

Lucas Papademos: Financial market excesses and corrections – a central banker’s perspective

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Ladies and Gentlemen,

I. Introduction

It is a great pleasure for me to address you on the occasion of this fifth conference of the International Research Forum on Monetary Policy. The goal of the Forum is to foster a transatlantic dialogue, based on rigorous theoretical and empirical research, on issues of relevance to monetary policy in the United States and the euro area, but also from a global perspective. And certainly the topics on the conference programme are of global relevance to monetary policy-makers and concern issues that continue to pose challenges for central banks.

The financial market turbulence over the past 10 months has highlighted the global and pressing relevance of several policy issues. And it has posed significant challenges for central banks: challenges for the conduct of monetary policy, the management of liquidity in the money markets and the performance of tasks pertaining to their responsibility to help safeguard financial stability. The ongoing process of risk reappraisal and balance sheet adjustment has led to extensive analysis and discussion of a number of pertinent matters: the underlying causes and (proximate) triggers of the market turmoil, the mechanisms responsible for the propagation and amplification of shocks across markets, institutions and borders, the identified weaknesses in the capacity of financial institutions and investors to appropriately assess and adequately manage risks, and, finally, necessary actions of market participants and authorities to address the consequences of the ongoing financial market correction and to strengthen the resilience of the financial system.

In my remarks, I will concentrate on three themes:

- The *first* pertains to the underlying causes of the turmoil and, in particular, some key factors and processes that contributed to the emergence and persistence of financial market excesses and asset price bubbles and can also help explain the timing and abruptness of the market correction.
- The *second* concerns the special role of certain asset markets, notably the housing and credit markets, in driving the dynamics of boom-and-bust.
- The *third* focuses on the role of central bank policies and tasks in containing the risk of financial market imbalances and in mitigating their potential consequences on the financial system and the economy.

II. The emergence and persistence of asset price bubbles and financial imbalances

So what key factors and processes contribute to the emergence of asset price bubbles and their persistence over a fairly long period before they abruptly unwind? There is no consensus among economists about the answer to this question. And, indeed, some have

argued that they are meaningless because in their view asset price bubbles do not really exist! Some economists had claimed that even the most famous bubbles in history – e.g. the Dutch Tulip Mania from 1634 to 1637, the French Mississippi Bubble in 1719-20, the South Sea Bubble in the United Kingdom in 1720 and, more recently, – the worldwide new economy boom in the late 1990s (the “dot.com-bubble”) – should not be considered as such because they can be explained by rational expectations justified by fundamental factors related to future returns on the respective underlying assets. Which in one case were tulip bulbs!¹

This view may have some merits given the hypotheses on which it rests. But, there is little doubt in my mind that we occasionally observe behavioural patterns in financial markets, which although they may be perfectly “rational” or justified from an individual investor’s perspective, they nevertheless lead to large, increasing and unjustifiable deviations of asset prices from their fundamental values.

Indeed, an insight into special or psychological factors that can affect stock market valuation can be highlighted by the following simple story: Once an investor approached his stockbroker for advice on which stock to buy and was told to purchase a penny stock that was valued at just 50 cents a share. “This one is really going to move”, the broker said, and the persuaded investor instructed his broker to buy him 5000 shares. The following day, the stock was valued at 1 euro and, seeing this, the investor called the broker and told him to buy another 10,000 shares. The next day the investor saw that the price of the stock had jumped up to 3 euro. Excited and satisfied with the huge profit he had made in just two days, the investor called his broker: “Sell all my shares”, he instructed. “To whom?” the broker replied. “You were the only one buying that stock!”

This humorous story is instructive because it highlights two features of asset markets that seem to contribute to the emergence of bubble-like phenomena and the build-up of financial imbalances. The first is the fact that asset markets involve the trade of expectations, or more precisely, the trade of instruments whose prices depend on expectations about the future and which are fundamentally uncertain and susceptible to potentially large swings. The second feature is the fact that asset prices are influenced by positive feedback mechanisms. These feedback effects can amplify initial revisions in expectations and thereby generate market outcomes that might induce investors to adjust their expectations even further, leading to a feedback loop between expectations and outcomes.²

Let me mention one important feedback mechanism that seems to have played a crucial role in the run-up to the current events. It appears that the present financial market turmoil has partly been driven by a certain pro-cyclicality in risk assessments, especially by what appears – *ex post* – to be an unjustified pro-cyclicality in the assessment of liquidity risk.

The increasing volume of securitisation of mortgage loans caused securitised mortgages to become increasingly liquid assets over the years. Investors in these assets with long-maturities apparently considered them sufficiently liquid that they could afford to finance their holdings with very short-term financing instruments. Given the market conditions prevailing for some time (over the period 2003-2007), such a strategy seemed justified: in case of insufficient funding, investors could (reasonably) expect to be able to quickly sell some of the mortgage-backed securities in a rather liquid market. But what would happen if funding liquidity would dry up for some reason?

Some – possibly even many – investors were aware of the possibility of future liquidity problems and occasionally even expressed their surprise about the ease with which it was possible to fund mortgage-backed securities via short-term credit. Nevertheless, most

¹ See Garber (1990/2001) and Pastor and Veronesi (2006).

² See for example Adam et al. (2008).

investors continued doing what they had been doing for some time, underestimating the associated (liquidity) risk and they even expanded the volume and range of their risky but profitable activities. Why did this happen? Why did investors underestimate the liquidity risks and fail to act promptly upon their sceptical views? The answers to these questions are relevant for our understanding of why the “party lasted for so long” and why some party (that is, market) participants kept on dancing until the very end, until the music finally stopped playing.

A number of reasons can help explain the observed behaviour. The first is associated with the difficulty of speculating against a strongly rising market that is driving prices above estimates of fundamental values. You may recall that John Maynard Keynes once cautioned against such a strategy by warning that *“The market can stay irrational longer than you can stay solvent.”* One explanation for this is that speculating against the market requires a critical mass of investors that will act in synchronised or coordinated manner and will be able to push prices back towards fundamental values. This may not be easy when markets are deep and liquid as they tend to be during upswings. The “coordination problem” may therefore substantially delay arbitrage.³ Indeed, it might be rational for each individual investor to aim at riding the bubble (just) until the moment before it bursts, and this can explain the apparent contradiction between what investors do and what they believe to be fundamentally justified.⁴

A second reason why speculation against a rising market may be limited is that there are few incentives to do so. Payoff-structures and compensation schemes tend to encourage risk-loving attitudes. Compensation contracts that fail to incorporate sufficient “history-dependence” can similarly lead to risk-loving behaviour: a fund manager whose bonus depends on his or her annual performance is likely to prefer a volatile environment which may be characterised by a sequence of bonanza years followed by a year or two of crisis and doom, rather than a more stable environment.

A third possible explanation, which is “rational” from an individual investor’s point of view, is that if taking investment positions against the market eventually fails to be profitable, it will carry the stigma of an unsuccessful investment manager, while being wrong with the crowd is likely to be considered to be just bad luck.

But the music will eventually stop playing. And it will stop playing when the orchestra realises that market value is totally out of tune with any reasonable expectations of future returns. As perceptions and attitudes gradually change, seemingly minor events can produce large changes in valuations. In August 2007, the difficulties emerged when it was recognised that some of the assets – initially those backed by sub-prime mortgages – turned out to be more risky investments than previously thought. This meant that structured investment vehicles (SIVs), hedge funds and other investors suffered losses in relation to the value of these securities. This in turn caused the liquidity providers to these investors to reassess the value and risk of the collateral offered against their funding and to demand higher margins. The resulting funding problems forced investors in mortgage-backed and other related securities to deleverage. With many investors trying to do the same thing at the same time, the downward pressure on prices intensified, resulting in extensive losses, even higher margin requirements and further forced sales until the market for funding and for mortgage-backed securities largely dried up.

The recent episode has shown how and why fundamentally unjustified asset price booms or excesses can occur and persist for some time. There are many lessons to be learned. Some of these are new and relate to the features and functioning in practice of the “originate-to-

³ Abreu and Brunnermeier (2002).

⁴ Abreu and Brunnermeier (2003).

distribute” (OTD) model and the securitisation process. Other lessons, however, are not new and should be relearned as they had been forgotten, including the role of excessive credit expansion and high leverage in driving the rising phase of a boom-and-bust asset price cycle and accounting for the steepness of the fall during the downturn phase. One policy-relevant question which should be addressed is whether some asset markets are likely to be more vulnerable to valuation swings and are more likely to have significant adverse implications for the stability of the financial system and the economy. I will now turn to this question.

III. The role of housing and credit markets

Are there particular markets that are more prone to boom-and-bust cycles and, in the event of a sharp correction, are likely to have more pronounced effects on financial and economic stability? And if so, which ones? The speculative element that could result in a mispricing of risk implies that financial market excesses are likely to have their origin in markets with long-lived assets with uncertain returns such as the housing markets or the equity markets, and possibly also the market for private bonds with long maturities. Moreover, asset markets that lack effective short-selling instruments, which allow investors to address overvaluations, should also be more prone to bubble-like price deviations from fundamental values.⁵

What are the facts? In advanced economies, stock and house price booms seem to occur rather frequently and with approximately the same frequency. Among the observed housing booms, every second one is likely to be followed by a house price bust. In equity markets, a crash follows a stock market boom only in 1 out of 6 cases. Thus, boom-and-bust cycles in housing markets occur much more frequently than in equity markets. Moreover, house price boom-bust cycles are historically associated with correspondingly larger inflation and output gap movements than stock price booms and busts.⁶

The association of house price cycles and macroeconomic volatility is not necessarily obvious *a priori*. We might expect housing boom-bust cycles to have a less pronounced impact on aggregate output than equity cycles. The available evidence in many countries indeed suggests that consumption is less sensitive to housing wealth than financial wealth.⁷ This probably reflects the fact that financial wealth in many countries can be mobilised more easily for consumption than housing wealth (e.g. by selling some of the assets).

Over time, however, the effect of housing wealth on consumption seems to have increased. In the euro area, since the (early) 1990s the effect of a change in housing wealth on consumption has become significant in terms of size and statistically, with the marginal propensity to consume out of housing wealth estimated at around 2 cents in response to a 1 euro increase in housing wealth. While the estimated magnitude in the euro area of the impact is rather small, the sheer size of the housing market and wealth implies that a 10% permanent decrease in house prices in the euro area as a whole would decrease consumption by approximately 1%. In the United States the marginal propensity to consume out of housing wealth is estimated to be considerably larger, roughly twice to three times as large as in the euro area.⁸

But there is another important reason why house price cycles have had a pronounced effect on the economy. Historically a number of housing market busts have been associated with crises in the banking sector, as banks traditionally have held the largest part of the mortgage

⁵ See Helbling and Terrones (2003) and Allen and Gale (2000).

⁶ See Bordo and Jeanne (2002) for the evidence mentioned in this paragraph. Similar conclusions are reached by Detken and Smets (2004).

⁷ See Slacalek (2006) as well as Case, Quigley and Shiller (2005) and Skudelny (2008).

⁸ See Slacalek (2006).

loans on their balance sheets. An increase in delinquency rates, triggered by house price declines and a coinciding economic slump reduce the capital buffers of banks with adverse effects on credit expansion and the intermediation process. The greater vulnerability of the banking sector to sharp housing market corrections explains why these events have had a bigger impact on output than stock market crashes.⁹

Turning to the recent experience, it would have reasonably been expected that increasing financial integration and the rapid growth of the loan securitisation and of the market for credit risk transfer instruments would have allowed banks to substantially reduce their exposure to mortgage loans and protect themselves from the effects of a sharp housing market decline. And, there is no doubt that these financial innovations did facilitate the spreading and redistribution of credit risks across institutions, sectors and countries.

At the same time, the functioning in practice of the OTD mode of intermediation was characterised by a number of weaknesses. Let me briefly point to a few of them:

- *First*, the increased leverage that was supported by the rapid growth in securitisation was accompanied by an erosion of credit standards reflecting weak incentives and competitive pressures.
- *Second*, the complexity of structured finance products and the imperfect information about the risk characteristics of the underlying assets made difficult the proper assessment and management of associated risks.
- *Third*, as a result, financial institutions and other investors relied excessively on the ratings of complex structured credit products by credit rating agencies (CRA). And, as it turned out, the models and methodologies used by CRAs had shortcomings, and inadequate information was provided about the methodologies employed and the characteristics of the ratings of structured finance products.
- *Fourth*, financial institutions established off-balance-sheet conduits and structured investment vehicles (SIVs) which held the long-term complex structured finance products and financed them by issuing short-term maturity instruments (which backed these long-term and not very liquid products). This maturity mismatch between assets and liabilities was accompanied by explicit or implicit liquidity or credit commitments of the sponsoring banks to provide financial support in the event of funding difficulties. Overall, as a consequence of the effects of various factors and practices, including poor internal controls on the management of on- and off-balance sheet risks, a number of banks underestimated not only default risks but also concentration and liquidity risks.

As a result of these shortcomings, the sharp rise in delinquencies on US subprime mortgages triggered a significant and widespread adjustment in the balance sheets of many financial institutions which had direct and indirect exposures to mortgage debt on and mainly off their balance sheet. So, effectively the securitisation process did not sufficiently insulate bank balance sheets from the adverse impact of sharp corrections in the housing market. In a few extreme cases, the shareholders of some institutions and the public at large suddenly realised, looking at the balance sheet, that “*on the left side, nothing was right, and on the right side, nothing was left*”.

Having said that, however, I would not conclude that the recent experience suggests that the OTD model and the securitisation process have failed and should be abandoned. These financial innovations entail important benefits. Looking ahead, the actions and initiatives by market participants and policy-makers should aim at addressing the identified weaknesses, by improving incentive structures, risk management practices and transparency, so that the

⁹ E.g. Helbling and Terrones (2003) and Adalid and Detken (2007).

OTD model can function effectively and contribute to an efficient and stabilising sharing of risk and help contain the intensity of boom-and-bust asset price cycles.

IV. The role of central bank policies

Let me now turn to some pertinent policy issues for central banks. What is the role of monetary policy, and more generally of central bank policies and tasks, in preventing or containing the risk of financial market imbalances – of asset price bubbles – that can threaten the stability of the financial system and entail serious risks to aggregate output volatility and medium to long-term price stability? And what is the role of central bank policies in mitigating the potential consequences of a sharp market correction on the financial system and the economy?

Over the past 10 months, central bank actions have provided answers to the second question. The ECB has pursued a clear strategy that aims at ensuring the orderly functioning of money markets and mitigating financial stability risks through the effective management of liquidity in the interbank money markets and without changing the stance of monetary policy. The level of policy rates has been determined by the overriding objective of preserving medium-term price stability, while money market operations have kept the very short-term market rates close to the key policy rate and have alleviated pressures in the term money market. Looking forward, the envisaged actions by public authorities and the private sector, in line with the proposals of the Financial Stability Forum and the ECOFIN Council policy roadmap, aim at addressing the consequences of the turmoil by restoring confidence and strengthening the resilience of the financial system. And very good progress is being made in implementing the envisaged actions.

But the answer to the first question I posed is also essential, for we can all agree that, in principle and in general, prevention is better than cure. The issue has been recently debated again and policy-makers and academic economists have expressed different views. So can and should monetary policy prevent – or at least contain – asset price bubbles? My answer to this question consists of five points.

- *First*, the overriding objective of monetary policy is – and should remain – the preservation of the stability of the general price level, as measured by the CPI (HICP), and monetary policy has the instruments to achieve this objective over the medium and longer term.
- *Second*, monetary policy cannot effectively control asset prices, which are relative prices that are fundamentally determined by real factors, including expectations of future real rates of return incorporating risk premia.
- Nevertheless, and this is the *third* point, there can be significant links between asset price developments and consumer price developments over the longer term, while monetary and credit conditions can influence asset price dynamics in various ways. For this reason, a careful monitoring of asset price developments and a thorough assessment of asset price prospects and risks can provide useful input to the assessment of the risks to medium-term price stability.
- *Fourth*, the empirical evidence from many countries and various periods, including the recent experience, has shown that excessive credit expansion and high leverage can be key drivers of unsustainable asset price developments, through various channels, including their effects on funding liquidity risk, risk premia and market liquidity. Consequently, the monitoring and analysis of monetary and credit aggregates can provide useful early warning signals about the build-up of asset price bubbles and their potential longer-term implications for the functioning of the financial system, macroeconomic volatility, and price stability.

- Therefore, and this is my *fifth* point, there may be circumstances when the assessment of the potential impact of asset price dynamics – past and projected – on price stability may imply that monetary policy should try to “lean against the wind” in order to mitigate medium to longer-term risks to price stability and the economy.

Having said that, I should add that defining a monetary policy stance that aims to “lean against the wind” in a manner that is consistent with the preservation of price stability may not be straightforward. And the effectiveness of such a policy is likely to depend on the effects of other factors that influence asset prices and consumer price developments. Time does not permit to elaborate on these complex issues. But let me note that the monetary policy strategy of the ECB provides an appropriate and comprehensive framework for the analysis of the links between money and credit expansion, asset price dynamics and price stability risks that can provide a solid basis for decision-taking and external communication.

More generally, addressing the broader issue of how to minimise the risk of financial bubbles occurring requires the involvement of the private sector itself, financial market regulators and supervisors of financial institutions. Monetary policy could, under certain circumstances, play a role in containing this risk, but it is certainly not the main instrument to help deal with the emergence, persistence or unwinding of financial imbalances. Not least against the background of the market turmoil, we can ask the question: Is there anything else that central banks could – or should – do to minimise the likelihood of significant financial market volatility and to strengthen the capacity of the financial system to absorb their consequences? The answer to this question involves various functions and potential actions of central banks, but I would like to stress the contribution which central banks can make by enhancing their monitoring of financial stability, by further developing the pertinent methodologies and models and improving the availability of the relevant data.

This is, of course, no easy task. Contagion effects and likely non-linearities in both the build-up of imbalances and their transmission across the financial system and to the real economy make the modelling of financial stability risks very complex. Moreover, assessing and estimating the likelihood of typically low probability events – the famous “black swans” – is exceedingly challenging.

There is no time now to discuss these matters in detail. Allow me, however, to make three pertinent remarks in this context: *First*, all of the financial stability indicators that are currently being developed (by the IMF, central banks and in research institutions) – be they indicators based on securities prices (such as credit spreads, distances-to default, volatilities implied by options prices), or “rule of thumb” thresholds derived from longer-term historical averages, fundamental equilibrium considerations, or from cross-country comparisons – certainly contain important information, but they are also subject to important inherent limitations. Therefore, it is necessary to appropriately combine the information contained in various indicators and avoid excessive reliance on single indicators.¹⁰

Second, in order to create an internally consistent framework, or model, for analysing imbalances and monitoring financial stability, it is also necessary to identify linkages and channels of contagion within the financial sector – across markets, institutions and infrastructures – and between the financial and non-financial sectors. Such complexity poses a formidable modelling challenge. Even if models might never be able to predict a financial crisis, and its precise timing, we can nevertheless seek to develop models for assessing vulnerabilities.

Third, a promising way of gauging the ability of the financial system to cope with disturbances is stress-testing, which is increasingly used at a macro level for assessing mainly the stability of banking systems. Important advances have been made in developing

¹⁰ See Borio and Lowe (2002), Detken and Smets (2004); and ECB (2007).

stress-testing techniques, and central banks have played a catalytic role in this progress.¹¹ However, also with regard to stress-testing techniques, we are faced with important limitations, related to unpredictable non-linearities or unexpected links that may surface during periods of stress. Until the existing limitations have been adequately addressed, our financial stability assessment will need to use an eclectic approach, building on a wide range of data sources, indicators and models.

Looking forward, I see the need to make further progress on at least three fronts, concerning (i) the availability of data, (ii) the development of models and (iii) the understanding of linkages. Regarding data, more and better data on quantity indicators – such as liquidity, leverage, market positioning, etc. – would help in shedding light not only on the indicator properties of securities prices, but also on the vulnerabilities prevailing within financial markets. In addition, micro balance sheet data, especially on distribution of exposures, can be helpful when seeking to identify the relevance of linkages both between real and financial sectors and within the financial system itself.¹² As financial institutions further strengthen their practices, data availability in this area may improve over time.

With regard to models, we need dynamic general equilibrium modelling frameworks capable of measuring (possibly non-linear) interactions between the financial and non-financial sectors of the economy and the links to monetary policy instruments. This would allow for a more accurate assessment of the likely impact of adverse disturbances, and the further development macroeconomic stress-testing techniques is clearly a promising avenue to pursue in this respect.

Finally, regarding linkages, further work would be desirable on the modelling of real-financial interaction, and on interactions within the financial system itself, including payment systems and interbank markets. This would help to better understand the likely impact of correcting imbalances on financial institutions, markets and infrastructures, and to capture possible second-round effects of financial crises.

V. Concluding remarks

Let me conclude on a note of appreciation and optimism: significant progress has been made in recent years in understanding how financial imbalances emerge, why they persist, and how they may be avoided, also, and especially, thanks to the dedicated effort and fruitful work of researchers in academia and policy-making institutions. But of course, many conceptual and methodological challenges lie ahead. As you witnessed, some of the explanations given and conclusions drawn were tentative, for the fact is that we do not know enough to provide a complete and accurate diagnosis of all the problems and definite policy prescriptions. Therefore, there is plenty of scope for economists to further contribute towards the deepening of our understanding of these phenomena and to the development of tools which can help to quantify their effects and identify the appropriate policy responses. After all, anticipating the consequences of financial innovation for the functioning of the financial system is a process of continuous learning and discovery. New products are likely to be invented, and some of these may give rise to new and unexpected risks. Unfortunately, we often learn about the risks only after they have materialised. It is, therefore, likely that as markets will continue to develop and innovate and as long as investors' "animal spirits" are not harnessed by an appropriate market and institutional framework that can foster prudence and discipline, the bubbles and financial imbalances will reappear in our economies. And so

¹¹ See Committee on the Global Financial System (2005); Basel Committee for Banking Supervision (2006, 2008).

¹² Possible reference here to the example of household indebtedness which could be less of a problem if it is concentrated on high-income deciles, or bank exposures, if they are on loans/assets that are not in particular risk.

will the need for further analysis on our research agenda. This is a clear example of the truth of the observation (made by 19th century English author Mark Pattison) that often “*in research the horizon recedes as we advance*”. There is no shortage of challenges ahead!

Thank you very much for your attention.

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