Self-Oriented Monetary Policy, Global Financial Markets ....Capital Flows

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Increasing importance of spillovers from advanced economies (or US alone?) to EME's

- Recent events
  - Evidence from GFC
  - Effects of unconventional monetary policy
  - Episode of Taper
- What factors are important?
  - (De)-stabilizing role of capital flows
  - Role of US exchange rate
  - Role of banks/financial markets
- Policy questions
  - Fed needs a more global orientation?
  - Trilemma versus dilemma?
  - Benefits of international cooperation?

What does this paper do?

- Develops new empirical methodology for exploring spillovers from US to EME's
- Develop DSGE model to address these issues from a structural theory view
- Explore source of spillovers
- Importance of financial constraints
  - Channels are through bank lending, leverage and IR spreads
  - Highlights volatility of capital flows, importance of gross flows
- Role of US Dollar
- Exchange rate regime
- Identify optimal policy

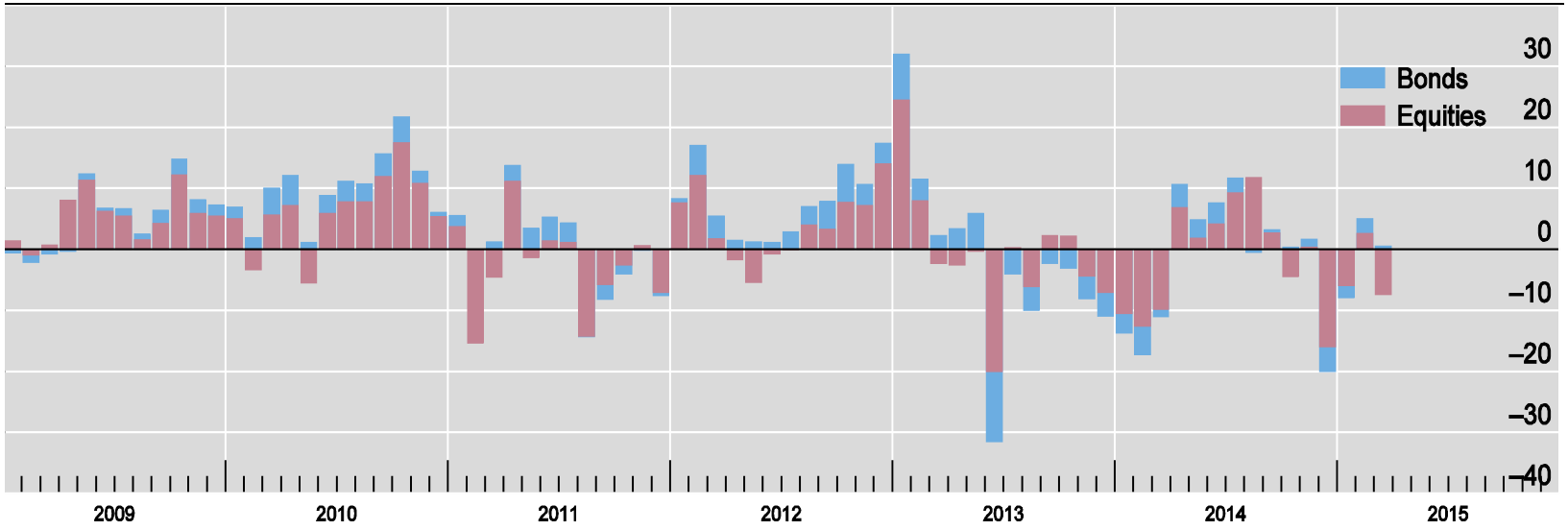
Existing literature: voluminous

Mostly empirical:
Rey 2014, Agrippino and Rey 2014, Fratschzer and Forbes 2013, Forbes and Warnock 2013, Claessens et al. 2014, Lane 2012, Bruno Shin 2014, Ahmed and Zlate, 2014 Borio 2012

Some relevant theoretical work:
Bruno and Shin 2014 Fahri and Werning 2013
Gertler Karadi, 2011 Nuno and Thomas 2013
Earlier work by Dedola Lombardo Karadi, 2013 etc.

Some motivating evidence: Capital flows to group of EME's

Net flows into emerging market portfolio funds[1] Graph 4



[1] In billions of US dollars, data up to end of 23 March 2015. Sums across major economies in each region. Data cover net portfolio flows (adjusted for exchange rate changes) to dedicated funds for individual EMEs and to EME funds for which country or at least regional decomposition is available.

Source: EPFR.

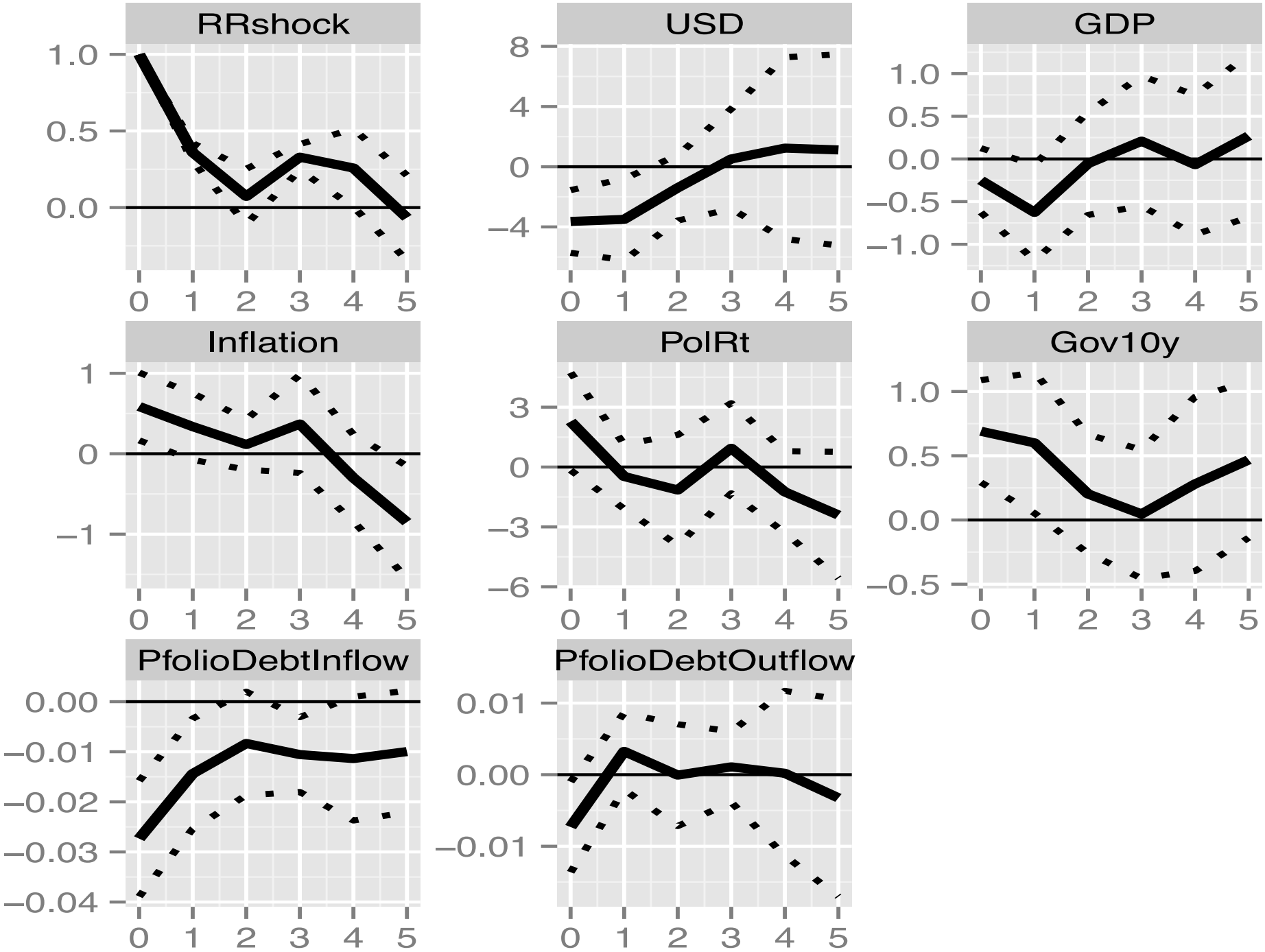
Empirical Methodology

- How to estimate effects of US monetary policy shocks on EME's?
- Many papers use VAR approach (e.g. Aggripino and Rey, etc.)
- But VAR imposes particular structure on the responses to shocks
- Results depend a lot on sample
- We use a more flexible approach - local projection methods - Jorda 2005

US monetary policy shocks and EME markets

- We identify US monetary policy shocks using an updated Romer and Romer series (Coibion et al. 2012)
  - Later will update with ZLB episode using Gertler Karadi HF instruments
- Data goes up to zero bound period only
- Estimate local projection of US shocks on variables from panel of EME's
- Argentina, Brazil Chile China Colombia Indonesia Indea Korea Malaysia Mexico Peru Philippines Russa Thailand Turkey South Africa
- FX reserves, Domestic 10y bond yield, log(CPI), Policy Rate, log(GDP), log(Exchange Rate), portfolio debt inflows as a share of GDP, portfolio debt outflows as a share of GDP. Shock

Effects of a US monetary policy shock on EMEs



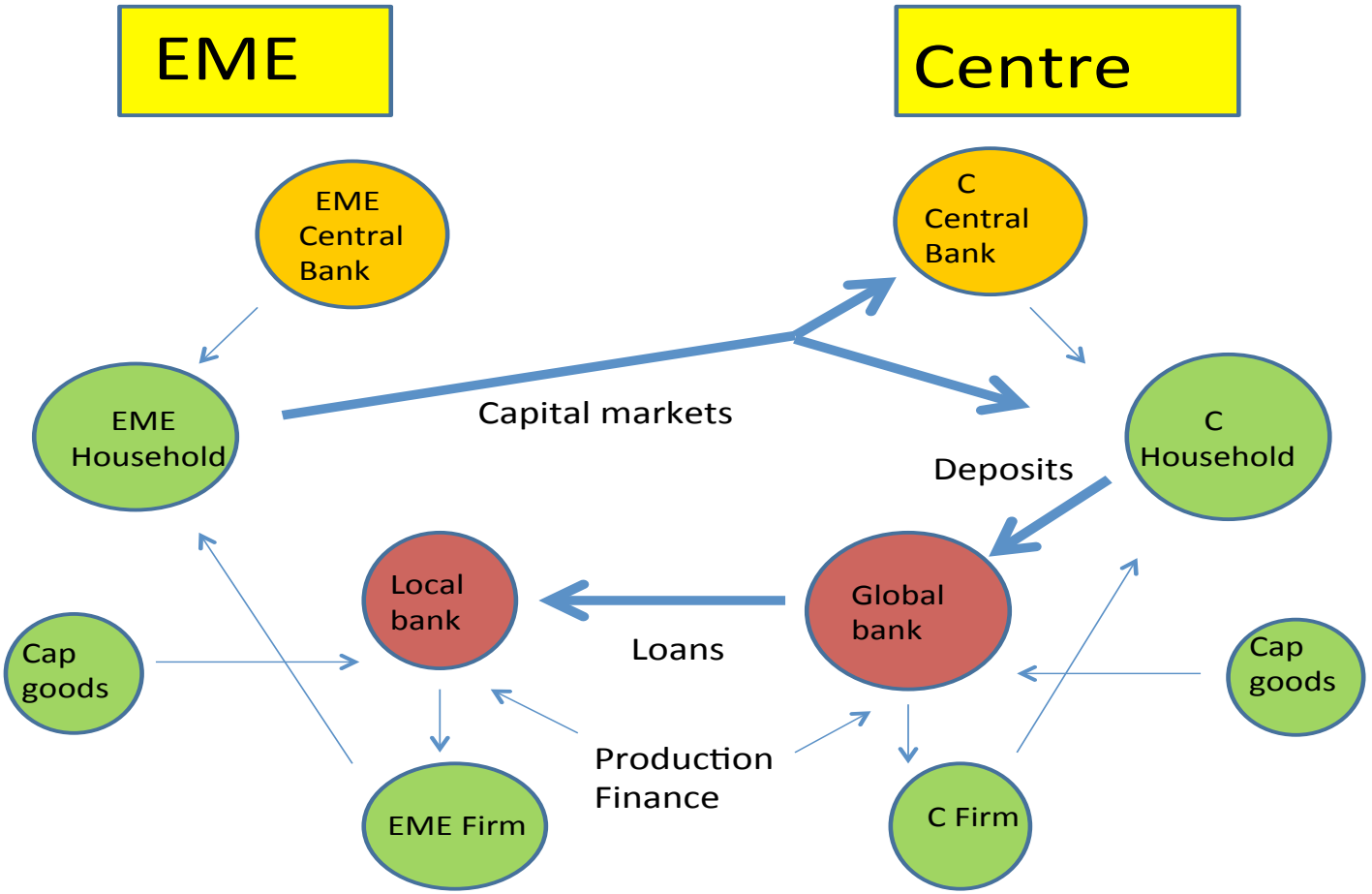
Notable implications

- US monetary shock causes ex rate depreciation
- Fall in GDP
- Rise, followed by a fall in CPI inflation
- Rise in policy rate and long term rates
- Fall in portfolio debt inflows and outflows

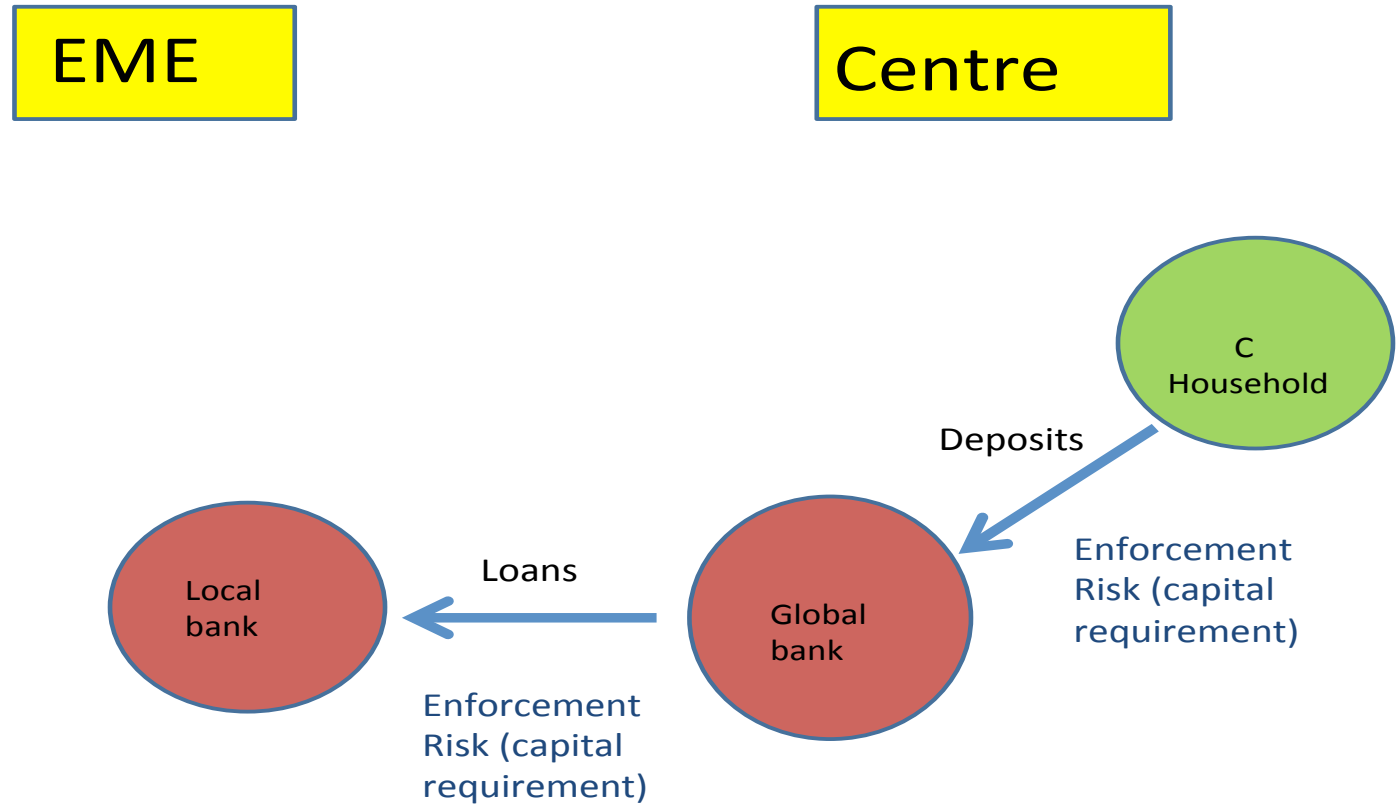
Empirical approach extensions

- Can update with monetary policy shocks including the ZLB
- Can condition on different states for EME's (high/low inflation, CA surplus/deficit, etc)
- Can extend to credit/financial shocks coming from US

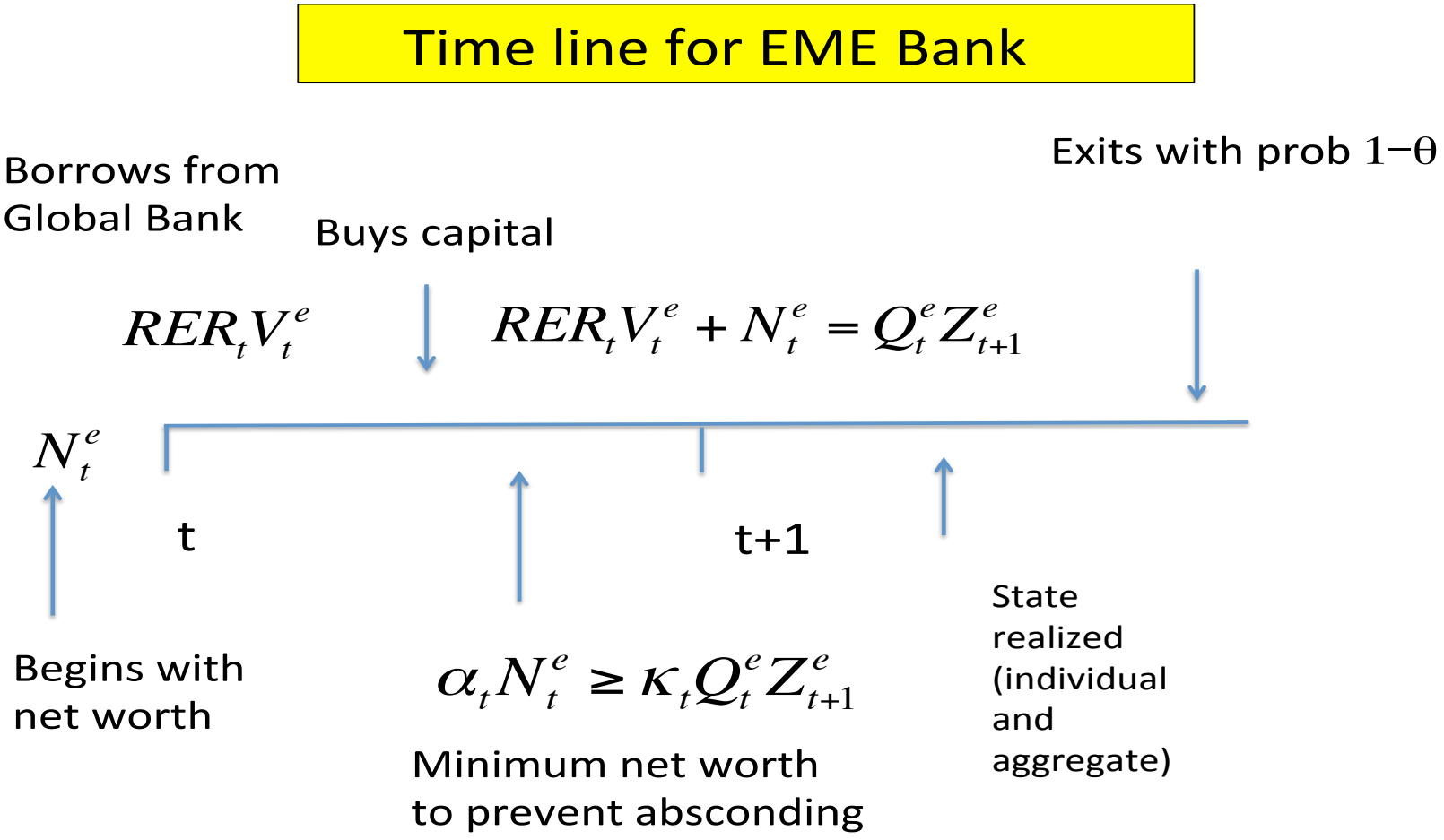
Architecture of model



Architecture of model



EME banks


Time line for EME Bank
Borrows from Global Bank
Buys capital
Exits with prob $1-\theta$
$RER_t V_t^e$
$RER_t V_t^e + N_t^e = Q_t^e Z_{t+1}^e$
N_t^e
t
t+1
Begins with net worth
$\alpha_t N_t^e \geq \kappa_t Q_t^e Z_{t+1}^e$
Minimum net worth to prevent absconding
State realized (individual and aggregate)

Relationship between leverage and spreads

Banks choose investment so that

$$E_t \tilde{\Lambda}_{t+1} \left[R^e_{kt+1} - R^e_{bt+1} \right] = \gamma^e_t \kappa_t$$

subject to:

$$\alpha^e_{vt} N^e_t \geq \kappa_t Q^e_t Z^e_{t+1}$$

and

$$N^e_t = \theta(R^e_{kt} Q^e_{t-1} Z^e_t - S_t R_{bt-1} V^e_{t-1}) + \delta_T Q_t K_t$$

So a fall in Q^e_t or a rise in S_t will reduce N^e_t, raise leverage, raise γ_t and lead to a spike in spreads

Shock to κ_t - a 'financial shock' - See Jermann and Quadrini 2012

Rest of the model

- Global Banks with same time-line but invest in C risky capital and EME bonds
- Firms with Calvo Pricing
- Trade across countries in C and E goods
- Separate CB's in both countries follow a Taylor rule with IR smoothing
- Shocks to C country monetary policy, and financial shocks

Calibration

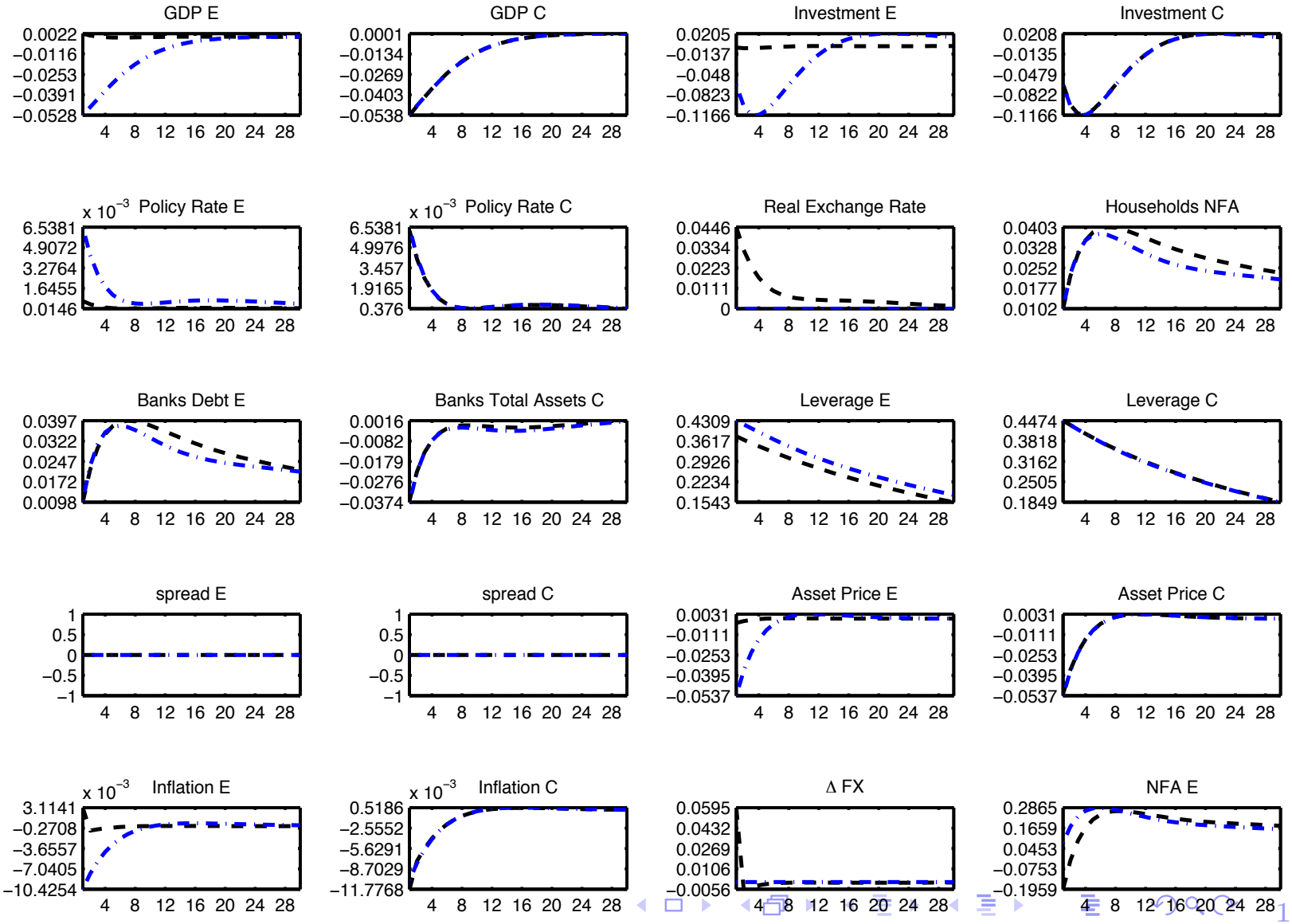
Table 1: Parameter Values

Label	Value	Label	Value
n	0.15	$\nu_{p,c}$	0.96
σ_p	6	σ	1.02
ς	0.8	κ	0.38
$\lambda_{y,c}$	0.2	$\rho_{A,e}$	0.9
$\lambda_{\pi,c}$	1.2	$\rho_{A,c}$	0.9
$\lambda_{r,c}$	0.85	ρ_{ξ}	0
π	3.1416	$\rho_{\kappa,e}$	0.9
β	0.99	$\rho_{\kappa,c}$	0.9
δ	0.025	$\rho_{i,c}$	0.9
δ_T	0.004	σ_{Ae}	0.01
ζ	1.728	σ_{Ac}	0.01
η	1.5	σ_{ξ}	0.01
ψ	0.276	$\sigma_{\kappa,e}$	0.01
θ	0.96	$\sigma_{\kappa,c}$	0.01
α	0.3	$\sigma_{i,c}$	0.01
$\nu_{p,e}$	0.96		

Now let's cycle through some experiments

- First question: Monetary policy spillovers in absence of financial frictions
- Compare inflation targeting (i.e. Taylor rule) to a peg
- Trilemma is clearly apparent here - i.e. peg implies significantly more spillovers

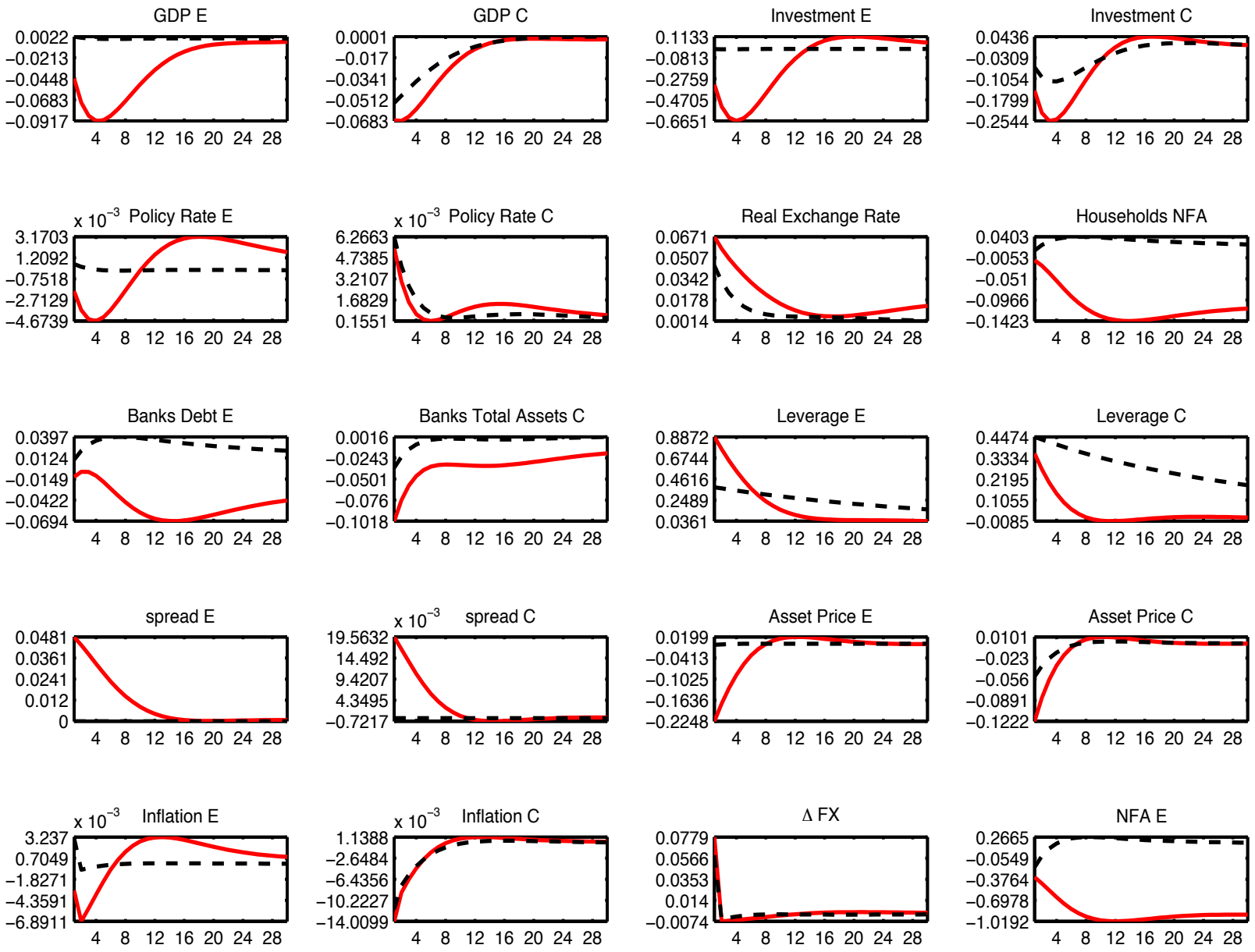
Monetary tightening in C country: No Financial Frictions



How does the comparison change with financial frictions?

- Even with Taylor rule, there exist large cross country spillovers
- Double agency problem generates greater volatility in EME than in C country
- Spillovers through spreads, leverage, and reduced loans to EME banks

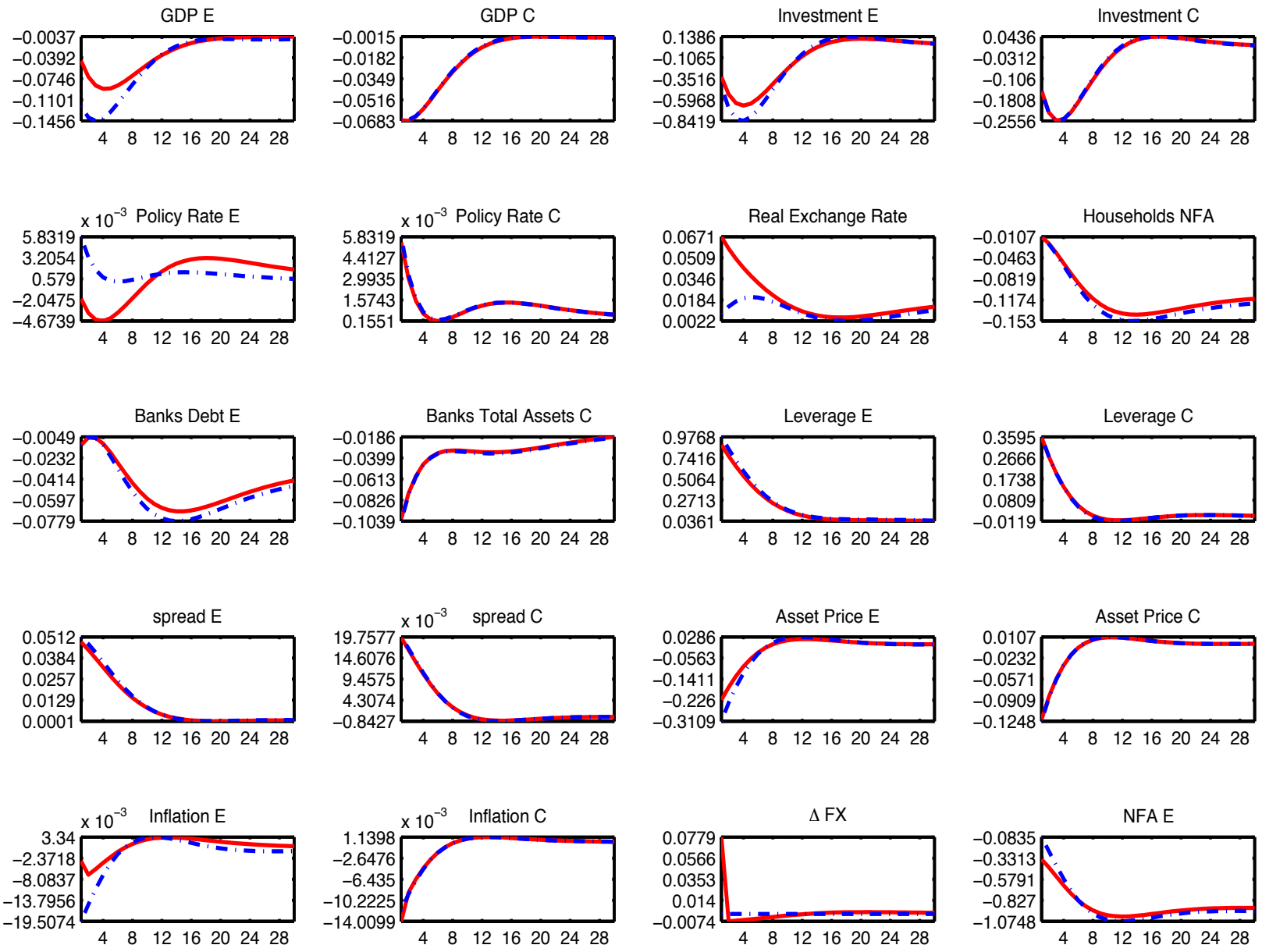
Monetary tightening in C country



Key implications

- High correlation in GDP downturn with bank links
- High correlation in spreads
- Response of GDP and spreads is higher in EME
- Gross inflows and outflows fall - capital flow retrenchment

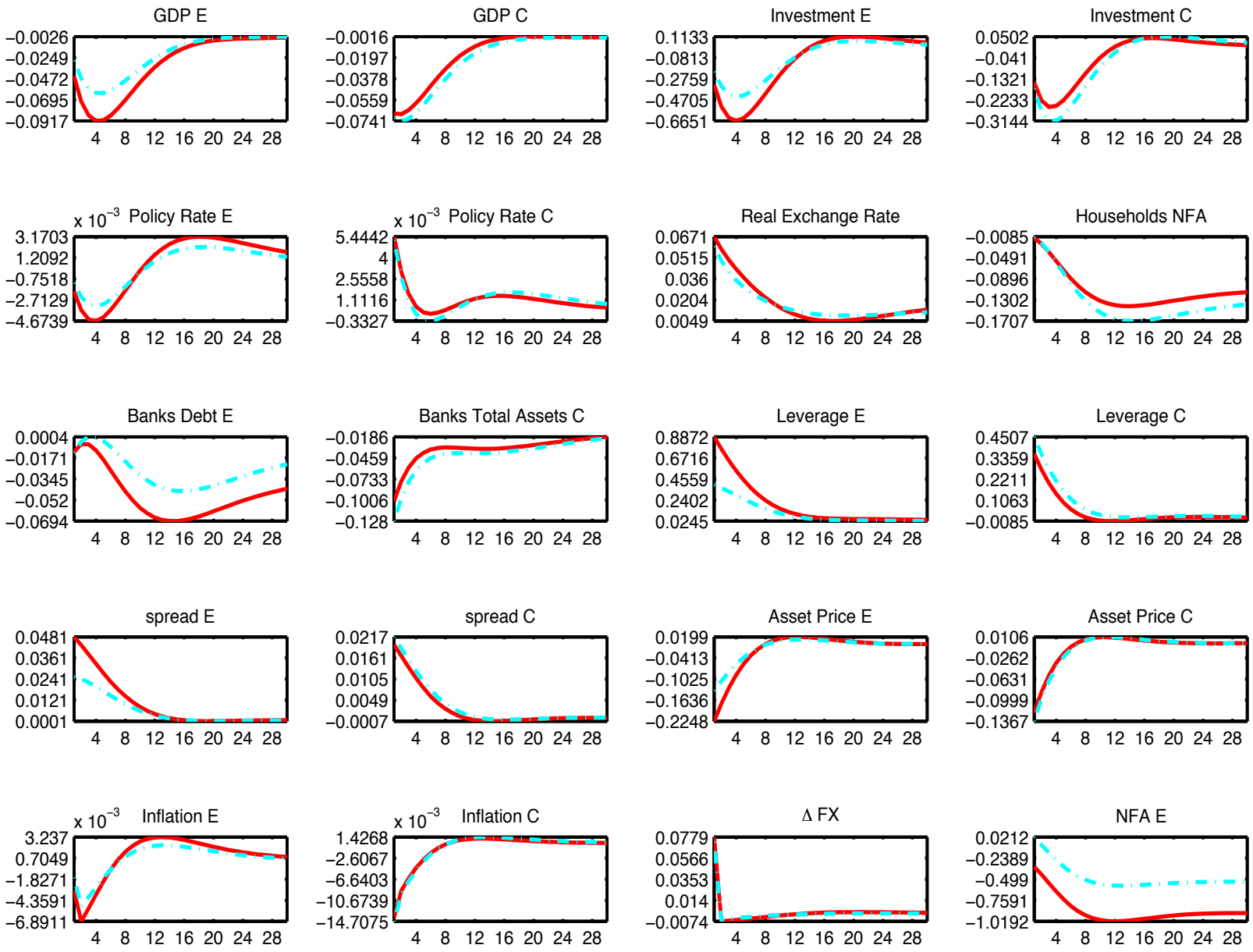
Flexible inflation targeting vs. Peg



Trilemma revisited

- With capital flows subject to financial frictions
- Spillovers are similar under Taylor rule and peg
- RER depreciation helps only a small amount
- Depreciation cannot prevent spike in interest rate spreads

Spillovers with local currency debt



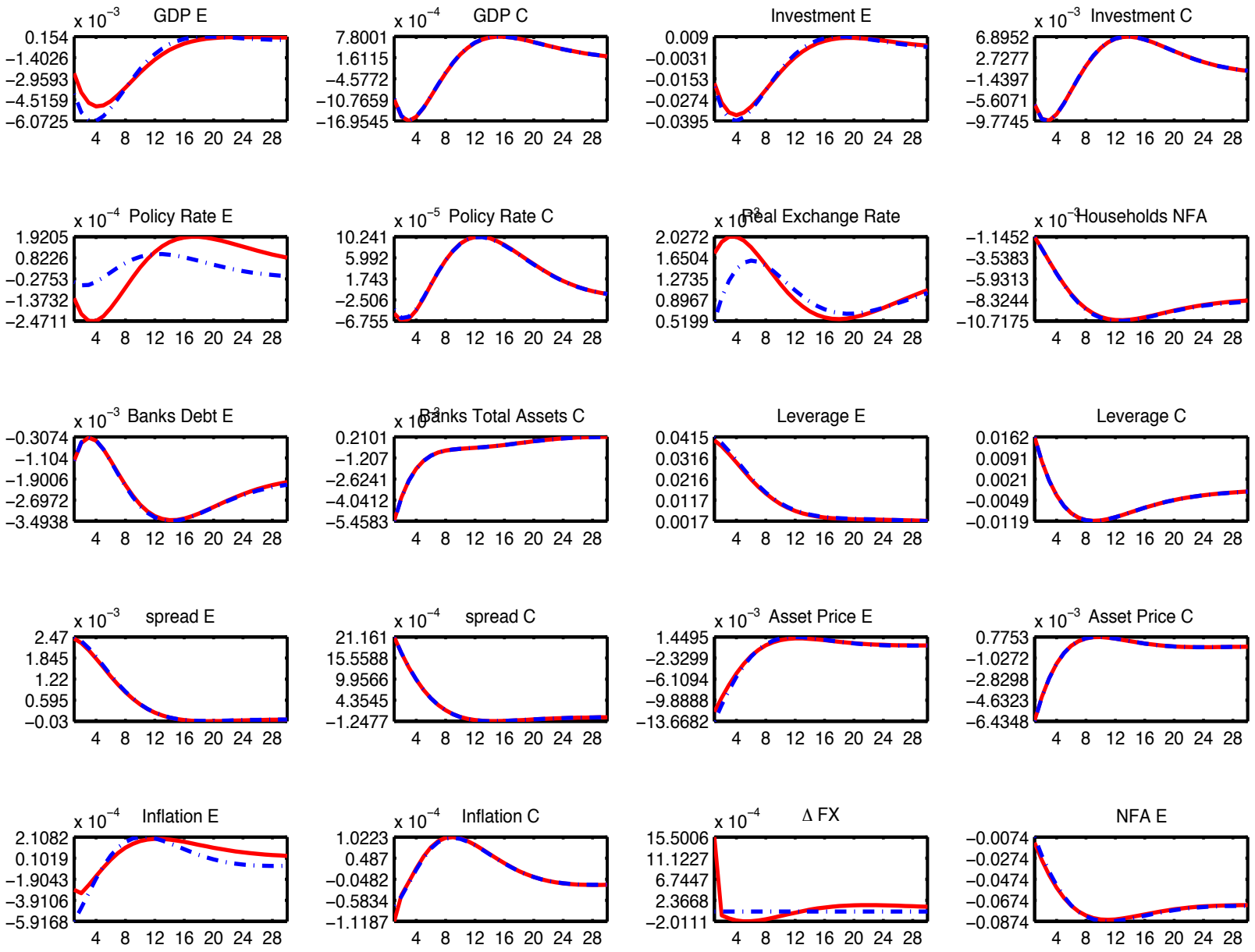
Conclude

- Local currency borrowing would ameliorate spillovers under flexible exchange rates
- But sizeable spillovers nonetheless
- Even with domestic currency borrowing, large spillovers through capital flows and spreads

Now look at alternative shocks - credit (financial shocks)

- Credit crunch in C country
- Cuts off capital flows to EME

Credit shocks in C country



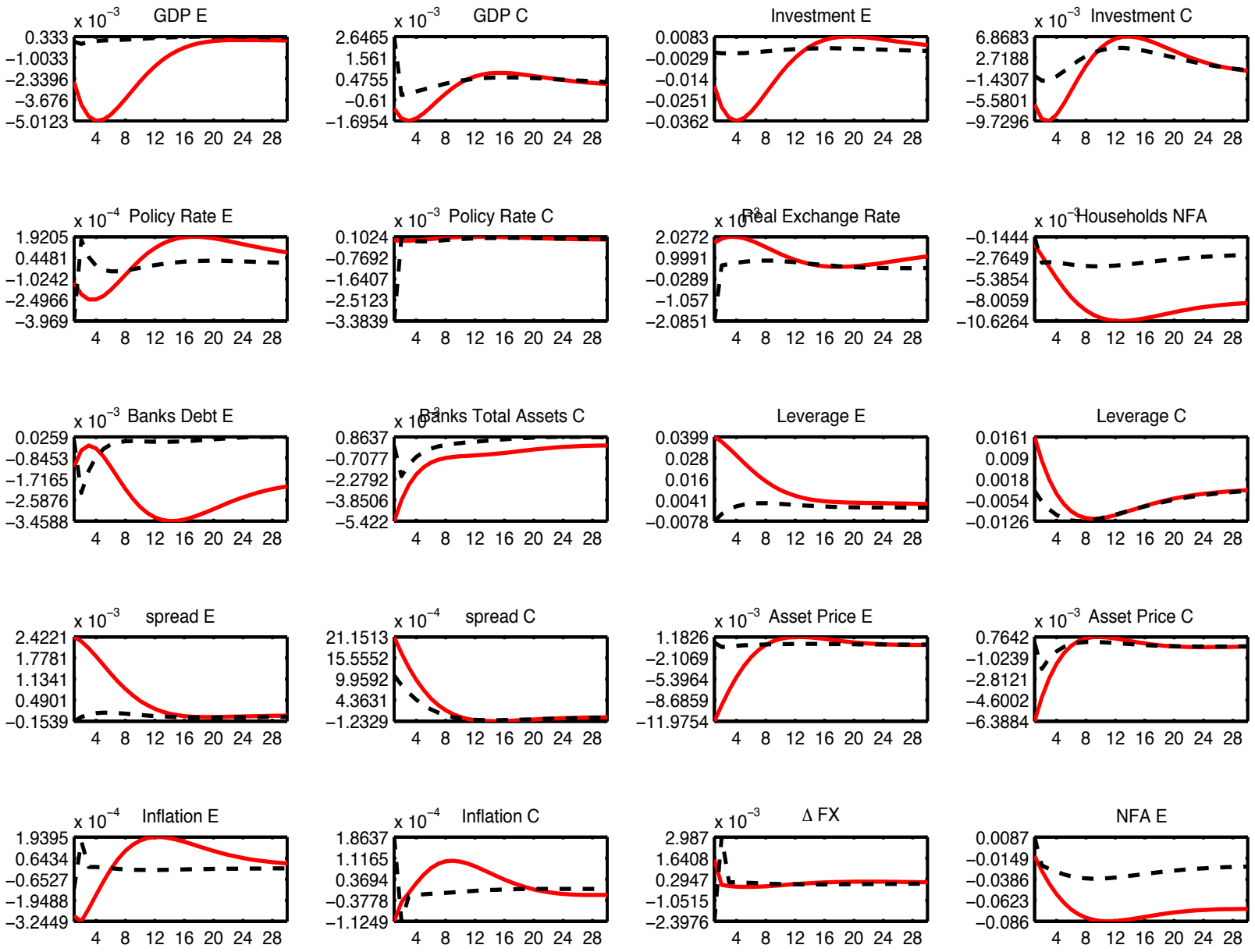
Implications

- Floating and pegged exchange rates almost identical in response to external financial shocks
- Taylor rule has no advantages
- Highlights the 'dilemma' of EME macro policy
- Does this imply monetary policy useless?

FIT policy is quite arbitrary

- Look at Ramsey optimal policy
- This is a cooperative monetary policy
- Does not make use of capital controls or macro-prudential tools
- Follows a 'timeless' perspective
- Does assume full commitment

Optimal Cooperative Policy: response to financial shock



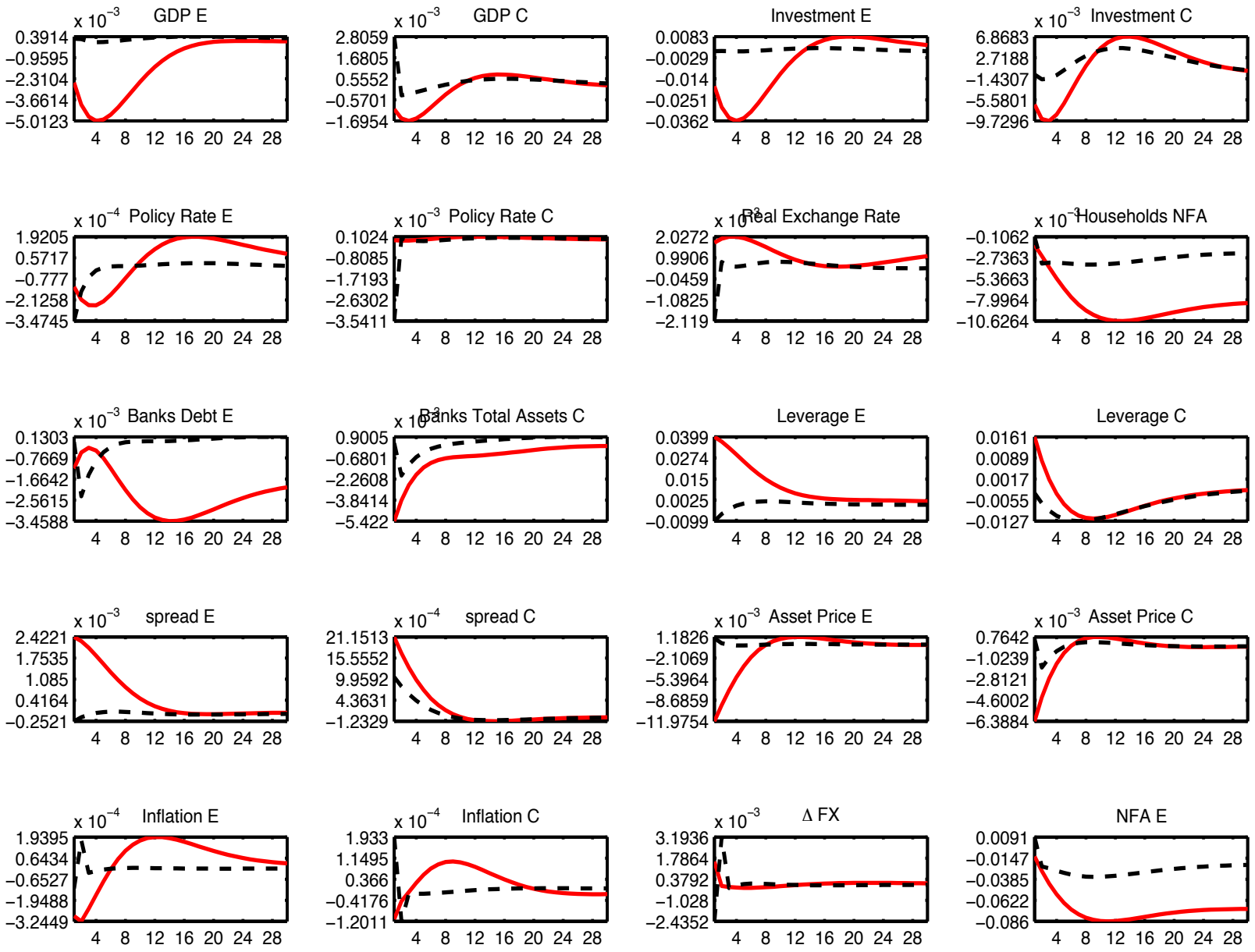
Conclude from this

- An optimal cooperative monetary policy can greatly reduce effects of financial shocks
- Eliminates most of spillovers to EME
- Requires sharp deviation from FIT rule
- But, while monetary policy is effective, does this eliminate the argument for self-oriented policy?

But what if monetary policy is set non-cooperatively?

- Look at Non-cooperative policy
  - Open Loop Nash game
  - Each policy-maker chooses PPI inflation, taking others as given
- For our calibration, Nash equilibrium is very similar to Ramsey optimum
- A Nash equilibrium can eliminate spillovers and greatly dampen the financial shock

A Nash equilibrium



Next Steps

- Greater empirical measures for spillovers
- Empirical support - compare with SVAR, FAVAR evidence
- Explicit comparison or monetary vs. macroprudential