Fiscal Austerity in Emerging Market Economies

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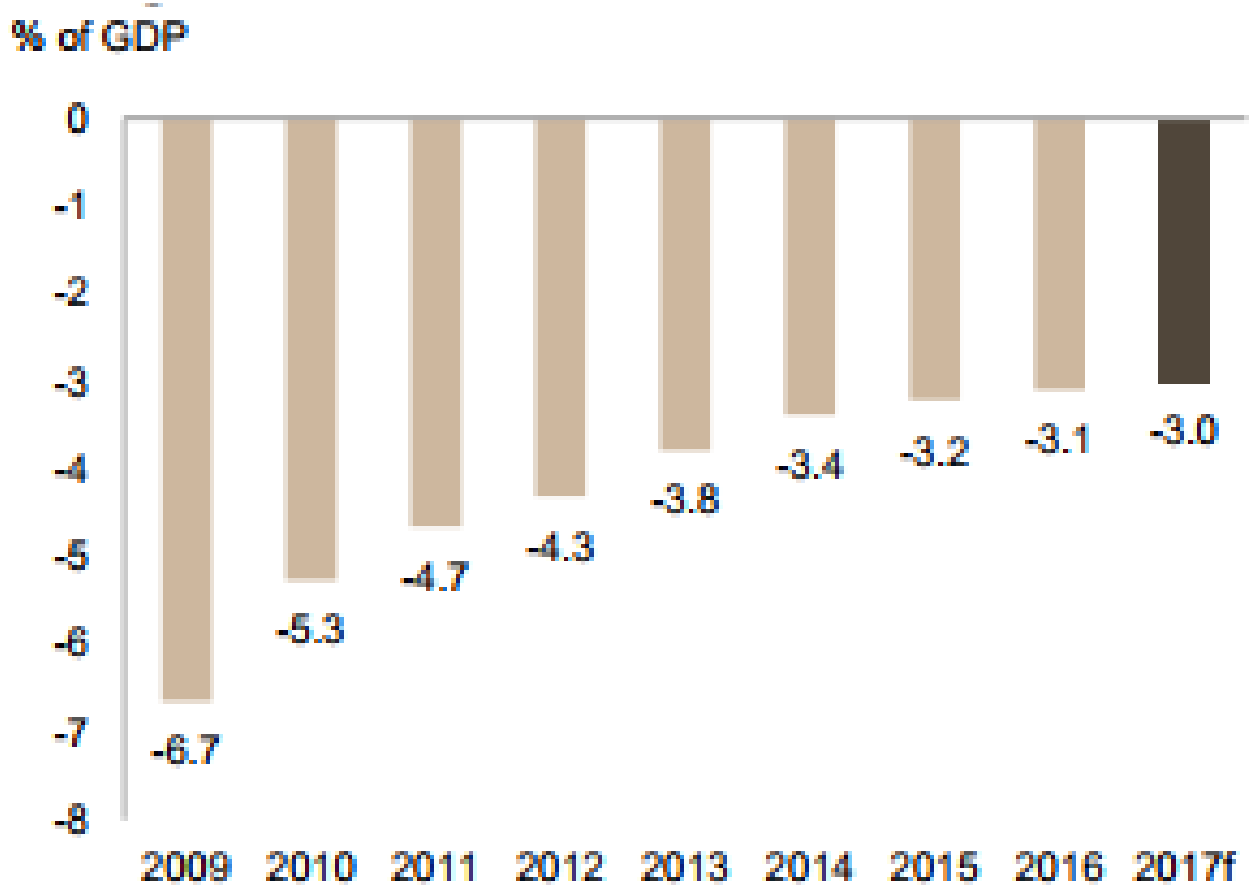
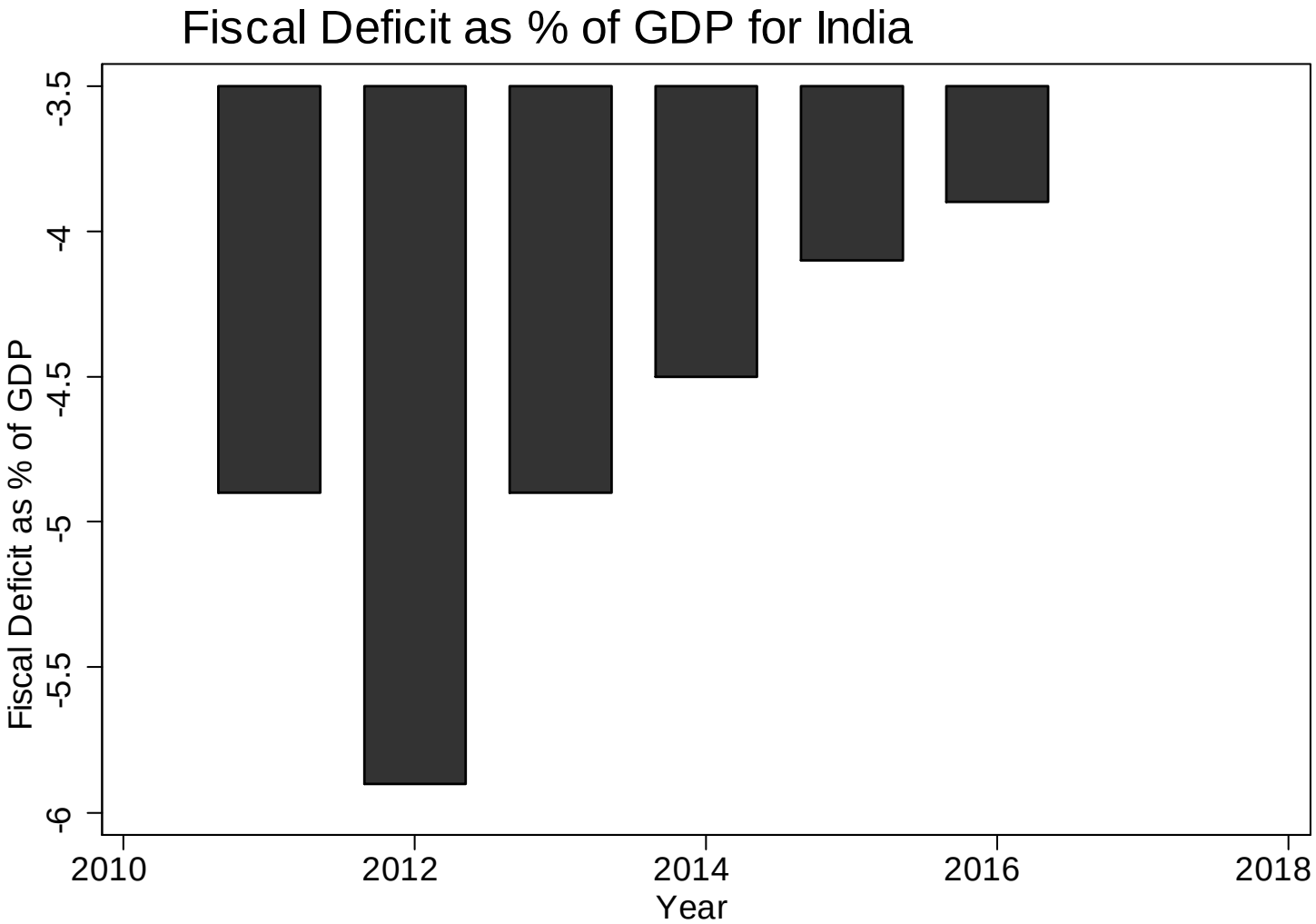
Introduction

- While there is a large literature on fiscal consolidation on economic activity in AEs, there is very little research in the context of EMEs.
  - There is no general consensus regarding the short term effects of fiscal austerity. Consolidation typically has a contrationary effect on output in the short run in AEs. Domestic demand - consumption + investment - falls by about 1 percent. (IMF WEO, October 2010)
  - Fiscal adjustments tend to be expansionary when they rely primarily on spending cuts (IMF WEO, October 2010)
  - Contractionary fiscal expansions can occur in the long term (Alesina, 2010).
- Some recent examples of fiscal contractions in EMEs:
  - Malaysia (Malaysia Economic Monitor, 2016)
  - India (meeting revised FRBM guidelines)

Introduction – Fiscal Deficit as % of GDP in Malaysia



Introduction – Fiscal Deficit as % of GDP in India



Literature

- There is a growing literature on EME business cycles using SOE RBC models
  - Aguiar and Gopinath (2008), Neumeyer and Perri (2005), Chong and Fernandez (2013). But these papers don't have fiscal policy or debt dynamics.
  - The Indian Case: Ghate, Pandey and Patnaik (2013); Ghate, Gopalakrishnan, and Tarafdar (2016)
- There is a large literature on government spending shocks in the basic RBC model (Aiyagari et al., 2010; Baxter and King, 1993; Christiano and Eichenbaum, 1992; Gali, Lopez-Salido, and Valles, 2007)
  - With infinitely lived Ricardian households, an increase in (non-productive) government spending purchases (financed by current or future lump sum taxes) lowers the present value of after tax income, and generates a negative wealth effect on consumption.

Introduction

- We merge the above literatures to understand:.
  - What are the general equilibrium effects of fiscal contractions in a SOE RBC model with financial frictions ?
  - What are the channels through which fiscal contractions can be expansionary in EMEs ?
- We address this by adding public debt to a canonical (Neumeyer and Perri, 2005) "interest-rate" shock EME business cycle model
  - Like NP and GGT, the main financial friction is that firms face working capital constraints
  - We extend these papers in two main ways
    - We add public debt to the framework in GGT. We also allow for sovereign risk premium to depend on public debt dynamics
- We calibrate/estimate the model using the approach in Sims (2001)

Main Result

- We identify the transmission mechanism of a variety of shocks on the macroeconomy.
  - TFP shocks, Interest Rate Shocks, Government Spending Shocks
- We derive conditions under which fiscal contractions can become expansionary.

Model – Households

- Households derive utility from effective consumption (C^*), leisure $(1-H)$, and government debt (D)
- A representative household maximizes utility:

$$\max_{\{C_t,H_t,D_t,K_t\}} E_0 \sum_{t=0}^{\infty} \beta^t \left[\mu \ln\left(C_t^*\right) + (1-\mu)\ln\left(1-H_t\right) + \varphi \ln\left(D_t\right)\right], \tag{1}$$

subject to,

$$C_t^* = C_t + \zeta G_t,$$

$$C_t + K_t - (1-\delta)K_{t-1} + \frac{\phi}{2}K_{t-1}\left[\frac{K_t}{K_{t-1}} - 1\right]^2 + D_t + \frac{\kappa}{2}Y_t\left[\frac{D_t}{Y_t} - \frac{\bar{D}}{\bar{Y}}\right]^2 + b_t + \frac{\kappa}{2}Y_t\left[\frac{b_t}{Y_t} - \frac{b}{\bar{Y}}\right]^2$$

$$= (1-\tau_w)W_tH_t + (1-\tau_k)R_tK_{t-1} + R_{t-1}^G D_{t-1} + R_{t-1}^P b_{t-1} + T_t$$

- Government spending is exogenous, i.e., $G_t \sim CSSP$; the government also extends (imposes) a lump-sum transfer (tax) T_t to (on) households

Model – Government

- The government budget constraint is given by

$$G_t + R^G_{t-1} D_{t-1} + T_t = \tau_w W_t H_t + \tau_k R_t K_t + D_t, \quad (2)$$

$$R^G_t = R^*_t \eta_t \quad (3)$$

where,

$$\eta_t = \eta \exp\left(\frac{D_t}{Y_t} - \frac{D}{Y}\right) + \varepsilon_t \qquad \text{(Case 2)}$$

Model – Firms

- The firm seeks to maximize it's profits given by,

$$\max_{\{K_t, H_t\}} \; Y_t - R_t K_{t-1} - (1-\theta) W_t H_t - \theta W_t H_t R^P_{t-1}, \tag{4}$$

subject to

$$Y_t = A_t K^{\alpha}_{t-1} H^{1-\alpha}_t \tag{5}$$

$$A_t \sim CSSP \tag{6}$$

$$R^P_t = R^G_t \Gamma_t \tag{7}$$

Estimation strategy

- We use a combination of calibration and maximum likelihood estimation to specify model parameters.
- Specifically, we calibrate all parameters except those governing the exogenous shock processes.
- To estimate, we linearize the model, solve that linear model using Sims (2001) to obtain the state space form

$$X_{t+1} = FX_t + G\varepsilon_t \quad (8)$$

$$Y_t = H'X_t \quad (9)$$

where Y_t denotes the vector of observed data of the same dimension as the number of exogenous stochastic processes in the model.

- Given the state space form, the Kalman Filter delivers a likelihood function for parameters not already calibrated.

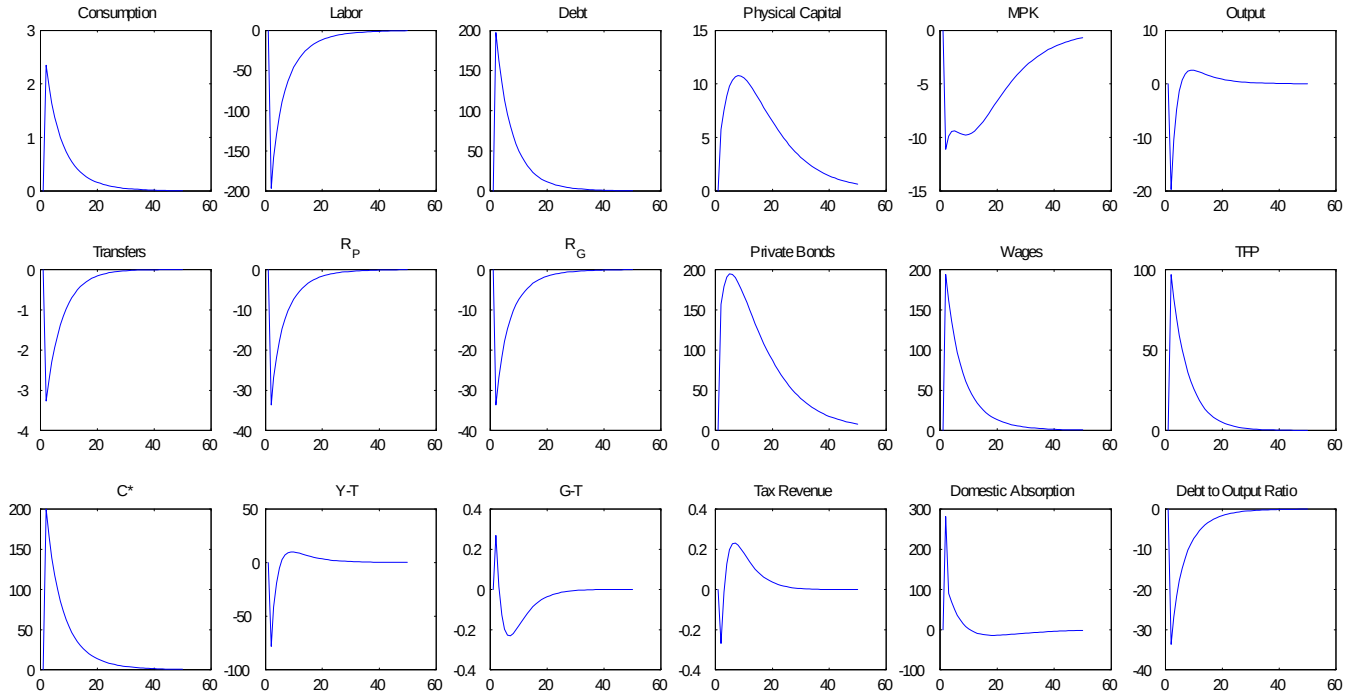
Calibration

Parameters	Value
α	0.4
β	0.95
μ	0.5
ζ	$\{0.5, 1.2\}$
τ_w	0.01
τ_k	0.01
δ	0.025
ϑ	0.01
κ_1	0.0001
κ_2	0.0001
ϕ	10
θ	0.502
R^*	1.03
$\overline{A}$	10
$\overline{G}$	10
ξ	1.02
ρ_{R^*}	0.9750
ρ_A	0.8483
ρ_G	0.6
ρ_Γ	0.9781
σ_{R^*}	0.01
σ_A	0.01
σ_G	0.01
σ_Γ	0.01
$\overline{B}$	-2

- We consider two cases: $\zeta < 1$ and $\zeta > 1$.

Case 1: Single period TFP Shock

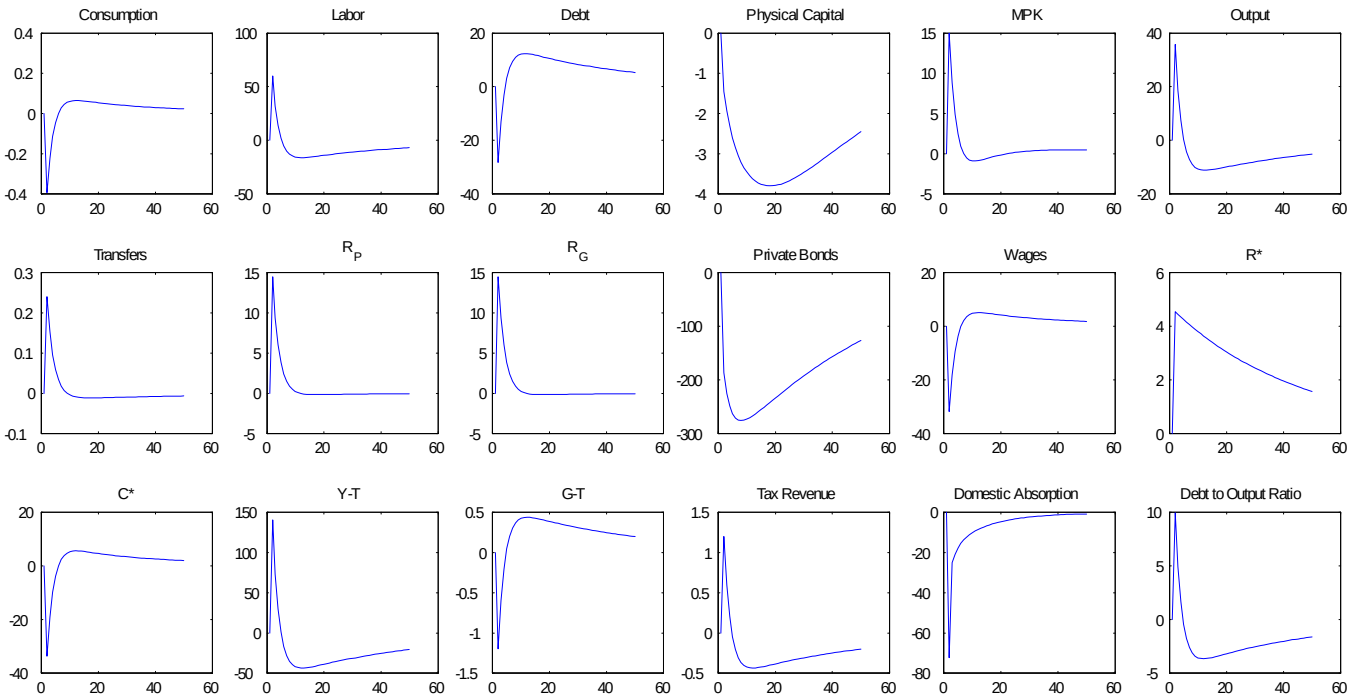
$\zeta = 0.5$



- Output falls, because of a fall in labor, which is due to an increase in consumption.

Case 1: Single period International interest rate Shock

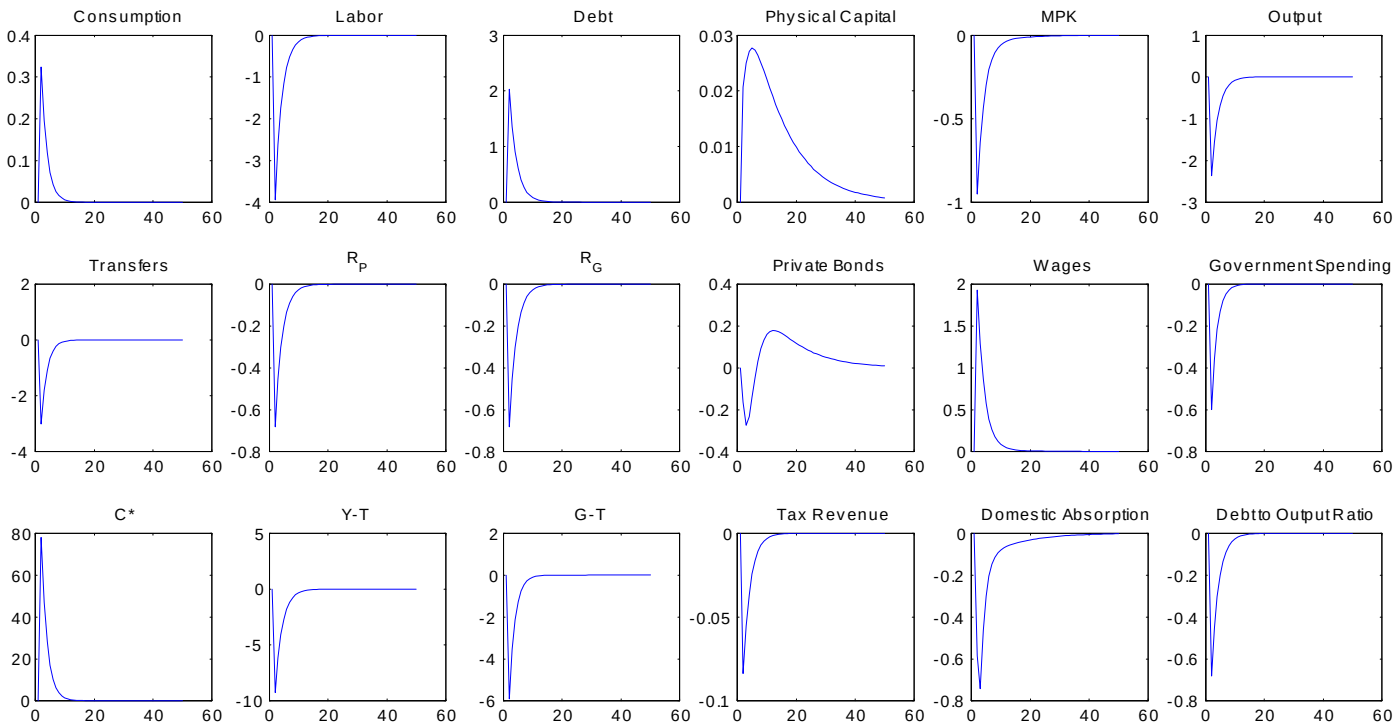
$\zeta = 0.5$



- $R_t^* \uparrow \Longrightarrow R^g$, and $R^p \uparrow$. This causes private consumption to fall and labor to increase. Since $Y_t = Y\left(H_t, K_{t-1}\right)$, $Y_t \uparrow$

Case 1: Single period G Shock

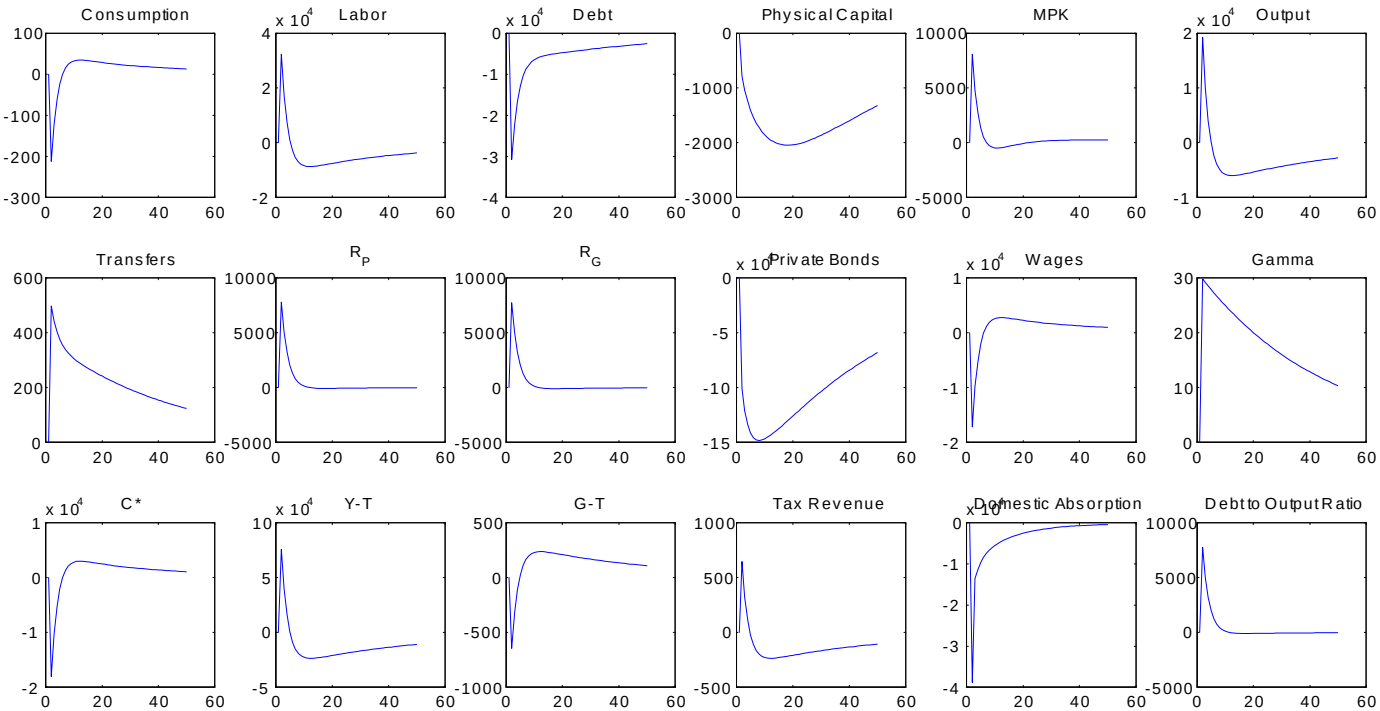
$\zeta = 0.5$



- $G_t \downarrow \Longrightarrow C_t \uparrow$. With a higher weight on C_t in C_t^*, $H_t \downarrow$. Since $Y_t = Y\left(H_t, K_{t-1}\right)$, $Y_t \downarrow$

Case 1: Single period Gamma Shock

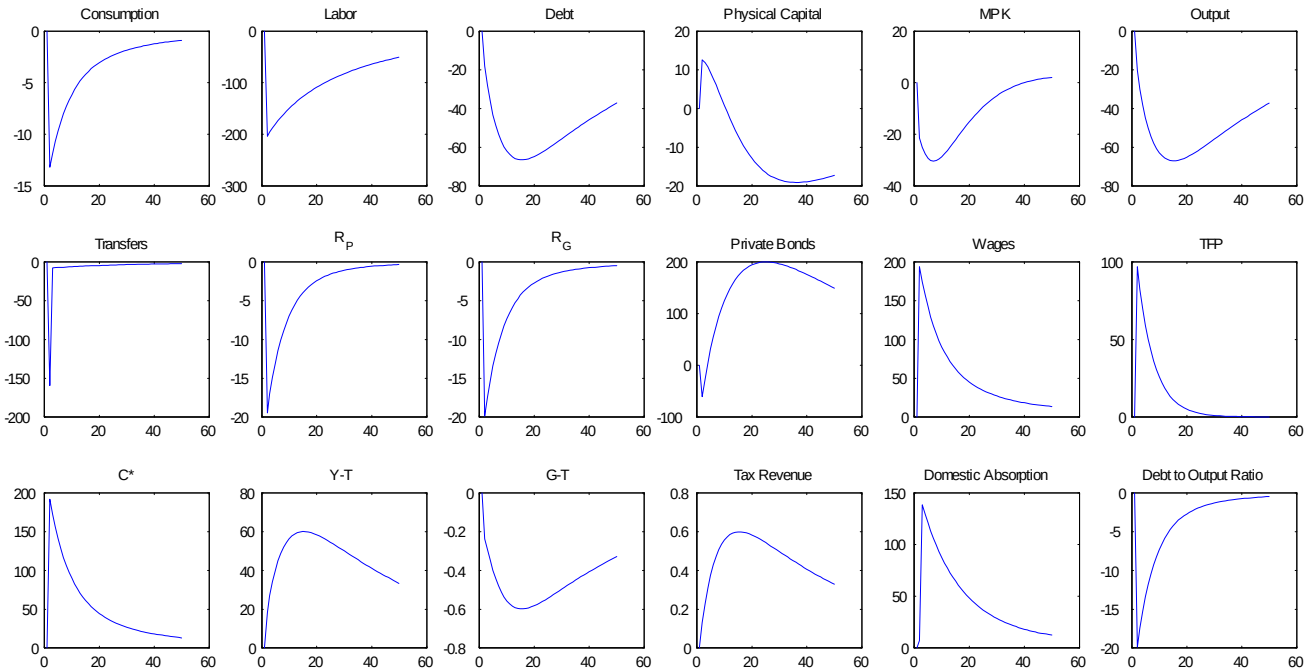
$\zeta = 0.5$



- This works in the same way as an interest rate shock

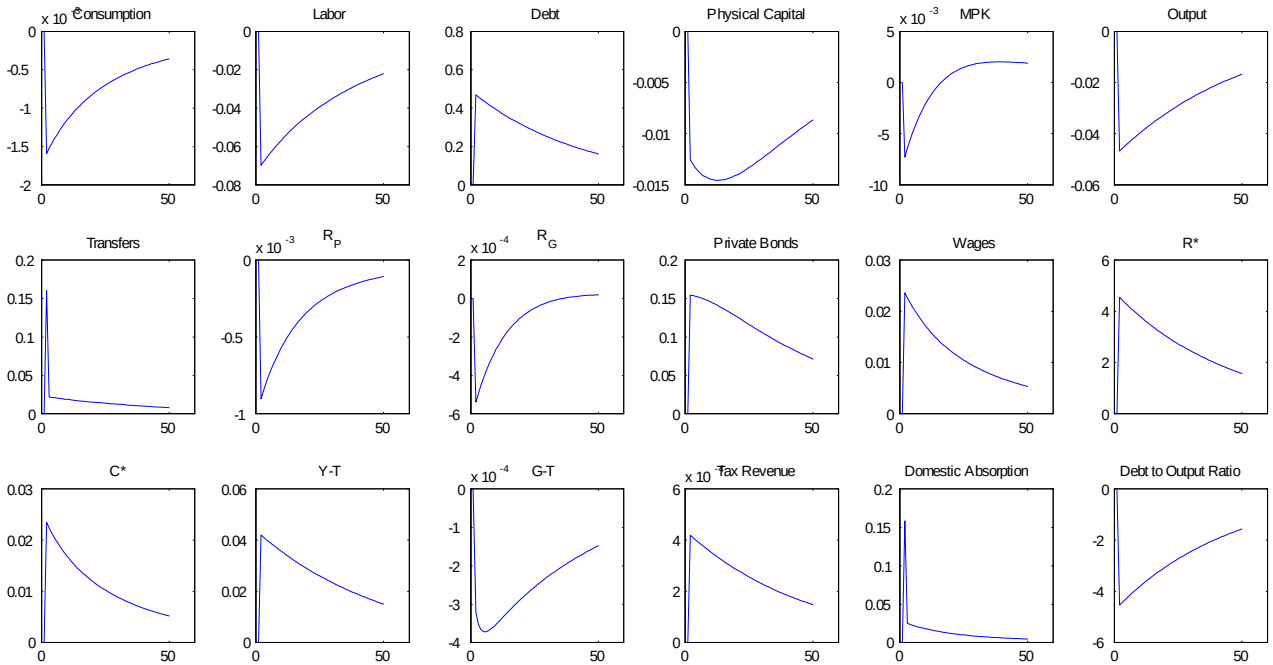
Case 2: Single period TFP Shock

$\zeta = 1.2$



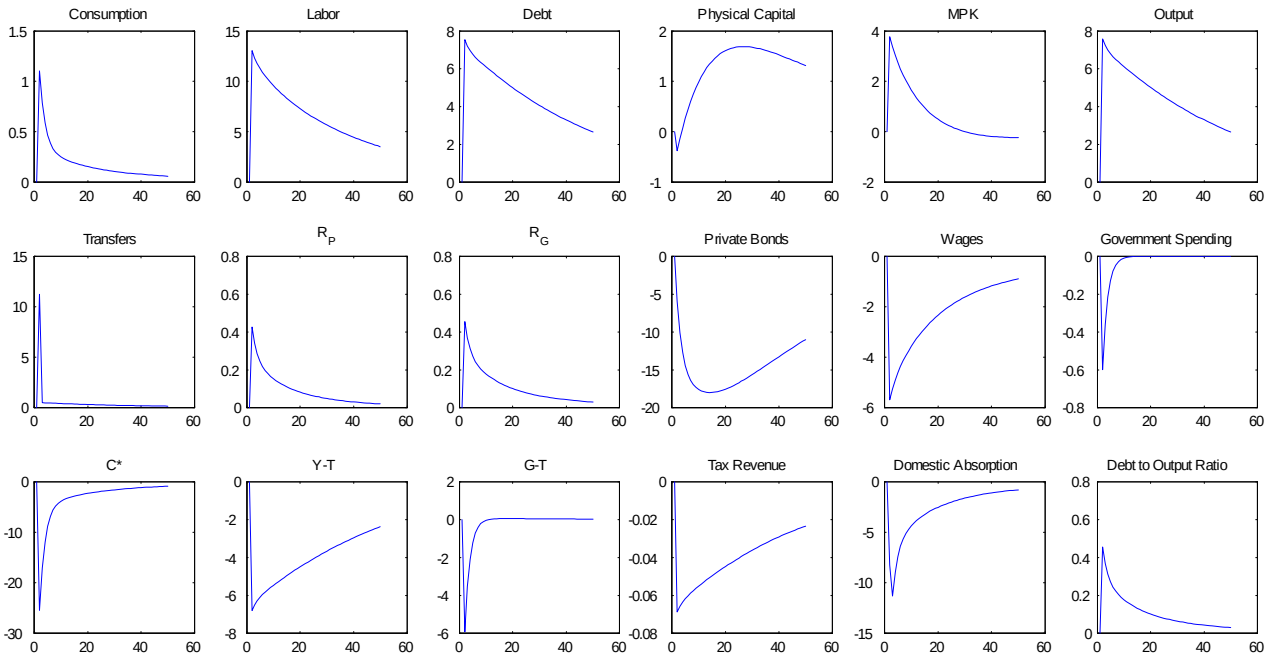
Case 2: Single period International interest rate Shock

$\zeta = 1.2$



Case 2: Single period G Shock

$\zeta = 1.2$



- $G_t \downarrow \Longrightarrow C_t \uparrow$. With a higher weight on G_t in C_t^*, $H_t \uparrow$. Since $Y_t = Y\left(H_t, K_{t-1}\right)$, $Y_t \uparrow$

Case 2: Single period Gamma Shock

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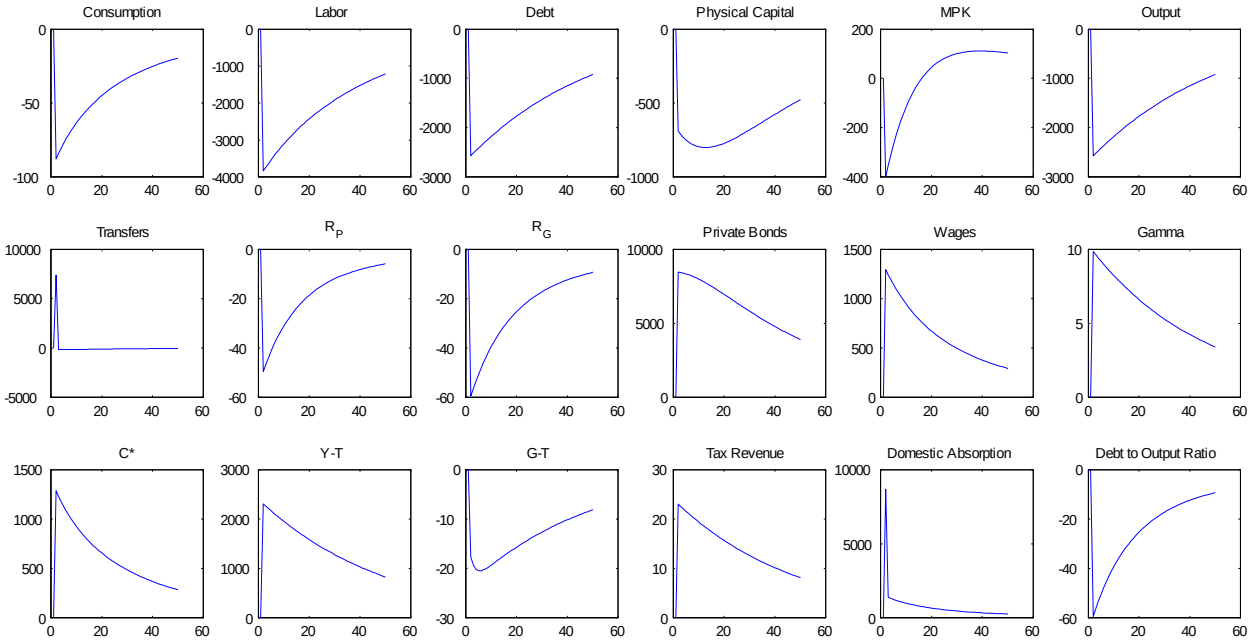

- Works the same way as an interest rate shock.

Concluding Remarks

- This project is ongoing
- We show that a fiscal consolidation may be expansionary in EMEs, but this crucially depends on the substitutability parameter between private consumption and government expenditure
- Contractionary fiscal policy is expansionary only when the weight on government expenditure in effective household consumption is high
- A shock to international interest rate and the sovereign debt spreads causes output to increase when the weight on government expenditure in effective household consumption is low
- Future work:
  - Quantifying and disaggregating the expansionary effect and the contractionary effect of a fiscal contraction
  - Identifying conditions under which the expansionary effect of a fiscal contraction dominates the contractionary effect

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