Chile’s Fiscal Policy Rule

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Key Issues

1. Why Fiscal Rules?
2. Chile’s Fiscal Rule: The Basics
3. Similarities and Differences between Chile’s and Norway’s Fiscal Rules
4. Chile’s Fiscal Policy Performance under the Rule
5. Macroeconomic Effects
6. Limitations of the Rule and Possible Changes

References

Appendix
1. Why Fiscal Rules?
Why Fiscal Rules?

Country experience and literature strongly suggest the following reasons for adopting fiscal rules:

• Long-term fiscal sustainability and solvency
• Fiscal policy transparency and credibility
• Macroeconomic and financial stability
• Inter and intra-generational equity
• Stronger political economy of public finances and budget approval
• Stability of government programs
• .... among others
What raises the likelihood of countries to have fiscal rules in place?

• Elbadawi, Schmidt-Hebbel and Soto (2014) put together and use a large 89-country world panel dataset for treatment and control country groups, applying five panel-data estimation techniques for discrete choice-dependent variables, and conducts robustness checks for different control groups and time periods

• We find that the following variables are robustly associated with the likelihood of having fiscal rules in place: fiscal conditions, level of development, government stability, inflation targets, fixed exchange rate regimes, global financial integration, and, in developing countries: democracy, and political checks and balances

• (See regression in Appendix)
2. Chile’s Fiscal Rule: The Basics
Chile’s Fiscal Rule

- 2000: Minister of Finance adopts a fiscal rule based on Cyclically-Adjusted Balance (CAB) or Structural Balance
- Objective: government expenditure determined by estimate of permanent income, saving cyclical revenue in sovereign wealth fund
- Two independent committees provide estimates for trend GDP growth (components) and forecasts for long-term copper price
- Used as MoF inputs for forecasts of cyclically-adjusted copper price and GDP levels – key variables in estimating cyclically-adjusted government revenue
In Principle: A Simple Rule (1)

- Government cyclical net saving (CAB minus actual balance) is determined by cyclical revenue (cyclically adjusted revenue minus actual revenue):

\[ B^*_t - B_t = (R^*_t - G_t) - (R_t - G_t) = \]
\[ = NMTR^*_t - NMTR_t + MTR^*_t - MTR_t + CR^*_t - CR_t + MR^*_t - MR_t \]

- Non-mining Tax Rev* = NMTR* = f (output gap)
  Mining Tax Rev* = MTR* = f (trend mineral prices)
  Mining Transfers* = CR*+MR* = f (trend min prices)
In Principle: A Simple Rule (2)

• Actual overall government expenditure set equal to cyclically-adjusted revenue net of CAB target:

\[ G = R^* - B^* \]

• Therefore government spending G is a-cyclical

• Government sets target for CAB target or B*

• Over the budget execution cycle (one calendar year), government adjusts budget execution to meet budget target
Chile’s Fiscal Rule

• Cyclically adjusted government balance rule – implies a-cyclical government spending (automatic tax stabilizers are still counter-cyclical)
• Unique: targets government spending to cyclically-adjusted revenue, adjusting for cyclical revenue due to cycles in GDP and mineral prices
• Strong governance and political economy / support
• Rule in place for 14 years, since 2001, subject to some changes
• Has generally worked well
• Except in 2009-10: rule was overruled because of insufficient counter-cyclicality; reestablished 2011
• But requires technical and institutional refinements
3. Similarities and Differences between Chile’s and Norway’s Fiscal Rules
Chile’s and Norway’s Fiscal Rules

Similarities

• Commodity-price windfalls are saved
• Government spending is determined by cyclically-adjusted tax revenue and commodity revenue
• In place since 2001
Chile’s and Norway’s Fiscal Rules

Differences

• Intra-generational in C, inter-generational in N
• Export volume considered permanent in C, transitory in N
• Cyclically-adjusted commodity revenue spent in C, saved in N
• Spending rule is formally a-cyclical in Chile, ad hoc counter-cyclical in N
• Spending smoothing in N, not in C
• Feedback from SWF to budget in N, not in C
• Commodity revenue rule more complex in C, less in N
4. Chile’s Fiscal Performance under the Rule
Copper Price and Government Mining Revenue

• Copper (and molybdenum)-related government revenue is adjusted only by the estimated cyclical component of world copper prices.

• No other cyclical adjustments are made, particularly none for the exchange rate and mining production costs, although mining-related government revenue is based on domestic-currency profits of copper producers.

• Note that while the super commodity boom seems to have ended, copper production costs are rising, squeezing mining profits and government mining revenue.
Current and Long-Term Forecasts of Copper Prices, and Production Costs (US dollar cents)

Sources: Central Bank of Chile, Budget Office of Chile, and Cochilco
Output Gap

• National Accounts data revisions are used each year by the Trend GDP Committee in forecasting production factor growth rates for 5 years, used subsequently in a Solow growth equation to generate forecasts for trend GDP

• Government determines output gap in year t (used for year t budget execution) according to year t trend GDP level forecast made in year t-1 and its own most recent forecast for year t current GDP level

• Government determines output gap for year t+1 (used for year t+1 budget preparation) according to year t trend GDP level forecast made in year t and its own most recent forecast for year t+1 current GDP level
GDP Growth: Actual and Long-Term Forecasts, 1990-2018 (%)

Source: Budget Office of Chile and IMF
Output Gap, 1990-2012 (%)

Note: a positive output gap reflects estimated trend GDP level above actual GDP level. Source: Budget Office of Chile
Actual and Cyclically Adjusted Fiscal Balance, 1990-2013 (% of GDP)

Source: Budget Office of Chile
5. The Rule’s Macroeconomic Effects
Chile’s Fiscal Performance under the Rule, 2001-13

- On average, budget surpluses
- Strong decline in net government debt (net positive assets since 2006)
- Low sovereign risk
- Budget balance and net government assets strongly pro-cyclical – as result of the a-cyclical spending rule

According to the OECD (Sovereign Borrowing Outlook 2014, published 28 March 2014), Chile’s 2014 Public Sector Gross Borrowing Requirement of 2.1% of GDP is the lowest among OECD members – the OECD average is 20.4% of GDP.
Government Budget Balance, Net Debt, and Sovereign Debt Premium, 2001-2013 (%)

Sources: Budget Office, Central Bank, and Ministry of Finance of Chile
Rule’s Fiscal and Macro Effects: Previous Findings

Previous studies suggest that Chile’s fiscal rule has:

• Lowered pro-cyclical bias of fiscal policy
• Contributed to fiscal sustainability and credibility, lowering the sovereign risk premium
• Reduced macroeconomic uncertainty
• Lowered volatility of GDP, interest rates, and exchange rate
• Reduced dependence on foreign financing during downturns
• Improved protection of social programs during cyclical downturns
Rule’s Fiscal and Macro Effects: New Findings

• Which is the response of government saving and Chile’s macroeconomy to a copper price shock under the rule (since 2001) – compared to previously (1990-2001)?

• I use impulse responses from VAR estimations to simulate the response to a 10% copper price shock (Schmidt-Hebbel 2012)

• Before the rule: no effects on fiscal balance and EMBI, while RER appreciates and growth declines

• After the rule: fiscal balance improves, EMBI declines, RER appreciates, and growth rises
Response to a Copper Price before the Fiscal Rule (2001-10)
Response to a Copper Price under the Fiscal Rule (2001-10)
6. Limitations of the Rule and Possible Changes
Some Limitations of the Rule

• Complex in design and implementation – stiff trade-off between complexity and relevance (or consistency with Chile’s fiscal policy objectives)
• Lack of counter-cyclicality (other than automatic tax stabilizers)
• Excessive variation in spending in response to large swings in forecasts of long-term prices of minerals and trend GDP
• Does not consider changes in mining production volumes and costs
• Is based on aggregate government balance
• Lack of escape clauses – led to its overrule in 2009-2010
Some of the Changes suggested by Corbo Commission and Advisory Fiscal Council

(1) Introduce counter-cyclical spending
(2) Establish limits on changes in government spending
   On (1) and (2): see model simulations by González, Muñoz and Schmidt-Hebbel in Appendix)
(3) Define cyclical components for mining profits instead of mining prices
(4) Introduce feedback from government net asset position to the rule
(5) Shift definition of the rule from aggregate to primary government balance
(6) Introduce escape clause
References


• González, G., F. Muñoz, and K. Schmidt-Hebbel. 2013: “Optimal Dynamic Fiscal Policy with Applications to Chile and Norway” Unpublished manuscript, Institute of Economics, Pontifical Catholic University of Chile


References

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• Ter Minassian, T. 2012: “Should Latin American Countries Adopt Structural Balance-Based Fiscal Rules.” Paper presented at the Banca d’Italia workshop on “Rules and Institutions for Sound Fiscal Policy after the Crisis” held in Perugia on 31 March-2 April
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Appendix
González et al. (2013): Model and Fiscal Policy

Objectives

- The government takes lifetime expenditure decisions according to the following objectives:
  1. Inter-temporal spending smoothing
  2. Counter-cyclical stabilization
  3. Expenditure growth smoothing
- This is reflected in objective function:

\[ u_t = \sum_{t=0}^{\infty} \beta^t \left\{ \omega_t \frac{g_t^{1-\gamma}}{1-\gamma} - \frac{\lambda}{2} \left( \frac{g_t}{g_{t-1}} - \omega_t \right)^2 \right\} \]
Objectives

- With:
  \[ \omega_t = 1 - \left( \frac{\tau_t - \bar{\tau}}{\bar{\tau}} \right) - \phi \left( \frac{n_t - \bar{n}}{\bar{n}} \right) \]

- Inter-temporal spending smoothing objective is captured by the CRRA term in the period utility function.

- Second term penalizes deviations of spending growth from cyclical measure \( \omega \), to prevent sharp annual changes in spending.

- Counter-cyclical stabilization objective is reflected by \( \omega \), too, that interacts with the CRRA term, which changes counter-cyclically the marginal value of an additional unit of spending.
González et al. (2013): Model and Fiscal Policy

Objectives

• The period budget constraint is:
  \[ \tau_t + \phi n_t + (1 + r^*) \Theta(b_t)b_t = g_t + b_{t+1} \]
  
  Where \( r^* \) is the steady-state return of the risk-free bond \( b_t \), which the government uses to buffer the changes in revenue over time

• \( \Theta(b_t) \) is a typical function in the spirit of Schmitt-Grohé and Uribe to induce stationarity

• So the problem for the government is to maximize its objective function subject to the period budget constraint and the correspondent transversality condition
González et al. (2013): Responses in the face of a Positive Temporary Shock to Non-Commodity Revenues (1% of steady state revenues)
González et al. (2013): Responses in the face of a Positive Temporary Shock to Commodity Revenues (1% of steady state revenues)

**Welfare Effect of Having Fiscal Objectives Different from Suggested (% of steady state spending)**

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<tr>
<th>Non-Commodity Shock</th>
<th>Commodity Shock</th>
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<tbody>
<tr>
<td>0.003</td>
<td>0.0005</td>
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<td>Variable</td>
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<td>------------------------------</td>
<td>-----------</td>
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<tr>
<td>Checks and Balances</td>
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<td></td>
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<td>Democracy</td>
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<td>Federalism</td>
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<td></td>
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<tr>
<td>Government Stability</td>
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<td></td>
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<tr>
<td>Dependency Ratio</td>
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<tr>
<td>Government Budget</td>
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<td></td>
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<td>Inflation Target</td>
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<td>Capital Account Openness</td>
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<td>Financial Development</td>
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<td>GDP per capita</td>
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<tr>
<td>Constant</td>
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<tr>
<td></td>
<td>(2.47)</td>
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| Observations                 | 2,190     | 2,213     | 2,252     | 932       | 941       | 941       |
| Countries                    | 89        | 89        | 89        | 89        | 89        | 89        |
| Without fiscal regime        | 52        | 52        | 52        | 55        | 55        | 55        |
| With fiscal regime           | 37        | 37        | 37        | 34        | 34        | 34        |
| LR statistic                 | 863.91    | 944.40    | 907.28    | 839.52    | 844.45    | 843.69    |
| Value                        | 0.0000    | 0.0000    | 0.0000    | 0.0000    | 0.0000    | 0.0000    |
| Log Likelihood               | -283.09   | -259.00   | -293.47   | -38.41    | -45.75    | -47.29    |