

Money and Banking in Emerging Economies

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May 2020

Introduction

- ▶ Workhorse medium-scale DSGE models currently in use
 - ▶ designed for developed economies
 - ▶ tested on developed country data
- ▶ Versions used in emerging economies
 - ▶ adaptations of developed economy versions
 - ▶ adaptation mostly done in terms of their calibration

Key missing features

- ▶ What makes emerging economies different?
 - ▶ limited financial market participation
 - ▶ limited financial instruments
 - ▶ sheltered financial markets and financial repression
 - ▶ fiscal dominance

Does this matter?

- ▶ Standard monetary transmission goes through aggregate demand
 - ▶ policy changes go through consumption and investment
- ▶ Segmented asset markets: direct effect through consumption almost absent
- ▶ Monetary policy is mostly corporate credit policy

Role of bank finance

- ▶ Limited financial development render asset markets incomplete, at best
- ▶ Limited institutional ability to enforce contracts
- ▶ Intensive reliance on bank finance
- ▶ Transmission of monetary policy through banks is important

Fiscal dominance

- ▶ Central bank often lacks independence
- ▶ Monetary policy has to adjust to fiscal stance
- ▶ Governments often run large fiscal deficits
- ▶ Higher interest rates worsen fiscal balance
- ▶ Effects of monetary tightening can be counterintuitive

This paper

- ▶ Build a DSGE model that incorporates these frictions
- ▶ Banking frictions built from micro model of private information
- ▶ Introduce fiscal dominance: exogenous budget deficit
- ▶ Retain standard New-Keynesian features like price stickiness

Financial Frictions

- ▶ Limits to capital mobility
- ▶ Incomplete household participation in formal asset markets
- ▶ Credit channel: firms' dependence on bank credit
- ▶ Private information: loan defaults and bank lending spreads

Households

- ▶ Two types of households
- ▶ Fraction λ of households are traders
 - ▶ traders: have access to banks and other asset markets
 - ▶ multiple ways of saving
- ▶ Fraction $1 - \lambda$ households are non-traders
 - ▶ non-traders: do not participate in asset markets
 - ▶ hand-to-mouth consumers

Overview of Production Structure

- ▶ Intermediate varieties produced using capital, labor and oil
- ▶ A variety of intermediate goods are combined to produce a domestic composite good
- ▶ Final good produced using a domestic and a foreign composite good
- ▶ Capital produced using the final good

Intermediate goods firms: Market structure

- ▶ All firms face competitive factor markets
- ▶ Firms are monopolistically competitive
 - ▶ set prices and meet demand at those prices
 - ▶ price setting is subject to Calvo friction
 - ▶ use capital, labor and oil to produce

Intermediate goods firms: Credit channel

- ▶ Firms must borrow to pay a fraction of wage bill in advance
 - ▶ wage-in-advance constraint

$$N_t(i) \geq \phi [W_t^T L_t^T(i) + W_t^N L_t^N(i)]$$

- ▶ must borrow from banks at lending rate r^N
- ▶ Wage-in-advance constraint creates a credit channel of monetary transmission

Investment goods firms

- ▶ Two-period lived, risk-neutral investors
- ▶ Investors convert final goods into investment goods
- ▶ Investors borrow from banks to purchase final goods
- ▶ Investment output subject to investor-specific productivity shock
- ▶ Output of investment goods is realized next period

Costly State Verification

- ▶ Investor-specific shock is private information revealed to investor after borrowing
- ▶ Bank can only verify at a cost q
- ▶ Solution is a debt contract
 - ▶ optimal contract consists of loan rate and a threshold productivity state
 - ▶ productivity realizations below threshold trigger default
 - ▶ contingent on default, bank verifies and seizes all output

Banks

- ▶ Banks accept deposits from trader households (D)
- ▶ Make riskless loans to sectoral firms (N)
- ▶ Make risky loans to investment goods firms (N')
- ▶ Required to hold cash reserves by central bank (\hat{M})
- ▶ Hold government bonds (B^{bG})
- ▶ Issue foreign debt (D^{b*}): **costly to manage**
- ▶ Costly banking: breaks interest parity with government bonds

Government

The government has three policy instruments

- ▶ money growth rate, $\frac{M_t}{M_{t-1}} = 1 + \mu_t$
- ▶ interest rate on government bonds r^G
- ▶ fiscal policy (taxes and spending)

We assume that

- ▶ r^G is set according to Taylor rule
- ▶ fiscal policy is exogenous
- ▶ μ_t is endogenously determined to satisfy the budget constraint.

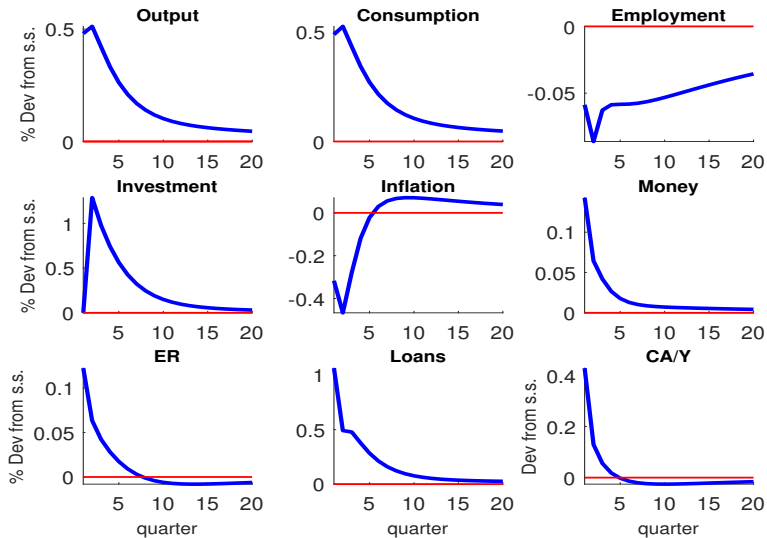
Mechanisms at Play

- ▶ Interest rate policy, r^G , through bank balance sheets, affects
 - ▶ lending rates to firms and entrepreneurs: output effect
 - ▶ deposit rates to households: saving effect
- ▶ Interest rate policy and fiscal policy affect inflation through government budget
- ▶ Segmented asset markets
 - ▶ real effects of monetary shocks
 - ▶ dampen transmission of interest rates to aggregate demand
 - ▶ raise volatility of labor supply and consumption
- ▶ Sticky prices induce
 - ▶ real effects of aggregate demand shocks
 - ▶ persistent effects of shocks through distribution of prices

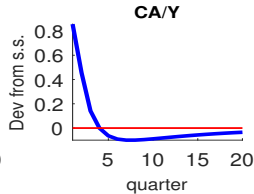
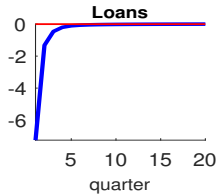
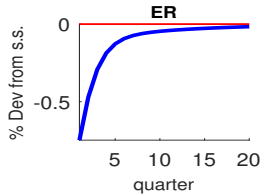
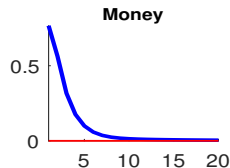
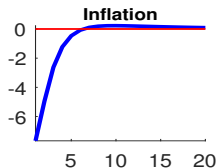
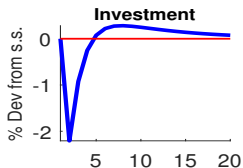
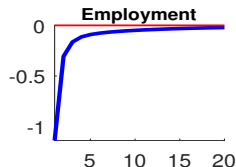
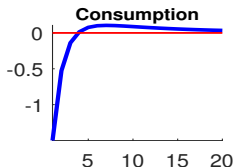
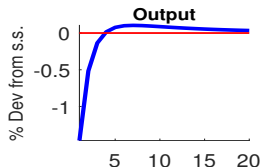
Calibration

- ▶ When possible we use the data for India (2000-2018) to obtain target moments and shock processes
- ▶ When data is not available, we use information from
 - ▶ Argentina, Brazil, Mexico
 - ▶ Korea, Philippines, Thailand

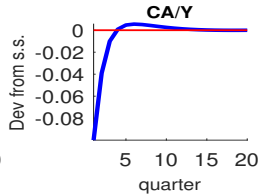
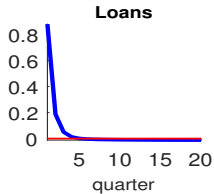
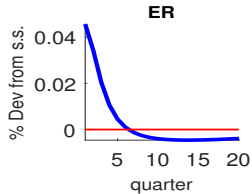
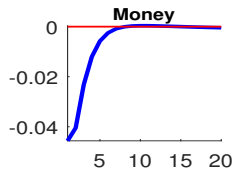
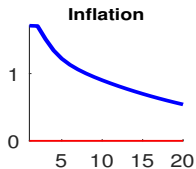
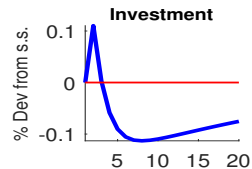
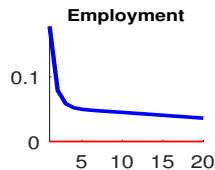
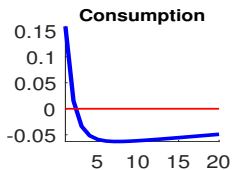
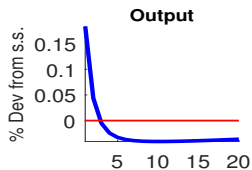
Productivity shock (ε^γ)



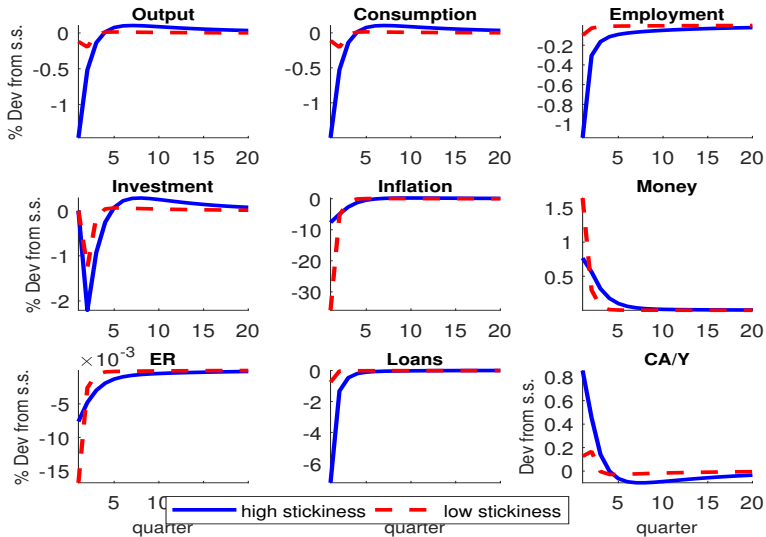
Policy interest rate shock (ε^{rG})



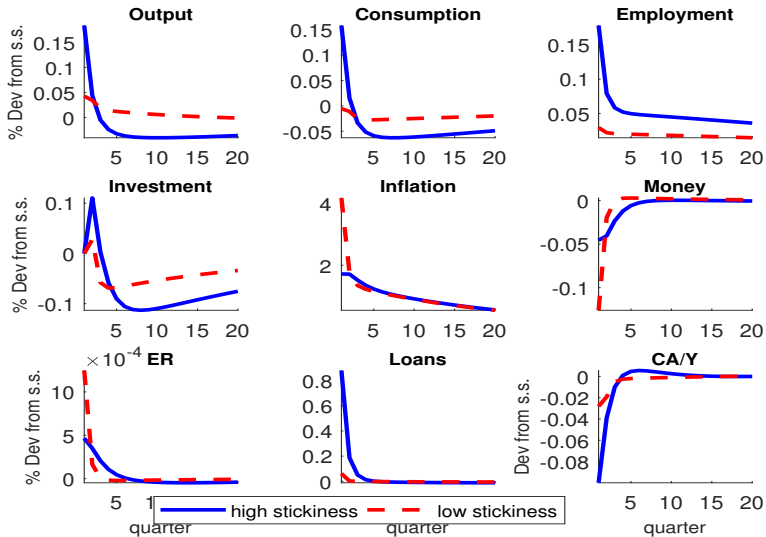
Government spending shock (ε^G)



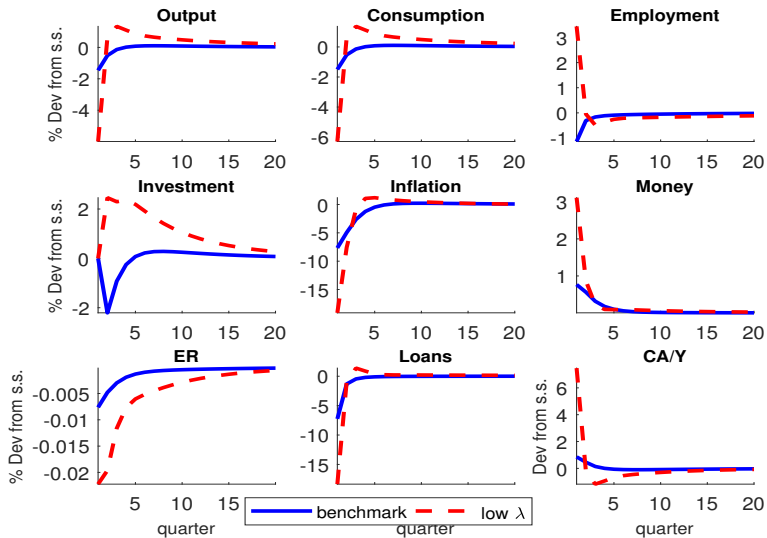
Role of price stickiness: Interest rate shock



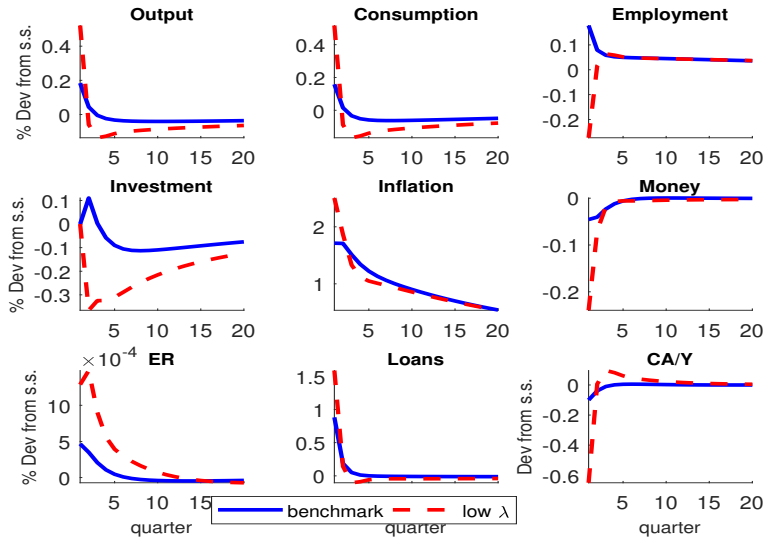
Role of price stickiness: Government spending shock



Role of limited participation: Interest rate shock



Role of limited participation: Government spending shock



Conclusion

- ▶ Prices more flexible in emerging economies
 - ▶ monetary transmission to quantities muted
- ▶ Financial frictions are severe in emerging economies
 - ▶ segmented asset markets increase response to monetary policy
 - ▶ can flip response of employment due to non-traders
- ▶ Segmented markets induce positive consumption response to fiscal expansion
- ▶ Agency costs and bank frictions have limited impact on monetary and fiscal policy effects