Fiscal Policy and Debt Dynamics in Developing Countries

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Ilzetzki, Mendoza and Vegh (2012) evidence on the government purchases multiplier.

- Rather small (0 to 0.4) in the short-run
- Magnitude in the long run depends crucially on country characteristics
  - Degree of monetary accommodation
  - Openness to international trade
  - Sovereign debt
  - In developing countries importance of composition (consumption/investment).
Tax Cuts as Stimulus

• During the recent downturn fiscal stimulus utilized both sides of the government balance sheet

• While debate has largely focused on government expenditure,
  • only half of the ARRA (US stimulus of 2009) was in the form of government purchases;
  • government purchases in the UK increased roughly along their (quadratic) trend of the Labour parliaments.

• Tax revenues declined significantly
  • Mainly due to an endogenous decline in the tax base
  • But also due to discretionary measures:
    • $288 billion in tax measures in the US, primarily personal income tax credit; some corporate tax incentives
    • VAT cut in the UK from 17.5% to 15%.
Importance of Debt

- Have also ignored the dynamic aspect of debt accumulation.

- Fiscal stimulus causes an increase in debt, which may have effects on GDP.

- Simple linear VAR may not account for this (may be along an unsustainable debt path).
Outline

• Description of dataset

• The growth impact of tax policy: panel analysis

• SVAR analysis

• Accounting for debt dynamics
Data

- New comprehensive dataset of marginal tax rates

- 28 countries: 7 high-income, 21 developing

- Calculated from tax codes taken from OECD and Pricewaterhouse Coopers
Figure 2: Calculating the Average Marginal Tax Rate, Brazil 2008

- Marginal Tax Rate = 27.5%
- Marginal Tax Rate = 15%
- Marginal Tax Rate = 0%
- Average Marginal Tax Rate = 13.6%
Figure 3: Average Marginal Personal Income Tax Rate
Comparison with Barro and Redlick (2009)
Econometric Model

- PVAR, including GDP, government consumption, government expenditures

\[ AY_{n,t} = \sum_{k=1}^{K} C_k Y_{n,t-k} + Bu_{t,k}, \]

  - (Excluding transfers) government expenditures cannot respond to innovations within a quarter
  - Tax elasticities estimated from institutional information.
Simple OLS/GMM Estimation

- Regress GDP growth on (lagged) changes in past tax rates.
  - Following Barro and Redlick (2010) also include lagged unemployment rate.

- Alternatively: Arellano-Bond GMM to address autocorrelation in GDP growth and (to some extent) reverse causation from GDP to tax rates.
### Table 4: Tax Changes and GDP
Dependent Variable: Change in GDP

<table>
<thead>
<tr>
<th></th>
<th>Full Sample</th>
<th>Developing countries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OLS</td>
<td>Arellano-Bond</td>
</tr>
<tr>
<td>PIT</td>
<td>-0.14 (.055)</td>
<td>-0.16 (.081)</td>
</tr>
<tr>
<td>CIT</td>
<td>0.043 (.028)</td>
<td>-0.084 (.063)</td>
</tr>
<tr>
<td>VAT</td>
<td>0.38 (.129)</td>
<td>0.51 (.55)</td>
</tr>
<tr>
<td>Lagged GDP</td>
<td>0.35 (.043)</td>
<td>0.37 (.10)</td>
</tr>
<tr>
<td>UR</td>
<td>-0.0079 (.00036)</td>
<td>0.0035 (.0011)</td>
</tr>
<tr>
<td>Trading Partners' Growth</td>
<td>1.52 (.31) 2.95 (.23)</td>
<td>1.62 (.34) 2.77 (.44)</td>
</tr>
</tbody>
</table>

**Note:**
- **Significant at 1%**
- **Significant at 5%**
- **Significant at 10%**

**Sample Sizes:**
- Full Sample: 335, 308
- Developing countries: 188, 166
Debt Dynamics

\[ AY_t = \sum_{k=1}^{K} \left[ C_k Y_{t-k} + D_k d_{t-k} \right] + Bu_t, \]

Favero-Giavazzi:

\[ d_t \equiv \frac{1 + i_t}{(1 + \Delta p_t) (1 + \Delta y_t)} d_{t-1} + \frac{\exp g_t - \exp T_t}{\exp y_t}, \]

Ilzetzki:

\[ d_t \equiv \frac{(1 + i_t) \left[ \delta (1 + \Delta s_t) + 1 - \delta \right]}{(1 + \Delta p_t) (1 + \Delta y_t)} d_{t-1} + \frac{\exp g_t - \exp T_t}{\exp y_t}, \]
Why does sovereign debt matter?

2. Higher debt increases real interest rates.
3. Higher debt causes inflationary pressures.
4. Direct effects of sovereign debt on GDP growth?
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Figure 6: Responses to a shock to government expenditure, Brazil

- Government Expenditure
- Inflation
- Tax Revenues
- Interest Rate
- GDP
- Exchange Rate
Figure 7: Responses to a shock to tax revenues, Brazil

- **Government Expenditure**
- **Tax Revenues**
- **Inflation**
- **Interest Rate**
- **GDP**
- **Exchange Rate**
1. Debt dynamics in a panel of developing countries
   1.1 Greater empirical power.
   1.2 Non-linearities, regime switching.

2. Narrative approach to estimate effects of taxes.