Tax Revolts and Sovereign Defaults*

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Abstract

Protests and fiscal crises often coincide, with complex causal dynamics at play. We examine the interaction between tax revolts and sovereign risk using a quantitative structural model calibrated to Argentina during the Macri administration (2015-2019). In the model, the government can be controlled by political parties with different preferences for redistribution. Households may opt to revolt in response to the fiscal policies of the ruler. While revolts entail economic costs, they also increase the likelihood of political turnover. Our model mirrors the data by generating political crises concurrent with fiscal turmoil. We find that left-leaning parties are more prone to default, while right-leaning parties sustain higher debt levels. Revolts impact default risk through two channels. First, political crises can increase sovereign risk by facilitating transitions from right-wing to left-wing administrations that culminate in default. Second, the threat of frequent revolts during default periods can deter the government and increase commitment. In our calibration, the latter channel dominates the former with revolts operating as an endogenous default cost. Relative to a model without revolts, our framework can sustain higher levels of debt and reduce the frequency of defaults.

Keywords: Civil unrest, financial crises, sovereign default, redistribution

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

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1 Introduction

Fiscal decisions are made by public officials aligned with a specific faction of the nation. In practice, tax reforms and fiscal consolidations often provoke civil unrest. While the literature on sovereign default has delved into various facets of political risk since the seminal work of Hatchondo and Martinez (2010), the theoretical insights from Acemoglu and Robinson (2001), regarding how the risk of civil conflict constrains governmental decisions have yet to be integrated into a quantitative model of sovereign risk. This paper aims to fill this void.

Protests differ from other forms of political backlash along crucial dimensions relevant to sovereign risk. First, unlike elections, protests allow members of the opposition to express their dissatisfaction immediately, often leading to subsequent declines in reelection rates for the incumbent (Madestam et al. (2013)). Moreover, protests disrupt economic activity both for the demonstrator and the wider economy, introducing significant strategic considerations for all involved parties. Protesters must be willing to bear the costs, while governments may want to adjust fiscal policy to mitigate unrest. Furthermore, given that protests can alter the reelection prospects of incumbents, they can also shape lenders' expectations regarding future government preferences, directly impacting the pricing of public debt.

We highlight the significance of these dynamics by examining Argentina during the presidency of Mauricio Macri from December 2015 to December 2019, while also showing that the relation between political and sovereign risk holds for a cross-section of countries. We show that episodes of heightened civil unrest, *political crisis*, are associated with increases in sovereign spreads.

We develop a quantitative sovereign debt model in the tradition of Eaton and Gersovitz (1981) and Arellano (2008), supplemented with a non-linear tax framework inspired by Heathcote et al. (2017), and incorporating civil conflict dynamics from Acemoglu and Robinson (2001). Heterogeneous households participate in production and are ruled by political parties with different preferences for redistribution that alternate in office. Furthermore, we allow households to strategically respond to government fiscal choices by staging revolts. Revolts lower productivity but decrease the probability that the incumbent party will stay in power. As in the data, we note that political and fiscal crises often coincide.

Compared to existing literature, our model introduces two novel mechanisms linking political and sovereign risk. Firstly, political conflict can elevate default risk by increasing the probability of transitioning from a ruling party with a low default rate to one with a higher rate. This mechanism generates a testable prediction that coincides with the Argentinean experience in 2020. Defaults are more likely to follow a transition from right-wing to left-wing governance. Secondly, political conflict can mitigate default risk by serving as a means to penalize incumbents who opt for default. Indeed, we find that in equilibrium revolts are more common during defaults than under repayment, which allows them to function as an endogenous default cost. In our model, the latter mechanism predominates over the former. Consequently, our baseline model can sustain higher debt levels while paying lower interest rate spreads than a counterfactual economy where transitions are purely exogenous.

Related literature This paper relates to several strands of literature on sovereign default, political economy, and public finance.

We view our contribution as being, first and foremost, to the literature on the political economy of sovereign default. Two strands stand out, one focused on sovereign reputation (Amador and Phelan (2021), Fourakis (2023), Morelli and Moretti (2023)), and another on political risk Hatchondo et al. (2009), Hatchondo and Martinez (2010), Scholl (2017), Chatterjee and Eyigungor (2019), Cotoc et al. (2021)). While our model draws from both strands, it is firmly in the latter category.

The exogenous part of turnover in our model resembles Hatchondo and Martinez (2010), and like them, we find one party defaulting more frequently than the other. However, unlike them, we assume equal discount factors for both parties. In Cotoc et al. (2021), discount rates are equalized across parties, but asymmetric reelection odds translate into asymmetric effective discount factors, thereby explaining the differences in default rates. In our framework, absent the endogenous revolt choices, both parties have the same exogenous probability of remaining in power.[1]

In our model parties differ in their preferences regarding the redistributive consequences of fiscal policy, a characteristic often observed in political parties in developing nations. This aspect is also explored in recent work by Andreasen et al. (2019), Azzimonti and Mitra (2023), and Scholl (2024) (extended in Scholl and Hermann (2024)), who explicitly incorporate political constraints and redistribution dynamics in a sovereign debt model. While we share certain elements with these models, there are notable differences. Relative to Andreasen et al. (2019) and Azzimonti and Mitra (2023) we introduce heterogeneity in the labor supply response to taxation. In our setup redistribution is not equal to dividing a fixed endowment, as there exists an efficiency-equity trade-off impacting aggregate output and thus repayment capacity.

Scholl (2017) and Scholl (2024) bear the closest resemblance to our paper, but two key

[1]In Chatterjee and Eyigungor (2019) model of endogenous political turnover, the asymmetry in the effective discount rates stems from the ability to divert public funds into private use and from an informational friction regarding the effects of government's policies. These issues are outside the scope of our paper.

differences stand out: the timing of political turnover and the debt's maturity structure. Our framework endogenizes the timing of political turnover by making it a strategic decision of the households. This proves significant for our novel mechanism, as households opt to exercise their protest option more frequently in default periods than in repayment. Additionally, whereas Scholl (2017) and Scholl (2024) assume one-period debt, we assume long-term debt. This assumption allows us to quantitatively match the level and volatility of debt and spreads observed in empirical data.[2] Importantly, the maturity structure of the debt directly influences the transmission of political risk into default risk. First, long maturities imply that the borrowing policies of the opposition party impact the price of the incumbent's debt. Second, longer debt maturities mitigate exposure to rollover risk, thus reducing the likelihood of default during political turnovers from right to left. In section 7.1 we show that these right-to-left transitions are the main channel by which political risk can increase default risk.

In addition, our paper draws on well-established literature on the economic impact of regime change, particularly in the context of taxation and redistribution (e.g. Acemoglu and Robinson (2001), Acemoglu et al. (2011), Scheuer and Wolitzky (2016), and many others), there is also a large literature on regime change (see Barbera and Jackson (2020) and references therein). Our paper is also related to Dovis et al. (2016), but we choose to focus on the aspect of sovereign default rather than the dynamics of optimal taxation.

2 Empirical motivation

In this section, we show suggestive evidence from Argentina from 2015 to 2020 linking political turnover, fiscal reforms, civil unrest, higher interest rate spreads, and defaults. We also show that the correlation between political risk and sovereign spreads holds in a cross-country panel regression even when controlling for macroeconomic fundamentals. Finally, we use the cross-country data to construct an event analysis of a political crisis. We select episodes of above-average rises in the political risk measure and show that these episodes coincide with simultaneous increases in sovereign risk, reflected in higher spreads. Our data sources are listed in Appendix A.

2.1 Argentina 2015-2020

This subsection outlines Argentina's political and economic landscape from the latter half of 2015 to the first half of 2020, providing a tangible example of the issues addressed in this

[2] This well-known result is proved in Chatterjee and Eyigungor (2012) and Hatchondo and Martinez (2009).

paper. First, as in the quantitative model, Argentina's experience involves political parties espousing diverse views on redistribution, public protests against governmental policies, strategic considerations in response to anticipated protests, political transitions, substantial fluctuations in interest rate spreads, and a default following a right-to-left transition. Second, as depicted in Figures 1 and 2 show, there is a strong positive correlation between interest rate spreads and perceived political risk throughout this period.[3]

Following a 13-year tenure under a left-wing party, Argentina elected a president from a right-wing party in October 2015. The preceding administration had defaulted on debt payments in 2014 and remained embroiled in active legal disputes with its creditors. Macri won with a platform advocating for a return to orthodox monetary policy, reduced subsidies, a smaller public sector, and notably for our study, fiscal consolidation.

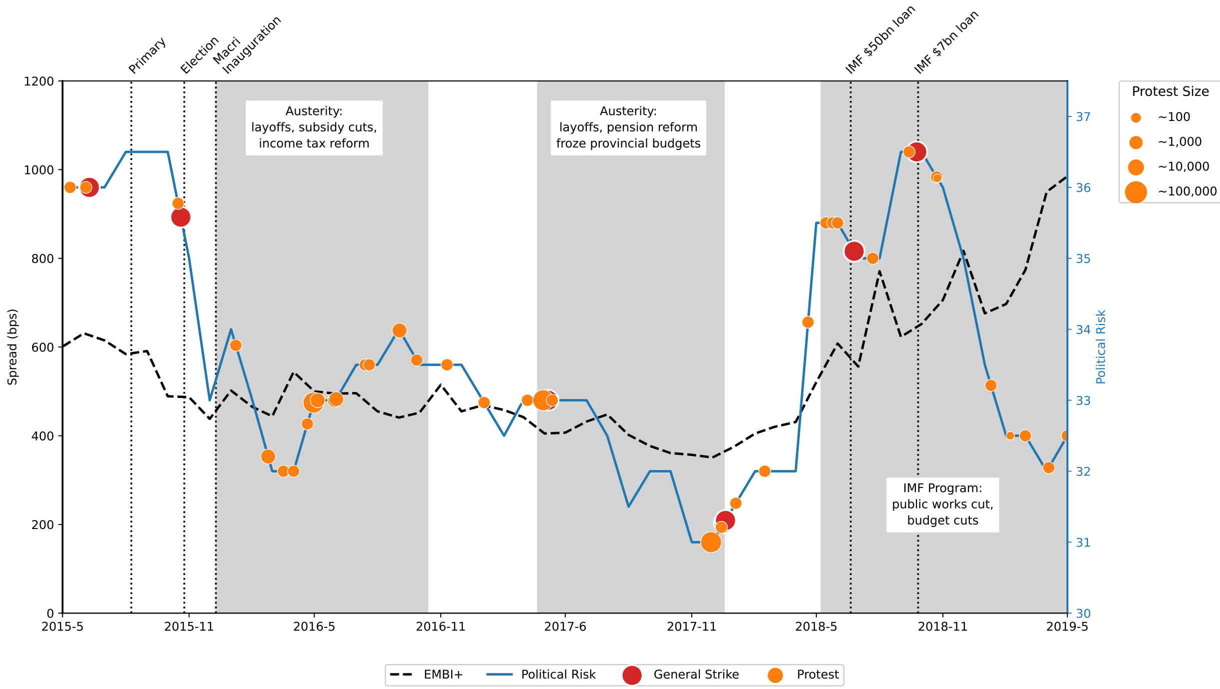


Figure 1: Interest rate spreads, political risk, and protests, 2015-2019

Note: Left vertical axis measures the interest rate spread using the EMBI+ in basis points. Right vertical axis corresponds to one hundred minus country risk from the ICRG database. This is an index of political risk with high values representing higher levels of political instability. Orange and red circles correspond respectively to protests and general strikes mentioned in the Dow Jones Factiva dataset and are associated with fiscal reforms. The size of the dot corresponds to the highest protest size recorded.

In his first year in office, the government introduced an austerity plan focused on reducing

[3] These Figures show the evolution of the EMBI+ spreads in Argentina, the ICRG index of political risk, and our measure of the number and size of protests against fiscal policies from Dow Jones Factiva. We provide further evidence of the prevalence of this relationship in a cross-country analysis in the next subsection.

subsidies and downsizing the public sector workforce. Concurrently, efforts were made to reform the income tax system to alleviate the tax burden on lower-income households. In April 2016, the administration successfully negotiated an agreement with bondholders, facilitating Argentina's re-entry into international credit markets. However, protests against the austerity measures escalated throughout the year and the Supreme Court rejected some of the proposed subsidy cuts. The year concluded with an economic downturn and a compromise reached between the government and the opposition, resulting in a second income tax reduction for low-income households.

In 2017, austerity measures continued with pension reforms and regional budget freezes. Although Argentina's GDP experienced growth, net public borrowing remained substantial at around 6.5% of GDP. This would be the last year with positive GDP growth until 2021. Nonetheless, as depicted in Figure 1, both interest rate spreads and political risk exhibited downward trends until the close of 2017.

Throughout 2018, general strikes and protests against austerity measures intensified, coinciding with a rise in unemployment and interest rate spreads. By June 2018, the government had secured a loan agreement with the International Monetary Fund (IMF). Opposition to the IMF program and discontent over imposed austerity measures surged in the latter half of the year, with the political risk peaking in October 2018 and interest rate spreads climbing from a low of 400 basis points in mid-2017 to 800 basis points by December 2018.

In response to the crisis, the government backtracked and introduced fiscal stimulus measures in early 2019, including a reduction in value-added tax and the implementation of a food emergency program. However, as the August 2019 primaries drew near and spreads surged to 2500 basis points, it became evident that Macri's prospects for reelection were bleak. Indeed, the October elections confirmed the resurgence of the left-wing party, which assumed office in December 2019. In January 2020, the new government announced the cessation of austerity measures, the formulation of a plan for debt sustainability, and the reversal of export tax reductions. This latter action sparked a series of protests among farmers, as depicted in Figure 2 coinciding with the upward trajectory of spreads and political risk.

In February, the IMF declared Argentina's debt to be unsustainable. A formal request for debt restructuring was submitted in April, culminating in missed debt payments in May 2020. Argentina's experience is characterized by the synchronized movement of spreads and political risk, as well as divergent default decisions across political parties, culminating in a left-wing government commencing its tenure with a default. All of these elements will be present in our model.

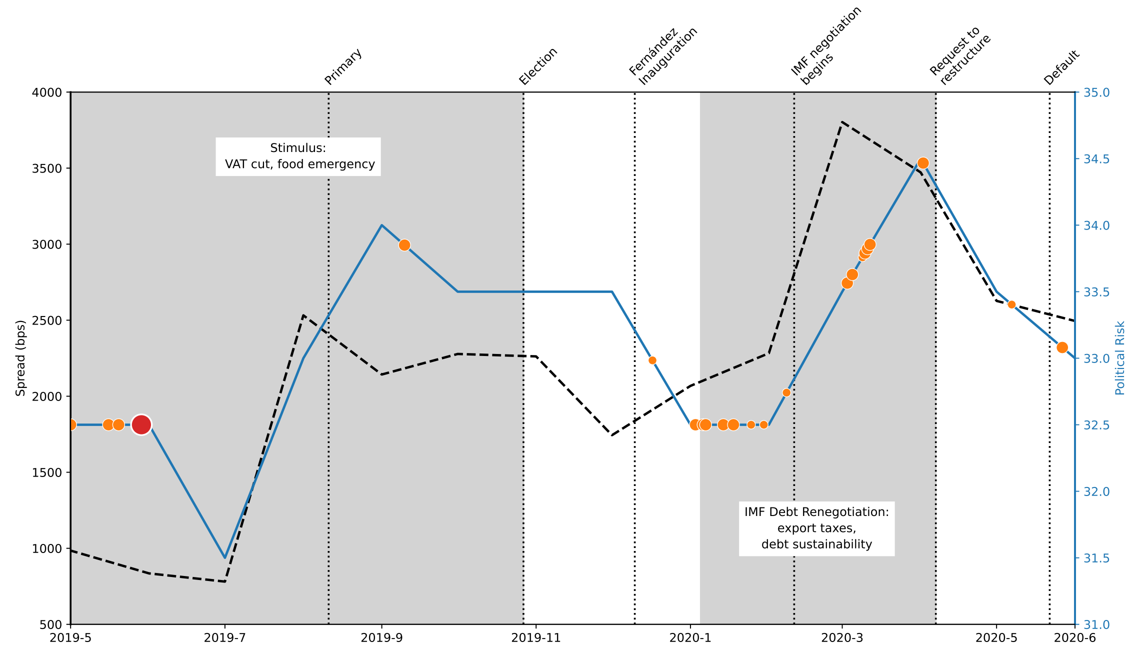


Figure 2: Interest rate spreads, political risk, and protests, 2019-2020

Note: Left vertical axis measures the interest rate spread using the EMBI+ in basis points. Right vertical axis corresponds to one hundred minus country risk from the ICRG database. This is an index of political risk with high values representing higher levels of political instability. Orange and red circles correspond respectively to protests and general strikes mentioned in the Dow Jones Factiva dataset and are associated with fiscal reforms. The size of the dot corresponds to the highest protest size recorded.

2.2 Cross-country evidence

The positive relation between political risk and spreads documented in Argentina is also evident across different countries. Hatchondo and Martinez (2009) were first to highlight the importance of political risk measured by the ICRG indicator, which they interpret as capturing the effect of governmental turnover on sovereign spreads. They study the 2001 Argentine default episode, pointing to outcomes of high government turnover driven by popular dissatisfaction. Similarly, Trebesch (2019) uses ICRG and time to renegotiation to argue that intense political turmoil makes restructuring more difficult. We confirm the positive correlation between political risk and spreads in the cross-country panel regression presented in Table 1.

The positive association between political risk and sovereign spreads persists even after accounting for macroeconomic fundamentals (such as Current Account Balance, Reserves, Real GDP growth, and Primary Balance), as well as time and country fixed effects. In Appendix C, we show that this relationship is also present regardless of the party in power, albeit with a stronger effect when the incumbent is a right-wing party. Figure 3 shows the

Table 1: CDS spreads and political risk

	(1) CDS Spread	(2) CDS Spread	(3) CDS Spread	(4) CDS Spread	(5) CDS Spread
Political Risk	9.333***	8.635***	12.60***	10.82***	15.91***
	(0.224)	(0.266)	(2.838)	(2.735)	(4.155)
External Debt-to-GDP		0.530***		0.625*	0.493
		(0.0450)		(0.264)	(0.308)
CA-to-GDP		-1.913***		1.227	1.770*
		(0.291)		(0.699)	(0.844)
Reserves-to-GDP					1.899*
					(0.731)
Real GDP growth					-1.848*
					(0.774)
Primary Balance-to-GDP					0.00796*
					(0.00394)
Quarterly FE	No	No	Yes	Yes	Yes
Country FE	No	No	Yes	Yes	Yes
Obs	4585	4067	4582	4064	2400

Note: We drop the top 2% of CDS Spread observations before all empirical work. All data sources are listed in Appendix A. Standard errors clustered at the country levels in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

fitted values of the regression with all the aforementioned macroeconomic controls and the fixed effects.

Additionally, in Figure 4, we further investigate this relationship in the data by focusing on *political crisis* events. We select events in which the index of political risk increases by more than one standard deviation above its long-run country-specific mean.[4] We then look at the change in CDS spreads around these events. The exercise can also be conducted by isolating events based on the party affiliation of the incumbent. Once again, our findings reveal that political crises are linked to an average increase in interest rate spreads of around 20 basis points, with larger increases observed when the incumbent is affiliated with a right-wing party. We validate our quantitative model by verifying it is consistent with these data patterns.

[4]This method of event analysis has been used to study sudden stop crises, Bianchi and Mendoza (2018), and inflation surges, Arellano et al. (2020)

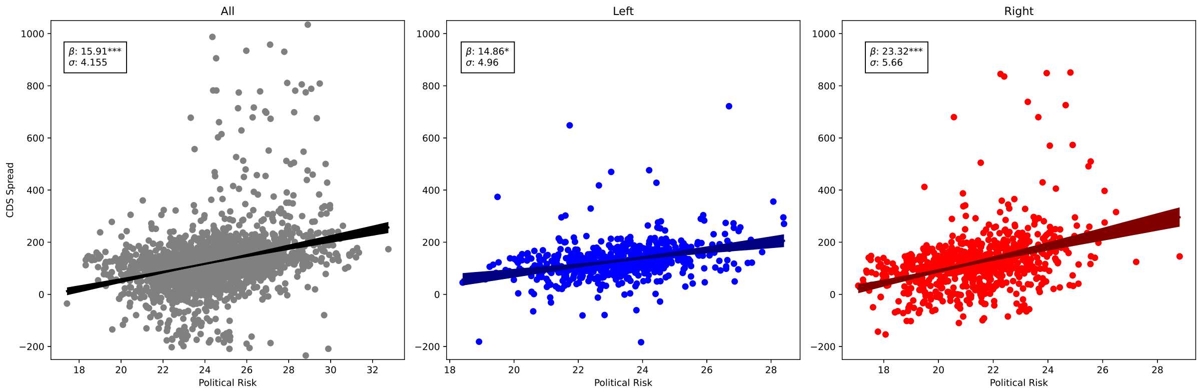


Figure 3: Fitted values CDS on spreads controlling for fundamentals

Note: The plots contain the fitted regression lines that pin down the empirical relationship between political risk and CDS spreads, after controlling for fundamentals. The fitted values are constructed by controlling within sample for external debt, gross domestic product (GDP), current account balance, reserves, and primary fiscal balance, with quarterly and country-specific fixed effects. All data sources are listed in Appendix A. The samples are respectively: total data, left-wing governments only, and right-wing governments only. We drop the top 2% of CDS spreads at the beginning from the total set of empirical data. We also demean the spreads series.

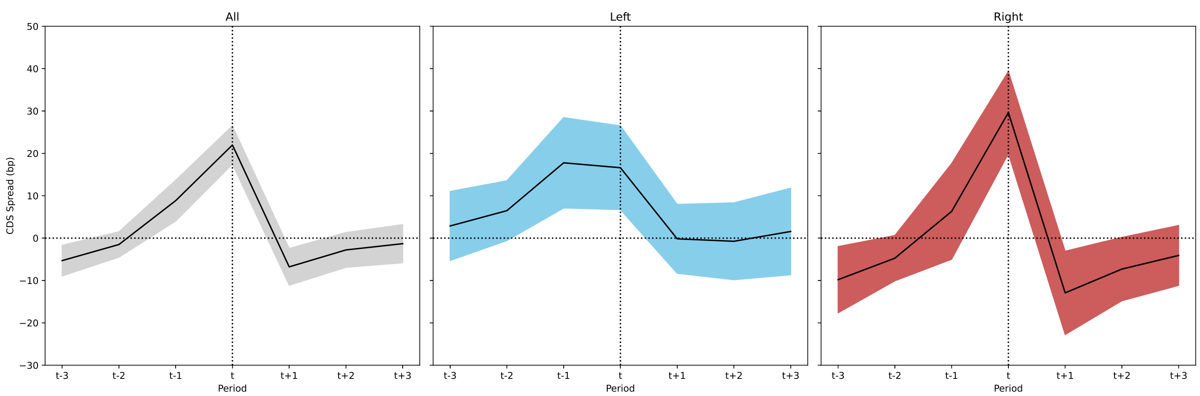


Figure 4: Change in spreads during a political crisis

Note: We encode an event as a one-quarter difference in the ICRG political risk measure that is greater than one standard deviation above the mean of all one-quarter differences within the time series for a particular country. The y-axis represents the corresponding one-quarter difference in the CDS spread, averaged over the appropriate sample of events. The events are then divided according to the party that was in power at the time of the event. Some observations do not have clear left/right affiliations and are thus dropped without changing the original indication of treatment. The magnitudes are averaged after controlling for the fundamentals of current account balance and external debt, which ensures comparability with the event studies in the simulated data. All events are required to have continuous data availability in a six-quarter window around the event quarter. We drop the top 2% of CDS observations at the beginning from the total set of empirical data. We have 426 events for the total data, 102 for the left-wing governments, and 114 for the right-wing governments.

3 Model

Parties and Households. Time is discrete and infinite. There is a small open economy populated by two political parties and two types of households. Both of these agents are indexed by $i \in \{L, R\}$, where L refers to the left-leaning (i.e., the more redistributive) party and its supporters, while R refers to the right-leaning (i.e., the less redistributive) party and its supporters. Households are heterogeneous in skill: the low-skilled (respectively, high-skilled) workers optimally support the left-wing (resp., right-wing) party. The party currently in office chooses the level and progressivity of tax policy, issues long-duration non-state-contingent bonds that are purchased by a mass of competitive foreign lenders, and has no commitment to repaying the debt.

Defaults and Revolts. The aggregate state of the economy, revealed only at the end of each period, is the result of strategic decisions made by both the government and the households. Namely, the party in office, as long as it is in good standing with its creditors, can decide whether to repay its debt in the current period ($\mathcal{D} = 0$) or default ($\mathcal{D} = 1$). If it chooses to default, no debt payments are made to lenders, and the country is excluded from financial markets for some time—i.e., it remains in the "default" state $\mathcal{D} = 1$ until it regains its good standing. Following the government's actions, households decide whether to accept the proposed fiscal package ($\mathfrak{R} = 0$) or revolt ($\mathfrak{R} = 1$). Production, borrowing, and consumption then take place given these strategic decisions. All agents are forward-looking. We focus on Markov-perfect equilibria.

3.1 Households

Households can be of two types (or ideologies) with equal mass, $i \in \{L, R\}$. Throughout the paper, whenever we refer to households of type i, we denote by j the other type; that is, $j = R$ if $i = L$, and *vice versa*. Households differ in labor productivity θ^i and taste for effort ψ^i, with $0 < \theta^L < \theta^R$ and $0 < \psi^L < \psi^R$. Households of type i derive utility from consumption C and disutility from labor supply N according to the following preferences:

$$u^i(C, N) = \log C - \frac{1}{\psi^i(1 + 1/\psi)} N^{1+1/\psi},$$

where $\psi > 0$ is the Frisch elasticity of labor supply, common to both types of households.

We denote the wage per unit of labor by w and labor income by $y = wN$. The government levies an income tax schedule $\boldsymbol{\tau}(\cdot)$ that has the following two-parameter functional form:

$$\boldsymbol{\tau}(y) = y - \tau_0 \cdot y^{1-\tau_1},$$

with $\tau_0 > 0$ and $\tau_1 < 1$. The constant τ_1 is the rate of progressivity of the tax system. If $\tau_1 = 0$, the tax schedule is linear, with a constant marginal tax rate equal to $1 - \tau_0$. If $\tau_1 > 0$ (respectively, $\tau_1 < 0$), the tax schedule is progressive (resp., regressive); that is, the marginal and average tax rates are monotonically increasing (resp., decreasing) with income.[5] Notice that if the tax schedule is progressive, low-income households receive transfers, i.e., $\boldsymbol{\tau}(y) < 0$, whenever $y < \tau_0^{1/\tau_1}$. Thus, for a given rate of progressivity $\tau_1 > 0$, a higher parameter τ_0 maps into both a higher base and a higher level of transfers to low-income households.

Households are hand-to-mouth. When making their decisions, they take wages and all other aggregate states of the economy—including the fiscal package proposed by the party in power—as given. A household of type i with wage w^i solves

$$\begin{aligned} U^i = \max_{C,N} \ & u^i(C, N) \\ \text{s.t.} \quad & C = w^i N - \boldsymbol{\tau}(w^i N). \end{aligned} \tag{1}$$

We obtain that the optimal choice of labor supply is given by

$$N^i = [\psi^i(1 - \tau_1)]^{\psi/(1+\psi)}.$$

Thus, labor supply is decreasing in the rate of progressivity τ_1. It does not explicitly depend on the wage rate w^i because the income and substitution effects on labor supply offset each other with a log utility of consumption. We let $y^i = w^i N^i$ the labor income, and U^i the indirect utility, of households of type i.

3.2 Representative Firm

A representative firm hires both types of households to produce the final good. The production function is CES with an elasticity of substitution between the two types of labor $\eta < 1$. The total factor productivity $\alpha(A, \mathcal{D}, \mathfrak{R})$ depends on an exogenous and persistent shock A, the government's current standing with its creditors $\mathcal{D} \in \{0, 1\}$, and the households' revolt

[5]The parameter $-\tau_1$ is then equal to the elasticity of the household's "keep rate", i.e., $1 - \boldsymbol{\tau}'(y)$, with respect to labor income y.

decision $\mathfrak{R} \in \{0,1\}$. The firm produces

$$Y = \alpha(A, \mathcal{D}, \mathfrak{R}) \, [(\theta^L N^L)^\eta + (\theta^R N^R)^\eta]^{1/\eta}$$

We assume that the function $\alpha(A, \mathcal{D}, \mathfrak{R})$ is strictly decreasing in both $\mathcal{D}$ and $\mathfrak{R}$. That is, both defaults—which last until the country recovers its good standing with creditors—and revolts lead to a reduction in the economy's output.

We assume the firm maximizes its flow profits. The labor market is competitive. In equilibrium, wages of households of type i are given by

$$w^i = \left[1 + \left(\frac{\theta^j N^j}{\theta^i N^i}\right)^\eta\right]^{(1-\eta)/\eta} \alpha(A, \mathcal{D}, \mathfrak{R}) \, \theta^i \tag{2}$$

Expression (2) shows that both defaults and revolts both lead to income losses for the households. Note also that, by influencing the decision of households to revolt, the tax schedule affects not only their disposable incomes ("redistribution") but also their pre-tax wages ("pre-distribution"). More generally, wages, labor supplies, and indirect utilities, depend on the exogenous shock A, the fiscal package $\mathcal{D}, \boldsymbol{\tau}$, and the revolt decision $\mathfrak{R}$.

3.3 Parties

Party Ideology. There are two political parties, left and right, indexed by $i \in \{L, R\}$. As for households, whenever we refer to party i, we denote by j the opposition, and *vice versa*. Both parties are benevolent and strategic, but they differ in their redistributive tastes. Specifically, they both evaluate social welfare according to a weighted utilitarian criterion, but they assign different welfare weights to the two types of households. We denote by $\Omega^{i|i}$ and $\Omega^{j|i}$ the welfare weights respectively assigned to households of type i and j by party i, with $\Omega^{i|i} > 1/2$ and $\Omega^{i|i} + \Omega^{j|i} = 1$. Thus, the right-wing (respectively, left-wing) party places a higher Pareto weight on the high-skilled (respectively, low-skilled) households—implying in turn that households R (respectively, L) optimally support the policies of party R (respectively, L). Besides these heterogeneous redistributive preferences, both parties are identical; in particular, they have the same discount factor β and face the same exogenous default costs.

Political Turnover. Each political party is either the incumbent (in-office) or the opposition (out-of-office). The probability that the incumbent party i stays in power next period depends on the households' decision to revolt, $\pi^{i|i}(\mathfrak{R})$. The probability that the incumbent party i is ousted and replaced by party j is then equal to $\pi^{j|i}(\mathfrak{R}) = 1 - \pi^{i|i}(\mathfrak{R})$. We assume that $\pi^{i|i}(\mathfrak{R})$ is strictly decreasing in $\mathfrak{R}$. Thus, the probability of reelection is the same for both parties; it is unaffected by the default status but it is strictly lower if a revolt takes place in the current period.

Fiscal Policy. We denote by B the current level of debt that the party in power, i, inherits from the previous period. If the country is currently in good standing with its creditors, party i gets to choose whether to default, $\mathcal{D} \in \{0, 1\}$, an end-of-period level of debt B', and a tax-and-transfer policy $\boldsymbol{\tau}$ consisting of a level of transfers τ_0 and a rate of progressivity τ_1.[6] If the party defaults, or has defaulted in the past and has not yet recovered its good standing with creditors, then $\mathcal{D} = 0$ and $B' = 0$, i.e., the country cannot borrow on international markets. In this case, the tax schedule $\boldsymbol{\tau}$ must balance the current-period budget. We use the shorthand notation $\mathcal{F}^i \equiv \{\mathcal{D}, B', \tau\}$ to denote the fiscal package chosen by party i.

We assume that debt is a long-term contract promising a stream of exponentially declining coupon payments. Specifically, a unit of the bond issued at time t promises to pay $(1 - \delta)^{t+s-1}(\delta + z)$ units of the consumption good in period $t + s$. The price of the newly issued bonds faced by party i, denoted by $Q^i(A, B', \mathfrak{R})$, is then a function of the exogenous total factor productivity A, the level of debt announced for next period B' (conditional on which the initial stock of debt B and the tax policy $\boldsymbol{\tau}$ are irrelevant), and the households' revolt decision $\mathfrak{R} \in \{0, 1\}$. Note that the ideology of the party in office $i \in \{L, R\}$ matters explicitly for the bond price, since this variable is persistent and therefore informative about future borrowing and default choices. The government budget constraint then reads

$$0 = \sum_{k\in\{L,R\}} \boldsymbol{\tau}(y^k(A, \mathcal{D}, \mathfrak{R}, \tau_1)) + \left\{Q^i(A, B', \mathfrak{R})[B' - (1 - \delta)B] - (\delta + z)B + \kappa(B, B')\right\}(1-\mathcal{D}). \tag{3}$$

The first term on the right-hand side is the tax revenue, consisting of the sum of taxes levied on the labor incomes y^L, y^R of the two types of households. Recall that labor income depends on the variables $A, \mathcal{D}, \mathfrak{R}$ via the total factor productivity $\alpha(\cdot)$, and on the rate of progressivity τ_1 that affects labor supply decisions. The second term on the right-hand side is the government's debt balance. It is non-zero only if the government is able to borrow, i.e., if it is in good standing with its creditors so that $\mathcal{D} = 0$. The last term in the curly brackets is a convex portfolio adjustment cost that penalizes the government for large changes in the stock of debt. We add this term to avoid the well-known issue of extreme dilution

[6] The opposition party j does not make a fiscal decision but still receives a utility flow according to its own preferences.

immediately before a default; at the calibrated values, less than 0.06% of output is spent on this adjustment cost. Note that the budget constraint (3) makes one of the fiscal variables redundant: The choices of end-of-period debt B' (possibly constrained to zero if $\mathcal{D} = 1$) and tax progressivity τ_1 determine a unique value for the level of transfers τ_0.

Following a repayment of its debt, the government keeps its good standing and can borrow in the next period. By contrast, after a default, the government is unable to borrow until it recovers its good standing and can re-enter credit markets. We assume that this happens with an exogenous positive probability $\gamma \in (0, 1)$ in each period. Letting $\mathcal{G}(\mathcal{D})$ denote the probability that the government is in good standing in the current period, we thus have $\mathcal{G}(\mathcal{D}) = 1$ if $\mathcal{D} = 0$, and $\mathcal{G}(\mathcal{D}) = \gamma$ as long as $\mathcal{D} = 1$.

Taste Shocks. The final ingredient of the model are two privately observed taste shock vectors $(\varepsilon^g, \varepsilon^h)$ that affect the political parties and the households in each period. The government's shock $\varepsilon^g(B', \boldsymbol{\tau})$ is a vector containing all the potential fiscal packages that are available to the government.[7] The households' shock $\varepsilon^h(\mathfrak{R}) \in \mathbb{R}^2$ is a two-dimensional vector associated with the costs of revolting and of accepting the fiscal package. We draw the taste shocks from a generalized type-one extreme value distribution with scale parameters μ^g, μ^h and correlation coefficients ρ^g, ρ^h for the government and the households, respectively, with $\rho^h = 0$. The shocks are independently and identically distributed (i.i.d.) over time and uncorrelated to each other.

3.4 Value Functions

We write the model in recursive form and "primed" variables (e.g., B') always represent the next-period values. We denote by W the value functions of the political parties, and by V the value functions of the households. Whenever a variable has a superscript of the form $i|i$ or $j|i$, the second variable (i in these two examples) denotes the party that is currently in office.

Parties. Suppose that the country is in good standing and that party i is in power; hence, party j is in the opposition. We let $W^{i|i}$ and $W^{j|i}$, respectively, denote the value functions of parties i and j, given that i is in office. Moreover, we let $W^{i|i}_{\mathcal{D}}$ and $W^{j|i}_{\mathcal{D}}$ be the values obtained when party i repays the debt ($\mathcal{D} = 0$) or defaults ($\mathcal{D} = 1$).

[7] For computational simplicity, we assume that the potential choices of end-of-period debt B' and tax progressivity τ_1 can only take a finite set of values: $B' \in \mathcal{B} \equiv \{B^1, B^2, ..., B^{N_B}\}$ and $\tau_1 \in \mathcal{T} \equiv \{\tau^1, \tau^2, ..., \tau^{N_\tau}\}$. There are thus $N_B \times N_\tau$ possible fiscal packages in repayment and N_τ possible packages in default. Hence $\varepsilon^g \in \mathbb{R}^{(N_B+1)\times N_\tau}$.

The party in office, i, chooses whether to repay or default, so that its value function satisfies

$$W^{i|i}(A,B,\varepsilon^g) = \max\ \left\{W_0^{i|i}(A,B,\varepsilon^g)\ ;\ W_1^{i|i}(A,\varepsilon^g)\right\} \tag{4}$$

where the state variables are the exogenous level of productivity A observed at the beginning of the period (and inherited from the previous period), the initial stock of debt B, and the vector of taste shocks ε^g. The initial stock of debt becomes irrelevant once the government has decided to default ($\mathcal{D}=1$). We denote by $\mathcal{D}^i(A,B,\varepsilon^g)\in\{0,1\}$ the resulting policy function that determines the decision to default or repay by the party in power i. For the opposition party j, there is no optimization problem: It takes the policy functions of the incumbent i and of the households as given. Its value function is then given by

$$W^{j|i}(A,B,\varepsilon^g) = (1-\mathcal{D}^i(A,B,\varepsilon^g))W_0^{j|i}(A,B,\varepsilon^g) + \mathcal{D}^i(A,B,\varepsilon^g)W_1^{j|i}(A,\varepsilon^g). \tag{5}$$

We now characterize the values of repayment and default. For simplicity, we only derive those of the party in power, $W_0^{i|i}, W_1^{i|i}$, and omit those of the opposition, $W_0^{j|i}, W_1^{j|i}$. Party i makes its fiscal decisions taking into account the households' reaction function, i.e., whether to revolt or not. However, it cannot perfectly predict whether a revolt will happen since it does not observe the taste shocks ε^h. We denote by $\mathbb{P}(\mathfrak{R}|A,\mathcal{F}^i)$ the probability that households of type j make the decision $\mathfrak{R}\in\{0,1\}$ given the productivity shock A, which affects their wages, and the incumbent party i's choice of fiscal package $\mathcal{F}^i=\{\mathcal{D},B',\boldsymbol{\tau}\}$. In case of repayment, we have

$$W_0^{i|i}(A,B,\varepsilon^g) = \tag{6}$$
$$\max_{B',\boldsymbol{\tau}} \sum_{\mathfrak{R}\in\{0,1\}} \mathbb{P}(\mathfrak{R}|A,\mathcal{F}^i)\left\{\sum_{k\in\{i,j\}}\Omega^{k|i}U^k(A,\mathcal{F}^i,\mathfrak{R}) + \beta\mathbb{E}\left[W^{i|i'}(A',B',\varepsilon^{g\prime})\big|A,\mathfrak{R}\right]\right\} + \varepsilon^g(\mathcal{F}^i).$$

subject to the budget constraint (3) with $\mathcal{D}=0$. In case of default, we have

$$W_1^{i|i}(A,\varepsilon^g) = \tag{7}$$
$$\max_{\boldsymbol{\tau}} \sum_{\mathfrak{R}\in\{0,1\}} \mathbb{P}(\mathfrak{R}|A,\mathcal{F}^i)\left\{\sum_{k\in\{i,j\}}\Omega^{k|i}U^k(A,\mathcal{F}^i,\mathfrak{R}) + \beta\mathbb{E}\left[W^{i|i'}(A',0,\varepsilon^{g\prime})\big|A,\mathfrak{R}\right]\right\} + \varepsilon^g(\mathcal{F}^i).$$

subject to the budget constraint (3) with $\mathcal{D}=1$. In these expressions, $\varepsilon^g(\mathcal{F}^i)$ is the value of the taste shock ε^g given the chosen fiscal package $\mathcal{F}^i=\{\mathcal{D},B',\boldsymbol{\tau}\}$, and the expectation inside the curly brackets is taken over future productivity A' and the ideology of the next government i', given the current productivity shock A and the household decision $\mathfrak{R}$. To characterize this continuation value, recall that party i is ousted from office with probability $\pi^{j|i}(\mathfrak{R}) \in (0,1)$; thus, when choosing the fiscal package, the incumbent party internalizes that its probability of staying in power is strictly smaller if citizens decide to revolt. In addition, recall that the government will be in good standing with creditors in the next period with probability $\mathcal{G}(\mathcal{D})$, which is equal to 1 if it repays its debt ($\mathcal{D}=0$), but is strictly lower than 1 if it defaults ($\mathcal{D}=1$). We can thus write

$$\begin{aligned} &\mathbb{E}\left[W^{i|i'}(A', B', \varepsilon^{g\prime})\right] \\ &= \mathbb{E}_{A'|A}\left[\sum_{i' \in \{i,j\}} \pi^{i'|i}(\mathfrak{R})\left\{\mathcal{G}(\mathcal{D})W^{i|i'}(A', B', \varepsilon^{g\prime}) + (1-\mathcal{G}(\mathcal{D}))W_1^{i|i'}(A', \varepsilon^{g\prime})\right\}\right] \end{aligned} \tag{8}$$

where $B' = 0$ if $\mathcal{D} = 1$.

Households. Given the state of the economy, the fiscal package $\mathcal{F}^i = \{\mathcal{D}, B', \boldsymbol{\tau}\}$ chosen by the incumbent government of type i, and their taste shock ε^h, households of the *opposite* type $j \neq i$ decide whether to revolt. They solve:

$$V^{j|i}(A, \mathcal{F}^i, \varepsilon^h) = \max_{\mathfrak{R} \in \{0,1\}} V_{\mathfrak{R}}^{j|i}(A, \mathcal{F}^i, \varepsilon^h) \tag{9}$$

where $V_0^{j|i}, V_1^{j|i}$ are the values of revolting and accepting the fiscal package, respectively. We denote by $\mathfrak{R}^j(A, \mathcal{F}^i, \varepsilon^h)$ the corresponding policy function. By contrast, the households who support the party in office do not make a revolt decision and take all of the policy functions as given. Their value function is then given by

$$V^{i|i}(A, \mathcal{F}^i, \varepsilon^h) = (1 - \mathfrak{R}^j(A, \mathcal{F}^i, \varepsilon^h))V_0^{i|i}(A, \mathcal{F}^i) + \mathfrak{R}^j(A, \mathcal{F}^i, \varepsilon^h)V_1^{i|i}(A, \mathcal{F}^i). \tag{10}$$

In turn, the values of revolting and accepting the fiscal package for household j satisfy

$$V_{\mathfrak{R}}^{j|i}(A, \mathcal{F}^i, \varepsilon^h) = U^j(A, \mathcal{F}^i, \mathfrak{R}) + \beta \mathbb{E}_{A'|A}\left[\sum_{i' \in \{i,j\}} \pi^{i'|i}(\mathfrak{R}) V^{j|i'}(A', \mathcal{F}'^{i'}, \varepsilon^{h\prime})\right] + \varepsilon^h(\mathfrak{R}), \tag{11}$$

where $\varepsilon^h(\mathfrak{R})$ is the value of the taste shock associated with the revolt or acceptance decision $\mathfrak{R}$. Revolts therefore lead to a decline in wages, and hence in utility, in the current period but increase the odds that a household's preferred party will be in power next period. The value functions $V_0^{i|i}, V_1^{i|i}$ for households of type i, who support the incumbent, can be derived analogously.

3.5 Foreign Lenders

A continuum of deep-pocketed, risk-neutral, and competitive international lenders can buy the government's bonds. Lenders have access to a one-period risk-free rate bond that pays interest rate r. As is standard in the literature, lenders are forward-looking and price the risk of default and debt dilution. Moreover, in our environment, lenders also internalize that the government's redistributive preferences vary by party—and hence change over time—and that revolts decrease the odds of an incumbent staying in power. When party i is in office, the bond price that satisfies the lenders' zero-profit condition is given by

$$Q^i(A, B', \mathfrak{R}) = \frac{1}{1+r}\mathbb{E}_{A'|A}\Bigg[1 - \sum_{i' \in \{i,j\}} \pi^{i'|i}(\mathfrak{R})\mathcal{D}^{i'}(A', B', \varepsilon^{g\prime}) \\ \times \Bigg\{\delta + z + (1-\delta)\sum_{\mathfrak{R}' \in \{0,1\}} \mathbb{P}(\mathfrak{R}' \mid A', \mathcal{F}^{i'})Q^{i'}\left[A', B''^{i'}(A', B', \varepsilon^{g\prime}), \mathfrak{R}'\right]\Bigg\}\Bigg] \tag{12}$$

where $B''^{i'}$ is the policy function that determines next-period's borrowing of party i'. The price of debt therefore depends on the probability of reelection of the incumbent, not only because of the default decision next period (as in, e.g., Scholl (2024)), but also because the ideology of the incumbent changes the level of future debt issuance and therefore the probability of future defaults. Long-term debt also implies that future political instability (represented by the probability of future revolts) also has an effect on the price of current bonds. In a model with one-period debt, both of these channels would be absent.

3.6 Recursive equilibrium definition

Definition 1. Markov Perfect Equilibrium (MPE). *An MPE is defined by value functions* $\{W^{i|i}, W^{j|i}, W^{i|i}_{\mathcal{D}}, W^{j|i}_{\mathcal{D}}, V^{i|i}, V^{j|i}, V^{i|i}_{\mathfrak{R}}, V^{j|i}_{\mathfrak{R}}\}$, *policy functions* $\{\mathcal{D}^i, B'^i, \mathcal{F}^i, N^i, \mathfrak{R}^i\}$, *and prices* $\{w^i, Q^i\}$, *for all* $(i,j) \in \{L,R\}^2$ *and* $(\mathcal{D}, \mathfrak{R}) \in \{0,1\}^2$, *such that:*

1. *Households' policy functions solve (1) and (9)-(11).*
2. *Parties solve the dynamic programming problems (4)-(8).*
3. *Wages are given by (2).*
4. *Bond prices are given by (12).*

The logistic shocks from Dvorkin et al. (2021) allow us to find closed-form solutions for all policy functions, and value functions in expectation of the taste shocks. We solve the model numerically using value function iteration.

4 Quantitative Analysis

The model is calibrated at the quarterly frequency using Argentine macroeconomic data. A first set of parameters to values that are either standard in the literature or based on historical Argentine data. We internally calibrate the remaining parameters to match relevant moments for Argentina's sovereign spreads, political turnover, frequency of revolts, and other business-cycle statistics. Table (2) summarizes the parameters set outside the model.

We take the first set of parameters from sovereign default models calibrated to Argentina. The quarterly risk-free real interest rate, r is set to 0.01, a standard value for this time period. The inverse Frisch elasticity is $\psi = .5$, in line with the values used by Arellano et al. (2017) and Arellano and Bai (2017) on sovereign debt models with labor. The maturity rate $\delta = 0.05$ and its coupon value $z = 0.03$ are set to the values used by Chatterjee and Eyigungor (2012) who also study Argentina and match the average maturity of the debt of 5 years and the debt service. Similarly, we assume that the productivity shock follows an AR(1) process given by $\ln(A_t) = \rho^A \ln(A_{t-1}) + \epsilon_t^A$ with $\epsilon_t^A \sim N(0, \sigma^A)$. Once again, we use Chatterjee and Eyigungor (2012) parameters estimates of an AR(1) endowment income process on detrended GDP data. We keep the persistence at their values $\rho^A = 0.95$, and we adjust the volatility of innovation such that the simulated volatility of output matches that of the data $\sigma^A = 0.03$. The reentry parameter is set to $\gamma = .0385$, this corresponds to an average exclusion period from credit markets after default of 6 years and 6 months.[8] We use Morelli and Moretti (2023) estimates of political change in Argentina as our measure of the average probability of reelection without revolts (i.e $\pi^{i|i}(\mathfrak{R} = 0) = .969$). Without revolts, this corresponds to an average tenure in office of 8 years for each political party.[9] We assume that sustained revolts cut in half the average tenure to 4 years (i.e. $\pi^{i|i}(\mathfrak{R} = 1) = .938$). This coincides with the political situation since 2015, with left and right alternating power three times every 4 years.

We take a second set of parameters from the literature on skill premia and inequality in Latin America. Gallego (2006) analyze 40 years of skill premium data in Chile following the same method as Krusell et al. (2000). They measure a labor elasticity between skilled and

[8]This number corresponds to the average length of debt renegotiation period across multiple Argentine defaults and is computed in Chatterjee and Eyigungor (2012) using data from Benjamin and Wright (2009).

[9]As in the U.S., Argentina's presidential elections are held every 4 years and only one reelection is permitted.

unskilled labor of 1.5 that is consistent with $\eta = 0.66$, in line with estimates for the U.S.. We use data on hourly wages by education group in Argentina from the Socio-Economic Database for Latin America and the Caribbean (SEDLAC) dataset. The data is available biannually from 2003 to 2021. The dataset splits the Argentinean labor force into three groups with different years of formal education (Less than 8 years, between 8 years and 13, and more than 13 years). For each group, we have their size, hourly wages, labor hours, and finally total net labor income. We use this to divide the labor force into two half-tiles of equal size. We follow Heathcote et al. (2017) and use equation (2) to compute the model prediction for the ratio of hours:

$$\frac{N^R}{N^L} = \left(\frac{\psi^R}{\psi^L}\right)^{\frac{\psi}{1+\psi}}.$$

We use average hours for each type half-tile in the data to estimate ψ^R, ψ^L, finding that $\frac{N^R}{N^L} = 1.15$. Normalizing by the mass of households and using our estimate of ψ, we obtain $\psi^R = 0.60$ and $\psi^L = 0.40$. Similarly, we know from equation (2) that the ratio of pre-tax wage in the model is:

$$\frac{w^R}{w^L} = \frac{(\theta^R)^\eta}{(\theta^L)^\eta}\left(\frac{N^R}{N^L}\right)^{1-\eta}.$$

Using the previous result for the ratio of hours, and our estimate of η, we estimate $\frac{\theta^R}{\theta^L} = 2.3$, and normalizing the sum to one, this yields $\theta^R = 0.70$ and $\theta^L = 0.30$.

Table 2: Parameters estimated outside of the model

Parameter	Value	Source/Transition
Risk-free rate	$r = .01$	Standard value
Inverse Frisch elasticity	$\psi = .5$	Standard value
Productivity shock	$\rho^A = .95$	Chatterjee and Eyigungor (2012)
$\log(A_t) = \rho^A \log(A_{t-1}) + \epsilon_t^A$	$\sigma^A = .03$	Argentina's GDP
Debt Maturity	$\delta = .05$	Avg. maturity of debt
Debt Coupon	$z = 0.03$	Debt Service
Reentry Probability	$\gamma = 1/26$	Average renegotiation lenght
Reelection odds under stability	$\pi^{i\|i}(\mathfrak{R} = 0) = 1 - 1/32$	Morelli and Moretti (2023)
Reelection odds under revolt	$\pi^{i\|i}(\mathfrak{R} = 1) = 1 - 1/16$	Political turnover since 2015
Elasticity of substitution	$\eta = 2/3$	Gallegos 2006
Labor productivity	$\theta^R = .70, \theta^L = .30$	Hourly wage premia
Taste for effort	$\psi^R = .60$	Hours top education half-tile
Taste for effort	$\psi^L = .40$	Hours bottom education half-tile

Table (3) shows the parameters of the model that we calibrate internally. The stochastic discount factor (β) is the same for both parties and the households. We follow Dvorkin et al. (2021) and assume a Generalized Type One Extreme Value distribution with scale parameter σ^{ϵ^G} and correlation ρ^{ϵ^G} for the fiscal taste shock and scale parameter $\sigma^{\epsilon^{HH}}$ for the revolt decision of the households.[10] We also take the functional form of the portfolio adjustment cost of debt from Dvorkin et al. (2021):

$$\iota(B', B) = \iota_1 \exp(\iota_2 |B' - B|) - \iota_1).$$

At the calibrated parameters, less than $6e-4$ of output is spent on these costs. To assess the effect of revolts and defaults on productivity, we borrow the functional form of the default costs from Chatterjee and Eyigungor (2012), and assume a similar transformation for the revolt costs:

$$\begin{aligned}
&\alpha(A, \mathcal{D} = 0, \mathfrak{R} = 0) = A, \\
&\alpha(A, \mathcal{D} = 0, \mathfrak{R} = 1) = A - \max(\phi_0^R A + \phi_1^R A^2, 0), \\
&\alpha(A, \mathcal{D} = 1, \mathfrak{R} = 0) = A - \max(\phi_0^D A + \phi_1^D A^2, 0), \\
&\alpha(A, \mathcal{D} = 1, \mathfrak{R} = 1) = \alpha(A, \mathcal{D} = 1, \mathfrak{R} = 0) - \max(\phi_0^R \alpha(A, \mathcal{D} = 1, \mathfrak{R} = 0) + \phi_1^R (\alpha(A, \mathcal{D} = 1, \mathfrak{R} = 0))^2, 0).
\end{aligned}$$

These transformations add four parameters to calibrate internally. The first two, ϕ_0^D, ϕ_1^D, correspond to the exogenous default costs common in the sovereign default literature. The other two, ϕ_0^R, ϕ_1^R, represent the analogous penalty that the economy suffers during a revolt. Note that if a revolt happens when the economy is in default, (i.e. $\mathfrak{R} = 1$ and $\mathcal{D} = 1$), both penalties are imposed on productivity. As we show in the next section, the ability to revolt during defaults is crucial for our mechanism. Finally, we internally calibrate the welfare weights (ω_i^j) that each party ($j \in \{L, R\}$) assigns to each type of household ($i \in \{L, R\}$). Since the welfare weights for each party add up to one, we only need to estimate the welfare weight given to the rich households. We find that the parties are broadly symmetric.

Table 4 shows the complete list of targets and model fit. The first set of moments we target are standard in the sovereign default literature. These are the average debt to output, the volatility of debt, the average spread, the volatility of spreads, the frequency of defaults, and the average increase in debt immediately preceding a default. As Morelli and Moretti (2023), we use international debt securities from the Joint External Debt Hub and GDP in U.S. dollars series from the World Bank Global Economic Monitor. As in Chatterjee and Eyigungor (2012), we exclude from the sample the episodes of default when computing debt both in

[10] The households' taste shock has no correlation since it is a scalar and not a vector. We allow for the government's taste shocks to be correlated across fiscal packages ($\rho^{\epsilon^G} \neq 1$)

Table 3: Parameters internally calibrated

Parameter	Value	Parameter	Value
Discount factor	$\beta = .91$	Ideology Right Party	$\omega_R^R = .75$
Fiscal taste shock ε^G	$\sigma^{\epsilon^G} = 7.5e^{-3}$	Ideology Left Party	$\omega_R^L = .25$
	$\rho^{\epsilon^G} = .37$	Default Cost	$\phi_0^D = -.19$
Revolt taste shock ε^{HH}	$\sigma^{\varepsilon^{HH}} = 9.0e^{-3}$	$\alpha(A, \mathcal{D} = 1, \mathfrak{R} = 0) = A - \max(\phi_0^D A + \phi_1^D A^2, 0)$	$\phi_1^D = .24$
Issuance Cost	$\iota_1, = .31$	Revolt Cost	$\phi_0^R = -.21$
$\iota(B', B) = \iota_1 \exp(\iota_2 \lvert B' - B \rvert) - \iota_1)$	$\iota_2 = 1.9$	$\alpha(A, \mathcal{D} = 0, \mathfrak{R} = 1) = A - \max(\phi_0^R A + \phi_1^R A^2, 0)$	$\phi_1^R = .26$

the data and simulations. We target an annual default frequency of 4.1% since Argentina has defaulted five times since the 1900s.[11] The average increase in debt-to-GDP one period before a default is targeted to identify the portfolio adjustment cost parameters.[12] The mean and standard deviations of the spreads are computed using the quarterly EMBI+ interest rate spreads from Global Financial Data from 1993q4-2022q4, again excluding defaults.[13] The model fits most moments well, except for the volatility of the spread.[14]

We also target moments related to political risk. As Scholl (2024), we target the consumption share of each household type, but we do this both before and after taxes and transfers. In the data, we once again use the SEDLAC dataset. For each half-tile, we compute total earnings pre-tax as the product of total hours and the hourly wage. We use these earnings to compute the pre-tax earnings shares. Post-taxes income in the data corresponds to the SEDELAC's variable total labor income by years of formal education. We use this to construct the post-tax income share of the half-tile with the most years of formal education. As Heathcote et al. (2017), we estimate the average tax progressivity in the data by running a regression on the log of post-tax income with respect to pre-tax income. This yields an average progressivity $\tau = 21\%$ slightly above the value they find for the U.S.. We use the Inter-American Development Bank's Database of Political Institutions (DPI) to asses the

[11]Morelli and Moretti (2023) count only four (1956, 1982, 2001, and 2014), since then Argentina defaulted one more time in 2020.

[12]It is well known that in the absence of an adjustment cost, models of sovereign debt with long-term bonds exhibit large increases in debt issuance followed immediately by default. The adjustment costs, though negligible in the end, help the model fit the patterns of debt accumulation observed in the data.

[13]Since we have three defaults in the data we exclude 2001q3-2005q3, 2014q3-2016q1, and 2020q1-2020q3.

[14]The definition of debt and output in the model, as well as the spreads follow the standard assumption made on the sovereign debt literature with long-term debt. The annualized spreads correspond to $(1 + (\delta + z)/Q - \delta)^4 - (1 + r)^4$, output is Y, and debt is B'.

Table 4: Targeted moments and model counterparts (in %)

Parameter	Target	Model	Parameter	Target	Model
Mean External Debt	88.8	85.6	Income share R pre-tax	65.6	65.7
Volatility External Debt	23.1	20.0	Income share R post-tax	62.5	63.2
Mean Spread	8.4	7.3	Mean tax progressivity	21.1	16.1
Volatility Spread	4.9	2.1	Right wing party in power	46.4	49.5
Default frequency	4.1	4.4	Revolts frequency	39.0	28.8
Debt surge pre-default $\Delta B'_{D-1}$	4.7	4.4			

Note: Moments in the model are computed using 100,000 simulations. In both the data and the model we compute the debt and spread moments excluding periods of default.

ideology of the ruling party in Argentina in the period 1993-2022. We restrict ourselves to the ideology of the president regardless of the ideology of Congress. Argentina has been ruled by a right-wing president 46.4% of the time.[15] Finally, we follow David et al. (2022) and use a narrative approach to construct a dataset of fiscal events that are linked to protests. Specifically, we use a set of keywords in the Factiva dataset to collect all the news articles about Argentina during the Macri presidency (2015-2019) that mention fiscal events (tax changes, subsidy cuts, public sector reforms, etc.) as well as protests or strikes. For each fiscal event, we then record if there is a protest or strike directly connected with it. We find that 39.0% of fiscal events are associated with at least one protest. We use this estimate as a target for the frequency of revolts ($\mathfrak{R} = 1$) in the simulations of the model. The model fits the income shares and party affiliation of the ruling party fairly well but understates the frequency of revolts and the degree of redistribution.

5 Validation

This section shows that the model generates untargeted patterns quantitatively similar to those observed in the data. In Figure 5, we plot again the residuals from the regression presented in the empirical section (Table 1) along with the residuals computed from model simulations. In the data, we focus on the regression of the CDS spreads on political risk controlling for the Current Account-to-output ratio and the External Debt-to-GDP ratio.

[15]The DPI dataset records that Argentina was ruled by a political party with a Center ideology in 2000 and 2001. Since we don't have such a party in the model we exclude those two years from our measure of the average.

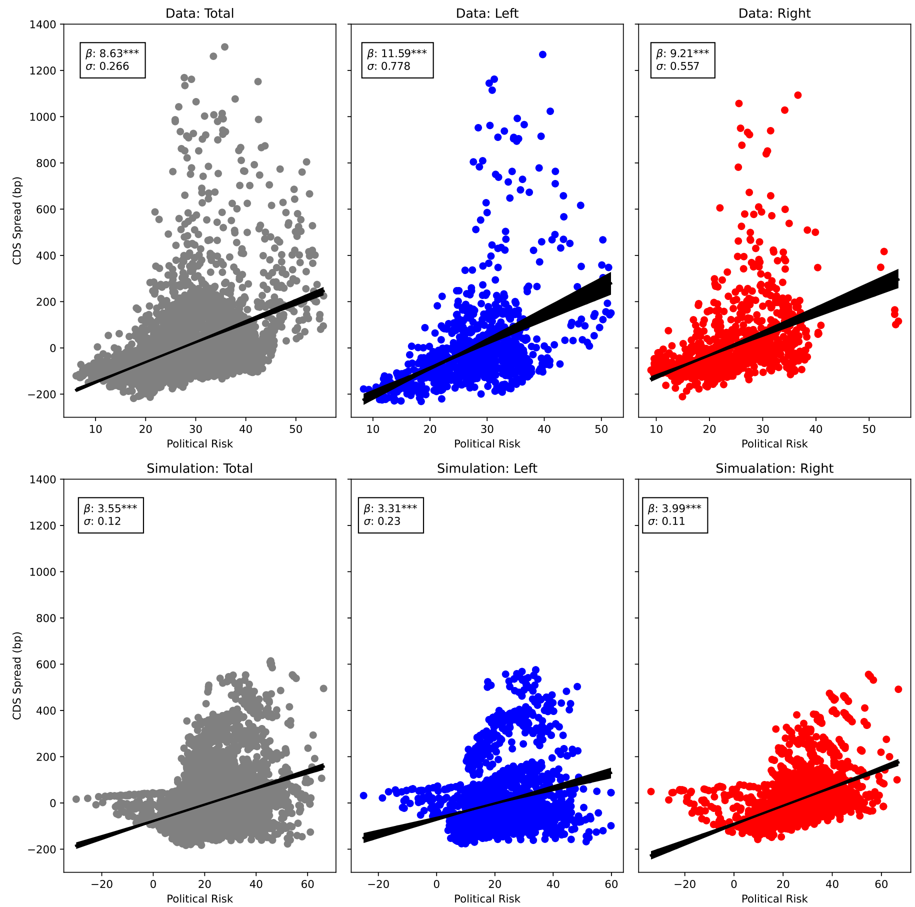


Figure 5: Correlation between political risk and spreads: Regression analysis.

Note: The plots contain the fitted regression lines between political risk and CDS spreads, after controlling for fundamentals. The fitted values are constructed by controlling within sample for external debt, and current account balance, without fixed effects. The samples are respectively: full empirical data, left-wing governments in the data, right-wing governments in the data, full simulation, left-wing governments in the simulation, and right-wing governments in the simulation. We drop the top 2% of observed spreads from the total samples in the data and in the simulation.

We chose this specification since it has direct model counterparts.[16] The results show that political risk and changes in the spreads are positively correlated, both in the cross-section, and are significant for both parties. The estimated slopes are statistically significant and positive in both cases, with the model magnitudes being around 40% of its data counterparts.

We also use the model to conduct an event analysis of a *political crisis*. The first row of Figure 6 shows the increase in spreads observed in the data during a political crisis event. In

[16]Output in the model corresponds to total production Y, external debt B', and the current account $(\delta + z)B - Q \times (B' - (1-\delta)B)$. Political risk in the model corresponds to the simulated probability of revolt given government policies ($\mathbb{P}(\mathfrak{R} = 1)$), while the spreads are the same as those used in the calibration section. To avoid the effect of outliers, in both the data and the model we Winsorize the top 2% of spreads.

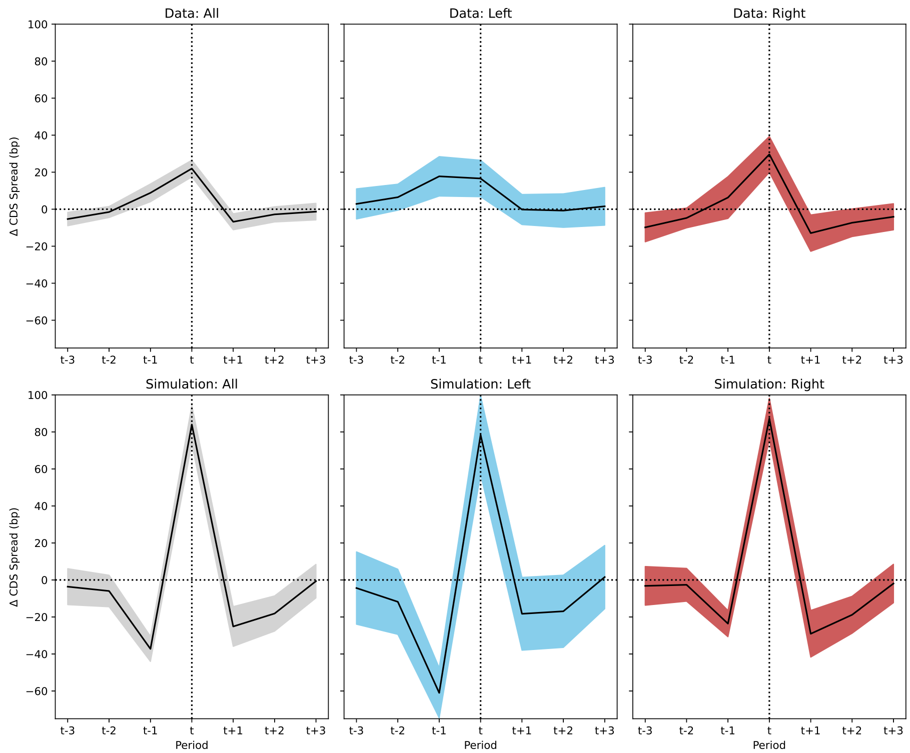


Figure 6: Change in spreads during a political crisis.

Note: In the first row, we plot the event studies in the empirical data for the full sample, only left-wing governments, and only right-wing governments. Then, in the second row the event studies for the full simulation, only left-wing governments, and only right-wing governments. We encode an event in the data (simulation) as a one-quarter difference in the ICRG index (probability of revolt) that is greater than one standard deviation above the mean of all one-quarter differences within the time series for a particular country (entire simulation). The y-axis represents the corresponding one-quarter difference in the spreads, averaged over the appropriate sample of events. The magnitudes are averaged after controlling for the current account and external debt, within both samples. All events are required to have continuous data availability in a six-quarter window around the event quarter. We drop the top 2% of CDS spreads at the beginning from both the data and simulation. We use 426 events in total from the empirical data, 102 left-wing events, and 114 right-wing events from the empirical data. We use 521 events in the simulation, 190 left-wing events and 331 right-wing events. The length of the simulation used is 10,000 periods.

the bottom row, we identify these episodes in a simulation of 10,000 periods of the model. Specifically, we select episodes in which the probability of revolts increases by more than one standard deviation above its mean. We focus on the evolution of spreads around those episodes. The increase in spreads is much stronger in the model than in the data. On average, spreads increase by 80 basis points in the model as opposed to 20 basis points in the data. Looking at the result by party in power, the model replicates the asymmetry of right-wing incumbents witnessing a bigger jump in spreads during a political crisis. The intuition behind this positive correlation and the sources of the asymmetry are explored in the next section.

6 Characteristics of the baseline model

Revolts are more common during defaults, especially against right-wing incumbents. Table 5 provides a breakdown of revolts and defaults at the ergodic distribution. While the economy has access to credit markets, revolts occur approximately 22% of the time, contrasting sharply with nearly half the time spent in revolt during defaults. Similarly, the breakdown by party affiliation reveals another notable asymmetry. In repayment, both left and right-wing governments encounter revolts at a similar frequency, approximately 20% each. However, during defaults, right-wing incumbents face revolts 55% of the time, while their left-wing counterparts experience revolts 43% of the time. This disparity contributes to an overall higher prevalence of left-wing governments in power.

	$\mathcal{D} = 0$	$\mathcal{D} = 1$	Share of $\mathfrak{R} = 1$ in $\mathcal{D} = 0$	Share of $\mathfrak{R} = 1$ if $\mathcal{D} = 1$
Total	72.1	27.9	21.5	47.2
Incumbent : R	38.8	10.3	12.4	20.3
Incumbent : L	33.3	17.6	9.0	26.9

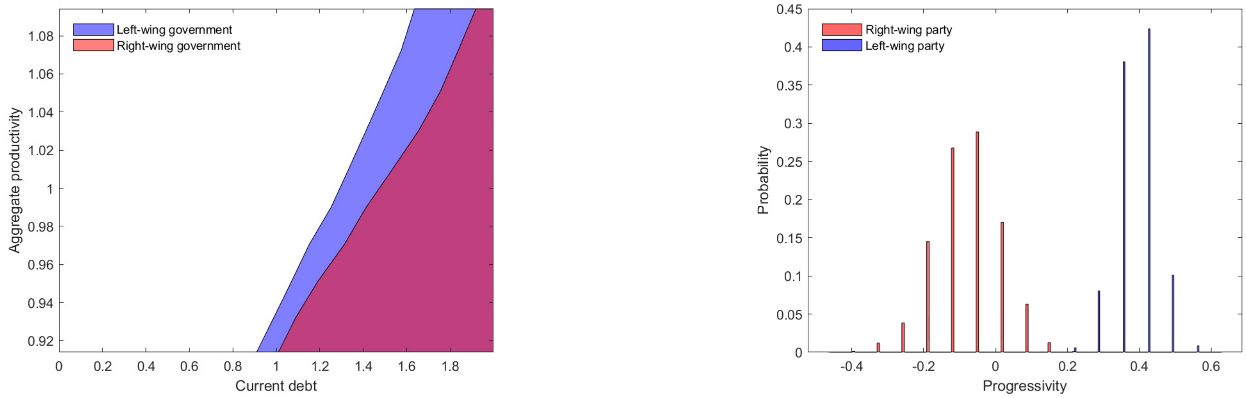
Table 5: Time in each state relative to simulation total (%).

Note: The first two columns report the shares of time spent in repayment and default states. The second two columns report the share of time spent in revolt within repayment and default respectively. The shares are broken down by party in power, but remain a share of time relative to the total economy rather than within party-specific tenure. This is done such that each row sums to the first entry in each column.

Left-wing parties default more frequently Figure 7 panel (a), shows the default sets by party affiliation of the incumbent as a function of the initial state.[17] As usual, we find that governments are more likely to default when the initial debt is high and the productivity shock is low. The default set of left-wing parties is larger. This finding holds significance as both parties face identical exogenous default costs and discount factors in our framework. Left-wing parties default more frequently because the regressive tax policies that repayment entails are detrimental to their preferred constituents. This can be seen in Figure 7 panel (b) where we show the density of tax progressivity choices by party at the ergodic. Right-wing parties opt for a regressive tax system, which leads to higher output, increased tax revenue, and consequently, the ability to repay higher levels of debt.

Right-wing governments face favorable schedules, but revolts worsen them. Panel (a) in Figure 8 shows the price schedules faced by each political party during both periods of

[17] To focus on fundamentals, the sets are constructed assuming that the government drew a vector of taste shocks equal to zero for all choices.



(a) Default sets by party.

(b) Tax progressivity.

Figure 7: Default sets and tax progressivity by party at the ergodic

Note: Panel (a) shows the default sets implied by the policy functions for each party in the baseline model with revolts and turnover. The shaded regions represent the points in the state space at which the left-wing and right-wing party have an ex-ante probability of default that is greater than 0.5, conditional on being in good standing initially. Respectively, the area shaded in blue corresponds to the left-wing party, and the area shaded in red to the right-wing party. Panel (b) shows the simulated densities of the tax progressivity. The density by party is taken relative to the party's total time in power.

stability stability ($\mathfrak{R} = 0$) and revolt stability($\mathfrak{R} = 1$) at the average productivity. Right-wing governments consistently enjoy a more favorable price schedule compared to their left-wing counterparts. This means that for any given debt choice, the right-wing party incurs lower spreads compared to the left-wing party.[18]

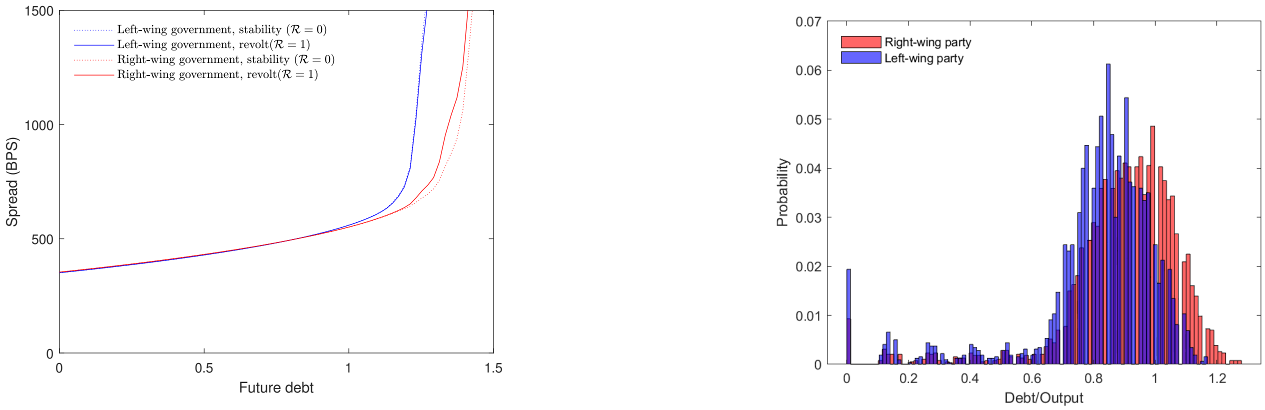
Furthermore, when end-of-period debt is high and the households revolt ($\mathfrak{R} = 1$), right-wing parties face higher spreads. This is because forward-looking lenders anticipate that revolts increase the likelihood of political turnover, leading them to demand higher spreads as compensation for bearing this additional risk.[19]

Under a right-wing government gross debt is higher. Panel (b) of Figure 8 is a histogram of the debt to average output ratio by party at the ergodic distribution. Gross debt tends to be higher when a right-wing party holds power. Right-wing administrations capitalize on the advantageous terms they receive to accumulate more debt, a pattern consistent with the Macri presidency in Argentina.[20]. This trend is further evident in Table 6, where we

[18] Cotoc et al. (2021) find that a similar result holds at the cross-country level on average, when a country leans towards electing left-wing leaders.

[19] A similar mechanism is present in reverse for the left-wing party (Appendix C). That is revolts lower borrowing costs for left-wing governments. This effect however becomes relevant only at very high levels of debt that we don't observe under a left-wing government at the ergodic distribution.

[20] As we show in appendix C this result is flipped if we look at the debt-to-output ratio. This is because the right's regressive policies increase output even more than debt.



(a) Right-wing gap.

(b) Debt to Average Output ratio

Figure 8: Spreads under stability($\mathfrak{R}=0$), and revolts($\mathfrak{R}=1$). Debt at the ergodic

Note: Panel (a) plots the policy-implied spreads as a function of future debt for both parties in the baseline model under stability(dotted lines), and under revolt(solid lines). For this purpose, we fix productivity at A=1.01, and we fix initial debt to be the lowest level that corresponds to a 0.05 probability of default for the left-wing party. Panel (b) shows the simulated densities of the debt-to-average output ratio, where the ratio is taken with respect to average output across all periods in good standing without party distinction. The density of debt by party is taken relative to the party's total time in power.

present various statistics including the mean level of issuance, mean value of new issuance, mean debt at the beginning and end of a term, and average debt, all analyzed by party during periods of access to credit markets. These values are normalized by the average level of output during periods of repayment.

Conversely, left-wing administrations typically exhibit lower debt levels at the end of their terms compared to the beginning, despite positive issuance levels. This phenomenon is made possible in part due to a notable proportion of left-wing tenures commencing with a default.

Table 6: Debt statistics by party.

	$\frac{B'-(1-\delta)B}{\mathbb{E}[Y]}$	$\frac{Q(B'-(1-\delta)B)}{\mathbb{E}[Y]}$	Start of term $\frac{B}{\mathbb{E}[Y]}$	End of term $\frac{B}{\mathbb{E}[Y]}$	Average $\frac{B}{\mathbb{E}[Y]}$
Incumbent: R	4.4	3.2	78.4	87.0	89.4
Incumbent: L	4.2	3.2	84.9	79.4	81.9

Note: We report the mean level of issuance, mean value of new issuance, mean debt at the beginning of a new term, mean debt at the end of a term in office, and average debt. All statistics are party-specific tenures under repayment, that is any period after a decision to default is excluded, thus term length varies significantly even within party. All values are normalized by the average level of output in good standing.

7 Results: The effect of revolts on sovereign risk

This section highlights the primary findings of the paper, focusing on two key results. We present the two opposing channels by which revolts affect sovereign risk. In the the final subsection, we show that both channels are quantitatively significant but the second channel dominates in our setup.

7.1 Right-to-Left-to-default transitions

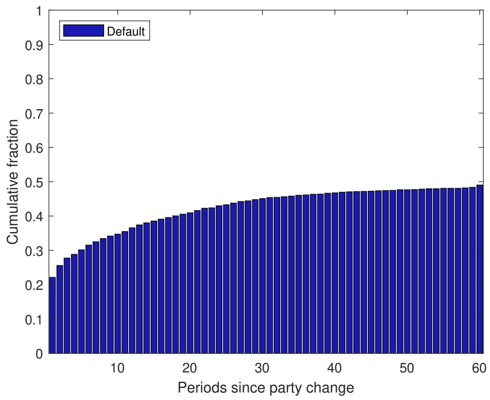
Given that right-wing governments tend to sustain higher debt levels relative to what left-wing governments prefer to repay, transitions from right to left carry a notable default risk. To illustrate this, we examine default dynamics immediately following political turnovers during periods of good standing at the ergodic distribution. For each party assuming power in period one, we monitor its tenure until either default or relinquishment of power to the opposition. After 60 periods, all tenures have concluded.

Figure 9 tracks the cumulative number of tenures ending in default after each period, distinguishing between left-wing (panel (a)) and right-wing governments (panel(b)). The findings reveal a stark contrast: over 20% of transitions from right to left during good standing periods result in immediate defaults, whereas less than 1% of left-to-right transitions commence with default.[21] Although the disparity in default rates persists during the initial ten periods, it stabilizes and diminishes thereafter. In the last 50 periods, an additional 15% of left-wing tenures tenures and 20% of right-wing tenures, end in defaults, underscoring the impact of the first few periods on cumulative default numbers. At the ergodic distribution, 9% of the time is spent in revolt against a right-wing government in good standing, increasing the likelihood of transitions from right to left culminating in default.

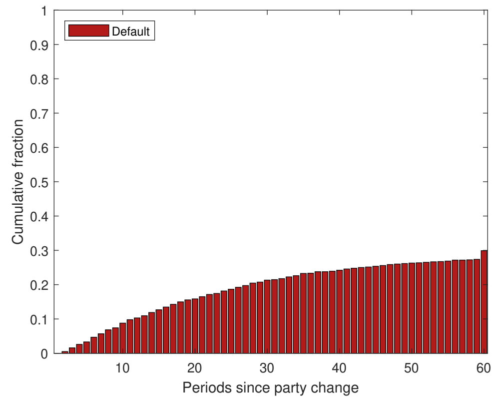
It's essential to note that this mechanism operates through rollover risk, as the Left's inclination to default increases with the size of the debt service. Ensuring that the maturity structure of the debt aligns with observed in the data is crucial for accurately assessing its quantitative significance.[22]

[21]For a Left-wing party in this situation the alternative to default is deleveraging and austerity. We explore some of the dynamics of austerity in Appendix B.

[22]Other papers in the literature have shown that political risk can increase default risk (Hatchondo et al. (2009), Cruces and Trebesch (2013), Scholl (2024) and Azzimonti et al. (2016)). However, the mechanism we highlight here is distinct. It doesn't arise from disparities in discount factors (Hatchondo et al. (2009)), reelection probabilities (Cotoc et al. (2021)), or debt restructuring (Cruces and Trebesch (2013)).Similar to Scholl (2024) and Azzimonti et al. (2016), it is differences in distributional preferences that give rise to asymmetric default sets. However, both of these papers assume one-period debt.



(a) Left takeover.



(b) Right takeover.

Figure 9: Dynamics of default following a change in ruling party in repayment.

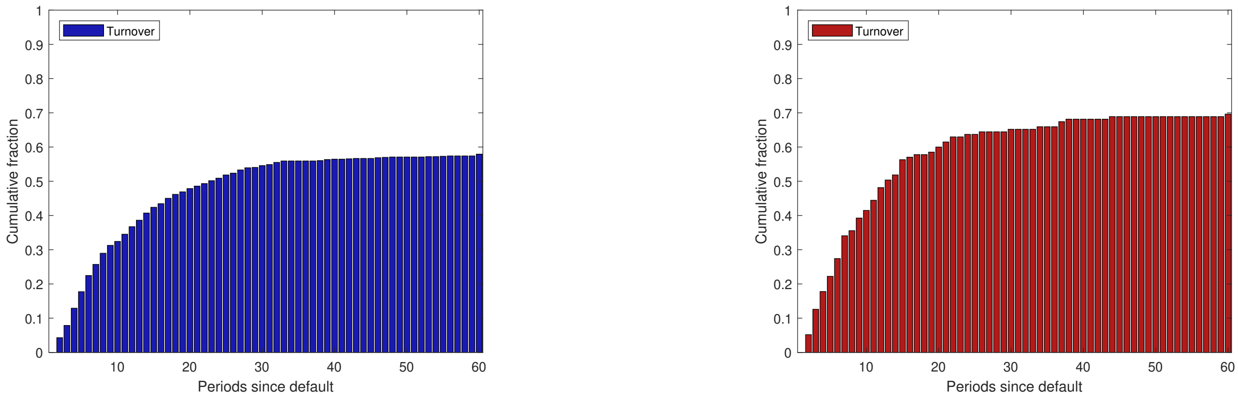
Note: Potted are the cumulative fractions of left-wing(right-wing) governments that have defaulted across 60 periods from coming into power. Each tenure is started by the left(right) coming into power in repayment. The cumulative fraction is computed by isolating events from a 100,000 period simulation, yielding 1668(1388) takeovers by the left(right)

7.2 Revolts as an endogenous default cost

In our model, households can deter impatient governments from defaulting by threatening to initiate revolts during such situations. Revolts thus can serve as an endogenous default cost, enabling the economy to sustain higher levels of debt. At the ergodic distribution, nearly half of the time in bad standing is also spent in revolt, while less than a third of the time in good standing is spent in revolt. To assess the extent to which agents in our model employ revolts in this manner, we examine the turnover dynamics by party immediately following a default.

For each party defaulting in period one, we track its tenure until it either returns to credit markets or relinquishes power to the opposition. After 60 periods, all tenures have concluded. Figure 10 illustrates the cumulative number of tenures ending in political turnover after each period. Interpreting these results is challenging because turnovers can occur exogenously even without revolts, and revolts are common under both government types, still, some patterns emerge.

Thirteen periods after a default, more than half of right-wing tenures terminate due to political turnover, by comparison, it takes twenty-three periods for left-wing governments to reach the same milestone. In a model where political turnover is purely exogenous (see subsection 7.3) this milestone is never reached. At most 45% of tenures end because of turnover with the rest ending due to reentry into credit markets.



(a) Left default.

(b) Right default.

Figure 10: Dynamics of turnover following a default episode.

Note: Potted are the cumulative fractions of left-wing(right-wing) governments that have lost power across 60 periods after defaulting. Each tenure is started by the left(right) choosing to default. The cumulative fraction is computed by isolating events from a 100,000 period simulation, yielding 953(135) takeovers by the left(right)

7.3 Quantitative importance of each channel and extensions

To assess the quantitative importance of each channel we analyze alternative specifications of the baseline model. Specifically, we compare our baseline with models featuring revolts solely in repayment, solely in default, only exogenous turnover, and models with a single party remaining in power permanently. In the first two extensions, we add a large negative utility penalty to revolts in defaults and repayments respectively. In the model with exogenous turnover, transitions are purely exogenous, with each party averaging an eight-year term in office. The final two specifications differ only by which party is initially in power, with no transitions occurring.

Table 7 presents an overview of the aggregate moments for the six model specifications. When revolts are not permitted during default states, spreads increase, defaults become more frequent, and the economy maintains considerably lower debt levels. The model with exogenous turnover sustains the second-lowest debt level and exhibits the second-highest default frequency. Models featuring permanent party types both maintain lower debt levels than our baseline and retain the anticipated asymmetry: a permanent left-wing government sustains less debt than a permanent right-wing government. Finally, when revolts are solely permitted during defaults, the highest amount of debt is sustained, with the lowest default frequency observed. We break down the analysis of these results by explaining the effect of revolts and turnover first in repayment and then in default.

Relative to models with a single type of ruler, models incorporating political turnover are susceptible to our first channel: the potential for Right-to-Left-to-default transitions.

Table 7: Moments comparison between models.

Model specification	Debt	Spread	Freq. default	Revolts	Share in power(Right)
Baseline	86.0	7.4	4.3	28.6	49.1
Revolts only in repayment	48.3	13.2	6.0	13.5	47.8
Revolts only in default	114.3	6.5	3.9	12.4	53.1
Exogenous turnover	72.3	8.7	4.9	-	50.0
Permanent left-wing	76.1	7.9	4.4	-	0
Permanent right-wing	77.8	7.6	4.4	-	100
Data	88	7.7	3.3	39.0	44.8

Note: We compare key moments of the data and the baseline model with the four alternative model specifications. The moments are computed using 100,000 simulations for each model specification. Revolts do no feature in the final three specifications and are thus not reported.

Our second channel, however, remains inactive even in models with exogenous transitions, provided that reelection probabilities remain unaffected by the default decision. Consequently, we find that the model with exogenous turnover maintains lower debt levels than even an economy governed permanently by a left-wing party.

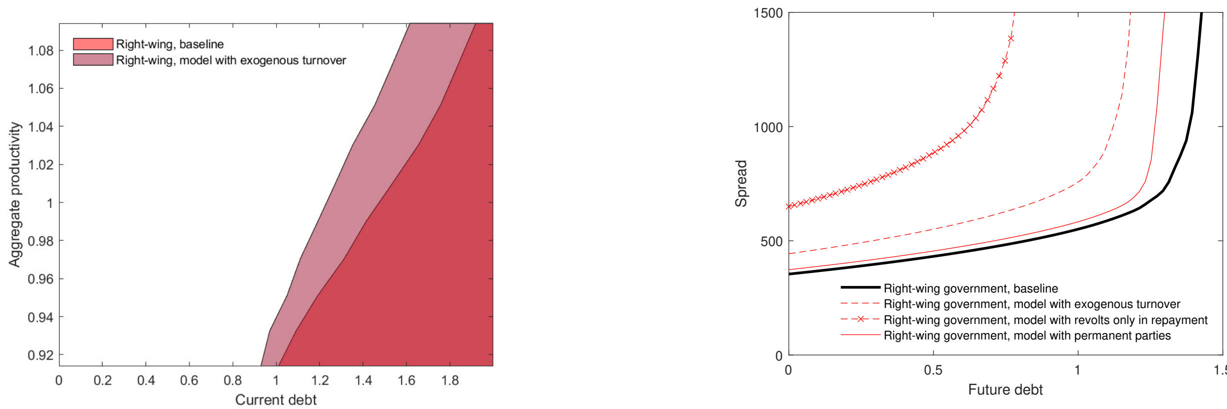
Introducing revolts solely in repayment reinforces the first channel significantly. In equilibrium, we find that even a low frequency of revolts (13.5%) is enough to increase default risk by more than 20% and reduce the average debt by more than 30%, relative to the economy with only exogenous turnover.

When revolts are permitted in default and repayment (our baseline), our second and dominant channel is activated. Overall, revolts double in frequency, with the majority of the increase occurring during default periods. This added default cost enables the economy to sustain even higher levels of debt than a model without revolts.

While the second channel dominates, it's important to note that the first channel still holds quantitative significance. Another way to illustrate the importance of revolts for the first channel is by comparing a model where revolts are only allowed in defaults to our baseline. In this counterfactual scenario, the economy sustains an additional 30% more debt while default frequency is 10% smaller.

The significance of revolts as an endogenous default cost is further evident in the policy functions, as depicted in Figure 11.[23] Here, we observe that the default sets of the model with exogenous turnover are larger than those of our baseline (Panel (a)), and the debt schedule is more favorable in our model than in any other specification (Panel (b)), except for the model where revolts are only allowed in default. To the best of our knowledge, no other paper highlights how revolts and political turnover can act as deterrents to default and help

[23]The figures are for a right-wing party but we obtain similar results when a left-wing party is in power.



(a) Default sets for right-wing party.

(b) Right-wing price schedule.

Figure 11: Default sets and comparison of policy-implied spreads across model variants.

Note: In panel (a) We plot for comparison the default sets implied by the policy functions corresponding to the baseline model and to the model with exogenous turnover for the right-wing party exclusively. This is done by adopting the previous definition under which the shaded area represents an ex-ante probability of default that is greater than 0.5, conditional on being in good standing initially. In panel (b). we plot the schedule for the baseline model(solid line), the model with exogenous turnover(dashed line), the model without revolts in default(dashed line with asterisks), and the model with permanent types. For this purpose we fix productivity at A=1.01, and we fix initial debt to the same level.

sustain higher levels of debt, even in a model that generates the positive correlation between political crises and spreads observed in the data.

8 Conclusions

We develop a quantitative model of sovereign debt, featuring parties with varying preferences for redistribution and political protests against the government. We calibrate the model to reflect the economic and political landscape of Argentina during the Macri administration (2015-2019). In our framework, revolts incur economic costs but elevate the likelihood of political turnover. Governments strategically conduct fiscal policy to mitigate these protests, while households make strategic decisions regarding when to engage in protest.

Our model successfully reproduces the observed positive association between political crises and sovereign risk. Instances of heightened political risk coincide with spikes in spreads. We find that left-wing parties exhibit a higher propensity for default, and revolts are more prevalent during default periods, particularly against right-wing governments. Despite both left and right-wing governments issuing similar levels of debt, right-wing administrations opt to sustain higher debt levels.

Protests can exacerbate default risk by increasing the chances of a right-wing incumbent transferring a sizable debt burden to a left-wing successor, who may favor immediate default over prolonged deleveraging–as witnessed at the end of Macri's term in Argentina. However, revolts can also mitigate sovereign risk when more prevalent during default states than in repayment states. They operate as potent deterrents against default for incumbents concerned about staying in power. In our quantitative model, this second channel dominates the first in significance.

When revolts are not allowed the economy sustains less debt, defaults more frequently, and spreads are higher. These findings underscore the nuanced relationship between political and sovereign risk, surpassing what a simplistic interpretation of the cross-country positive correlation might suggest.

References

Acemoglu, Daron and James A. Robinson, "A Theory of Political Transitions," *American Economic Review*, September 2001, *91* (4), 938–963.

_ , Mikhail Golosov, and Aleh Tsyvinski, "Power fluctuations and political economy," *Journal of Economic Theory*, 2011, *146* (3), 1009–1041.

Amador, Manuel and Christopher Phelan, "Reputation and Sovereign Default," *Econometrica*, 2021, *89* (4), 1979–2010.

Andreasen, Eugenia, Guido Sandleris, and Alejandro Van der Ghote, "The political economy of sovereign defaults," *Journal of Monetary Economics*, 2019, *104*, 23–36.

Arellano, Cristina, "Default risk and income fluctuations in emerging economies," *American economic review*, 2008, *98* (3), 690–712.

_ and Yan Bai, "Fiscal austerity during debt crises," *Economic Theory*, 2017, *64*, 657–673.

_ , _ , and Gabriel P Mihalache, "Monetary policy and sovereign risk in emerging economies (nk-default)," Technical Report, National Bureau of Economic Research 2020.

_ , _ , and Luigi Bocola, "Sovereign default risk and firm heterogeneity," Technical Report, National Bureau of Economic Research 2017.

Azzimonti, Marina and Nirvana Mitra, "Political constraints and sovereign default," *Journal of International Money and Finance*, 2023, *137*, 102895.

_ , Marco Battaglini, and Stephen Coate, "The costs and benefits of balanced budget rules: Lessons from a political economy model of fiscal policy," *Journal of Public Economics*, 2016, *136*, 45–61.

Barbera, Salvador and Matthew Jackson, "A Model of Protests, Revolution, and Information," *Quarterly Journal of Political Science*, 2020, *15* (3), 297–335.

Benjamin, David and Mark LJ Wright, "Recovery before redemption: A theory of delays in sovereign debt renegotiations," *Available at SSRN 1392539*, 2009.

Bianchi, Javier and Enrique G Mendoza, "Optimal time-consistent macroprudential policy," *Journal of Political Economy*, 2018, *126* (2), 588–634.

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

— **and** — , "Endogenous political turnover and fluctuations in sovereign default risk," *Journal of International Economics*, 2019, *117*, 37–50.

Cotoc, Ionut, Alok Johri, and César Sosa-Padilla, "Sovereign spreads and the political leaning of nations," Technical Report, National Bureau of Economic Research 2021.

Cruces, Juan J and Christoph Trebesch, "Sovereign defaults: The price of haircuts," *American economic Journal: macroeconomics*, 2013, *5* (3), 85–117.

David, Antonio C, Jaime Guajardo, and Juan F Yépez, "The rewards of fiscal consolidations: Sovereign spreads and confidence effects," *Journal of International Money and Finance*, 2022, *123*, 102602.

Dovis, Alessandro, Mikhail Golosov, and Ali Shourideh, "Political Economy of Sovereign Debt: A Theory of Cycles of Populism and Austerity," Working Paper 21948, National Bureau of Economic Research January 2016.

Dvorkin, Maximiliano, Juan M Sánchez, Horacio Sapriza, and Emircan Yurdagul, "Sovereign debt restructurings," *American Economic Journal: Macroeconomics*, 2021, *13* (2), 26–77.

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

Fourakis, Stelios, "Sovereign Default and Government Reputation," Technical Report 2023.

Gallego, Francisco, "Skill premium in Chile: Studying the skill bias technical change hypothesis in the south," *Documentos de Trabajo (Banco Central de Chile)*, 2006, (363), 1.

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

— **and** — , "The politics of sovereign defaults," *FRB Richmond Economic Quarterly*, 2010, *96* (3), 291–317.

— **,** — **, and Horacio Sapriza**, "Heterogeneous borrowers in quantitative models of sovereign default," *International Economic Review*, 2009, *50* (4), 1129–1151.

Heathcote, Jonathan, Kjetil Storesletten, and Giovanni L Violante, "Optimal tax progressivity: An analytical framework," *The Quarterly Journal of Economics*, 2017, *132* (4), 1693–1754.

Krusell, Per, Lee E Ohanian, José-Víctor Ríos-Rull, and Giovanni L Violante, "Capital-skill complementarity and inequality: A macroeconomic analysis," *Econometrica*, 2000, *68* (5), 1029–1053.

Madestam, Andreas, Daniel Shoag, Stan Veuger, and David Yanagizawa-Drott, "Do political protests matter? Evidence from the tea party movement," *The Quarterly Journal of Economics*, 2013, *128* (4), 1633–1686.

Morelli, Juan M and Matias Moretti, "Information frictions, reputation, and sovereign spreads," *Journal of Political Economy*, 2023, *131* (11), 3066–3102.

Scheuer, Florian and Alexander Wolitzky, "Capital Taxation under Political Constraints," *American Economic Review*, August 2016, *106* (8), 2304–28.

Scholl, Almuth, "The dynamics of sovereign default risk and political turnover," *Journal of International Economics*, 2017, *108*, 37–53.

_ , "The politics of redistribution and sovereign default," *Journal of International Economics*, 2024, *148*, 103876.

_ and Tim Hermann, "The political economy of domestic and external sovereign debt," Technical Report 2024.

Trebesch, Christoph, "Resolving sovereign debt crises: the role of political risk," *Oxford Economic Papers*, 2019, *71* (2), 421–444.

A Data Sources

Data for revolt risk : We follow the empirical literature on sovereign debt and political risk (Cruces and Trebesch (2013), Trebesch (2019)), where they measure political risk using the International Country Risk Guide (ICRG) compiled by the PRS group. This data is available at the monthly frequency for 142 countries from Jan-1984 to Feb-2023. In all our calculations we use a transformed version of the index from one to one hundred where a higher value is is associated with higher political risk[24].

We complement this cross-country data with detailed protest and fiscal news data for Argentina from 2015 to 2020. We follow David et al. (2022) and use a narrative approach to construct a dataset of fiscal events protests or strikes associated with them. Specifically, we use a set of keywords in the *Dow Jones- Factiva* database to collect news articles about Argentina during the Macri presidency. In order to capture fiscal events and protests, we use the following keywords: "fiscal consolidation", "fiscal adjustment","austerity", "tax reform", "tax adjustment", "spending cuts", "budget cuts", "protest", and "tax". We also filter the articles, requiring that they are sourced from Latin America, are about Argentina, and fall into the news categories: Commodity/Financial Market News, Corporate/Industrial News, Economic News, or Political/General News [25]. Our goal was to collect fiscal events for the Macri presidency in Argentina along with any protests or strikes that were explicitly associated with these fiscal events. We manually check all events to ensure their relevance to our stated goal.

Data for sovereign spreads : For our empirical section 2, we use quarterly cross-country data on interest rate spreads on Credit Default Swap (CDS) data from Bloomberg. We use measures in U.S. dollars and a five year maturity for all countries. In our calibration section 4, we follow the sovereign default literature and use the EMBI+ spread data for Argentina from Global Financial Data[26].

Other data sources : Our cross-country regressions use data on External Debt, Gross Domestic Product (GDP), Current Account Balance, Reserves, and Primary fiscal balance. The external debt data is from the Joint External Debt Hub of the World Bank, International Monetary Fund (IMF), and Bank of International Settlements (BIS). GDP data in national

[24] Our measure is simply, one hundred minus the country risk index from the original the data source.

[25] The database compiles articles from 77 news sources for Argentina in English and Spanish. Among them are CE Noticias Financieras, Buenos Aires Herald, and the BBC.

[26] As a robustness check we also run our empirical cross-country regressions on the limited set of countries for which we have EMBI+ spread data and find similar results.

currency and U.S. dollars are from the World Bank's Global Economic Monitor and National Account sources in Global Financial Data. Current Account Balance, Reserves, and Primary fiscal balance are from the IMF International Financial Statistics data set. Party affiliation data is from the Inter-American Development Bank's (IADB) 2020 Database of Political Institutions.

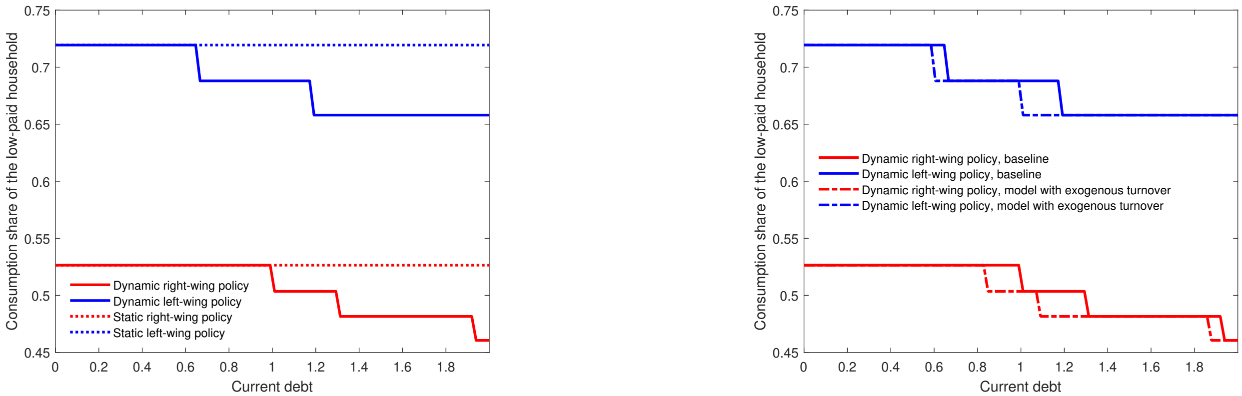
B Austerity policies

The model gives some insight into the timing and impact of austerity policies, we focus on the scope related to tax adjustments aimed at incentivizing output. These policies tend to have the simultaneous effect of reducing redistribution, which we also observe in the model. In the model there is a 1-to-1 mapping between tax progressivity and consumption shares, thus we refer to a policy as austere if the consumption share of the low-paid household relative to the rich households consumption is lower than the share implied by the Pareto weights in the static model.

In Figure 12 we plot three different tax policies for each party as a function of current debt in terms of the consumption share of the low-paid household. The static policy serves as a benchmark, as it represents the preferred level of inequality for each party in an unconstrained world. We juxtapose that static optimum with the policies of the baseline model, and the policies in the model with exogenous turnover.

In the baseline model, the right-wing party due to both higher output levels and better spreads can sustain its preferred allocation for much higher levels of debt relative to the left-wing party. However, once it begins to implement austerity its gradualism in terms of debt levels is comparable with the left-wing party. Both parties do not choose to descend into the most austere policies available, but in equilibrium will make the strategic decision to default.

We then compare the baseline with the model that allows only for exogenous turnover, where austerity policies are implemented sooner relative to current debt stock. This is consistent with the effect of increased spreads, and thus lower sustainable debt in the model with exogenous turnover.



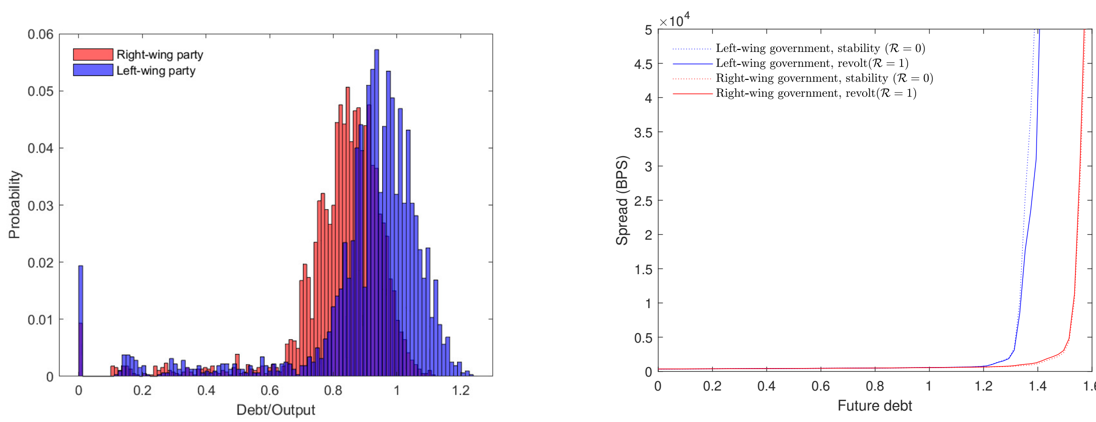
(a) Fiscal choices baseline model vs static.

(b) Fiscal choices baseline model vs no-revolts.

Figure 12: Fiscal choices in the baseline, no-revolts, and static models.

Note: Plotted are three tax policies for each party: first is the static policy(dotted lines) that only depends on the Pareto weights, second is the dynamic policy of the baseline model(solid lines), third is the dynamic policy of the model without revolts(dot-dash lines). In all three cases we vary the initial level of debt and fix ex–ante productivity at $A = 1.01$, where the dynamic policy choice is understood as the tax progressivity that has the highest point mass given the probability distribution of taste shocks. The policy is represented in terms of the implied consumption share of the low-paid household as a fraction of the rich households consumption.

C Additional regressions and figures



(a) Debt to Output ratio

(b) Left-wing gap.

Note: Plot (a) shows the simulated densities of the debt to output ratio, where the ratio is taken within-period. The density by party is then taken relative to the party's total time in power.
Plot (b) shows the simulated densities of the debt to average output ratio, where the ratio is taken with respect to average output across all periods in good standing without party distinction. The density of debt by party is taken relative to the party's total time in power.

Table 8: CDS spreads and political risk, in countries ruled by left wing parties

	(1) CDS Spread	(2) CDS Spread	(3) CDS Spread	(4) CDS Spread	(5) CDS Spread
Political Risk	11.78***	11.59***	14.70**	15.41**	14.86**
	(0.601)	(0.778)	(5.131)	(5.391)	(4.960)
External Debt-to-GDP		1.217***		0.156	1.689
		(0.275)		(2.320)	(1.428)
CA-to-GDP		-2.184*		-0.815	0.766
		(0.987)		(1.785)	(1.028)
Reserves-to-GDP					2.775*
					(1.291)
Real GDP growth					-1.616**
					(0.529)
Primary Balance-to-GDP					0.0289*
					(0.0129)
Quarterly FE	No	No	Yes	Yes	Yes
Country FE	No	No	Yes	Yes	Yes
Obs	1032	1000	1032	1000	604

Note: We drop the top 2% of CDS Spread data before all empirical work. These regressions were run on the same data as in Table 1, excluding values associated with non-left wing governments. Standard errors clustered at the country level in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 9: CDS spreads and political risk, in countries ruled by right wing parties

	(1) CDS Spread	(2) CDS Spread	(3) CDS Spread	(4) CDS Spread	(5) CDS Spread
Political Risk	8.172***	9.209***	18.86**	17.00**	23.32***
	(0.513)	(0.557)	(5.448)	(5.289)	(5.661)
External Debt-to-GDP		0.464***		0.723	0.566
		(0.0667)		(0.455)	(0.497)
CA-to-GDP		-2.162***		2.269	2.361
		(0.606)		(1.179)	(1.246)
Reserves-to-GDP					0.282
					(3.027)
Real GDP growth					-1.605*
					(0.755)
Primary Balance-to-GDP					0.00933
					(0.00627)
Quarterly FE	No	No	Yes	Yes	Yes
Country FE	No	No	Yes	Yes	Yes
Obs	1116	1113	1115	1113	769

Note: We drop the top 2% of CDS Spread data before all empirical work. These regressions were run on the same data as in Table 1, excluding values associated with non-right wing governments. Standard errors clustered at the country level in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$