Tax Revolts and Sovereign Defaults*

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Abstract

Civil unrest and fiscal crises are usually observed simultaneously and causality can flow in both directions. We analyze the interaction between tax revolts and sovereign risk in a quantitative structural model. In the model, the government can be controlled by political parties with different preferences for redistribution. In response to the fiscal choices made by the sovereign, households can decide to revolt. Revolts are economically costly but increase the probability of political turnover. As in the data, the model generates political crises that coincide with fiscal crises. We find that left wing parties are more likely to default, and that revolts are more common against right wing governments. Both left and right wing government issue the same amount of debt, however right wing government can sustain higher levels of debt. Political turnover can increase default risk specially during Right to Left transitions. However, since revolts are also more frequent during defaults, revolts can also be powerful endogenous default costs. Models with political turnover and revolts can therefore have lower spreads and sustain higher levels of debt overall.

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 elected public officials that can have different views than their constituents. In practice, tax reforms and fiscal consolidations are usually immediately followed by civil unrest. The sovereign default literature has explored different aspects of political risk since the seminal work of Hatchondo and Martinez (2010). Nevertheless, there has been no structural evaluation of how the risk of civil unrest both in repayment and default can affect constrain the decisions of the ruling party. This paper seeks to bridge this gap.

Protests differ from other forms of political backlash along important dimensions that are relevant for sovereign risk. Contrary to elections, protests allow for social groups of opposing ideologies to express their dissatisfaction immediately and have been shown to correlate with subsequent declines in reelection rates for the incumbent (Madestam et al. (2013)). Additionally, protests disrupt economic activity both for the protesters and the rest of the economy. This creates the potential for important strategic considerations for all agents involved. On the one hand, protesters must be willing to bear the costs for their actions, and governments must conduct fiscal policy considering how deviations from their preferred policies can appease their opponents. Finally, since protests make it more unlikely that incumbent will remain in office much longer, protests change the expectations of lenders about the preferences of future governments and can therefore directly affect the price of public debt.

We illustrate the importance of these interactions, by focusing on Argentina around the presidency of Mauricio Macri from December 2015 to December 2019, but also showing that the relation between political risk and sovereign debt holds in a cross section of countries. We show that episodes of increased civil unrest, "political crisis", are associated with increases in sovereign spreads. We decompose this effects by party ideology of the incumbent.

We construct a structural model in the tradition of Eaton and Gersovitz (1981) and Arellano (2008) that can generate the patterns we observe in the data. We augment the standard framework with a production economy with heterogeneous agents as in Heathcote et al. (2017), and political parties with different preferences for redistribution. Moreover, we allow households in the model to respond to the government fiscal choices by strategically choosing to stage a revolt. Revolts lower productivity but decrease the probability that the incumbent party will win reelection.

Relative to the existing literature, our model presents a novel mechanism liking political risk and sovereign spreads. Even if political crises and debt crisis happen in tandem, revolts can increase commitment and lower spreads overall. By increasing the likelihood of political turnover during a default, protest can act as a deterrent for default and allow the economy to sustain higher levels of debt.

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

We view our contribution as being, first and foremost, to the literature on the political economy of sovereign default. Following the seminal contribution of Hatchondo and Martinez (2010) that highlighted the impact of politics on sovereign debt, many specific channels have been examined, such as sovereign reputation (Amador and Phelan (2021),Fourakis (2023), Morelli and Moretti (2023)) as well as political leanings and turnover (Scholl (2017), Chatterjee and Eyigungor (2019), Cotoc et al. (2021). However, these papers do not emphasize the distributional consequences of fiscal policy–a stance on which is often the distinguishing feature of political parties in developing countries. This aspect is analyzed in recent work by Andreasen et al. (2019), Azzimonti and Mitra (2023), and Scholl (2024) (extended in Scholl and Hermann (2024)), who explicitly model the political constraints to implementation of otherwise feasible fiscal policy.

We share a few key elements with these models, namely the fiscal policy tools and non-linear taxation. However, there are also crucial differences. In Andreasen et al. (2019) and Azzimonti and Mitra (2023) there is no heterogeneity in the labor supply response to taxation, whereas in Scholl (2024), just as in our model, agents are indexed by their productivity. This distinction makes the government's policy in the first two models equivalent to splitting a fixed endowment, while in our paper there is efficiency-equity trade-off that affects the size of aggregate output and thus the ability to repay. There are two key differences with Scholl (2024), the maturity structure of the debt and how political turnover affects sovereign risk. As Andreasen et al. (2019) and Azzimonti and Mitra (2023), Scholl (2024) assumes one period debt. This amplifies the risk of political turn over when going from right to left since the entire stock of debt is due[1]. At the same time, the different borrowing choices of the opposition party do not affect the spreads of incumbent since there is no dilution. Finally, our framework endogenizes the risk of political turnover by making it a strategic decision of the households. This is proves to be important for our new mechanism, since in equilibrium the household end up using their protest option more often in defaults than in repayment and this lowers spreads overall.

In addition, our paper draws on a well-established literature on the economic impact of

[1]As usual this also implies that the model will not have much debt in equilibrium.

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

2 Empirical motivation

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

2.1 Argentina 2015-2020

This subsection describes the political and economic situation of Argentina between the second half of 2015 and the first half of 2020. We present this as a concrete example of the issues this paper aims to tackle. First, as in the quantitative model, Argentina's experience has political parties with different views of redistribution, protests against government policies, strategic consideration in anticipation of protests, political turnover, large fluctuations in spreads, and defaults. Second, as Figures 1 and 2 show, there is a strong positive correlation between interest rate spreads and perceived political risk throughout this period. These Figures show the evolution of the EMBI+ spreads in Argentina, the ICRG index of political risk, and our measure of the number and size of protests against fiscal policies from Dow Jones Factiva. We provide further evidence of the prevalence of this relationship in a cross-country analysis in the next subsection.

After spending 13 years under a left wing party, Argentina elected a president from a right wing party in October 2015. The previous administration had missed debt payments in 2014 and was still involved in active litigation with its creditors. Macri won with platform centered on a return to orthodox monetary policy, and crucially for our paper, fiscal consolidation.

In his first year in office, the government proposed an austerity plan centered on cutting

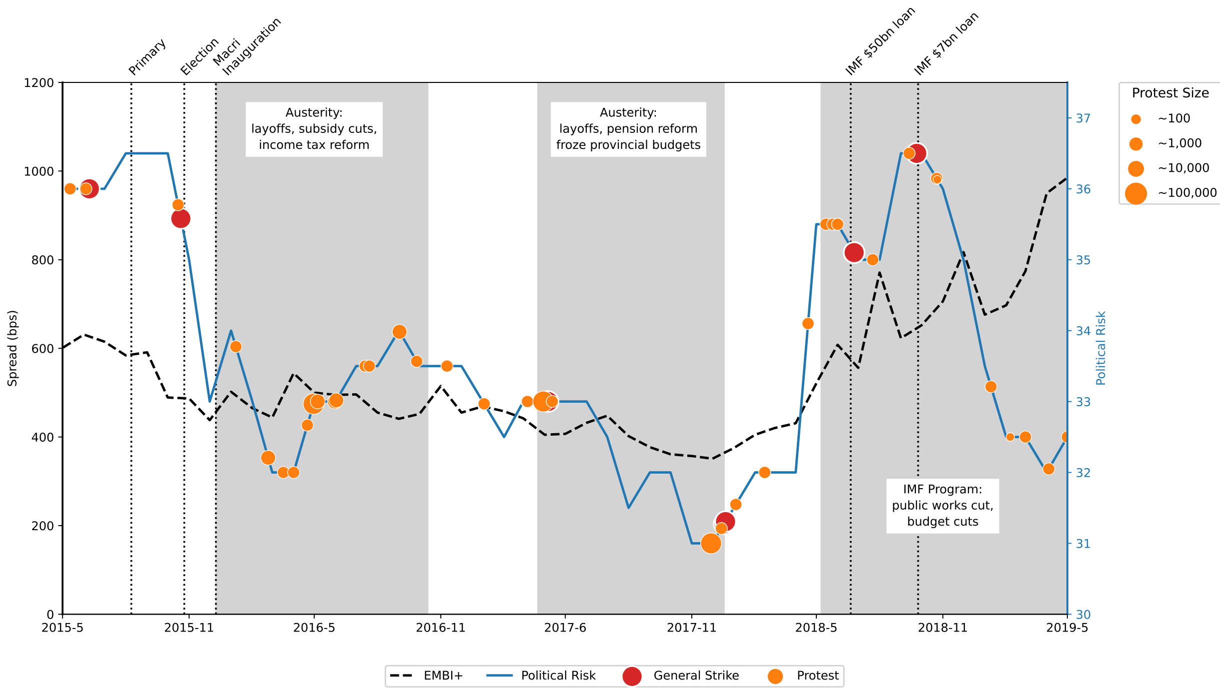


Figure 1: Interest rate spreads, political risk, and protests, 2015-2019

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

subsidies and laying off of public employees. At the same time, the government pushed for an income tax reform aimed at lowering the tax burden of lower income households. In April 2016, the administration negotiated a deal with bond-holders allowing Argentina to return to international credit markets. Protests against austerity measures increased during the year, and the supreme court ruled against some of the government's proposed cuts to subsidies. The year 2016 ended with a contraction in output and a compromise deal between the government and the opposition on a second income tax cut for low income households. In 2017, the austerity policies took the form of pension reform and freezes to regional budgets. Argentina's GDP grew in 2017, but net borrowing kept pace at around 6.5% of GDP. This would be the last year with positive growth until 2021. As Figure 1 shows, however, both the interest rate spreads and the ICRG index were trending down until the end of 2017. In the first half of 2018, general strikes and protests against austerity became more frequent, while unemployment and interest rate spreads began to rise. In June 2018, the government negotiated a loan with International Monetary Fund (IMF). Protests against the return of an IMF program and the imposition of austerity significantly increased in the second half of the year, with the ICRG index peaking in October 2018 and spreads increasing from a low of 400 basis points in mid 2017 to 1000 basis points by May 2019.

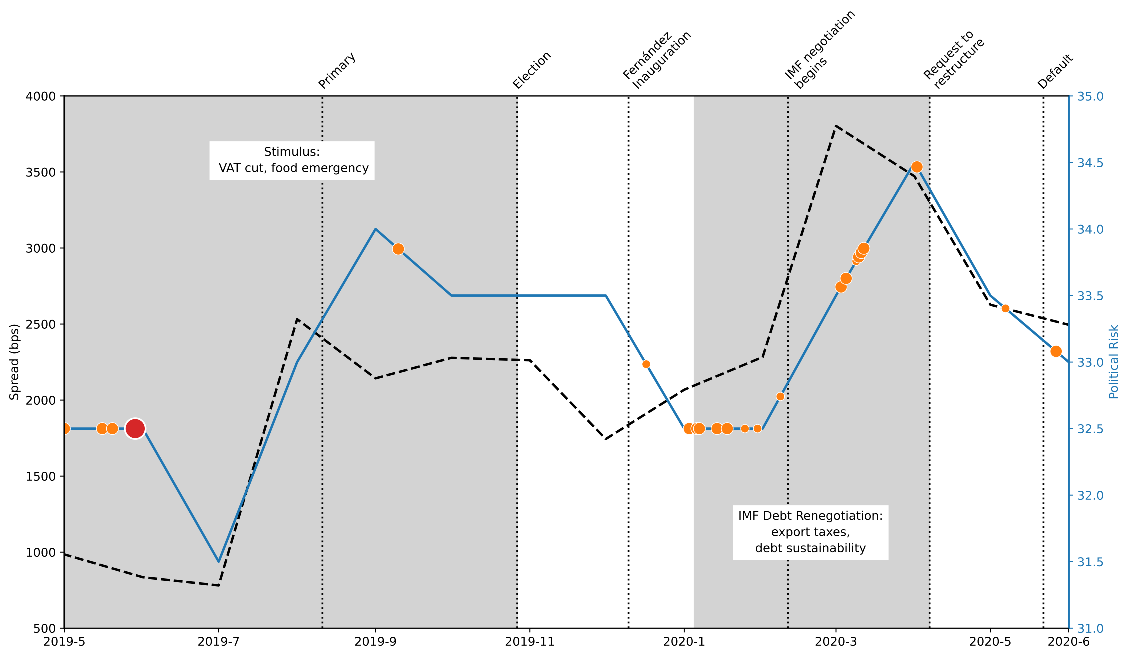


Figure 2: Interest rate spreads, political risk, and protests, 2019-2020

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

In response to the crisis, the government proposed fiscal stimulus policies in early 2019, including a value added tax cut and a food emergency program. Nevertheless, as the August 2019 primaries approached and spreads increased to 2500 basis points, it became clear that Macri's reelection chances were slim. Indeed, the October elections confirmed a return of the left-wing party, who took over in December 2019. In January 2020, the new government announced the end to austerity, the preparation of a debt sustainability plan, and the reversal of export tax cuts. This final measure lead to a series of protests from farmers that can be seen in Figure 2 alongside the upward march of spreads and political risk. In February, the IMF declared that Argentina's debt was unsustainable. A formal restructuring request was sent in April, and Argentina missed debt payments in May 2020. Argentina's experience is characterized by co-movement between spreads and political risk, along with spreads and default decisions that are significantly differ across parties, and left wing government starting its tenure with a default. All of these elements will be present in our model.

2.2 Cross-country evidence

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

Table 1: CDS spreads and political risk

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

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

The positive relation between political risk and spreads persists even when controlled for macroeconomic fundamentals (i.e., Current Account Balance, Reserves, Real GDP growth, and Primary Balance) and time and country fixed effects in a panel regression. In Appendix B, we show that this relationship is also present for countries regardless of the party in power, albeit with a stronger effect when the incumbent is a member of a right wing party.

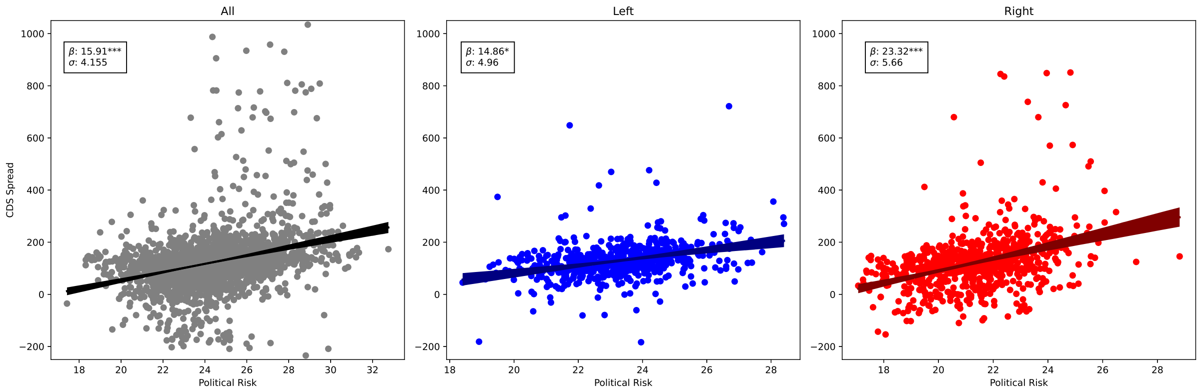


Figure 3: Fitted values CDS on spreads controloing for fundamentals

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

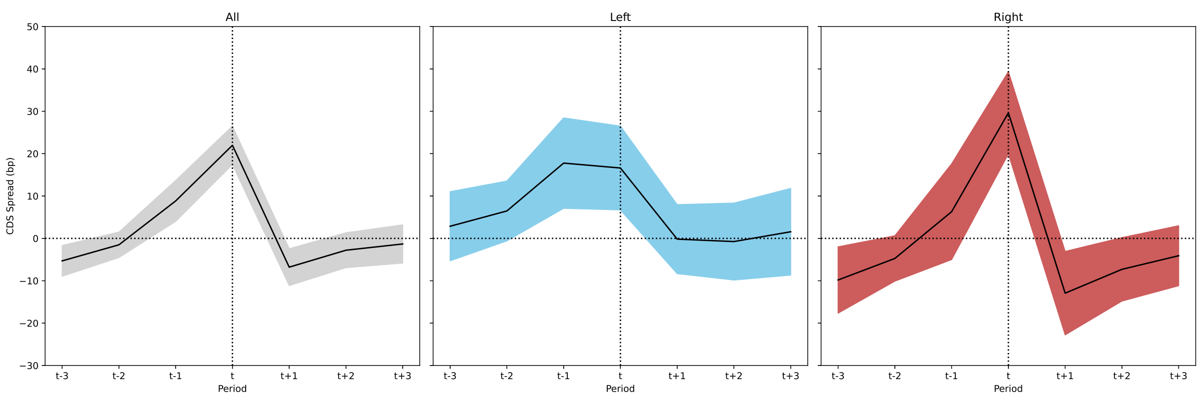


Figure 4: Change in spreads during a political crisis

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

Figure 3 shows the fitted values of the regression with all the aforementioned macroeconomic controls and the fixed effects. The quantitative model we propose will be able to replicate this relationship.

In Figure 4, we also explore this relationship in the data by focusing on "political crisis" events. We select events in which the index of political risk increases by more than one standard deviation above its long-run, country-specific mean[2]. We then look at the change in CDS spreads around those events. These exercises can also be done isolating events by the party affiliation of the incumbent. Once again, we find that political crises are associated with increases in the interest rate spread of around 20 basis points on average, with larger increases when the incumbent is a right-wing party. Another aim of the quantitative model is to generate similar patterns.

3 Model

Time is discrete and infinite. There is a small open economy populated by two types of consumers and two political parties that can run the government (Left and Right). Regardless of the party in office, the government decides tax policy (λ, τ) and issues long-duration, non-state-contingent bonds (B) that are purchased by a mass of competitive foreign lenders. The government has no commitment to repaying the debt. The model is written in recursive form and all *primed* variables (e.g B') represent the next-period values. There is an aggregate political state $(\mathscr{P})$ that is the result of strategic decisions made by both the government and the households and will only be determined at the end of the current period. It can take four values :

- **Stability** $(\mathscr{S})$: The government is in good standing with its creditors, the government has decided to repay the debt this period, and the households have accepted the government's fiscal package.
- **Revolt** $(\mathscr{R})$: The government is in good standing with its creditors, the government has decided to repay the debt this period, and the households have decided to revolt against the government.
- **Default and Stability** $(\mathscr{D}\mathscr{S})$: The government is currently excluded from financial markets, no debt payments are being made to lenders, and the households have accepted the government's fiscal package.

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

- **Default and Revolt** $(\mathscr{DR})$: The government is currently excluded from financial markets, no debt payments are being made to lenders, and the households have decided to revolt against the government.

Within the period, we assume that the government makes all fiscal decisions first, then the households decide if the want to accept or revolt against the government. This sequence determines the political state. Production, borrowing, and consumption decisions then take place at that political state. All agents are strategic and forward looking, and we focus on the Markov perfect equilibrium.

3.1 Households

Households are hand-to-mouth and can be of two types, low-paid or rich ($i \in \{L, R\}$), with the only difference between types being their labor productivity (θ_i) and their taste for leisure (ψ_i). There is measure one of each type of household. Households of type i derive utility from consumption and leisure according to the following per-period utility:

$$u^i(C, N) = \log(C) - e^{\frac{\psi_i}{\psi}} \psi \times N^{\frac{1}{\psi}},$$

where the parameter ψ pins down the Frisch elasticity of labor supply.[3] Households receive wages w_i per each unit of labor they provide to a representative firm, face a tax level λ, and a tax progressivity of the system τ chosen by the current government. We normalize the price of the final good to one. The post-tax budget constraint of the households is therefore:

$$C_i = \lambda \times (w_i N_i)^{1-\tau},$$

We assume that all households make their optimal labor-leisure decision statically by equating the marginal product of labor to the marginal utility of consumption. The household takes as given all the fiscal packages (taxes, borrowing, and default) as well as the other aggregate states of the economy (party in power and exogenous productivity shocks). We aggregate all the aggregate variables from the point of view of the household into variable S^{HH}. Moreover, the households also take wages as given and, in equilibrium, wages depend on S^{HH} and the political state of the economy $\mathscr{P}$. We provide more details about all the components of the aggregate state when we discuss fiscal policy in subsection 3.3. The static

[3] The specific functional form follows Heathcote et al. (2017). The log consumption assumption is made for simplicity to avoid income effects.

consumption/leisure problem of households of type i is:

$$\mathcal{U}^i(S^{HH}, \mathscr{P}) = \max_{C,N} \log(C) - e^{\frac{\psi_i}{\psi}} \psi \times N^{\frac{1}{\psi}},$$

$$\text{subject to}$$

$$C = \lambda \times \left[w_i(S^{HH}, \mathscr{P})N\right]^{1-\tau}.$$

This implies that in equilibrium the labor supply of households of type i is pinned down by government policies and is equal to:

$$\mathcal{N}_i(S^{HH}) = (1-\tau)^{\psi} e^{\psi_i} \tag{1}$$

This expression shows that tax progressivity will be inversely correlated with labor supply. The households also make revolt decisions that determine the political state of the economy at the end of the period. However, since the final state also depends on government policies, we present that in subsection 3.3.

3.2 Representative firm

The representative firm hires both types of households to produce the final good and is subject to an exogenous total factor productivity shock A. We assume a constant returns to scale production function that depends on the political state. Using a labor mix (N_L, N_R) when the political state of the economy is $\mathscr{P}$, the representative firm produces Y:

$$Y(N_L, N_R, \mathscr{P}) = A^{\mathscr{P}} \times [(\theta_L N_L)^{\eta} + (\theta_R N_R)^{\eta}]^{\frac{1}{\eta}}, \tag{2}$$

where $\eta < 1$ determines the elasticity of substitution between the two types of labor and $A^{\mathscr{P}}$ captures the productivity losses incurred from the political state of the economy. We borrow the CES structure from the skill-biased technical change literature in the tradition of Krusell et al. (2000) and Katz and Murphy (1992). For all values of the exogenous shock A, we make the following assumption:

$$A = A^{\mathscr{S}} \geq A^{\mathscr{R}} \geq A^{\mathscr{D}\mathscr{S}} \geq A^{\mathscr{D}\mathscr{R}}$$

We assume the firm maximizes its static profits. In equilibrium, the representative firm makes zero profits and labor is supply-determined, which yields the following expression for the wages w_i of households of type i:

$$w_i(S^{HH}, \mathscr{P}) = (A^{\mathscr{P}})^\eta \theta_i \Big[\frac{Y\big(\mathcal{N}_L(S^{HH}), \mathcal{N}_R(S^{HH}), \mathscr{P}\big)}{\theta_i \mathcal{N}_i(S^{HH})}\Big]^{1-\eta} \tag{3}$$

This expression shows that both Revolts and Defaults will lead to income losses to the households, and that the government can perform *predistribution*. That is, a regressive government policy (low τ) can, in theory, increase wages and output simultaneously, though the benefits of this policy will be higher for the rich households since $\theta_R > \theta_L$.

3.3 Political parties and government

Party ideology We assume that the economy is populated by two political parties, left and right ($j \in \{L, R\}$). Although both political parties are benevolent and strategic, the parties differ in terms of political ideology. Specifically, the parties differ in terms of the welfare weights they assign to each type of household (ω_i^j). We assume that for $j \in \{L, R\}$:

$$\omega_R^R = 1 - \omega_L^R > \omega_L^R,$$
$$\omega_L^L = 1 - \omega_R^L > \omega_R^L.$$

That is, the right wing party prefers the rich over the low-paid, while the opposite is true for the left wing party. We also normalize both welfare weights to add up to one. It is important to highlight that, in contrast to other papers in the literature, our two parties only differ in their preferences for redistribution. In particular, we assume that they have the same discount factor (β) and that the exogenous default costs are independent of the party in power.

Political turnover The political parties can be either the incumbent (in-office) or the opposition (out-of-office). As in Morelli and Moretti (2023), the incumbent has an exogenous probability of staying in power next period $\pi^{\mathscr{P}}$. However, we make this probability a function of the current political state. In particular, we assume:

$$\pi^{\mathscr{S}} = \pi^{\mathscr{D}} > \pi^{\mathscr{R}} = \pi^{\mathscr{DR}}.$$

In other words, the probability of reelection is the same for both parties, is unchanged by the default status, and is strictly lower if there is a revolt.

Aggregate states and fiscal policy We denote by A the current exogenous state, by $\kappa \in \{L, R\}$ the ideology of the incumbent party, by B the current level of debt, and by $s \in \{0, 1\}$ a binary that determines if the country is currently in good standing ($s = 1$) or bad standing ($s = 0$) with its creditors . The vector

$$S^G = (s, A, \kappa, B)$$

summarizes the aggregate public state of the economy at the beginning of the current period. Given S^G, the political party in power chooses the fiscal policy for the current period, while the opposition party makes no decision but still receives utility flows according to its preferences. Fiscal policy in our model consists of a default choice ($D \in \{0, 1\}$), a choice of end-period debt B', a choice progressivity τ of the tax system, and a choice of current tax level λ. Once the government has conducted fiscal policy, the aggregate state of the economy is:

$$S^{HH} = (S^G, D, B', \tau, \lambda)$$

Government's budget constraint : When the government is in good standing and repays its debts ($D = 0$), it can issue new bonds in international credit markets. We follow Chatterjee and Eyigungor (2012) and Hatchondo and Martinez (2009), and assume that debt is a contract promising a stream of exponentially declining coupon payments. Specifically, a unit of the bond issued at time t, promises to pay $(1 - \delta)^{t+l-1}(\delta + z)$ of the consumption good in period $t + l$. The period budget constraint is then:

$$\begin{aligned} 0 = &\Big[Q^{\kappa}_{\mathscr{P}}(A, B')\{B' - (1 - \delta)B\} - (\delta + z)B\Big] + \iota(B', B) \\ &\sum_{i=L,R} [w^i(S^{HH}, \mathscr{P})\mathcal{N}^i(S^{HH}) - \lambda(w^i(S^{HH}, \mathscr{P})\mathcal{N}^i(S^{HH}))^{1-\tau}]. \end{aligned} \tag{4}$$

The first term of this equation is standard in the sovereign default literature and corresponds to the debt balance. Note that, in repayment, the price of government debt ($Q^{\kappa}_{\mathscr{P}}(.)$) is a function of the borrowing choices and the exogenous states, but also of the party in power and the end-of-period political state ($\mathscr{P}$). This term will be explored in more detail in the lenders problem in subsection 3.4. The second term is a convex portfolio adjustment cost that penalizes the government for large changes in debt stock. This term is added to avoid the well-known issue of extreme dilution immediately before a default. At the calibrated values less than $1e - 4$ of output is spent on it. The third term is the tax receipt. It arises from the tax structure we borrow from Heathcote et al. (2017).

If the government defaults ($D = 1$), we assume that the country is now in bad standing

($s = 0$), no payments are made to the creditors, and the economy is excluded from financial markets ($B' = 0$). The government's fiscal package can only choose taxes (τ, λ). If the economy is in bad standing, the government must balance the budget :

$$0 = \sum_{i=L,R} [w^i(S^{HH}, \mathscr{P})\mathcal{N}^i(S^{HH}) - \lambda(w_i(S^{HH}, \mathscr{P})\mathcal{N}^i(S^{HH})^{1-\tau}]. \tag{5}$$

The next period, we assume that the economy reenters credit markets with zero debt with an exogenous probability γ. Note that, in either case, the choice of (B', τ) directly pins down a unique value for the tax level λ necessary to satisfy the budget constraints (4) or (5). In what follows, we assume that the potential debt choices B' and progressivity levels τ are constrained to bounded supports:

$$B' \in \mathcal{B} = \Big[B_1, B_2, ..B_{n^b}\Big], \tau \in \mathcal{T} = \Big[\tau_1, \tau_2, ..\tau_{n^\tau}\Big],$$

and that the tax level λ is adjusted to satisfy the government's budget constraint.

Taste shocks The final ingredient of the model are two privately observed taste shocks $(\varepsilon^G, \varepsilon^{HH})$ that affect the parties and the households each period. We follow Dvorkin et al. (2021) and draw the taste shocks from a Generalized Type One Extreme Value distribution with scale parameter σ^{ϵ^G} and correlation ρ^{ϵ^G} for the government, and scale parameter $\sigma^{\epsilon^{HH}}$ for the households. The shocks are independently and identically distributed (i.i.d.) over time and uncorrelated to each other. The government's shock (ε^G) is a vector containing all the potential fiscal packages available to the government. Given the number of options available to a government in good standing, we have that $\varepsilon^G \in \mathbb{R}^{(n^b+1)\times n^\tau}$ since there are $n^b \times n^\tau$ fiscal packages in repayment and n^τ packages in default. The households' shock $(\varepsilon^{HH} \in \mathbb{R})$ is just a scalar associated with the revolt decision.

Value functions If the country is in good standing, the incumbent political party (κ) solves:

$$W_\kappa(S^G, \varepsilon^G) = \max_{D\in\{0,1\}} [1 - D] \times VR_\kappa(A, B, \varepsilon^G) + D \times VD_\kappa(A, \varepsilon^G), \tag{6}$$

where the value in repayment is:

$$VR_\kappa(A, B, \varepsilon^G) = \max_{B',\tau\in\mathcal{B}\times\mathcal{T}} \omega_L^\kappa U^L(S^{HH}) + \omega_R^\kappa U^R(S^{HH}) + \varepsilon^G_{B',\tau} + \beta\mathbb{E}VR'_\kappa(S^{HH}),$$

subject to (4).

$\varepsilon^G_{B',\tau}$ is the value of the taste shock at the fiscal package chosen, $U^i(.)$ are the expected utility flows to households of type $i \in \{L, R\}$ in the current period, and $\mathbb{E}VR'_\kappa(.)$ is the continuation value. The expected utility flows can be further decomposed into:

$$U^i(S^{HH}) = \mathbb{P}^{\mathscr{R}}(S^{HH})\mathcal{U}^i(S^{HH}, \mathscr{R}) + (1 - \mathbb{P}^{\mathscr{R}}(S^{HH}))\mathcal{U}^i(S^{HH}, \mathscr{S}), \tag{7}$$

where the utility flows $\mathcal{U}^{i,\mathscr{P}}(.)$ are the solutions to (1), and $\mathbb{P}^{\mathscr{R}}(.)$ is the probability of revolt given the aggregate state and the chosen fiscal package. Note that $\mathbb{P}^{\mathscr{S}} = 1 - \mathbb{P}^{\mathscr{R}}$, so if the government repays, the end-of-period political state is either Stability $\mathscr{S}$ or Revolt $\mathscr{R}$ depending on what the households decide to do. The government makes its fiscal decisions taking these reaction functions into account but cannot perfectly predict if a revolt will happen since it does not observe ε^{HH}. Revolts also affect the continuation value $\mathbb{E}VR'(.)$[4]:

$$\begin{aligned}\mathbb{E}VR'_\kappa(S^{HH}) = &\mathbb{P}^{\mathscr{R}}(S^{HH})\mathbb{E}_{A'|A}[\pi^{\mathscr{R}}W_\kappa(A', B', \kappa, \varepsilon^{G\prime}) + (1 - \pi^{\mathscr{R}})W^o_\kappa(A', B', \varepsilon^{G\prime})] + \\ &\mathbb{P}^{\mathscr{S}}(S^{HH})\mathbb{E}_{A'|A}[\pi^{\mathscr{S}}W_\kappa(A', B', \kappa, \varepsilon^{G\prime}) + (1 - \pi^{\mathscr{S}})W^o_\kappa(A', B', \varepsilon^{G\prime})],\end{aligned} \tag{8}$$

where $W^o_\kappa(.)$ is the value function of the opposition party. Since $\pi^{\mathscr{S}} > \pi^{\mathscr{R}}$, the party in power internalizes that a revolt will diminish the probability of staying in power. We assume that when political parties are in opposition they keep the same ideologies (welfare weights), but make no decisions. When in opposition, a party with ideology κ takes the policy functions of the incumbent (κ_-) as given[5]:

$$W^o_\kappa(S^G, \varepsilon^G) = [1 - \mathcal{D}_{\kappa_-}(S^G, \varepsilon^G)] \times VR^o_\kappa(S^G, \varepsilon) + \mathcal{D}_{\kappa_-}(S^G, \varepsilon^G) \times VD^o_\kappa(A, \varepsilon^G) \tag{9}$$

Similarly in case of default, the value for the incumbent is:

$$\begin{aligned}VD_\kappa(A, \varepsilon^G) = &\max_{\tau \in \mathcal{T}} \; \omega^\kappa_L U^L_D(S^{HH}) + \omega^\kappa_R U^R_D(S^{HH}) + \varepsilon^G_{D,\tau} + \beta \mathbb{E}VD'_\kappa(S^{HH}), \\ &\text{subject to (5)},\end{aligned}$$

where $\varepsilon^G_{D,\tau}$ is the value of the taste shock at the fiscal package chosen, and $\mathbb{E}VD'_\kappa(.)$ is the continuation value. In default, the expected utility flows can now be decomposed into:

$$U^i_D(S^{HH}) = \mathbb{P}^{\mathscr{DS}}(S^{HH})\mathcal{U}^i(S^{HH}, \mathscr{DS}) + \mathbb{P}^{\mathscr{DR}}(S^{HH})\mathcal{U}^i(S^{HH}, \mathscr{DR}), \tag{10}$$

[4] To simplify notation we have avoided reiterating here that repaying current debt guarantees that the government will be in good standing with it's creditors at the beginning of the next period.

[5] The values of being in the opposition during repayment and default will similarly have analogous expression to (7) and (10). However, the opposition party solves no optimization problem and takes the policy functions of the incumbent government and the households as given.

where $\mathbb{P}^{\mathscr{P}}(.)$ is the probability of $\mathscr{P}$ being the end-of-period political state. During a default the end-of-period political state is $\mathscr{DS}$ if the households accept the fiscal policy, and $\mathscr{DR}$ if they revolt. Again, the utility flows once the political state is realized are solutions to (1). Moreover, the continuation utilities are:

$$\begin{aligned}\mathbb{E}VD'_{\kappa}(S^{HH}) =&\mathbb{P}^{\mathscr{DR}}(S^{HH})\Big\{\mathbb{E}_{A'|A}\Big[\pi^{\mathscr{DR}}\big(\gamma W_{\kappa}(A',0,\kappa,\varepsilon^{G\prime}) + (1-\gamma)VD_{\kappa}(A',\varepsilon^{G\prime})\big)+\\ &+\big(1-\pi^{\mathscr{RD}}\big)\big(\gamma W^{o}_{\kappa}(A',0,\varepsilon^{G\prime}) + (1-\gamma)VD^{o}_{\kappa}(A',\varepsilon^{G\prime})\big)\Big]\Big\}+\\ &\mathbb{P}^{\mathscr{DS}}(S^{HH})\Big\{\mathbb{E}_{A'|A}\Big[\pi^{\mathscr{DS}}\big(\gamma W_{\kappa}(A',0,\kappa,\varepsilon^{G\prime}) + (1-\gamma)VD_{\kappa}(A',\varepsilon^{G\prime})\big)+\\ &+\big(1-\pi^{\mathscr{DS}}\big)\big(\gamma W^{o}_{\kappa}(A',0,\varepsilon^{G\prime}) + (1-\gamma)VD^{o}_{\kappa}(A',\varepsilon^{G\prime})\big)\Big]\Big\},\end{aligned} \tag{11}$$

where γ is the probability of recovering good standing with international creditors.

Revolt decision and determining the political state : Given an aggregate state S^G and a fiscal package chosen by the incumbent government of type κ, households of the **opposite type** ($i = \kappa_-$) decide if they want to revolt based on their fundamental values in each political state and their taste shock ε^{HH}. Specifically, if the government repays, the households solve:

$$V^i(S^G, D=0, B', \tau, \varepsilon^{HH}) = \max_{\mathrm{R}\in\{0,1\}} \ \mathrm{R}\times[\mathcal{V}^i(S^{HH},\mathscr{R}) + \varepsilon^{HH}] + \Big[1-\mathrm{R}\Big]\times\mathcal{V}^i(S^{HH},\mathscr{S}), \tag{12}$$

and if the government defaults:

$$V^i(S^G, D=1, 0, \tau, \varepsilon^{HH}) = \max_{\mathrm{R}\in\{0,1\}} \ \mathrm{R}\times[\mathcal{V}^i(S^{HH},\mathscr{DR}) + \varepsilon^{HH}] + \Big[1-\mathrm{R}\Big]\times\mathcal{V}^i(S^{HH},\mathscr{DS}), \tag{13}$$

where the $\mathcal{V}^i(.)$ is the value they obtain given the aggregate state and the end-of-period political state $\mathscr{P}$. If the government repays, the political state is $\mathscr{R}$ if the households revolt and $\mathscr{S}$ if they don't. If the government defaults, the political state is $\mathscr{DR}$ if the households revolt and $\mathscr{DS}$ if they don't. The value given a political state is:

$$\mathcal{V}^i(S^{HH},\mathscr{P}) = \mathcal{U}^i(S^{HH},\mathscr{P}) + \beta\mathbb{E}_{A'|A}\Big[\pi^{\mathscr{P}}V^i(S^{HH\prime},\varepsilon^{HH\prime}) + (1-\pi^{\mathscr{P}})V^i_I(S^{HH\prime},\varepsilon^{HH\prime})\Big],$$

where $\mathcal{U}^i(.)$ is again the solution to (1), and $V^i_I(.)$ is the value the households obtain when the party that favors them is in-power ($\kappa = i$). Revolts therefore lead to a productivity decline in the current period but increase the odds that a household's preferred ideology will be in power next period. When the incumbent's party favors households of type i, we assume that the household can't make any revolt decisions and must take all policy functions as given. The value is then:

$$V_I^i(S^{HH}, \varepsilon^{HH}) = \mathcal{R}^{i_-}(S^{HH}, \varepsilon^{HH})[\mathcal{V}^i(S^{HH}, \mathscr{P}) + \varepsilon^{HH}] + (1 - \mathcal{R}^{i_-}(S^{HH}, \varepsilon^{HH}))\mathcal{V}^i(S^{HH}, \mathscr{P}),$$

where $\mathcal{R}^{i_-}(.)$ is the revolt policy function of households of type $i_- \neq i$. We assume that households whose preferred party is in power take all fiscal and revolt decisions as given.

3.4 Foreign lenders

A continuum of deep-pocketed, risk neutral, and competitive international lenders can buy the government's bonds. The lenders have access to a one-period, risk-free rate bond that pays interest rate r. As is standard in the literature, the lenders are forward-looking and will price the risk of default and debt dilution. Moreover, in our environment the lenders also internalize that the preferences of the government vary by party, that these preferences will change over time, and that revolts decrease the odds of an incumbent staying in power. The bond price that satisfies lenders' zero-profit condition is given by the following functional equation, for $\mathscr{P} \in \{\mathscr{R}, \mathscr{S}\}$ and an incumbent with of party $\kappa \in \{L, R\}$:

$$\begin{aligned} Q_{\mathscr{P}}^{\kappa}(A, B') = \frac{\mathbb{E}_{A'|A}}{1+r} \Bigg\{ & 1 - \pi^{\mathscr{P}} \mathcal{D}_{\kappa}(S^{G'}, \varepsilon^{G'}) \Big[\delta + z + (1-\delta) \times \\ & \big(\mathbb{P}^{\mathscr{R}}(\kappa, S^{HH'}) Q_{\mathscr{R}}^{\kappa}(A', \mathcal{B}'(\kappa, S^{G'}, \varepsilon^{G'})) + \mathbb{P}^{\mathscr{S}}(\kappa, S^{HH'}) Q_{\mathscr{S}}^{\kappa}(A', \mathcal{B}'(\kappa, S^{G'}, \varepsilon^{G'})) \big) \Big] \\ & - (1 - \pi^{\mathscr{P}}) \mathcal{D}_{\kappa_-}(S^{G'}, \varepsilon^{G'}) \Big[\delta + z + (1-\delta) \times \big(\mathbb{P}^{\mathscr{R}}(\kappa_-, S^{HH'}) \times \\ & Q_{\mathscr{R}}^{\kappa_-}(A', \mathcal{B}'(\kappa_-, S^{G'}, \varepsilon^{G'})) + \mathbb{P}^{\mathscr{S}}(\kappa_-, S^{HH'}) Q_{\mathscr{S}}^{\kappa_-}(A', \mathcal{B}'(\kappa_-, S^{G'}, \varepsilon^{G'})) \big) \Big] \Bigg\}. \end{aligned} \tag{14}$$

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 Scholl (2024), but also because the ideology of the incumbent changes the level of future debt issuances and therefore odds of future defaults. Long-term debt also implies that future political instability (represented by the probability of future revolts) will also have an effect on the price of current bonds. In a model with one-period debt, both of these channels would be absent and only the effect on default next period will affect the spread.

3.5 Recursive equilibrium definition

Definition 1 (Markov perfect equilibrium) *A Markov perfect equilibrium is defined by value functions* $\{W_\kappa, VR_\kappa, VD_\kappa, W^o_\kappa, VR^o_\kappa, VD^o_\kappa, V^i, V^i_I, \mathcal{V}^i\}_{i,\kappa\in\{L,R\}}$ *associated policy functions* $\{\mathcal{D}_\kappa, \mathcal{B}'_\kappa, \tau_\kappa, \mathcal{R}_i, \mathcal{U}_i, \mathcal{C}_i, \mathcal{N}_i\}_{i,\kappa\in\{L,R\}}$*, probability of revolt functions* $\{\mathbb{P}^{\mathscr{P}}_i\}_{i\in\{L,R\},\mathscr{P}\in\{\mathscr{S},\mathscr{R},\mathscr{DS},\mathscr{DR}\}}$*, and prices* $\{Q^{\mathscr{P}}_\kappa, w^{\mathscr{P}}_i\}_{i,\kappa\in\{L,R\},\mathscr{P}\in\{\mathscr{S},\mathscr{R},\mathscr{DS},\mathscr{DR}\}}$ *such that:*

1. *Given policy functions, households policy functions solve problems (1), (12), and (13).*
2. *Given policy functions and prices, the firm maximizes revenue (2) net of labor costs.*
3. *Given policy functions, bond prices are given by equation (14).*
4. *Given policy functions and prices, the government solves the dynamic programming problem defined by equations (6)-(11).*
5. *Wages equalize labor demand and supply (3), and the resource constraint of goods is satisfied in repayment (4) and in default (5) states.*

3.6 Closed form solutions

The logistic shocks from Dvorkin et al. (2021) allow us to find closed form solutions for all policy functions in expectation of the taste shocks. For instance, the expected probability of default given an initial state S^G is:

$$\mathbb{E}_{\varepsilon^G}[D=1|S^G] = \mathbb{P}_{\varepsilon^G}[D=1|S^G] = \frac{\left[\sum_{h=1}^{n^\tau} \exp\left(\frac{\Upsilon^D_h(S^G)}{\rho^{\varepsilon^G}\sigma^{\varepsilon^G}}\right)\right]^{\rho^{\varepsilon^G}}}{\left[\sum_{h=1}^{n^\tau} \exp\left(\frac{\Upsilon^D_h(S^G)}{\rho^{\varepsilon^G}\sigma^{\varepsilon^G}}\right)\right]^{\rho^{\varepsilon^G}} + \left[\sum_{h=1}^{n^\tau\times n^B} \exp\left(\frac{\Upsilon_h(S^G)}{\rho^{\varepsilon^G}\sigma^{\varepsilon^G}}\right)\right]^{\rho^{\varepsilon^G}}}$$

Here $\Upsilon^D_h(S^G)$ is the expected value flow from fundamentals when the aggregate state is S^G, and the government chooses a default fiscal package ($D=1$) with tax progressivity $\tau = \tau_h \in \mathcal{T}$. Whereas, $\Upsilon_h(S^G)$ is the expected value flow from fundamentals when the aggregate state is S^G, and the government chooses repayment ($D=0$), as well as a pair of end-of-period debt and tax progressivity such that $(B', \tau) = (B'_h, \tau_h) \in \mathcal{B}\times\mathcal{T}$. Specifically:

$$\begin{aligned}\Upsilon^D_h(S^G) &= \omega^\kappa_L U^L_D(S^G,\tau_h) + \omega^\kappa_R U^R_D(S^G,\tau_h) + \beta\mathbb{E}VD'_\kappa(S^G,\tau_h)\\ \Upsilon_h(S^G) &= \omega^\kappa_L U^L(S^G,B'_h,\tau_h) + \omega^\kappa_R U^R(S^G,B'_h,\tau_h) + \beta\mathbb{E}VR'_\kappa(S^G,B'_h,\tau_h),\end{aligned} \tag{15}$$

where $U^i(.)$ and $U^i_D(.)$ correspond to the functions defined in (7) and (10) respectively, and the continuation values, $\mathbb{E}VR'(.)$ and $\mathbb{E}VD'(.)$, are defined in (8) and (11) respectively. We also have analogous expressions for the probabilities of selecting a fiscal package conditional on repayment and the probabilities of revolts given a fiscal package and a default decision.

4 Quantitative Analysis

The model is calibrated at the quarterly frequency using Argentine macroeconomic data. We first set a subset of parameters to values that are either standard in the literature or based on historical Argentine data. In a second stage, 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 $\psi = .33$, inline 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 who estimate 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[6]. We use Morelli and Moretti (2023) estimates of political change in Argentina as our measure of average probability of reelection without revolts (i.e $\pi^{\mathscr{S}} = \pi^{\mathscr{D}} = .969$). Without revolts, this corresponds to an average tenure in office of 8 years for each political party[7]. We assume that sustained revolts cut in half the average tenure to 4 years (i.e $\pi^{\mathscr{R}} = \pi^{\mathscr{D}\mathscr{R}} = .938$). This coincides with the political situation since 2015, with left and right alternating power three times every 4 years.

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

[6]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).

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

unskilled labor of 1.5 that is consistent with $\eta = 0.66$, in line with estimates for the U.S. We use data on hourly wages by education group in Argentina from the Socio-Economic database for Latin America and the Caribbean (SEDLAC) dataset. The data is available biannually from 2003 to 2021. The dataset splits the Argentinean labor force in 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 (1) to compute the model prediction for the ratio of hours:

$$\frac{N_R}{N_L} = \frac{e^{\psi_R}}{e^{\psi_L}}.$$

We use average hours for each type half-tile in the data to estimate ψ^R, ψ^L, finding that $\frac{e^{\psi_R}}{e^{\psi_L}} = 1.15$. Normalizing by the mass of household we obtain $e^{\psi^R} = 0.93$ and $e^{\psi^L} = 1.07$. Similarly, we know from equation (3) that the ratio of pre-tax wage in the model is:

$$\frac{w_R^{\mathscr{P}}}{w_L^{\mathscr{P}}} = \frac{\theta_R^\eta}{\theta_L^\eta}\left(\frac{N_R}{N_L}\right)^{1-\eta}.$$

Using 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	$1/\psi = 3$	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 Maturiy	$\delta = .05$	Avg. maturity of debt
Debt Coupon	$z = 0.03$	Debt Service
Reentry Probability	$\gamma = 1/26$	Average renegotiation lenght
Reelection odds under stability	$\pi^{\mathscr{S}} = 1 - 1/32$	Morelli and Moretti (2023)
Reelection odds under revolt	$\pi^{\mathscr{R}} = 1 - 1/16$	Political turnover since 2015
Elasticity of substitution	$\eta = 2/3$	Gallegos 2006
Labor productivity	$\theta_R = .70, \theta_L = .30$	Hourly wage premia
Disutility of labor	$\exp(\psi_R) = 1.07$	Hours top education half-tile
Disutility of labor	$\exp(\psi_L) = .93$	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[8]. We also take the functional form of the portfolio adjustment cost of debt from Dvorkin et al. (2021):

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

At the calibrated parameters, less than $6e-4$ of output is spent on these costs. To asses the effect of the political state 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:

$$\begin{aligned}
A^{\mathscr{S}} &= A, \\
A^{\mathscr{R}} &= A^{\mathscr{S}} - \max(\phi_0^R A^{\mathscr{S}} + \phi_1^R (A^{\mathscr{S}})^2, 0), \\
A^{\mathscr{DS}} &= A^{\mathscr{S}} - \max(\phi_0^D A^{\mathscr{S}} + \phi_1^D (A^{\mathscr{S}})^2, 0), \\
A^{\mathscr{DR}} &= A^{\mathscr{DS}} - \max(\phi_0^R A^{\mathscr{DS}} + \phi_1^R (A^{\mathscr{DS}})^2, 0).
\end{aligned}$$

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

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 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

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

Table 3: Parameters internally calibrated

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

annual default frequency of 4.1% since Argentina has defaulted five times since the 1900s[9]. The average increase in debt-to-GDP one period before a default is targeted to identify the portfolio adjustment cost parameters[10]. 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[11]. The model fits most moments well, with the exception of the volatility of the spread[12].

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

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

[10] 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 a default. The adjustment costs, though negligible in the end, help the model fit the patterns of debt accumulation observed in the data.

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

[12] 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 $Y(N_L, N_R, \mathscr{P})$, and debt is B'.

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

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

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

the ideology of the ruling party in Argentina in the period 1993-2022. We restrict ourselves to the ideology of the president regardless of the ideology of Congress. Argentina has been ruled by a right-wing president 46.4% of the time[13]. Finally, we follow David et al. (2022) and use a narrative approach to construct a dataset of fiscal events that are linked to protests. Specifically, we use a set of keywords in the Factiva dataset to collect all the news articles about Argentina during the Macri presidency (2015-2019) that mention fiscal events (tax changes, subsidy cuts, public sector reforms, etc.) as well as protests or strikes. For each fiscal event, we then record if there is a protest or strike directly connected with it. We find that 39.0% of fiscal events are associated with at least one protest. We use this estimate as a target for the frequency of revolts (political state $\mathscr{R}$ or $\mathscr{DR}$) in the simulations of the model. The model fits the income shares and party affiliation of the ruling party fairly well, but understates the frequency of revolts and the degree of redistribution.

5 Validation

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

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

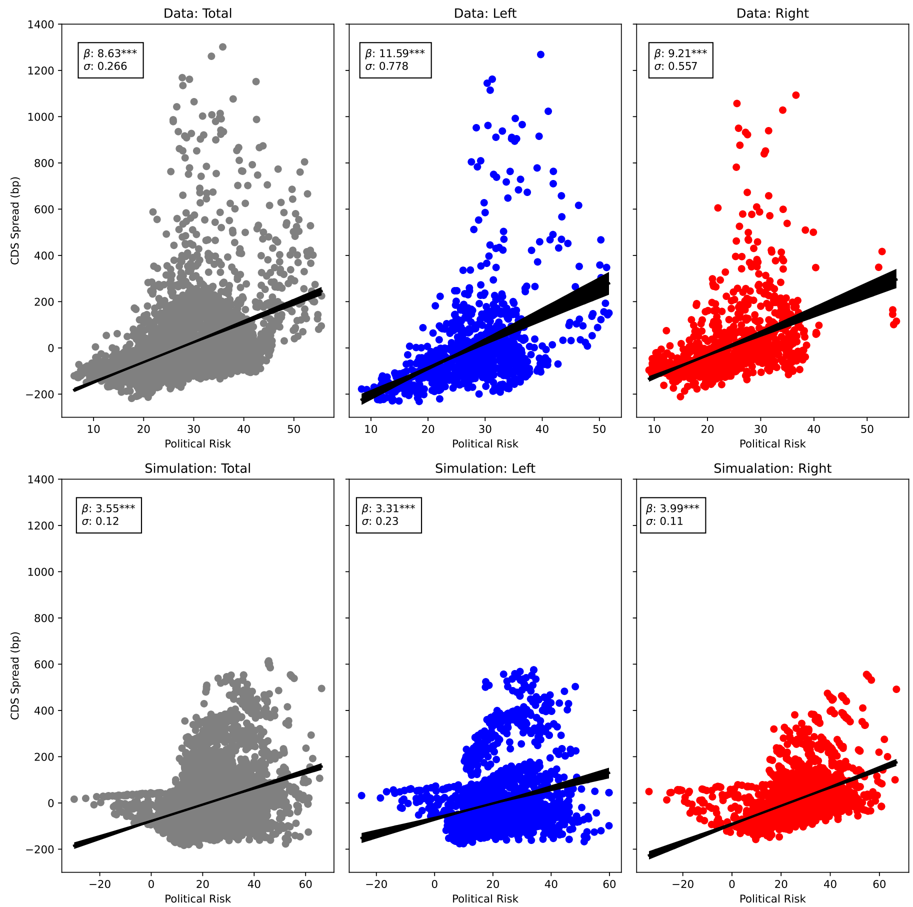


Figure 5: Correlation between political risk and spreads: Regression analysis.

Note: The plots contain the fitted regression lines 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, current account balance, without fixed effects. This allows for an identical specification in the data and in the model. The samples are respectively: full empirical data, left-wing governments in the data, right wing governments in the data, full simulation, left-wing governments in the simulation, and right-wing governments in the simulation. We drop the top 2% of observed spreads from the total samples in the data and in the simulation.

We chose this specification since it has direct model counterparts. Output in the model corresponds to total production $Y(N_L, N_R, \mathscr{P})$, 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 ($\mathbb{P}^{\mathscr{R}}(S^{HH})$), 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. The results show that political risk and changes in the spreads are positively correlated, both in the cross section and regardless of the party in power. The estimated slopes are statistically significant and positive in both cases, with the model magnitudes being around 40% of its data counterparts.

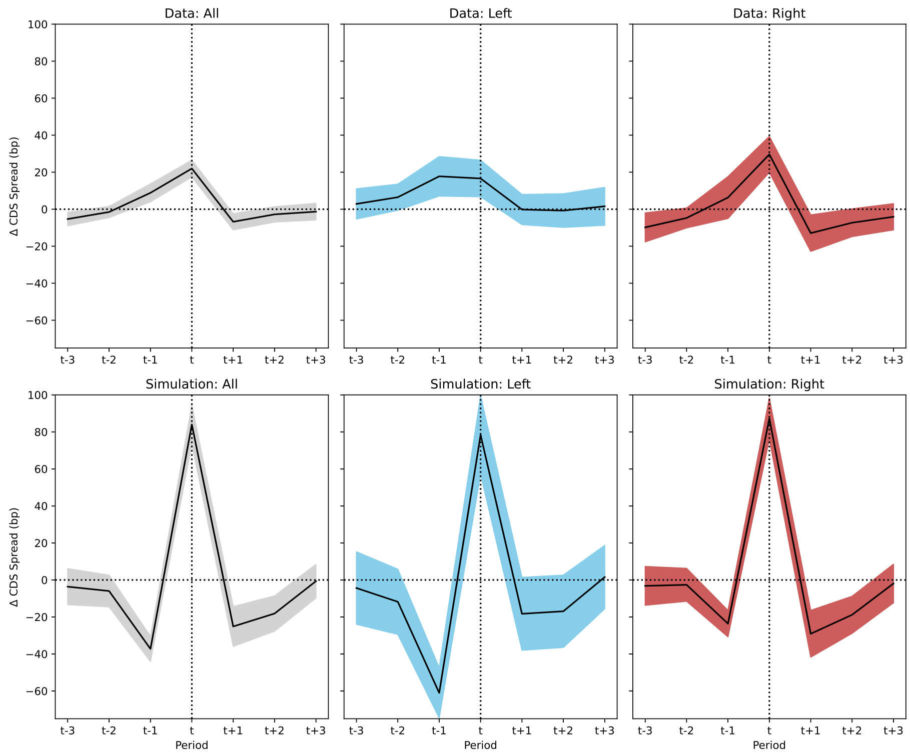


Figure 6: Change in spreads during a political crisis.

Note: We plot the event study comparison for the empirical data and simulation by party. 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 political risk measure (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 fundamentals of current account balance 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 the total set of empirical data and total simulation. We use 426 events in total from the empirical data, 102 left-wing events, and 114 right-wing events from the empirical data. We use 521 events in the total simulation, 190 left-wing events and 331 right-wing events. The length of the simulation used is 10,000 periods.

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

6 Results

This section will present the main results of the paper as well as help the reader understand why the model replicates the patterns observed in the data.

Revolts are more common during defaults, specially for right wing governments. Table 6 shows a breakdown of the political state at the ergodic distribution. At the ergodic, 57% of the time is spent in under Stability ($\mathscr{S}$). That is, the government is on good standing with its creditors and households are accepting its fiscal package. Revolts during repayment periods are, in contrast, infrequent, in that we observe them 16% of the time. The breakdown between revolts and stability is very different if the country is in bad standing with its creditors (around 28% of the time). During these episodes, roughly half of the time is spent in revolt. Moreover, in repayment, both Left and Right-wing governments are mostly symetrical in the amount of time under stability or revolt. In contrast during defaults, right-wing policies are faced with revolt more often than they are accepted. Left-wing parties in default also face more hostility than under repayment, but are still more likely to see their fiscal packages accepted. This asymmetry is strong enough to lead to an overall higher share of left wing governments in power overall.

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

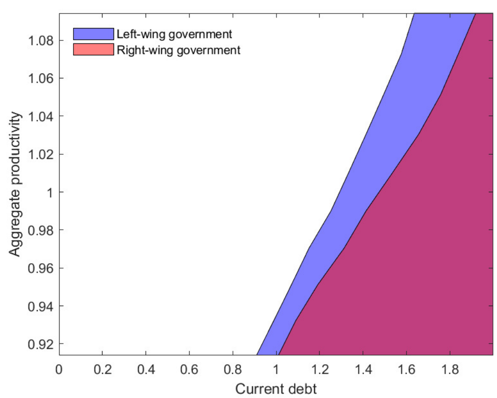
	Stability $\mathscr{S}$	Revolt $\mathscr{R}$	Default Revolt$\mathscr{DR}$	Default Stability $\mathscr{DS}$
Total	56.6	15.5	13.2	14.7
Incumbent : R	29.8	9.0	5.7	4.6
Incumbent : L	26.8	6.5	7.5	10.1

Note: Reported are the shares of time spent in each of the possible political states of the economy as a percentage of total time in the simulation. The ordering as in the text is: stability, revolt, revolt in default, and stability in default.

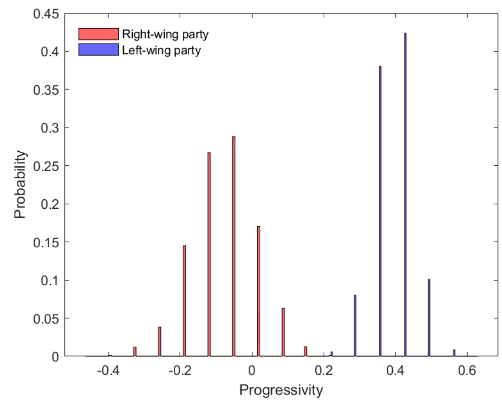
Left-wing parties are more likely to default. Figure 6 panel (a), shows the productivity and debt default sets by party affiliation of the incumbent[14]. As usual, we find that

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

governments are more likely to default when the initial debt is high and the productivity shock is low. The default set of left wing parties is larger. This result is significant since, contrary to other related models in the literature, both of our parties have the same exogenous default costs and the same discount factors. In our set-up, left-wing parties default more frequently because the austerity measures that repayment entails are simply too costly for their preferred constituents. This can be seen in Figure 6 panel (b). Right-wing parties choose a lower level of progressivity, which leads to higher output, increased tax revenue and therefore repayment of higher levels of debt. Since defaults are more costly and repayment easier, right-wing parties default less, both at the ergodic distribution and conditional on a given state.



(a) Default sets by party.



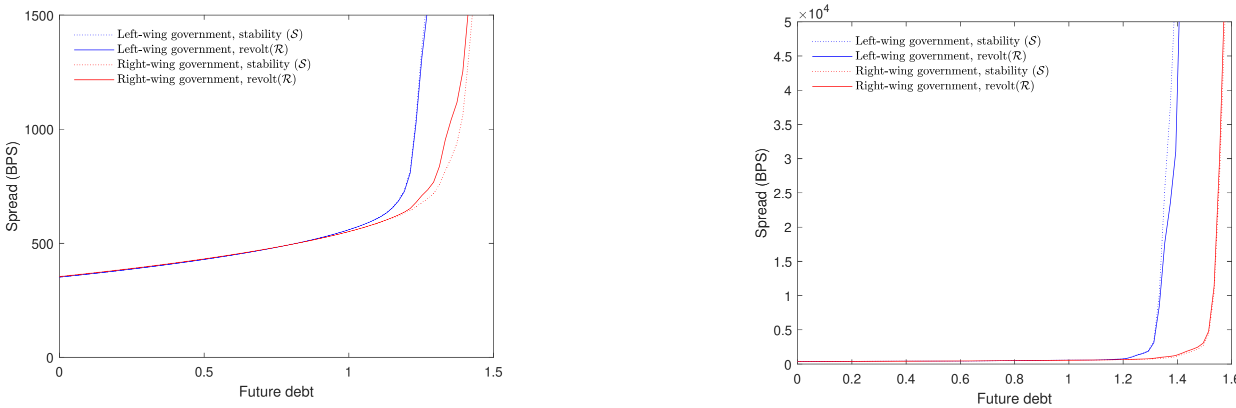
(b) Tax progressivity.

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 lower spreads, but revolts increase them. Figure 8 shows the price schedules that each party faces, at the average productivity, for each possible value of the political state under repayment. Panel (a) and (b) show the same figure but the y-axis is allowed to be much higher in panel(b). Right wing governments always faces a preferential price schedule. That is for any end of period debt choice the right wing party makes, the spreads paid is lower than what the left wing party would pay for the same choice[15]. Moreover, conditional on choosing a high level of borrowing, the right wing party pays a higher spread when the political state is revolt $\mathscr{R}$. Since lenders are forward looking

[15] Cotoc et al. (2021) find that a similar result holds at the cross-country level on average.

they internalize that the right wing government has a higher repayment capacity. Moreover a revolt in the model increases the odds of a turn over from right to left, hence lenders correctly assume that default is now more likely to occur and demand a higher spread. A similar mechanism is present in reverse for the left wing party (panel (b)). That is conditional on observing a revolt, spreads will be lower. This mechanism however becomes relevant only at very high levels of debt that we don't observe at the ergodic distribution.



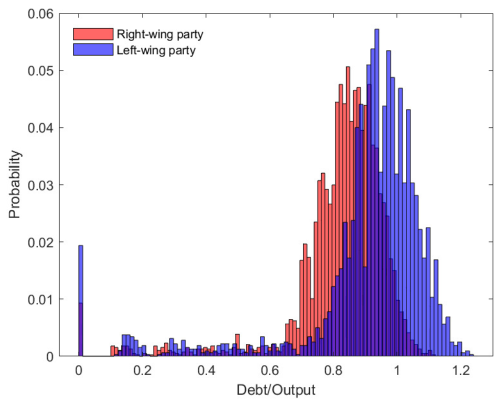
(a) Right-wing gap.

(b) Left-wing gap.

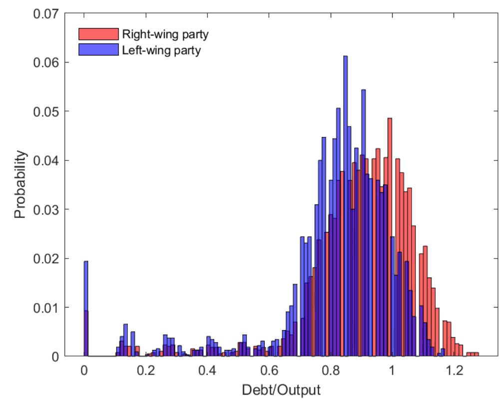
Figure 8: Policy-implied spreads under stability($\mathscr{S}$), and revolts($\mathscr{R}$) in the baseline model.

Note: We plot the policy-implied spreads as a function of future debt for the both parties in the baseline model under stability(dotted lines), and under revolt(solid lines). Both plots show the same price schedules but at different scales. This is done to highlight the difference in spreads when either of the parties faces a within period revolt that results in a revision of the bond prices they are offered. 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.

Under a right wing government, debt-to-output is lower but gross debt is higher. Figure 9, shows two histograms of the debt to output ratio by party at the ergodic distribution. In panel (a), we compute the observed ratio of debt to output when each party is in power. Since left wing parties chose higher levels of progressivity, output is lower which leads to a high levels of debt to output. In panel (b), we abstract of this output effect by keeping output at its mean value at the ergodic. This allow us to focus on the stock of debt when each party is in power. The results are flipped. Gross debt is higher when a right wing party in power. Right wing government take advantage of the preferential terms they receive from lenders to issue more debt. This can also be seen in Table 6. Here we report the mean level of issuance, mean value of new issuance, mean debt at the beginning of new term, mean debt at the end of a term in office, and average debt. All statistics are computed by party, excluding periods in default, and are normalized by the average level of output in good standing. We can see that the Right, tends accumulate more debt during its term. The left still exhibits positive debt issuances on average, even if it's average initial term debt is higher than its end of term debt. This is only possible because the Left usually defaults on the hang-over debt it inherits from the Right (as Argentina did in 2020). This feature is a key reason why a model with political turnovers can exhibit more defaults. Debt that was sustainable under a right wing government ends up being to high for a government with different preferences for redistribution, who prefers to default when austerity is too costly.We explore austerity policies in more detail in Appendix B.1.



(a) Debt to Output ratio



(b) Debt to Average Output ratio

Figure 9: Debt to output by party.

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

Table 6: Debt statistics by party.

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

Note: We report the mean level of issuance, mean value of new issuance, mean debt at the beginning of new term, mean debt at the end of a term in office, and average debt. All statistics are computed by party, excluding periods in default, and are normalized by the average level of output in good standing.

6.1 Revolts as an endogenous default cost

We analyze alternative specifications to the baseline model in an effort to separate the effects of revolts on sovereign risk. We compare our baseline model to specification with no revolts in default, models with only exogenous turnover, and models with a permanent party in power. In the model with no revolts in default, we shut down the possibility to revolt only in default, thus the transitions are augmented by the endogenous revolt decisions made by the households in repayment. In the model with exogenous turnover, the transitions are purely determined by the stochastic transition matrix with each party staying, on average, eight years in office. Finally, we shut down both the exogenous transitions and the revolts entirely, resulting in permanent rule by one party. The final two specifications differ only by the distinction of which party is initialized at the beginning.

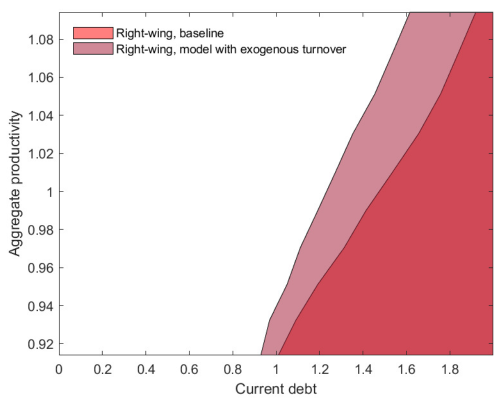
Table 7 summarizes the aggregate moments for our five specifications of the model. When revolts are not allowed in default states, spreads are higher, defaults are more frequent and the economy sustains much lower levels of debt. Moreover, the overall number of revolts is less than half what we observe in our baseline. The model with exogenous turnover sustains the second lowest level of debt and has the second highest frequency of defaults. The models with permanent types both sustain less debt than our baseline, and maintain the asymmetry we expect, a permanent left wing government sustains less debt than a permanent right wing government. We break down the analysis of these results by explaining the effect of revolts and turnover first in repayment and then in default.

Table 7: Moments comparison between models.

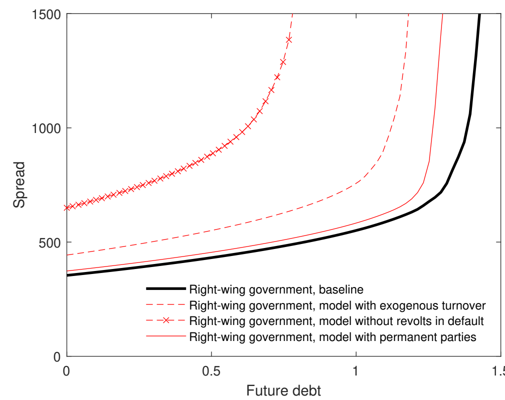
Model specification	Debt	Spread	Freq. default	Revolts	Share in power(Right)
Baseline	86.0	7.4	4.3	28.6	49.1
No revolts in default	48.3	13.2	6.0	13.5	47.8
Exogenous turnover	72.3	8.7	4.9	-	50.0
Permanent left-wing	76.1	7.9	4.4	-	0
Permanent right-wing	77.8	7.6	4.4	-	100
Data	88	7.7	3.3	39.0	44.8

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

Relative to a model with permanent type, models with political turn over in repayment exhibit an additional risk. Since left and right wing parties can sustain different levels of debt, party switches after prolonged rule by the right can lead to defaults. Specifically, a sudden shift from a right to left wing rule is likely to be followed by either painful deleveraging to levels of debt sustainable by the left or default. This type of default does not happen in a model with permanent types. Hence turnover in general, and revolts in our model exacerbate this additional default risk. Revolts in repayment in our model make turn over more likely, as such relative to the model with exogenous turnover the model with no revolts in default is more exposed to this risk. The consequences are quantitatively significant. Debt is much lower and spreads highers. Quantitatively however, this channel plays a secondary role in our model, since the debt levels in our baseline will end up being higher than those observed under permanent types. These risks of political turnover for defaults have been highlighted by other recent papers in the literature (Scholl (2024) and Azzimonti et al. (2016)), however their effect may be magnified by the maturity structure these papers assume, since roll-over risk strengthen this channel.



(a) Default sets for right-wing party.



(b) Right-wing price schedule.

Figure 10: 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 he 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.

The novel mechanism that our model highlights is that revolts and political turnover during defaults can serve as an additional endogenous default cost, and therefore lower spreads and the frequency of defaults. Since in our model revolts are disproportional more likely during defaults than in repayment this new channel ends up dominating the standard channel. The importance of this new channel can also be seen for a given state, as we Figure 8 shows[16]. Here we show that the default sets of the model with exogenous turnover are bigger than for our baseline (Panel (a) and that the schedule of debt is more favorable in our

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

model than in any other specification (Panel (b)). To the best of our knowledge, no other paper highlights how revolts and political turnover can act as a deterrent to default and help sustain higher levels of debt, even in a model that generates the positive correlation between political crisis and spreads that we observe in the data.

7 Conclusions

We present a quantitative model of sovereign debt, parties with different preferences for redistribution, and political protests against the government. We calibrate the model to the economic and political situation of Argentina during the Macri administration (2015-2019). Protests exacerbate the probability of political turn over and governments conduct fiscal policy strategically to avoid them. The model is able to generate the positive association that we observe in the data between political crisis and sovereign risk. Episodes of high political risk coincide with increases in spreads. We find that left wing parties are more likely to default, and that revolts are more common during defaults, specially against right wing governments. Both left and right wing government issue the same amount of debt, however right wing government can sustain higher levels of debt. Political turn over can increase default risk when right wing party leaves a large stock of debt to a new left wing government (as it happened in Argentina at the end of Macri's term). Nevertheless, the ability to increase the chances of political turnover in default states can be a powerful commitment tool. If revolts are only possible in repayment states, the economy defaults 30% more frequently and can only sustain half the level of debt that our model with revolts in default achieves.

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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[17].

We complement this cross-country data with detailed protest and fiscal news data for Argentina from 2015 to 2020. We follow David et al. (2022) and use a narrative approach to construct a dataset of fiscal events protests or strikes associated with them. Specifically, we use a set of keywords in the *Dow Jones- Factiva* database to collect news articles about Argentina during the Macri presidency. In order to capture fiscal events and protests, we use the following key words: "fiscal consolidation", "fiscal adjustment","austerity", "tax reform", "tax adjustment", "spending cuts", "budget cuts", "protest", and "tax". We also filter the articles, requiring that they are sourced from Latin America, are about Argentina, and fall into the news categories: Commodity/Financial Market News, Corporate/Industrial News, Economic News, or Political/General News [18]. Our goal was to collect fiscal events for the Macri presidency in Argentina along with any protests or strikes that were explicitly associated with these fiscal events. We manually check all events to ensure their relevance to our stated goal.

Data for sovereign spreads : For our empirical section 2, we use quarterly cross-country data on interest rate spreads on Credit Default Swap (CDS) data from Bloomberg. We use measures in U.S. dollars and a five year maturity for all countries. In our calibration section 4, we follow the sovereign default literature and use the EMBI+ spread data for Argentina from Global Financial Data[19].

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

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

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

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

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

B Political risk and spreads by party affiliation

B.1 Austerity policies

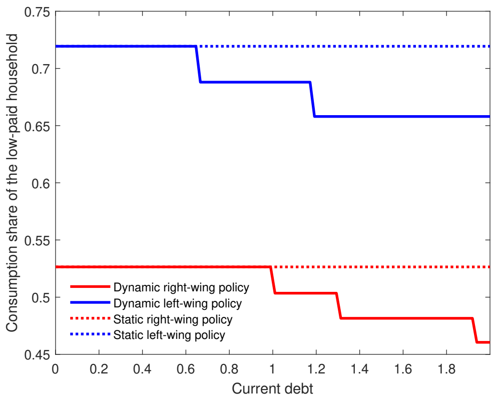
The model gives some insight into the timing and impact of austerity policies, we focus on the scope related to tax adjustments aimed at incentivizing output. These policies tend to have the simultaneous effect of reducing redistribution, which we also observe in the model. In the model there is a 1-to-1 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 11 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.

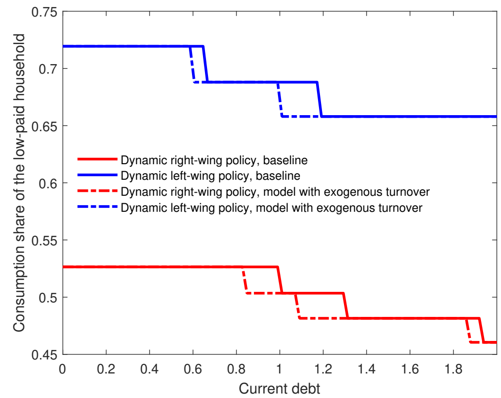
In the baseline model, the right-wing party due to both higher output levels and better spreads can sustain its preferred allocation for much higher levels of debt relative to the left-wing party. However, once it begins to implement austerity its gradualism in terms of debt levels is comparable with 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.

C Additional figures



(a) Fiscal choices baseline model vs static.



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

Figure 11: 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.

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

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

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

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

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

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