

How Countercyclical Should a Fiscal Rule Be in Commodity-Dependent Economies?



A fiscal rule that reacts strongly countercyclically to the domestic business cycle and mildly procyclically in response to exogenous and volatile commodity price cycles can effectively stabilize the economy, while generating significant welfare gains, especially for liquidity-constrained households.



The most favorable countercyclical rule lets liquidity-constrained families accrue welfare gains of 0.6% of lifetime consumption compared to an acyclical benchmark rule.



The most appropriate instrument to implement a fiscal rule is total spending: Government consumption and especially public investment help stabilize real output in bad times, while countercyclical social transfers are essential to smooth the consumption paths of financially constrained households.

CONTEXT

Cyclically adjusted fiscal rules have long been proposed as commitment devices to avoid discretionary spending and the perils of procyclical policies. Fiscal rules are particularly relevant in commodity-dependent economies where output, exports, and government revenues substantially depend on volatile and exogenous commodity prices. Moreover, the effectiveness of monetary policy can be severely compromised when a large share of the population is financially constrained. In such an environment, fiscal policy becomes an effective countercyclical tool, lifting output in bad times while smoothing consumption of financially constrained households via targeted social transfers.

PROJECT

This paper builds a model of a commodity-dependent economy estimated for Chile, including Ricardian (“savers”) and non-Ricardian (“non-savers”) households, in which the government follows a rule to isolate spending from variability of public revenues, which come from taxes and a state-owned commodity-producing company. The government consumes goods and services, invests in (productive) public infrastructure, and provides lump-sum social transfers. The paper then analyzes fiscal rules determining the cyclical reaction of government spending to fluctuations in (a) tax revenues and (b) commodity-related revenues. The rule is augmented with conditions effectively imposing a debt limit.

Key Concept



WELFARE GAINS

The percentage of regular or lifetime consumption agents willing to sacrifice to live under a particular fiscal policy rule, relative to an acyclical benchmark rule.

Key Concept



RICARDIAN HOUSEHOLDS

Households that own shares in the productive firms in the economy and have access to financial markets to save/borrow.

RESULTS

[Figure 1](#) illustrates the welfare gains/losses (in consumption equivalent units) under alternative fiscal rules relative to an acyclical benchmark rule. Panel A shows that non-Ricardian welfare is maximized under a strongly countercyclical stance regarding tax revenues while keeping an acyclical or moderately procyclical approach to the commodity revenue gap. In Panel B, however, any deviation from the acyclical benchmark is welfare-decreasing for Ricardian consumers. Ricardian households thus face a trade-off. While fiscal activism in the form of countercyclical spending increases consumption volatility, it also effectively stabilizes economic cycles, reducing the volatility of hours worked. Non-Ricardian households do not face such a trade-off, as countercyclical social transfers help stabilize their consumption profile in bad times.

While procyclical fiscal spending unambiguously and significantly harms all economic agents, countercyclical policies are not, *per se*, welfare-improving, as the relationship is nonlinear and dependent on whether agents are financially constrained. [Figure 1](#) shows that too much fiscal activism is not desirable, especially regarding exogenously driven commodity revenues. This counterintuitive result is explained by the intrinsically different nature of commodity-related revenues relative to tax revenues. Since tax revenues are a function of GDP, households' income and tax revenues are simultaneously higher than usual when the economy is booming. So intuitively, a countercyclical response to tax revenues is desirable as it stabilizes aggregate output and, thus, households' income. In contrast, commodity revenues are mainly a function of exogenous and persistent fluctuations in international commodity prices, which do not (necessarily) correlate with the domestic business cycle. In such a scenario, if a positive commodity price shock hits the economy during an economic recession, a countercyclical response would drag the economy further down, amplifying economic cycles.

POLICY IMPLICATIONS

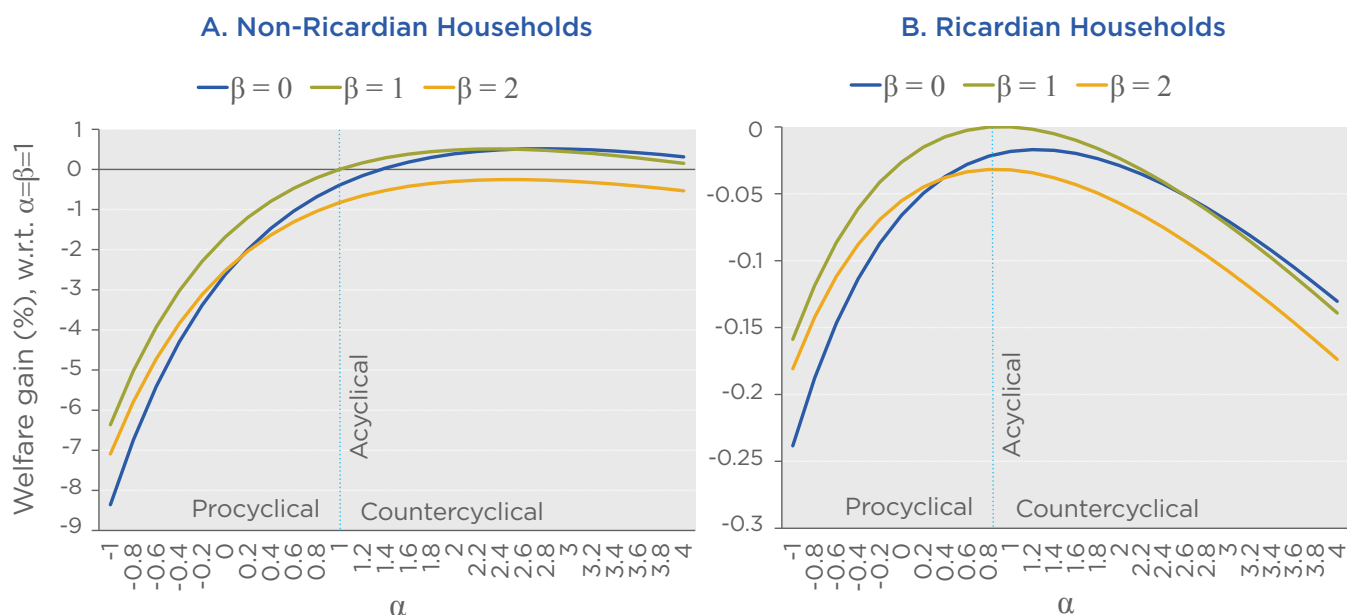
Fiscal rules constitute powerful commitment devices for governments to avoid discretionary and procyclical spending, a feature that has characterized LAC for several decades. Cyclically adjusted fiscal rules support sound macroeconomic management by reducing economic instability and boosting the credibility of the government's commitment to a sensible budgetary policy, stimulating private investment and overall economic development.

Nevertheless, fiscal rules take time to implement and sustain credibly, especially in LAC. Poor institutional quality leads to discretionary spending by short-sighted policymakers, and limited access to international credit markets may prevent governments from taking additional debt to smooth expenditures, especially in bad times when country spreads tend to increase.

Policymakers in the region can benefit from the Chilean experience. In 2006, Chile formalized the necessary institutional support to adopt the already *de facto* operating acyclical fiscal rule, which isolates fiscal expenditures from tax and commodity revenues volatility. Our results suggest that additional welfare gains are possible by moving from a neutral acyclical policy to an actively countercyclical approach.

The design of a fiscal rule should nevertheless depend on context: no single approach is necessarily appropriate for every country. For instance, if a developing country has accumulated net foreign assets during a prolonged period of economic prosperity and needs financing for development projects, it may be in everybody's interest to spend more and save less than what a rigid fiscal rule would mandate. Of course, such escape clauses require political and technical consensus about the economy's absorptive capacity and independent oversight to function correctly. On the other hand, in the face of a large and persistent commodity price boom, the government may also wish to build a prudent buffer fund to face potential economic disasters, to cover contingent liabilities (for example, related to future pensions), or to aim for intergenerational equity.

Figure 1. Fiscal Rules and Their Welfare Implications



Note: Welfare gains for non-Ricardian (Panel A) and Ricardian households (Panel B) under alternative fiscal spending rules of the form:

$$G_t = \alpha(\Pi_t^{tax} - \Pi^{tax}) + \beta(\Pi_t^{co} - \Pi^{co}),$$

where G_t is government spending, $(\Pi_t^{tax} - \Pi^{tax})$ is the tax revenue gap, $(\Pi_t^{co} - \Pi^{co})$ is the commodity revenue gap, and α and β are the fiscal rule feedback parameters. Welfare gains are in percent consumption equivalent units relative to an acyclical benchmark rule with $\alpha=\beta=1$. In each panel, only α varies on the horizontal axis, while each line fixes an illustrative value for β . The vertical line indicates the value of $\alpha=1$. Values of α and β below (above) one means increasingly procyclical (countercyclical) fiscal policies.

Key Concept



NON-RICARDIAN HOUSEHOLDS

Financially constrained agents unable to save or borrow to smooth consumption out of exogenous shocks to their disposable income: They work for a wage and consume their labor income period by period (“hand-to-mouth”).



FULL STUDY

[Heresi, Rodrigo. 2023. “From Macroeconomic Stability to Welfare: Optimizing Fiscal Rules in Commodity-Dependent Economies.” IDB Working Paper No. 1511. Washington, DC: Inter-American Development Bank.](#)

DEPARTMENT OF RESEARCH AND CHIEF ECONOMIST

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