Tax Revolts and Sovereign Defaults *

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Abstract

Political 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 issue more debt. Our framework explains the high deficits observed during the Macri administration and the sovereign default that occurred immediately after the Left regained power.

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 specific factions of the nation. In practice, tax reforms and fiscal consolidations often provoke civil unrest. While the literature on sovereign default has explored various facets of political risk since the seminal work of Hatchondo and Martinez (2010), the theoretical insights from Acemoglu and Robinson (2001) on 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. Unlike elections, protests allow opposition members 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 for both demonstrators and the wider economy, introducing significant strategic considerations for all involved parties. Protesters must be willing to bear the costs, while governments may adjust fiscal policy to mitigate unrest. Furthermore, since 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, particularly during the presidency of Mauricio Macri from December 2015 to December 2019, while also showing that the relationship between political and sovereign risk holds for a cross-section of countries. We show that episodes of heightened civil unrest, termed *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, households can 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.

Our model explores two channels 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, with protests making these

transitions more likely. 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, allowing them to function as an endogenous default cost. In our model, the latter mechanism quantitatively dominates over the former, improving the interest rate schedules faced by the government.

Finally, we show that right-wing governments are particularly prone to take advantage of these more favorable borrowing conditions to issue more debt in equilibrium. Thus, although left-wing parties default more frequently, right-wing parties issue more debt as a way to compromise with an opposition more prone to revolt against their fiscal choices.

Related literature This paper connects to several strands of literature on sovereign default, political economy, and public finance. Our primary contribution lies within the political economy of sovereign default, focusing on the risks associated with political turnover.[1]

The exogenous part of political turnover in our model resembles Hatchondo and Martinez (2010), and like them, we find that one party defaults more frequently than the other. However, unlike their model, 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 and gaining power.[2]

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), with further extensions 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. Compared 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 simply a matter of dividing a fixed endowment, as in Cuadra and Sapriza (2008). Instead, there is an efficiency-equity trade-off that impacts aggregate output and, consequently, repayment capacity.

[1] Our model will however also draw elements from the strand of the literature that focuses on sovereign reputation (Amador and Phelan (2021), Fourakis (2023), Morelli and Moretti (2023)

[2] 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.

Scholl (2017) and Scholl (2024) bear the closest resemblance to our paper, but two key differences stand out: the frequency of political turnover and the debt's maturity structure. Our framework endogenizes the frequency of political turnover by making it a strategic decision of households. This feature proves significant for our novel mechanism, as households opt to exercise their protest option more frequently during default periods than in repayment periods. Additionally, while 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.[3] Moreover, 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 7.2 we show that these right-to-left transitions are the main channel by which political risk can increase default risk.

Our paper also 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). Additionally, there is a large body of literature on regime change (see Barbera and Jackson (2020) and references therein). Our paper relates to Dovis et al. (2016), but we focus on the aspect of sovereign default rather than the dynamics of optimal taxation.

2 Empirical motivation

2.1 Cross-country evidence

Following the literature, we document the positive relation between political risk and spreads across different countries. Hatchondo and Martinez (2009) were first to highlight the importance of political risk measured by the International Country Risk Guide (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

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

panel regression of countries with a credit rating below A-, presented in Table 8.[4]

Table 1: CDS spreads and political risk

	(1) CDS Spread	(2) CDS Spread	(3) CDS Spread	(4) CDS Spread	(5) CDS Spread
Political Risk	9.179***	9.910***	16.75***	19.04**	24.90*
	(0.529)	(0.774)	(4.538)	(6.314)	(9.893)
External Debt-to-GDP		3.890***		-0.613	-0.266
		(0.390)		(4.654)	(4.947)
CA-to-GDP		-1.237		1.384	1.515
		(0.667)		(1.187)	(1.692)
Reserves-to-GDP					-1.137
					(4.321)
Real GDP growth					-2.039
					(1.384)
Primary Balance-to-GDP					0.00801*
					(0.00366)
Quarterly FE	No	No	Yes	Yes	Yes
Country FE	No	No	Yes	Yes	Yes
Obs	2261	1838	2258	1835	982

Note: We drop the top 2% of CDS Spread observations before all empirical work. Additionally, we use Standard and Poors credit rating data to drop all nations rated A- or higher. All data sources are listed in Appendix A. Standard errors clustered at the country levels in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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 D, 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 1 shows the fitted values of the regression with all the aforementioned macroeconomic controls and the fixed effects.

Additionally, in Figure 2, 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

[4]The source for CDS spreads is CMAN obtained from Bloomberg Per Security Data and Bloomberg terminal, used with the permission of Bloomberg. This regression only includes countries whose foreign-exchange debt was rated below A- by Standard and Poor's in July 2024. We conduct the same exercise keeping countries of all ratings in appendix E and find similar results.

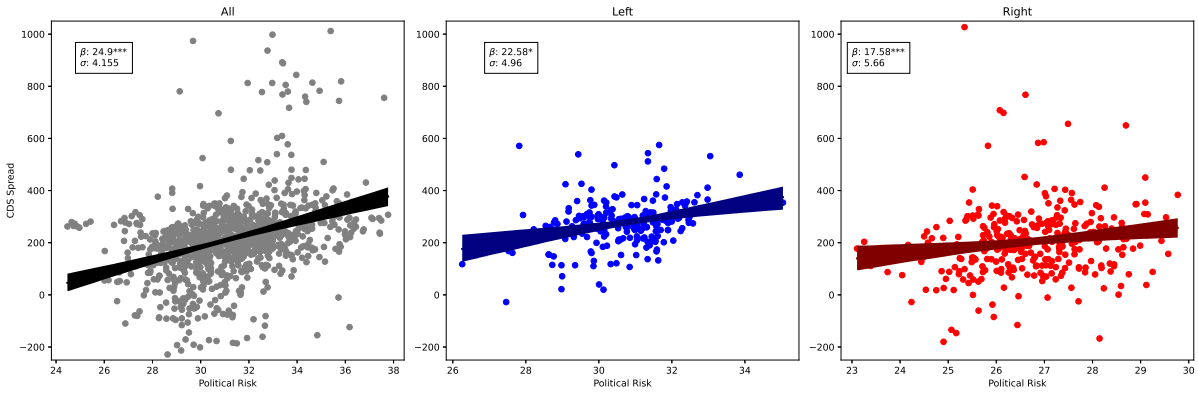


Figure 1: Fitted values CDS on spreads controlling for fundamentals

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. We keep only countries with a credit rating below A-. We drop the top 2% of CDS spreads at the beginning from the total set of empirical data. We also demean the spreads series.

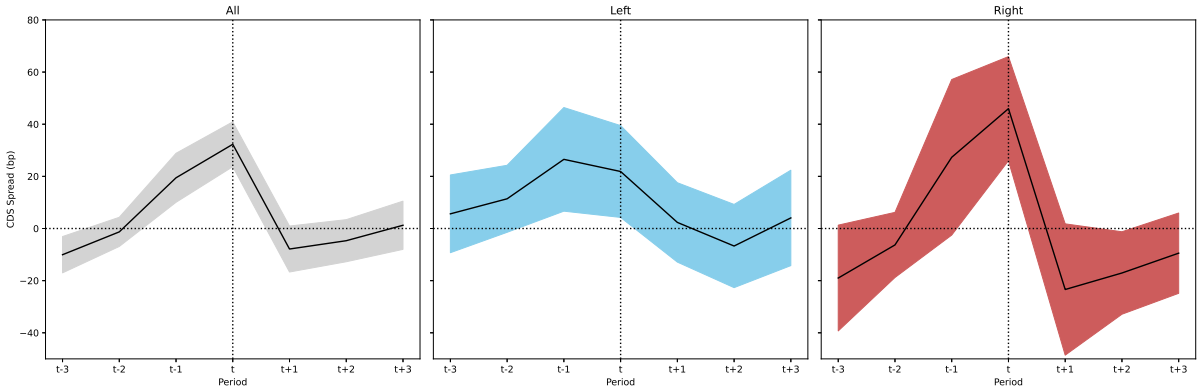


Figure 2: Change in spreads during a political crisis

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 keep only countries with a credit rating below A-. 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.

than one standard deviation above its long-run country-specific mean.[5] We then look at the

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

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.

2.2 The case of Argentina 1995-2020

A significant drawback of the ICRG index of political risk is that its method of calculation is not public. To circumvent this issue, we construct our own measure of political conflict using a narrative approach. Following David et al. (2022), we utilize the Dow Jones Factiva dataset to search Argentinean newspaper articles that mention protests motivated by economic conditions on a daily frequency and record the size of the protests. The exact keywords and a detailed description of our method can be found in Appendix A. We conduct this analysis from the earliest possible date in the dataset, January 1995, until December 2020. The results of this analysis, aggregated at the quarterly level, are shown in Figure 3, alongside the party affiliation of the incumbent president.

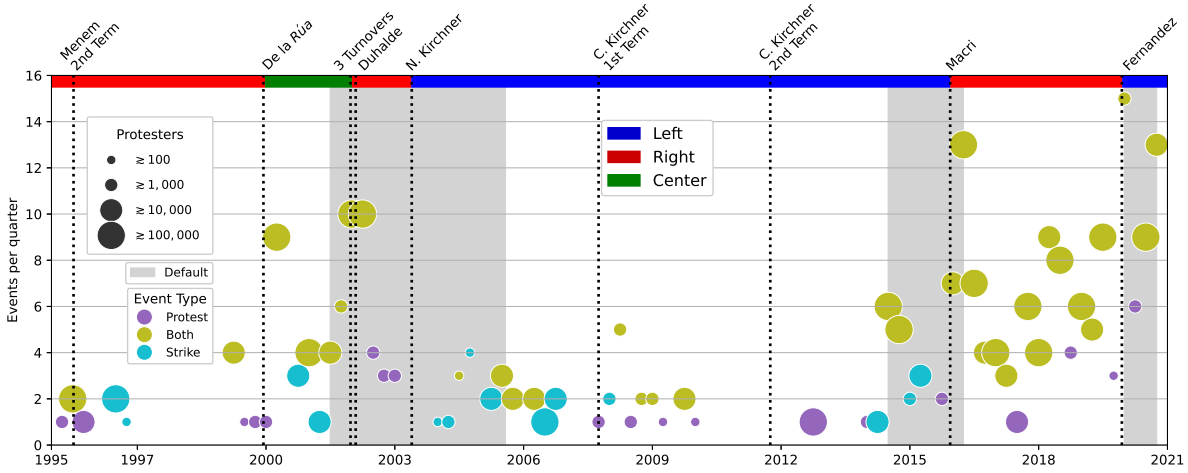


Figure 3: Protests in Argentina 1995-2020

Left vertical axis measures the number of protest events recorded in that quarter. Orange and red circles correspond respectively to protests and general strikes mentioned in the Dow Jones Factiva dataset and are associated with economic reforms. The size of the dot corresponds to the highest protest size recorded. The name of the president in power at the time is written above. President from a right-wing (left-wing) party are colored in red (blue). Political affiliation is from the The Database of Political Institutions 2020 compiled by the IDB and the World Bank (see Scartascini et al. (2021)).

The figure shows three important empirical facts that will inform our quantitative model:

1. Large and more numerous strikes and protests are common immediately before and after a default episode.

2. Presidents from right-wing parties tend to face more protests than their left-wing counterparts. This is especially visible during the Macri administration (2015-2019) and is explored in more detail below.

3. Reelected parties (N. Kirchner and C. Kirchner's first term) faced fewer protests during their terms compared to administrations that ended in a political turnover (De la RÃºa, C. Kirchner's second term, and Macri).

2.3 The Macri Administration and the Right-to-Left Default

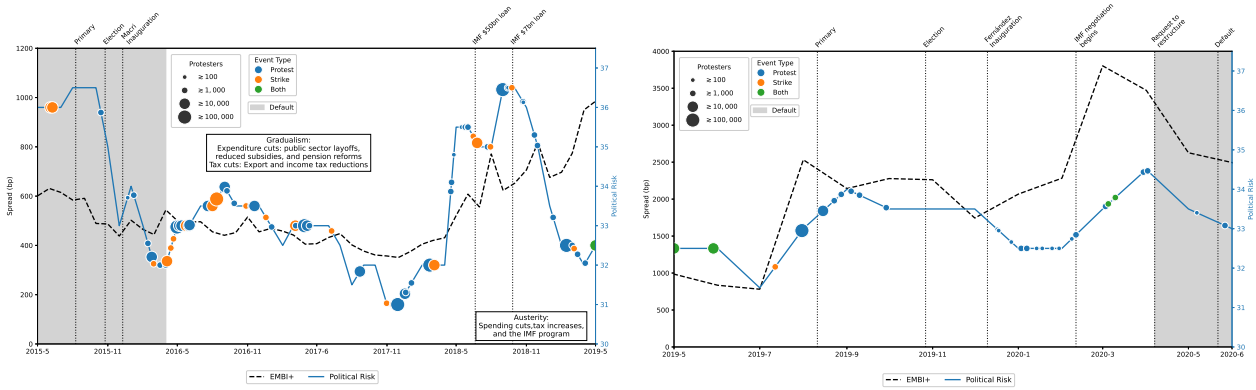
Taking advantage of the high frequency of the data, we examine the years around the Macri administration in greater detail.[6] This period was marked by frequent revolts, volatile spreads, two sovereign defaults, and two political transitions between parties of different ideologies, providing a tangible example of the issues addressed in this paper.

After a 13-year period of left-wing governance, Argentina elected a president from a right-wing party in November 2015. The previous administration had defaulted on debt payments and was still entangled in ongoing legal battles with its creditors. Macri won the election with a platform promoting fiscal responsibility and openness to international capital markets while also promising to maintain some of the social programs introduced by the left.

As shown in Figure 4, Macri's administration faced social unrest for most of its four-year term. In the first fifteen months, this increase in social unrest did not translate into higher interest rate spreads. This was because, during his first two years in office, Macri's approach to fiscal consolidation was characterized by gradualism. The administration attempted to reduce spending through cuts to subsidies, pension reforms, and public sector layoffs, but these measures faced opposition on the streets and in Congress. Consequently, the administration also introduced measures that decreased revenues, such as cutting export and income taxes. As a result, total net borrowing by the central government increased from 6.0% of GDP in 2015 to 6.7% of GDP in both 2016 and 2017. This additional borrowing was facilitated by the administration's successful negotiation with bondholders in April 2016, which allowed Argentina to re-enter international credit markets.

The situation changed when a recession began in 2018 and unemployment surged. The government could no longer avoid austerity measures, leading to general strikes and widespread

[6] In appendix B show the same results for the administrations that ruled Argentina between 1995 and 2015.



(a) 2015-2019.

(b) 2019-20.

Figure 4: Macri Administration: Spreads, political risk, and daily protests

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.

protests. By June 2018, the government had secured a loan agreement with the International Monetary Fund (IMF). To meet the program's conditionality requirements, the government cut subsidies and public investment projects. Protests against the program and discontent over the austerity measures remained frequent throughout the rest of the year. Political risk increased, and the president's popularity declined.

As the August 2019 primaries approached, spreads surged to 2500 basis points, as it became evident that Macri's prospects for reelection were bleak. 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 end of austerity measures, a plan for debt sustainability, and the reversal of export tax reductions. In February 2020, 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.

Argentina's experience is characterized by a positive correlation between interest rate spreads and political risk, large deficits under a right-wing government, and a left-wing government commencing its tenure with a default. All of these elements will be present in our model.

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 ($\mathcal{R} = 0$) or revolt ($\mathcal{R} = 1$). 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.[7] 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 $\alpha(A, \mathcal{D}, \mathcal{R})$ 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

[7] 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 $\mathcal{R} \in \{0, 1\}$. The firm produces

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

We assume that the function $\alpha(A, \mathcal{D}, \mathcal{R})$ is strictly decreasing in both $\mathcal{D}$ and $\mathcal{R}$. 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

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

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 $\mathcal{R}$.

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, $\pi^{i|i}(\mathcal{R})$. The probability that the incumbent party i is

ousted and replaced by party j is then equal to $\pi^{j|i}(\mathcal{R}) = 1 - \pi^{i|i}(\mathcal{R})$. We assume that $\pi^{i|i}(\mathcal{R})$ is strictly decreasing in $\mathcal{R}$. Thus, the probability of reelection, without revolts, 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.[8]

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.[9] 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.

Note the sovereign decides how much debt to issue before knowing whether households will riot—but this outcome will in turn affect the price of borrowing. As we explain below, the level of transfers τ_0 needs to adjust ex post in order to ensure that the government budget constraint holds. For simplicity, we omit the argument $\mathcal{R}$ from τ_0 in the sequel.

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 $Q^i(A, B', \mathcal{R})$, 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 $\mathcal{R} \in \{0, 1\}$. 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

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

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

[8] This reduced form assumption allows the model to match the empirical evidence showing that incumbents facing social unrest are reelected at lower rates Madestam et al. (2013)). A model where the median voter is dissatisfied with the social unrest and at least partially blames the incumbent for it could rationalize this assumption.

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

depends on the variables $A, \mathcal{D}, \mathcal{R}$ 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 ($\kappa(B, B')$ 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 immediately before a default; at the calibrated values, less than 0.06% of output is spent on this adjustment cost. Note that a revolt has the ex-post effect of altering the price of bonds and tax revenue. However, given a specific revolt choice, the budget constraint (3) renders 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 uniquely determine the level of transfers τ_0. We assume that the government commits to the levels of borrowing and tax progressivity, but once the revolt decision is realized, it adjusts the transfers (τ_0) to satisfy the budget constraint.

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.[10] The households' shock $\varepsilon^h(\mathcal{R}) \in \mathbb{R}^2$ 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.

[10]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 $\varepsilon^g \in \mathbb{R}^{(N_B+1)\times N_\tau}$.

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 $W_{\mathcal{D}}^{i|i}$ and $W_{\mathcal{D}}^{j|i}$ be the values obtained when party i repays the debt ($\mathcal{D}=0$) or defaults ($\mathcal{D}=1$).

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 $\mathbb{P}(\mathcal{R}|A,\mathcal{F}^i)$ the probability that households of type j make the decision $\mathcal{R}\in\{0,1\}$ 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

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

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

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

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 $\mathcal{R}$. To characterize this continuation value, recall that party i is ousted from office with probability $\pi^{j|i}(\mathcal{R}) \in (0, 1)$; 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

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

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 $j \neq i$ make the revolt decision.[11] They solve:

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

where $V_0^{j|i}, V_1^{j|i}$ are the values of revolting and accepting the fiscal package, respectively. We denote by $\mathcal{R}^j(A, \mathcal{F}^i, \varepsilon^h)$ 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

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

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

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

where $\varepsilon^h(\mathcal{R})$ is the value of the taste shock associated with the revolt or acceptance decision $\mathcal{R}$. 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,

[11] This assumption is without loss of generality in a Markov equilibrium. Revolting against a party of the *same* type as the households is not a credible threat, since it would decrease current wages and increase the odds of a future incumbent who places a lower welfare weight on the household.

the bond price that satisfies the lenders' zero-profit condition is given by

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

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* $\{W^{i|i}, W^{j|i}, W^{i|i}_{\mathcal{D}}, W^{j|i}_{\mathcal{D}}, V^{i|i}, V^{j|i}, V^{i|i}_{\mathcal{R}}, V^{j|i}_{\mathcal{R}}\}$*, policy functions* $\{\mathcal{D}^i, B'^i, \mathcal{F}^i, N^i, \mathcal{R}^i\}$*, and prices* $\{w^i, Q^i\}$*, for all* $(i,j) \in \{L,R\}^2$ *and* $(\mathcal{D}, \mathcal{R}) \in \{0,1\}^2$*, 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.[12] 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 $\pi^{i|i}(\mathcal{R} = 0) = .969$). Without revolts, this corresponds to an average tenure in office of 8 years for each political party.[13] The reelection probability under sustain revolts ($\pi^{i|i}(\mathcal{R} = 1)$) is a key determinant of the benefits of revolting and as such will be internally calibrated.

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 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 (SEDLAC (2023)). 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

[12]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).

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

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	$\pi^{i\|i}(\mathcal{R} = 0) = 1 - 1/32$	Morelli and Moretti (2023)
Elasticity of substitution	$\eta = 2/3$	Gallego (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.[14] We also take the functional form of the portfolio adjustment

[14]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 ($\rho^{\epsilon^G} \neq 1$)

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:

$$\begin{aligned}
&\alpha(A, \mathcal{D}=0, \mathcal{R}=0) = A, \\
&\alpha(A, \mathcal{D}=0, \mathcal{R}=1) = A - \max(\phi_0^R A + \phi_1^R A^2, 0), \\
&\alpha(A, \mathcal{D}=1, \mathcal{R}=0) = A - \max(\phi_0^D A + \phi_1^D A^2, 0) \equiv \alpha^{\mathcal{D}}_{\mathcal{R}_0}, \\
&\alpha(A, \mathcal{D}=1, \mathcal{R}=1) = \alpha^{\mathcal{D}}_{\mathcal{R}_0} - \max(\phi_0^R \alpha^{\mathcal{D}}_{\mathcal{R}_0} + \phi_1^R \alpha^{\mathcal{D}\ 2}_{\mathcal{R}_0}, 0).
\end{aligned}$$

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. $\mathcal{R}=1$ 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. We also 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. Finally, we calibrate the effect of revolts on reelection probabilities, and find that an incumbent in power who faces revolts throughout its mandate can expect to remain in office an average of 3 years.

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 the data and simulations. We target an annual default frequency of 4.1% since Argentina has defaulted five times since the 1900s.[15] The average increase in debt-to-GDP one period

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

Table 3: Parameters internally calibrated

Parameter	Value	Parameter	Value
Discount factor	$\beta = .92$	Reelection odds under revolt	$\pi^{i\|i}(\mathcal{R}=1) = 1 - 1/12$
Fiscal taste shock ε^G	$\sigma^{\epsilon^G} = 7.5e^{-3}$	Ideology Right-Wing Party	$\omega_R^R = .69$
	$\rho^{\epsilon^G} = .37$	Ideology Left-Wing Party	$\omega_R^L = .31$
Revolt taste shock ε^{HH}	$\sigma^{\varepsilon^{HH}} = 9.0e^{-3}$	Default Cost	$\phi_0^D = -.19$
Issuance Cost	$\iota_1, = 5e^{-5}$	$\alpha(A, \mathcal{D}=1, \mathcal{R}=0) = A - \max(\phi_0^D A + \phi_1^D A^2, 0)$	$\phi_1^D = .25$
$\iota(B', B) = \iota_1 \exp(\iota_2 \lvert B' - B \rvert) - \iota_1)$	$\iota_2 = 28$	Revolt Cost	$\phi_0^R = -.21$
		$\alpha(A, \mathcal{D}=0, \mathcal{R}=1) = A - \max(\phi_0^R A + \phi_1^R A^2, 0)$	$\phi_1^R = .25$

before a default is targeted to identify the portfolio adjustment cost parameters.[16] 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.[17] The model fits most moments well, except for the volatility of the spread.[18]

We also target moments related to political risk. As in 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 (2023) 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 SEDLAC'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 ideology of the ruling party in Argentina in the period 1990-2022. We restrict ourselves to the ideology of the president regardless of the ideology of Congress. Argentina

[16] 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.

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

[18] 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	89.6	Income share R pre-tax	65.6	65.7
Volatility External Debt	23.1	21.2	Income share R post-tax	62.5	63.4
Mean Spread	8.4	7.3	Mean tax progressivity	21.1	15.5
Volatility Spread	4.9	2.3	Right wing party in power	46.4	47.9
Default frequency	4.1	4.4	Revolts frequency	39.0	36.6
Debt surge pre-default $\Delta B'_{D-1}$	4.7	3.0	Revolts against Right	41.1	42.9
			Revolts against Left	32.9	30.9

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.

has been ruled by a right-wing president 46.4% of the time.[19] We also use our narrative study to compute the Revolt frequency. Specifically, we consider that the country is in a revolt state if at any point during the quarter a protest of more than 100,000 person took place. To capture the empirical observation that protests tend to be more frequent against a right-wing incumbent we also target the frequency by party in power. The model replicates this asymmetry even-though party preferences for each type are symmetric.

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 9) 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. We chose this specification since it has direct model counterparts.[20] The results show that political risk and changes in the spreads are positively correlated, both in the cross-section, and are

[19]The DPI dataset (Scartascini et al. (2021)) 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.

[20]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 ($\mathbb{P}(\mathcal{R} = 1)$), 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.

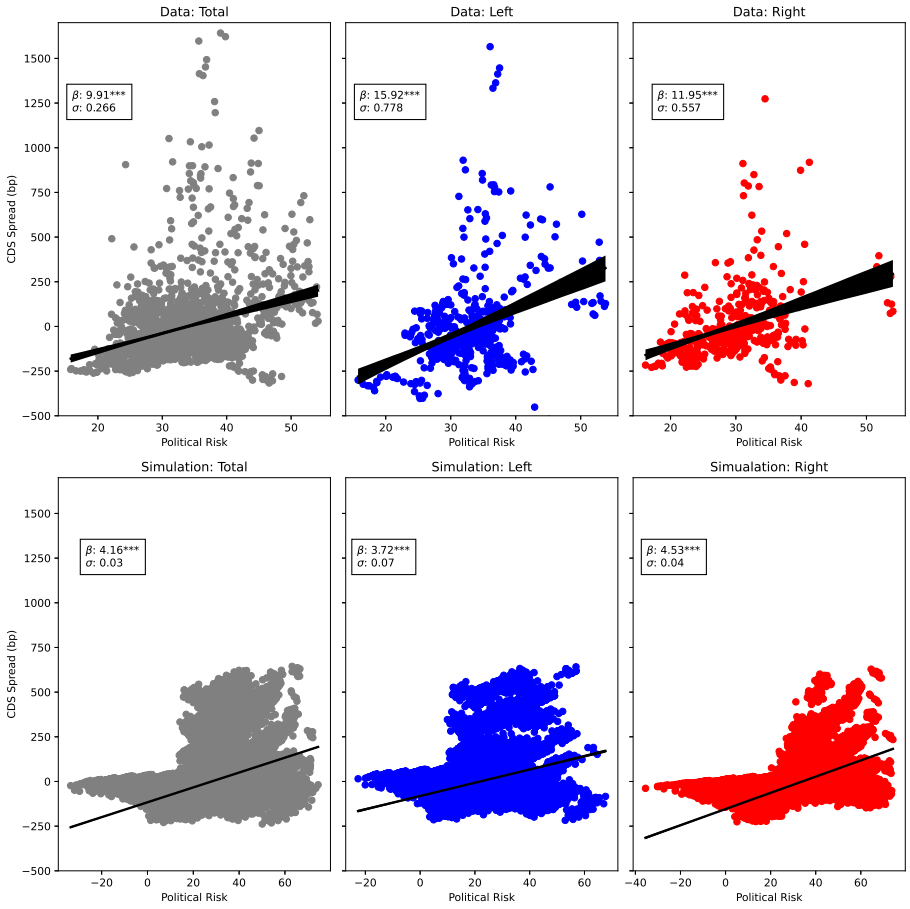


Figure 5: Correlation between political risk and spreads: Regression analysis.

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.

significant for both parties. The estimated slopes are statistically significant and positive in both cases, with the model magnitudes being around 40% of their 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 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 40 basis points in the data.

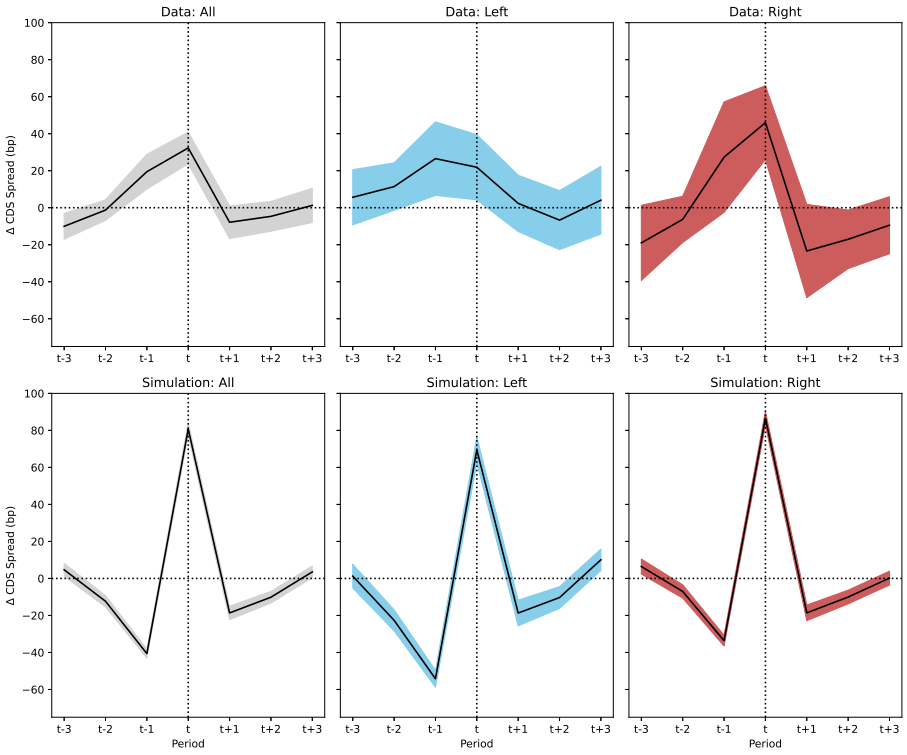


Figure 6: Change in spreads during a political crisis.

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. Additionally, we use Standard and Poor's credit rating data to drop all nations rated A- or higher. We use 187 events in total from the empirical data, 50 left-wing events, and 39 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.

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 Table 5 provides a breakdown of revolts and defaults at the ergodic distribution. When credit markets are accessible, revolts occur approximately 28% of the time. In contrast, revolts occur more than half of the time during default periods. The table also demonstrates that the model accurately reflects the asymmetry between parties regarding the frequency of revolts and time spent in office. Right-wing parties experience more revolts and thus spend less time in office. This asymmetry is more pronounced during repayment periods than during defaults.

Although the exogenous drop in total productivity due to revolts is independent of the incumbent's ideology, the opportunity cost of revolting is higher for more productive households, particularly during repayment periods when productivity is high. During defaults, productivity is lower even without revolts, reducing the difference in opportunity costs and leading to more symmetric revolt frequencies. The next section will explore the significance of this asymmetry for one of the two main channels discussed in the paper.

	$\mathcal{D}=0$	$\mathcal{D}=1$	Share of $\mathcal{R}=1$ in $\mathcal{D}=0$	Share of $\mathcal{R}=1$ if $\mathcal{D}=1$
Total	72.3	27.7	28.2	58.7
Incumbent : R	36.1	11.8	17.2	29.3
Incumbent : L	36.2	15.9	11.0	29.3

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

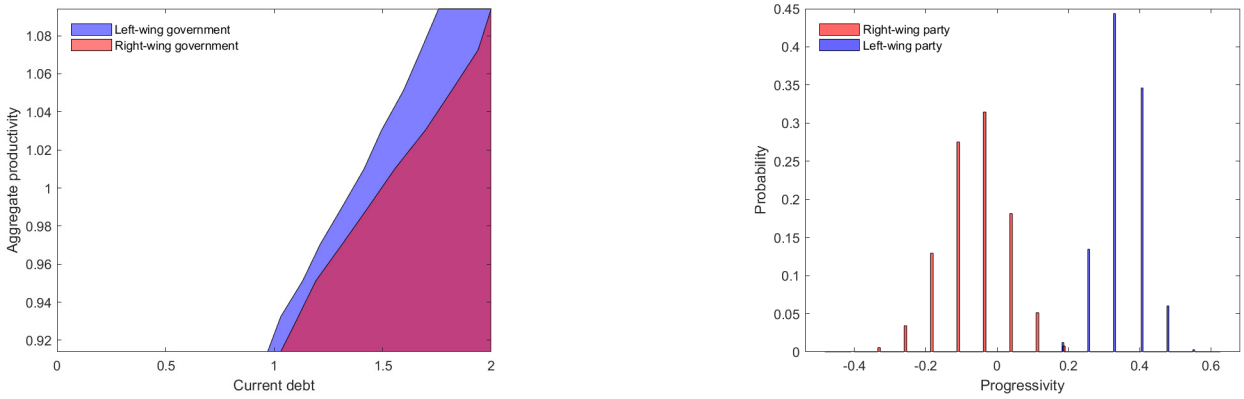
Note: The first two columns report the shares of time spent in repayment and default states. The second two columns report the share of time spent in revolt within repayment and default respectively. The shares are broken down by party in power, but remain a share of time relative to the total economy 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 Table 5 illustrates that left-wing parties are more prone to default at the ergodic distribution. Figure 7 panel (a) depicts the default sets based on the incumbent's party affiliation as a function of the initial state.[21] Consistent with expectations, governments are more likely to default when initial debt levels are high and productivity shocks are low. Notably, left-wing parties have a larger default set. This result is significant given that both parties have the same discount factor and face identical exogenous default costs in our model.

Left-wing parties default more frequently because the regressive tax policies required for debt repayment are detrimental to their preferred constituents. This is illustrated in Figure

[21]For clarity, these sets are constructed assuming the government drew a vector of taste shocks equal to zero for all choices.

7 panel (b), which shows the density of tax progressivity choices by party at the ergodic distribution. Left-wing parties prefer more progressive tax systems, which can lead to lower output and reduced tax revenue, making it harder to service higher levels of debt. In contrast, right-wing parties favor regressive tax systems that enhance output and revenue, thereby improving their ability to repay debt.



(a) Default sets by party.

(b) Tax progressivity.

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

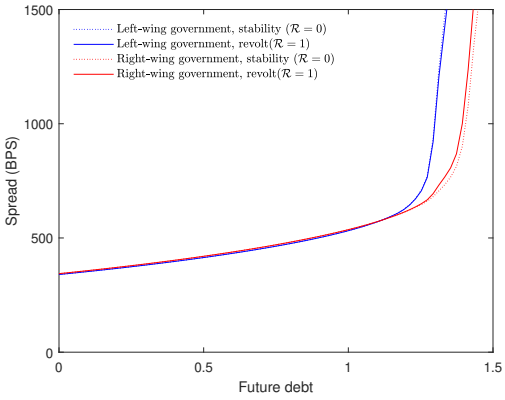
Note: Panel (a) shows the default sets implied by the policy functions for each party in the baseline model with revolts and turnover. The shaded regions represent the points in the state space at which the left-wing and right-wing party have an ex-ante probability of default that is greater than 0.5, 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.

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 stability stability ($\mathcal{R} = 0$) and revolt stability($\mathcal{R} = 1$) 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.[22]

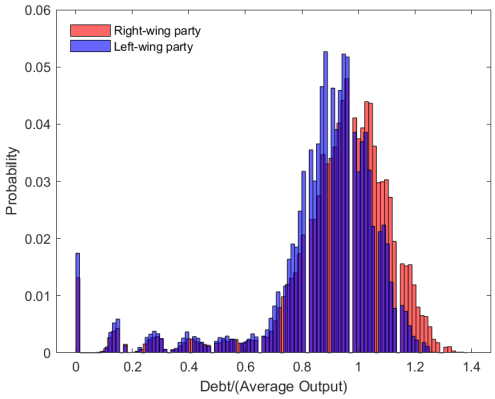
Furthermore, when end-of-period debt is high and the households revolt ($\mathcal{R} = 1$), right-wing parties face higher spreads. This is because forward-looking lenders anticipate that revolts increase the likelihood of political turnover, leading them to demand higher spreads

[22] 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.

as compensation for bearing this additional risk.[23]



(a) Right-wing gap.



(b) Debt to Average Output ratio

Figure 8: Spreads under stability($\mathcal{R}=0$), and revolts($\mathcal{R}=1$). 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.

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.

7 Unpacking the effect of revolts on sovereign risk

This section summarizes the key findings of the paper. We identify two opposing channels through which revolts impact sovereign risk: political defaults and revolts as an endogenous default cost. Both channels are quantitatively significant, but the latter is predominant in our framework. Additionally, we demonstrate that the combination of more favorable borrowing conditions and the threat of revolts incentivizes both parties, but particularly the right-wing party, to issue more debt. This outcome aligns with the "gradualism" strategy implemented by the Macri administration.

[23] A similar mechanism is present in reverse for the left-wing party in Appendix B. That is revolts lower borrowing costs for left-wing governments. In the appendix we also show that, as in the data, most revolts have a very small effect on the spreads outside of fiscal crises.

7.1 Comparison to alternative specifications

To evaluate the quantitative impact of revolts on sovereign risk, we examine various specifications of the baseline model. Table 6 provides a summary of the aggregate moments across six different model configurations.

The first two specifications are models without political turnover, representing either a permanent rule by the right-wing party or the left-wing party. These models reveal that the incumbent's ideology does not significantly alter the average levels of debt, spreads, and defaults in the absence of political turnover. This is due to the fact that both parties face identical exogenous default costs and discount factors.

Table 6: Moments comparison between models.

Model specification	Debt	Spread	Freq. default	Revolts	Share in power(Right)
Permanent left-wing	85.0	6.5	4.0	-	0.0
Permanent right-wing	86.7	6.3	3.9	-	100.0
Exogenous turnover	81.4	7.1	4.3	-	50.0
Revolts only in repayment	55.2	10.1	5.1	19.7	47.5
Revolts only in default	118.4	6.1	3.6	13.9	50.9
Baseline	89.6	7.3	4.4	36.6	47.9
Data	88.8	8.4	4.9	39.7	46.4

Note: We compare key moments of the data and the baseline model with the five 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.

We then examine a model incorporating only exogenous political turnover, where each party averages an eight-year term in office. Compared to the previous specifications, this model shows lower levels of debt, higher spreads, and more frequent defaults. This occurs because political turnover introduces what Hatchondo et al. (2009) refers to as "political defaults," which are defaults driven by shifts in the incumbent's ideology. Our analysis reveals that political defaults can occur even when both parties exhibit the same level of patience, a nuance not fully captured in the existing literature. We will further explore this mechanism and how revolts amplify its impact in the subsequent sections.

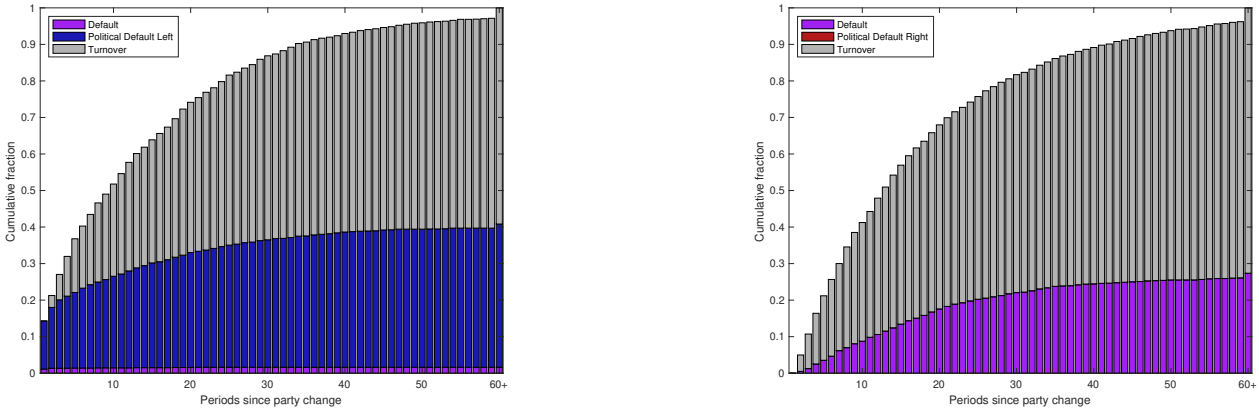
The final two specifications involve models where revolts are restricted to either repayment or default states. When revolts are allowed only during repayment periods, spreads increase, defaults become more frequent, and the economy maintains significantly lower levels of debt. In contrast, when revolts are allowed solely during default periods, higher levels of debt are sustained with lower default frequencies. In the first scenario, defaulting becomes more attractive as it can extend the incumbent's tenure. In the second scenario, revolts serve as an additional cost of default, as they present a new threat to the incumbent's tenure. This

threat enhances commitment, allowing the economy to sustain more debt. In our model, revolts are more frequent during defaults, effectively acting as an endogenous default cost. As a result, our baseline model, compared to one with only exogenous transitions, supports significantly higher levels of debt while only showing a modest increase in both spreads and default frequency.

7.2 Right-to-left-to-default transitions

Since right-wing governments can sustain higher debt levels than left-wing governments, transitions from right to left carry a significant default risk. To illustrate this, we analyze default dynamics right after political turnovers during periods of stable standing within the ergodic distribution. We track each party's tenure from the start until either default occurs or power is transferred to the opposition. Most tenures are completed within 60 periods.

Figure 9 shows the cumulative number of tenures ending in default over time, separated by left-wing (panel (a)) and right-wing (panel (b)) governments. To highlight the impact of the incumbent's ideology, we apply the same state and taste shock to the default rule of the opposing party for each observed default decision. States where both parties would have chosen to default are shaded in purple, while those where only one party would have chosen to default are identified as political defaults.



(a) Left takeover.

(b) Right takeover.

Figure 9: Dynamics of default following a switch in the ideology of the ruling party.

Note: Plotted 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 1783(1586) takeovers by the left(right). Areas in purple correspond to states in which both types of incumbents choose to default. Areas in blue (red) are states where only left-wing (right-wing) incumbents default.

The exercise reveals a significant disparity: over 15% of transitions from right to left during

periods of good standing result in immediate defaults, while less than 1% of left-to-right transitions begin with defaults.[24] Additionally, nearly all defaults observed during left-wing administrations are political defaults, whereas none occur under right-wing administrations. This is consistent with the default sets shown in Figure 7 and the immediate default following a Right-to-Left transition reflects the situation in Argentina in 2020.

While this effect is present in a model with only exogenous political transitions, revolts increase the number of transitions. In the model with only exogenous transitions, we observe an average of 1.58 right-to-left transitions per 1000 periods. In contrast, our baseline model shows 2.52 right-to-left transitions per 1000 periods.

The mechanism interacts with the two central components of our model: ideological differences in the efficiency-equity trade-off that influence default rules, and endogenous political transitions.[25]

It is also crucial to account for debt maturity when estimating the quantitative significance of this mechanism. This is because the propensity of left-wing parties to default increases with higher debt service. Therefore, assuming one-period debt, as in Scholl (2024) and Azzimonti et al. (2016), might overstate the impact of this channel.

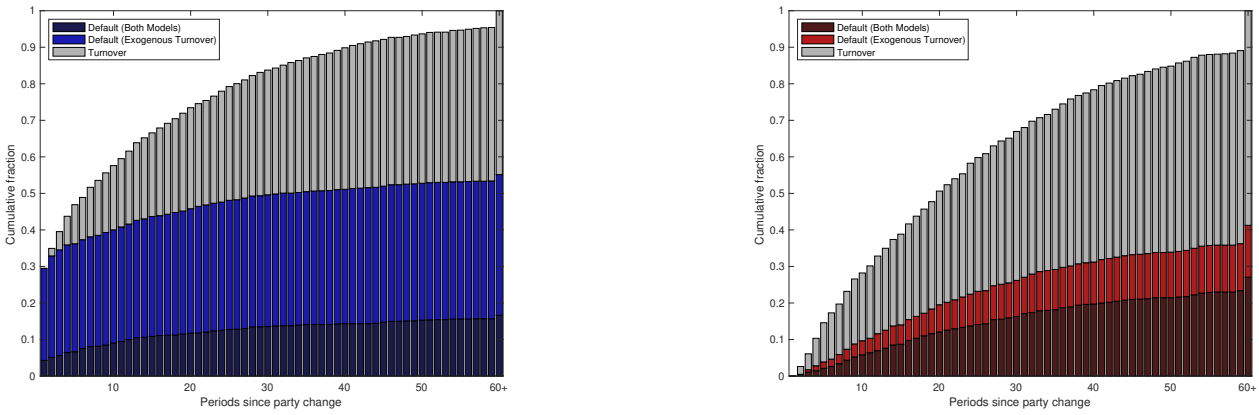
7.3 Revolts as an endogenous default cost

In our model, revolts are more than twice as likely during defaults than during repayment periods. This characteristic effectively turns revolts into an endogenous default cost, which households can use to deter incumbents from defaulting. To evaluate the effectiveness of this mechanism, we compare the default dynamics predicted by our model with endogenous revolts to those predicted by a model with only exogenous turnover.

Figure 10 illustrates the cumulative number of defaults for each party assuming power at period zero, with separate panels for left-wing (a) and right-wing governments (b). These events are computed at the ergodic distribution for the model with only exogenous turnover. To emphasize the contrast with our baseline model, we also compute the hypothetical default decisions that the same party would have made in our model given the same state. We use dark colors to indicate defaults that would occur in both models and lighter colors to represent defaults that are prevented by the threat of revolts in our baseline model.

[24] When a left-wing government inherits a large debt burden the alternative to default is deleveraging via austerity. We explore the dynamics of austerity policies under a left-wing government in Appendix C.

[25] The literature indicates that similar mechanisms can emerge under different assumptions. For instance, variations in discount factors (as in Hatchondo et al. (2009)), exogenous reelection probabilities (as in Cotoc et al. (2021)), or debt restructuring (as in Cruces and Trebesch (2013)) can produce comparable effects.



(a) Left takeover.

(b) Right takeover.

Figure 10: Dynamics of default in the model with only exogenous transitions.

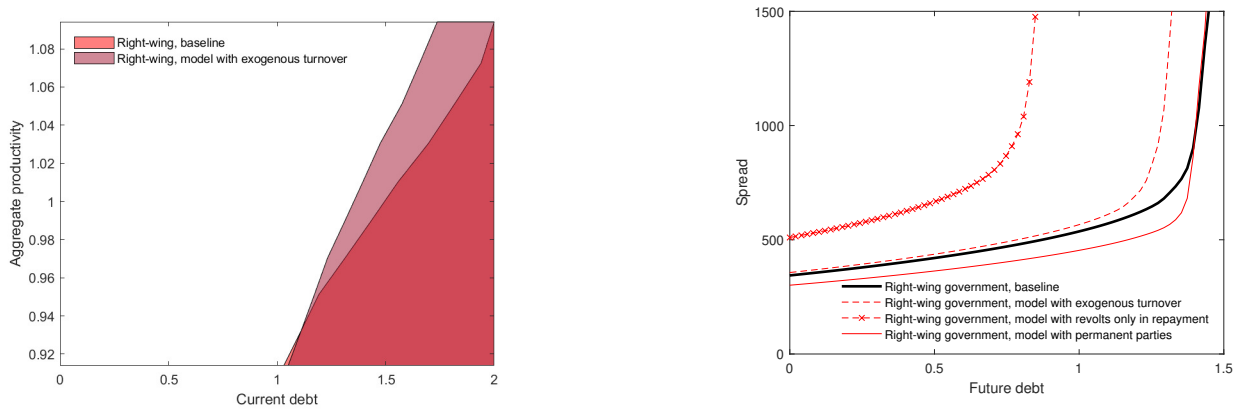
Note: Plotted are the cumulative fractions of left-wing (right-wing) governments that have defaulted across 60 periods from coming into power at the ergodic distribution of the model with only exogenous turnover. Each tenure is started by the left(right) coming into power in repayment. The cumulative fraction is computed by isolating events from a 100,000-period simulation. Dark-colored areas correspond to states in which default would have also been observed in the baseline model, light areas are defaults that are only predicted in the model with only exogenous turnover.

This exercise reveals that the role of revolts as an endogenous default cost is more pronounced for left-wing governments compared to right-wing ones. Under a right-wing administration, most defaults would occur in both models. Conversely, the threat of revolts prevents more than two-thirds of defaults under a left-wing administration relative to the model with only exogenous turnovers.

This discrepancy arises from the asymmetric frequency of revolts during repayment versus default. In our baseline framework, left-wing parties encounter fewer protests when repaying but face significantly more protests when defaulting. This disparity enhances their incentive to repay, relative to a model where their reelection probabilities are not a function of their default decisions. Since the difference in revolt frequencies is less pronounced for right-wing parties, their capacity to deter defaults is correspondingly lower.

7.4 Right-wing deficits: A theory of Macri's "gradualism"

At the ergodic distribution of our baseline model, the endogenous default cost channel dominates the political default channel. Figure 11 illustrates this by showing the default sets and interest rate schedules faced by the right-wing party under various model specifications. The baseline model demonstrates, on average, a smaller default set and lower spreads compared to the model with only exogenous transitions. However, as indicated in Table



(a) Default sets for the 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.

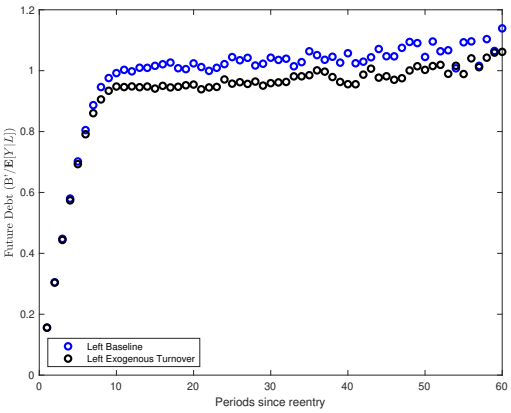
6, the average debt level in our baseline model is significantly higher, leading to a slight increase in spreads and default frequency. In essence, the government uses the more favorable borrowing conditions to issue substantially more debt.

Figure 12 depicts the evolution of debt at the ergodic distribution of our baseline model following reentry from default for both left-wing (panel (a)) and right-wing (panel (b)) governments. We also calculate the counterfactual debt levels obtained when using the borrowing rules of the model with no revolts for the same party and at the same states. The figure illustrates that the disparity in debt levels is primarily due to increased debt issuance by right-wing governments.

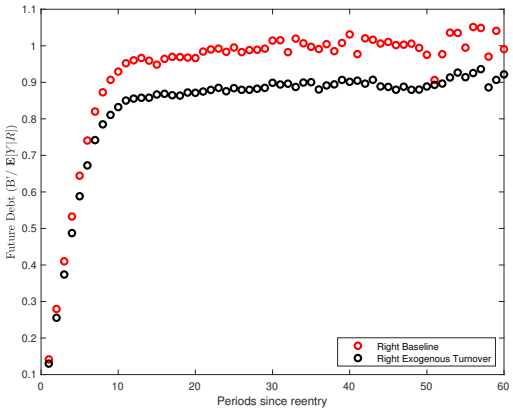
In our baseline model, right-wing governments encounter significantly more revolts during repayment periods. Consequently, they issue more debt to make their fiscal choices more agreeable to the opposition. This behavior is consistent with Argentina's experience during the initial years of the Macri administration ("Gradualism"), where the fear of protests led to fiscal compromises that increased the budget deficit while spreads remained low.

This figure is also consistent with the political economy theory of "Starving the Beast."[26]

[26]See for instance Bartlett (2007) for a political economy explanation and Martin (2019) for an application into economics.



(a) Debt under a Left wing party.



(b) Debt under a Rght wing party.

Figure 12: Debt levels at the ergodic distribution after reentry.

Note: Plotted in panel (a) (panel (b)) are the average levels of debt for left-wing (right-wing) governments that reenter with zero debt at period zero and remain in power and in repayment up to 60 periods later at the ergodic distribution of our baseline model. The averages are computed by isolating events from a 100,000-period simulation. In both panels, we also compute the hypothetical borrowing decisions that the same party would have made in the model with only exogenous transitions given the same state.

The theory predicts, that right-wing governments would push for tax cuts and larger budget deficits while in office as a way to induce future left-wing governments to reduce spending when a turnover takes place. Crucially this theory does not contemplate sovereign defaults. Nevertheless, in our setup, once a left-wing party takes over we will observe either a sovereign default or a period of austerity until the debt is brought to a sustainable level for that ideology (see Appendix C), it is therefore possible that a different version of this theory holds in our model.

8 Conclusions

We develop a quantitative model of sovereign debt, featuring parties with varying preferences for redistribution and political protests against the government. Calibrated to the economic and political context of Argentina, our model aligns closely with the conditions observed during the Macri administration (2015-2019), a period marked by significant unrest. In our framework, revolts impose economic costs but increase the likelihood of political turnover. Governments strategically adjust fiscal policies to address these protests, while households strategically decide when to protest.

Our model effectively captures the positive correlation between political crises and sovereign risk, with increases in political risk aligning with higher debt spreads. We find that

protests are more frequent during defaults, left-wing parties are more prone to default, and right-wing governments face more protests while sustaining higher levels of debt.

Protests influence sovereign risk through two main channels. First, they can heighten default risk by making it more likely for a right-wing government to transfer a substantial debt burden to a left-wing successor, who might prefer immediate default over prolonged deleveraging. Second, revolts can mitigate default risk if they are more prevalent during default states than during repayment states. They act as a deterrent against default for incumbents concerned with retaining power. This deterrent effect is feature of our model, leading to more favorable borrowing conditions for all governments.

In equilibrium, the combination of more favorable borrowing conditions and the constant threat of revolts drives right-wing governments toward fiscal profligacy. Our model thus provides a rationale for both the substantial deficits accumulated during the "gradualism" period of the Macri administration as well as the subsequent default that occurred immediately after the return of a left-wing government.

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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[27].

We complement this cross-country data with detailed protest and strike news data for Argentina from 1995 to 2020. We follow David et al. (2022) and use a narrative approach to construct a dataset protests or strikes which are associated with economic policy. We depart from them in the construction of fiscal events, due to limited data coverage for the entire time span. Instead, we collect news reports of civil unrest and determine from the articles' context the nature of grievances. Specifically, we use a set of keywords in the *Dow Jones- Factiva* database to collect news articles about Argentina during the entire time period of 1995 to 2020, spanning multiple presidencies of both political leanings. In order to capture fiscal events and protests, we use the following keywords: "protest","strike", and "demonstration". 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 [28]. Finally, we estimate from the context of the article the approximate participation for each event, whenever it is possible. All general strikes are grouped into the biggest participation category. Our goal was to collect protests and strikes that were organized in opposition to economic policies by the federal government. 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/CMAN. 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[29].

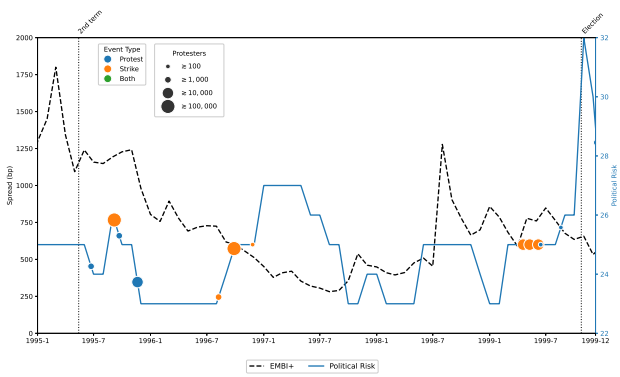
[27] Our measure is simply, one hundred minus the country risk index from the original the data source.

[28] The database compiles articles from over 70 news sources for Argentina in English and Spanish. Among them are CE Noticias Financieras, Buenos Aires Herald, and the BBC.

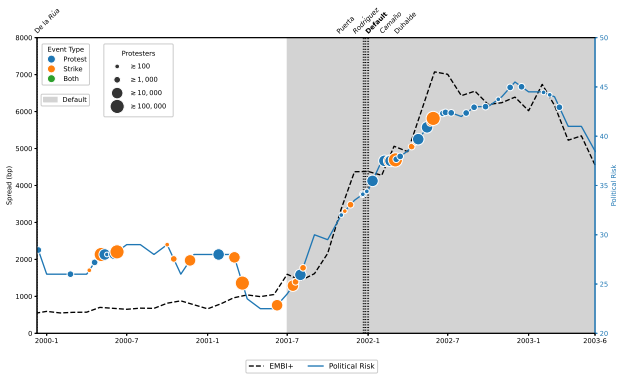
[29] As a robustness check we also run our empirical cross-country regressions on the limited set of countries for which we have EMBI+ spread data and find similar results.

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 currency and U.S. dollars are from the World Bank's Global Economic Monitor, Haver/National Account sources, 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. Finally, the credit ratings used to select countries for the regression and event analysis, are from Standard and Poor's country ratings for foreign exchange debt extracted in July 2024. We use data on hourly wages from the SEDLAC (2023) dataset, extracted in April 2023.

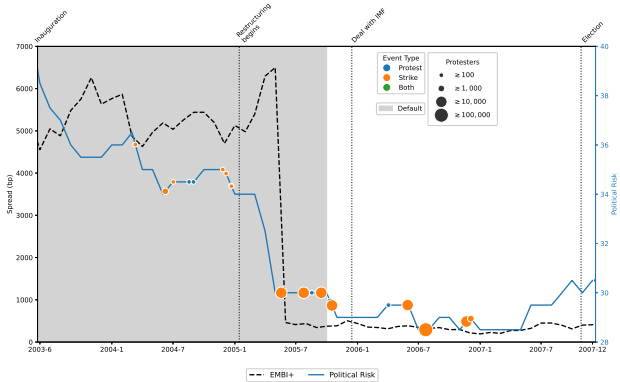
B Revolts and Spreads: Data and model



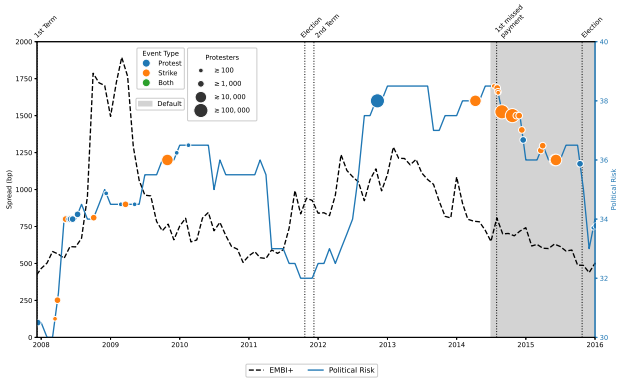
(a) 1995-1999.



(b) 2000-2003.



(c) 2003-2007.



(d) 2008-2015.

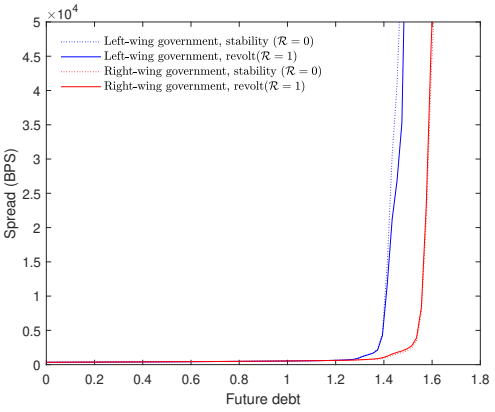
Figure 13: Spreads, political risk, and daily protests

We extend the daily analysis conducted for the Macri administration, shown in Figure 4, to the administrations that governed Argentina between 1995 and 2015. The results, plotted in Figure 13, reveal that the 2001 default also experienced similar frequent episodes of social unrest, government turnovers, and rapid increases in spreads. However, it is important to note that outside of these default crisis periods, most protests seem to only have a small impact on spreads.

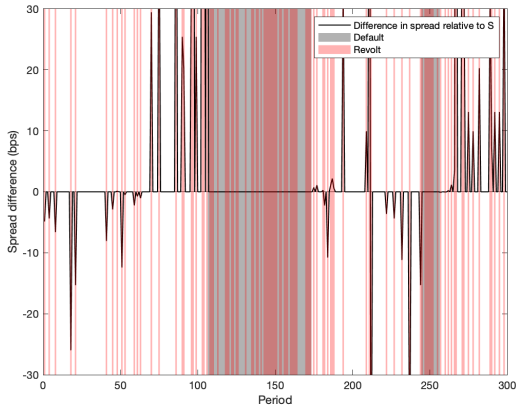
Note: Left vertical axis measures the interest rate spread using the EMBI+ in basis points. The right vertical axis corresponds to one hundred minus country risk from the ICRG database. This is an index of political risk with high values representing higher levels of political instability. Orange and 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 the model, protests influence the reelection probability of the incumbent. Consequently, they can theoretically induce a positive spread when a right-wing government is in office, as illustrated in Figure 8in the main body of the paper. Conversely, protests can lead to a negative spread when a left-wing government is in office, as depicted in panel (a) of Figure 14, where the y-axis is chosen to highlight this gap.

Although a significant gap can appear for certain debt values, the spreads paid under stability and revolt also coincide for substantial portions of the debt support. In panel (b) of Figure 14, we plot the difference in spreads between stability and revolt over 300 periods of the ergodic distribution. The results align with the data, showing that most revolts affect the spread by less than 30 basis points, with a few rare instances having a significant impact. At the ergodic distribution, revolts increase spreads by 8.6 basis points on average, with a standard deviation of 29.8 basis points.



(a) Left-wing gap in spreads.



(b) Revolts and spreads at the ergodic.

Figure 14: Effect of revolts on spreads in the baseline model.

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. This figure is identical to Figure 8 with the exception of the y-axis.
Panel (b) plots a stylized simulation that is meant to be an example of the median effect of revolts on spreads. The simulation starts in power and lasts for 300 periods. The initial debt level is fixed to $B = 1.23$, which corresponds to the median level of debt for the right-wing party in the ergodic distribution. The initial productivity level is fixed to $A = 0.99$, which is in the middle of the productivity grid.

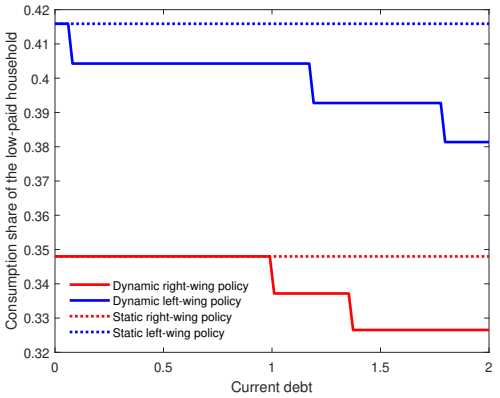
C Austerity policies

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.

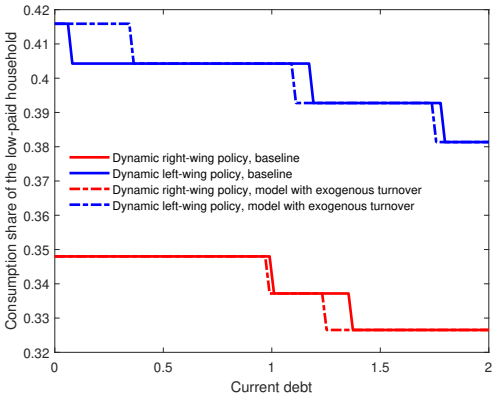
In Figure 15 we plot three different tax policies for each party as a function of current debt in terms of the consumption share of the low-paid household. The static policy serves as a benchmark, as it represents the preferred level of inequality for each party in an unconstrained world. We juxtapose 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.

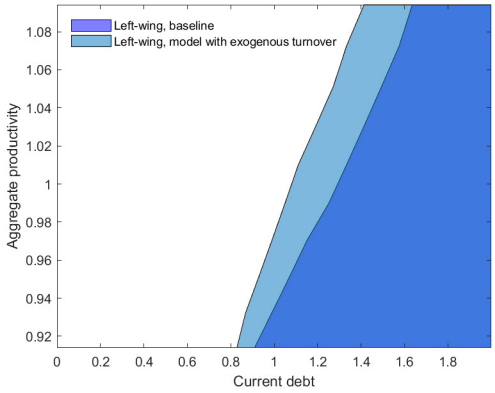


(b) Fiscal choices baseline model vs no-revolts.

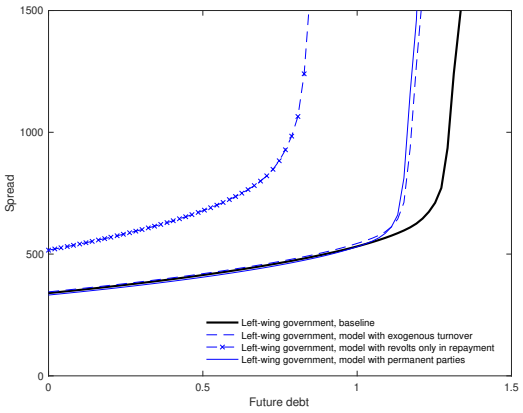
Figure 15: Fiscal choices in the baseline, no-revolts, and static models.

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.

D Additional figures



(a) Default sets for left-wing party.



(b) Left-wing price schedule.

Figure 16: 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 left-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. We fix productivity at A=1.01, and we fix initial debt to the same level.

E Sensitivity analysis of the empirical motivation

We show that the cross-country correlation that links political risk and spreads also holds when we separate countries by the political ideology of the incumbent.

Table 7: 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	13.94***	15.92***	34.73**	41.01*	22.58**
	(1.581)	(1.765)	(11.36)	(14.35)	(5.165)
External Debt-to-GDP		10.05***		-3.091	6.718*
		(1.048)		(7.808)	(2.926)
CA-to-GDP		2.662		-7.398	2.416
		(1.652)		(4.660)	(3.191)
Reserves-to-GDP					-1.869
					(6.305)
Real GDP growth					-0.0463
					(3.658)
Primary Balance-to-GDP					1.713
					(3.500)
Quarterly FE	No	No	Yes	Yes	Yes
Country FE	No	No	Yes	Yes	Yes
Obs	540	522	540	522	205

Note: We drop the top 2% of CDS Spread data before all empirical work. Additionally, we use Standard and Poors credit rating data to drop all nations rated A- or higher. These regressions were run on the same data as in Table 9, 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 8: 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	6.553***	11.95***	22.05**	17.06**	17.58
	(1.308)	(1.381)	(7.393)	(5.306)	(10.21)
External Debt-to-GDP		4.412***		3.048	3.249
		(0.506)		(3.871)	(3.937)
CA-to-GDP		-0.648		2.104	2.603
		(1.036)		(1.405)	(1.833)
Reserves-to-GDP					-2.748
					(5.465)
Real GDP growth					-2.928
					(1.837)
Primary Balance-to-GDP					-4.408
					(2.251)
Quarterly FE	No	No	Yes	Yes	Yes
Country FE	No	No	Yes	Yes	Yes
Obs	440	438	439	438	323

Note: We drop the top 2% of CDS Spread data before all empirical work. Additionally, we use Standard and Poors credit rating data to drop all nations rated A- or higher. These regressions were run on the same data as in Table 9, excluding values associated with non-right wing governments. Standard errors clustered at the country level in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

We show that the cross country exercise conducted in section 2 is robust to including all possible countries in the dataset (as opposed to only those whose sovereign credit rating was below A-). Table 9 shows the regression results for all governments, while Table 10 shows the results for left-wing governments, and Table 11 shows the results for righ-wing governments.

Table 9: CDS spreads and political risk (all countries)

	(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. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 10: CDS spreads and political risk, in countries ruled by left wing parties (all countries)

	(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 9, 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 11: CDS spreads and political risk, in countries ruled by right wing parties (all countries)

	(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 9, excluding values associated with non-right wing governments. Standard errors clustered at the country level in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$