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Abstract*

Fiscal rules can help countries with long-term debt overcome time-inconsistent default incentives, but enforcement is often imperfect. We integrate an optimal fiscal policy framework under partial commitment with a sovereign default model featuring long-term debt, introducing an endogenously announced debt ceiling as a fiscal rule. First, we analyze a baseline environment where governments announce a ceiling each period and incur a proportional cost for issuing above it. Second, we extend the model to a political economy setting with heterogeneous agents, where competing parties renegotiate the inherited ceiling, thereby microfounding the cost. The ceiling reduces debt dilution but limits fiscal flexibility. Calibrated to Argentina, our counterfactual shows that welfare gains from such a rule are possible but not guaranteed, a finding that persists in the fully microfounded model.

JEL classifications: E32, E44, F41, G01, G28

Keywords: Optimal policy, Political constraints, Limited commitment, Fiscal announcements, Fiscal rules, Sovereign default

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1 Introduction

While the importance of policy anchors is well established in the context of monetary policy, the theoretical underpinnings of fiscal anchors have received comparatively less attention (Leeper, 2010). Nonetheless, over the past four decades, a growing number of countries have adopted fiscal rules as a means to discipline government behavior. This shift reflects a recognition that optimal fiscal policy may require an anchor to mitigate persistent deficit biases arising from government myopia, moral hazard, or dynamic inconsistency.

We develop a framework in which the debt ceiling, our chosen fiscal rule, is endogenously announced by the incumbent each period but remains adjustable by the next government. To build intuition, we proceed in two steps. First, we introduce a tractable baseline where a sequence of identical Markov governments make borrowing and default decisions subject to a debt ceiling rule and announce a ceiling for the following period. Crucially, the government can reoptimize away from the current debt ceiling at the cost of an exogenous quadratic penalty on debt issuance above the ceiling, adapting the "partial commitment" mechanism of Clymo, Lanteri and Villa (2023) to sovereign debt limits. Second, we microfound this penalty in a richer political-economy extension with heterogeneous agents, optimal taxation, and alternating governments (building on Arce, Morgan and Werquin 2024), where the incoming administration may renegotiate the inherited ceiling with the opposition before it binds. In both steps, we embed strategic debt ceiling announcements and sovereign default within a microfounded optimal policy framework that captures key institutional features of real-world debt limit rules. Although our primary interest lies in the effects of strategic debt ceiling announcements and renegotiations, embedding them in a sovereign default environment is essential to capture the credibility problem these rules aim to address and to generate a meaningful pricing kernel through endogenous bond pricing.

The underlying mechanism hinges on a simple trade-off that balances two economic forces. On the one hand, carrying the debt ceiling forward as a binding promise gives the government partial commitment not to issue excessive long-term bonds in the future, thereby mitigating the classic "debt dilution" bias in Eaton and Gersovitz (1981)-type models with long-term debt: when additional issuance today raises the probability of default tomorrow, investors anticipate legacy-holder ex-post dilution incentives and demand higher yields, lowering bond prices (Chatterjee and Eyigungor, 2012; Hatchondo and Martinez, 2009). On the other hand, the same ceiling restricts the government's ability to respond to adverse shocks by issuing additional debt, which can make default more attractive in some states and thus raise the risk of actual repayment failure. The overall welfare impact reflects the trade-off between lower borrowing costs through enhanced commitment and higher default risk due to reduced

fiscal flexibility. Allowing for intermediate commitment to the rule, either with an exogenous cost of deviation or a microfounded political economy game, increases flexibility in certain states but at the cost of lower commitment in other states.

In this context, we undertake two quantitative exercises. First, we calibrate the simple model to Argentina, where no formal debt ceiling currently exists, and conduct a counterfactual experiment by introducing an optimal debt ceiling within our framework to assess its welfare implications, finding that gains are possible but not guaranteed. Second, we extend the analysis to the fully microfounded political economy model, calibrated using data from Arce et al. (2024), and show that the main welfare results remain robust when the cost of exceeding the debt ceiling is microfounded through political renegotiation, and when heterogeneous agents, optimal taxation, and alternating governments are taken into account.

2 Related Literature

This paper contributes to two strands of the literature: i) sovereign default and fiscal rules, and ii) partial commitment in optimal fiscal policy. One of the main contributions of the paper is to link the first strand—which typically assumes no commitment—with the second strand——which typically abstracts from sovereign default.

Sovereign Default and Fiscal Rules. In sovereign-debt models à la Eaton and Gersovitz (1981) with long-term debt, the "debt-dilution" time inconsistency highlighted by Hatchondo and Martinez (2009) and Chatterjee and Eyigungor (2012) generates persistent deficits: new bond issues dilute legacy claims, raising required yields and lowering bond prices. Subsequent work has quantified the welfare losses from dilution (Aguiar et al., 2020) and proposed both state-contingent rules that eliminate dilution (Hatchondo et al., 2016) and simpler rules that mitigate its impact (Hatchondo et al. 2022; Roch and Roldán 2023), evaluating gains by comparing commitment versus no-commitment equilibria. Our paper contributes to this strand by embedding the fiscal-rule choice with endogenous partial commitment in a quantitative sovereign-default model. Governments set a debt ceiling each period but may renegotiate it ex post, so the degree of commitment is endogenously determined by the political environment, capturing, for example, how U.S. debt-ceiling rules operate in practice. This approach complements the normative "rules versus flexibility" literature initiated by Amador et al. (2006) and developed in Halac and Yared (2014a, 2017, 2020, 2022), while our positive, quantitative framework evaluates how fiscal rules function when political constraints

limit full commitment.[1]

Optimal Fiscal Policy with Partial Commitment and Fiscal Announcement. Our framework is related to the literature on optimal fiscal policy under limited commitment and on fiscal announcements. First, on intermediate commitment ("partial commitment"), we build on the idea that governments make noncontingent announcements but face costs when deviating from them. In our simple model, we adapt the costly-deviation mechanism of Clymo et al. (2023)——originally developed for capital and labor taxes——to sovereign debt ceilings and default. Unlike Debortoli and Nunes (2010, 2013), where the timing of re-optimization is exogenous, here the "degree of commitment"——i.e., the extent of reneging——emerges endogenously from the state. This state-dependent slack then shapes strategic debt-ceiling announcements. Relatedly, Farhi (2010), Klein et al. (2008), and Karantounias (2019) use generalized Euler–equation methods to explore time consistency and default, while Clymo and Lanteri (2020) show that even short-horizon commitment can sustain first-best outcomes. We extend their approach by introducing costly, state-contingent reneging of debt ceilings in a stochastic economy with sovereign default and, moreover, provide a microfoundation via a richer political-economy environment. Second, on fiscal announcements per se, we bridge optimal-policy theory with the empirical and quantitative work that treats announcements as exogenous drivers of expectations. Empirical papers such as Mertens and Ravn (2012) and Alesina et al. (2015) document the macro effects of announced plans, and quantitative studies like Mertens and Ravn (2011) and Fernández-Villaverde et al. (2015) embed announcement "shocks" in DSGE settings. By distinguishing between announced and implemented policies——and by endogenizing the cost of deviating from announcements——we embed insights from the empirical literature on fiscal announcements into a fully microfounded optimal-policy framework. Our approach also relates to the fiscal-rules literature (e.g., King et al. 1988; Schmitt-Grohe and Uribe 1997; Athey et al. 2005; Halac and Yared 2014b), which shows that limits on state-contingency can amplify fluctuations. We demonstrate that costly, partial state-contingency——driven by political constraints on commitment and strategic debt-ceiling announcements in a sovereign-default environment——generates rich dynamics with non-trivial policy implications for the design of fiscal rules and debt-management frameworks.

[1] See also Espino et al. (2022) for an analysis of fiscal-rule suspensions during the COVID-19 crisis, to which we add a microfounded political-economy mechanism for rule renegotiation.

3 Models

We analyze two versions of a quantitative sovereign default model to assess the implications of fiscal rules under partial commitment:

1. A baseline model with a unitary government that selects the debt ceiling on a period-by-period basis. Enforcement of the rule is incomplete: exceeding the debt ceiling incurs an exogenous quadratic cost proportional to the amount of debt issued above the ceiling. This specification provides a tractable representation of partial commitment to fiscal discipline.

2. A political economy model with heterogeneous agents and two alternating political parties building on the framework developed in Arce et al. (2024). In this setting, the incumbent government chooses both the current-period fiscal package and the debt ceiling to be applied in the following period. At the start of the subsequent period, the newly elected incumbent may renegotiate the inherited debt ceiling with the opposition. However, once the ceiling is (re)established, the government is constrained to issue debt within the agreed-upon limit.

In both frameworks we find that welfare gains are possible but not guaranteed. We calibrate the model without debt ceiling to Argentina and explore conditions that affect the desirability of the fiscal rule.

4 Conclusion

We develop a quantitative framework to assess the desirability of fiscal rules within a positive sovereign debt model. Our main contribution lies in endogenizing the process through which fiscal rules—such as debt ceilings—are adopted, suspended, or modified over time. By incorporating a political economy dimension, we demonstrate that the enforcement of fiscal rules can be partially sustained in equilibrium due to strategic interactions between political parties. However, the overall desirability of implementing such rules is conditional not only on the structural parameters of the economy but also on the extent of political polarization, which influences the credibility and persistence of the rule.

References

Aguiar, Mark, Manuel Amador, and Stelios Fourakis, "On the welfare losses from external sovereign borrowing," *IMF Economic Review*, 2020, *68* (1), 163–194.

Alesina, A., C. Favero, and F. Giavazzi, "The Output Effect of Fiscal Consolidations," *Journal of International Economics*, 2015, *96* (S1), 19–42.

Amador, Manuel, Iván Werning, and George-Marios Angeletos, "Commitment vs. flexibility," *Econometrica*, 2006, *74* (2), 365–396.

Arce, Fernando, Jan Morgan, and Nicolas Werquin, "Tax revolts and sovereign defaults," 2024.

Athey, Susan, Andrew Atkeson, and Patrick J. Kehoe, "The Optimal Degree of Discretion in Monetary Policy," *Econometrica*, 2005, *73* (5), 1431–1475.

Chatterjee, Satyajit and Burcu Eyigungor, "Maturity, indebtedness, and default risk," *American Economic Review*, 2012, *102* (6), 2674–2699.

Clymo, Alex and Andrea Lanteri, "Fiscal Policy with Limited-Time Commitment," *Economic Journal*, 2020, *130* (627), 623–652.

_ , _ , and Alessandro T. Villa, "Capital and labor taxes with costly state contingency," *Review of Economic Dynamics*, 2023, *51*, 943–964.

Debortoli, D. and R. Nunes, "Fiscal policy under loose commitment," *Journal of Economic Theory*, 2010, *145* (3), 1005–1032.

_ and _ , "Lack of Commitment and the Level of Debt," *Journal of the European Economic Association*, 2013, *11* (5), 1053–1078.

Eaton, Jonathan and Mark Gersovitz, "Debt with potential repudiation: Theoretical and empirical analysis," *The Review of Economic Studies*, 1981, *48* (2), 289–309.

Espino, Emilio, Julian Kozlowski, Fernando M Martin, and Juan M Sánchez, "Policy rules and large crises in emerging markets," *FRB St. Louis Working Paper*, 2022, (2022-18).

Farhi, Emmanuel, "Capital Taxation and Ownership When Markets are Incomplete," *Journal of Political Economy*, 2010, *118* (5), 908–948.

Fernández-Villaverde, Jesús, Pablo Guerrón-Quintana, Keith Kuester, and Juan Rubio-Ramírez, "Fiscal Volatility Shocks and Economic Activity," *American Economic Review*, 2015, *105* (11), 3352–3384.

Halac, Marina and Pierre Yared, "Fiscal rules and discretion under persistent shocks," *Econometrica*, 2014, *82* (5), 1557–1614.

_ **and** _ , "Fiscal Rules and Discretion Under Persistent Shocks," *Econometrica*, 2014, *82* (5), 1557–1614.

_ **and** _ , "Fiscal rules and discretion under self-enforcement," Technical Report, National Bureau of Economic Research 2017.

_ **and** _ , "Commitment versus flexibility with costly verification," *Journal of Political Economy*, 2020, *128* (12), 4523–4573.

_ **and** _ , "Fiscal rules and discretion under limited enforcement," *Econometrica*, 2022, *90* (5), 2093–2127.

Hatchondo, Juan Carlos and Leonardo Martinez, "Long-duration bonds and sovereign defaults," *Journal of international Economics*, 2009, *79* (1), 117–125.

_ **,** _ **, and César Sosa-Padilla**, "Debt dilution and sovereign default risk," *Journal of Political Economy*, 2016, *124* (5), 1383–1422.

_ **,** _ **, and Francisco Roch**, "Fiscal rules and the sovereign default premium," *American Economic Journal: Macroeconomics*, 2022, *14* (4), 244–273.

Karantounias, Anastasios G., "Greed versus Fear: Optimal Time-Consistent Taxation with Default," Technical Report 2019.

King, Robert G., Charles I. Plosser, and Sergio T. Rebelo, "Production, Growth, and Business Cycles, II. New Directions," *Journal of Monetary Economics*, 1988, *21*, 309–341.

Klein, Paul, P. Krusell, and José V. Ríos-Rull, "Time-Consistent Public Policy," *Review of Economic Studies*, 2008, *75* (3), 789–808.

Leeper, Eric M, "Monetary science, fiscal alchemy," Technical Report, National Bureau of Economic Research 2010.

Mertens, K. and M. Ravn, "Understanding the Effects of Anticipated and Unanticipated Tax Policy Shocks," *Review of Economic Dynamics*, 2011, *14* (1), 27–54.

_ **and** _ , "Empirical evidence on the aggregate effects of anticipated and unanticipated U.S. tax policy shocks," *American Economic Journal: Economic Policy*, 2012, *4* (2), 145–181.

Roch, Francisco and Francisco Roldán, "Uncertainty premia, sovereign default risk, and state-contingent debt," *Journal of Political Economy Macroeconomics*, 2023, *1* (2), 334–370.

Schmitt-Grohe, S. and M. Uribe, "Balanced-Budget Rules, Distortionary Taxes, and Aggregate Instability," *Journal of Political Economy*, 1997, *105* (5), 976–1000.