Jeffrey Frankel:
A Solution to Fiscal Overspending in Commodity Booms: the Structural Budget Institutions Pioneered by Chile

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Great paper!

- New time-series evidence on copper price
- New int’l and Chilean evidence on official budget and growth forecast errors
- Policy-relevant assessment of Chile’s fiscal rule and institutions
- Main conclusion: Chile does better than industrial countries due to its better rule and institutions
- Fun to read!
Outline

1. Chile’s structural balance rule
2. Copper price trends and mean reversion
3. Cyclicality of fiscal policy
4. Forecast errors
5. Reform challenges for Chile’s fiscal rule and fiscal institutions
1. Chile’s structural balance rule

- According to IMF (2009), Chile in 2001 was country No. 30 in adopting explicit fiscal rule
- As Frankel shows, Chile’s rule has worked reasonable well on average since 2001
- But it has been de facto suspended in 2009-2010: structural balance ratio to GDP was reduced from 1.1% of GDP in 2006 to 0.4% in 2007 to -0.6% in 2008 to -3.1% in 2009 and to -3.2% in 2010 (Adv. Com. on Fiscal Rule, 2010)
- Implying huge fiscal expansion
1. Chile’s structural balance rule

Chile’s structural and actual fiscal balance ratio to GDP, 2001-2010 (Sources: ACFR and DIPRES)
1. Chile’s structural balance rule

Chile’s real government spending growth (%), 2001-2010 (Source: DIPRES)
1. Chile’s structural balance rule

Cumulative real expenditure growth by 59% during 2006-2009:

- Macroeconomically desirable? May be
- Optimal? To be seen
- Microeconomically efficient? Unlikely
- Consistent with ex ante rule? Certainly not: A-cyclical rule was considered insufficiently counter-cyclical – hence it was suspended.
2. Copper price trend and mean reversion

- Frankel: short-time series uninformative for copper-price trend estimates and projection due to small-sample bias leading to RW estimates – hence use long series (217 years)

- I disagree: going back to bronze age (when copper was highly priced!) is uninformative because of long-term stochastic (i.e., unpredictable) structural breaks in world copper demand and supply

- Author’s estimate of trend copper price implies:
  (i) No actual price observation in 1959-2009 is statistically significant below estimated LT trend – highly unlikely
  (ii) 2010 trend price (0.004) is 25% of 2010 actual price (0.016) – would imply massive copper budget surplus.
2. Copper price trend and mean reversion

The real price of copper over 50 years

- Annual price
- Long-run trend
- 10 year MA
2. Copper price trend and mean reversion

Copper Price Advisory Commission does better:

- discounts (disregards) fully old historical data;
- focuses on recent (10-20 years ?) copper price and market behavior, identifying structural conditions;
- projects for short to medium-term horizon (1-10 years).
3. Cyclicality of fiscal policy

- J. Frankel, p. 17: “The hope that improved fiscal policies or institutions might reduce (fiscal) procyclicality make this one of the most potentially fruitful avenues of research in EM macroeconomics”

- Indeed. Next two papers show that government institutional quality and financial development turn fiscal policy from procyclical into counter-cyclical – in the world sample.
Business Cycles and Fiscal Policies: The Role of Institutions and Financial Markets

César Calderón
The World Bank

Klaus Schmidt-Hebbel
Catholic University of Chile

2008
Empirical strategy

• Regression equation for fiscal indicator ratios:

\[ \Delta f_{it} = \mu_i + \eta_t + \phi f_{i,t-1} + \alpha_i \Delta y_{it} + B' X_{it} + \zeta_{it} \]

• where \( \alpha_i \) is:

\[ \alpha_i = \alpha_0 + \alpha_1 FO_{it} + \alpha_2 FD_{it} + \alpha_3 IQ_{it} + \alpha_4 PR_{it} \]

• Budget balance is counter-cyclical if:

\[ \frac{\partial \Delta f_{it}}{\partial \Delta y_{it}} = \alpha_0 + \alpha_1 FO_{it} + \alpha_2 FD_{it} + \alpha_3 Inst_{it} + \alpha_4 PR_{it} > 0 \]
Extended IV Regression ($\alpha_i$ is a function)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Budget Balance</th>
<th></th>
<th>Expenditure</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All</td>
<td>Industrial</td>
<td>Developing</td>
<td>All</td>
</tr>
<tr>
<td></td>
<td>[1]</td>
<td>[2]</td>
<td>[3]</td>
<td>[7]</td>
</tr>
<tr>
<td>Real Output</td>
<td>-2.061 **</td>
<td>-0.126</td>
<td>-1.552 *</td>
<td>11.431 **</td>
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<tr>
<td>(in log differences)</td>
<td>(0.87)</td>
<td>(1.89)</td>
<td>(0.83)</td>
<td>(3.93)</td>
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<tr>
<td>Real Output × Financial Openness</td>
<td>0.174 **</td>
<td>0.027</td>
<td>0.132 *</td>
<td>-0.953 **</td>
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<tr>
<td>(FO: Foreign liabilities as % GDP, logs)</td>
<td>(0.08)</td>
<td>(0.04)</td>
<td>(0.08)</td>
<td>(0.36)</td>
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<td>Real Output × Financial Depth</td>
<td>0.133 **</td>
<td>0.074</td>
<td>0.090</td>
<td>-0.811 **</td>
</tr>
<tr>
<td>(FD: Dom. Credit to Private Sector as % GDP, logs)</td>
<td>(0.06)</td>
<td>(0.16)</td>
<td>(0.06)</td>
<td>(0.27)</td>
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<tr>
<td>Real Output × Institutional Quality</td>
<td>0.017 **</td>
<td>-0.001</td>
<td>0.014 **</td>
<td>-0.087 **</td>
</tr>
<tr>
<td>(IQ: ICRG Index of Political Risk)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.03)</td>
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<tr>
<td>Real Output × Democracy</td>
<td>-0.023 **</td>
<td>0.008</td>
<td>-0.015 *</td>
<td>0.135 **</td>
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<td>(Democracy: Polity Score)</td>
<td>(0.01)</td>
<td>(0.03)</td>
<td>(0.01)</td>
<td>(0.05)</td>
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<td>No. Countries</td>
<td>90</td>
<td>22</td>
<td>68</td>
<td>90</td>
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<td>No. Observations</td>
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<td>624</td>
<td>1359</td>
<td>2051</td>
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<td>R**2</td>
<td>0.146</td>
<td>0.188</td>
<td>0.143</td>
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<tr>
<td>Time Dummies</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Response of budget balance to 1 s.d. increase in output (world sample)

Full Sample of Countries

1.1. Conditional on the degree of financial openness

1.2. Conditional on the level of financial development

1.3. Conditional on the level of institutions

1.4. Conditional on the political regime

- Foreign Liabilities (% of GDP)
- Domestic credit to the private sector (% of GDP)
- ICRG Index of Political Risk
- Polity Score
Expaining differences in fiscal cyclicality: industrial vs. developing economies

8.1. Budget balance

8.2. Government expenditure

8.3. Current expenditure

8.4. Capital expenditure
Institutions and Cyclical Properties of Macroeconomic Policies in the Global Economy

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June 2010
I. Motivation

- **Our Prior**: Macroeconomic policies stabilize business-cycle fluctuations in countries with stronger institutions

- **Our Goal**: to test whether countries with strong institutions are more likely to adopt contractionary (expansionary) policies during booms (recessions)
II. Data

• Panel-data sample of 112 countries, 1984-2008 (annual data)

• *Interest rates*: cyclical component of log of gross nominal central bank discount (interbank, money market) rate.

• *Fiscal Policy*: cyclical component of log of real government spending.

• *Output Gap, Inflation, currency depreciation*: cyclical components
III. Model

• Monetary policy equation (extended Taylor rule):

$$\tilde{r}_{i,t} = \alpha_0 + \alpha_1 \tilde{r}_{i,t-1} + \alpha_2 \tilde{\pi}_{i,t} + \alpha_3 \tilde{e}_{i,t} + \alpha_4 \tilde{y}_{i,t} + \alpha_5 \tilde{y}_{i,t} Q_{i,t} + u_{i,t}$$

• Fiscal policy equation (extended fiscal rule):

$$\tilde{g}_{i,t} = \beta_0 + \beta_1 \tilde{g}_{i,t-1} + \beta_2 \tilde{y}_{i,t} + \beta_3 \tilde{y}_{i,t} Q_{i,t} + v_{i,t}$$

• At high level of institutions (high Q), we expect macro policies to be countercyclical.
V. Results

Figure 3. Cyclical Behavior of Monetary Policies

ICRG
V. Results

Figure 4. Cyclical Behavior of Fiscal Policies

- Fiscal policy (HP filter)
- Fiscal policy (first-difference filter)
4. Official budget and GDP growth forecast errors

- J. Frankel reports very promising empirical analysis of forecast error measurement and structural determinants.
- But international estim. results may be biased due to inadequate estimation technique: stacked data.
- Try better alternatives: SUR, FE, RE, DFE, FE-IV, Panel EC. Dynamics, country fixed effects and endogeneity are very likely to be present.
- Chile estimation: include inflation forecast error as regressor of budget error: unexpected inflation raises unexpected budget surplus: tax revenue is inflation-indexed; government expenditure is not.
5. Reform challenges for Chile’s fiscal framework

- Fiscal rule design: from a-cyclical to counter-cyclical spending?
- Fiscal rule: ex post enforcement and ex ante escape clauses
- Three models for fiscal institutions:
  (i) Independent fiscal authorities with (some) delegation of fiscal authority (Frankel): no country has done it
  (ii) Fiscal councils (and CBOs): no delegation of fiscal authority (gov. sets budget balance and composition); FCs assess assumptions and results, monitor implementation, LT studies, strong independent opinions, report to Congress. World trend.
  (iii) Advisory committees issue non-binding recommendations. Chile now.