Economics 390
Topics in Macroeconomics
(9/18/13)

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UW Madison
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Outline

• Multipliers
• Fiscal consolidation
Multipliers

Impact multiplier

\[ \frac{dY_t}{dZ_t} \]

Cumulative multiplier

\[
\frac{\sum_{j=0}^{n} dY_{t+j}}{\sum_{j=0}^{n} dZ_{t+j}}
\]

Sustained 1% of GDP increase in Public Expenditures

Percentage deviations from baseline

<table>
<thead>
<tr>
<th>UNITED STATES</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP level</td>
<td>0.9</td>
<td>1.0</td>
<td>0.6</td>
<td>0.0</td>
<td>-0.5</td>
</tr>
<tr>
<td>Inflation</td>
<td>0.1</td>
<td>0.3</td>
<td>0.9</td>
<td>0.7</td>
<td>0.1</td>
</tr>
<tr>
<td>Interest rates (basis points)</td>
<td>60</td>
<td>95</td>
<td>155</td>
<td>95</td>
<td>-10</td>
</tr>
<tr>
<td>Government net lending (% GDP)</td>
<td>-0.8</td>
<td>-0.6</td>
<td>-0.6</td>
<td>-0.8</td>
<td>-0.8</td>
</tr>
<tr>
<td>Current Account (% GDP)</td>
<td>-0.2</td>
<td>-0.1</td>
<td>0.1</td>
<td>0.2</td>
<td>0.3</td>
</tr>
</tbody>
</table>

### Goods/Svcs Spending, Transfers, and Tax Multipliers for the US

Assumes monetary policy accommodative

Source: CBO (2012)

<table>
<thead>
<tr>
<th>Type of Activity</th>
<th>Estimated Output Multipliers&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low Estimate</td>
</tr>
<tr>
<td>Purchases of Goods and Services by the Federal Government</td>
<td>0.5</td>
</tr>
<tr>
<td>Transfer Payments to State and Local Governments for Infrastructure</td>
<td>0.4</td>
</tr>
<tr>
<td>Transfer Payments to State and Local Governments for Other Purposes</td>
<td>0.4</td>
</tr>
<tr>
<td>Transfer Payments to Individuals</td>
<td>0.4</td>
</tr>
<tr>
<td>One-Time Payments to Retirees</td>
<td>0.2</td>
</tr>
<tr>
<td>Two-Year Tax Cuts for Lower- and Middle-Income People</td>
<td>0.3</td>
</tr>
<tr>
<td>One-Year Tax Cut for Higher-Income People</td>
<td>0.1</td>
</tr>
</tbody>
</table>

<sup>a</sup> Assumes monetary policy accommodative.
When might multipliers differ?

• If the economy is open to international trade
• If the economy is open to capital flows, and the exchange rate is floating (so the dollar moves as interest rates go up or down)
• If the exchange rate is fixed
• If the aggregate supply curve is vertical (i.e., there is no slack in the economy)
• If the monetary policy is accommodative or not
In an Economy Open to Trade

\[ Z \equiv C + I + G - IM / \varepsilon + X \]

\[ IM = IM(Y, \varepsilon) \]

\[ \frac{\partial IM}{\partial Y} = m_1 \]

\[ \hat{\gamma} \equiv \frac{1}{1 - c_1(1 - t_1) - b_1 + m_1 + \frac{b_2}{\eta}} \]
If There Is Economic Slack

Figure 5. Historical multiplier for total government spending

Notes: shaded regions are recessions defined by the NBER. The solid black line is the cumulative multiplier computed as $\sum_{h=1}^{20} Y_h / \sum_{h=1}^{20} G_h$, where time index $h$ is in quarters. Blue dashed lines are 90% confidence interval. The multiplier incorporates the feedback from $G$ shock to the business cycle indicator $z$. In each instance, the shock is one percent increase in government spending.

Source: Auerbach and Gorodnichenko (2012)
Accommodative and Non-accommodative Monetary Policy

\[ \hat{\gamma} \equiv 0 \]

\[ \hat{\gamma} \equiv \frac{1}{\left(1 - c_1(1-t_1) - b_1 + \frac{b_2}{h}\right)} \]

\( i_{\text{Target}} \)

Effective LM, Non-accommodative Monetary policy

Effective LM
Fiscal Consolidation

• Alesina and Perroti (1995) conclude that contractionary fiscal policy can be expansionary

• They use changes in the structural budget balance to examine a sample of episodes

• The results are driven by a few of observations, so that small changes in definition cause big changes in results

• IMF (2010) uses a narrative approach for empirics

• Augments with model simulations
1% Fiscal Consolidation
The Importance of Monetary Policy

Figure 3.6. Composition and Monetary Conditions: Impact of a 1 Percent of GDP Fiscal Consolidation

Why are spending-based consolidations less contractionary? Partly because they benefit from monetary stimulus, whereas tax-based adjustments feature monetary tightening.

Policy Rate (basis points)

Tax-based

Spending-based

0 1 2 3

-60 -40 -20 0 20 40 60 80
When is Contractionary Fiscal Policy Expansionary?

Answer: Possibly when sovereign risk is high.
What about at Zero Lower Bound?

Answer: Since data does not span a period of ZLB, have to rely on simulation.