The Profit-Credit Cycle

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Introduction

Credit expansion predicts

- ... increased banking crisis risk (Schularick & Taylor, 2012)
- ... lower GDP growth (Mian, Sufi & Verner, 2017)
- ... heightened bank equity crash risk (Baron & Xiong, 2017)

Open questions

1. What are the underlying drivers of credit cycles?
2. Why are they associated with forecast errors?

"Instability from beliefs": credit expansion and crisis

Increase in bank profits (decreasing loan losses)

⇓

Expectation formation (extrapolative, diagnostic)

⇓

Credit expansion based on overoptimistic expectations

⇓

Expected > realized outcomes (**Returns, Crisis, GDP**)

Overview

What we do

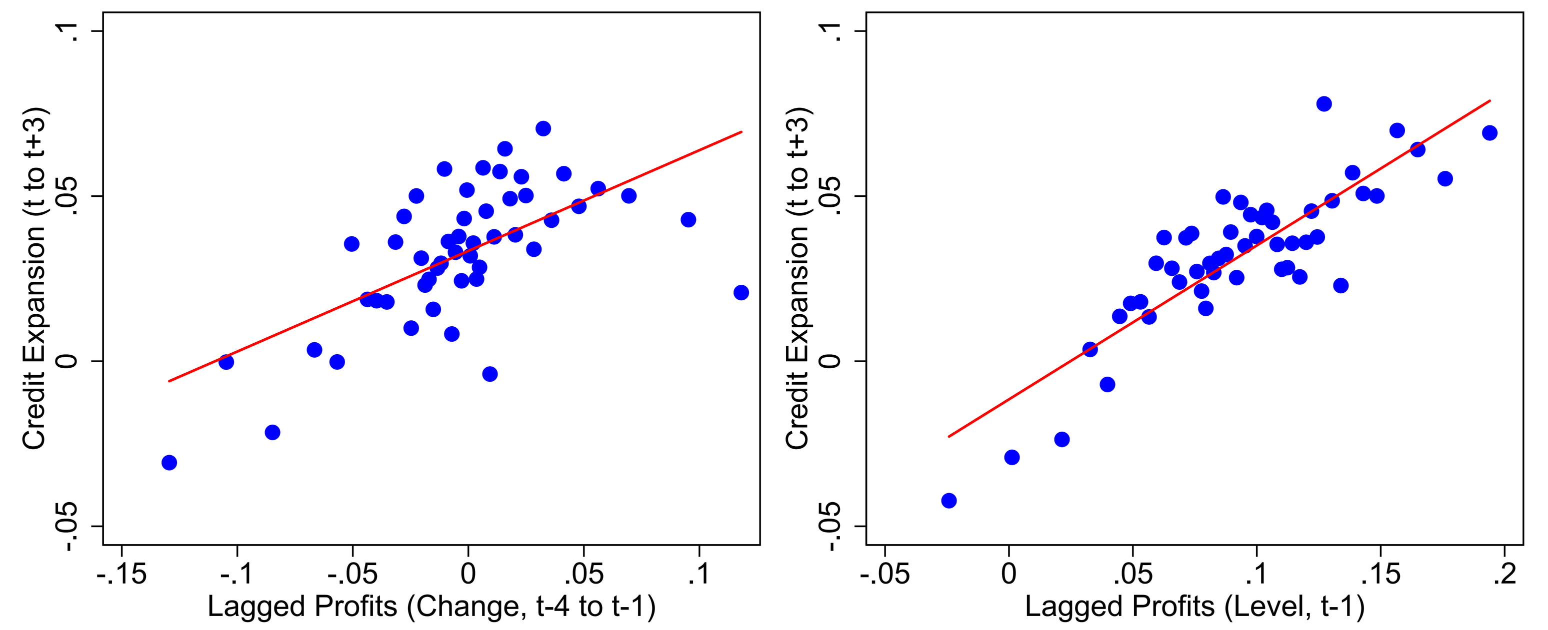
1. We introduce new data on banking sector profit and loss accounts (17 countries, 1870-2015) to study the relationship between past profits, credit expansions and crises.
2. We study the relationship between past performance, expectations (optimism), and lending in recent survey data on expectations of bank CFOs in the US.

What we find: The Profit-Credit Cycle

1. In long run panel data:
   - **Credit expansions:** increases in bank profitability predict a credit expansion over the following years
   - **Reversals:** increases in profitability predict elevated crisis risk and lower bank equity index excess returns
2. In US CFO survey data:
   - **Expectations:** expected profitability depends excessively on past profitability
   - **Credit:** expectations and forecast errors are reflected in credit

Bank profitability and the credit cycle

Figure 1: Binned scatterplot for the relationship between profits and credit-to-GDP changes



Notes: Each point represents the group specific means of profitability and credit expansion after controlling for a vector of net-worth and macroeconomic variables.

The strong postive correlation between observed profitability and subsequent credit growth

- ... remains robust when we include additional controls, time effects and analyse subsamples
- ... holds for alternative measures of profitability or credit growth, during and outside of financial distress and on a country-by-country level

Net worth channel and behavioral credit cycles

"Instability from beliefs"

- Decreasing loan losses predict credit expansion, lower costs or higher revenues do not
- Consistent with banks extrapolating from recently experienced loan default rates to expected future credit outcomes (Bordalo et al., 2018; Greenwood et al., 2018)

What about other explanations?

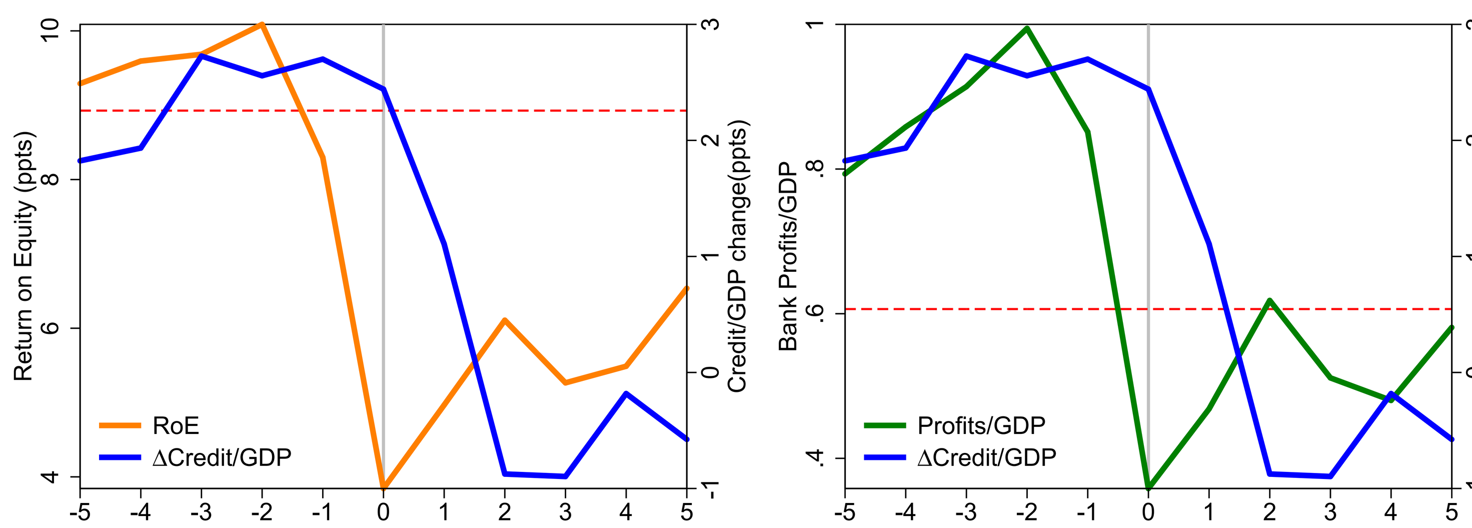
- Credit demand: unlikely, quantity of credit increases, but price of credit (bond spreads) decreases
- Banking sector net worth: not fully,
  - ... paid out dividends correlate with credit expansion, while controlling for retained earnings
  - ... changes in profits predict credit expansion, even controlling for profit level

Table 1: Disentangling net worth and expectations channels

	Dependent variable: $\Delta_3 y_{it+3}$					
	Uses of profits				Profit path	
	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta_3 DoE_{it-1}$	0.95*** (0.16)	0.76*** (0.20)	0.81*** (0.17)	0.70*** (0.19)		
$\Delta_3 REToE_{it-1}$			0.27*** (0.08)	0.21*** (0.07)		
$RoE_{i,t-1}$					0.44*** (0.09)	0.41*** (0.10)
$\Delta_3 RoE_{i,t-1}$					0.12** (0.06)	0.10** (0.04)
R^2	0.029	0.121	0.052	0.133	0.092	0.155
Country fixed effects	✓	✓	✓	✓	✓	✓
Distributed lag in Δy		✓		✓		✓
Control variables		✓		✓		✓
Observations	939	939	939	939	1640	1462

Bank profitability and crisis

Figure 2: Event study of profitability and credit variables around financial crisis dates

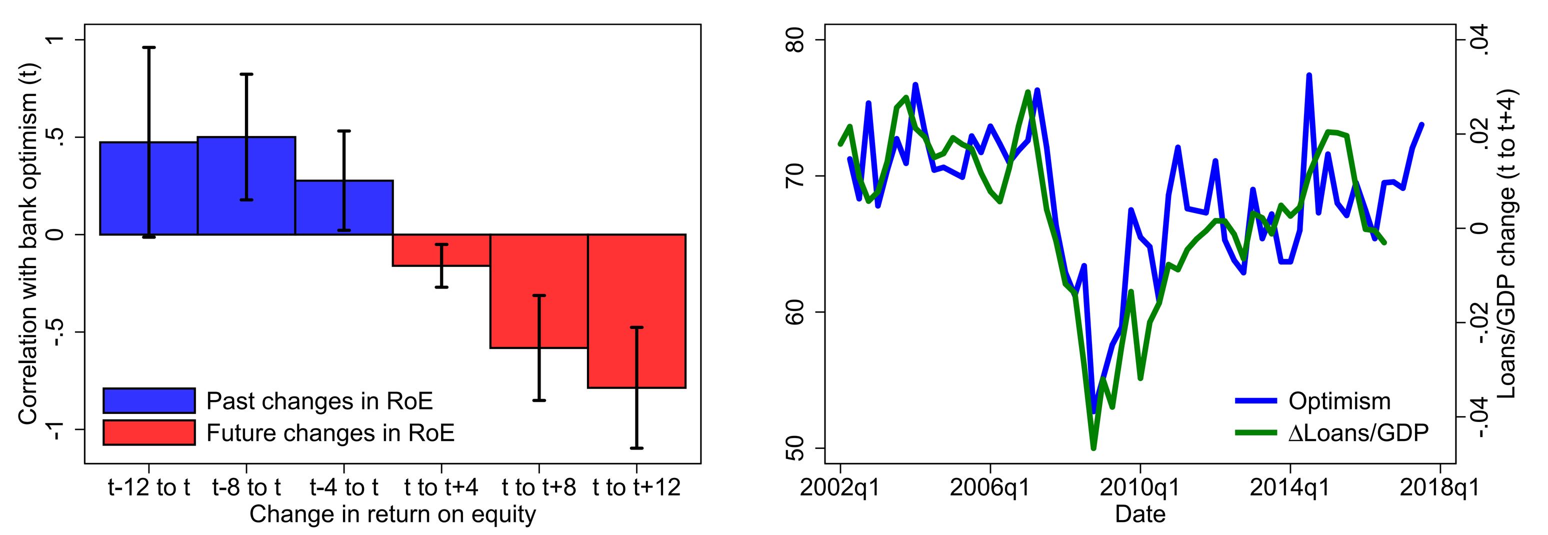


Do bank profits also help to understand the transition from boom to crisis?

- Credit cycle models with extrapolative expectations link increases in profitability not only to elevated sentiment and credit growth, but also to a predictable reversal over the following years
- We predict financial crises using a probit model
  - Increases in profitability predict financial instability over horizons of more than two years
  - The year prior to a banking crisis is often characterized by declining profitability
  - These results mirror the behavior of credit spreads (Krishnamurthy and Muir, 2017) and stock market volatility (Danielsson et al., 2018)
- Increases in profitability also associated with low excess returns on bank equity

Survey expectations and credit expansions

Figure 3: Profitability, optimism and credit growth



- Quarterly survey data on optimism and expectations of bankers in the United States from the Duke CFO survey.
  - Question 1: "Rate your optimism about the financial prospects for your own company on a scale from 0-100, with 0 being the least optimistic and 100 being the most optimistic"
  - Question 2: "Relative to the previous 12 months, what will be your company's percentage change during the next 12 months?" (Earnings)
  - Combined with quarterly accounting data on banking sector balance sheets and income
- Optimism and expected profitability today strongly correlated with past profitability
  - Link between realized profitability and past profitability is weaker ⇒ predictable forecast errors
- Optimism and expected profitability strongly correlated with changes in bank credit/GDP over the following four quarters