sum_{k=1}^{3} \beta_k \; x_{k,c,t} + \gamma_1 \Omega_{i,c,t-1} + \gamma_2 \Sigma_{i,c,t} + \gamma_3 \left| \Delta oil_{t-1} \right| + \varepsilon \qquad (5)$$

where $\chi_{k,c,t}$ splits the economic transparency index into dummy variables for the observations of low transparency (index equal to 1.5 or 2), medium transparency (index equals 2.5) or high transparency (with an index of 3). The level of disagreement for these different levels is tested against those cases with very low values of economic transparency (where the index is lower than 1.5). The hypotheses are that with higher economic transparency, disagreement should decline, such that $\beta1$ to $\beta3$ should be negative. In the case of diminishing

[12] We have identified other limits, which are for brevity not reported here. For instance, central bank transparency does not seem to affect the persistence of disagreement, nor the magnitude of the effects of a variable's volatility on disagreement.

[13] An alternative might be the inclusion of a quadratic term, as suggested by Van der Cruijsen et al. (2008). This would suggest the existence of an *optimal* level of transparency, after which disagreement starts rising again. Such a squared term is indeed statistically significant in one of the models (namely for the current-year CPI forecasts).However, the resulting trade-off is such that there is only a very minor increase in disagreement for a transparency level of 3. Looking at the results in Table 9, this increase in disagreement is actually not statistically significant, such that the fit of the quadratic term must be owed primarily to the decreasing marginal returns when moving from very low to higher levels of transparency.

returns, we would see that disagreement is reduced more strongly in the lower ranges of the index, and that less additional reduction can be achieved for higher ranges. Accordingly, $\beta 2$ might not be different from $\beta 3$ any more, whereas both might be substantially smaller than $\beta 1$.

*Table 9 Economic transparency and forecaster dispersion*

| **CPI** | **current year** | | **next year** | |
|---|---|---|---|---|
| Ec. Transparency = 1.5 or 2 | -0.037* | + | -0.051* | + |
| | 0.019 | | 0.024 | |
| Ec. Transparency = 2.5 | -0.063*** | ++ | -0.110*** | |
| | 0.018 | | 0.024 | |
| Ec. Transparency = 3 | -0.054** | | -0.114*** | |
| | 0.020 | | 0.029 | |
| Fixed effects | Yes | | Yes | |
| Observations | 2330 | | 2330 | |
| R2 | 0.55 | | 0.55 | |
| **GDP** | **current year** | | **next year** | |
| Ec. Transparency = 1.5 or 2 | -0.031*** | +++ | 0.010 | |
| | 0.009 | | 0.009 | |
| Ec. Transparency = 2.5 | -0.073*** | ++ | -0.066** | +++ |
| | 0.013 | | 0.022 | |
| Ec. Transparency = 3 | -0.088*** | | -0.068** | |
| | 0.020 | | 0.024 | |
| Fixed effects | Yes | | Yes | |
| Observations | 2330 | | 2330 | |
| R2 | 0.61 | | 0.56 | |
| **Unemployment** | **current year** | | **next year** | |
| Ec. Transparency = 1.5 or 2 | 0.006 | | 0.013 | |
| | 0.004 | | 0.012 | |
| Ec. Transparency = 2.5 | -0.008** | + | -0.036** | + |
| | 0.002 | | 0.011 | |
| Ec. Transparency = 3 | -0.021** | | -0.061*** | ++ |
| | 0.007 | | 0.015 | |
| Fixed effects | Yes | | Yes | |
| Observations | 1582 | | 1582 | |
| R2 | 0.71 | | 0.53 | |
| **Short-term rates** | **in 3 months** | | **in 12 months** | |
| Ec. Transparency = 1.5 or 2 | -0.028 | | -0.039 | |
| | 0.031 | | 0.027 | |
| Ec. Transparency = 2.5 | -0.051* | | -0.098*** | |
| | 0.025 | | 0.024 | |
| Ec. Transparency = 3 | -0.075** | | -0.121*** | |
| | 0.029 | | 0.022 | |
| Fixed effects | Yes | | Yes | |
| Observations | 2330 | | 2330 | |
| R2 | 0.41 | | 0.55 | |
| **Long-term rates** | **in 3 months** | | **in 12 months** | |
| Ec. Transparency = 1.5 or 2 | -0.033 | | -0.032* | |
| | 0.026 | | 0.015 | |
| Ec. Transparency = 2.5 | -0.081*** | ++ | -0.096*** | ++ |
| | 0.022 | | 0.018 | |
| Ec. Transparency = 3 | -0.112*** | ++ | -0.113*** | |
| | 0.026 | | 0.019 | |
| Fixed effects | Yes | | Yes | |
| Observations | 2330 | | 2330 | |
| R2 | 0.23 | | 0.42 | |

Notes: The table shows estimates of $\Omega_{i,c,t} = \alpha_c + \alpha_m + \sum_{k=1}^{3} \beta_k \chi_{k,c,t} + \gamma_1 \Omega_{i,c,t-1} + \gamma_2 \sum_{i,c,t} + \gamma_3 \left| \Delta oil_{t-1} \right| + \varepsilon$, where $\Omega_{i,c,t}$ denotes the inter-quartile range, and $\chi_{k,c,t}$ splits the economic transparency index into dummy variables as described in the text. Numbers in italics denote standard errors, which allow for clustering by countries. ***, **, and * indicate statistical significance against zero at the 1%, 5%, and 10% level, respectively. +++, ++ and + denote statistical significance for the test .

The results of this test are provided in Table 9. With the exception of unemployment forecasts, where the βk seem to be monotonically increasing, there is clear evidence for diminishing returns. Typically, β2 is not statistically significantly different from β3, and there is a relatively large jump when moving from β1 to β2. This suggests that there are large benefits to be reaped when moving from very low levels of economic transparency, whereas the additional benefits for already very transparent central banks are relatively smaller.

For a final test of the limits, we are interested whether and to what extent central bank transparency and communication can also reduce heterogeneity in forecasts of the general public. As mentioned in the preceding section, we employ the inflation expectations as expressed in the European Commission's Consumer Survey for that purpose. The model that we have estimated is equal to our earlier benchmark model for the professional forecasters, with one exception. The question on inflation expectations is preceded by one on inflation perceptions ("How do you think that consumer prices have developed over the last 12 months?"), which is also answered in a qualitative fashion. As inflation perceptions might affect inflation expectations, we have included the corresponding dispersion measure when explaining disagreement in inflation expectations, and the corresponding balance statistic when regressing the balance statistic for inflation expectations. This leads to the model

$$\Omega_{exp,c,t} = \alpha_c + \alpha_m + \beta\, \chi_{c,t} + \gamma_1\, \Omega_{exp,c,t} + \gamma_2 \sum_{i,c,t} + \gamma_3 \left| \Delta oil_{t-1} \right| + \gamma_1\, \Omega_{pers,c,t} + \varepsilon \qquad (6)$$

Results are given in Table 10. The left panel reports results using Lacy's (2006) dispersion measure for ordinal variables. The control variables are clearly important (as for the case of professional forecasters), indicating that disagreement is persistent and depending on the volatility of inflation, the absolute change of oil prices and disagreement about inflation perceptions. Nevertheless, none of the central bank transparency and communication measures enters the models significantly. This might not be surprising, given that the general public clearly does not follow central bank policies as closely as professional central bank watchers and, maybe, rely relatively more on the media coverage of central bank policies. However, the complete absence of any central bank effect (e.g. also for inflation

targeting) might still come somewhat unexpected. To test whether this result is an artifact of the type of data that we use (different sample period, different country coverage, qualitative questions and, therefore, a rougher measure of disagreement), we have repeated the analysis using the balance statistics (the right panel of Table 10). Interestingly, some effects are discovered here: both the existence of a quantified inflation target as well as a high level of economic transparency lead to lower levels of inflation expectations. Central bank communication, in contrast, does not affect consumers' inflation expectations –again, probably not surprisingly, given that the release of economic forecasts by central banks is mainly targeted to the professional audience, and might not reach out to the general public.

*Table 10 Central bank transparency and household inflation expectations*

| | $D^2$ | | | | Balance statistic | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (1) | (2) | (3) | (4) |
| Inflation Targeting | 0.005 | | | | -1.020** | | | |
| | 0.003 | | | | 0.484 | | | |
| (Ec.) Transparency | | 0.001 | 0.004 | | | -0.090 | -0.528** | |
| | | 0.001 | 0.003 | | | 0.153 | 0.221 | |
| Communication | | | | 0.001 | | | | -0.431 |
| | | | | 0.002 | | | | 0.317 |
| Own Lag | 0.841*** | 0.840*** | 0.833*** | 0.843*** | 0.899*** | 0.901*** | 0.893*** | 0.900*** |
| | 0.020 | 0.019 | 0.022 | 0.019 | 0.023 | 0.021 | 0.021 | 0.022 |
| Cond. volatility | 0.000*** | 0.000*** | 0.000*** | 0.000*** | -0.000* | -0.000** | -0.000** | -0.000** |
| | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Oil Prices | 0.016* | 0.016* | 0.016* | 0.015 | 1.513 | 1.671 | 1.589 | 1.732 |
| | 0.009 | 0.009 | 0.009 | 0.009 | 1.872 | 1.826 | 1.828 | 1.849 |
| Inflation perceptions | 0.100*** | 0.104*** | 0.111*** | 0.102*** | 0.013 | 0.017* | 0.026** | 0.017 |
| | 0.016 | 0.016 | 0.020 | 0.016 | 0.009 | 0.010 | 0.011 | 0.010 |
| Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 3909 | 3909 | 3909 | 3909 | 3909 | 3909 | 3909 | 3909 |
| R2 | 0.92 | 0.92 | 0.92 | 0.92 | 0.91 | 0.91 | 0.91 | 0.91 |

Notes: The table shows results of the model $\Omega_{exp,c,t} = \alpha_c + \alpha_m + \beta\, \chi_{c,t} + \gamma_1\, \Omega_{exp,c,t} + \gamma_2 \sum_{i,c,t} + \gamma_3 \left| \Delta oil_{t-1} \right| + \gamma_1\, \Omega_{pers,c,t} + \varepsilon$, where $\Omega_{exp,c,t}$ denotes the Lacy's (2006) dispersion measure for ordinal variables, $d^2$, in the left panel, and the balance statistics in the right panel, each referring to the EC consumer survey inflation expectations. $\Omega_{pers,c,t}$ relates to the same concept for inflation perceptions. Numbers in italics denote standard errors, which allow for clustering by countries. Column (2) contains results with the overall transparency index, column (3) with the sub-index for economic transparency. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

These results point to a limited role of central bank transparency and communication in reducing disagreement regarding inflation expectations among the general public. While enhanced economic transparency and the announcement of a quantified inflation target do not go unnoticed by the general public, and even manages to lower the public's inflation expectations, the effects to do not extend to reduce their dispersion across individuals.

## 4. CONCLUSIONS

Acknowledging the existence of information processing constraints and costs has led to the emergence of economic models that allow for disagreement among economic agents. That this is a desirable feature of any economic model is clearly demonstrated by ample evidence of such disagreement, such as present in economic forecasts. In such models, there is a role for central bank transparency and communication to reduce the cost of information processing, either by increasing the precision of signals received by economic agents, or by making the information acquisition less costly. Over the last decades, central banks have undertaken great efforts in that direction, leading to major improvements in the predictability of their decisions and/or in the anchoring of inflation expectations.

This paper has studied to what extent greater central bank transparency and communication have contributed to a convergence in expectations of economic agents, by testing for their effects on the disagreement in forecasts of key macroeconomic variables. Compared to earlier contributions to this literature, our tests and proxies for central bank transparency and communication are substantially broader and more systematic. The paper finds empirical evidence that several of these measures (in particular the announcement of a quantified inflation target and enhanced transparency about economic dimensions of the conduct of monetary policy, such as the release of the central bank's internal forecasts of inflation and output) are effective in that regard, and that the effects are partially additive. The reduction in forecaster disagreement is not only statistically significant, but also economically important. The findings of the paper indicate that this reduction has been achieved

because forecasters in countries with more transparent and open central banks manage to update their forecasts in response to news in a smoother fashion, generating less disagreement.

At the same time, the findings of the paper also point at limits to the effects of central bank transparency. Increasing economic transparency is particularly powerful at low levels of transparency. Yet at higher levels, the additional effects that can be reaped by further enhancements of economic transparency are much smaller. Another important limitation regards the capabilities to reduce disagreement among the general public (rather than professional forecasters). The present paper does not detect any evidence that central bank transparency affects the dispersion in expectations among the general public. Although we stress the limitations of the data sources to measure such expectations of the general public, this finding is suggestive that there are limits in the reach of central bank transparency, and thus that monetary authorities may need to think of alternative ways to extend their reach to households and firms.

Whereas these findings speak a clear language about the appropriateness of economic models that incorporate information processing constraints, their normative implications are less straightforward. There could be the possibility that the central bank acts as a focal point for economic agents, as described for instance in the seminal work by Morris and Shin (2002). In this case, the information provided by central banks might crowd out independent information acquisition by the private sector, which carries the risk of an inefficiently low level of information acquisition. This possibility has been deemed implausible in the real world by Svensson (2006) in his comment on Morris and Shin (2002). While not strictly tested, our results also support that forecast accuracy has not really suffered from the greater transparency and communication efforts of central banks so far. We leave a more formal test of this debate on the efficiency of information acquisition by the private sector for future research.

# APPENDIX: TABLE A1: LITERATURE OVERVIEW

| Authors | Contents | Data | Main Model /Specifications* | Results |
|---|---|---|---|---|
| Fujiwara (2005) | How a central bank's economic forecasts affect forecasts by professional forecasters and vice versa | BOJF: Outlook and Risk Assessment of the Economy and Prices; PFs: obtainable from newspapers, the internet, etc. | $x_a^{PF} = \alpha + \beta x_b^{PF} + u$ (1)<br>$x_a^{PF} = \beta x_b^{PF} + \sum_{i=1}^{10} \gamma \delta_i + u$ (2)<br>$x_a^{PF}$ : a column vector collecting all the differences after the BOJF;<br>$x_b^{PF}$ : the corresponding vector for those before the BOJF;<br>$\delta_i$ : the dummy corresponds to an occasion where the influence of the BOJF is examined. | i) Central bank economic forecasts have a notable effect on professional forecasts, but not significantly influenced by professional forecasts of inflation.<br>ii) BOJF reduces professional forecasters' uncertainty about the future |
| Beechey, Johannsen and Levin (2007) | Compare the recent evolution of long-run inflation expectations in the euro area and the United States | Surveys of Professional Forecasters; Daily U.S. and euro area financial market data | $f_{n,t}-f_{n,t-1}=a_n+\beta_n X_t+\varepsilon_{n,t}$ (1)<br>$f_{n,t}-f_{n,t-1}$: the change from period t-1 to t of a one-year forward rate ending n-years ahead;<br>$X_t$: a vector of the surprise components of macroeconomic data released on day t. | i) Long-run inflation expectations are reasonably well-anchored in both economies, but also reveal substantially greater dispersion across forecasters' long-horizon projections of U.S. inflation.<br>ii) Long-run inflation expectations are more firmly anchored in the euro area than in the United States. |
| Crowe (2006) | Test whether inflation targeting (IT) enhances transparency using inflation forecast data for 11 IT adoption countries. | Consensus Forecasts dataset | $\Delta V^{ij} = b_0 + b_{0T} D_T^{ij} - V_0^{ij}(b_1 + b_{1T} D_T^{ij}) + u^{ij}$ (13)<br>i : individual forecaster;<br>j : country;<br>$V_0^{ij}$: the initial forecast error;<br>$D_T$: a dummy variable for the .treatment (IT adoption). | Convergence occurs in all countries due to mean-reversion, but that the adoption of IT leads to greater convergence, as predicted by the model, which serves as strong evidence that IT does indeed enhance transparency. |
| Crowe and Meade (2007) | Survey and quantify the trends in two major areas of central bank governance: independence (CBI) and transparency. | Cukierman et al.(1992); Authors' calculations | $\frac{\pi}{1+\pi_{it}} = \beta_0 + \beta_1 CBI_{it} + \varepsilon_{it}$ (1)<br>$\frac{\pi}{1+\pi_{it}} = \beta_0 + \beta_1 Turnover_{it} + \varepsilon_{it}$ (2)<br>$\pi$: the average annual increase in consumer prices during 2000–2004;<br>*CBI*:the authors updated measure of central bank independence for countries in their sample;<br>*Turnover*: the average annual turnover of the central bank's governor between 1995 and 2004.<br>$\pi_{it}=\beta_0+\beta_i Transparency_i+\varepsilon_{it}$ (3)<br>$\pi$: the average of 12-month changes in consumer prices from July 2003 through June 2006;<br>*Transparency*: the 2006 transparency score. | i) Although there is a significant increase in central bank independence, they do not find a dramatic effect of central bank independence on inflation.<br>ii) The most robust effect on inflation comes from the aspect of independence most closely related to transparency. |

| | | | | |
|---|---|---|---|---|
| Crowe and Meade (2008) | Presents in more detail the updated central bank independence and transparency measures outlined in Crowe and Meade (2007). | Cukierman et al.(1992); Authors' calculations | $\pi_{it}=\beta_0+\beta_1 CBI_{it}+\beta_2 Turnover_{it}+\beta_3 GDP_{it}+\beta_4 Open_{it}+\beta_5 Regime_{it}+\varepsilon_{it}$ (1)<br>$\pi$: annual average inflation; *Turnover*: central bank independence; : turnover rate of the central bank's governor. Controls include: GDP -real GDP per capita, Open- the openness measured by the sum of exports and imports divided by GDP, and Regime-the exchange rate regime.<br>$\pi^b=\beta_0+\beta_1 Transparency_{it}+\beta_2 Open_{it}+\beta_3 RQ_{it}+\varepsilon_{it}$ (2)<br>$\pi^b$: ratio of variance to mean squared error of private sector inflation forecasts; *RQ*: regulatory quality; *Transparency*: transparency score. | i) Greater CBI is associated with lower inflation.<br>ii) Enhanced transparency practices are associated with the private sector making greater use of information provided by the central bank. |
| D'Amico and Orphanides (2008) | Compare and contrast quarterly time series of alternative measures of uncertainty and disagreement regarding inflation expectations | Survey of Professional Forecasters | Using the midpoint method, the aggregate measures across all respondents for a specific quarter are:<br>(1) Mean expectation of inflation<br>$\mu_{h,t}^M=\frac{1}{N_t}\sum_{i=1}^{N_t}\mu_{i,h,t}^M$<br>(2) Uncertainty about inflation:<br>$\sigma_{h,t}^M=\frac{1}{N_t}\sum_{i=1}^{N_t}\sigma_{i,h,t}^M$<br>(3) Disagreement regarding the mean forecast:<br>$s_{h,t}^M=\sqrt{\frac{1}{N_t}\sum_{i=1}^{N_t}(\mu_{i,h,t}^M-\mu_{h,t}^M)^2}$<br>(4) Disagreement about inflation uncertainty:<br>$\phi_{h,t}^M=\sqrt{\frac{1}{N_t}\sum_{i=1}^{N_t}(\sigma_{i,h,t}^M-\sigma_{h,t}^M)^2}$ | i) Disagreement about the mean inflation outlook is not a particularly good proxy for inflation uncertainty.<br>ii) Higher average expected inflation is associated with both higher average inflation uncertainty and greater disagreement about the inflation outlook. |

| | | | | |
|---|---|---|---|---|
| Capisteran and Timmermann (2009) | Investigate how agents arrive at the beliefs reported in survey data, and offer an explanation for the source of disagreement in agents' beliefs. | Survey of Professional Forecasters | (1) GARCH (1, 1) model:<br><br>$\pi_{t+1,f}=\lambda_0+\lambda_1\pi_{t+1,f}+\lambda_2\pi_{t-3,f-4}+\varepsilon_{t+1}$<br>$\varepsilon_{t+1} \square N(0,\sigma^2_{t+1,f})$,<br>$\sigma^2_{t+1,f}=\omega+a_t\,\varepsilon_t^2+\beta_t\sigma^2_{t,f-1}$ (17)<br><br>(2) Mean forecast errors across forecasters:<br>$(\pi_{t+h}\,f_{t+h,f})\,\delta_0+\delta_1\sigma^2_{t+h,f}+\varepsilon_{t+h}=$ (18)<br><br>(3) Dispersion across forecasters:<br>$\bar{S}_{t+h,f}=\gamma_0+\gamma_1\sigma^2_{t+h,f}+\varepsilon_{t+h}$ (19)<br><br>where $\sigma^2_{t+h,f}$ is the conditional variance in inflation obtained from the GARCH(1,1) model. | Agents weight the consequences of over- and under-predictions very differently and as a result calculate their forecasts under asymmetric loss with a shape of the loss function that differs across agents. In addition, a constant bias component, which capture agents' tendency to over-predicting inflation, can help explain why a substantial portion of individual forecasters change from under-predicting inflation to over-predicting it around 1982. |
| Dovern, Fritsche and Slacalek (2009) | Investigate determinants of disagreement about six key economic indicators using individual expert forecasts from G7 countries. | Consensus Economics dataset | $disagr_t=\beta_0+\beta_1\times rec_t+\beta_2\times post\_1998_t+u_t$ (1)<br><br>where disagr is the disagreement among forecasters, rec denotes the recession dummy, and post-1998 is the dummy for the second part of the sample.<br><br>$disagr_t=\beta_0+\beta_2 x_t+\beta_3\sigma^2_{x,t}\,\beta_4 output\_gap+\beta_5\Delta policy\_rate^2_t+u_t$ (3)<br><br>where CBI is central bank independence capturing credibility of monetary policy, $x_t$ is the level of the underlying actual variables, $\sigma^2_{x,t}$ is the uncertainty about these variables proxy with the variance of permanent shocks, and $\Delta policy\_rate^2_t$ is the squared change in the policy interest rate-a proxy of the variation in monetary policy. | i) Disagreement about real variables (GDP, consumption, investment and unemployment), is more strongly affected by real factors; and disagreement about nominal variables (inflation and interest rate), reacts to the institutional setting of monetary policy (in particular central bank independence).<br>ii) Cross-sectional dispersion for both groups increases with uncertainty about the underlying indicators.<br>iii) More credible monetary policy can substantially contribute to the anchoring of expectations about nominal variables; however its effects on disagreement about real variables are moderate. |

| | | | | |
|---|---|---|---|---|
| Maag and Lamla (2009) | Investigate the effects of media coverage and macroeconomic conditions on inflation forecast disagreement of German households and professional forecasters. | Joint Harmonized EU Consumer Survey; Consensus Economics survey | $Var(\pi_{i,t})=\beta_1 Var(\pi_{i,t-1})+\beta_2\pi_{t-1}+\beta_3\pi^2_{t-1}+\ldots+\beta_p\text{-}1+\beta_p d+\varepsilon_t$ □14□<br>where $Var(\pi_{i,t})$ is inflation forecast disagreement, $Var(\pi_{i,t-1})$ is lagged dependent variable, and $d$ is a dummy controlling for the euro cash changeover which is unity from 2002 onwards. | i) Disagreement of households depends on the content of news stories (tone) but is unaffected by reporting intensity (volume) and by the heterogeneity of story content (information entropy). Disagreement of professionals does not depend on media coverage.<br>ii) Disagreement of households and professionals primarily depends on the current rate of inflation. |
| Coibion and Gorodnichenko (2009) | Use three different surveys of economic forecasts to assess both the support for and the properties of informational rigidities faced by agents. Specifically, they track the impulse responses of mean forecast errors and disagreement among agents after exogenous structural shocks. | Michigan Survey of Consumers (MSC); Survey of Professional Forecasters (SPF); Blue Chip Economic Indicators (BCEI) | $F_t\pi_{t+h}=c+\sum_{i=1}^{I}\beta_i F_{t-i}\pi_{t-i+h}+\sum_{j=0}^{J}\gamma_j\varepsilon^k_{t-j}+\nu_t$ (8)<br>$\pi_t-F_{t-h}\pi_t=c+\sum_{i=1}^{I}\beta_i(\pi_{t-i}-F_{t-i-h}\pi_{t-i})+\sum_{j=0}^{J}\gamma_j\varepsilon^k_{t-j}+\nu_t$ (9)<br>$\frac{\pi_t-F_{t-h}\pi_t}{\pi_t}=c+\sum_{i=1}^{I}\beta_i\frac{\pi_{t-i}-F_{t-i-h}\pi_{t-i}}{\pi_{t-i}}+\sum_{j=0}^{J}\gamma_j\varepsilon^k_{t-j}+\nu_t$ (10)<br>$\ln\sigma(F_t\pi_{t+h})=c+\sum_{i=1}^{I}\beta_i\ln\sigma(F_{t-i}\ \pi_{t-i+h})+\sum_{j=0}^{J}\gamma_j\lvert\varepsilon^k_{t-j}\rvert+\nu_t$ (11)<br>where is the mean forecast across agents at time t of a variable h periods ahead, k denotes each type of shock, h = 4 for quarterly data or h = 12 for monthly data, and is the dispersion measured as the logarithm of the cross-sectional standard deviation of inflation forecasts over the next year. | i) Forecasts fail to adjust one-for-one with the variable being forecasted after structural shocks.<br>ii) Conditional forecast errors converge at similar rates across different shocks.<br>iii) Conditional forecast errors converge at similar rates across agents.<br>iv) Structural shocks do not appear to lead to any discernible increase in disagreement. |

* The equation's number is the same with those in the original paper at first place.

## REFERENCES

*Andersen, T.G., Bollerslev, T., Diebold, F.X. and C. Vega (2003), Micro Effects of Macro Announcements: Real-Time Price Discovery in Foreign Exchange. American Economic Review, 93(1), 38-62.*

*Badarinza, C. and M. Buchmann (2009). Inflation Perceptions and Expectations in the euro Area: The Role of News. Forthcoming, ECB Working Paper.*

*Ball, Laurence, and Niamh Sheridan. 2005. "Does Inflation Targeting Matter?" In The Inflation-Targeting Debate, ed. Ben S. Bernanke and Michael Woodford. Chicago: University of Chicago Press, 249-76.*

*Bauer, A., Eisenbeis, R., Waggoner, D. and T. Zha (2006). Transparency, Expectations, and Forecasts. Federal Reserve Bank of Atlanta Economic Review Q1, 1-25.*

*Bernanke, Ben, Thomas Laubach, Frederic S Mishkin, and Adam S. Posen. 1999. Inflation Targeting: Lessons from the International Experience. Princeton, New Jersey: Princeton University Press.*

*Blinder, A., Ehrmann, M., Fratzscher, M., de Haan, J. and D.-J. Jansen (2008). Central Bank Communication and Monetary Policy: A Survey of Theory and Evidence. Journal of Economic Literature 46(4), 910–945.*

*Beechey, Meredith J, Benjamin K Johannsen and Andrew Levin (2007). Are Long-Run Inflation Expectations Anchored More Firmly in the euro Area than in the United States? CEPR Discussion Paper No. 6536.*

*Bryan, M.F. and G. Venkatu (2001). The Demographics of Inflation Opinion Surveys. Federal Reserve Bank of Cleveland Economic Commentary, October 2001.*

*Capistrán, Carlos and Allan Timmermann (2009). Disagreement and Biases in Inflation Expectations. Journal of Money, Credit and Banking, 41(2-3), 365-396.*

*Carroll, Christopher (2003). Macroeconomic Expectations of Households and Professional Forecasters. Quarterly Journal of Economics 118, 269-298.*

*Coibion, Olivier and Yuriy Gorodnichenko (2009). What Can Survey Forecasts Tell Us About Informational Rigidities? NBER Working Paper No. 14586.*

*Crowe, Christopher (2006). Testing the Transparency Benefits of Inflation Targeting: Evidence from Private Sector Forecasts. IMF Working Paper No. 06/289.*

*Crowe, Christopher and Ellen E. Meade (2007). The Evolution of Central Bank Governance around the World. Journal of Economic Perspectives 21(4),*

*69-90.*

*Crowe, Christopher and Ellen E. Meade (2008). Central Bank Independence and Transparency: Evolution and Effectiveness. European Journal of Political Economy 24(4), 763-777.*

*Cruijsen, Carin van der, and Sylvester Eijffinger (2007). Actual and Perceived Central Bank Transparency: The Case of the European Central Bank. CEPR Discussion Paper No. 6525.*

*Cruijsen, Carin van der, Sylvester Eijffinger and Lex Hoogduin (2008). Optimal Central Bank Transparency. CEPR Discussion Paper No. 6889.*

*D'Amico, Stefania and Athanasios Orphanides (2008). Uncertainty and Disagreement in Economic Forecasting. Board of Governors of the Federal Reserve System Finance and Economics Discussion Series No. 2008-56.*

*Dincer, N. and B. Eichengreen (2009). Central Bank Transparency: Causes, Consequences and Updates. NBER Working Paper No. 14791.*

*Dovern, Jonas, Ulrich Fritsche and Jiri Slacalek (2009). Disagreement Among Forecasters in G7 Countries. Forthcoming, ECB Working Paper.*

*Eijffinger, S. and P. Geraats (2006). How Transparent Are Central Banks? European Journal of Political Economy 22, 1-21.*

*Fujiwara, Ippei (2005). Is the Central Bank's Publication of Economic Forecasts Influential?. Economics Letters 89(3), 255-261.*

*Goldberg, Linda, and Michael Klein. 2005. Establishing Credibility: Evolving Perceptions of the European Central Bank. NBER Working Paper No. 11792.*

*Gürkaynak, Refet, Brian Sack and Eric Swanson, 2005. The Sensitivity of Long-Term Interest Rates to Economic News: Evidence and Implications for Macroeconomic Models, American Economic Review 95(1), 425-36.*

*Lacy, M. G. (2006). An Explained Variation Measure for Ordinal Response Models with Comparisons to Other Ordinal R2 Measures. Sociological Methods & Research 34, 469-520.*

*Maag, Thomas and Michael J. Lamla (2009). The Role of Media for Inflation Forecast Disagreement of Households and Professionals, KOF Swiss Economic Institute Working Paper No. 09-223.*

*Mankiw, N. Gregory and Ricardo Reis (2002). Sticky Information Versus Sticky Prices: A Proposal to Replace the New Keynesian Phillips Curve. Quarterly Journal of Economics 117(4), 1295-1328.*

*Mankiw, N. Gregory, Ricardo Reis, and Justin Wolfers (2003). Disagreement about Inflation Expectations, NBER Macroeconomics Annual 2003, Cambridge, MIT Press, 18, 209-248.*

*Morris, S. and H.S. Shin (2002). Social value of public information,*

*American Economic Review 92(5), 1521-1534.*

*Sims, Christopher A. (2003). Implications of Rational Inattention. Journal of Monetary Economics 50(3), 665-690.*

*Svensson, L. (2006). Social Value of Public Information: Morris and Shin (2002) Is Actually Pro Transparency, Not Con. American Economic Review 96(1), 448-451.*

*Woodford, Michael (2001). Imperfect Common Knowledge and the Effects of Monetary Policy. NBER Working Paper No. 8673.*

*Woodford, Michael (2005). Central Bank Communication and Policy Effectiveness. NBER Working Paper No. 11898.*

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# SESSION III

# GOVERNORS' PANEL

# SPEECH

*Ardian Fullani**

*Honourable Mr. Prime Minister,*
*Honourable Governors,*
*Distinguished guests,*

The topic chosen to be dwelt with in this conference is on the focus of institutions responsible for macroeconomic policies and financial sector surveillance at a national and international level. The panic that followed the Lehman Brothers' failure almost a year ago transformed the turmoil in the U.S. mortgage loan market into a genuine global-wide financial crisis. Financial market integration caused the crisis to spread swiftly, while the vital role of the credit system in free market economies transformed it into a global recession, hitting the East and South-East European countries as well.

The experience gained so far has allowed a better recognition of the causes of the crisis and the factors that have triggered and accelerated its spreading, as well as a reassessment of diverse supervisory and regulatory practices. I would like to focus on two directions: what we learnt and what we could not learn from the crisis. Among the numerous aspects debated at length, I would like to highlight three of them: the dichotomy between the state and the market; the degree of confidence in the forecast models; and the importance of coordinating the pre-emptive measures.

With respect to the "state vs. market" debate, I would like to reiterate my unwavering confidence in the market and our commitment as policy-makers to make it operate in line with the rules and efficiently 24/24. The past few years have attested to a rapid development of complex forecasting models and techniques. Without underestimating their high importance to the daily work of every analyst and policy-maker, we have to be aware of the restraints in these models and of the risks arising from excessive reliance on them. The high cost of coping with the consequences of the crisis makes us aware of the importance of building pre-emptive mechanisms and above all, coordinating them at a national and international level.

Today, nearly two years after the crisis onset, the global economy and financial markets are in a more optimistic situation. The economic recovery has been reflected in improved business and consumer confidence indices, mitigated deflationary pressures, normal functioning of banking and financial systems and higher economic activity growth rates in almost all production sectors. As in other countries in the region, these developments have been present in Albania as well.

The last quarters have attested to higher lending to economy, improved confidence in the banking system, relative exchange rate sustainability and anchored inflation expectations.

There is now a global consensus that the hardest part of the crisis is over. This is certainly good news, albeit insufficient. Time is ripe to consider all the options for the so-called "exit strategy". The mitigation of anti-crisis measures' side-effects calls for co-ordinated, proper and timely actions. Policy-makers need to reassess macroeconomic and financial policy objectives in the light of the most recent positive developments.

Narrowing down the geographic extension of my discussion from global to regional, I will briefly dwell on some of the above-mentioned issues.

I once told a friend of mine that small open economies, as is the case with the Balkan economies, are net importer of goods, services and crises. The crisis did not originate in the region. It was gradually transmitted as a result of the integration of the region with the global markets and economy and a consequence of the presence of large international banking groups. Our countries are all as similar as they are different. Consequently, the form, outburst and consequences of the crisis were as similar as they were different. The economic and social structure, the level of convergence and integration with the global markets, the legal and institutional norms and the nature of exchange rate regimes in particular, have established the features of the crisis for each country. The experience of the distinguished governors present in this conference will throw light on the above aspects.

As regards Albania's case, the last 12 months have been challenging for the banking industry. Despite the turbulent times, the banking system has in no case shown any signs of panic or confusion. The Bank of Albania considers that the rationale behind is the prudence shown in the recent years with respect to the banking system's financial stability.

High level of resilience and quick recovery were an outcome of a number of important decisions. By adopting the new banking Law in the Republic of Albania and a range of other monetary policy and banking supervision decisions, we have aimed to further consolidate macroeconomic balances and strengthen financial stability. The focus of the Bank of Albania's strategy has been on good governance and better risk management, enhancing bank transparency to customers and strengthening internal control. This strategy peaked with a comprehensive, exceptional and contemporary programme of open and ongoing communication with the public.

I believe that the favourable liquidity and capital conditions characterizing the Albanian banking system on the eve of the financial crisis last fall helped cope with the withdrawal of deposits during September-October 2008. However, the Bank of Albania deemed as necessary the prudent monitoring of the situation and took a number of actions, which alleviated the pressures over the

banking system substantially. These actions helped relax the liquidity condition and were in line with the ECB's operational response to the crisis.

First, an ad-hoc task force was set up. Its main responsibility was and remains the daily monitoring of each individual bank. Our direct conclusion was that the analysis should consider all micro-level aspects, each and every cell of the system and indicators.

Second, a number of facilities were adopted for the incessant supply of the system with the required liquidity. The type of auction for injecting liquidity changed to fixed-price auctions; the collateral base for repo agreements expanded; the use of the required reserve increased from 20 to 40 percent; and the spread between the Bank of Albania's key interest rate and overnight loan reduced from 175 to 75 basis points.

Third, through a special act, the Bank of Albania required higher capitalization of banking activity from the banking sector, adding to the guarantee of the banking sector's financial soundness.

Current financial system developments show that the overall situation in the banking sector has constantly improved. Deposits are back to the banking system, attesting to the improved public confidence.

Credit to economy has also shown signs of recovery. Another positive development relates to the fact that lending in the Albanian Lek has increased considerably. The European markets have been performing amid a more optimistic climate. Statistics show that the recovery from the crisis began even earlier than the most optimistic forecast.

*Distinguished guests,*

I believe the prominent panellists addressed many issues, as the central bank governors will do as well, related to the crisis and the lessons drawn from it. However, let me briefly address some issues I believe are of interest to the audience.

First, the large-scale globalization of the world economy in the past two decades could not but spread the crisis throughout the world; consequently, there was an immense need for co-ordinated protection at an international level. In the early days of the crisis, we saw biased actions which led to arbitrage of negative effects.

Globalization requires the financial infrastructure to be everywhere similar in shape, contents, and human and technological capacities. It should operate under similar standards and practices and have the proper flexibility to precede financial novelties.

Second, the last crisis calls for the pre-emptive and forerunning nature of supervision and legal regulations in general. I believe a regulatory framework is genuinely effective and successful when it intertwines both the simplicity and transparency of a rule-based approach with the flexible and forward-looking characteristics of a principle-based approach. In any case, it is necessary to make banks accountable, to convince the supervisor on the risk and return characteristics of various new on- and off-balance sheet products, before they exceed a certain threshold in size and exposure. The Bank of Albania is working for identifying the aspects that need further improvement. In this undertaking, we will take into consideration similar developments in the region and broader, to preserve market competitiveness and the convergence in supervisory practices.

Third, I believe that the crisis requires the existence of an international institution which should guide the financial stability, assess the systemic risk and determine the quantitative indicators measuring it. In this process, it is important that the regulatory norms be transparent to everyone. At the same time, it should be followed by an accelerated convergence process in the supervisory and regulatory practices according to the financial centres of influence.

Fourth, the current crisis confirmed our concern related to the exposure of the Balkan to a relatively small group of banking operators of vast regional extension. Shocks affecting parent banks would also affect one or several countries in the region. Such a risk will persist even when one of the bank branches in the region is hit by a shock. Similarly, the contagion risk is still present.

Fifth, I believe the region should carefully scrutinize the foreign-currency lending. It is essential to set a better balance between national-currency lending and foreign-currency lending.

To this end, the nature of the exchange rate regime and the impracticability of central banks in the region to act as lender of last resort should be taken into account. In this context, we should support a stronger role of the national currency in bank lending, making foreign-currency lending more costly for banks unless supported by retail foreign-currency savings. Thus, the over-reliance of banks on wholesale financial resources in foreign currency to support rapid lending should be timely addressed and managed.

Sixth, I think the current crisis will make the financial funds, which for a long time have rushed in numerous forms across all former communist countries of East Europe, scarcer. This situation may have considerable implications for the long-term economic growth rates in the countries of the region, which still need foreign financial funds to support their catching-up process. Therefore, I believe that the crisis has called for another lesson: the need to draft and implement joint regional programmes and structural reforms to absorb projects and financing lines, which will in turn expand and deepen our joint Balkan market.

It is true that after each crisis, macroeconomics as a science has made steps forward. Each crisis represents an event with specific characteristics, dissimilar or partly dissimilar from the previous crises. Each crisis brings in new information, regardless of intensity, geographic extension or duration. Each crisis fills in a piece of the hard puzzle of free-market economy functioning, helping to a better understanding of the whole.

I hope to provide a consensual conclusion if I say that we, the administrators, had the fortune to govern in times of crisis and that we have a motive to feel privileged -and why not proud- to have coped with the challenge, being witnesses and active players in that regard.

Thank you for your attention.

* Ardian Fullani, Governor of the Bank of Albania.

# SPEECH

*Radovan Jelašić**

Thank you very much for inviting me as a guest speaker to this conference. It is always a pleasure to visit Tirana.

Serbia entered the transition process relatively late and decided to build up and maintain relatively strong buffers against the potential macroeconomic risk due to the following facts:

a) a floating exchange rate regime while the economy is still highly influenced by the Euro;
b) a traditionally high level of inflation during the last four decades;
c) a low level of confidence in the banking sector due to freezing of private individuals savings and pyramid banks,
d) failure to achieve EU membership, even the candidate status;
e) need for substantial restructuring in the real sector, etc.

All of the above facts are reflected in our BB- rating (Standard & Poor) as well.

When crisis hit Serbia, we had a relatively strong cushion in order to face a worst case scenario. Capital adequacy ratio (CAR) of the banking sector was at approximately 23%, while liquid assets represented some 30% of the balance sheet of the banking sector, as

of 30 September 2008. Owing to the relatively attractive Key Policy Rate, the banking sector invested some EUR 3bn in 2-week National Bank of Serbia's repos. A stable ownership structure represented an additional buffer as 75% of the banking sector was and still is owned by strategic owners (banks) coming from the EU that were fully ready to provide all the necessary support to their subsidiaries in the form of capital and liquidity if needed. Needles to say that the central bank was heavily criticized for its restrictiveness before the crisis as high buffers implied also higher systemic costs.

Immediate effects of the financial crisis in Serbia were:

- Exchange rate depreciation of some 20% during the last quarter of 2008. As the Serbian public tends to translate "stable exchange" rate into "fixed exchange" rate, compared to the central bank that translates it into an exchange rate development without excessive daily fluctuation in any direction, for an exchange rate sensitive economy this was a real shock. Compared to the appreciation of some 12% that took place in the period of mid 2006 till September 2008, mainly due to the unprecedented capital inflow, the sharp depreciation in the last quarter of 2008 was an unpleasant surprise. Moreover, although the majority of households' loans are FX denominated, the quality of the loan portfolio did not deteriorate substantially due to limits set by the central bank on the level of loans compared to the monthly income before the crisis.
- Withdrawal of EUR 1bn by households from the banking sector during the period of mid October till end of November 2008. This liquidity crisis was to a large extent solved locally by reducing the level of repos kept by the commercial banks and by lowering the central bank's reserve requirement provisions. Meeting the public's liquidity needs was crucial from a confidence standpoint given that, instead of liquidity and solvency ratios of the central bank, the public understands only availability of cash.
- Compared to a quarterly average foreign capital inflow of almost EUR 1bn, during the last quarter of 2008, Serbia registered an outflow of some EUR 700mn. The financial crisis completely changed the flow of capital that forced Serbia to

convert the precautionary stand-by arrangement with the IMF to a disbursing one (EUR 2.9bn, 560% of the quota).

The first macroeconomic effects of the crisis were not only a substantial adjustment of the current account deficit, from -18.1% of the GDP in 2008 down to -5.7% of the GDP in 2009, but also an increase of the budget deficit from -2.5% of GDP to -4.0% of GDP in the same period. After an average GDP growth of 5.4% in the period of 2001 to 2008, the economy shrunk by -3.1% in 2009. As of today, we do see that the crisis is bottoming out, inflationary pressures are easing thanks to the restrictive fiscal policy, and the exchange rate got stabilized, although at a higher level, without major central bank interventions. The main question for the near future remains how to handle the issue through fiscal policies. Although Serbia has a low level of public debt, around 30% of its GDP, during the first year of the crisis, it increased by 6%. Needles to say that there are no plans to balance the budget in the upcoming 4-5 years implying that the public debt, though presently at very unfavourable conditions, will increase even further. Hopefully, the structural reforms that are part of the IMF programme will also ensure Serbia's fiscal sustainability in the long term.

* Radovan Jelašić, Governor of the National Bank of Serbia

# SPEECH

*Kemal Kozarić**

Thank you very much.

Dear colleagues,

First of all, I would like to express my pleasure for being with you here today and have the opportunity to share certain experience about the effects of the global economic crisis influencing on our region and especially on how it affected Bosnia and Herzegovina. Before anything else, I would like to congratulate the Bank of Albania for its excellent organization, very nice presentations and very good speakers. Especially, I would like to congratulate the Bank of Albania's staff for making a very good job and providing a very comfortable atmosphere in this room, in this hotel and elsewhere. And especially I would like to thank my colleague, Mr. Governor Ardian Fullani, who has given a significant contribution to establishing personal and professional friendship over the entire region.

After that, I want to say a few words about Bosnia and Herzegovina and the first question is: How can a small open economy cope with external shocks? As you know, the largest countries provide very large bailout to help their economy and to protect commercial banks and the financial sector but small economies, small countries don't have enough tools to fight with these external shocks. Bosnia and

Herzegovina is a small open economy. Before the financial crisis we had a crisis as well, but now we have a very difficult situation. Our Government decided to go to the IMF to sign an agreement for a new Stand-By Arrangement and we were provided new funds, new loans for approximately EUR 1.2 billion, reduced some expenditure and tried to prepare some measures to escape the budget deficit. It's a difficult task for them but I hope they will achieve that in the future.

What have we done at the central bank? As you already know, we have a special monetary policy called the currency board and we don't have lots of instruments in our hands. We decreased our required reserves and opened the capital flow for foreign investors to keep our commercial banks liquid. We achieved that and we don't have any problems about bank liquidity. But what happened after that? Commercial banks, 90 percent of which are foreign ones, changed their behaviour and prepared maybe some restructuring criteria to receive new loans. For example, our credit growth decreased 28 percent in 2008 and 4 percent in June 2009. Our GDP grew approximately 6 percent in 2008, but this year our estimation is -3 and we will be happy if it will be at this level. Our reserves are now approximately EUR 3 billion and we do not have any losses. We are very satisfied with our investment policy. It's very important for our credibility, for our citizens and for our economy as well.

Inflation is very low because our anchor currency is Euro and we have the influence of the European Union because all our trade activities are with the European Union as well.

What we achieved after the Standby Arrangement is the Vienna Initiative. We signed an agreement with the commercial banks and they were obliged to keep their capitalization level for 2008 and they promised to keep their credit at the same level. It's a good sign because I think it's a strong message for the market that the commercial banks stay at the same capacity.

What I can say in the end is that the crisis maybe prepared some new lecture for us but we saw different behaviour between the biggest and largest countries because state intervention is now

normal for this behaviour. But above all, we have all learnt about free economy, about liberal economy. They changed behaviour because the situation is different from before. Unfortunately, small countries don't have these tools and therefore, we are suffering more from the crisis.

Thank you very much!

* Kemal Kozarić, Governor, Central Bank of Bosnia & Herzegovina

# SPEECH

*Hashim Rexhepi**

Thank you very much Prof. Eijffinger for your kind introduction.

First, I would like to thank the Bank of Albania, especially Governor Fullani for organizing this Conference, which is very important, as it brings together people from the region. This is the way how we must think and how we must govern in the future, close cooperation and coordination and joint problems for the economic development of this region.

Of course, I would like to thank Governor Fullani for inviting me and the Central Bank of the Republic of Kosovo to this event.

In his presentation, Mr. Jazbec showed you the economic developments in Kosovo, especially in the financial sector. I won't elaborate on the technical details now to explain to you the economic developments in Kosovo.

But in general, Kosovo is a little different from the neighbouring countries in terms of the crisis effects. There are two reasons for that. First, in 2001 we adopted the euro as the official currency of Kosovo, which brings a lot of advantages to Kosovo. I see these advantages in price stability in Kosovo, in the confidence of the economy and the

public in this currency; there is no transaction cost in doing business and no temptation to implement a loose monetary and exchange policy. These factors, first the use of the euro, and second, taking into consideration that the banking system and the economy of Kosovo are both very young, only 10 years of development in new circumstances, provides the explanation why the financial sector of Kosovo is only slightly integrated into the global financial markets. This limits the effects of the financial crisis on the financial sector. Also, the sources of bank funding in Kosovo are mainly gathered domestically and banks are not so exposed to international financial markets, especially to toxic investments and assets.

We were quite sure at the beginning or in the middle of 2008 that the banking system will continue to maintain a stable development. We didn't expect big effects of the financial crisis on the financial sector. However, to prevent any unexpected shocks to the economy and being responsible, as central bankers, in the third quarter of 2008 we established a Crisis Committee at the central bank to analyze the crisis development in the world and the potential effects of this crisis on Kosovo's financial system and the economy.

In fact, we built three pillars of our activity for that period. The first pillar was to be more conservative in the investment policy of assets, which are managed by the central bank. As we act as the fiscal agent to the Government of the Republic of Kosovo, we manage the funds of Kosovo's consolidated budget and other public enterprises. We were very successful in doing so and we took all the necessary measures in terms of investment policy.

The second and the most important pillar of our activity was to take into consideration that we are using the euro. We are focused more on financial stability, as we do not have to run our own monetary policy. For that reason, we increased our supervisory rule to financial institutions, implementing prudential measures, and our on-site and off-site teams followed the development of the financial system on a daily basis.

Taking into consideration that foreign-owned financial institutions operating in Kosovo account for more than 80% of

the banking industry, we were focused especially on counterparty risk management and on any effects that came eventually from parent financial institutions that are in Kosovo. In that direction, we were very successful in increasing the cooperation between us and home supervisory authorities from the region. Especially, we focused on establishing a very good cooperation with the Bank of Slovenia, the Financial Supervisory Authority of Slovenia, taking into consideration that the NLB is one of the systemic banks in Kosovo, and the same in the insurance sector. We exchanged information with corresponding authorities almost on a daily basis and we set up an early warning mechanism for any impact of these groups or parent banks or financial institutions on Kosovo's financial sector and the economy as a whole. We did the same with Austria, Albania and Turkey.

Since the biggest bank in Kosovo, ProCredit Bank, is not supervised by the German Banking Supervisory Authority (BaFin), we were very successful in establishing very good relations with ProCredit Group, and we had two or three meetings with the supervisory board of the Group to be sure about the development under the Group and what risk it could bring to their bank in Kosovo. At the same time, we took measures to limit the exposure of the subsidiary to the parent banks and normally we were very cooperative with banks. We accepted their plans to be in line with our requirements, just not to create any shocks or problems in their liquidity management.

The third pillar of our activity was to build on cooperation and coordination with other institutions in Kosovo, with the Government of Kosovo, the Parliament of Kosovo, the Chamber of Commerce and with the public. Someone said that transparency and very effective relations with financial institutions are key to successful action. In that direction, we had regular meetings with all general managers of banks and insurance companies. Similarly, we built our approach, just not to create an environment that would generate contrasting financial institutions. All these measures taken by the central bank contributed to a very stable financial system and good performance of all financial institutions.

We don't have any significant withdrawal from the banks. The use

of euro, good management, risk management in commercial banks and good work with the public contributed to enhanced confidence of Kosovo citizens in the banking system. I think this was one of the keys to success in our work related to the financial crisis in Kosovo's financial system.

However, we were aware that the real sector of Kosovo would be in recession, like the rest of Europe, due to the fact that remittances, foreign investments and donations are the key driver of development in Kosovo. We have made good analyses and proper forecasting. In 2009, we expect that Kosovo's real sector might have slight problems that will be reflected in Kosovo's economy, and what we see after the first 9 months is that Kosovo's exports, which are very limited as a share of GDP are decreasing by 40 percent. This is due to the fact that general consumption in Europe has impact on exports, but also due to political reasons.

Kosovo has problems in implementing the CEFTA agreement. In Kosovo some of the key private sectors now face the problem and this resulted in export decline by 40%.

Remittances as a share of Kosovo's GDP are about 16-17%, which is a very important factor in consumption and investment in our economy. Official data show that after 9 months, remittances are decreasing by 5% or 6%, but informal channels tell us that in 2009, remittances will be equal or similar to 2008. Foreign direct investments are decreasing due to the environment, but a good sign which contributes to the economic growth is Kosovo's budget expenditure. For these reasons, we expect that the GDP of Kosovo will grow by 3.8% - 4%, which is less than in 2008 when the GDP was 5.4 percent.

Given the general environment, Kosovo's economy is in good shape, which provides optimistic forecasts for 2010 and 2011 when we expect to enter the new cycle of development, taking into consideration that the Government of Kosovo has taken very important decisions on some big investment projects in infrastructure and in the energy sector. We have taken the decision to promote some public enterprises which will bring more foreign

investments. This was the general environment, the way we dealt with the effects of the financial crisis and the role of the central bank and the Government.

Thank you very much!

* Hashim Rexhepi, Governor, Central Bank of the Republic of Kosovo

# SPEECH

*Dimitar Bogov**

First of all, let me express my appreciation for the hospitality that we received these days by Governor Fullani and the Bank of Albania staff. The questions that are in front of us are really the hottest topics these days.

First, I will say a few words about the background of the situation in my country when the crisis hit. So, last year we had a current account deficit of 14% of GDP. We had 12 years of a successful history of exchange rate peg mechanism in place and also our economy was characterized by high euroization. 55% of household loans were euro-denominated and 65% of corporate loans were euro-denominated. So, when we were hit by the crisis we had to have in mind all these factors that were at the background of our economy. First effects of the crisis were seen immediately after the Lehman Brothers collapse and when the capital inflows stopped, mainly of foreign direct investments, because our banking system was characterized by credit expansion based on domestic sources, not on foreign funding. Therefore, in the absence of these capital inflows from abroad we were faced with a situation of still strong economic growth which demanded high imports that had to be financed by foreign reserves. So, in the last quarter of 2008 we already started losing some foreign exchange reserves.

In such situation, the first impact was on the real sector because industrial production started to decline and exports also started to suffer. Our logic in that period was: ok, the decline of economic activity will have impact on imports, so our current account might improve like in the previous periods of crisis. In such situation, we were also certain that our financial sector is quite resilient due to several factors that I will not elaborate now. We saw a little weakness in the liquidity which had deteriorated. Banks did not have liquidity problems, although the liquidity ratios of the banking sector were going sharply down.

Our first measure at the end of last year was to introduce liquidity coefficients, so the banks had to adjust. We allowed a period of gradual adjustment for them. This was primarily a prudential measure but we also saw that this measure would have some impacts on the monetary stability because in order to adjust to these liquidity coefficients, they would have to cut their credit activity to some extent - because many resources were not available - so they would have to balance their liquidity positions and close maturity gaps they were being faced with. In the first quarter, actually we did not see domestic demand contraction as we expected. Private consumption and investments were very sound. Government consumption was even strengthened because of the election period in March 2009. All this contributed to further loss of reserves. Central bank was continuously intervening in the foreign exchange market. Therefore, in the beginning of April we took more measures; we increased our policy interest rate from 7 to 9%. All speculative and psychological factors had vanished. After April we already saw improvements in our current account position and in the beginning of May we already saw the first impact on imports. It means that with all these measures that we undertook the credit growth was sharply reduced. If last year we had a monthly growth of credit of 3 to 4%, in the beginning of this year it was less than 1%. Our measures caused an adjustment that we expected and wanted to achieve.

Later, in May we introduced an additional measure. We increased the reserve requirement ratio but only for foreign-denominated liabilities, which means we wanted to discriminate the foreign deposits due to the process of converting denar-deposits to euro-deposits and

increase in interest rates, which on euro-deposits reached 5 to 6% in a situation when the Libor rate on euro was going around 1%.

All these measures gave effects that we wanted to achieve because the economic activity and imports were not adjusting by themselves. With our restrictive measures we unfortunately squeezed domestic demand and finally in June we saw a stabilized foreign exchange market. Contrary to the previous 9 months of continuous interventions, we started to intervene on the other side by purchasing foreign exchange in the market. We entered a stable period, stable from the point of view that the monetary stability and macroeconomic stability were preserved. But at the same time, with our tighter monetary policy we forced the economy to contract. In such a situation, when we talk about a small economy like ours that is quite open to the world and to the external influence, actually the only solution for going out of the crisis could come from the world markets. We see such signals, improvement of the commodity prices, improvement of demand in some major economies, so our expectations are that all these will create a more favourable situation. Exports are going to start to increase, probably the capital inflows will return, creating a situation for change of the course of the monetary policy from tightening to loosening stance.

Talking about the issue of a choice between monetary stability and financial stability, again in an economy with an exchange rate peg and high euroization to some extent the choice is given. Namely, if monetary stability is deteriorated it will inevitably lead to deterioration of the banking sector and the financial sector in general. Therefore we have to have this in mind and in our decisions we have to weigh these two aspects.

I will stop here. Thank you.

* Dimitar Bogov, Vice Governor, National Bank of Republic of Macedonia

# SPEECH

*Helen Dendrinou-Louri**

Thank you Chairman.

The crisis in international banking and finance that erupted in 2007 and deteriorated markedly in the autumn of 2008 highlighted the important role that central banks have in the area of financial stability and pointed to areas where more work needs to be done.

At the macroeconomic level, research into the causes of the crisis is already promoting a healthy debate on the appropriateness and ability of central banks to prevent crises by dealing with the threats posed by asset price bubbles, while still focusing on the primary goal of price stability.

At the microeconomic level, there have been many proposals in the areas of regulation, supervision and risk management. These proposals take into account, much more than in the recent past, the need for better cross-border coordination between the authorities responsible for financial regulation and supervision in the era of globalization and large banks with widespread networks abroad.

Finally, there are also developments taking place at the level of the institutional macro-prudential framework. Following the Report of the De Larosière Group, the European Commission proposed

in May 2009 the creation of a new European Systemic Risk Board responsible for macro-prudential oversight.

In my brief remarks here today, I want to say something about the complementary nature of price stability and financial stability. I want also to stress the role that monetary and credit aggregates can play in ensuring that the euro area's monetary policy is directed at its goal of price stability whilst maintaining financial stability. I will then move on to the experience of Greece over the past year and discuss the package that was put in place to limit spillover effects from the global financial crisis. Finally, I will highlight what I believe to be the main problems facing the Greek economy today.

## PRICE STABILITY AND FINANCIAL STABILITY

By and large, there is little trade-off between the goals of price stability and financial stability. Stable prices contribute to financial stability – they prevent major redistributions of wealth between lenders and borrowers often associated with high inflation, and they help anchor inflationary expectations, both of which are important for the efficient functioning of financial markets. At the same time, financial stability increases the efficiency with which monetary policy operates.

But even in cases where a trade-off exists, Tinbergen's law would tell us that the central bank needs to have at its disposal more than one instrument – in addition to interest rate policy, liquidity management may also need to be used. Other policies, which can be enlisted to meet the financial stability objective, include both micro and macro-prudential regulations. Thus the central banks, especially those with regulatory and supervisory responsibilities, have plenty of ammunition at their disposal to help them meet both price and financial stability simultaneously.

It can also be mentioned that the two pillar approach (of economic and monetary analysis) which underlies monetary policy decision making in the ECB is well-suited to incorporating a concern for financial stability. The second pillar, which focuses on following money and credit aggregates is useful not only in the prevention of a crisis, but also in managing a crisis.

## THE GREEK RESPONSE TO THE INTERNATIONAL FINANCIAL CRISIS

The Greek government's response to the international financial crisis followed the pattern adopted by other euro area countries. Whilst Greek banks faced less pressure and were not exposed to toxic assets, it was important to maintain a level playing field for financial institutions operating in Greece. At the same time, the drying up of the interbank market and the high risk premia embodied in interest rates were likely to have implications for the supply of credit with significant negative consequences for economic growth.

In response, the Bank of Greece, as a member of the Eurosystem, provided adequate liquidity to the Greek banking system to address the distortions in the interbank money markets. In addition, a state support scheme to limit the impact of the crisis was agreed with the European Commission and is being implemented. The scheme comprises two pillars and amounts to some €28 billion. The first pillar aims at strengthening the capital base of banks; the second at restoring liquidity.

- An amount of €5 billion in the form of preferred shares was made available on a voluntary basis to strengthen the capital base of Greek banks.
- The State has issued 2, 3 and 5-year bonds up to a value of €8 billion and made them available to Greek banks for a fee and against collateral.
- Finally, loans and notes that are issued or refinanced for a maturity of up to 5 years are guaranteed by the State. Up to €15 billion is available under this measure.

In practice, banks only began to start benefiting from the scheme in mid-2009 and by September only about 50% of the total amount available had been allocated, as some of the measures were perceived by the banks to have a relatively high cost. Whilst non-performing loans in Greek banks have increased as the economy has moved into recession, Greek banks have continued to be profitable and some have been successful in tapping markets for funds or capital. In addition, stress tests carried out in the context of the IMF's annual

mission, suggest that banks have enough capital to withstand various, hypothetical serious shocks to the Greek market. It goes without saying that the stability of the Greek financial system is important not just for the Greek economy but, given Greek banks' widespread presence in the countries of South-eastern Europe, for the wider region.

## CHALLENGES FOR THE GREEK ECONOMY

Finally, let me touch upon what I consider to be the most important challenges facing the Greek economy. First and foremost is the fiscal challenge – the need to bring the deficit under control and make significant headway with reducing Greece's public debt. The second is the formulation of a sustainable growth strategy where the engine of growth is an improvement in the supply-side of the economy.

Whilst Greece's response to the international financial crisis did not include any discretionary fiscal stimulus (largely because of its already high public debt to GDP ratio), public finances have nonetheless deteriorated significantly, as the impact of the slowdown in economic activity on revenues has been severe. It is expected that the deficit could surpass 6% of GDP in 2009, while the public debt to GDP ratio is likely to well exceed the 100% mark. Fiscal consolidation is thus a major challenge. At the same time, a new growth strategy is required. Growth since entry into the euro area has been largely driven by domestic demand. The large and increasing current account deficit that accompanied this growth (almost 14% of GDP in 2008) bore testament to the lack of a supply-side response to the increased demand and, hence, to the lack of sustainability of the strategy.

A supply-side driven growth strategy requires fundamental structural change. Reforms to reduce the inflexibility of labour markets and to increase competition in product markets, reduce bureaucracy and corruption in the public sector and improve the education and health systems are all necessary, if this fundamental challenge of raising the potential growth of the Greek economy is to be met.

Thank you for your attention.

* Helen Dendrinou-Louri, Deputy Governor, Bank of Greece

# SPEECH

*Rumen Simeonov**

I would like to congratulate the Bank of Albania for the very nice organization and hospitality. I would also like to thank Governor Fullani for his active role in the region, which facilitates the communication not only among governors but also amongst staff at various levels of our banks.

First, I will describe briefly the pre-crisis situation and the way we closed year 2008. Over the past few years, Bulgaria has experienced a very comfortable situation, because of high foreign investments in the country, which facilitate the GDP growth. Hence, Bulgaria's GDP has been 6% over the past few years. The banking sector, as in many other countries in the region, is the main source of business financing and plays a primary role in the economy. Many largest banks are foreign-owned, mainly from the European Union. Their share of assets is about 85%. At the same time, the sector is very concentrated and very competitive. The top 5 banks account for more than 50% of total assets.

As other countries, we are a small economy, which mostly relies on what happens in the large European economies that are our main partners. If they are in trouble or in recession, our exports go down, GDP also goes down, and we are also in trouble. Such a thing happened at the beginning of this year. GDP has dropped

and year-end forecast is -4.5 or -5%. Exports also dropped more than 30%, obviously creating problems for the economy and the banking sector. Therefore, labour market conditions are expected to deteriorate further in the second half of the year and the beginning of the next year. Expected unemployment rate is about 8.3%. As many other speakers said, small open economies behave differently from large economies. In this respect, I would say that because of the crisis several external balances have been improved. For example, because of the decline in imports, current account deficit will continue to improve accounting for 10% of GDP. We expect that this number will be improved in the next year.

Concerning the budget, we have also experienced good years of budget surplus. Of course, the Government must cut many expenses and Government spending during this year; however, Government budget is expected to be at least balanced. As I have already stated, the banking sector is crucial for our economy, because of its role. Until now we have been comfortable with the sound indicators, because in the past few years we experienced real booms in loans averaging about 30 to 50% a year. To limit this expansion, which was driven mainly by foreign banks, because of the favourable conditions and the big profit they earn, we asked higher capital and liquidity requirements, higher provisioning for impairment losses, and accounting standards, as a tool for reducing the credit growth. All these measures taken in 2007-2008 helped create good buffers for the crisis. Of course, every buffer has a limited role and everything depends on the bank. Until now, as I said, the banking system's performance has been good. One of the disturbances worth mentioning here, which we experienced in the first quarter of 2009, is the behaviour of the largest foreign banks based on an uncoordinated policy between supervisors and government officials. Many foreign banks, which asked for the Government's support, have been furnished with a program to reduce their exposures to the region and this creates some fight on local deposits which increased the cost of funds. Fortunately, after the bilateral and international contacts between the supervisors, we finally found the right way that it is impossible to reduce exposures in times of crisis. It is not easy even to provide additional capital to the markets. That is why they have to keep better prudential policy, because as I said, the policy

of their parent banks to expand on these markets is not of our own. We have also restricted this policy, so they have to bear their own negative effects, if any.

To use these buffers, as I mentioned, now we have started to gradually reduce the requirements, in order to give more comfort to banks, because obviously their credit risk and their bad loans are the main problem of our economy and our neighbours. Fortunately, credit intermediation and penetration of financial services are not so high in our countries. Therefore, there is no direct and simple link between GDP drop and loan performance. One more thing I would like to say is that we apply the currency board regime since our national crisis of 1996-1997 and we think that the currency board has done a lot of good things in disciplining the Government and the central bank. The population has expected well this fixed exchange rate and we think that the currency board did a good job not to create panic on, let's say, deposit withdraws. As we saw in several countries, where the currency was depreciated fast, it was also accompanied with a massive withdrawal of deposits, because people obviously want to save their money.

Thank you.

* Rumen Simeonov, Deputy Governor, Bulgarian National Bank

# SPEECH

*Nikola Fabris**

Ladies and gentlemen,

I am really honoured to have the opportunity to speak in this conference. As you probably know, Montenegro is a small highly open economy. In the years before the crisis, Montenegro had a very fast economic development. In the last three years before the crisis, average growth rate of GDP was around 8%. Similarly to other countries in the region, that are also small and highly opened economies, the effect of the crisis is transmitted to Montenegro and the negative influence on the economy is very strong. Montenegro's economy is mostly based on very few industrial branches and mostly oriented to services, especially in the area of tourism. The industrial production was severely affected by the crisis. In the first seven months of this year, compared to the same period of the previous year, the negative rate of growth was more than 20%. Especially influenced negatively was the metal industry because of the significant decrease in the base metal prices in the world market. As you know, on the global level, there was a significant decrease in the number of tourists, which influenced Montenegro adversely, since tourism is one of the most important branches. Of course, when we have a problem in the area of tourism then there are problems in a lot of other branches which are connected with tourism, like transport, telecommunication, food processing industry, retail and others. Construction, which was also

one of the drivers of economic growth in the previous year, has also been faced with a lot of difficulties. The very fast development of construction in the previous period was based on the very high foreign demand for real estate in Montenegro and it resulted in a very high increase of real estate prices in Montenegro and it created bubble. But the global financial crisis resulted that the bubble burst and then prices started to go down and the number of foreign buyers decreased significantly and most construction companies have a lot of problems to finish objects they had started to build. They also have a lot of problems to repay credits that they had previously taken for this business. The banking sector was also very severely affected. Unfortunately, we have the problems from '90s. In that period, we had the situation that foreign exchange savings of citizens were frozen and obligation is still repaving in annual insolvency. In the first signs of the crisis, some citizens reacted very panicly. They started to withdraw deposits and we had very high money outflow from the banking system. But after a few months the situation regarding citizens was stabilised and household savings started to increase. But then the crisis affected negatively the real sector. Most real sector companies are faced with liquidity problems and a lot of them have problems with repaying their credits to the banking system. It resulted in the increase of non-performing loans in the banking system. We have also a few positive achievements and one very interesting is FDI inflow. I think Montenegro will be in the group of the very rare countries that will succeed in increasing FDI inflow in spite of the crisis. The rate of inflation is relatively low. Annual rate of inflation at the end of July was only 2% and as in many other countries of the region current account deficit was significantly improved, but unfortunately we have significant decrease on both exports and imports. It is expected that the current account deficit will be between 15-20% of GDP, which is a significant improvement, if compared with the previous year when it was around 30%. Having in mind that Montenegro is a Euroised economy, it means that the available instruments of monetary policy are very limited and that the Central Bank of Montenegro can not perform the function of the lender of last resort which is very important, especially in the period of the crisis. The reaction of the Government of Montenegro was relatively similar to that of other specific EU countries. It was adopted a package of measures that decreased a lot of taxes for

companies and citizens and in mid-October we adopted the Law on the protection of the banking system. According to the Law, the State introduced the full guarantee for all deposits. It opened a possibility for state recapitalisation of the bank and for state credit for troubled banks. It also opened the possibility that the state will guarantee interbank credits. Regarding the Central Bank of Montenegro, we do not have a lot of room to handle crisis situations and our actions were mostly focused on the gradual decrease of our reserve requirement policy. So during the period of the crisis, with decreasing or changing reserve requirement policy, we injected into the system around 2.5% of GDP. We also started to decrease some of our requirements regarding general reserves, especially in the areas in which we were most strict than the international banking standards. Regarding the prospects for Montenegrin economy, there is still a high level on uncertainty. Montenegro has prospects for high growth in the medium term, but of course we will not, in the short period of time, get back to the very high rate of growth that we had before the crisis, but it is obviously that a few big projects can improve the situation. In the first place, it is connected with the recapitalisation of electro-company of Montenegro and selling of the minority package of shares of this company. Then we will have some better situation regarding tourism in August and of course it is expected that the building of the highway will start in the last quarter of this year. So we expect gradual improvement of the situation.

Thank you!

* Nikola Fabris, Chief Economist, Central Bank of Montenegro

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