

# Interest Rate Rules under Financial Dominance

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## In a Nutshell

### Aim

- Determinacy analysis under joint setting of monetary and macroprudential policy to achieve dual objectives of price stability and financial stability

### Model

- DSGE model. Capital-constrained entrepreneurs finance risky projects by borrowing from banks
- Banks make loans using equity and deposits
- Financial contracts are non-state-contingent  $\Rightarrow$  bank balance sheets exposed to entrepreneurial defaults
- Macroprudential policy imposes positive response of bank capital ratio to lending

### Result

- Taylor Principle violated when macroprudential response coefficient too small
- Then macroprudential policy ineffective in stabilising debt & monetary policy subject to 'financial dominance'
- Under constant bank capital requirement, strong reaction of the interest rate to inflation destabilises financial sector

## Analogy with Fiscal Dominance

### Related Literature

- Active fiscal policy necessitates passive monetary policy (and vice versa): Leeper (JME, 1991)
- Price stability, fiscal sustainability and financial stability are intimately intertwined: Brunnermeier and Sannikov (2013)
- Link between fiscal sustainability and price stability, focussing on fiscal dominance: Kumhof et al (2010)

### This paper

- Abstracts from fiscal sustainability issues (lump sum taxes set to satisfy government budget constraint)
- Analyses link between financial stability and price stability, focussing on financial dominance

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## Model

### Monetary and Macroprudential Policy

Interest rate rule:  $\frac{R_t}{R} = \left(\frac{\Pi_t}{\Pi}\right)^{\tau_\pi}$

Capital requirement rule:  $\frac{\phi_t}{\phi} = \left(\frac{b_t}{b}\right)^{\zeta_b}$

$R_t$ =policy rate,  $\Pi_t$ =inflation,  $\phi_t$ =capital ratio,  $b_t$ =borrowing

## Results

### Determinacy Analysis

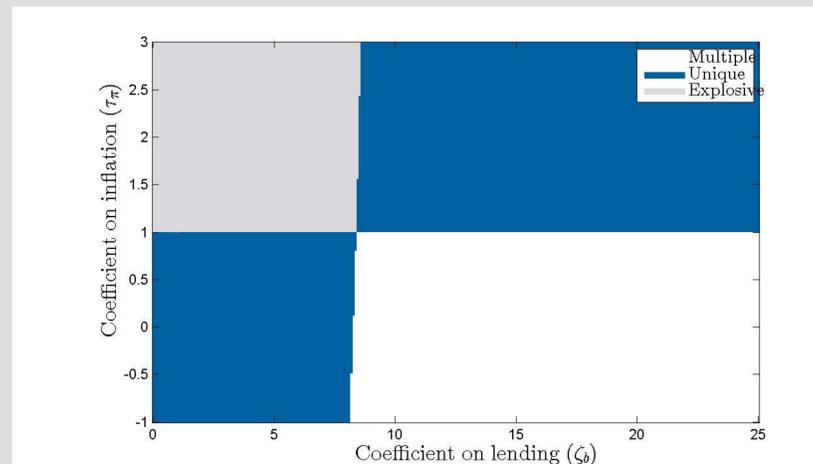


Figure 1. Model's determinacy properties as a function of the respective response coefficients on inflation and borrowing.

### Banker net worth

$$n_{t+1}^B = (1 - \chi^B) \left(\frac{R_{t+1}^B}{\Pi_{t+1}}\right) n_t^B$$

$$\frac{R_{t+1}^B}{\Pi_{t+1}} = \Phi_{t+1}^E [r_{t+1}^K + (1 - \delta)q_{t+1}] K_t - \frac{1}{\beta\phi} \left(\frac{\Pi_{t+1}}{\Pi}\right)^{\tau_\pi - 1} \left(\frac{b_{t+1}}{b}\right)^{-\tau_b}$$

### Real equity return

- increasing in macroprudential policy coefficient  $\zeta_b$
- decreasing in inflation coefficient  $\tau_\pi$

### Calibration

$\beta = 0.99$	discount factor
$\eta = 0.2$	inverse Frisch elasticity of labour supply to real wage
$\alpha = 0.3$	capital share in production
$\varepsilon = 6$	substitutability between goods
$\kappa_p = 20$	price adjustment cost
$\delta = 0.025$	capital depreciation rate
$\kappa_k = 2$	capital adjustment cost

### Calibration (cont'd)

$\chi^E = \chi^B = 0.06$	consumption share of entrepreneurs and bankers
$\Phi = 0.08$	bank capital requirement
$\mu^E = 0.3$	entrepreneur monitoring cost
$\sigma^E = 0.12$	idiosyncratic firm risk
$sd(a_t) = 0.0047$	standard deviation of productivity shock
$sd(c_t) = 0.07$	standard deviation of firm risk shock
$\rho_a = 0.9$	persistence of productivity shock
$\rho_c = 0.9$	persistence of firm risk shock

### Welfare Analysis

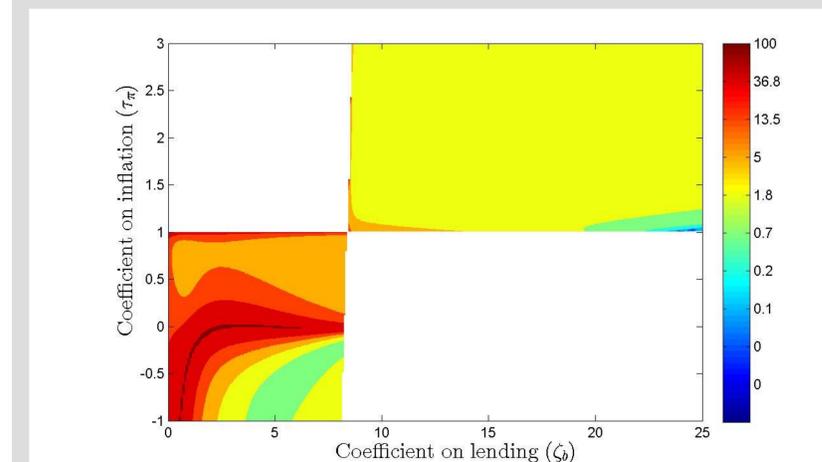


Figure 2. Welfare loss relative to optimised policy rule,  $100 \cdot \lambda$ , as a function of the respective response coefficients on inflation and borrowing.

## Conclusion

Question: optimal policy mix when financial dominance is a threat?

1. Passive macroprudential and active monetary policy. Capital ratio increased sufficiently in response to lending. Re-establishes Taylor Principle  $\Rightarrow$  central bank can focus on price stability objective
2. Active macroprudential and passive monetary policy. Stable capital ratio; interest rate raised less than one-for-one with inflation. Inflation used to erode real value of debt. However: lower welfare

## Main References

- [1] Leeper, E.M. (1991), Equilibria Under 'Active' and 'Passive' Monetary and Fiscal Policies. Journal of Monetary Economics 27(1), 129-147.
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- [3] Kumhof, M.; R.Nunes, I.Yakadina (2010), Simple Monetary Rules under Fiscal Dominance. Journal of Money, Credit and Banking 42(1), 1538-4616.