Fiscal Austerity in Emerging Market Economies

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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 India

Fiscal Deficit as % of GDP for India

Year

Fiscal Deficit as % of GDP

2010 2012 2014 2016 2018

(13th Annual Conference on Growth and Development)
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.
Households derive utility from effective consumption \((C^*)\), leisure \((1 - H)\), and government debt \((D)\).

A representative household maximizes utility:

\[
\begin{align*}
\max_{\{C_t, H_t, D_t, K_t\}} & \quad E_0 \sum_{t=0}^{\infty} \beta^t \left[ \mu \ln (C^*_t) + (1 - \mu) \ln (1 - H_t) + \varphi \ln (D_t) \right], \\
\text{subject to,} & \\
C^*_t &= C_t + \zeta G_t, \\
C_t + K_t - (1 - \delta) K_{t-1} + \frac{\phi}{2} K_{t-1} \left[ \frac{K_t}{K_{t-1}} - 1 \right]^2 + D_t + \\
&\quad \frac{\kappa}{2} Y_t \left[ \frac{D_t}{Y_t} - \bar{D} \right]^2 + b_t + \frac{\kappa}{2} Y_t \left[ \frac{b_t}{Y_t} - \frac{b}{Y} \right]^2 \\
&\quad = (1 - \tau_w) W_t H_t + (1 - \tau_k) R_t K_{t-1} + R^G_{t-1} D_{t-1} + R^P_{t-1} b_{t-1} + T_t
\end{align*}
\]

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.
The government budget constraint is given by

\[ G_t + R_t^G D_{t-1} + T_t = \tau_w W_t H_t + \tau_k R_t K_t + D_t, \]  

(2)

\[ R_t^G = R_t^* \eta_t \]  

(3)

where,

\[ \eta_t = \eta \exp \left( \frac{D_t}{Y_t} - \frac{D}{Y} \right) + \varepsilon_t \]  

(Case 2)
The firm seeks to maximize it’s profits given by,

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

subject to

$$Y_t = A_t K_{t-1}^\alpha H_t^{1-\alpha} \quad (5)$$

$$A_t \sim CSSP \quad (6)$$

$$R^P_t = R^G_t \Gamma_t \quad (7)$$
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

\[
X_{t+1} = FX_t + G\varepsilon_t \tag{8}
\]
\[
Y_t = H'X_t \tag{9}
\]

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

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<th>Parameters</th>
<th>Value</th>
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</table>
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

$\zeta = 0.5$

- $R_t^* \uparrow \implies R^g$, and $R^p \uparrow$. This causes private consumption to fall and labor to increase. Since $Y_t = Y(H_t, K_{t-1})$, $Y_t \uparrow$
Case 1: Single period G Shock

\( \zeta = 0.5 \)

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

ζ = 1.2
Case 2: Single period International interest rate Shock

$\zeta = 1.2$
Case 2: Single period G Shock

\[ \zeta = 1.2 \]

- \( G_t \downarrow \implies C_t \uparrow \). With a higher weight on \( G_t \) in \( C_t^* \), \( H_t \uparrow \). Since \( Y_t = Y(H_t, K_{t-1}) \), \( Y_t \uparrow \).
Case 2: Single period Gamma Shock

\[ \zeta = 1.2 \]

- 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
This project is ongoing

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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.