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Introduction

John Y. Campbell

During the past quarter century, monetary authorities in developed countries have been remarkably successful at reducing and stabilizing inflation. Fluctuations in output have also been less severe than they were in earlier decades, leading commentators to coin phrases such as “the great moderation” or “nice decade.”¹ However, the same period has seen major fluctuations in asset markets, most obviously the sustained bull market in equities during the 1980s and 1990s, the boom and subsequent bust in technology stocks during the late 1990s and early 2000s, the dramatic increase in house prices in the first few years of this century, and, most recently, falling house prices and rising commodity prices.

Central bankers have always paid some attention to asset prices in connection with their mission of ensuring the soundness of the banking system. In the United States, for example, the Federal Reserve took measures to choke off the stock price boom of the late 1920s, provided liquidity after the stock market crash of 1987, and helped to engineer the bailout of the hedge fund Long-Term Capital Management in 1998. Recently, however, there has been increased interest in the relevance of asset prices for macroeconomic stability. The chapters in this volume, presented at a National Bureau of Economic Research (NBER) conference at the Wequassett Inn in Chatham, Massachusetts, on May 5–6, 2006, explore the relationship between asset prices and monetary policy from this point of view.

Several chapters in the volume ask what monetary authorities can learn

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1. “Nice” stands for noninflationary consistently expansionary, an acronym due to Governor Mervyn King of the Bank of England.

from asset markets. These chapters treat asset prices not as ultimate goals of monetary policy, nor as variables that can be directly controlled, but as indicators of macroeconomic conditions to which monetary authorities can respond.

Stephen G. Cecchetti opens the volume with an empirical analysis of equity markets in twenty-seven countries and housing markets in seventeen countries. He finds particularly strong linkages between housing markets and the macroeconomy. Housing booms predict strong economic growth in the near term, weak economic growth in the longer term, and relatively high inflation. Cecchetti argues that central bankers are and should be particularly concerned about extreme negative outcomes; they act as macroeconomic risk managers. Accordingly, Cecchetti evaluates the relation between equity and housing booms and extremely high inflation or low output. He finds that both types of booms worsen the distribution of worst outcomes (measured as the mean within the lower 25 percent tail of the output distribution or the upper 25 percent tail of the inflation distribution). There is some evidence that the equity market effects are stronger, and housing effects are weaker, in economies with market-based financial systems and high ratios of stock market capitalization to gross domestic product (GDP). Cecchetti uses these results to argue that traditional academic analysis, which looks at the first two moments of output and inflation, understates the importance of asset prices for the practice of central banking.

Central bankers will have greater confidence responding to asset prices if they understand what structural forces are driving them and how these forces affect output and inflation. One common view is that prices are driven by exogenous shocks to investor beliefs or preferences that have little or nothing to do with underlying macroeconomic fundamentals. In 1996, Alan Greenspan famously used the phrase “irrational exuberance” to describe a positive shock of this sort. An alternative view is that asset markets reflect evolving beliefs about the long-run prospects for the economy, particularly the trend rate of productivity growth.

The second chapter in this volume, by Simon Gilchrist and Masashi Saito, builds a model that embodies this alternative view. Their model contains a financial accelerator mechanism (Bernanke, Gertler, and Gilchrist 1999); that is, high asset prices increase the collateral of entrepreneurs and lower the cost of external funds for investment. Gilchrist and Saito evaluate several alternative monetary policies using a quadratic loss function in the output gap and inflation. They find that a policy of aggressive inflation targeting is less than ideal because, while it stabilizes inflation, it allows the financial accelerator to destabilize output. When expected productivity growth accelerates, asset prices rise, external funds become cheap, and investment and output increase by more than they would do in a frictionless economy. The monetary authority can offset this by calculating and re-

sponding to the “asset price gap,” the difference between the level of asset prices and the level that would prevail in a frictionless economy. The benefits of such a policy are particularly large if the monetary authority has better information about long-run growth than does the private sector. However, Gilchrist and Saito caution that an uninformed central bank can do damage if it responds naively to the level of asset prices, because such a policy will tend to produce inflation when there is a productivity slowdown, and deflation when productivity growth accelerates.

Tommaso Monacelli’s chapter also emphasizes the role of collateral in debt markets. Monacelli points out that in an economy in which some households are borrowing-constrained, welfare increases if the constraints are relaxed. The central bank should take this effect into account when formulating optimal monetary policy. Monacelli argues that it may be appropriate for a central bank to allow some surprise inflation when there is a temporary improvement in productivity. At such a time, borrowing constraints tend to bind more tightly, but if households have long-term nominal debt, inflation offsets the effect by eroding the real value of outstanding debt. However, Monacelli concedes the dominant importance of the standard argument for price stability in an economy where prices are costly to adjust. Monacelli goes on to consider the role of durable goods in providing collateral for household debt. He argues that constrained households tilt their consumption inefficiently toward durable goods, particularly when constraints are unusually tight, and that this increases the volatility of durable goods prices. Optimal monetary policy should have stability in the relative price of durable goods as an objective, balancing this against the objective of stability in nondurables price inflation.

Monika Piazzesi and Martin Schneider present a novel explanation for the volatility of house prices. They emphasize that house price booms occurred in many countries both in the 1970s, when inflation was high, and in the 2000s, when inflation was low. To explain this phenomenon, they suggest that some households are confused about the distinction between real and nominal interest rates, while other households understand it. This causes disagreement about the level of real interest rates at times when inflation is unusually high or low. In the 1970s, confused or “illusionary” households perceived high real rates, while rational households perceived low rates; in the 2000s, this pattern was reversed. Households that perceive low real rates wish to borrow, but Piazzesi and Schneider argue that in order to do so, they must invest in housing as collateral. Accordingly, disagreement about real interest rates drives up house prices. Shocks to inflation, whether positive or negative, have the potential to generate housing booms.

Asset prices can be informative not only about the state of the real economy, as emphasized by Gilchrist and Saito and Monacelli, and inflation, as emphasized by Piazzesi and Schneider, but also about the stance of

monetary policy itself. This feedback from monetary policy to asset markets significantly complicates the task of central bankers who must decide how to respond to asset price movements. The chapter by Hans Dewachter and Marco Lyrío asks how the prices of long-term nominal government bonds respond to the macroeconomy and to the perceived stance of monetary policy. Dewachter and Lyrío point out that a standard structural macro model, in which investors are assumed to know the parameters of the model, is unable to explain the volatility of long-term interest rates. Because long rates are determined primarily by the long-run equilibrium real interest rate and the inflation target of the monetary authority, both of which are constant, the standard model implies that long rates are also close to constant. To generate realistic movements at the long end of the yield curve, Dewachter and Lyrío assume that bond market investors believe that the equilibrium real interest rate and long-run inflation target change over time and update their estimates of these variables using a Kalman filter. The authors fit their model to U.S. market data on nominal interest rates, together with survey data on inflation expectations. In an extended version of the model, they allow parameters to change when the chairmanship of the Federal Reserve changes. Dewachter and Lyrío find that learning about monetary policy is the main factor driving the prices of long-term nominal bonds.

If bond prices are determined by investors' beliefs about monetary policy, it is natural to ask how the monetary authority can shape those beliefs to improve its control over the yield curve. Glenn D. Rudebusch and John C. Williams discuss one approach that has been used recently by the central banks of New Zealand and Norway, the publication of a projected future path for the short-term interest rate that is directly controlled by the monetary authority. This approach goes significantly beyond the informal verbal discussion of the possible direction of policy that has been used recently by the Federal Reserve. Rudebusch and Williams analyze a simple New Keynesian structural model in which the public is uncertain about the central bank's inflation target or about the parameters of the policy rule that the bank uses to respond to macroeconomic shocks. They assume that the monetary authority cannot communicate these parameters directly but can release noisy forecasts of future short-term interest rates. They find that releasing interest rate projections generally improves the public's understanding of monetary policy, with beneficial results for macroeconomic stability. It is, however, possible that the policy can backfire, destabilizing the economy, if the public greatly overestimates the accuracy of the central bank's interest rate forecasts.

Recent increases in the price of oil and other mineral and agricultural commodities have renewed interest in the link between commodity prices and monetary policy. Jeffrey A. Frankel's chapter points out that, in theory, the world real interest rate is an important influence on commodity prices.

In equilibrium, the convenience yield of an inventory of commodities, plus the expected rate of real commodity price appreciation, must equal the real interest rate. Thus, a high real interest rate requires expected commodity price appreciation, which, in turn, requires a low commodity price today. Frankel presents evidence that this effect is important for many commodities. To the extent that the real interest rate is hard to measure directly because expected inflation is unobservable, commodity prices provide an important clue that should be used by monetary authorities.

Frankel goes on to argue that monetary policy should pay special attention to the prices of commodities that are exported or imported. He criticizes the policy of targeting consumer price inflation, which is currently used by many central banks around the world, on the ground that this policy does not properly handle shocks to the terms of trade. For example, a Consumer Price Index (CPI)-targeting oil importer facing an increase in the world price of oil is required to tighten monetary policy to offset the effect of the oil shock on domestic consumer prices, but Frankel argues that this policy worsens the real effect of the oil shock on the macroeconomy. Instead, Frankel suggests that monetary policy should stabilize an index of export prices or producer prices.

The last two chapters in this volume study the effects of macroeconomic announcements on asset prices. Empirically, this is an attractive strategy for identifying the reaction of asset prices to macroeconomic variables because other influences on asset prices have relatively small effects during the short periods of time around announcements. Roberto Rigobon and Brian Sack highlight a difficulty with the standard methodology for measuring announcement effects and propose a novel methodology to solve it. They point out that only the surprise component of a macroeconomic announcement should move asset markets, but this surprise component is measured with error because surveys of prior consensus forecasts are noisy and typically outdated. To correct for the effect of measurement error, they argue that other influences on asset prices should create equal asset-price variance in announcement periods and other equally short periods when announcements do not occur. If this is true, a comparison of variances provides additional information that can be used to identify the true announcement effect, even in the presence of announcement measurement error. Implementing their methodology, Rigobon and Sack find larger announcement effects than previous studies have done. The pattern of these effects is, however, familiar, with positive growth or inflation announcements driving up interest rates at all maturities and positive inflation announcements driving down stock prices.

Richard H. Clarida and Daniel Waldman ask how the exchange rate reacts to news about inflation. There are offsetting effects because inflation lowers the long-run equilibrium nominal exchange rate but may also lead the monetary authority to increase the short-run nominal interest rate, cre-

ating a wedge between the current exchange rate and its long-run value. Clarida and Waldman show that in a simple monetary policy model proposed by Clarida, Galí, and Gertler (2002), an optimizing central bank tightens aggressively in response to inflation news and thereby induces an exchange rate appreciation. Thus the announcement effect of inflation on the exchange rate can be used to learn about the stance of monetary policy, specifically, how close it is to an optimal policy. Empirically, Clarida and Waldman show that inflation announcements do tend to cause exchange rate appreciation, particularly in countries with explicit inflation targeting policies. In the United Kingdom and Norway, countries that moved in the direction of inflation targeting in 1997 and 2001, respectively, the authors find that the exchange rate response to inflation also changed in the direction predicted by their model.

Central bankers face the difficult task of integrating these and other insights into their decision-making process. The volume concludes with a fascinating panel discussion among three distinguished practitioners: Governor Donald L. Kohn of the Federal Reserve; former Governor Laurence H. Meyer, now vice chairman of Macroeconomic Advisers LLC; and William C. Dudley, advisory director of Goldman, Sachs & Co. Of course, all three panelists express their personal views and not those of their institutions.

The three panelists share the view that asset markets periodically develop “bubbles,” upward price movements that cannot easily be justified by fundamentals and that often end in sharp declines. Governor Kohn contrasts the “conventional strategy” of responding to bubbles only insofar as they change expected output or inflation in the medium run, with a strategy of “extra action” that seeks to use monetary policy to dampen emerging bubbles. He characterizes extra action as a form of insurance against adverse consequences from the collapse of a bubble that is allowed to develop but argues that three conditions must be met for this insurance to be worth buying. First, the monetary authority must be able to identify an emerging bubble reliably and in real time. Second, contractionary monetary policy must reliably dampen the bubble. And, third, dampening the bubble must have substantial benefits for macroeconomic stability. Governor Kohn argues that these conditions have not been met in recent years in developed countries and are unlikely to be met in the future.²

Both Laurence H. Meyer and William C. Dudley are more sympathetic to policies of taking extra action against asset price bubbles.³ Dudley argues that seasoned market observers can identify emerging bubbles in a timely manner. He agrees with Kohn that conventional monetary policy is

2. Governor Kohn's position appears to be close to those of the former and current Federal Reserve chairmen, Alan Greenspan (2002) and Ben Bernanke (2002).

3. In this respect, they are closer to the position expressed in a recent article published by the European Central Bank (2005).

ill-suited to dampen speculative activity in long-term asset markets but suggests that the monetary authority has alternative policies that may be more effective. Specifically, the central bank should regularly publish assessments of fair value in equity markets and should tighten margin requirements when a bubble appears to be developing. In addition, it would be helpful if the monetary authority had greater authority over capital adequacy and disclosure requirements for financial institutions. Meyer agrees that the central bank must regularly communicate its concerns about asset values with the public and argues that the monetary authority should at least err on the side of restraint when it perceives the emergence of an asset price bubble.

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