

Understanding Credit Cycle Characteristics in Indonesia

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Outline

- Introduction
- Credit sector in Indonesia
- Literature review
- Empirical strategy
- Estimation result
- Conclusion

Introduction

- Indonesia witnessed credit cycles over the years.
- Rapid credit overexpansion created credit booms; that eventually followed by credit busts.
- This study aims:
 - to investigate the characteristic of Indonesia's credit cycles from 2002 to 2016
 - to examine factors/determinants that contribute to the credit booms.

Credit sector in Indonesia

- Indonesia enjoyed rapid credit growth in recent years
- Demand for credit is strong in various economic sectors
- Some policies to control high credit growth:
 - Increase loan-to-value (LTV) ratio
 - Maximum Non Performing Loan (NPL) < 5%
 - Limitation of credit card ownership.

Literature review

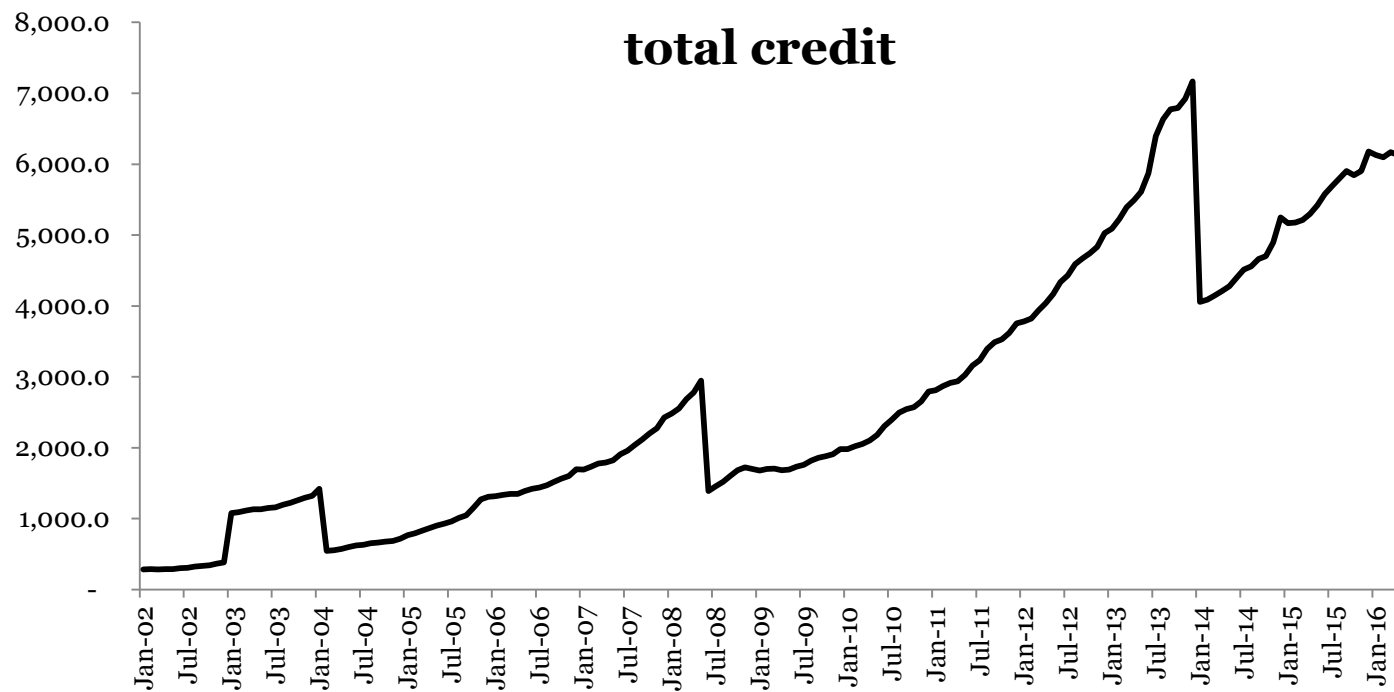
Credit cycles and fluctuations

- **Minsky financial stability theory**
 - Economic stability → trigger reckless behaviour of both borrower and lenders.
 - Reiterated by Roubini (2007).
- **Austrian business cycle theory**
 - Excessive credit may lead to credit supply-demand incompatibility

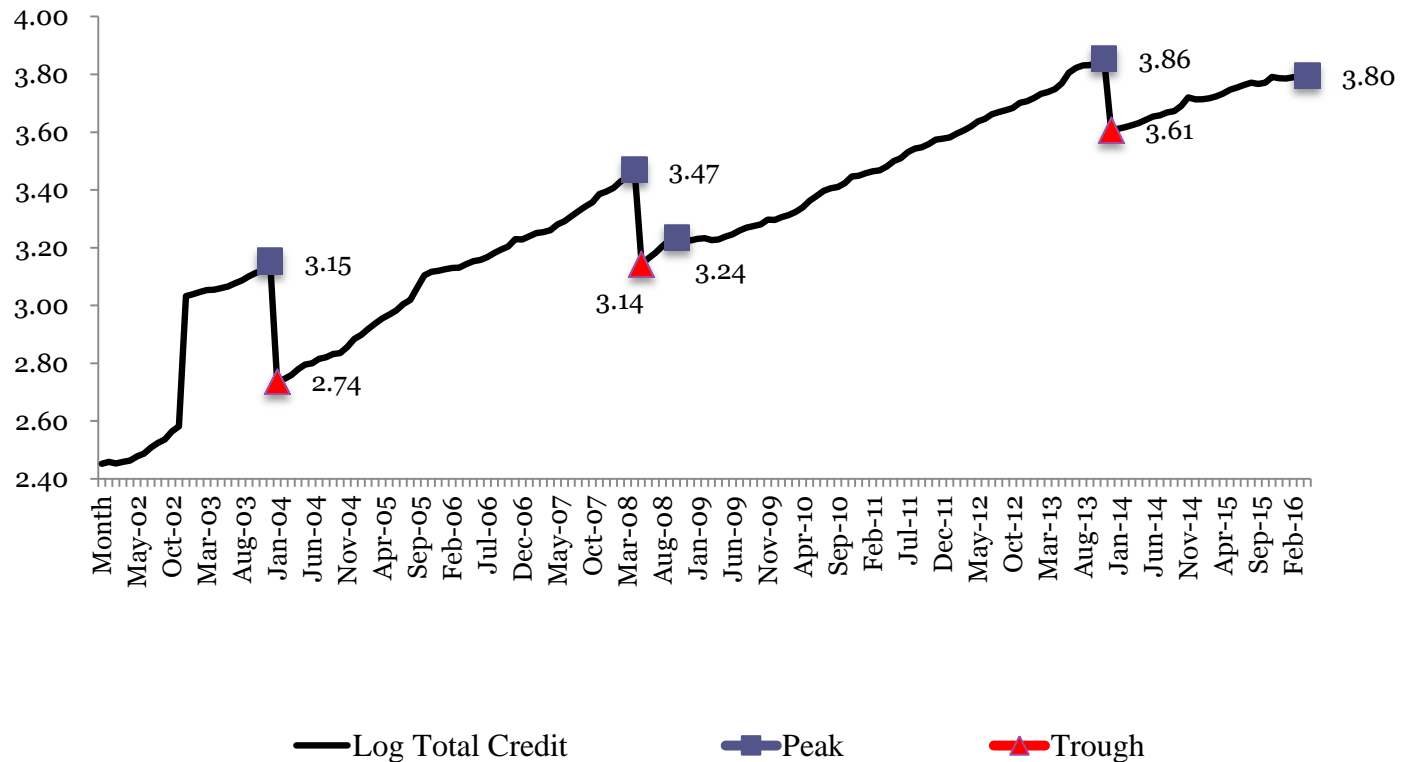
Credit boom determinants

- Herding behaviour (Kindleberger, 2000)
- Loose lending policies (Peterson and Rajan, 1995)
- Perverse incentives between borrowers and lenders (Boom and Are, 2004)
- Financial deepening.

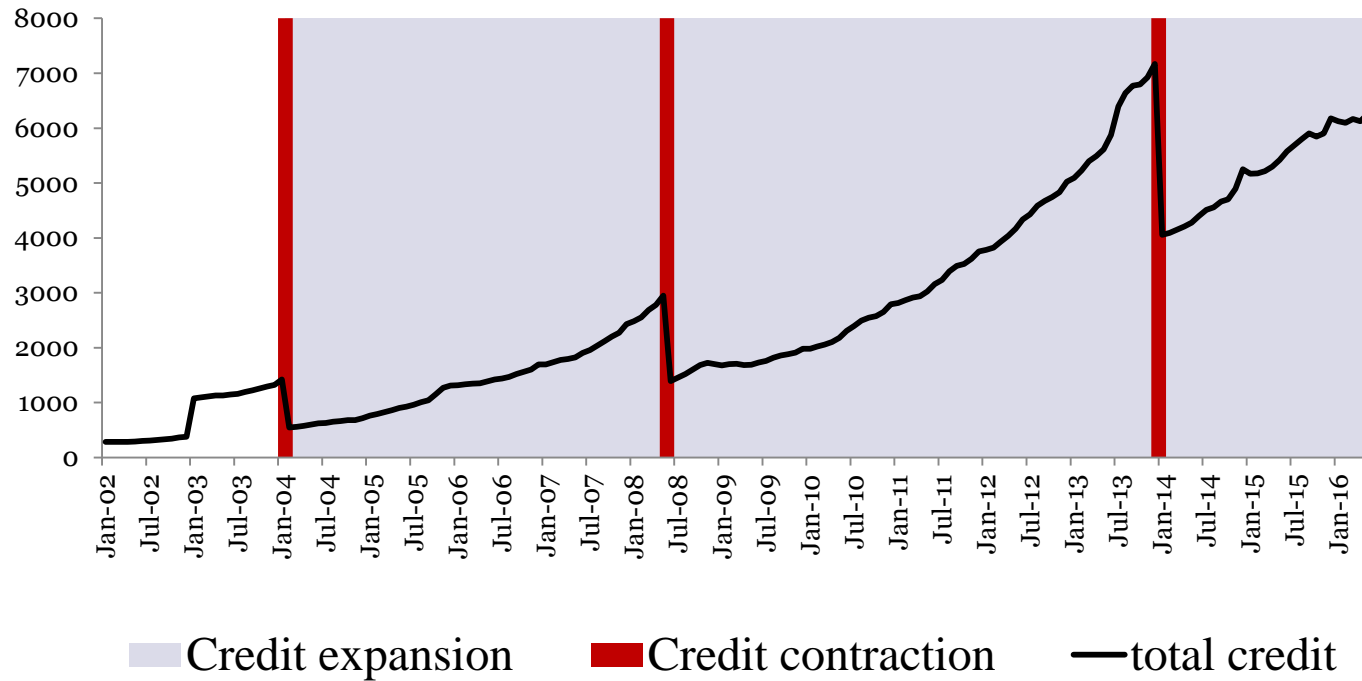
Indonesia credit



Credit turning point - peak and trough



Credit expansions and contractions

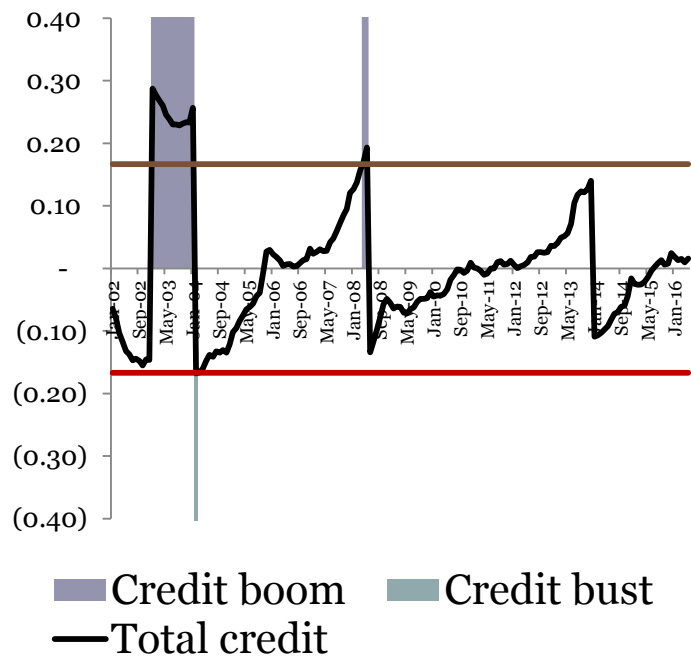


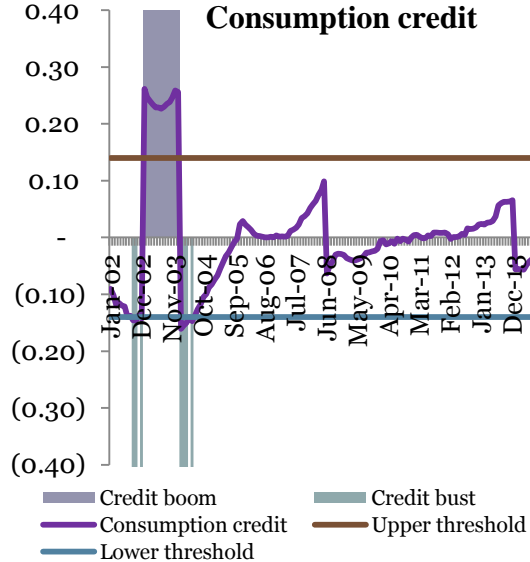
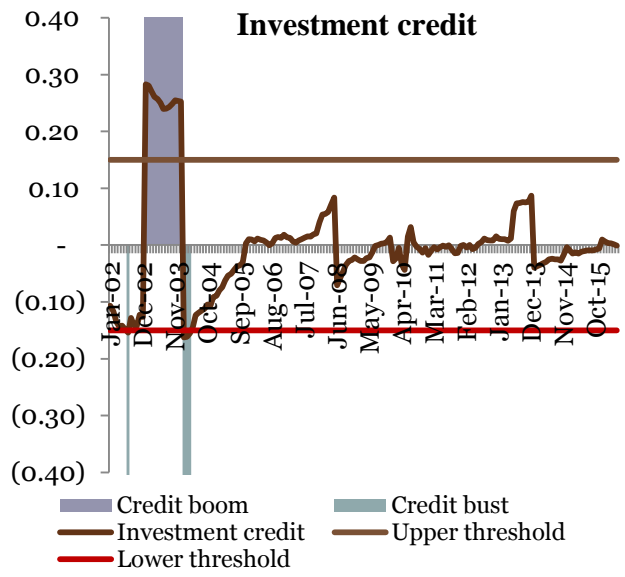
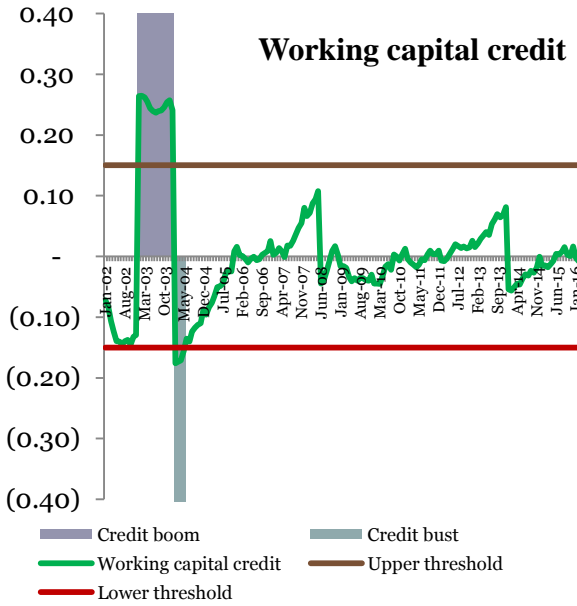
Credit boom and bust

Credit boom: $\tilde{C}_t > 1.65\sigma_{\tilde{C}_t}$

Credit bust: $\tilde{C}_t < -1.65\sigma_{\tilde{C}_t}$

\tilde{C}_t = is cyclical component from credit series C_t





Cycle comovement

$$s_{yi,t} = \begin{cases} 1 & \text{if } y_i \text{ is in expansion at } t \\ 0 & \text{otherwise} \end{cases} \quad s_{xi,t} = \begin{cases} 1 & \text{if } x_i \text{ is in contraction at } t \\ 0 & \text{otherwise} \end{cases}$$

$$\text{Concordance statistics} = \frac{1}{T} \sum_{t=1}^T [s_{xi,t}s_{yi,t} + (1 - s_{xi,t})(1 - s_{yi,t})]$$

	Total credit	Working capital credit	Investment credit	Consumption credit
Total credit	1			
Working capital credit	0.92	1		
Investment credit	0.92	0.92	1	
Consumption credit	0.92	0.92	1	1

Modeling the relationship between credit booms and its determinants

- Model specification:

$$y_t = \alpha_0 + \sum_{i=1}^3 \alpha_i x_{it} + \sum_{i=4}^6 \beta_i x_{it} + \varepsilon_t$$

Where Y (1:credit boom; 0:otherwise)

- X1= Credit growth at time t
- X2= new credit approval ratio (as total credit) at time t
- X3 = policy rate at time t
- X4, X5, X6 are control variables

Control Variable

No	Variable	Definition
X4	Residential housing price index	Residential housing price index, based on Bank Indonesia survey (base year=2002)
X5	Inflation	Inflation in annual percentage change
X6	GDP growth	GDP growth in annual percentage change

Baseline models → Y (1:boom; 0:otherwise)

	Baseline	Model 1	Model 2	Model 3	Model 4
Credit growth	1.4237*** (0.4873)	1.5378*** (0.5201)	1.1146** (0.4872)	1.4449** (0.5085)	1.1290** (0.4701)
New credit approval ratio	0.6287*** (1.3241)	0.7031*** (1.4643)	0.5369*** (1.3456)	0.6897* (0.1941)	0.4639** (0.1817)
Policy rate	-1.1523*** (0.4166)	-1.4191* (0.8575)	-0.2215*** (0.7610)	-0.7928* (0.9105)	-0.2066* (0.1431)
House price index		0.9747 (0.7355)			1.0985 (0.9386)
Inflation			-1.3976* (-0.8437)		-0.1360 (0.8873)
GDP growth				0.1082 (0.2454)	-0.2917 (0.2813)

Alternative models → Y (deviation of credit from trend)

	Baseline	Model 5	Model 6	Model 7	Model 8
Credit growth	0.0554*	0.8340*	0.2321*	0.2222*	0.2288*
	(0.0033)	(0.0033)	(0.0031)	(0.0033)	(0.0029)
New credit approval ratio	0.1269***	0.1395*	0.1529*	0.0414*	0.0273*
	(0.0314)	(0.0335)	(0.0284)	(0.0409)	(0.0357)
Policy rate	-0.5751***	-0.2603***	-1.7912***	-1.3029***	-2.0254***
	(0.0849)	(0.3031)	(0.2090)	(0.92463)	(0.3480)
House price index		0.0248***			0.0891***
		(0.0229)			(0.0258)
Inflation			-1.258***		-1.1770***
			(0.2013)		(0.1909)
GDP growth				1.3716***	2.7201***
				(0.4372)	(0.4951)

Conclusion

- Indonesia experiences more episodes of credit overexpansion than contraction.
- A rapid credit growth and high ratio of credit approval to total credit are significant determinants of credit booms, while a lower policy rate also increases the probability of credit boom.
- For the magnitude of credit boom, residential housing price index, inflation and GDP growth are also significant determinants.