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Remarks by Ignazio Visco

Banca d'Italia

1. Introduction

Over the last decade a new global financial landscape has emerged as a result of substantial changes in market openness, demography and technology. Financial deepening has accompanied a marked increase in economic growth, with the emergence of new economic giants. This has been associated, however, with significant imbalances in current accounts and, as we have seen in the course of this year, a new bout of financial instability.

I will briefly consider the main changes in the financial system. As these are not transitory, it is important to inquire into the strengths and weaknesses of what appears to be a new financial paradigm, and assess the main challenges for monetary authorities and financial regulators alike.

2. The new financial landscape: main driving forces

2.1. Economic and financial integration

The first, key factor is market integration and financial globalization. This development has several dimensions:

- On the trade side, imports and exports of goods and services have accelerated, growing much faster than world GDP. The emerging Asian economies now account for more than a fourth of world exports of manufactured goods, having doubled their share since 1990. The effective entry into the global labour market of significant parts of the populations of China and India is an important element in what we mean by globalisation. This process is still far from complete.

- Foreign direct investment has expanded substantially, from less than 10 per cent of world GDP in 1995 to about 25 per cent today; the increase has been similar in advanced and emerging economies. The share of foreign affiliates in world GDP has doubled since the early 1980s, from 5 to 10 per cent.

- Financial integration has been very intense in the industrialised countries, where the ratio of gross foreign assets and liabilities to GDP has risen from 140 per cent in 1995 to over 300 per cent today. It is expected to increase sharply in the emerging and developing countries as well, as capital controls are gradually removed.

Greater international integration, in these three dimensions, has two main implications. The first is increased interdependence. Shocks are transmitted more rapidly across borders via trade, corporate outsourcing and financial markets. This implies that national policy decisions now have greater potential spillover effects. The second implication – partly a mirror image of the first – is greater risk diversification. Trade shifts part of the repercussions of domestic macroeconomic shocks to the rest of the world. Similarly, investors holding global asset portfolios should be less exposed to country-specific shocks. In spite of the significant increase in integration, however, there seems still to be ample scope for further gains from risk diversification, as domestic saving and investment are still very closely related.

2.2. Population ageing

Another major change that is shaping the global economy and financial markets is the ageing of population. A secular rise in longevity has been flanked, more recently, by lower fertility rates, with the result that world population is now ageing very rapidly, not only in industrial countries, but in a number of emerging economies as well, most notably China. In particular:

- The steep increase in the old-age dependency ratio observed in many countries has brought a retrenchment in public pensions and a switch to supplementary schemes. These structural changes in pension schemes in turn affect the financial choices of households and have far-reaching effects on financial markets at large.

- In order to secure retirement income, households have significantly increased the portion of their financial assets managed by institutional investors, such as pension funds, mutual funds and insurance companies: in the three largest economies of the euro area, in the last decade this share increased on average by 10 percentage points to more than a third.

- Due to these demographic and financial changes, households are exposed to considerable financial risk. This reflects the shift in composition of their portfolios in favour of riskier assets, held directly and via institutional investors, and the switch from "defined benefit" to "defined contribution" pension schemes. Together with financial risk, longevity risk has also increased: as people live longer than expected, governments find it difficult to fund public pension schemes and this raises the need for private savings to provide retirement income.

2.3. The new economy and financial innovation

A third driving force that has reshaped financial markets over the last decade is the interaction between technical progress and financial innovation. The breakthroughs in information technology and telecommunications have powerfully affected all the building blocks of the financial system: payments infrastructure, intermediaries, markets and instruments. Foremost is the growth of asset securitization, which relies on complex financial instruments and on sophisticated risk management techniques, with several implications:

- In the traditional intermediation model, banks raise funds in the form of short-term deposits and invest in longer-term loans that are held to maturity. With the extraordinary growth of securitization, banks have been moving to a new model of intermediation, in which they originate loans and then repackage them for sale to other investors. With this new "originate-to-distribute" (OTD) model, credit risk is not concentrated on banks' books anymore, but is potentially dispersed among a multitude of investors.

- The development of asset backed securities and the vast array of financial instruments built on them (indices, derivatives, etc.), has made bank loans tradable. This has decreased their cost, by reducing the illiquidity premium, and has contributed to the narrowing of spreads and the generally favourable credit conditions we have witnessed in the past few years. Overall, securitization has freed up banks' capital, which has been used to back new loans.

Now that it is possible to trade loans, pent-up demand for credit risk has found an outlet. Thanks to greater financial integration, pension funds, insurance companies, hedge funds and even money market funds have shown an appetite for these products, partly as a form of diversification and partly as the result of intensified search for yield in a world of low interest rates and low volatility.

3. Strengths and weaknesses of the new financial paradigm: a "robust yet fragile" financial system

The OTD model has many benefits for banks, investors and the financial system at large:

- In the traditional model banks hold credit risk, while other investors cannot get exposure to it. With the new model, banks can sell part of the risk in their loan portfolio and enhance the liquidity of their assets.

- At the same time, investors can easily diversify by getting exposure to credit risks; hence, the OTD model is a further step towards complete financial markets.

- Credit risk should, at least in principle, be dispersed among a large number of investors with different propensities for risk and different investment objectives and horizons. This variety should reduce the likelihood of large swings of asset prices caused by unidirectional trading strategies, making the financial system more stable. The decrease in financial volatility observed in recent years can be traced, among other things, to the new intermediation model.

The bottom line is that the OTD model permits more efficient allocation of credit risk. But it also entails a number of dangers, some of them intrinsic to its mechanism, others more generally related to the greater interdependence of the financial system.

3.1. New sources of risk brought by the OTD model

The weaknesses of the OTD model have become evident during the recent financial turmoil:

- The pricing of structured finance products (SF) such as ABSs, CDOs and CLOs is complicated. These instruments, constructed by packaging loans, are complex, illiquid and often opaque. Because their valuation depends on data-intensive statistical models and on incomplete data for a host of possible scenarios, they may imply substantial "model risk".

- Rating agencies play a key role, serving as third party certifiers of the quality of SF products, but face technical and incentive problems. Unlike traditional bonds these products are not generally traded in secondary markets, so no public information on their value is available. Conflicts of interest may therefore be more relevant in SF markets than in bond markets: as it is very difficult to verify the quality of the service provided, the standard reputational equilibrium that sustains the agencies' business model is weakened.

- The incentives for banks to act as delegated monitors of their borrowers are weakened substantially, as the bank that originates the loan no longer holds its risk. Whereas in the traditional "buy-to-hold" model banks have an incentive to avoid the deterioration of quality of the loan, so as to prevent default, in the OTD model their interest in monitoring the borrower is greatly diminished.

- Risk might be more concentrated than we know. Once SF products are sold, there is no telling where they end up. Risk might be widely spread, which would be beneficial to systemic stability, but it could also be concentrated among a few operators. Unregulated highly-leveraged institutions such as conduits, SIV and hedge funds may pile up substantial credit risk, maturity risk, and liquidity risk, and indeed they have done so. Ultimately, risk may return to banks, which remain the main source of credit. Lacking sufficient information, an adverse event might trigger losses in many dimensions. As has happened since this summer, this could lead to a liquidity squeeze in money markets: banks would not be willing to lend to one another even at short maturity.

All in all, OTD is a sophisticated mechanism that, in order to allocate risk efficiently, relies on complex products, liquid markets and a multitude of operators. But products may be opaque, market liquidity may dry up, and some operators may have strong incentives and be accordingly ready to place big bets. So although it is market-based, at least for now the OTD model lacks the main feature of well-functioning financial markets: frequent and abundant trading, which at once requires and produces information and liquidity.

As a result, while systemic events may have become less likely thanks to diversification and risk dispersion, their costs may have increased, with the overall increase in leverage and interdependence (more on this later). This suggests that "tail" risk might be larger than is commonly thought; or, in other words, that the probability of extreme events is underestimated. Shocks that would otherwise have been otherwise easy to manage may now become a threat to financial stability if they trigger a chain reaction, as could be the case of a shock to investors with large unbalanced positions or if many investors have similar models and strategies that lead them all to be on the same side of the market.

3.2. Greater interdependence

The ongoing process of financial consolidation and the OTD model have produced intermediaries that are closely intertwined with the capital markets. The large, complex financial institutions resulting from consolidation offer a broad range of products – from asset management to corporate finance and prime brokerage services – that rely on well-functioning capital markets. Therefore, the OTD model has increased banks' dependence on capital markets.

Today's global financial system is also far more interconnected than in the past. This has some important consequences for financial stability:

- Since banks now sell their loans and offer a range of financial services, an illiquid market would generate substantial risks, such as warehouse risk (i.e. the risk of being unable to find buyers and being stuck with products the bank might not want in the first place) and additional market risks (when assets sold in thin markets would send prices spiralling down, forcing additional sales by leveraged investors and sharply reducing liquidity – something we have seen in recent weeks). To avoid this, at times banks may end up acting as a sort of "lender of last resort to markets", with all the implicit effects on the availability of credit to other sectors of the economy and on financial stability.

- Since the intermediation model increasingly relies on capital markets, market infrastructures are of paramount importance. The quality and reliability of both technical infrastructures – payment, clearing and settlement systems – and the organization of trading in public markets directly affect all players.

- A more connected world improves risk diversification and makes markets more resilient. But when contagion is actually set off, an interlinked financial system heightens the risk that it may spread more widely. The very channels that in good times enhance resilience may also propagate, and possibly amplify, shocks.

Interdependence thus requires more international coordination of policies for liquidity provision, regulation and supervision of markets and intermediaries. This would help to impede opportunities for regulatory arbitrage and the situations of moral hazard.

4. Challenges for authorities and regulators

The recent financial turbulence has posed a number of stiff challenges to monetary authorities and financial regulators. So far, the response has followed a two-pronged strategy: central banks have provided liquidity in order to ensure an orderly functioning of money markets while a number of far-reaching initiatives have been launched in the international fora of cooperation to strengthen the financial system.

4.1. Short-term response to stabilise markets

When financial and credit market turmoil produces systemic tensions in money markets, distinguishing between the aims of liquidity provision and the reasons that stand behind the setting of policy interest rates – easy under normal circumstances – becomes more difficult. On the one hand, the actions needed to ensure orderly functioning of the money market may blur monetary policy signals. On the other, decisions on interest rates could be interpreted as revealing major information unknown to the market and hinder its normal functioning. In particular:

- Recent events have demonstrated that modern central banks, and the ECB in particular, are well-equipped to deal with these problems, at least as far as short-term money market rates are concerned. Since August, the major central banks have provided ample liquidity to the interbank system, keeping short-term rates under control. While very short-term rate volatility has increased significantly since, in the euro area the differential between the overnight and the official rate has generally remained very low, in line with pre-crisis levels.

- In the United States, the Fed has lowered its target rate twice, for a total of three quarters of a point. In the euro area, meanwhile, the policy rate has been kept unchanged. In neither case has day-to-day liquidity management impaired signalling of the monetary policy stance.

- The situation is more problematic on longer money market maturities, where a substantial premium on official rates has emerged. Central bank interventions have been effective in avoiding market disruptions, but they could not address the lack of disclosure underlying these tensions, resolution of which requires additional information of the size and distribution of exposures, an assessment of the impact on banks' balance sheets, and the completion of the process of risk repricing.

All in all, by their prompt interventions the central banks were able to preserve orderly market conditions and avert a liquidity crisis, without endengering the markets' medium-term expectations in a period of volatility and generalized uncertainty.

4.2. Strengthening the foundations of the financial system

The ongoing financial turbulence has not come as a surprise. For some time the supervisory authorities had been emphasizing the increasing strains, stressing the rise in sub-prime mortgage defaults in the United States and warning that investors' perception of risk might have changed suddenly, leading to abrupt portfolio adjustment and destabilizing effects. But the interaction between the difficulty to value SF products, the evaporation of liquidity and the "rush to exit" to reduce risk exposure could not have been foreseen, and nor could the speed at which the crisis spread across institutions and markets.

To tackle the fragilities highlighted by the current turbulence, the financial community has put a number of initiatives in place in recent months. In particular:

- At the request of the Group of Seven, the Financial Stability Forum (FSF) is reviewing several important issues such as the management of risks – especially liquidity risk – by the institutions subject to regulation, the appropriateness of capital requirements, the full consolidation of the assets and liabilities currently kept off banks' balance sheets, and the transparency and valuation of structured financial products.

- The EU Finance Ministers have asked the Economic and Financial Committee to examine a number of issues raised by the recent turbulence, analysing them in a way that is complementary to the mandate of the FSF by taking a European perspective and covering slightly different areas, including the implications of the new Capital Requirements Directive, which implements the Basel 2 framework in the European Union.

In fact, it was not properly anticipated that commercial banks could be the weak link in the system: other financial institutions, hedge funds first of all, were thought to be more likely candidates to set off a crisis. To some extent, the tensions experienced in recent weeks reflect banks' attempts to exploit regulatory arbitrage permitted by the Basel 1 framework, transferring outside their balance sheets, to unregulated entities, activities that would have required substantial capital otherwise. Searching for the direction to follow in addressing the issues that have emerged, we can advance the following considerations:

- The Basel 2 framework will certainly mitigate the problem, as the risks associated with the innovative, complex activities undertaken by banks in recent years will be easier to capture. With respect to capital requirements, for example, Basel 2 improves on the treatment of mortgage exposures and introduces a capital charge on liquidity lines extended to conduits funded through asset-backed commercial paper. Additional capital will be required to match operational risks in order, for example, to cover legal losses. To enhance market discipline banks will be induced to disclose information about their risk management policies and systems. This will include the risks associated with securitization exposures. As a development of the new regulatory approach, before the turmoil the Basel Committee had begun a review of the existing supervisory approaches to liquidity risk**.**

- While the Basel 2 framework will represent a considerable improvement on the previous discipline of capital requirements, steps need to be taken in other areas to avoid excessive risks and make banks more resilient to shocks. To improve transparency on risk exposures, particular attention must be paid to the obligation to consolidate the accounts of financial vehicles, even if not affiliated, whenever banks exercise substantial control and bear the ultimate risk. To take account of the effective risk for prudential purposes, vehicles that are largely controlled by banks should also be consolidated when capital requirements are established. In order to contain model risk, additional efforts must be directed at refining the methods used to value SF products. Banks' liquidity management must also be improved, with reference to liabilities no less than assets, to increase our understanding of the relation between market liquidity and banks' funding liquidity risk. Also, public authorities and market participants should thoroughly review existing incentives in the financial industry at large, to find ways to prevent the accumulation of excessive risks.

An additional area of policy intervention that is becoming as important as the regulation and supervision of markets and intermediaries is financial literacy. As individuals become increasingly responsible for their retirement income and the allocation of wealth, so their financial needs are becoming increasingly complex. The financial industry is responding with a wide range of instruments, many of them complex as well. A few remarks on this point are appropriate:

- Survey evidence suggests that the majority of consumers lacks financial capability in key areas, even in countries where there is a strong tradition of stock market participation as in the United States or the United Kingdom. For poorer and less educated households the lack of knowledge is greater and has more serious potential consequences.

- By improving financial education, policy-makers can affect economic behaviour. Evidence shows a positive correlation between financial literacy and retirement planning abilities, the likelihood of buying risky assets and investing efficiently.

- Financial education is helpful but its impact should not be overestimated. Regulations to protect consumers – such as by reducing conflicts of interest for financial advisers, introducing rules of disclosure, and making provision for investment default options – are complementary to financial education. For example, policies to increase the transparency of financial products can improve households' welfare both on the asset and liability side. Regulation should be designed keeping in mind the trade-off between consumer protection and the inhibition of innovation.

5. Conclusions

The increasing complexity and interdependence of the world financial system is channelling resources to the most productive investments, thus supporting efficiency and growth globally. However, the financial system may also become, at times, a source of instability. Policy-makers are already adjusting regulation and supervision practices to deal with a rapidly evolving financial system; cooperation to secure a level playing field and to reduce the scope for competition in laxity is required. Coordination when intervening on interlinked markets is necessary.

Institutional and retail investors should be made aware of the new set of risks they are facing, in order to make informed decisions. Crises can not always be prevented; as recent events have shown, once they occur swift action can stem the damage and work towards restoring confidence. Again, cooperation and coordination are the only way to deal with systemic events that have the potential to wreck the global financial system. Indeed, while we recognize that an efficient financial market is a fundamental driver of economic growth, we are also aware that financial instability must be limited if it is not to hamper economic activity.