

ISSUES RAISED AT THE ECB WORKSHOP ON “ASSET PRICES AND MONETARY POLICY”

C. Detken, K. Masuch and F. Smets¹

On 11-12 December 2003, the Directorate Monetary Policy of the Directorate General Economics in collaboration with the Directorate General Research held a workshop on “Asset prices and monetary policy” at the European Central Bank in Frankfurt. The workshop was attended by participants from 27 central banks.² This note briefly summarises some of the main issues addressed, puts them into context and draws some lessons. The first section deals with the information content of asset prices for the conduct of monetary policy, defines asset price bubbles and discusses the costs associated with such bubbles. The second section summarises some of the evidence regarding past asset price boom and bust periods, their identification and consequences. The last section deals with the issue of the monetary policy response to asset price bubbles.

1. Asset prices: fundamentals or bubbles?

It is important for monetary policy makers to understand the incidence, the effects and the costs of asset price bubbles, as they have implications for the development and indicator properties of key macroeconomic variables and for the impact of monetary policy on these variables.

In order to assess the information content of asset prices for monetary policy, it is useful to distinguish, at least conceptually, between those instances in which asset prices are driven by changes in current and expected future “fundamentals” and those cases in which asset prices deviate from those fundamentals. In the latter case, one often speaks about asset price bubbles.³ This note focuses on “positive bubbles” where the asset price positively deviates from the fundamentally justified price. The resolution of the misalignment will in such cases be associated with - possibly rapidly - falling asset prices, potentially leading to macroeconomic instability. Negative bubbles might have similar effects as such crashes, but they are not discussed in the remainder of this note.

¹ The views expressed are those of the authors and do not necessarily reflect those of the ECB.

² Participants were invited from the central banks of the EU countries, the EU accession countries, Australia, Canada, Japan, New Zealand, Norway, Switzerland and the United States; and in addition the BIS and the IMF.

³ In practice, this distinction may be less straightforward to make as over-optimistic expectations about future returns and the development of asset price bubbles often build on good fundamentals.

The no-bubble case

Under standard economic analysis asset prices are driven by investors who form rational expectations about future economic developments (fundamentals) that are relevant for the net (and after tax) present value of future returns on the asset. This implies that changes in asset prices are endogenous and generally caused by changes in expectations about long-term developments in fundamentals like productivity trends, relative prices of input factors, tax policy or real interest rates. Such changes in expectations also directly affect economic activity and inflation through various channels. For example, they may have an impact on consumption through wealth effects. These expectations also affect investment both directly through changes in current and expected future profits and indirectly through the possible impact of asset prices on the external finance premium and financing conditions more generally. In other words, movements in asset prices, consumption and investment are jointly determined by developments in current and expected fundamentals.

The bubble case

The workshop mainly focused on the case of asset price bubbles and their implications for monetary policy. When observers identify the risk of a bubble this is almost always related to the view that the present value of future returns or service streams as perceived by the agents holding (or buying) the respective asset is out of line with a realistic assessment of current and future fundamentals. This in turn typically implies that the current behaviour of the respective agents (e.g. their consumption and investment decisions) is distorted and sooner or later may have to be adjusted. These distortions are costly as agents consume or invest too much compared with a situation without bubbles, which, in turn, normally increases macro-economic instability.

Moreover, if debtors base their debt financing decisions on overly optimistic expectations regarding their future net income streams, there may be important additional costs related to bankruptcies and financial instability once the bubble bursts. This problem is related to the fact that financial frictions make the availability of credit conditional on the value of collateral, which can amplify the macroeconomic fallout from an asset price collapse. The overall cost of the bursting of asset price bubbles may be particularly high if financial institutions are vulnerable to asset price crashes e.g. if they directly hold equities or stocks.

2. Empirical evidence on past asset price booms and busts

A number of papers at the workshop analysed the historical experience of large asset price booms and busts and the role of monetary policy.⁴ Most of these papers focused on the experience of industrial

⁴ For example, Helbling and Terrones (2003), Detken and Smets (2003), Borio and Lowe (2003), Goodhart and Hofmann (2003), and Christiano, Motto and Rostagno (2003).

countries in the post-Bretton-Woods period.⁵ An asset price boom has been defined differently by different authors, but the definition typically focuses on exceptionally large increases in asset prices over specific periods of time. The definition of a boom can therefore include both the bubble and the no-bubble case.

When are asset price booms costly?

The first thing to note is that not all asset price booms end with a bust. Second, not all busts are costly in terms of triggering financial crises or severe recessions. The probability of a bust following a boom depends on the type of asset price under consideration.⁶ A stylised fact emerging is that stock market crashes are overall more frequent than housing price crashes. However, the relative likelihood of a real estate price boom being followed by a bust is about 50% higher than that of an equity price boom being followed by a bust.⁷ Both equity and housing price busts are typically associated with a slowdown in growth.⁸

Distinguishing between high and low-cost booms (high-cost booms are those which trigger a large post-boom decline in real GDP growth rates), it would appear that real estate price developments play a larger role in high-cost booms.⁹ Moreover, all major banking crises in industrialised countries during the post-war period have coincided with housing price busts.¹⁰ The reasons for the high cost of housing price busts are threefold. First, property accounts for a major share of household assets; second the high share of bank loans secured by real estate collateral (between 30 and 70%) creates a link to the health of the banking system; and third from the private agents' perspective housing prices are closely linked to expected income developments.¹¹ Furthermore, the fact that the deviation of the credit to GDP ratio from its trend is increasing particularly strongly during high-cost booms is consistent with the link between leverage and future costs of real estate price collapses. Other characteristics of high-cost asset price booms are significant increases in investment (especially housing investment) relative to GDP and in money relative to GDP (widening money gaps).¹²

Given the importance of housing price bubbles for financial crises and the real economy, real estate prices deserve particular attention by monetary policy authorities. Having good statistics on real estate prices is a necessary condition for the appropriate monitoring of national housing markets.

⁵ Two exceptions are Goodhart and Hofmann (2003), and Christiano, Motto and Rostagno (2003).

⁶ Of course, such estimates also depend on the method chosen to identify booms and busts (peak-to-trough, trend deviations or growth rates).

⁷ Helbling and Terrones (2003), pp. 8-9.

⁸ In reality it is always difficult to identify to what extent the fall in asset prices may have been caused by the expectation of the slowdown.

⁹ Detken and Smets (2003), p. 13.

¹⁰ Eichengreen and Bordo (2002).

¹¹ Goodhart and Hofmann (2003).

¹² Detken and Smets (2003).

Can bubbles be identified in real time?

Bubbles are notoriously difficult to identify even ex-post.¹³ Identifying bubbles in real time obviously involves even more difficulties. However, some observers found that simple methods like comparing current with historical price/earnings ratios seem to do a reasonable job in identifying large misalignments.¹⁴ The simultaneous observation of a major deviation of equity or land prices from their past trends and a relatively high growth rate in certain key variables, such as money, credit and investment, seems to be a relatively good leading indicator of a boom followed by a costly crash. Other results suggest that banking crises which in most cases are associated with asset price collapses can be reasonably well predicted at a 3 to 5-year horizon when high credit and equity price gaps are simultaneously observed.¹⁵

How did monetary policy react in past boom episodes?

It is certainly difficult to come up with a general characterisation of monetary policy during past asset price boom episodes. Central banks might have had a stabilising effect in some boom episodes, but may have contributed to an asset price bubble in other cases. It has been claimed that central banks often did not respond to asset prices during the boom phase, but loosened the policy stance after the bubble burst (using a simple Taylor rule as a benchmark¹⁶).¹⁷ This response could be consistent with a purely reactive approach to unwinding financial imbalances. Other evidence shows that the monetary policy stance was on average (for 38 boom periods across 18 countries) tight at the beginning of the booms, but was then considerably loosened in the last part of the boom phase (again with the Taylor rule being used as the benchmark).¹⁸ The loosening is also confirmed by the typical rise in money and credit gaps over the boom period. As discussed below, the overall cautious central bank reactions might be due to uncertainty with regard to the underlying reason for the asset price increases. Obviously, it cannot be excluded that on some occasions too lax (current and expected) monetary policy has accommodated the asset price booms and prolonged their existence.

¹³ For example, there is still a debate about whether the famous 17th century tulip bubble was really a bubble or whether it could be explained by rational expectations about the development of underlying fundamentals; see Kindleberger (1978) versus Garber (2000).

¹⁴ Shiller (2000).

¹⁵ In this context a gap is defined as a variable's deviation from its (recursive, stochastic) trend. Borio and Lowe (2003).

¹⁶ The Taylor rule is normally used for reasons of simplicity in this kind of literature.

¹⁷ Borio and Lowe (2003). However, Cecchetti (2003) comes to a different conclusion.

¹⁸ The estimated loosening of the policy stance occurred despite modestly rising nominal interest rates over the boom period. The monetary policy stance was passively loosened as the increase in inflation and the output gap would under normal circumstances have required a stronger increase in interest rates. See Detken and Smets (2003).

3. How should monetary policy react to asset price changes and asset price bubbles?

It seems undisputed that monetary policy-makers should use the information contained in asset prices and balance sheets, not least because the underlying shocks are not directly observable. When addressing the question of *how* monetary policy should react, it seems again useful to distinguish between the normal case and the bubble case.

The no-bubble case

The endogeneity of asset prices implies that monetary policy should not react to asset prices as such, but to the estimated underlying shocks.¹⁹ However, this does not imply that asset prices do not provide useful information. On the contrary, the shocks driving economic dynamics and ultimately growth and inflation can be better identified if asset prices are included in the analysis. Asset prices can for example provide information on wealth effects on consumption, on market expectations and on financing conditions (including external finance premia). It is thus important to understand how asset prices are related to expectations of fundamentals.

In this context it should be stressed that higher asset prices do not always signal increased inflationary pressures. There are a number of shocks to fundamentals, which cause equity prices to increase, but at the same time reduce price pressures, at least over short- or medium-term horizons. For example, structural reforms or other supply shocks, which enhance productivity and increase labour supply, reduce public expenditure and debt and lower expected taxes on capital would normally lead to higher expected net-profits and lower expected marginal costs. The increase in asset prices may thus be accompanied by lower inflationary pressure, especially if possible short-term negative effects on aggregate demand of the underlying wage and fiscal policy changes are taken into account.

The bubble case

Owing to the potentially high macro-economic volatility associated with a bursting asset price bubble, there seems to be a consensus emerging that trying to identify asset price bubbles is highly recommendable for central banks aiming to maintain price stability over the medium term. What seems largely undisputed among central banks is that monetary policy should not target asset prices. Beyond these conclusions a very large degree of uncertainty exists with respect to the actual policy recommendation. The general notion seems to be that central banks should lean against a growing positive asset price bubble with higher interest rates, even if this implies a lower than desired inflation rate over the short term, in order to avoid higher volatility in the medium term.²⁰ Recently it has been argued that after this initial tightening, loosening monetary policy as the bubble persists, could be the

¹⁹ Smets (1997) and Dupor (2002).

²⁰ Kent and Lowe (1997).

optimal policy.²¹ The reason is that due to the time lag in the effective operation of the interest rate channel, policy has to pre-emptively take into account the likely post-boom decline in aggregate demand by lowering interest rates as the bubble matures. There is of course the counter argument that such a policy may risk feeding the bubble in the first place.

Indeed, the question of whether the central bank should conduct a looser or tighter policy than it would without the existence of the bubble crucially depends on a number of the bubble's properties which are extremely difficult to assess. For example, other things equal optimal policy may need to be tighter than otherwise the lower is the probability of the bubble bursting on its own accord, the larger are the efficiency losses associated with big bubbles, and the higher is the assumed impact of monetary policy on the bubble process.²² Furthermore, the fact that the precise future consequences of a bursting bubble are likely to be highly uncertain further adds to the complexity of taking appropriate monetary policy decisions during a boom period.

Asset price crashes and deflation risks

Finally, an asset price crash, especially if it represents a bursting bubble, may be associated with overall economic dynamics that might undermine the long run preconditions for price stability. For example, the bursting bubble could lead to a sharp drop in aggregate demand, and thus deflationary risks, both via direct wealth effects and, in the event that the stability of the financial sector is affected, via a credit crunch. Due to the zero lower bound on nominal interest rates such a situation could make it more difficult for the central bank to maintain price stability.

The question of whether monetary policy should try to lean against emerging bubbles, or of whether monetary policy should be pre-emptively loosened if the probability of a crash is considered high, therefore also depends on whether monetary policy can prevent a prolonged period of deflation after the bubble bursts, even if short-term policy rates are close to zero.

In this respect, some papers submitted for the workshop mentioned the existence of various possibilities for conducting monetary policy also in the environment of the zero bound, thereby avoiding deflation. For example, the central bank may attempt to influence longer-term interest rates through a commitment to low policy rates *in the future*. Other examples relate to quantitative easing, which will lower the yields paid on a broad spectrum of assets and thus the average financing costs of the private sector.²³ Finally, there is the related possibility of direct purchases of assets, such as bonds, equities or land, with a view to injecting liquidity into the economy and to raising the prices of these assets.²⁴

²¹ Gruen, Plumb and Stone (2003).

²² Gruen, Plumb and Stone (2003).

²³ Christiano, Motto and Rostagno (2003).

²⁴ Goodhart and Hofmann (2003).

To the extent that monetary policy can prevent a prolonged period of deflation once the bubble bursts, the argument for pre-emptive loosening in case of an anticipated asset price crash becomes even less convincing.

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