Discussion of "Leveraged Bubbles" by Jordà, Schularick & Taylor (2015)

Joshua Gottlieb
UBC & NBER

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Overview

Context:

- Continuing important line of research by these authors that:
  - Relates credit, asset prices, recessions
  - Helps understand the Great Recession
  - Introduces impressive historical data

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This paper specifically:

- Considers 144 recessions across 17 countries, $>$ 100 years
- Relates asset price growth, credit growth, and recession depth
- For each recession:
  - Looks ahead to measure output decline
  - Looks back at credit growth, asset price growth during expansion
  - Shows various relationships among these variables

Paper's Empirical Approach

1. Collect wonderfully comprehensive data

Table 1: *Data sources, period, and coverage details of the house price and equity price data*

For each country, we show the period covered by the equitymarket index, the period covered by the house price index, and the period covered by the bank loans series.

Country	Equity prices	House prices	Bank loans
Australia	1875–2012	1870–2012	1870–2012
Belgium	1897–2012	1878–2012	1885–2012
Canada	1915–2012	1921–2012	1870–2012
Switzerland	1910–2012	1900–2012	1870–2012
Germany	1870–2012	1870–2012	1883–2012
Denmark	1915–2012	1875–2012	1870–2012
Spain	1874–2012	1970–2012	1900–2012
Finland	1922–2012	1905–2012	1870–2012
France	1870–2012	1870–2012	1900–2012
U.K.	1870–2012	1899–2012	1880–2012
Italy	1906–2012	1970–2012	1870–2012
Japan	1913–2012	1913–2012	1888–2012
Netherlands	1890–2012	1870–2012	1900–2012
Norway	1914–2012	1870–2012	1870–2012
Portugal	1931–2012	——	1870–1903 / 1920–2012
Sweden	1870–2012	1870–2012	1871–2012
U.S.	1870–2012	1890–2012	1880–2012

Notes: Equity prices are broad indices. House prices are quality adjusted where possible. For bank loans, the financial institutions covered include commercial banks (CB) and other financial institutions (OFI) such as savings banks, credit unions, and building societies. Data generally cover all monetary financial institutions.
Sources: Jordà, Schularick, and Taylor (2014) and Knoll, Schularick, and Steger (2014). See text.

Paper's Empirical Approach

1. Collect wonderfully comprehensive data
2. Identify and categorize 144 recessions that appear over these periods
    - Unit of observation: each episode deemed to be a bubble
    - Identify peaks in housing or equity prices, followed by busts
3. Investigate relationships between prices, credit expansion, and recessions
    - Do booms & credit precede financial recessions?
    - Do booms & credit relate to recession severity?

Comments

1. Looking only at recessions discards much of the authors' hard work!
   - Reduces $N = 1{,}998$ to $N \leq 144$
     - Admittedly not all indepedent obs., but we still lose many
     - Aside: explain variability in sample sizes across specifications

2. Approach treats each episode as occurring independently
   - But credit likely relates to economic activity at other times also
     - Specifically: during boom preceding the bust

Challenge for Interpretation

- When obs. are selected based on outcome ($\Delta GDP \downarrow$), selection bias is a concern
  - Recessions could reflect reversion to trend
  - Or reaction to over-investment/over-consumption during boom (Beaudry, Galizia & Portier 2014; Rognlie, Shleifer & Simsek 2014)

- Bigger booms may have more credit growth—and worse recessions simply because of reversion to trend

Relationship Between Fundamentals, Credit & GDP

- Consider an economy where expected growth affects demand for credit:

$$GDP_t = f\left(\text{Fundamentals}_t,\ \text{Loans}_{t-1}\right) \tag{1}$$

$$\text{Loans}_{t-1} = D\Big(\text{Credit shock}_{t-1},\ \mathbb{E}_{t-1}\left[\text{Fundamentals}_t\right]\Big) \tag{2}$$

$$\text{where:} \quad f_1 > 0, \quad f_{12} > 0, \quad D_1 > 0, \quad D_2 > 0 \tag{3}$$

- Loans are helpful w/ good investment opportunities (high fundamentals)
- Loans can be detrimental ($f_2 < 0$), as in Jordà et al., if fundamentals low

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- This "economy" can experience credit growth for 2 reasons:

1. Improvement in expected fundamentals
   - This increases loans now
   - Assuming rational expectations, future GDP ↑
   - By eq. (3), loans further increase future GDP

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- This "economy" can experience credit growth for 2 reasons:

2. Credit shock
   - Also increases loans now
   - Effect on future GDP is ambiguous—depends on future fundamentals

Measured Effect of Prior Credit Expansion

- In this economy, the effect of credit on future GDP is ambiguous
  - Can increase GDP if future fundamentals are good
  - Can decrease GDP if future fundamentals are bad
- But examining all of the recessions won't reveal this
  - This strategy eliminates instances where credit $\uparrow$ due to good fundamentals

Key Suggestion

How to address selection?

- Use their impressive data more fully!
- Measure effect of credit in full sample
  - To look at recessions: allow for heterogeneity based on past growth, lending

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How to address selection?

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  - To look at recessions: allow for heterogeneity based on past growth, lending

- This approach is still imperfect
  - Leaves open the reason for credit growth
  - Requires more structure on lags
    - But would clarify the parameter being estimated

Summary

- Important, fascinating research agenda
- Enjoyable paper
- Introduces new, valuable data