

Christian Noyer: Financial innovation, monetary policy and financial stability

Speech by Mr Christian Noyer, Governor of the Bank of France, at the Spring Conference of the Bank of France/Deutsche Bundesbank, Eltville, Germany, 27/28 April 2007.

* * *

Ladies and gentlemen,

- It is a privilege and a real pleasure to open this conference, which is the first one to be jointly organised by the Banque de France and the Deutsche Bundesbank. And I look forward, together with President Weber, to many other events of the same kind to be held either in France or in Germany.
- This conference addresses a topic which I believe is of utmost importance. Indeed, central banks extensively collect and analyse micro-data, mainly on banks and firms. Such information is used in an extensive way in order to assess the economic situation and short-term prospects for output, demand and prices. It also provides inputs to macroeconomic models for forecasting and policy evaluation; and finally, it helps identifying possible threats to the stability of the financial system. At a time when financial innovation is developing rapidly, micro-data analytical research is particularly useful in helping central bankers meeting the challenges we face for maintaining price stability and financial stability.

Financial innovation, defined as the emergence of new financial instruments and services, and of new forms of organisation in more sophisticated and complete financial markets, has many well-known positive effects:

- by creating more complete markets, it improves resource allocation, thereby supporting longer-term growth prospects¹;
- financial innovation even appears to reduce growth volatility, as has been shown in the case of the US² and confirmed on a sample of 25 countries³. As regards firms, this seems to result from a more flexible financial structure. With respect to households, this appears to stem from relaxed collateral constraints on borrowing⁴ allowing households to better smooth consumption in the face of temporary changes in their income⁵. Moreover, deregulation and innovation on the housing finance markets enable households to purchase houses whose values are consistent with their long-term income prospects, as shown e.g. in the case of the US using data from the Panel Study of Income Dynamics.

Financial innovation does not follow a regular pattern, as some periods are more active than others especially those of financial liberalisation and increased use of IT in financial related activities. It is clearly the case of the last few years with the rapid development of credit derivatives, securitization, hedge funds and private banking that has led to a situation where most credit risk are no longer in the form of loans, held to maturity on the balance sheets of banks, but where much of the credit risk is now held by nonbank financial institutions that can take on substantial leverage. It has occurred in Europe in the context of a major financial innovation, the introduction of the Euro, and poses new challenges for central bankers: it makes monetary analysis more complex, modifies the monetary policy transmission mechanisms and, in some cases, may endanger financial stability.

¹ Weber, 2006; Rajan and Zingales, 1998

² Dynan, Elmendorf and Sichel, 2006

³ Cecchetti, Flores-Lagunes and Krause, 2006

⁴ Campbell and Horovitz, 2005

⁵ IMF, 2006

1. Financial innovation is a challenge for the interpretation of developments in the monetary aggregates and for the best use of our second pillar

It is clearly not a surprise, at a time of burgeoning financial innovation to observe signs of instability in money demand. New products and new intermediaries tend to blur the distinction between monetary and non-monetary assets and to modify the financial behaviour of economic agents. And indeed, the demand for M3 in the euro area has shown clear signs of instability since 2001 and a break in the income velocity of M3 occurred at the same time. Most remarkably, instead of delivering some erratic pattern, a new velocity trend seemed to emerge with liquidity expanding much more rapidly⁶. It is fair to say that the precise role of financial innovation in this regard is still unknown but we have all the reasons to believe that, taking it into account should help explain this change in money demand, and better gauge its consequences for future inflationary pressures. Let me elaborate further.

First of all, the introduction of the euro in itself a major financial innovation, had many effects on the financial behaviour of economic agents.

The introduction of the euro immediately resulted in:

- the removal of any exchange rate risk between participating countries;
- the introduction of a new system of remunerated reserve requirements;
- and the creation of an integrated money market – thanks in particular to the setting up of a new large-value payment system (TARGET).

Furthermore, thanks to the introduction of the euro and to the successful monetary policy conducted by the ECB, all member countries now benefit from an environment of well-anchored inflation expectations and, as a result, low interest rates.

This new context has had several consequences:

- both inside and outside the euro area, the reputation of the euro as a solid currency has fostered the holding of euro-denominated banknotes, which has doubled in a few years, now representing the largest banknote circulation in the world;
- the so-called “home bias” in asset holdings has decreased further, both inside the euro area vis-à-vis assets issued in other Member States and outside the euro area vis-à-vis assets issued in the euro area. This has increased globally the demand for euro-denominated financial assets;
- the integration and competition in the banking and financial markets that has been fostered by the euro speeded up the development and the spreading out of financial innovation throughout the euro area, affecting money and credit developments in different ways. Let me just mention some of them.
 - One is the rapid pace of expansion in the activities of the so-called “other financial institutions” or OFIs. OFIs are not part of the money-creating sector and are neither insurance companies nor pension funds. In particular, they include financial vehicle corporations that purchase, pool and repackage as marketable securities loans that are “securitised” by banks, thereby reducing the growth rate of loans to the private sector. The expansion in OFIs’ activities is to a certain extent mirrored in the development of their monetary assets: which is now quite significant and amounts to around 10.5% of M3. I would submit that, in normal circumstances OFIs’ money holdings are unlikely to be transferred to non-financial agents and to generate an additional demand for goods and services. The reading of M3 developments, and its interpretation in terms of the risks to price stability, should, most likely, be adapted accordingly.
 - Financial innovation has also affected money and credit developments by making it easier for banks to hedge credit risk and manage maturity and credit mismatches. This may have supported the supply of credit, especially long-term loans to

⁶ Noyer, 2006b

households, in recent years. Indeed, housing loans have grown at a rate of 9.8% per year in the euro area since the beginning of 1999.

- In recent years, two innovations that may have an impact on the interest rate elasticity of money demand have emerged. One takes the form of high-yielding and highly liquid deposits accessible via direct banking or internet accounts. The second, which is still marginal, consists in the introduction of so-called “retail derivatives”, which are usually short-term deposits with embedded derivatives tailored to the needs of investors.

Taking into account the effects of financial innovation is a clear challenge for monetary analysis. Meeting this challenge requires regularly updated tools and in-depth research based, in particular, on sectoral analysis.

2. By affecting the transmission mechanism, financial innovation is also a challenge for the conduct of monetary policy

A good knowledge of the mechanisms through which monetary policy affects the economy is of crucial importance for central banks. Financial innovation affects these mechanisms both by altering the channels through which monetary policy operates and by changing the overall impact of monetary policy decisions. But the magnitude of the changes and the precise effect due to financial innovation at a time when other factors such as globalisation are at work are not well known. At the present juncture research shows that financial innovation tends to strengthen the interest and exchange rate channels whereas it appears to weaken the credit channel.

- Financial innovation certainly contributes to stronger wealth effects and thus probably also to strengthen interest rate channel⁷. This can be explained as follows :
 - Financial innovation fosters faster dissemination of information and its more rapid incorporation into financial market prices. This is of course particularly true for monetary policy decisions and can therefore increase the effectiveness of monetary policy, particularly via the interest rate channel⁸.
 - Financial innovation contributes to an increased holding of financial assets by lowering transaction costs and facilitating arbitrage, hedging, funding and investment strategies.
 - Financial innovation often relies on stronger leverage, increasing the effect of interest rate change by the central bank. One example of this enhanced impact is provided by the behaviour of hedge funds who customarily borrow short-term funds to finance their (longer-term) investments⁹.
- Turning to the exchange rate channel, financial innovation results in greater integration of domestic and international financial markets, which should also strengthen the exchange rate channel as exchange rates become more sensitive to interest rate differentials between currency areas. This has been illustrated by the recent debate about cross-border carry trades¹⁰.
- At the same time, financial innovation has probably weakened the credit channel¹¹. Several phenomena may be at play :
 - Financial innovation gives firms broader access to securities markets, which may reduce information asymmetries at the source of the credit channel.

⁷ BIS, 1994

⁸ Noyer, 2001

⁹ Weber, 2007

¹⁰ Weber, 2007

¹¹ BIS, 1994; Thornton, 1994

- More specifically, securitisation by banks has reduced their liquidity constraints and thus further weakened the credit channel. A recently published research paper by the New York Fed, using a micro data set of individual loans granted by a sample of banks between 1997 and 2005, shows that the use of credit derivatives is associated with a greater supply of newly negotiated loans extended to large corporate borrowers. Previous research has generally found that banks have used earlier credit market innovations such as loan sales and securitisation to diversify credit risk exposures and increase lending.
- However, credit derivatives might also encourage banks to monitor risks less carefully than in the past and thus mitigate the aforementioned effects that dampen the credit channel. To the extent that banks monitor their risks efficiently that mitigating impact should nevertheless be only partial.

Research conducted within the Eurosystem Inflation Persistence Network has already shown that the interest rate channel is a prominent channel of transmission in the euro area¹². As financial innovation tends to strengthen that channel, it would be tempting to assert that it makes monetary policy more efficient. However, countervailing effects make it difficult to draw a general conclusion. Furthermore, empirical work is lacking on this issue. I would thus strongly encourage researchers to provide policymakers with further evidence – drawing especially on micro-data.

3. Financial innovation may in some cases endanger financial stability and central banks should take appropriate action in order to mitigate potential systemic risks

Such issues may arise both at the microeconomic and at the macroeconomic levels.

- Let us first look at the microeconomic level
 - Specific difficulties may arise in the infancy of new products: valuation difficulties, lack of market liquidity, possible lack of expertise of some traders, and so on. However, such problems can be regarded as mostly transitory in nature. Indeed, financial innovation has improved and increased the efficiency of the financial system. In particular, risks are spread among a greater number of agents, who are willing and *a priori* able to bear them. However, innovations constantly introduce additional layers of sophistication and complexity¹³. In this regard, the system of incentives by which professional asset managers operate should be closely and permanently aligned with the interests of investors.
 - One specific type of financial innovation is the emergence of new unregulated players whose default might have implications for systemic risk. One such type of investor are hedge funds. Hedge funds' activities could clearly be the source of systemic risk since they are now major – often dominant – actors in several market segments accounting for 40% of the turnover of major stock exchanges and 25% of the turnover of credit derivatives markets. They are also the main providers of liquidity in some markets that would dry up very quickly should they withdraw. They often leverage themselves with very high multiples either directly through borrowing or indirectly by intensive use of derivatives.
 - The importance of hedge funds and more generally of the already mentioned OFIs illustrates that there may be circumstances in which injecting liquidity into the banking system – a traditional tool of crisis management used by central banks – may not be sufficient to prevent major instability. Three main avenues for mitigating the risks of contagion from hedge fund defaults either through potential losses to their bank creditors or through adverse market dynamics have been proposed¹⁴. First, appropriate intervention by supervisors vis-à-vis prime brokers to make sure that they ask for and get broad information from hedge funds and that they put in

¹² Angeloni, Kashyap and Mojon, 2003

¹³ Noyer, 2006a

¹⁴ Noyer, 2007

place comprehensive risk management of all hedge funds-related exposures is essential. Second, there may be scope for policy-makers to encourage appropriate organisation of infrastructure in order to improve the information available on the markets in which hedge funds operate. Third, a specific information system to be triggered in the event of a crisis could be established ex ante in order to ensure that relevant information on exposures and positions could be quickly gathered if necessary.

- At the macroeconomic level
 - Increased financial asset holding resulting from financial innovation is likely to result in higher sensitivity of households to asset price booms and busts¹⁵. On the liabilities side of non-financial agents' balance sheets, by facilitating the management of risk and easing liquidity constraints, financial innovation stimulates both the supply of and demand for credit, which may lead to higher leveraging and financial fragility. Note that both effects run counter to the result I mentioned at the start, i.e. that financial innovation tends to reduce growth volatility. Although this result may still hold true in normal circumstances, it may thus be reversed in specific ones, especially in stress situations.
 - Finally, as links between markets are tightened by financial innovation, a shock occurring on one specific market may be more easily transmitted and possibly amplified on other markets. This may particularly be the case if the shock is large and if market participants adopt herd behaviour in the face of incoming information that is disseminated very fast.

I will not try to conclude these opening remarks, since it is precisely the purpose of the conference to go into deeper analysis of all the issues I tried to mention briefly, and perhaps of others I forgot. And it will be up to President Axel Weber at the end, to draw the conclusions. But let me make just one final remark. Financial innovation brings a lot of progress and should be welcome in principle. It is also a constant challenge for central bankers. Good knowledge of microeconomic behaviour is of prime importance in order to better cope with the increased uncertainties and the new types of risks they bring about. This in turn is a challenge I am sure this conference will endeavour to rise to.

References

- Angeloni I., A. Kashyap and B. Mojon (eds) (2003), *Monetary Policy Transmission in the Euro Area*, Cambridge University Press.
- Banque de France (2007), *Financial Stability Review, Special issue on hedge funds*, 10, Banque de France, April.
- BIS (1994), *Macroeconomic and monetary policy issues raised by the growth of derivatives markets, CGFS – Monetary Policy (Hannoun Report)*, 4, November.
- Campbell J.R. and Z. Hercowitz (2005), "The role of collateralized Household Debt in Macroeconomic Stabilization", *NBER Working Paper Series*, 11330, May.
- Cecchetti S., A. Flores-Lagunes and S. Krause (2006), "Assessing the Sources of Change in the Volatility of Real Growth", *NBER Working Paper Series*, 11946, January.
- Dynan K.E., D.W. Elmendorf and D.E. Sichel (2006), "Can financial innovation help to explain the reduced volatility of economic growth?", *Journal of Monetary Economics*, 53, pp 123-150.
- Gerardi K., H. Rosen and P. Willen (2007), "Do Households Benefit from Deregulation and Innovation? The Case of the Mortgage Market", *NBER Working Paper Series*, 12967, March.

¹⁵ IMF, 2006

- Hirtle B. (2007): "Credit Derivatives and Bank Credit Supply", *Federal Reserve Bank of New York, Staff Reports*, 276, February.
- IMF (2006), "How do financial systems affect economic cycles ?" *World Economic Outlook*, chap. 4, pp 105-138, September.
- Jermann U., V. Quadrini (2007), "Financial Innovation and Macroeconomic Volatility", paper presented at the Bundesbank Spring Conference, 27-28 April.
- Noyer C. (2001), "Overview", in *Economic Policy for the Information Economy*, Federal Reserve Bank of Kansas, pp 399-404.
- Noyer C. (2006a), "Financial systems for economic growth", Speech at the 3rd Conference of the Monetary Stability Foundation, Frankfurt-am-Main, 6 July.
- Noyer C. (2006b), "Does money matter? A European perspective", Speech at the 4th ECB Central Banking Conference, Frankfurt-am-Main, 9-10 November.
- Noyer C. (2007), "Hedge funds: what are the main issues?", *Financial Stability Review, Special issue on hedge funds*, Banque de France, 10, pp 105-111, April.
- Rajan R.G. (2005), "Has Finance Made the World Riskier?", *European Financial Management*, 12 (4), 499-533.
- Rajan R.G. and L. Zingales (1998), "Financial dependence and growth", *American Economic Review*, 88, pp 559-586.
- Thornton D.L. (1994), "Financial Innovation, Deregulation and the "Credit View" of Monetary Policy", *Review of Federal Reserve Bank of Saint Louis*, pp 31-49, January-February.
- Weber A. (2006), "Concluding Remarks", Conference of the ECB-CFS Research Network on "Financial system modernisation and economic growth in Europe", September 29.
- Weber A. (2007), "Hedge funds: a central bank perspective", *Financial Stability Review, Special issue on hedge funds*, Banque de France, 10, pp 101-168, April.