

MONETARY POLICY, BUBBLES, AND THE KNOWLEDGE PROBLEM

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The role of monetary policy in creating, not merely responding to, asset price bubbles is a provocative topic of relevance to central banking requiring empirical analysis. The tenor of the times following the global financial crisis is to take that extreme premise as a given, and to advocate a policy response of tightening monetary policy preemptively to prevent or pop bubbles—that is, to lean against the wind. Leading expressions of this view, set out before the current consensus emerged, include Bordo and Jeanne (2002); Borio and Lowe (2002); Borio and White (2003); Cecchetti, Genberg, and Wadhvani (2002); Roubini (2006); and White (2006, 2009). As argued in Posen (2009), however, the success of such a policy depends upon three empirically testable assumptions: first, that we can discern bubbles in real time from among the ongoing fluctuations in asset prices before it is too late; second, that the monetary instruments available to central banks do affect asset prices in a dependable fashion; and third, that it is worth it on net to preempt bubbles, despite the potential costs from lost output and increased volatility of doing so.

Amidst the understandable public outrage in the United States and elsewhere regarding the aftermath of the 2008–09 crash, it is

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easy to rush to judgment on monetary policy and to forget that all three of these assumptions remain far from established. Previously, several researchers have taken on the second assumption, and offered cross-national evidence that monetary policy instruments do not predictably or dependably influence asset prices.¹ Analyses of the bubble of the 1980s in Japan, often held up as the paradigmatic example of a missed opportunity to preempt an asset price boom with monetary tightening (or even of a bubble caused by monetary laxity), show that the case does not fit the paradigm—not least because real estate prices there rose by 50 percent in two years prior to monetary loosening, and continued rising after monetary tightening began.² One implication is that if small open economies facing apparent bubbles at present driven by capital inflows raise interest rates by anything short of hundreds of basis points, they will only attract more inflows and exacerbate their problems (Posen 2010).

This article challenges the validity of the first listed assumption necessary for leaning against the wind to succeed—namely, the assumption that monetary policymakers can correctly identify asset price bubbles in time to respond preemptively (or at least usefully). This is something where many policymakers even previously skeptical now feel they can be like Supreme Court Justice Potter Stewart and recognize obscenity in asset prices when they see it.³ Some patterns do emerge if we look more carefully at the historical record of asset price booms and busts (Hellebrandt, Meads, Posen 2011), but, in light of those patterns, the prospect of getting the call right becomes very daunting. This is not because one should have huge faith that financial markets are always correct in their pricing of risk and reward, or that central bank decisionmakers can avoid making judgment calls as a principle. The difficulty arises because of the complex nature of asset price booms and busts, a complexity that seems to be overlooked in the advocacy of leaning against the wind.

¹See Assenmacher-Wesche and Gerlach (2008), Goodhart and Hofmann (2008), and Posen (2009), as well as earlier discussions in Bean (2003, 2009) and Posen (2003, 2006).

²See the analyses of Japanese monetary policy and other factors in the 1980s bubble in Bernanke and Gertler (2001); Cargill, Hutchison, and Ito (2000); Takeo and Kashyap (1999); Toshiki, Kuroki, and Miyao (2000); and Posen (2010).

³See the shift on this particular point between Kohn (2006) and Kohn (2008), for one notable example.

Some Booms Are Different

Nowadays, all empirical macroeconomists are riffing on Reinhart and Rogoff's (2009) already classic book, *This Time Is Different*. In that spirit, consider a few facts about the diversity of types of bubbles, or at least of asset price booms and busts. It turns out that some things taken for granted about booms and busts are not true, and their impact and attributes are quite varied.

Even if one is to use judgment on asset prices from a forward-looking perspective, it certainly helps to have an objective baseline definition for what constitutes a boom or bust looking retrospectively for research. Hellebrandt, Meads, and Posen (2011) create lists of asset price booms and busts, both for residential real estate prices and for equity prices, for 17 developed economies since the 1970s.⁴ Their lists were generated by two distinct methods for identifying booms and busts: one which looks at sustained periods of price growth more than 1.3 standard deviations above/below the four-quarter moving average of the growth rate for the series (by country and asset type), following Bordo and Jeanne (2002); the other which uses Hodrik-Prescott filter methods to identify a time-varying trend growth rate for the given series, and then looks for sustained large deviations or gaps from trend, following Goodhart and Hoffmann (2008) and Hume and Sentence (2009). To a perhaps surprising degree, the results of the analyses are robust across the two differently generated (and genuinely differing) lists.

Examining simple descriptive statistics on the duration and timing of booms and busts yields already ample evidence that not all booms and busts are alike. With the growth rate method, 42 real estate booms and 50 equity booms are identified. Of these, only 16 real estate booms were followed by a bust within two years, and only 12 equity booms were followed by a bust within two years. For the price gap method, real estate busts followed booms within two years in 11 out of 30 cases, and equity busts followed booms in only 13 out of 51 cases. Looking at recessions in GDP terms rather than at incidence of asset price busts has a similar pattern: recessions begin within a year of the end of an asset price boom in only a small

⁴This extends a dataset that Charles Goodhart and Boris Hoffman graciously shared. Obviously, data limitations played a role in which specific countries and years were included in the sample.

fraction of the total number of boom cases. In other words, what goes up need not come down where asset price booms are concerned. More detailed analysis reveals that real estate booms are more likely to be followed by busts than equity booms are, though it still is far from inevitable. Further underscoring the difference, on average equity booms are associated with positive multi-year performance for GDP (and some other macroeconomic variables of concern), but real estate booms are not, even those absent subsequent busts.

For policymaking, this means that reacting to asset price movements preemptively on the basis of the price movements alone is likely to cut off several fold the number of booms that would do no harm than the number of dangerous bubbles doomed to burst that would be desirably preempted. In addition, as DeLong (2002) argues, historically equity booms have been associated with technological advances, and cutting them off can do lasting damage to productivity growth. Mishkin and White (2002), Mishkin (2009), and Posen (2009) all discuss further the importance of distinguishing between different types of asset booms or bubbles. Thus, the decision to preempt an asset price boom requires either a lot of additional information beyond the price movements themselves—as yet unidentified in the research to date—to tell policymakers which booms to cut off, or the willingness to cut off many harmless or helpful booms for every harmful bust preempted.

Complicating matters further is the timing revealed in Hellebrandt, Meads, and Posen's (2011) sample averages. The admittedly mechanical methods for identifying booms (and busts) essentially rule out anything from being an asset price boom unless the deviation from average or trend price growth is sustained for more than four quarters. Even with greater judgment placed in the hands of monetary policymakers it seems unrealistic (and certainly would require a degree of fine-tuning that is unadvisable) that any central bank would intervene on the basis of a shorter-duration boom rather than waiting to see if it would reverse itself. The majority of equity booms end in two years or less, however, and of real estate booms end in three years or less—though some real estate busts go on for many years.

Unless one believes that the first rise in interest rates, or the initial announcement of a commitment to raise rates as much as necessary to stop the boom in question, would be sufficient to cut off the boom quickly, even preemptively oriented central banks would be

intervening on average after the expected lifetime of the average boom had passed. The experience of rising equity prices in the United States after Greenspan's "irrational exuberance" announcement in 2006, or of climbing real estate prices in Japan after the Bank of Japan started raising rates at the end of the 1980s, suggests it would take some time for even bubble popping central banks to put the needle through the bubble wall.

Of course, advocates of leaning against the wind could claim that a credible commitment to preempt asset price bubbles would avoid this whole chasing cycle. In a similar spirit, others suggest that a promise by central banks not to cut rates when asset busts occur—thereby removing the supposed "Greenspan put"—would deter the emergence of bubbles in the first place. The history of macroeconomic policy over the last 40 years, however, is littered with falsified claims that "credible commitments" by central banks will induce changes in private sector behavior. Furthermore, any monetary commitment needs to be to a policy that would be effective in practice in order to be credible. Yet, the empirical research already discussed, as well as that of Reinhart and Reinhart (2011), indicates that such monetary measures would not have the desired effect on economic outcomes, even if the central bankers in question were willing to carry them out. So such proclaimed commitments to preempt or not to ease could not have the intended deterrent effect against bubbles.

One can instead put in place an institutionalized rule, like an inflation target or exchange rate peg, but with regard to asset price booms. But that still does not avoid the previous issue of how to define that rule, and we know that even announced policy commitments can come under suspicion and change. A more interesting question is whether policymakers might be guided usefully by some sort of joint target on duration and boom—that is, whether only popping those booms that last an unusually long time is welfare enhancing and avoids false positives. This approach merits further research, but clearly would be less preemptive in spirit than the lean against the wind argument usually given, even if it turns out to be a good idea.

Predicting Booms Is Easier Said than Done

If monetary policymakers could predict the emergence of asset price booms, then some of these issues would be resolved. The oft heard premise is that such prediction all too easy to do, because it is

easy monetary policy itself that leads to asset price booms. No matter how many times this claim gets asserted, however, it is not true—at least not in such robust terms that it would be a guideline for policy. Posen (2003) was the first to demonstrate that monetary ease—measured either by high rates of narrow or broad monetary aggregate growth, or by low real or nominal instrument interest rates—is neither necessary nor sufficient to cause an asset price boom, looking at cross-national panel data. Subsequent studies have borne this pattern out using different methods and different samples. Reinhart and Reinhart (2011) show the absence of any reliable link between the Fed funds rate and equity prices, housing prices, and even long-term interest rates using many decades of U.S. data. Credit growth has some positive correlation with asset prices, a relationship most often seen between measures of broad money and real estate prices (but also bidirectional in that case), but it is neither the primary driver of sustained asset price booms nor under the central bank's direct control as a form of monetary policy.

Further investigation was merited, since the claim that monetary ease predicts bubbles is so important as well as persistent, and since reliable predictors of future asset price booms (or bubbles) in general are critical to leaning against the wind (and other policies). Following the approach of Goldstein, Kaminsky, and Reinhart's (2000) system of early warning indicators for emerging market financial crises, Hellebrandt, Meads, and Posen (2011) set out to find variables that could be shown to be dependable advance signals of asset price booms in their aforementioned 17 country sample. The approach is first to define a "signalling window" ahead of booms (and busts), and then to look for variables that exceed some threshold level in most instances during that window, but rarely exceed that threshold in instances outside that window. In the jargon, one tries to find variables that have a high signal-to-noise ratio for predicting booms, indicating their likely onset with few false positives. Ideally, the variables should make some theoretical sense in connection and sign (e.g., low interest rates being associated with booms). Candidate indicator variables examined for their utility as predictors included measures of monetary policy, interest rates, and credit growth, as well as real variables like GDP growth, the current account balance (as a share of GDP), and construction growth.

The bottom line of this investigation is clear and broadly consistent, whether looking at predictors of real estate or equity booms

(or busts). In most cases, the same signaling variables that perform relatively well—though poorly in absolute terms—as predictors of the list of booms/busts generated by one of the identification methods perform similarly on the other list, which is at least reassuring regarding robustness. Few candidate indicators, however, manage to predict more than 50 percent of the booms (or busts). This result is in marked contrast to the results that Goldstein, Kaminsky, and Reinhart (2000) found for emerging market financial crises, where a number of indicators predicted a high proportion of banking and balance-of-payments crises.

In addition, when trying to predict the emergence of asset price booms, most of the monetary variables considered prove to perform poorly as signals. The relatively most promising monetary signal is the *change* in the policy interest rate, not the *level*, which is what is usually invoked to say monetary ease causes bubbles. Even then, the change in the policy rate is not a highly reliable indicator in absolute terms. In general, real variables do a better and more consistent job of predicting asset price booms (and busts) on average than monetary variables. Perhaps unsurprisingly, nonresidential investment growth and the ratio of the current account to GDP are the most promising advance indicators among the real variables, though they too are not terribly good signals compared with predictors of emerging market crises.

There are two implications of these results for the viability of a “lean against the wind” monetary strategy. First, trying to get ahead of asset price movements by tracking signals of coming asset price booms is likely to prove frustrating for policymakers—no likely candidate variables (at least considered so far and invoked in the calls to lean against the wind) seem to be robust and accurate early warning indicators of booms or busts in practice. Second, a primary motivation for such a strategy, that excessive monetary ease itself is a major precondition for, if not cause of, asset price booms, is rejected by analysis of the available data.

What We Might Question Since We Do Not Know

These results—including the relative rarity of most asset price booms ending in busts or being followed by recessions (i.e., becoming burst bubbles)—should cause a reconsideration of leaning against the asset price wind by monetary policymakers. We should

not leap to believing that we can readily recognize bubbles, at least not in time to do anything about them. In fact, the bestiary of booms and busts is a far more diverse collection than is usually acknowledged. It is currently beyond the ability of policymakers to discern in real time which booms are harmful and merit preemption, and which are not, even taking recent horrible events into account. Given how long it would realistically take central banks to act on booms compared to the short duration of most booms, even absent policy action, and how much tightening (and thus more time) would be necessary to end such booms, this seems like the kind of macroeconomic policy fine-tuning chasing after a shock has passed that Milton Friedman warned against. This is one reason why Jeanne (2008) and Posen (2009) advocate adoption of automatic stabilizers through cyclically variable taxation of real estate transactions instead of discretionary monetary policy responses.

Other researchers working on similar issues with different approaches may yet turn up ways for central bankers to distinguish dangerous from safe asset price booms and reliable advance indicators that warn them sufficiently far ahead of booms (and busts) emerging. Until such knowledge is provided to monetary policymakers, however, even the seemingly least controversial assumption required for leaning against the wind to succeed—that central banks can discern destabilizing booms with sufficient notice to preempt them—will be invalid. Since this argument is solely about the ability of monetary policymakers to recognize and react to asset price booms, and not about the viability of their means to affect asset prices, this should concern advocates of discretionary macroprudential policymaking as well, even when using nonmonetary tools.

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