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Leveraged bubbles ☆

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ABSTRACT

What risks do asset price bubbles pose for the economy? This paper studies bubbles in housing and equity markets in 17 countries over the past 140 years. History shows that not all bubbles are alike. Some have enormous costs for the economy, while others blow over. We demonstrate that what makes some bubbles more dangerous than others is credit. When fueled by credit booms, asset price bubbles increase financial crisis risks; upon collapse they tend to be followed by deeper recessions and slower recoveries. Credit-financed housing price bubbles have emerged as a particularly dangerous phenomenon.

[O]ver-investment and over-speculation are often important; but they would have far less serious results were they not conducted with borrowed money.
– Irving Fisher, "The Debt-Deflation Theory of Great Depressions," 1933

All of us knew there was a bubble. But a bubble in and of itself doesn't give you a crisis…. It's turning out to be bubbles with leverage.
– Former Federal Reserve Chairman Alan Greenspan, CNBC Squawk Box, 2013

What risk do asset price bubbles pose for an economy? Naturally, in the wake of the largest financial crisis since the Great Depression, the causes and consequences of extended mispricing of financial assets have climbed to the top of the agenda for macroeconomists and policymakers. It has become harder to dismiss such bubble episodes as rare aberrations and exclude them from macroeconomic thinking on axiomatic grounds.

In the pre-crisis consensus, to a large extent, policymakers and economists preferred to ignore bubbles, arguing that they could not exist, or could not be detected, or not reliably, or that nothing could or should be done, or there might be

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unintended consequences, and so on. Researchers and central bankers imagined that the problem of depressions had been solved and that the financial sector would be self-stabilizing. The financial stability role of central banks was mostly regarded as secondary, if not quaintly vestigial. The crisis exploded these and other myths which had taken hold based on very little firm empirical evidence, and with scant regard for the lessons of history. The Former Fed Chairman very publicly resiled from old beliefs: he stepped away from a benign neglect approach to markets' irrational exuberance, admitted the "flaw" in his worldview, and began to entertain, as above, the possibility that central banks might need to pay heed to bubbles, or at least some of them, rather more seriously than before.[1]

Yet how policymakers should deal with the potential risks emanating from asset price bubbles remains a hotly debated issue. In particular, the question as to whether central banks should use interest rates or macroprudential tools in response to such risks has attracted considerable attention. Recent influential contributions such as Svensson (2014) and Galí (2014) have cautioned against using interest rates to "lean against the wind".

Where are we now? Among policymakers and economists a post-crisis consensus seems to be emerging, and this new view worries a lot about *leveraged bubbles*. Yet, the skeptic might well ask: Is not this new consensus just as detached from evidence-based macroeconomics as the last one? Is not more empirical work needed before we rush to embrace another approach? Sadly, as of now, if one seeks statistically powerful inference based on data from large samples, then one can find little empirical evidence about varieties of asset price bubbles and the damage they might wreak on the economy.

This paper aims to close this gap by studying the nexus between credit, asset prices, and economic outcomes in advanced economies since 1870. We use a dataset that spans the near universe of advanced economies in the era of modern economic growth and finance capitalism over the last 150 years. Financial crises and asset price boom–busts are relatively rare events. Thus, any empirical study must employ very long time series and the historical experience of more than one country to have any hope of conducting a reasonable statistical analysis, as our prior work has shown.

Our key result is that some bubbles matter more than others. What makes bubbles dangerous is the role of credit, as was belatedly suspected by Greenspan. This finding also fits with conjectures put forward by Mishkin (2008, 2009) and other policymakers after the crisis: the idea that there are two categories of bubbles. Pure, unleveraged "irrational exuberance" bubbles may pose a limited threat to financial stability or the macroeconomic outlook. "Credit boom bubbles," on the other hand, may be a dangerous combination. In such bubbles, a positive feedback develops that involves credit growth, asset prices, and increasing leverage. When such credit boom bubbles go bust, in Mishkin's words, "the resulting deleveraging depresses business and household spending, which weakens economic activity and increases macroeconomic risk in credit markets." Arguably, these deleveraging pressures have been a key reason for the slow recovery from the financial crisis (Mian and Sufi, 2014; Jordà et al., 2013).

This paper builds upon our previous research. In Jordà et al. (2013) we showed that the debt overhang from credit booms is an important feature of the business cycle and that it is associated with deeper and longer lasting recessions. Subsequently, we collected a more comprehensive dataset on credit than had been hitherto available in Jordà et al. (2015). This paper uses these new data together with novel long-run historical data on asset prices (both in equities and houses). These two datasets allow us to investigate the interaction between asset prices and debt overhangs.

The plan of the paper is as follows. First, we introduce the two historical datasets underlying this study. In the second part, we study the role of credit and asset price bubbles in the generation of financial crises. Using a comprehensive dataset, covering a wide range of macroeconomic and financial variables, we demonstrate that it is the interaction of asset price bubbles and credit growth that poses the gravest risk to financial stability. These results, based on long-rung historical data, offer the first sound statistical support based on large samples for the widely held view that the financial stability risks stemming from of an unleveraged equity market boom gone bust (such as the U.S. dotcom bubble) can differ substantially from a credit-financed housing boom gone bust (such as the U.S. 2000s housing market). Third, analyzing the consequences of bursting asset price bubbles for the macroeconomy, we show that the output costs in the depth of the financial crisis recession, and the speed of the subsequent recovery, are shaped by the interaction of asset price run-ups and the pace of credit growth in the prior boom phase.

Our conclusions align with an emerging post-crisis consensus, but with actual an evidentiary basis. Asset price bubbles and credit booms may be harmful, but the interaction of the two sows the seeds of severe economic distress. The risk of a financial crisis then rises substantially and the ensuing recessions are considerably more painful. Leveraged housing bubbles turn out to be the most harmful combination of all.

Our new discoveries also place a renewed and nuanced emphasis on our earlier work on the causes of financial instability (Schularick and Taylor, 2012; Jordà et al., 2015). It is not only credit growth, but the interaction of credit and asset prices that matters for financial stability risks and the economic costs of financial crises.

1. Data

Our study relies on the combination and extension of two new long-run macro-finance datasets that have recently become available. In Jordà et al. (2015) we presented the latest vintage of our long-run credit and macroeconomic dataset in

[1] For the CNBC interview see Matthew J. Belvedere, "Bubbles and leverage cause crises: Alan Greenspan," October 23, 2013 ⟨http://www.cnbc.com/id/101135835⟩. For more depth see the interview with Gillian Tett ("An interview with Alan Greenspan," *FT Magazine*, October 25, 2013).

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