

Augmented Taylor rule and Independent Prudential rule

E. Vansteenberghe¹

¹École d'Économie de Paris

2015/06/09

Summary

Rule(s?)

Motivation

Literature

Optimal Taylor-type rule coefficients

Model à la Gali 2008

Model à la Gertler & Karadi 2011

Prudential rule

Prudential ratio ϕ_t

Conclusion

Our recommendation

Systemic risk

Summary

Rule(s?)

Motivation

Literature

Optimal Taylor-type rule coefficients

Model à la Gali 2008

Model à la Gertler & Karadi 2011

Prudential rule

Prudential ratio ϕ_t

Conclusion

Our recommendation

Systemic risk

The 2007-09 potential impact on the Taylor rule

John B. Taylor in 2014:

I have proposed that legislation be enacted requiring the Fed to adopt a policy rule –of its own choosing– for the instruments of policy, and that if and when the Fed deviates from its chosen rule, the Fed Chair would have to explain why in writing and in testimony [...].

Should we augment the Taylor rule with financial frictions ω_t ?

$$i_t = i + \phi_\pi \pi_t + \phi_y \log \frac{Y_t}{Y} - \phi_\omega \log \frac{\omega_t}{\omega}$$

Or add an independent prudential rule (coordination)?

- ▶ Leaning-against-the-wind
- ▶ Mopping-up afterwards

Extra: externalize provisions to avoid moral hazard?

Summary

Rule(s?)

Motivation

Literature

Optimal Taylor-type rule coefficients

Model à la Gali 2008

Model à la Gertler & Karadi 2011

Prudential rule

Prudential ratio ϕ_t

Conclusion

Our recommendation

Systemic risk

Not a consensus on the whole story yet

- ▶ Strong monetary policy reaction to the inflation
- ▶ No monetary policy reaction to the output
- ▶ Sign of the reaction to spread should depend on the shock
 - ▶ Non-financial (technology...)
 - ▶ Financial
- ▶ Prudential rule
 - ▶ Mopping-up afterwards
 - ▶ qualitative easing
 - ▶ quantitative easing à la Gertler & Karadi 2011
 - ▶ Leaning-against...
 - ▶ credit frictions (credit spread...)
 - ▶ credit aggregate (the more the riskier?)
 - ▶ asset prices distortions (bubbles...)
 - ▶ exchange rates (volatility...)
 - ▶ systemic risk build up (portfolio risk correlations...)

Summary

Rule(s?)

Motivation

Literature

Optimal Taylor-type rule coefficients

Model à la Gali 2008

Model à la Gertler & Karadi 2011

Prudential rule

Prudential ratio ϕ_t

Conclusion

Our recommendation

Systemic risk

Optimal Taylor-rule coefficients - Gali 2008

Model à la
Gali 2008

Quadratic Loss

$$\phi_y \rightarrow 0$$

$$\phi_\pi \rightarrow \infty$$

2nd order sim.

$$\phi_y \rightarrow 0$$

$$\phi_\pi \rightarrow \infty$$

Results as in

- ▶ Schmitt-Grohe and Uribe 2007
- ▶ Faia and Monacelli 2007

Summary

Rule(s?)

Motivation

Literature

Optimal Taylor-type rule coefficients

Model à la Gali 2008

Model à la Gertler & Karadi 2011

Prudential rule

Prudential ratio ϕ_t

Conclusion

Our recommendation

Systemic risk

Major features - work

We could react to the **aggregate credit wrt GDP**

- ▶ Q_t relative price of each claim
- ▶ S_t financial claims on non-financial firms
- ▶ ϕ_t : **leverage ratio** total private assets intermediated / capital

1.
$$i_t = i + \phi_\pi \pi_t + \phi_y \log \frac{Y_t}{\bar{Y}} - \phi_c \left(\log \left(\frac{Q_t S_t}{\bar{Y}_t} \right) - \log \left(\frac{QS}{\bar{Y}} \right) \right)$$

($\phi_c > 0$ non-fin. shock, $\phi_c < 0$ fin. shock)

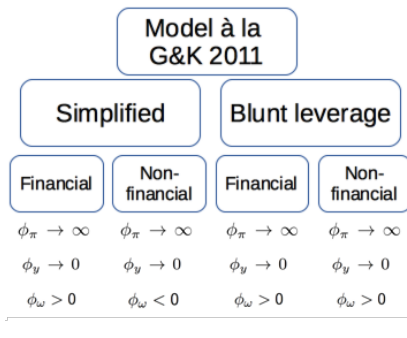
2.
$$\phi_t = (1 - \rho_\phi) \left(\hat{\phi} + \text{range} \left(1 - \frac{1}{\exp(\omega_t - \omega)} \right) \right) + \rho_\phi \phi_{t-1}$$

(range is chosen ad hoc)

Major features - results

We choose to react to the **credit spread**: $\omega_t = R_{kt} - R_t$.

- ▶ household deposits and government debts return: R_t
- ▶ intermediary assets earn the stochastic return: R_{kt}
- ▶ ϕ_t : **leverage ratio** total private assets intermediated / capital



Summary

Rule(s?)

Motivation

Literature

Optimal Taylor-type rule coefficients

Model à la Gali 2008

Model à la Gertler & Karadi 2011

Prudential rule

Prudential ratio ϕ_t

Conclusion

Our recommendation

Systemic risk

Prudential ratio

Financial intermediaries face endogenous capital constraint:

- ▶ fraction λ can be diverted
- ▶ start up funds as a fraction ω of "earnings"

$\Rightarrow \phi_t$ Steady-State

A prudential authority can impose a leverage ratio (counter-cyclical as in Basel III).

Jokivuolle et al. 2015 suggest that bank capital buffer should counter-cyclically react to credit-to-GDP ratio.

Operational prudential rule

- ▶ \mathcal{T}_{1t} : tax on the benefits a banker is bringing to its household
- ▶ \mathcal{T}_{2t} : tax on the financial intermediary's return on assets

$$\phi = \frac{1 - R\theta\mathcal{T}_2}{\omega\mathcal{T}_1 + \theta(R_k - R)\mathcal{T}_2}$$

Simplification: tax only on stochastic return on intermediary assets

$$\tau_t = (1 - \rho_\tau) \left(\hat{\tau} - \kappa_\tau \left(\frac{Q_t S_t}{Y_t} - \frac{QS}{Y} \right) \right) + \rho_\tau \tau_{t-1}$$

$$R'_{kt+1} = R_{kt+1} \tau_t$$

"Scanning": $\kappa_\tau \in [-0.001, 0.001]$, we find $\kappa_\tau \rightarrow 0.001$ optimal.

For both financial and non-financial shocks: $\kappa_\tau > 0$.

$$\tau_t = (1 - \rho_\tau) (\hat{\tau} - \kappa_\tau^S (\omega_t - \omega)) + \rho_\tau \tau_{t-1}$$

Optimal for $\kappa_\tau^S \rightarrow \infty$

Summary

Rule(s?)

Motivation

Literature

Optimal Taylor-type rule coefficients

Model à la Gali 2008

Model à la Gertler & Karadi 2011

Prudential rule

Prudential ratio ϕ_t

Conclusion

Our recommendation

Systemic risk

Our recommendation

The monetary authority positively reacts to

- ▶ inflation

The prudential authority positively reacts to

- ▶ financial frictions, either
 - ▶ credit aggregate wrt GDP (measure of systemic risk)
or
 - ▶ credit spread

Summary

Rule(s?)

Motivation

Literature

Optimal Taylor-type rule coefficients

Model à la Gali 2008

Model à la Gertler & Karadi 2011

Prudential rule

Prudential ratio ϕ_t

Conclusion

Our recommendation

Systemic risk

Systemic Risk

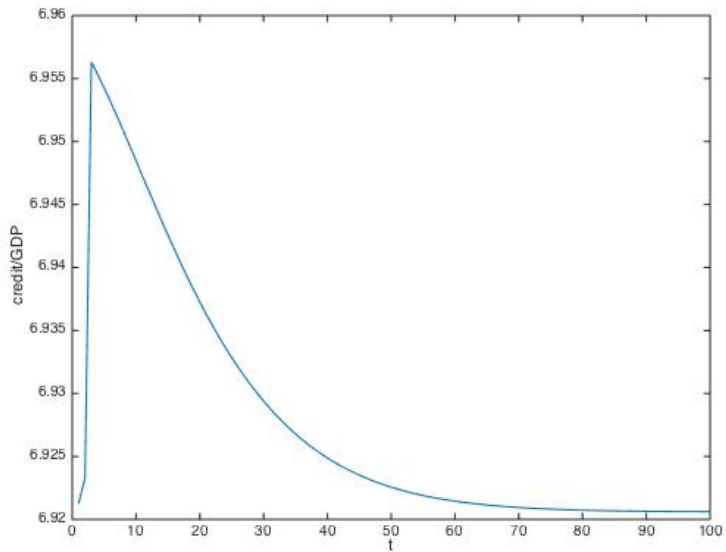
In our model, system risk is proxied with

- ▶ credit aggregate wrt GDP
- ▶ credit spread

We would explore

- ▶ financial intermediaries risk correlation
(crowded trades, hoarding, herding...)
- ▶ regulation evolution
(securitization...)
- ▶ alternative endogenous capital constraint
(Dewachter & Wouters 2014, intermediaries reputation)

Aggregate Credit over GDP behavior



Spread Reaction

