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SHOULD CENTRAL BANKS TARGET STOCK PRICES?

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The question of whether central banks should react to stock price developments has been hotly debated. This discussion has intensified since the eruption of the credit crisis. According to some analysts, including myself, the failure of the US Federal Reserve under Alan Greenspan to react to the bubbles in the stock and housing markets helps to explain the financial excesses and the subsequent crisis.

There are two schools of thought on the issue of whether the central bank should try to influence asset prices. The first one, which is well represented by the present and former Chairmen of the US Federal Reserve, argues that central banks should not use the interest rate to influence asset prices. The proponents of this view advance several arguments. The first argument is that it is difficult to identify bubbles *ex ante*. An extreme version of this view denies the existence of bubbles altogether. In this view, financial markets are efficient and thus asset prices always reflect the best available information. Since central banks do not possess better information than markets, it makes no sense for them to try to influence stock prices. The second argument is that even if a bubble can be identified *ex ante*, using the interest rate is ineffective to burst a bubble. All the central bank can do is to limit the damage once the bubble bursts. This school of thought also stresses that by keeping the rate of inflation low, the central bank contributes to creating an environment of sustainable growth in which bubbles are less likely to emerge.

The second school of thought takes the view that asset prices are often subject to bubbles and

crashes. These can have strong pro-cyclical effects and can also affect the stability of financial markets. Since central banks are responsible for financial stability they should monitor asset prices and try to prevent the emergence of bubbles (that invariably lead to crashes). In this view the use of the interest rate is seen as effective in preventing bubbles from emerging. It should be noted that few economists from this school will argue that the central bank should target a particular value of the asset price (in the same way as it targets an inflation rate). Instead proponents of the second school of thought argue that a strategy of 'leaning against the wind' may be useful to reduce too strong movements in asset prices.

How to analyze this issue? Economists usually employ some macroeconomic model and then ask the model to answer the question. In this case we want the model to answer the question of whether a central bank can improve macroeconomic stability by reacting to asset price movements. The next question then is which model to use. Since the last two decades macroeconomics has been dominated by the rational expectations paradigm. The present-day macroeconomic models, the so-called Dynamic Stochastic General Equilibrium models (DSGE-models), all incorporate this paradigm. This is a world of rational agents who are superbly informed. They understand the world in all its complexities. Since they all understand the same 'Truth', it is sufficient to model just one agent, the representative agent. This agent observes a shock and immediately understands its implications allowing him to compute the optimal price, consumption and production from today into eternity. New-Keynesian versions of this model

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incorporate stickiness in wage and prices, but remain firmly embedded in the rational expectations paradigm.

In this DSGE-world there is no room for bubbles and crashes. Markets are always efficient, so that asset prices reflect underlying fundamentals. Thus central banks cannot improve welfare by guiding asset prices to other values than those produced by efficient markets. Since most central banks these days use some form of DSGE-model for policy evaluation it will not come as a surprise that these central bankers are reluctant to use the interest rate to influence stock prices.

But are the DSGE-models the appropriate instruments to study the issue of whether central banks should try to prick asset bubbles? I argue that they are not for two reasons. First, the scientific evidence from other sciences (psychology, brain sciences) casts doubts about the plausibility of the rational expectations assumption which requires agents to understand the full complexity of the world in which they live. It is no exaggeration to say that there is now strong evidence that individual agents suffer from deep cognitive problems limiting their capacity to understand and to process the complexity of the information they receive. Many anomalies that challenge the rational expectations assumption have been discovered. I just mention ‘anchoring’ effects here, whereby agents who do not fully understand the world in which they live are highly selective in the way they use information and concentrate on the information they understand or the information that is fresh in their minds. This anchoring effect explains why agents often extrapolate recent movements in prices.

Second, models that deny the existence of bubbles and crashes are particularly unsuitable to analyze the question of whether a central bank should act to prevent bubbles in asset prices from emerging. We need other models.

In my modelling approach I take the view that agents face cognitive problems in understanding and processing information. As a result, they use simple rules (‘heuristics’) to guide their behaviour. They do this not because they are irrational, but rather because the complexity of the world is overwhelming. In a way it can be said that using heuristics is a rational response of agents who are aware of their limited capacity to understand the world. These heuristics also contain a bias. I assume that some agents are optimistic in their forecasting rules and others are pessimistic. This leads to a behavioral macroeconomic model in which waves of optimism and pessimism (Keynes’ ‘animal spirits’) arise spontaneously. (For a

detailed description of the model, see my CEPS Working Document No. 305). Note that although this model assumes that agents have biased beliefs, on average the forecasts are right.

These endogenously generated cycles in output and stock prices are made possible by a self-fulfilling mechanism that can be described as follows. A series of random shocks creates the possibility that optimistic forecasting rules deliver a higher payoff, i.e. a lower mean squared forecast error (MSFE). This attracts agents that were using pessimistic forecasting rules. The ‘contagion-effect’ leads to an increasing use of the optimistic beliefs to forecast the output, which in turn stimulates aggregate demand and leads to a bull stock market. Optimism is therefore self-fulfilling. A boom is created. Put differently, the contagion effect leads to a correlation of beliefs, in this case optimistic ones, that propel market prices in one direction. At some point, however, negative stochastic shocks make a dent in the MSFE of the optimistic beliefs. The pessimistic beliefs become attractive and therefore fashionable again. The stock market and the economy turn around.

It is in this context that I analyze the question of whether central banks can improve macroeconomic stability (i.e. lower variability of output and inflation) by using the interest rate aimed at reducing stock price volatility. I assume that stock prices affect both demand and supply. When stock prices increase, net equity of firms goes up. As a result, banks are more willing to grant better credit conditions to firms. This has a positive effect on aggregate demand (this is the Bernanke-Gertler credit multiplier model). The improved credit conditions also lower marginal costs and thus affect aggregate supply positively. Stock price declines have the opposite effects.

I then ask the model the question of whether a central bank that ‘leans against the wind’ in the stock market, i.e. that uses the interest rate to reduce the volatility of stock prices improves macroeconomic stability. And the answer is: Yes, central banks can influence stock prices, and by following ‘leaning against the wind’ strategies in the stock market, they can improve the tradeoff between output and inflation, i.e. they can reduce the volatility of both output and inflation.

So far, this is not really surprising. After all, this is a model that produces waves of optimism and pessimism in the macroeconomy and to booms and busts in the stock market. By manipulating the interest rate the central bank changes these ‘animal spirits’. What is more surprising is that this result only holds in an environment of credible inflation targeting. If the inflation target has a high degree of

credibility the model tells us that these ‘leaning against the wind’ strategies significantly improve macroeconomic stability (output and inflation stability). However, these policies aiming at reducing the volatility of asset prices by manipulating the interest rates do not improve macroeconomic stability when inflation targeting has no credibility.

In this sense there is a grain of truth of the first school of thought discussed earlier. A credible inflation targeting is a powerful tool to stabilize the economy. Where this school of thought has it wrong is when it confuses necessary and sufficient conditions. Inflation targeting is necessary for macroeconomic stability, but it is not *sufficient*. By leaning against the waves of excessive optimism and pessimism that characterize asset price movements, the central bank contributes in reducing the scope for bubbles and crashes and in so doing helps to stabilize the economy.

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