THE POLITICAL IMPLICATIONS OF REFERENCE-DEPENDENT PREFERENCES

Fausto Panunzi
Department of Economics and IGIER, Bocconi University; CEPR and ECGI

Nicola Pavoni
Department of Economics and IGIER, Bocconi University; IFS and BaffiCarefin

Guido Tabellini
Department of Economics and IGIER, Bocconi University; CEPR and CESIfo

Abstract
This paper studies electoral competition over redistributive taxation between a safe incumbent and a risky opponent. With reference-dependent preferences, economically disappointed voters become risk lovers, and hence are attracted by the more risky candidate. We show that the equilibrium can display policy divergence: the intrinsically more risky candidate proposes lower taxes and is supported by a coalition of very rich and very disappointed voters, while the safe candidate proposes higher taxes. This can explain why right-wing populist parties are often supported by economically dissatisfied voters and yet they run on policy platforms of low redistribution. (JEL: D72, H23)

1. Introduction

Over the past decade, the landscape of Western democracies has been marked by the surge of populism, a phenomenon often linked to economic shocks and insecurity. Research has established strong connections between economic vulnerability and support for populist movements, with evidence showing that individuals experiencing economic insecurity or fearing loss of social status are more likely to embrace populist parties and display anti-establishment attitudes (Algan et al. 2017; Dal Bo et al. 2023; Guiso et al. 2024). Yet, often populist parties advocate policies favoring the affluent, and gain traction across very diverse socio-economic segments, creating a complex puzzle. In countries like the US, the UK, or Italy, populist politicians and their policy

The editor in charge of this paper was Christopher Roth.

Acknowledgments: We thank Chris Roth, three anonymous referees, Jeff Frieden, Edoardo Grillo, Salvo Nunnari, Mattias Polborn, Ronny Razin, and participants at workshops at CREI, CEPR, CIFAR, CSEF, IMF, LUISS University, University of Basel, University of Bristol, University of Essex, University Federico II Naples, UPF, Princeton University, Yale University, the 2018 Summer Symposium on Financial Markets (Gerzensee) for helpful comments. We thank Ginevra Casini, Gonzalo Alberto Marivil Figueroa and Sergio Cappellini for excellent research assistance, and ERC grant 741643 for financial support.

E-mail: fausto.panunzi@unibocconi.it (Panunzi); nicola.pavoni@unibocconi.it (Pavoni); guido.tabellini@unibocconi.it (Tabellini)

agendas are supported by a coalition of affluent segments alongside frustrated and disenchanted low to middle-class voters. This intriguing alliance begs the question: why does this occur, and what implications does it have?

We address this question by examining how reference-dependent preferences can explain parts of this puzzle. We start from the premise, that we support empirically, that populist leaders inherently embody risk, because they have a penchant for unconventional policies. We then build on Panunzi, Pavoni, and Tabellini (2024), who show that disappointed voters (i.e. with income below their reference point) like political risk, because it gives them a chance to reclaim the lost ground. That paper studies how voters trade off risk vs efficiency, when choosing between two candidates with given intrinsic features: one is safe, the other is risky and inefficient. In Panunzi, Pavoni, and Tabellini (2024) there is no policy choice, however, and hence no meaningful electoral competition. Here instead we allow these two candidates (one safe, the other risky and inefficient) to engage in Downsian electoral competition over redistributive taxation. For concreteness, we refer to the safe candidate as "moderate", and the risky and inefficient candidate as "populist". Suppose that a large negative shock hits the economy, causing several voters to fall below their expected consumption level. How do these competing politicians react to the aggregate negative shock, and what policy platforms do they propose, if voters have reference dependent preferences?

The answer is not obvious, because the redistributive policy changes how disappointed voters assess the tradeoff between risk and efficiency. More redistribution reduces the economic disappointment of the poorer voters, and this makes them less attracted by the intrinsically more risky populist candidate. Hence, the populist has a weaker incentive than the moderate to propose a highly redistributive policy. To see the intuition, suppose that a candidate unilaterally deviates from a conjectured equilibrium tax rate. A lower tax rate, while hurting poorer voters, also amplifies their disappointment. This benefits the intrinsically more risky candidate, namely the populist. Consequently, when the populist implements a lower tax rate, impoverished voters do not penalize him/her as severely as they would penalize the safer candidate for the same policy deviation.

Our analysis reveals that the equilibrium can have one of two alternative features. In one case, the equilibrium exhibits policy convergence: both candidates seek the support of the same marginal voter and propose identical tax rates targeted at that voter's preferences. However, policy divergence can also emerge in equilibrium: the populist candidate runs on a policy platform of lower taxation and less redistribution, compared to the moderate. This generates a novel equilibrium feature: the formation of an "unwieldy coalition" where the populist simultaneously attracts both the poorest disappointed voters (drawn by the candidate's intrinsic riskiness) and the wealthiest voters (attracted by lower tax rates). Voters above their reference point, instead, lean towards the moderate candidate, because he is more efficient and (for loss-averse voters just above their reference point) less risky. This coalition structure provides a new theoretical foundation for understanding how populist movements can build politically successful alliances across seemingly incompatible socioeconomic groups.

Although the main contribution of our paper lies in its theoretical results, we also provide some supporting evidence. First we show that, consistently with our key assumption, populist governments are indeed associated with greater economic risks. We use a synthetic control method (SCM) to analyze the effects of populist leadership on economic outcomes, as in Funke, Schularick, and Trebesch (2023) - see also Abadie and Gardeazabal (2003) and Abadie, Diamond, and Hainmueller (2010). This methodology is particularly well-suited for our analysis, as it allows us to construct plausible counterfactuals in a panel of countries. For each episode of populist leadership in our sample, we select comparison units using a data-driven procedure that finds optimal weights over control countries. The procedure minimizes the disparity between observed trends in the treated country and the synthetic counterfactual during the pre-treatment period. Having generated a synthetic counterfactual for each populist episode, we consider an interval of ± 15 years around the start year of the populist leadership. The key identifying assumption is that the synthetic control follows a similar trajectory to what the populist economy would have experienced if a populist government had not been elected. Drawing on the database of Funke, Schularick, and Trebesch (2023), we analyze 27 instances of populist governance in 18 countries. Our baseline sample covers all major advanced and emerging market economies, including the nine largest South American states and ten main emerging markets from Asia and Africa. The results show that populist governance reduces real GDP per capita by approximately 9.2% on average (similar to Funke, Schularick, and Trebesch 2023) and increases growth volatility (measured by yearly standard deviation) by about 20% relative to average pre-treatment volatility. These findings support our modeling assumption that populist leadership introduces both inefficiency (lower expected output) and increased risk (higher volatility).

Second, we consider the policy platforms and the support base of populist parties in the main countries of Western Europe. Based on common classifications by political scientists, there are two kinds of populist parties: left-wing, and right wing. Whereas the former advocate extensive rich-to-poor redistribution, the latter often run on less redistributive platforms than many mainstream parties. Voting declarations reported in the European Social Surveys suggest that indeed right-wing populist parties are supported by an "unwieldy" economic coalition: respondents facing economic difficulties are about 10% more likely to vote for a right-wing populist party, compared to respondents who do not face economic difficulties. But at the same time, voters in the top income quintile are also about 11% more likely to do so, compared to those in the middle quintile. Left-wing populists parties, instead, tend to be supported by voters in the bottom income quintiles and voters facing income difficulties. Thus, our theory applies to right-wing populist parties, but not to all populist movements.

Literature. Our paper is related to three lines of research. First, it contributes to explain the sources of success of right-wing populist parties during the recent decades - see the survey by Guriev and Papaioannou (2020). An important question in that literature is why economically disadvantaged voters support right-wing populist parties that oppose welfare state expansion. Some contributions answer this question by introducing a second dimension of political conflict, on non-economic issues (immigration, or civil rights). This mechanism can explain why culturally conservative low-income voters support right-wing populist parties, despite these parties' opposition to redistributive policies (Norris and Inglehart 2019; Gennaioli and Tabellini 2025; Hacker and Pierson 2020). Without additional assumptions, however, it cannot explain why right-wing populists find it optimal to run on less redistributive platforms than mainstream parties. In our framework, all parties are opportunistic and only care about their vote share, and this policy divergence is explained by the effect of redistribution on voters' risk loving preferences.

As explained above, this paper also significantly differs from our earlier work on populism (Panunzi, Pavoni, and Tabellini 2024), because it allows parties to compete over redistributive tax policy. When this competition leads to policy divergence, right-wing populists are supported by the “unwieldy coalition” of disappointed poor voters and high income voters - a result that was absent from our previous work. We also extend the analysis of Funke, Schularick, and Trebesch (2023), by showing that, when populist leaders are in government, per capita income is not only lower on average, but its growth is also more volatile, compared to a non-populist counterfactual. Finally, we provide some novel evidence that indeed right-wing populist parties are supported by richer voters and voters facing economic difficulties.

Second, we contribute to explain why electoral competition can yield equilibrium policy divergence if candidates have different intrinsic features. The concept of voters weighing their policy preferences against the inherent qualities of rival candidates has been explored in several papers. Groseclose (2001) and Aragones and Palfrey (2002) investigated electoral dynamics involving candidates with divergent valences, revealing that voters with conventional policy inclinations favor candidates with higher valence. In equilibrium, the advantaged candidate gravitates towards the center, while the disadvantaged one adopts more extreme policy positions. More recent work by Krasa and Polborn (2010, 2012, 2014) demonstrates equilibrium policy divergence in scenarios where candidates possess differing abilities and select one-dimensional policies to optimize electoral prospects. Their crucial assumption posits that candidates' abilities complement the policies they advocate. In contrast, our study focuses on candidates' intrinsic risk disparities, and the complementarity with redistributive policies is implied by the voters' non-monotonic risk preferences relative to income levels.

Third, we contribute to a rapidly growing line of research that incorporates insights from behavioral economics in political analysis (Quattrone and Tversky 1988; Alesina and Passarelli 2019; Lockwood and Rockey 2020; Passarelli and Tabellini 2017; Grillo and Prato 2023). In particular, we take to political economics some specific insights of prospect theory, building on the seminal work of Kőszegi and Rabin (2006, 2007). Relative to existing research in behavioral political economics, we highlight how reference-dependent preferences, by affecting voters' attitudes towards risk, can have a profound impact on equilibrium redistributive policies and voters' coalitions.

The outline of the paper is as follows. In the next section, we provide some evidence regarding our key assumption on the characteristics of populist politicians. In Section

3 we present the baseline model of political competition; Section 4 provides a first characterization of the political equilibrium, which is further analyzed in Section 5, where we discuss the properties of the double-crossing equilibrium, and 6, where we analyze the conditions under which divergence or convergence of tax rates occur. Section 7 discusses how our main results can be extended to a more general setting. Section 8 provides some supporting evidence on who votes for populist parties. Section 9 concludes.

2. Empirical Motivation

Our theoretical framework rests on a two-part hypothesis linking economic disappointment to populist voting behavior. First, populist candidates systematically differ from moderate candidates in their characteristics, exhibiting both higher inefficiency and greater outcome variance. Second, individuals who experience substantial unexpected income losses are forced to consume below their reference point, triggering a shift in risk preferences. This economic disappointment induces greater risk tolerance, leading such voters to favor populist candidates despite "or because of" their higher risk profile. This theoretical mechanism aligns with evidence from Panunzi, Pavoni, and Tabellini (2024), who document that economically disappointed voters exhibit increased risk tolerance and a higher propensity to support populist politicians.

In this section, we provide empirical evidence that populist leaders generate a reduction in real GDP per capita and an increase in GDP per capita growth volatility (standard deviation) compared to a plausible non-populist counterfactual.

2.1. Data

Our analysis builds on the comprehensive leadership database constructed by Funke, Schularick, and Trebesch (2023), which draws from the Archigos database to identify and classify political leaders across major economies. The dataset spans from 1900 (or independence) to 2020, encompassing 1,482 leaders with 1,853 leader spells. Among these, Funke, Schularick, and Trebesch (2023) identify 53 populist leaders (3.4%) who served 72 leader spells (3.9%). The geographic coverage includes major advanced and emerging market economies, the nine largest South American states, and ten key emerging markets from Asia and Africa. It combines two sources for GDP data: historical records from the Macrohistory Database (Jorda, Schularick, and Taylor 2017) and recent World Bank statistics. Following Funke, Schularick, and Trebesch (2023)'s baseline specification, our estimation sample focuses on 18 countries that experienced 27 distinct episodes of populist governance. Several countries in our sample, including Argentina, Brazil, Ecuador, Italy, and Peru, underwent multiple populist periods. Table B.1 in Appendix B provides detailed country-level information.[1]

2.2. Empirical Strategy: Synthetic Control Method

Given the challenges in establishing causal relationships between populist governance and economic outcomes, we employ the Synthetic Control Method (SCM) as our primary empirical strategy. This approach, pioneered by Abadie and Gardeazabal (2003) and Abadie, Diamond, and Hainmueller (2010), and further developed in political economy applications by Abadie, Diamond, and Hainmueller (2015), enables systematic comparison between populist-led economies and synthetic counterfactuals. For a comprehensive review of the method, see Abadie (2021).

The SCM implementation consists of two key stages:

1. Construction of Comparison Units: We employ a data-driven procedure to assign non-negative weights to control countries, minimizing the disparity between observed trends in treatment and control units during the pre-treatment period. This approach ensures that our synthetic control closely mirrors the pre-populist economic trajectory of the treated country.

2. Generation of Counterfactuals: For each populist episode, we construct a synthetic counterfactual using data from a $\pm$15-year window around the leadership transition. The method rests on the assumption that this synthetic control approximates the economic trajectory of the treated country would have followed absent populist leadership.

The weight determination process varies by outcome variable:

- For GDP level effects, following Funke, Schularick, and Trebesch (2023), we use real GDP per capita as the primary matching variable
- For GDP growth volatility effects, we match on pre-treatment trends of our key variable: the 10-year rolling standard deviation of per capita real GDP growth

Detailed specifications of the matching procedure and additional robustness checks are provided in Appendix B.

2.3. Results

Figure 1 presents our central findings on the economic effects of populist leadership. The figure comprises four panels comparing treated economies with their synthetic counterfactuals. The left panels replicate Funke, Schularick, and Trebesch (2023), while the right panels display our new estimates. Each analysis is presented in two formats: Panel A shows the average paths of populist-led economies (solid line) and their synthetic counterparts (dashed line, "doppelganger"), with all variables normalized to zero at the start of populist governance. Panel B plots the difference

1. Compared to the sample of countries in Funke, Schularick, and Trebesch (2023), we exclude Slovakia from our analysis, due to insufficient data for calculating the 10-year rolling standard deviation.

between these paths, highlighting the treatment effect. *The results reveal two key patterns: populist leadership systematically reduces real GDP per capita and increases its volatility.* For the volatility analysis, we mark two critical time points with vertical lines: the start of populist governance ($t = 0$) and the tenth period post-treatment.

The uncertainty in the control group comes from randomness in the construction of the synthetic control weights in the pretreatment period (in-sample uncertainty) and from the out-of-sample prediction due to the stochastic error after the treatment (out-of-sample uncertainty). We implement both methods to obtain the confidence intervals using a simulation-based approach for in-sample (quantified through 200 simulations), and a sub-Gaussian bounds approach for the out-of-sample uncertainty. Following Funke, Schularick, and Trebesch (2023), our displayed confidence intervals reflect only out-of-sample uncertainty, as these provide more conservative bounds. Detailed derivations of these intervals are available in the Online Appendix E, where we also offer a placebo exercise.

A populist taking power is not a random event. Consistently with other findings, Funke, Schularick, and Trebesch (2023) document that: "Populist often enter the government in the wake of economic financial crises, when growth performance is weak." (p. 3273). In the SCM, such pre-existing weak economic performance is captured in the construction of the control group.

Average effects. Our analysis reveals that populist leadership reduces real GDP per capita by approximately 9.2%.[2] This is in line with Funke, Schularick, and Trebesch (2023), who found a cumulated effect of more than 10% after 15 periods. The estimated effects on growth volatility are displayed in columns 1 and 2 of Table 1. These estimates derive from comparing the trajectories of treated units against their synthetic controls, following the Synthetic Control Method (SCM). The precise calculation approach is detailed in Appendix B.4. The estimated effect of increasing the standard deviation of growth by 0.72 percentage points corresponds to an increase of about 20% relative to the average standard deviation of growth in the 15 pre-treatment periods.

TABLE 1. Effect of a populist leader on real GDP growth volatility.

	SCM		**SDiD**
	(1)	(2)	(3)
Populist	0.0072*** (0.0012)	0.0072** (0.0033)	0.0075*** (0.0030)
Clustered S.E. at episode/"country" level	No	Yes	Yes
Number of observations	1,602	1,602	44,113

Notes: This table reports the effect of populism on GDP volatility. Standard errors are shown in parentheses. ***, **, * represents significance at 1%, 5% and 10%, respectively.

2. See Table B.2 in Appendix B.

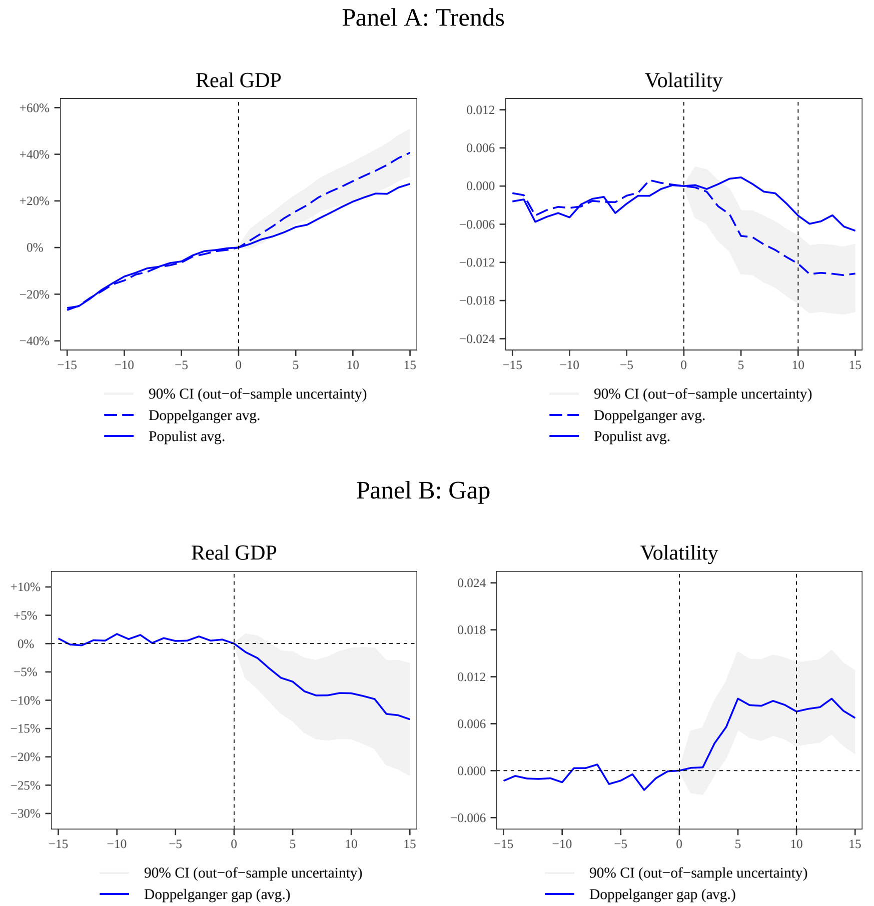

FIGURE 1. Baseline results on GDP level and volatility. This figure shows the effect of populism on the real GDP per capita and the standard deviation of real GDP per capita growth. The standard deviation (volatility) is calculated as a 10-years rolling. From period 1 until 9, the volatility considers information of the GDP growth from the pre-treatment period. The results on the GDP drop replicate those in Funke, Schularick, and Trebesch (2023). The 90% confidence intervals are based on Cattaneo, Feng, and Titiunik (2021), as well as on Cattaneo et al. (2025).
ALT TEXT: Four line graphs in a 2 by 2 grid. Panel A shows average trends: real GDP per capita (left) lags behind the counterfactual once a populist takes government; volatility (right) for populist-led economies rises above the counterfactual in the post-treatment period. Panel B shows gaps: the real GDP gap increases throughout the post-treatment period, while the volatility gap rises for the first 5 years and then settles. 90% confidence intervals are shown throughout using light gray shading.

Synthetic Difference in Differences. We complement our analysis by estimating populism's effect on GDP volatility using the Synthetic Difference-in-Differences (SDiD) methodology (Arkhangelsky et al. 2021; Clarke et al. 2023). The SDiD approach shares key features with the Synthetic Control Method (SCM) while offering distinct advantages. Like SCM, the SDiD framework considers a binary treatment variable, assumes treated units receive exposure only after a specified date and requires control units to remain untreated throughout the study period. The SDiD methodology enhances the standard Difference-in-Differences approach by computing optimal weights that align pre-treatment trends between exposed and unexposed units. Additionally, it determines time weights to balance pre- and post-exposure periods. This data-driven approach to control group selection enables us to estimate the Average Treatment Effect on the Treated (ATT) without relying on the parallel trends assumption between treatment and control units. Appendices B and Online Appendix E provide a comprehensive explanation of this methodology.

The estimated effect of populist government on volatility, according to the SDiD procedure, is displayed in Column 3 of Table 1. The SDiD estimate closely aligns with our findings from the Synthetic Control Method, reinforcing the robustness of our results.

3. The Model

We study voters choosing between two candidates - a moderate and a populist - under reference-dependent preferences. The moderate is safe (i.e. it entails no uncertainty), while the populist is risky and less efficient than the populist. We model this with the assumption that when the populist is in office, each voter has a stochastic income with a lower expected value compared to his certain income when the moderate is in office. This formulation is the same as in Panunzi, Pavoni, and Tabellini (2024), but here we add endogenous policy choice by the two candidates.

Consider a continuum of voters with income $\theta \geq 0$, distributed according to cumulative distribution G with density g. Under the moderate (M), a voter's gross income equals their base income θ. Under the populist, their income becomes $\theta - z + \eta$, where $z > 0$ captures the populist's inefficiency, and η is a random shock distributed over $[-\varepsilon, \varepsilon]$ with density h and $\mathbb{E}(\eta) = \int_{-\varepsilon}^{+\varepsilon} \eta h(\eta) d\eta = 0$. The populist is therefore riskier than the moderate (because of the presence of the random shock η). z measures the inefficiency of the populist compared to the moderate. We assume $\varepsilon > z$, ensuring the populist can sometimes deliver higher income than the moderate for all voters. Note that the difference between the populist and moderate candidates only concerns aggregate outcomes and it is the same for all voters - although, as shown below, different voters have different evaluations of these intrinsic features of candidates.

While with standard preferences, all voters would be in favor of the moderate candidate, this is no longer true with reference-dependent preferences. The risk associated with the populist candidate may be appealing to voters whose income is much below their reference point, who may vote for him, provided that the difference in efficiency is not too large.

In particular, we assume that for any given distribution of consumption F_c, voters have utility:[3]

$$U(F_c, x) = \mathbb{E}[c + \mu(c - x)],$$

where c is consumption, $\mu(\cdot)$ is a negative valued, increasing, and convex function that penalizes the voter whenever $c < x$. $x > 0$ is the (exogenous) reference point' and we assume that it is the same for everyone, irrespective of his actual income.[4]

Let $d = c - x$. We summarize our assumptions on μ below.

ASSUMPTION 1. *The function μ is continuous over the whole domain, with $\mu(d) = 0$ for all $d \geq 0$. Moreover, for $d < 0$, μ is at least twice continuously differentiable and the following properties hold:* (i) $\mu(d) < 0$*;* (ii) $\mu'(d) > 0$*;* (iii) $\mu''(d) > 0$*;* (iv) $\mu'''(d) \leq 0$*; (v) for $d = 0$, μ admits left derivatives at least till the third degree $\mu^n_-(0),\ n = 1, 2, 3$, which are compatible with the natural extensions of* (ii)-(iv).

While the first three conditions are standard in models of reference-dependent preferences[5], point (iv) of Assumption 1 is less standard and plays an important role in our results. In essence, it is equivalent to having preferences for moving risk from high to low-income levels. Hence the assumption implies that more disappointed agents are more likely to favor the populist candidate because of its intrinsic riskiness.[6]

The moderate and the populist candidates compete over income tax rates $0 \leq \tau_M, \tau_P \leq 1$, (subscripts refer to candidates). The tax proceeds are distributed as a lump sum to every agent.

Under the moderate candidate, the consumption of agent θ equals:

$$c_M(\theta, \tau) = (1 - \tau_M)\theta + f(\tau_M),$$

while, under the populist, consumption is random and equals:

$$c_P(\theta, \tau) = (1 - \tau_P)\theta - z + f(\tau_P) + \eta,$$

where, recall, the random variable η is distributed between $-\varepsilon$ and $+\varepsilon$ and both η and z affect all agents equally. Note that since $-z + \eta$ only affects aggregate income and redistribution is lump sum, effectively only the fixed and idiosyncratic income component θ is taxed.

The function $f(\tau)$ solves the government budget constraint and embeds inefficiencies due to distortionary taxation. Specifically, we assume:

$$f(\tau) = \tau \mathbf{E}\theta - i(\tau), \tag{1}$$

3. With an abuse of notation, we denote by c both the random variable and a particular realization of it.

4. This assumption together with the linearity in consumption in absence of loss aversion will be relaxed in Section 7.

5. See, e.g., Kőszegi and Rabin (2007)

6. See Panunzi, Pavoni, and Tabellini (2024) for a more thorough discussion.

with $i(\cdot) \geq 0$ an increasing and convex function representing tax distortions, and $\mathbf{E}\theta$ representing the cross-sectional average of θ.[7]

The timing is the following. Agents start with a given reference point x. Before elections, their gross income level θ is realized. Candidates then propose their tax rates in sequential order: first the moderate and then the populist. Finally, elections are held and the winner is elected. If the populist candidate wins, income shocks are realized and agents consume.

Throughout we assume that the properties of $i(\cdot)$ satisfy the following:

Assumption 2. *The function f as defined in* (1) *takes a maximal value at tax rate $0 \leq \tau_0 < 1$ and the increasing and convex function $i(\cdot)$ is such that $i(0) = 0 = i'(0)$.*

Thus, if f is differentiable, at τ_0 we have $f'(\tau_0) = \mathbf{E}\theta - i'(\tau_0) \leq 0$, with equality if $\tau_0 > 0$. It is easy to verify that the optimal tax rate for an agent with income θ, denoted by τ^θ, satisfies the optimality condition: $f'(\tau^\theta) \leq \theta$, with equality if $\theta \leq \mathbf{E}\theta$ and strict inequality otherwise, irrespective of which type of agent is in office (this follows from the assumption that the shock associated with the populist is aggregate). Hence, τ^θ, is a decreasing function of θ if $\theta < \mathbf{E}\theta$ and $\tau^\theta = 0$ if $\theta \geq \mathbf{E}\theta$. Moreover, by definition of τ_0, $\tau^\theta \leq \tau_0$. No voter with $\theta \geq 0$, no matter how poor, would ever want to have a tax rate on the wrong side of the Laffer curve.

Despite these well-behaved policy preferences, however, voters' preferences for the package of a politician's type (moderate or populist) and his associated tax rate do not satisfy the single crossing property. Let $w_P(\theta, \tau_P)$ and $w_M(\theta, \tau_M)$ denote the expected utility functions of type θ under the populist and the moderate, respectively. Then, the two curves, for some tax rates τ_P and τ_M, may intersect at more than one value of θ. This can be seen from Figure 2. If $\tau_P = \tau_M$, then the indirect utility functions $w_P(\theta, \tau_P)$ (dash-dotted curve) and $w_M(\theta, \tau_M)$ (solid curve) of voter θ under each candidate intersect at most once to the left of x, at income level $\hat{\theta}$ (see Lemma A.1 and Corollary A.2 in Appendix A for a formal proof of this statement). But suppose that τ_P is lowered below τ_M. This steepens the slope of $w_P(\theta, \tau_P)$ (dashed curve) relative to that of $w_M(\theta, \tau_M)$. Hence the linear component of $w_P(\cdot)$ (where $c^P > x$) intersects the linear component of $w_M(.)$ for $\theta < \infty$. At the same time, the convex component of $w_P(.)$ could remain flatter than that of $w_M(\cdot)$ for $c^P < x$ and for small realizations of θ. Hence the two curves can intersect in at least two points, one to the left (denoted as $\underline{\theta}$) and one to the right (denoted as $\overline{\theta}$) of x, as shown in Figure 2.

The absence of single-crossing implies that a Condorcet winner may not exist. In such a case, a simple model of Downsian electoral competition, where the two candidates compete in the election by simultaneously committing to a tax rate, does not have a pure-strategy Nash equilibrium, because of the nonconvexity of the objective functions.

7. To avoid confusion, we use the "bold" notation **E** for cross-sectional averages and the "math" notation $\mathbb{E}$ when the integration is taken over the shock $\eta \in [-\varepsilon, \varepsilon]$.

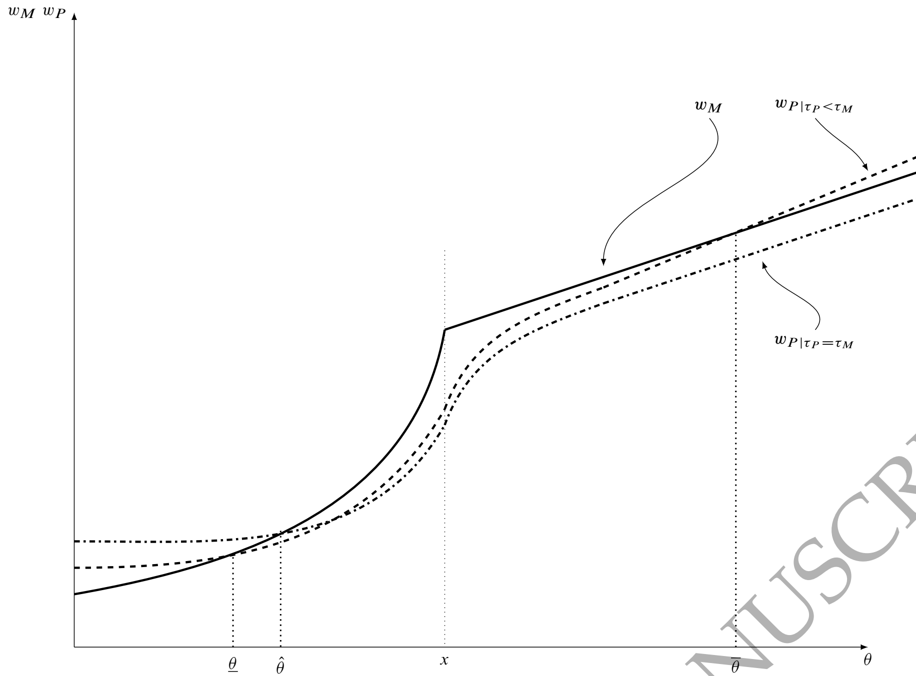

FIGURE 2. The black solid and the dash-dotted curves, representing $w_M(\cdot)$ and $w_P(\cdot)$ respectively, are drawn under the assumption that $\tau_M = \tau_P$. In this case, the curves intersect only once at income level $\hat{\theta}$. If τ_P is reduced, while τ_M remains constant, the (dash-dotted) curve $w_P(\cdot)$ rotates to the dashed curve, and it can intersect $w_M(\cdot)$ at two income levels, $\underline{\theta}$ and at $\bar{\theta} > x$. Voters with income with $\theta < \underline{\theta}$ and with $\theta > \overline{\theta}$ prefer candidate P to M. Those in between prefer M. In the absence of distortions (i.e., $i \equiv 0$), the rotation would have centered the mean income $\mathbf{E}\theta$. With distortion, a reduction in τ_P also shift the curve w_P upwards.
ALT TEXT: Line graph showing voter expected utility as a function of income under two candidates, a moderate and a populist. When the populist lowers its tax rate, the two utility curves intersect at least twice, creating a coalition of low- and high-income populist supporters, with supporters for the moderate candidate in between.

To get around this problem, we assume instead that the two candidates move sequentially and that they maximize their vote share.[8] Specifically, we assume the following timing. First, the moderate candidate commits to a tax rate τ_M. Then the

8. The assumption that candidates maximize the vote share can be interpreted as saying that (exogenous) political rents are an increasing function of the vote share. Alternatively, the outcome of the election could be random and determined by the realization of an aggregate and exogenous popularity shock, making the probability of victory an increasing function of the vote share.

populist candidate commits to a tax rate τ_P.[9] Finally, voters observe both tax rates and, knowing the risk properties of each candidate, they vote. This timing assumption can be interpreted as saying that the moderate candidate is the incumbent and this makes him less flexible in his policy announcements. Although we will maintain such timing in our narrative, this can be considered non-consequential, as in Proposition 3 (iii) below, we show that the key qualitative properties of the equilibrium set are independent of the identity of the first mover.

Since the game played is of zero-sum it also enjoys the property that - if a Nash in pure strategies exists in the normal form game - Stackelberg and Nash generate the same tax rates. Moreover, it is not difficult to show that if inverting the order of moves the model delivers the same equilibrium outcome, such equilibrium outcome is also the Nash equilibrium of the simultaneous moves game. In particular, this implies that if - no matter the order of moves - we get policy convergence at a positive tax, the single crossing equilibrium is also a Nash equilibrium of the normal-form game.[10]

We now turn to the analysis of the political equilibrium.

4. Political Competition over Redistributive Taxation

4.1. Single crossing

To gain some intuition, we first start with the case where $\tau_P = \tau_M < \tau_0$. Under the moderate candidate, the consumption of agent θ equals:

$$c^M(\theta, \tau) = (1 - \tau)\theta + f(\tau),$$

while, under the populist, consumption is random and equals:

$$c^P(\theta, \tau) = (1 - \tau)\theta - z + f(\tau) + \eta,$$

where

$$f(\tau) = \tau \mathbf{E}\theta - i(\tau).$$

Since for the same tax, the difference in consumption equals z, we can - for a given z - let $t := (1 - \tau)\theta + f(\tau) - x$. Then

$$w^M(\theta, \tau) - w^P(\theta, \tau) := \Delta(t)$$

where:

$$\Delta(t) = z + \mu(t) - \int_{-\varepsilon}^{\varepsilon} \mu(t - z + \eta) h(\eta) d\eta.$$

9. Since the choice variables lie in the compact set $[0, 1]$ the existence of a (Stackelberg, sequential) equilibrium (in pure strategies) of the dynamic game is guaranteed whenever the payoff functions of both players are continuous. In our context, it is easy to show that continuity of the payoff functions is guaranteed whenever the net distortion and the loss functions - f and μ - and are continuous and the distribution of over θ admits a density (in particular, it has no mass points, perhaps with the exclusion of the extremes).

10. For a formal proof of these statements see Lemma A.3 in Appendix A.

As we show at the beginning of Appendix A, under our assumptions: (i) for $t > 0$, $\Delta(\cdot)$ is strictly positive and (weakly) decreasing, while (ii) for $t < 0$, $\Delta(\cdot)$ is a strictly increasing function. In other words, the single crossing property that holds when tax rates are 0 is still valid when the tax rates are equal and positive.

Intuitively, the single crossing property still holds if $w^M(\theta, \tau)$ becomes flatter and/or $w^P(\theta, \tau)$ becomes steeper, i.e., when $\tau_P \geq \tau_M$. This is shown in the following lemma.

LEMMA 1. *Suppose that Assumptions* 1 *and* 2 *hold, and also assume that* $\mathbf{E}\theta \leq x - \varepsilon + z$. *Then, for* $\tau_P \geq \tau_M$ *we have:* (i) *the expected utilities* $w_M(\theta, \tau_M)$ *and* $w_P(\theta, \tau_P)$ *cross at most once, and* (ii) *this may only happen for* $\theta = \hat{\theta}$ *such that* $\mathbb{E}c_P(\hat{\theta}, \tau_P) < c_M(\hat{\theta}, \tau_M) < x$. (iii) *Moreover,* $w_M(\theta, \tau_M) \geq w_P(\theta, \tau_P)$ *(resp.* $w_M(\theta, \tau_M) \leq w_P(\theta, \tau_P)$*) if* $\theta \geq \hat{\theta}$ *(resp.* $\theta \leq \hat{\theta}$*).*

Note that $z - \varepsilon < 0$. The (sufficient) condition $\mathbf{E}\theta \leq x - \varepsilon + z$ can hence be interpreted as saying that the economy has been hit by such a large negative shock that even the average voter (whose income is $\mathbf{E}\theta$) always remains below his reference point when the populist is elected. This assumption also implies that any voter who is in favor of redistribution, that is, with income $\theta < \mathbf{E}\theta$ will also be disappointed.[11]

The threshold level $\hat{\theta}(\tau_M, \tau_P)$ for which $w_P(\hat{\theta}, \tau_P) = w_M(\hat{\theta}, \tau_M)$, if it exists, is defined implicitly by the following equation

$$c_M\left(\hat{\theta}(\tau_M, \tau_P), \tau_M\right) + \mu\left(c_M\left(\hat{\theta}(\tau_M, \tau_P), \tau_M\right) - x\right) = \mathbb{E}c_P\left(\hat{\theta}(\tau_M, \tau_P), \tau_P\right) + \mathbb{E}\mu\left(c_P(\hat{\theta}(\tau_M, \tau_P), \tau_P) - x\right) \quad (2)$$

Single crossing implies that the political competition when $\tau_P \geq \tau_M$ is very simple. By Lemma 1, all voters with $\theta > \hat{\theta}(\tau_M, \tau_P)$ vote for M, while all voters with $\theta < \hat{\theta}(\tau_M, \tau_P)$ vote for P. Then, to maximize his vote share, the populist candidate sets τ_P to maximize $\hat{\theta}(\tau_M, \tau_P)$, taking τ_M as given. We denote with $\tau_P^*(\tau_M)$ the solution to the populist optimization problem for each τ_M, that is the populist's Best Response. Each point of the correspondence $\tau_P^*(\tau_M)$ must satisfy $\partial\hat{\theta}/\partial\tau_P = 0$. By symmetry of the (zero sum game) problem, the moderate aims at minimizing $\hat{\theta}(\tau_M, \tau_P^*(\tau_M))$. By the envelope property, the effect of τ_M on $\hat{\theta}$ has opposite sign with respect to that of τ_P and it is larger in absolute value. In particular, taking into account the reaction function of the populist candidate, the threshold $\hat{\theta}$ is strictly decreasing in τ_M in the range where $\tau_P^*(\tau_M) > \tau_M$. As a consequence, we cannot have an equilibrium with $\tau_P^* > \tau_M^*$. More formally:

LEMMA 2. *Under the assumptions of Lemma 1, in equilibrium we cannot have* $\tau_P^* > \tau_M^*$.

11. Note indeed that for any tax rate τ, if $\theta \leq \mathbf{E}\theta$ then $c_i(\theta, \tau_i) \leq \mathbf{E}\theta < x$, $i = M, P$.

The result is obtained, in particular, because if the populist finds it optimal to choose $\tau_P^* > \tau_M$, then the moderate would be able to decrease $\hat{\theta}$ further (and hence increase his vote share) by raising τ_M. This is, in turn, the consequence of a key property of our framework. By comparing the slope of $\hat{\theta}$ with respect to τ_P (see equation (A.3) in Appendix A) and the slope of $\hat{\theta}$ with respect to τ_M (see equation (A.4) in Appendix A), whenever these slopes are different from zero, for this range of taxes we have:[12]

$$\left|\frac{\partial\hat{\theta}}{\partial\tau_M}\right| > \left|\frac{\partial\hat{\theta}}{\partial\tau_P}\right|.$$

In other words, M gains more votes amongst the poor when it raises its tax rate, compared to what happens when P does the same. The reason is that more redistribution makes poor agents better off, and hence less disappointed, so that their consumption gets closer to x. Since $\mu'''(\cdot) < 0$, they thus become less risk-loving, and this increases further the number of voters who lean towards M. The opposite occurs when the populist raises taxes. An increase in τ_P gains the support of disappointed voters because they favor redistribution; this effect is however mitigated since by making them richer they become less risk-loving.

4.2. Political Equilibrium

We are now ready to study the full equilibrium. To simplify the exposition, throughout we assume that the distribution G has (full) support over $\mathbb{R}_+$.

We summarize this discussion in the following:

PROPOSITION 3. *Under the assumptions of Lemma* 1*, a political equilibrium outcome can be of two sorts:*

(i) *Policy convergence: In equilibrium,* $\tau_P^* = \tau_M^* = \tau^{\hat{\theta}}$*: there is policy convergence at the bliss point of the voter who is just indifferent between M and P at the equilibrium tax rate. Richer voters vote for the moderate and less wealthy voters prefer the populist*

(ii) *Populist tax cuts: the populist candidate strictly prefers* $\tau_P(\tau_M^*) < \tau_M^*$*, and the schedules* $w_P(\theta, \tau_P^*)$ *and* $w_M(\theta, \tau_M^*)$ *cross at more than one income level* θ*.*

(iii) *Moreover, the potential equilibrium configurations (i) and (ii) and their qualitative features about taxes and crossing remain the same if P is the first mover.*

12. Specifically, the two conditions are:

$$\frac{\partial\hat{\theta}}{\partial\tau_P} = \frac{f_\tau(\tau_P) - \hat{\theta}(\tau_M, \tau_P)}{(1-\tau_M)R(c_M, c_P) - (1-\tau_P)},$$

and

$$\frac{\partial\hat{\theta}}{\partial\tau_M} = \frac{R(c_M, c_P)[\hat{\theta}(\tau_M, \tau_P) - f_\tau(\tau_M)]}{(1-\tau_M)R(c_M, c_P) - (1-\tau_P)},$$

where $R(c_M, c_P) := \Big(1 + \mu'(c_M - x)\Big)/\Big(1 + \mathbb{E}\mu'(c_P - x)\Big)$, and abusing notation $\mathbb{E}\mu'(c_P - x) := \int_{-\varepsilon}^{x-\mathbb{E}c_P} \mu'(\mathbb{E}c_P + \eta - x)h(\eta)d\eta$. Since at the crossing point we have $\mathbb{E}c_P < c_M$ and $\mu'(.)$ is positive and concave, we have $R(c^M, c^P) > 1$.

The intuition for outcome (i) is as follows. In the range $\tau_P \geq \tau_M$, both candidates would like to increase the tax rate so as to shift the threshold $\hat{\theta}$ in their desired direction. This tendency is mitigated by the fact that higher taxes also entail higher tax distortions, however. Higher tax distortions shift the expected utility downwards and hence move the threshold $\hat{\theta}$ in the opposite direction. In this case, these two forces are balanced. Not surprisingly, single crossing implies policy convergence at the bliss point of the voter who is just indifferent between the two candidates (not necessarily the median voter).

The equilibrium of case (ii) in Proposition 3 is more interesting. Here we do not have single-crossing (i.e., the voters' utility functions intersect more than once), and, in equilibrium, there is no policy convergence: the populist candidate announces a lower tax rate than the moderate. Proposition 3 (ii) also indicates that, in this case, there must be at least another intersection point, possibly more than one. As in the previous discussion of Figure 2, let $\bar{\theta}$ denote the highest level of income for which $w_P(\theta, \tau_P(\tau_M^*))$ and $w_M(\theta, \tau_M^*)$ intersect. Since $\tau_P(\tau_M^*) < \tau_M^*$, it must be the that $w_P(\bar{\theta}, \tau_P(\tau_M^*))$ intersects $w_M(\bar{\theta}, \tau_M^*)$ from below.[13] Hence, all voters with income $\theta > \bar{\theta}$ prefer candidate P to candidate M. Let $\underline{\theta}$ denote the first intersection point to the left of $\bar{\theta}$, so that at $\underline{\theta}$ the function $w_M(\underline{\theta}, \tau_M^*)$ intersects $w_P(\underline{\theta}, \tau_P(\tau_M^*))$ from below (i.e. w_M is steeper than w_P). Hence, all voters with income $\theta < \underline{\theta}$ in a neighborhood of $\underline{\theta}$ prefer candidate P to candidate M. Since $\tau_P(\tau_M^*) < \tau_M^*$ and $\mu'(\cdot) > 0$, this second intersection point can only occur in the region where w_M is non-linear - i.e., where $c_M(\underline{\theta}, \tau_M^*) < x$. We thus have:

Corollary 4. *In case* (ii) *of Proposition* 3 *the populist candidate is supported by a coalition that includes the richest voters* (*i.e., all voters with* $\theta > \bar{\theta}$) *and disappointed voters* (*i.e., voters with* $c_M < x$ *in equilibrium*).

To illustrate this corollary in a case with double crossing of the functions $w_M(\theta, \tau_M^*)$ and $w_P(\theta, \tau_P(\tau_M^*))$, we can refer to Figure 2. This is the case illustrated by the solid curve. All voters with income $\theta > \bar{\theta}$ and with income $\theta < \underline{\theta}$ prefer candidate P to candidate M. A coalition of the extremes, the rich voters and the poor and disappointed voters support. The populist candidate. With more than double crossing, the poorest voters could support the moderate incumbent (who promises higher taxes), but it would remain true that the populist candidate draws the support of the richest voters and of some disappointed voters. With double (or more) crossing, it is also true that the moderate candidate always receives the support of some voters with intermediate levels of income, i.e., with $\underline{\theta} < \theta < \bar{\theta}$. These are the voters who fear the risky populist politician the most because, being close to their reference point, they could suffer a lot if the populist politician has a bad draw, due to loss aversion.

13. The fact that w_P intersects w_M from below can be proved by contradiction. Suppose that at $\bar{\theta}$ w_P intersects w_M from above. Then $\bar{\theta}$ cannot be the right-most intersection point, because: (i) $\tau_P(\tau_M^*) < \tau_M^*$ implies $\partial w_P / \partial \theta > \partial w_M / \partial \theta$ in the linear part of the utility functions: (ii) G has (full) support over $\mathbb{R}_+$.

In other words, the populist candidate knows that he appeals the most to the risk-loving and disappointed voters. He can thus afford to choose a tax rate that is too low for these voters, knowing that they would be reluctant to vote for the moderate politician that they dislike. Setting a lower tax rate enables the populist candidate to also gain the vote of the richest and non-disappointed individuals, who only care about the policy platforms and not about the intrinsic features of the two politicians. Thus, in equilibrium, the populist politician sets a lower tax rate and is supported by a coalition of rich and disappointed voters.

In Section 6, we analyze when the equilibrium exhibits policy convergence versus policy divergence. More precisely, we show that if the average voter prefers the populist when both candidates set zero taxes, then the equilibrium has $\tau_M = \tau_P = 0$. This happens because neither candidate can gain votes by proposing positive taxes, since the marginal voter opposes redistribution. We also derive a necessary condition for divergence: the average voter must prefer the moderate candidate when both propose the same tax rate. This requires the populist's inefficiency (z) to be sufficiently large.

Finally, who wins the election? If in equilibrium $\tau_P(\tau_M^*) \geq \tau_M^*$, then by Lemma 1 we have single crossing at the level of income $\hat{\theta}(\tau_P(\tau_M^*), \tau_M^*)$. Voters to the right of $\hat{\theta}$ prefer the moderate candidate, and those to the left prefer the populist candidate. Hence, candidate M wins if the median level of income exceeds $\hat{\theta}$, while candidate P wins in the opposite case. Note that, if in equilibrium $w_M(\theta, \tau_M^*)$ and $w_P(\theta, \tau_P(\tau_M^*)$ cross only once at the point $\hat{\theta}$, although there is policy convergence, the equilibrium tax rates of either candidate are not attracted by the median voter bliss point. If, instead, in equilibrium $\tau_P(\tau_M^*) < \tau_M^*$, then we may have double crossing or more, we have no policy convergence, and to determine who wins we have to sum the coalitions of voters in favor of one or the other candidate. For instance, in the case of double crossing, the size of the voting coalition in favor of the moderate candidate is $G(\bar{\theta}(\tau_P(\tau_M^*)\, \tau_M^*)) - G(\underline{\theta}(\tau_P(\tau_M^*)\, \tau_M^*))$. If this expression exceeds 1/2 then M wins, otherwise P does. Here too, the median voter bliss point does not pin down equilibrium tax rates.[14]

5. Double Crossing

We now consider in greater detail the case in which the value functions $w_M(\theta, \tau_M)$ and $w_P(\theta, \tau_P)$ cross at most twice for $\tau_P < \tau_M$. In the Online Appendix D.3, we provide a set of sufficient conditions for this to happen. These conditions amount to assuming - roughly - that: (i) for any $\tau_P < \tau_M$, the right-most crossing point occurs sufficiently far from the reference point x , and that (ii) the function $\mu(\cdot)$ is sufficiently well behaved that $w_M(\theta, \tau_M)$ remains below $w_P(\theta, \tau_P)$ for all levels of income below

14. If the election outcome was determined by the realization of an aggregate and exogenous popularity shock, then the statements in the text would have to be interpreted as affecting the probability of winning, but not who is ultimately appointed.

the first crossing point to the left of x. The latter is obviously the crucial assumption, while property (i) only serves to formally state property (ii). Under these conditions, if $\tau_P < \tau_M$ then we have at most double crossing. As a result, by Proposition 3, in equilibrium candidate P is supported either by a group of poor and disappointed voters (single crossing equilibrium), or by a coalition of poor and disappointed voters and of rich voters, while voters with consumption close to the reference point vote for M (double crossing equilibrium).

Consider how the candidates behave in this type of equilibrium. Since there is double crossing, the optimal tax rate for P maximizes the area to the right of $\bar{\theta}$ plus the area to the left of $\underline{\theta}$. His optimality condition (assuming interiority), taking τ_M as given, is:

$$g(\underline{\theta})\frac{\partial \underline{\theta}}{\partial \tau_P} = g(\bar{\theta})\frac{\partial \bar{\theta}}{\partial \tau_P},$$

where $g(\cdot)$ is the density of the income distribution $G(\cdot)$. This condition says that, at an interior optimum, the marginal votes gained by P amongst the poor when raising τ_P are equal to the votes lost amongst the rich.[15] By the envelope theorem, the optimality condition for M, taking into account how τ_P responds to τ_M, is:

$$g(\underline{\theta})\frac{\partial \underline{\theta}}{\partial \tau_M} = g(\bar{\theta})\frac{\partial \bar{\theta}}{\partial \tau_M},$$

which has the same interpretation, namely M also equates the marginal votes gained and lost on the opposite sides of the income distribution, evaluated at exactly the same thresholds, $\underline{\theta}$ and $\bar{\theta}$.

For simplicity, suppose that the right-most intersection point $\bar{\theta}$ occurs in the region where both $w_M(\theta, \tau_M)$ and $w_P(\theta, \tau_P)$ are linear, as in Figure 2. These optimality conditions imply that - for this case to happen - in equilibrium we must have $\tau_P(\tau_M^*) < \tau_M^*$. This is because, as discussed above and formally shown in the proof of Lemma 2 in Appendix A, at $\tau_M = \tau_P$ we have:

$$\left|\frac{\partial \underline{\theta}}{\partial \tau_M}\right| > \frac{\partial \underline{\theta}}{\partial \tau_P} \quad \text{and} \quad \frac{\partial \bar{\theta}}{\partial \tau_M} = \left|\frac{\partial \bar{\theta}}{\partial \tau_P}\right|.$$

Namely, the lower income threshold $\underline{\theta}$ is more sensitive to changes in τ_M than in τ_P, while the upper threshold is equally sensitive at $\tau_M = \tau_P$. As we saw, the assumption $\mu'''(.) < 0$, implies that M gains more votes among the poor when it raises its tax rate, compared to what happens when P does the same. This effect is absent at the upper threshold $\bar{\theta}$, where swing voters are risk-neutral. Hence, the equilibrium must be found at a point where $\tau_P(\tau_M^*) < \tau_M^*$. At this point, tax distortions are higher under M, and

15. Note that into have an equilibrium of this type, it must be that $\underline{\theta} < \mathbf{E}\theta$.

the concavity of f implies that $\partial\bar{\theta}/\partial\tau_M > |\partial\bar{\theta}/\partial\tau_P|$.[16] Namely, the upper threshold is also more sensitive to changes in τ_M than in τ_P when $\tau_P(\tau_M^*) < \tau_M^*$, because of the larger tax distortions associated with τ_M.

In other words, under the stated assumptions, the equilibrium is such that, at both margins, the elasticity of votes gained or lost is higher for M than for P. This in turn follows from the intrinsic difference between the two candidates. Because P is risky, it has less to gain from offering redistribution to the poor. The reason is that, by making the poor voters better off, P also reduces its intrinsic attractiveness amongst disappointed voters. Not surprisingly, therefore, in equilibrium P sets lower taxes than M.

6. Convergence or Divergence of Tax Rates

As we have shown, in our model, two types of equilibria may exist: one with convergence of tax rates ($\tau_M = \tau_P$) and one with divergence ($\tau_M > \tau_P$). In this subsection, we discuss when these two types of equilibria prevail.

The first relevant property of the economic environment is whether, when both candidates offer the same tax rates, the average voter $\mathbf{E}\theta$ prefers the populist or the moderate. Define $\hat{\theta}(\tau^{\hat{\theta}}, \tau^{\hat{\theta}})$ as the level of income of an individual who is indifferent between the two candidates when they both set tax rates at his bliss point, $\tau^{\hat{\theta}}$, namely such that:

$$w_M(\hat{\theta}, \tau^{\hat{\theta}}) = w_P(\hat{\theta}, \tau^{\hat{\theta}}). \tag{3}$$

As depicted in Figure 2, individuals with with $\theta > \hat{\theta}$ (resp. $\theta < \hat{\theta}$) prefer the moderate (resp. populist) candidate when they set the same tax rate. Note that $\hat{\theta}$ and $\tau^{\hat{\theta}}$ do not depend on the distribution of θ among voters.[17]

16. More formally, if $\bar{\theta}$ is in the linear part of w_M and w, we have

$$\frac{\partial\overline{\theta}}{\partial\tau_P} = \frac{\overline{\theta}(\tau_M, \tau_P) - f_\tau(\tau_P)}{\tau_M - \tau_P},$$

while

$$-\frac{\partial\overline{\theta}}{\partial\tau_M} = \frac{\overline{\theta}(\tau_M, \tau_P) - f_\tau(\tau_M)}{\tau_M - \tau_P}.$$

Whenever f is strictly concave, $\tau_P < \tau_M$ implies $f_\tau(\tau_M) < f_\tau(\tau_P)$. If $\bar{\theta}$ was in the non-linear part of w_M or of w_P, then these expressions would contain additional terms, which we do not report here for ease of exposition.

17. Using the condition for a voter optimal tax rate, $\hat{\theta}$ and $\tau^{\hat{\theta}}$ are implicitly defined by:

$$\begin{aligned} \mu(\theta - i(\tau) - x) &= -z + \mathbb{E}\mu(\theta - i(\tau) - z + \eta - x) \\ i'(\tau) &= Max[0, \mathbf{E}\theta - \theta] \end{aligned}$$

The first equation is the indifference condition, whereas the second equation defines the optimal tax rate for an individual with income θ.

Suppose that, when $\tau_M = \tau_P = 0$, the average voter prefers the populist candidate: $\mu(\mathbf{E}\theta - x) < -z + \mathbb{E}\mu(\mathbf{E}\theta - z - x)$. In this case, the only equilibrium is described in the following proposition:

Proposition 5. *If* $\mu(\mathbf{E}\theta - x) < -z + \mathbb{E}\mu(\mathbf{E}\theta - z + \eta - x)$, *then* $\tau_M^* = \tau_P^* = 0$ *and* $\hat{\theta}(0,0) > \mathbf{E}\theta$.

That is, if the marginal voter $\hat{\theta}$ is opposed to redistribution, then neither candidate can gain votes by proposing a positive tax rate, and policy divergence is ruled out in equilibrium. Thus, a necessary (but not sufficient) condition for the equilibrium to have policy divergence is that, when candidates propose the same tax rate, the average voter prefers the moderate candidate.

Note this in turn requires that $z > 0$ and sufficiently large, since $\mathbb{E}\mu(\mathbf{E}\theta + \eta - x) > \mu(\mathbf{E}\theta - x)$ by the convexity of $\mu(.)$. In other words, unless the populist's inefficiency, z, is sufficiently high, we are always in the case where there is convergence of tax rates to $\tau_M = \tau_P = 0$.

Next, consider the polar case, where the average voter prefers the moderate candidate if both tax rates are at the maximal level τ_0, namely $\mu(\mathbf{E}\theta - i(\tau_0) - x) > -z + \mathbb{E}\mu(\mathbf{E}\theta - i(\tau_0) - z + \eta - x)$. In this case, it must be that $\hat{\theta} < \mathbf{E}\theta$. This is so since whenever the average voter prefers the moderate candidate at $\tau_M = \tau_P = \tau_0$, it also does so for any $\tau_M = \tau_P < \tau_0$. In this case, in equilibrium we can either have single crossing convergence of tax rates at $\tau^{\hat{\theta}} > 0$,[18] or double crossing (or more) and divergence with $\tau_P^*(\tau_M^*) > \tau_M^*$. The outcome, in particular, depends on the distribution of voters.

By Proposition 3, in an equilibrium where $\tau_P^* \geq \tau_M^*$, we can only have equality between the two tax rates at $\tau^{\hat{\theta}}$. Hence if, when $\tau_M = \tau^{\hat{\theta}}$, the populist prefers to set $\tau_P < \tau^{\hat{\theta}}$, an equilibrium with convergence of tax rates fails to exist. In other words, we only need to consider the incentives of the populist candidate to deviate from the putative single crossing equilibrium with policy convergence. In the single crossing equilibrium, the populist candidate obtains a fraction of votes $G(\hat{\theta}(\tau^{\hat{\theta}}, \tau^{\hat{\theta}}))$. Let $\underline{\theta}(\tau^{\hat{\theta}}, \tau_P)$ and $\bar{\theta}(\tau^{\hat{\theta}}, \tau_P)$ be the two crossing points depicted in Figure 2 if the populist chooses $\tau_P < \tau^{\hat{\theta}} = \tau_M$, with $\underline{\theta}(\tau^{\hat{\theta}}, \tau_P) < \bar{\theta}(\tau^{\hat{\theta}}, \tau_P)$.[19] Note that $\underline{\theta}(\tau^{\hat{\theta}}, \tau_P) < \hat{\theta}(\tau^{\hat{\theta}}, \tau^{\hat{\theta}})$: by reducing the tax rate, the populist loses votes among voters who favor redistribution.[20] Then the populist prefers to deviate and set $\tau_P < \tau^{\hat{\theta}}$ if the votes gained among the rich exceed those lost among the poor, namely if there is a tax rate $\tau_P < \tau^{\hat{\theta}}$

18. Note in particular, that - since $i'(0) = 0$ - the preferred tax rate for $\hat{\theta} < \mathbf{E}\theta$ must be positive.

19. For simplicity, we only consider the possibility of an equilibrium with double crossing, ruling out equilibria with more than two crossing points (again, for a set of sufficient conditions for this to happen, see Online Appendix D.3).

20. Since $\tau^{\hat{\theta}}$ is the ideal tax rate for $\hat{\theta}$, when the populist reduces the proposed tax rate, $\hat{\theta}$ is no longer indifferent between the two candidates, but prefers to vote for the moderate.

such that:

$$1 - G(\bar{\theta}(\tau^{\hat{\theta}}, \tau_P)) > G(\hat{\theta}(\tau^{\hat{\theta}}, \tau^{\hat{\theta}})) - G(\underline{\theta}(\tau^{\hat{\theta}}, \tau_P))$$

If this condition holds, then an equilibrium with policy divergence and $\tau_M^* > \tau_P^*$ exists. Intuitively, this condition is more likely to be satisfied if the income distribution is such that there are many rich above $\bar{\theta}$, or if there are few poor in the region between $\hat{\theta}$ and $\underline{\theta}$. This condition is also more likely to be satisfied if the points $\hat{\theta}$ and $\underline{\theta}$ are close together (i.e., these two thresholds are not very sensitive to τ_P).

6.1. A Numerical Example

We now illustrate these intuitions with a numerical example. The example is documented in Figure 3 below and Figures D.1, D.2, D.3, D.4, D.5 and D.6 in the Online Appendix D.4. Figure D.5 (in the Online Appendix) illustrates the populist reaction function and displays the discontinuity in $P's$ reaction function: if τ_M is sufficiently low, $\tau_P^*(\tau_M) > \tau_M$ and it is increasing in τ_M. But once τ_M exceeds a critical value (0.12 in this numerical example), P finds it optimal to jump to a lower tax rate $\tau_P^*(\tau_M) < \tau_M$. Candidate M in turn finds it optimal to accept this situation, and the Stackelberg equilibrium is found at $\tau_M^* = .22$ and $\tau_P(\tau_M^*) = .18$, where we have double crossing and both candidates are at an interior optimum.

The equilibrium with double crossing emerges because M does not want to lose the support of moderately disappointed voters. To get their vote, M must offer sufficiently high redistribution, otherwise P could attract them with a tax rate close to their bliss point. By setting a large τ_M, however, the moderate creates an opportunity for the populist to reduce the tax rate and attract the richest voters. This is indeed what P does in the political equilibrium with double crossing.

This numerical example has the same qualitative properties, including $\tau_P^* < \tau_M^*$, if roles are reversed and P is the Stackelberg leader. Figure D.6 (in the Online Appendix) illustrates the reaction functions $\tau_P(\tau_M)$ (blue solid line) and $\tau_M(\tau_P)$ (red dashed line). Both reaction functions are discontinuous and they never cross, indicating that a Nash equilibrium in pure strategies does not exist. Figure D.6 also reports the Stackelberg equilibria when P is moving first (the two red squares). These are both at a point where $\tau_P^* < \tau_M(\tau_P^*)$. Proposition 3 (iii) clarifies that this is not a coincidence: the key qualitative features of the equilibrium are preserved even if the timing assumptions are reversed and P moves first. This is not surprising, since with $\tau_P \geq \tau_M$ we have single crossing by Lemma 1. Hence, if the equilibrium was in the region $\tau_P \geq \tau_M$, either the follower (here M) would have to be indifferent between two points, one above and another below the 45-degree line, or there would be policy convergence in equilibrium. Even if P moves first, there cannot be an equilibrium where the follower (M) strictly prefers $\tau_M > \tau_P$.

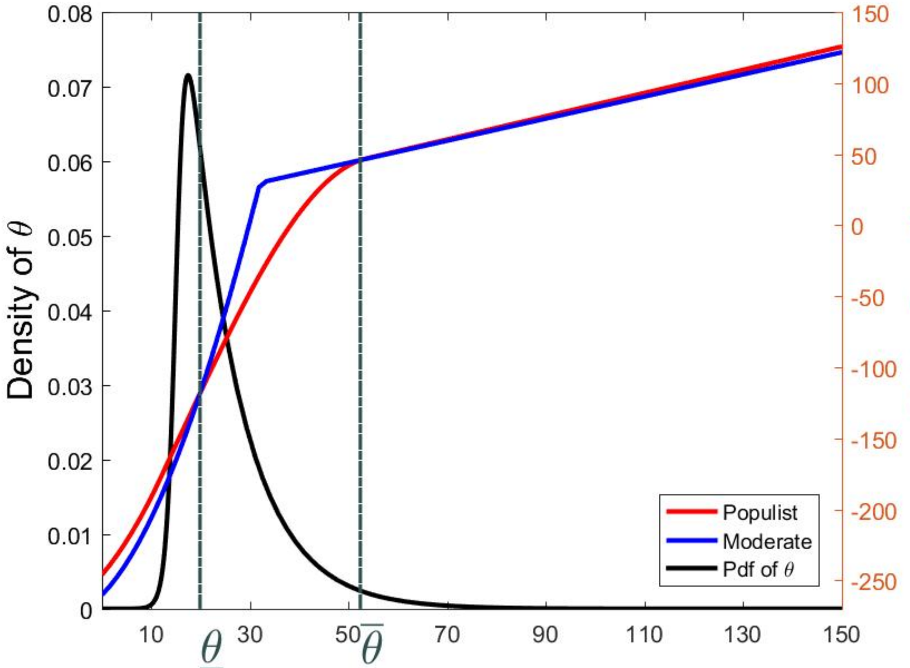

FIGURE 3. A numerical example of double crossing. The figure combines Figures D.2 and D.3 in Online Appendix D.2. It reports both the distribution of θ (the left scale) and voters' welfare (reported in the right scale) under the two parties - w_P (in red) and w_M (in blue) - as a function of θ for the equilibrium level of taxes. The vertical dashed lines represent the equilibrium crossing points. Voters prefer M between the two points and P for θ outside the two vertical lines.
ALT TEXT: Dual-axis line graph showing voter income density (black) and voter payoff under the populist (red) and moderate (blue) candidates. Two vertical dashed lines mark the crossing points of the payoff functions; voters prefer the populist outside the two thresholds and the moderate between them.

7. Extensions

In our model, there are two dimensions of political conflict. One is the traditional redistributive conflict over tax policy. The other is disagreement over the desired risk properties of candidates. Both dimensions are related to individual income, relative to average income for redistribution, and relative to a common reference point for risk attitudes. Preferences for high taxes are decreasing in individual income, θ. Similarly, for any tax rate $\tau \in [0, 1)$, the difference between net income (consumption) and the common reference point x increases with θ. The shape of μ implies that the risk attitude of voters as a function of income is non-monotone, with voters who consume close to the reference point being most averse to risk. Our results generalize to extensions of the model that preserve these qualitative features. In this section, we briefly discuss some extensions.

Risk aversion. We assumed that the direct utility of voters is linear in consumption. All our results would still hold if we assumed risk- averse voters, namely if $w^{M}(c, x) = u(c) + \mu(c - x)$ with u strictly increasing and concave. In this case, however, we need two additional "regularity" assumptions. First, in order to keep individuals with high income not very averse to risk (and hence potentially willing to vote for the populist), u should display Decreasing Absolute Risk Aversion (DARA). Risk aversion penalizes the populist, and DARA implies that such penalty decreases with income. Second, more disappointed individuals (i.e., those with lower $c - x$) should be more likely to prefer the populist candidate in the absence of taxation (as in Lemma 1). For this to be the case, we need to assume that for $c < x$ the function w^{M} satisfies Assumption 1. In particular, the convexity of μ must dominate the concavity of u - i.e., $u''(c) + \mu''(c - x) > 0$ and $u'''(c) + \mu'''(c - x) \leq 0$ for all $c < x$.

Heterogeneous Reference Points. We can also relax the assumption that all voters have the same reference point, as long as we preserve the feature that individuals with lower income are more disappointed (i.e., they are further below their idiosyncratic reference point) and that rich voters are not disappointed. For example, all our results still hold if the reference point of individuals with income θ is given by: $x(\theta) = (1 - \rho)\theta + \rho x_0$ for $1 \geq \rho > \tau_0$ (where τ_0 is the tax rate that maximizes tax revenue). In this case, all our results remain true as long as we strengthen the assumption made in Lemma 1 to $\mathbf{E}\theta \leq x_0 - \varepsilon + z$. Recall that the assumption guarantees that all non-disappointed voters have above average income, and hence cannot be attracted by the populist if he proposes a higher tax rate. Given this, we can retain all the main results in the paper.

Comparative Statics. Here we present a few comparative static results. We assume a differentiable equilibrium. We will maintain the assumptions of Lemma 1 and that the conditions for the validity of the implicit function theorem hold.

PROPOSITION 6. *If the equilibrium has convergence to a positive tax rate, then:* (i) *Ceteris paribus, in an economy with a higher reference point x the marginal voter has a higher income and the equilibrium tax rate is lower.* (ii) *Ceteris paribus, in an economy with a higher aggregate income $\mathbf{E}\theta$, the marginal voter has a lower relative income level and the equilibrium tax rate is higher.*

The intuition for (i) is the following: when x rises, the indifferent voter becomes more disappointed and thus more risk-lover. Therefore, if taxes do not change s/he now strictly prefers to vote for the populist. This implies that the voter who is now indifferent between the moderate and the populist has a higher income. Competition will hence induce the tax to target these richer agents, and hence the tax rate will be lower. The intuition for (ii) is as follows. At any given positive tax rate, an increase in aggregate income makes all agents better off. This reduces disappointment for all agents, particularly the marginal voter. Therefore, the voter who is now indifferent between the moderate and the populist has a lower relative income. At the same time, for a fixed distortion function, when aggregate income increases, the tax rate preferred by each agent weakly increases. So both forces drive up the equilibrium tax rate.

What happens to tax rates in the double-crossing equilibrium with policy divergence is more difficult to assess. However, under some conditions, we can establish that, as the reference point x increases: (i) the two tax rates move in the same direction, although it is ambiguous whether up or down; and (ii) τ_P moves more than τ_M. Thus, if both tax rates increase, then divergence between the tax rates set by the two candidates is reduced; if both tax rates go down, then divergence increases.

To see this, suppose the upper crossing point is above the reference point. Assuming a differentiable equilibrium, differentiating the indifference condition at $\overline{\theta}$ and using $\partial w_i / \partial \tau_i = \left(\partial \overline{\theta} / \partial \tau_i\right)\left((\partial w_i / \partial \overline{\theta}) - (\partial w_j / \partial \overline{\theta})\right)$ we get:

$$\frac{\partial \overline{\theta}}{\partial x} = 0.$$

This implies that, in a "differentiable" equilibrium, tax rates adjust to the increase in $\underline{\theta}$ while $\overline{\theta}$ remains constant. This, in turn, implies that τ_P and τ_M move in the same direction and τ_P changes by more than τ_M in absolute terms. The reason is that, as we discussed above, $\overline{\theta}$ is more sensitive to τ_M in equilibrium.[21]

Do equilibrium tax rates change, and in which direction? If g is locally uniform at $\underline{\theta}$, we can guarantee that equilibrium tax rates change. Differentiating the indifference condition at $\underline{\theta}$, and using $\partial w_i / \partial \tau_i = \left(\partial \underline{\theta} / \partial \tau_i\right)\left((\partial w_i / \partial \underline{\theta}) - (\partial w_j / \partial \underline{\theta})\right)$ we get[22]

$$\frac{\partial \underline{\theta}}{\partial x} = \frac{\mu'(c_M(\underline{\theta}, \tau) - x) - \mathbb{E}\mu'(c_P(\underline{\theta}, \tau) - x)}{\frac{\partial w_M}{\partial \underline{\theta}} - \frac{\partial w_P}{\partial \underline{\theta}}} > 0.$$

Moreover, recall that at the new equilibrium we must obtain again the optimality conditions:

$$g(\underline{\theta}) \frac{\partial \underline{\theta}}{\partial \tau_i} = g(\bar{\theta}) \frac{\partial \bar{\theta}}{\partial \tau_i}.$$

It is immediate to see that if taxes did not change, the conditions $\partial \underline{\theta} / \partial \tau_i$ would move with x. As a consequence, the original taxes cannot be optimal anymore. Whether tax rates increase or decrease with x is ambiguous, however.[23]

Socially optimal policy and probabilistic voting. What is the socially optimal tax policy in this economy? The answer is not straightforward, because the marginal utility of income varies depending on whether voters are above or below their reference point.

21. More precisely, we have $\left|\left(\tau'_P(x)\right) / \left(\tau'_M(x)\right)\right| = \left|\left(\overline{\theta} - f'(\tau_M)\right) / \left(\overline{\theta} - f'(\tau_P)\right)\right| > 1.$

22. The numerator is positive due to the concavity of μ' while the denominator is positive since at $\underline{\theta}$ w_P crosses w_M from above.

23. Two forces are favoring lower equilibrium tax rates. On the one hand, since the poor become more captive to the populist, τ_P might decrease. On the other hand, for both M and P the marginal poor is now richer, so again this calls for a lower tax rate. Against this force is the fact that the moderate might try to recover part of the disappointed poor that moved to the populist as x increased by increasing τ_M, and this might induce P to follow. This last point is not present in the single crossing case since taxes in this case are set in equilibrium at the bliss for the marginal agent. In the double-crossing case, instead, one can show that the equilibrium tax rate of the moderate is too low for the marginal poor.

Moreover, very disappointed voters are risk-loving, and so they may prefer not to be insured against income risk. In Appendix A.7 we study the tax rate that solves the utilitarian optimum.

We first consider the social optimum under a moderate government (i.e. assuming that income is not stochastic). The optimal tax rate is strictly positive if $\mathbf{E}\theta > x$ and there is a positive measure of agents with $\theta < x$. In this case, all disappointed agents are poorer than the average, and hence they benefit from redistribution. Since disappointed voters have higher marginal utility of income due to their loss aversion, a positive tax rate is optimal despite the tax distortions. In particular, at the social optimum the marginal tax distortions are equated to the marginal social benefit of redistributing in favor of the disappointed agents.

If $\mathbf{E}\theta < x$, however, this is no longer true, since some individuals with particularly high marginal utility are also hurt by redistribution. In this case, a positive tax rate under a moderate government is socially optimal only under an additional condition stated in the Appendix. This condition is more likely to be satisfied if: (i) there are not too many individuals with income between x and $\mathbf{E}\theta$; (ii) the function $\mu(\cdot)$ is not too convex.

In the second part of Appendix A.7, we consider the socially optimal tax rate under a populist government (i.e. when individual income is stochastic), and compare it to the social optimum under a moderate. The analysis highlights three differences between the two optimal tax rates. First, for poor voters who would be disappointed under both government types, redistribution is less desirable under the risky populist than under the safe moderate. The reason is that higher taxes make poor voters less risk loving. Second, when the populist faces a negative shock to average income, some middle-income voters become disappointed, and hence risk loving. For these voters too, redistribution is less desirable under the populist than under the moderate, for the same reason that redistribution makes them less risk loving. These two effects favor a lower tax rate under a populist government. On the other hand, some disappointed voters with above-average income are hurt less by higher tax rates under the populist, because redistribution makes them more disappointed and hence more risk loving. This third force favors a higher tax rate under the populist.

The overall conclusion is that the socially optimal tax rate is lower under the populist than under the moderate if the first two effects dominate the third. This is more likely to occur if there are many disappointed voters with below average income (who thus benefit from redistribution), relative to the number of disappointed voters with income above average (who are hurt by it), and if risk preferences are more sensitive to disappointment (i.e., $\mu'''(d)$ is larger in absolute value).

Note that the socially optimal tax rates are also the Nash equilibrium tax rates chosen by each type of candidate in a probabilistic voting model of electoral competition, if all income groups are equally responsive to policy favors, and if the two candidates move simultaneously (Persson and Tabellini 2002). This equilibrium always exists, because the probability of winning is a smooth function of of the tax rate selected by each candidate, taking the opponent's tax rate as given. Thus, the conditions stated in Appendix A.7, under which the socially optimal tax rate is lower under the populist than under the moderate government, also imply that, with probabilistic voting, the populist candidate promises a lower tax rate than the moderate. Hence, under these conditions, in equilibrium the populist candidate is supported by a coalition that over-represents poor disappointed voters and very rich voters.

8. Evidence

Our theoretical results yield two main predictions. First, populist parties either promote lower taxes and less redistribution than mainstream parties, or they converge to the same redistributive platforms as mainstream parties. Second, populist parties that promote lower taxes are supported by a coalition of poor voters who fall below their reference point and rich voters. In this section, we summarize preliminary evidence regarding both predictions. Our goal is not to provide a rigorous test of these hypotheses, but rather to discuss whether they are roughly consistent with observed general patterns in advanced democracies. We focus on major Western European countries where populist parties constitute a significant political force: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, the Netherlands, Spain, Sweden, and the United Kingdom. We exclude the United States under President Trump, which appears to be an obvious good fit for our predictions. Note that while the theory concerns a two-candidate equilibrium, almost all countries in our sample have more than two relevant parties. This difference may explain some of the patterns in the data.

Party platforms. Consider initially party platforms. We group parties into four main families: right-wing populist, left-wing populist, center-right, and center-left. We neglect niche parties, one-issue parties, and non-populist parties with radical policy positions. Only populist parties with a vote share of at least 5% in at least one parliamentary election between 2006 and 2020 are included (we provide the list of parties in Appendix C). We rely on Norris (2020) for the classification of populist parties and define them as left-wing or right-wing based on their ideological position as reported in the Chapel Hill Expert Survey (CHES).[24] Center-right parties are those that CHES classifies as belonging to the Conservative or Christian-Democratic party family. Center-left parties are those that CHES classifies as belonging to the Socialist or Green party family. Thus, center-right and center-left parties tend to be mainstream, and correspond to the moderate candidate in the model.

Figure C.1 in Appendix C illustrates the average redistributive stance of each party family in each country as measured in CHES (averaged over time and

24. We use the variable Ideology [lrgen], which reports the party's overall ideological stance (0=extreme left, 5=center, 10=extreme right). Right-wing populist parties are those scoring above 5, left-wing populist those scoring below 5.

parties), with 95% confidence intervals. Higher values correspond to being more pro-redistribution.[25] Three facts stand out.

First, in all countries except Spain, right-wing populist parties maintain a significant political presence. Left-wing populist parties are also widespread (they are present in 8 out of 12 countries), although less so than right-wing populists.

Second, in almost all countries, right-wing populist parties are either less in favor of redistribution than any other party family, or their redistributive stance is approximately the same as center-right parties (when present). Right-wing populist parties are also consistently less in favor of redistribution than center-left parties (when present), except in Greece and Finland, where they are at approximately the same level.

Third, when left-wing populist parties are present, they either maintain the same redistributive stance as center-left parties or are even more in favor of redistribution. In countries such as Greece, Spain, France, and Germany, there are extreme left-wing parties classified as populist that adopt aggressive redistributive platforms. Thus, our theory applies to right-wing populist parties, but it cannot be considered a general theory of populism. There are other features of populism, particularly of left-wing populism, not captured by the core ingredients of our model.

Supporting coalitions. Next, we examine who votes for populist parties. We rely on seven biennial waves of the European Social Surveys (ESS) between 2010 and 2023 (some waves are missing for certain countries) for the same countries listed above. Our goal is to explore which income groups support populist parties. The ESS does not ask about economic disappointment. Instead, it asks whether the respondent faces income difficulties, which we code as a dummy variable that equals one if they do.[26]

Thus, we estimate the following regression:

$$Y_{it} = \sum_{k \neq 3} \beta_k Q_{ik} + \gamma \text{Income Difficulties}_i + \alpha' \mathbf{X}_i + FE_{r(i)t} + \varepsilon_{it}$$

where i is the respondent, t is the survey wave, and Y_{it} is a dummy variable that equals one if the respondent voted for a populist party (right-wing or left-wing, depending on the regression) and 0 otherwise (abstentions are coded as missing). Populist parties are defined as above. The covariates of interest are the dummy variable Income Difficulties$_i$ and dummy variables for the respondent's income quintiles in the income distribution of the survey, Q_{ik} (we omit the middle quintile). Throughout we control for region×wave fixed effects ($FE_{r(i)t}$) and for several other covariates $\mathbf{X}_i$.[27]

25. To measure the parties' redistributive stance, we rely on the variable "redistribution" in CHES, which reports the party's position on rich-to-poor redistribution at four points in time: 2006, 2010, 2014, 2019. This variable varies between 0 (strongly favors redistribution) and 10 (strongly opposes). We recode it as 10 − redistribution.

26. The dummy variable equals one for respondents who answer 3 or 4 to the question "Which of the descriptions on this card comes closest to how you feel about your household's income nowadays?", to

TABLE 2. Populist vote, income and economic difficulties.

	Party Voted for in Last Election					
	RW Populist			LW Populist		
	(1)	(2)	(3)	(4)	(5)	(6)
Income Quintiles						
Q1	-0.000	-0.004	-0.003	0.008	0.012**	0.010*
	[0.005]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]
Q2	0.009**	0.005	0.005	-0.001	0.003	0.003
	[0.005]	[0.004]	[0.004]	[0.006]	[0.006]	[0.006]
Q4	0.001	0.011*	0.011**	-0.008*	-0.014***	-0.014***
	[0.005]	[0.006]	[0.006]	[0.004]	[0.005]	[0.005]
Q5	-0.007	0.017**	0.018**	-0.031***	-0.041***	-0.041***
	[0.006]	[0.008]	[0.009]	[0.007]	[0.008]	[0.008]
Income Difficulties	0.017**	0.014**	0.015**	0.038***	0.027***	0.024***
	[0.008]	[0.007]	[0.007]	[0.009]	[0.008]	[0.008]
Mean of Dep. Var.	0.157	0.157	0.157	0.129	0.129	0.129
Observations	99,302	99,302	99,302	99,302	99,302	99,302
Adj. R-squared	0.216	0.230	0.230	0.237	0.247	0.248
Socio-Demographics		✓	✓		✓	✓
Labor Market Status			✓			✓

Notes: The dependent variable is a dummy equal to 1 for respondents who voted for a right-wing (RW) or left-wing (LW) populist party during the last national elections, where populist parties have been identified following *the Global Party Survey* (Norris 2020). Individuals who refused to answer, answered "Don't know" or did not vote are excluded. The main independent variables are income quintile based on household income (Q3 omitted) and a dummy for experiencing income difficulties. All specifications include region-by-wave FEs and controls for missing values of independent variables. Columns (1) and (4) only include these RHS variables, plus the RHS variables of interest. Columns (2) and (5) add socio-demographic covariates: gender, age and age squared, marital status, educational attainment, immigrant status, and a dummy for residence in a rural area. Columns (3) and (6), additionally, control for respondents' labor market status through indicators for being retired and for being unemployed. Robust standard errors, clustered at the region level, are shown in brackets. */**/*** indicates statistical significance at the 10%/5%/1% level.

Table 2 reports the estimated coefficients of interest, for voting for right-wing populist parties (columns 1-3) and for left-wing populists (columns 4-6). In columns (1) and (4) we only control for region-by-wave fixed effects, columns (2) and (5) also control for socio-demographic features of the respondent, columns (3) and (6) report the full specification that also includes dummy variables for the respondent's labor market status. In line with the theoretical predictions, right-wing populist parties are

which the possible responses are 1 – Living comfortably on present income; 2 – Coping on present income; 3 – Difficult on present income; 4 – Extremely difficult on present income.

27. The other covariates included in the regression are age, age squared, dummy variables for gender, marital status, educational attainments, immigrant status, rural residence, and two dummy variables for labor market status (retired and unemployed). We also include a dummy variable that equals one for each missing observation (one dummy variable for each covariate). Appendix C provides a complete definition.

supported by voters who experience income difficulties, and by voters in the top two income quintiles. According to the estimated coefficients in column (3), individuals in the top income quintile are about 11% more likely to vote for a right-wing populist party, compared to those in the middle quintile. And those who experience income difficulties are also about 10% more likely to do so, compared to those who don't face income difficulties. Note that voters in the top two income quintiles, instead, are less likely to vote for left-wing populist parties, compared to those in the middle quintile, as expected given the redistributive stances documented in Figure C.1 in the Appendix.

Of course, the estimated coefficients only reflect correlations and cannot identify causal relations. Nevertheless, they are remarkably consistent with our predictions.

9. Concluding Remarks

As Western democracies continue to grapple with economic uncertainty and social discontent, it is important to reach a more profound understanding of the mechanisms driving populist success and its implications for democratic governance. This paper tries to shed light on these issues, with a particular emphasis on economic shocks and social insecurity. Paradoxically, despite an agenda that often favors the rich, the populist appeal transcends diverse socio-economic strata and fosters unexpected supporting coalitions. We argue that reference-dependent preferences play a pivotal role in elucidating this phenomenon.

Our analysis, which centers on a scenario of electoral competition between a moderate and a riskier populist candidate, unveils the nuanced interplay between candidate characteristics and voters' preferences. After a large negative shock to the economy, the inherent riskiness embodied by populist leaders becomes appealing to disillusioned voters seeking to mitigate their losses. Conversely, voters close to their expected income levels exhibit loss aversion, leading to opposition against risk-laden policies. This dynamic engenders two possible equilibrium outcomes: one with policy convergence, wherein both candidates compete for the same marginal voter and advocate analogous tax policies, and another with policy divergence, characterized by the populist proposing lower taxes and reduced redistribution, garnering the support of wealthier voters and deeply disillusioned individuals. The divergence arises from the differential impact of policy proposals on voters' reference-dependent preferences, particularly evident when a large fraction of the electorate falls below its reference point due to economic shocks.

The implications of our analysis extend beyond the immediate electoral outcomes and suggest several important directions for future research. First, the model hints at potential dynamic effects that could make populism self-reinforcing. When risky populist policies fail to deliver their promised outcomes, voters already below their reference point fall even further behind their expectations. Our framework suggests that such deeper disappointment could paradoxically strengthen rather than weaken the appeal of populist candidates, as increasingly disappointed voters become even more risk-seeking in their political choices. This dynamic could help explain the persistence of populist movements even after initial policy failures, and why some countries appear trapped in cycles of populist governance.

A second crucial avenue for research concerns the evolution of voters' reference points. While our model takes reference points as given, understanding their formation and adjustment is essential for a complete theory of populist success. Do reference points adjust downward after major economic shocks, and if so, how quickly? The answer has important implications for the persistence of populist appeal. Economic disappointment may have long-lasting political effects if reference points are sticky, even as objective conditions improve. Alternatively, if reference points adjust rapidly, the political impact of economic shocks might be more temporary. This question connects to broader issues in behavioral economics about expectation formation and adaptation to new circumstances. Moreover, it raises important policy questions about managing public expectations during economic transitions or reform programs.

A third important direction concerns the strategic responses available to moderate parties facing populist challengers. Our model suggests that traditional redistributive policies alone may be insufficient to win back disappointed voters, as these voters' political choices are driven more by risk-seeking behavior than by conventional economic incentives. This creates a difficult strategic dilemma for moderate parties: should they maintain their commitment to careful, well-tested policies at the risk of losing elections, or should they incorporate elements of populist platforms despite recognizing their risks? Understanding how moderate parties can effectively compete with populists while maintaining their fundamental character is crucial for democratic stability.

Finally, our analysis raises broader questions about institutional design in democracies subject to populist pressures. If reference-dependent preferences create systematic biases toward risky policies during periods of economic disappointment, should democratic systems incorporate institutional constraints specifically designed to manage such biases? Examples might include mandatory delay periods before major policy changes, requirements for supermajority support for certain types of reforms, or independent agencies with a mandate to evaluate certain policies. Such institutional changes would need to balance the legitimate desire to constrain potentially harmful policy choices against the need to maintain democratic responsiveness. These questions connect our analysis to the broader literature on constitutional political economy and optimal institutional design under behavioral biases. These research directions take on particular urgency in light of contemporary political developments. The persistence and proliferation of populist movements across established democracies suggest that they represent not a transitory phenomenon but a lasting feature of modern political systems. Their demonstrated capacity to reshape democratic institutions and governance makes understanding their causes and consequences a central challenge for political economy research.

Appendix A: Proofs of Main Results

This appendix contains the proofs of the main theoretical results presented in the paper.

A.1. Single Crossing with Equal Tax Rates

Single Crossing with equal tax rates. Let $t := (1-\tau)\theta + f(\tau) - x$. Then

$$w_{\boldsymbol{M}}(\theta,\tau) - w_{\boldsymbol{P}}(\theta,\tau) := \Delta(t) \tag{A.1}$$

where:

$$\Delta(t) = z + \mu(t) - \int_{-\varepsilon}^{\varepsilon} \mu(t - z + \eta)h(\eta)d\eta.$$

LEMMA A.1. *Under Assumption* 1: (i) *for* $t > 0$, $\Delta(\cdot)$ *is strictly positive and (weakly) decreasing, while* (ii) *for* $t < 0$, $\Delta(\cdot)$ *is a strictly increasing function.*

COROLLARY A.2. *For each given tax rate* τ *proposed equally to both candidates, the functions* $w_{\boldsymbol{M}}(\cdot,\tau)$ *and* $w_{\boldsymbol{P}}(\cdot,\tau)$ *cross at most once and if this occurs it must be at* $(1-\tau)\hat{\theta} + f(\tau) - x < 0$.

Proof. We take the derivative of $\Delta(\cdot)$ with respect to its argument in different points. Even though some points are not differentiable, the function is continuous as a difference of continuous functions, so the finitely many points of non-differentiability have zero effect on the level of Δ.

Consider first the range where $t > 0$. In this case, $\Delta(t)$ is strictly positive over the whole range. In fact, for this range, $\mu(t) = 0$, and hence

$$\Delta(t) = z - \int_{-\varepsilon}^{\varepsilon} \mu(t - z + \eta)h(\eta)d\eta > 0$$

as $\mu(\cdot) \leq 0$. Also, for $-\varepsilon > z - t$, $\Delta(t) = z$, whereas for $-\varepsilon < z - t$, $\Delta(t) = z - \int_{-\varepsilon}^{z-t} \mu(t - z + \eta)h(\eta)d\eta > 0$, which is decreasing in t as $\mu' > 0$ and $\mu(0) = 0$.

We now consider the range where $t < 0$. We will show that $\Delta(\cdot)$ always increases in this range. Note first that for $t < z - \varepsilon$ all arguments in μ are negative. This implies that

$$\Delta'(t) = \mu'(t) - \int_{-\varepsilon}^{\varepsilon} \mu'(t - z + \eta)h(\eta)d\eta \geq \mu'(t) - \int_{-\varepsilon}^{\varepsilon} \mu'(t + \eta)h(\eta)d\eta \geq 0.$$

The first inequality is implied by the convexity of μ (increasing first derivative, Assumption 1 (iii)) and $z > 0$. The second inequality is the consequence of Jensen's inequality and Assumption 1 (iv) (the function μ has concave first derivative). Obviously, when μ is strictly concave, the second inequality will be strict and hence Δ will be strictly increasing in this range.

Finally consider the range $z - \varepsilon < t < 0$. In this range, we have

$$\Delta(t) = z + \mu(t) - \int_{-\varepsilon}^{z-t} \mu(t - z + \eta)h(\eta)d\eta,$$

and hence

$$\Delta'(t) = \mu'(t) - \int_{-\varepsilon}^{z-t} \mu'(t - z + \eta)h(\eta)d\eta \geq \mu'(t)$$
$$- \int_{-\varepsilon}^{z-t} \mu'(t - z + \eta)h(\eta)d\eta - \int_{z-t}^{\varepsilon} h(\eta)d\eta\mu'_{-}(0),$$

where we used $\mu(0) = 0$. The inequality is immediate given $\mu'_{-}(0) > 0$ and $\varepsilon > z - t$. Furthermore, if we consider any convex and continuous extension of μ, it must be that $\mu'_{-}(0) \leq \mu'(t - z + \eta)$ for $\eta \in (z - t, \varepsilon)$ (consider the linear extension for example). Taking an extension that satisfies Assumption 1 (iv) as well, we hence have

$$\Delta'(t) \geq \mu'(t) - \int_{-\varepsilon}^{z-t} \mu'(t - z + \eta)h(\eta)d\eta$$
$$- \int_{z-t}^{\varepsilon} \mu'_{-}(0)h(\eta)d\eta \geq \mu'(t) - \int_{-\varepsilon}^{\varepsilon} \mu'(t - z + \eta)h(\eta)d\eta > 0,$$

where the last inequality is implied the Jensen's inequality and by Assumption 1 (iii) (convex μ). Again, if Assumption 1 (iii) is strict, we have strictly decreasing $\Delta(\cdot)$ in this range as well. □

A.2. Additional Lemmas

LEMMA A.3. (i) *If inverting the order of moves in the Stackelberg sequential game we obtain the same equilibrium outcome, such outcome is also a Nash equilibrium of the simultaneous move game in pure strategies.*
(ii) *Under Assumptions* 1*, and* 2 *with* $i(\cdot)$ *strictly convex if - by inverting the order of moves in the Stackelberg sequential game - we obtain the single crossing equilibrium* (*with policy convergence*) *such equilibrium outcome coincides to the Nash equilibrium outcome of the simultaneous move game.*

Proof. (i) If by inverting the order we get the same equilibrium outcome (τ_P^*, τ_M^*) we have that both P finds τ_P^* as a best response to τ_M^* and M finds τ_M^* as a best response to τ_P^*, that is, the two best response functions cross each other at the point. This implies that (τ_P^*, τ_M^*) is a Nash equilibrium.

(ii) The key observation is that there can be only one equilibrium outcome with single crossing and positive common taxes. We can then apply the previous result. Under our assumptions, the optimality condition condition $\hat{\theta}(\tau^*, \tau^*) = f'(\tau^*)$ is indeed compatible with only one value that also constitutes a crossing point and in turn with only one value of positive taxes. To see it, note first that if i is strictly convex f' decreases strictly with τ so if there are two equilibrium outcomes with policy convergence τ_1 and τ_2 the following relationship must hold: $\tau_1 > \tau_2 \Rightarrow \hat{\theta}(\tau_1, \tau_1) < \hat{\theta}(\tau_2, \tau_2)$. Now recall that the crossing condition for $\tau_P = \tau_M = \tau > 0$ solves:

$$\mu(t(\tau) - x) = -z + \mathbb{E}\left[\mu(t(\tau) - z + \eta - x)\right]$$

where $t(\tau) := (1-\tau)\hat{\theta}(\tau,\tau) + f(\tau) - x$. It is easy to see that if $\tau_1 > \tau_2$ we have $t(\tau_1) < t(\tau_2)$. But then - from $z > 0$ and the Jensens' inequality implied by Assumption 1 - we cannot have any two points of crossing. The definition of the object t and the line of proof of this statement indeed is exactly the same as that in Lemma A.1 and Corollary A.2 above. □

A.3. Proof of Lemma 1

As a preliminary result we would like to state some regularity conditions on the objects of analysis.

LEMMA A.4. *Assume $f(\cdot)$ is twice continuously differentiable, and $\mu(\cdot)$ are twice continuously differentiable everywhere except at zero.* (i) *For $\bar{\tau} := (\bar{\tau}_M, \bar{\tau}_P)$, let $\hat{\theta}$ be a threshold for which $w_P(\hat{\theta}, \bar{\tau}_P) = w_M(\hat{\theta}, \bar{\tau}_M)$. Then $\hat{\theta}(\cdot)$ is twice continuously differentiable as a function of (τ_M, τ_P) in an open neighbor of $\bar{\tau}$ as long as $w_{P,\theta}(\hat{\theta}, \bar{\tau}_P) \neq w_{M,\theta}(\hat{\theta}, \bar{\tau}_M)$.* (ii) *The condition $w_{P,\theta}(\hat{\theta}, \bar{\tau}_P) \neq w_{M,\theta}(\hat{\theta}, \bar{\tau}_M)$ is satisfied for all $\hat{\theta}$ associated to $\bar{\tau}_P \geq \bar{\tau}_M$.*

Proof.

(Sketch) (i) The result uses a basic version of the implicit function theorem which can be generalized to higher order derivatives. The assumptions imply the function $H : \theta \times [0,1] \times [0,1]$ defining the zero point:

$$H(\theta, \tau_M, \tau_P) := w_M(\theta, \tau_M) - w_P(\theta, \tau_P),$$

is twice continuously differentiable with respect to (θ, τ_M, τ_P) at any triplet $(\hat{\theta}, \bar{\tau}_M, \bar{\tau}_P)$ compatible with a zero of the function. And since $H = w_P - w_M$, the last assumption guarantees that $H_1(\hat{\theta}, \bar{\tau}_M, \bar{\tau}_P) \neq 0$ as required by the theorem.

To show that H is twice continuously differentiable we just need to check the $c = x$ cases. First of all, $\hat{\theta}$ cannot be such that $c_M(\hat{\theta}, \bar{\tau}_M) = x$ as this would be incompatible with a crossing point (i.e., a zero of H). In addition the continuity of μ at zero and the integral definition of w_P guarantee twice continuous differentiability of w_P.

(ii) Finally, we show that whenever $\bar{\tau}_P \geq \bar{\tau}_M$, $H_1(\hat{\theta}, \bar{\tau}_M, \bar{\tau}_P) \neq 0$. This is the single crossing case. The result follows since w_P crosses w_M from below and the derivative is changing continuously. □

Proof of Lemma 1.

(i) First of all, note that $c_M(\cdot, \tau_M)$ is strictly monotone in θ for all $\tau_M < 1$. We will hence be able to span all θ by looking at the whole range for c_M.

A. Consider all θ such that $c_M(\theta, \tau_M) \geq x$. Given our assumptions, it must be that $c_M(\theta, \tau_M) \geq \mathbf{E}\theta$. We now show that in this case the two functions w_M and w_P cannot cross because the populist has higher distortions than the moderate and the loss function μ is not acting for the latter. Formally: $c_M(\theta, \tau_M) \geq \mathbf{E}\theta$ and the monotonicity of consumption in θ implies $\theta \geq \mathbf{E}\theta$. As a consequence, $\tau_P \geq \tau_M$

implies that $c_M(\theta, \tau_P) \le c_M(\theta, \tau_M)$ and $\mathbb{E}c_P(\theta, \tau_P) = c_M(\theta, \tau_P) - z$. Since under M consumption is above the reference point, while under P consumption might end up being below x in the bad state (and $\mu \le 0$), the difference $w_P(\theta, \tau_P) - w_M(\theta, \tau_M)$ must be larger than z for all such θ.

B. Consider the complement set: θ such that $c_M(\theta, \tau_M) < x$. We here have two cases to consider.

B1. First, assume in addition that $c_M(\theta, \tau_M) \ge \mathbb{E}c_P(\theta, \tau_P)$. That is, we consider all θ such that we have $x > c_M(\theta, \tau_M) \ge \mathbb{E}c_P(\theta, \tau_P)$. The difference between the two functions w_M and w_P is strictly increasing in θ. They might hence cross at most once in this range. Formally, we have:[28]

$$\frac{\partial}{\partial \theta}[w_M(\theta, \tau_M) - w_P(\theta, \tau_P)] = (\tau_P - \tau_M) + (1 - \tau_M)\mu'(c_M - x) - (1 - \tau_P)\mathbb{E}\mu'(c_P - x) > 0,$$

where the last strict inequality is guaranteed even for $\tau_P = \tau_M$ because of Assumption 1 (iv). In particular, note that for any convex extension of μ we have $\mu'(c_M - x) \ge \int_{-\varepsilon}^{+\varepsilon} \mu'(c_P - x)h(\eta)d\eta$ and in any such extension, for $c_P - x > 0$ we must have $\mu'(c_P - x) \ge \mu'_-(0) > 0$. The inequality is hence satisfied a fortiori when for such values $\mu'(c_P - x) = 0$.

B2. Consider now the alternative case where $c_M(\theta, \tau_M) < x$ and $c_M(\theta, \tau_M) < \mathbb{E}c_P(\theta, \tau_P)$. Note that, since $\tau_P \ge \tau_M$, it must be that $\theta \le \mathbf{E}\theta$. And hence, under our assumption of f, we have $(1 - \tau_P)\theta + f(\tau_P) \le \mathbf{E}\theta$ and hence $\mathbb{E}c_P(\theta, \tau_P) = (1 - \tau_P)\theta + f(\tau_P) - z \le \mathbf{E}\theta - z \le x - \varepsilon$, where the last inequality is implied by our assumption. This in turn implies that $c_M(\theta, \tau_M) \le \mathbb{E}c_P(\theta, \tau_P) < x - \varepsilon$.

We now show that the two conditions $x - \varepsilon \ge c_M(\theta, \tau_M)$ and $\mathbb{E}c_P(\theta, \tau_P) \ge c_M(\theta, \tau_M)$ together imply that $w_P(\theta, \tau_P) > w_M(\theta, \tau_M)$. This will show that the functions w_P and w_M cannot cross in the relevant range of θ in this case. In words, we have $w_P(\theta, \tau_P) > w_M(\theta, \tau_M)$ since for this range of θ the populist enjoys higher average consumption and the riskiness of the convex punishment. More in detail, since $\mathbb{E}c_P(\theta, \tau_P) \ge c_M(\theta, \tau_M)$, it suffices to show that:

$$\mu\left(c_M(\theta, \tau_M) - x)\right) \le \mathbb{E}\mu\left(c_P(\theta, \tau_P) - x\right). \tag{A.2}$$

To see why (A.2) holds, note that $c_M(\theta, \tau_M) < x - \varepsilon$, so: (i) $\mu(c_M(\theta, \tau_M) - x) < 0$ and (ii) if we define $\tilde{c}_M(\theta, \tau_M) := c_M(\theta, \tau_M) + \eta$ where η takes the values between $-\varepsilon$ and $+\varepsilon$ with density h, from Jensen's inequality, we have $\mathbb{E}\mu\left(\tilde{c}_M(\theta, \tau_M) - x\right) \ge \mu\left(c_M(\theta, \tau_M) - x\right)$. Now, since $\mathbb{E}c_P(\theta, \tau_P) \ge \mathbb{E}\tilde{c}_M(\theta, \tau_M) = c_M(\theta, \tau_M)$ we obtain the result from the monotonicity of μ.

(ii) Since the only case where we can have a crossing point is **B1**, we have also shown the second part of the proposition. Namely, that at the crossing point $\hat{\theta}$, if any, we have $\mathbb{E}c_P(\hat{\theta}, \tau_P) < c_M(\hat{\theta}, \tau_M) < x$.

(iii) It is sufficient to observe that in region **B1** $\partial(w_M - w_P)/\partial\theta > 0$. □

28. Obviously, for $c_P = x$, μ' should be replaced by its left derivative, however this is of measure zero in the integral and we ignore it to simplify notation.

A.4. Proof of Lemma 2

Proof. The proof will be by contraposition. If such equilibrium exists, it will deliver single crossing. Given the monotonicity and continuity of the cumulate G, any point in the Best Response of the populist compatible with the stated equilibrium maximizes the threshold $\hat{\theta}$ defined in (2), and in particular it must solve the first order necessary condition (recall indeed that $\tau_0 < 1$ so the solution must be interior):

$$\hat{\theta}_2(\tau_M^*, \tau_P^*) = 0.$$

As well, note that, by single crossing, and the strict monotonicity of G all threshold points that maximize populist objective for the same fixed τ_M must deliver the same threshold. From (2), The derivative of the threshold level with respect to τ_P equals

$$\frac{\partial \hat{\theta}}{\partial \tau_P} = \frac{f_\tau(\tau_P) - \hat{\theta}(\tau_M, \tau_P)}{(1-\tau_M)R(c_M, c_P) - (1-\tau_P)}, \tag{A.3}$$

where $R(c_M, c_P) := \left(1 + \mu'(c_M - x)\right) / \left(1 + \int_{-\varepsilon}^{x - \mathbb{E}c_P} \mu'(\mathbb{E}c_P + \eta - x)h(\eta)d\eta\right)$. Notice this is well defined by Lemma A.4. Moreover, since we have shown in Lemma 1 that at the crossing point we have $\mathbb{E}c_P < c_M$ and $\mu'(\cdot)$ is positive, increasing, and concave, we have $R(c_M, c_P) > 1$. Note indeed that - by the Jensen's inequality - for any concave extension of μ' we would have $\mathbb{E}\mu'(c_P - x) \leq \mu'(c_M - x)$. Moreover, $\mathbb{E}\mu'(c_P - x) \geq \int_{-\varepsilon}^{x-\mathbb{E}c_P} \mu'(\mathbb{E}c_P + \eta - x)h(\eta)d\eta$, because $\mu' \geq 0$. As a consequence, the denominator is positive for $\tau_P \geq \tau_M$.

Since the solution is interior, we must have

$$f_\tau(\tau^*) = \hat{\theta}(\tau_M^*, \tau_P^*).$$

Consider now the problem of the moderate, who is minimizing $\hat{\theta}$. Since the game is zero sum, we can apply the envelope theorem even though the populist best response is not singled valued. In particular, under our assumptions, the moderate objective is differentiable (Milgrom and Segal 2002). By the envelope theorem, a necessary condition for the moderate optimality (minimization) is

$$\frac{\partial \hat{\theta}(\tau_M^*, \tau_P^*)}{\partial \tau_M} \geq 0, \qquad \text{with equality for } \tau_M > 0.$$

From (2), the derivative of $\hat{\theta}$ with respect to τ_M takes the following expression:

$$\frac{\partial \hat{\theta}}{\partial \tau_M} = \frac{R(c_M, c_P)[\hat{\theta}(\tau_M, \tau_P) - f_\tau(\tau_M)]}{(1-\tau_M)R(c_M, c_P) - (1-\tau_P)}. \tag{A.4}$$

We now show that expression (A.4) must be negative for each $\tau_P > \tau_M$ compatible with populist's optimum, hence incompatible with moderate optimality. First of all, note again, in the range $\tau_P > \tau_M$ and since $R(c_M, c_P) > 1$, the denominator of (A.4) is positive.

Since $f_\tau(\tau)$ is *decreasing* in τ, and recalling that at the interior populist optimum we have $\hat{\theta} = f_\tau(\tau_P)$, for $\tau_P > \tau_M$ we have $\partial\hat{\theta}(\tau_M, \tau_P)/\partial \tau_M < 0$ as claimed. □

A.5. Proof of Proposition 3

Proof. We consider two possibilities for an equilibrium.

(i) First, the case where $\tau_P^* \geq \tau_M^*$. From Lemma 2, the only situation compatible with equilibrium is $\tau_P^* = \tau_M^*$, that is Policy Convergence. It is immediate to see that under Policy Convergence no optimality condition is violated so this is a genuine possibility.

(ii) The other possibly is hence $\tau_P^* < \tau_M^*$ which can be optimal because the function $w_P(\cdot, \tau_P(\tau_M^*))$ and $w_M(\cdot, \tau_M^*)$ cross more than once (i.e. for at least two different values of θ). Again, as we discuss below, the concavity of f and of μ' makes such equilibrium a genuine possibility.

(iii) This is an immediate consequence of Lemma 2. We can indeed follow line by line the proof of Lemma 2 to show that we cannot have $\tau_P^* > \tau_M^*$ in equilibrium. In particular, we can compare the first order conditions for P and M under $\tau_M^* < \tau_P$ (and recalling that in this case we have single crossing), in order to show the same contradiction derived there. □

A.6. Proof of Proposition 5

Proof. First note that if the average voter prefers the populist candidate at $\tau_P = \tau_M = 0$, it also does so for any $\tau_P = \tau_M > 0$. The difference of the utility of the average voter with the populist and his utility with the moderate when they both set a tax rate equal to τ is indeed

$$\mathbb{E}\mu(\mathbf{E}(\theta - i(\tau) - z - x) - z - \mu(\mathbf{E}\theta - i(\tau) - x).$$

The derivate with respect to τ is $-i'(\tau)[\mathbb{E}\mu'(\mathbf{E}\theta - i(\tau) - z - x) - \mu'(\mathbf{E}\theta - i(\tau) - x)]$. The term inside square brackets is negative given our assumption on the third derivative of $\mu(.)$. Since $i'(\tau) > 0$, the derivative is positive.

Suppose now that $\tau_M = 0$. In that case, since $\tau_P \geq \tau_M$, we have a single crossing equilibrium. Let $\hat{\theta}(\tau_M, \tau_P)$ be the marginal voter when the tax rates are respectively τ_M and τ_P. Then $\hat{\theta}(0, \tau_P)$ is decreasing in τ_P and so the optimal response of the populist is $\tau_P^*(0) = 0$.

Now consider the choice of M. Let $V_M(\tau_M, \tau_P)$ denote the share of votes for M (obviously $V_M(\tau_M, \tau_P) + V_P(\tau_M, \tau_P) = 1$). Suppose that $\tau_M > 0$ and consider $\tau_P^*(\tau_M)$. We must consider two subcases.

i) If $\tau_P^*(\tau_M) \geq \tau_M$, we have single crossing. The optimal response of P in this range is $\tau_P^*(\tau_M) = \tau_M$. But $V_M(\tau_M, \tau_M) \leq V_M(0, 0)$. In fact, $\hat{\theta}(\tau, \tau)$ is implicitly defined by

$$\mu((1-\tau)\hat{\theta}(\tau,\tau) + f(\tau) - x) + z - \mathbb{E}\mu((1-\tau)\hat{\theta}(\tau,\tau) + f(\tau) - z - x) = 0.$$

Then, using the implicit function theorem, we obtain $d\hat{\theta}/d\tau = \Big(\hat{\theta}(\tau,\tau) - f'(\tau)\Big)/(1-\tau)$ which is positive as by assumption we are in the region where $\theta > \mathbf{E}\theta$.

When the threshold increases, the votes for the moderate decrease. So this cannot be part of an equilibrium.

ii) Alternatively, assume that $\tau_P^*(\tau_M) < \tau_M$. This means that $V_P(\tau_M, \tau_P^*(\tau_M)) \geq V_P(\tau_M, \tau_M)$, or, equivalently $V_M(\tau_M, \tau_P^*(\tau_M)) \leq V_M(\tau_M, \tau_M)$. As $V_M(\tau_M, \tau_M) \leq V_M(0, 0)$, this cannot be an equilibrium.

Therefore, the only equilibrium is of single crossing, with $\tau_M = \tau_P = 0$. □

A.7. Socially Optimal Tax Rate

Suppose first that the moderate candidate is in office. The social planner maximizes the utilitarian optimum, namely:

$$\int_0^\infty c(\theta, \tau) dG(\theta) + \int_0^{\theta_x(\tau)} \mu[c(\theta, \tau) - x] dG(\theta), \tag{A.5}$$

where, recall, $G(.)$ is the distribution of θ, and $\theta_x(\tau)$ is such that $c(\theta_x(\tau), \tau) = x$, namely

$$\theta_x(\tau) = \frac{x + i(\tau) - \tau \mathbf{E}\theta}{1 - \tau}$$

Taking the derivative with respect to τ, and recalling that $\mu[c(\theta_x(\tau), \tau) - x] = 0$, we obtain:

$$-i'(\tau) + \int_0^{\theta_x(\tau)} \mu'[c(\theta, \tau) - x][\mathbf{E}\theta - \theta - i'(\tau)] dG(\theta) \equiv M(\tau) \tag{A.6}$$

Now evaluate this expression at the point $\tau = 0$. Since $i'(0) = 0$, we can write it as:

$$\int_0^x (\mathbf{E}\theta - \theta)\mu'(\theta - x) dG(\theta). \tag{A.7}$$

If $\mathbf{E}\theta > x$ and there is a positive measure of agents with $\theta < x$ this expression is clearly strictly positive. Hence $\tau = 0$ cannot be a solution. Intuitively, disappointed agents are loss averse, and hence they have a higher marginal utility of income. Since $\mathbf{E}\theta > x$, all disappointed agents are poorer than the average. Hence, a positive tax redistributes from non-disappointed to disappointed agents, and this increases social welfare. Note that convexity plays no role here, just loss aversion is sufficient for this result.

If $\mathbf{E}\theta < x$ then (A.7) can be written as:

$$\int_0^{\mathbf{E}\theta} (\mathbf{E}\theta - \theta)\mu'(\theta - x) dG(\theta) + \int_{\mathbf{E}\theta}^x (\mathbf{E}\theta - \theta)\mu'(\theta - x) dG(\theta). \tag{A.8}$$

The first term is positive, the second term is negative, hence this expression has an ambiguous sign. Intuitively, some disappointed agents have above average income, so we can no longer tell whether a positive tax rate is optimal.

Rewriting (A.8), the condition for $\tau > 0$ to be an optimal solution is:

$$\int_0^{\mathbf{E}\theta} (\mathbf{E}\theta - \theta)\mu'(\theta - x) dG(\theta) > \int_{\mathbf{E}\theta}^x (\theta - \mathbf{E}\theta)\mu'(\theta - x) dG(\theta) \tag{A.9}$$

This condition is more likely to be met if:

(i) there are not too many people between $\mathbf{E}\theta$ and x.

(ii) the function $\mu(\cdot)$ is not too convex.

To see why convexity works against (A.9), note that $\mu'(\cdot)$ is an increasing function. Hence, the marginal utility of income is higher for the disappointed losers from redistribution than from the disappointed beneficiaries (i.e., μ' is uniformly higher on the RHS of (A.9). Moreover, the LHS of (A.9) sees higher values of μ' weighted by smaller values of $\mathbf{E}\theta - \theta$, while the opposite happens on the RHS. In other words, the covariance between $(\mathbf{E}\theta - \theta)$ and $\mu'(\theta - x)$ is negative, and this also works against (A.9) being satisfied.

We summarize these results in the following.

PROPOSITION A.5. *The socially optimal tax rate when the moderate candidate is in office is positive if* $\mathbf{E}\theta > x$ *and there is a positive measure of agents with* $\theta < x$, *or if* $\mathbf{E}\theta < x$ *and* (A.9) *holds.*

Suppose that one of these conditions is met, so that the optimal tax rate is positive, ruling out a corner solution. Then, the socially optimal tax rate is implicitly defined by setting (A.6) equal to 0. Intuitively, at a social optimum the marginal tax distortions, $i'(\tau) > 0$, are equated to the marginal social benefit of redistributing in favor of the disappointed agents (the second term in (A.6)).

When the populist is in power, a voter's consumption becomes stochastic:

$$c_P(\theta, \tau) = (1-\tau)\theta - z + \tau\mathbf{E}\theta - i(\tau) + \eta$$

where $\eta \sim U[-\varepsilon, \varepsilon]$.

The social planner now maximizes expected utilitarian welfare:

$$\int_0^\infty \mathbb{E}[c_P(\theta,\tau)]dG(\theta) + \int_0^\infty \mathbb{E}\left[\int_{c_P(\theta,\tau)<x} \mu[c_P(\theta,\tau) - x]\right] dG(\theta)$$

Since $\mathbb{E}[\eta] = 0$, we have:

$$\mathbb{E}[c_P(\theta,\tau)] = (1-\tau)\theta - z + \tau\mathbf{E}\theta - i(\tau)$$

Let $\theta_x^P(\tau, \eta)$ be the income level for which $c_P(\theta_x^P, \tau) = x$ for a given η:

$$\theta_x^P(\tau,\eta) = \frac{x - \tau\mathbf{E}\theta + i(\tau) + z - \eta}{1-\tau}$$

Repeating the same steps analyzed above, the first-order condition with respect to τ can be written as

$$= -i'(\tau) + \int_{-\varepsilon}^{\varepsilon}\int_0^{\theta_x^P(\tau,\eta)} \mu'[(c_P(\tau,\theta) - x][\mathbf{E}\theta - \theta - i'(\tau)]dG(\theta)\frac{1}{2\varepsilon}d\eta$$

From this condition, it is possible to derive the same conclusions as in the case where the moderate is in power, with the only modification that the socially optimal tax rate is surely positive when $E\theta > x + z$, which is a more restrictive condition than the one derived above.

Let τ_M^* be the socially optimal tax rate under candidate M, defined implicitly by (A.6), and assume $\tau_M^* > 0$. For convenience we rewrite (A.6) here as:

$$i'(\tau) = \int_0^{\theta_x^M(\tau)} \mu'[c_M(\tau, \theta) - x][\mathbf{E}\theta - \theta - i'(\tau)]dG(\theta). \tag{A.10}$$

We consider the more interesting case in which, at τ_M^*, some voters with above average income are disappointed, namely

$$\theta_x^M(\tau_M^*) > \mathbf{E}\theta \tag{A.11}$$

Define $\tilde{\theta}^M = \mathbf{E}\theta - i'(\tau_M^*)$. Thus $\tilde{\theta}^M$ is the value of θ for which τ_M^* is exactly optimal. Clearly $\tilde{\theta}^M < \mathbf{E}\theta$ when $\tau > 0$. Note that (A.11) implies $x + i(\tau_M^*) > \mathbf{E}\theta$, which in turn implies

$$\theta_x^M(\tau_M^*) > \tilde{\theta}^M \tag{A.12}$$

Now evaluate the optimality condition of P at the point τ_M^*. Using (A.10) we obtain

$$\int_{-\varepsilon}^{\varepsilon} \int_0^{\theta_x^P(\tau_M^*, \eta)} \mu'[(c_P(\tau_M^*, \theta) - x][\mathbf{E}\theta - \theta - i'(\tau_M^*)]dG(\theta)\frac{1}{2\varepsilon}d\eta - \tag{A.13}$$
$$\int_0^{\theta_x^M(\tau_M^*)} \mu'[c_M(\theta, \tau_M^*) - x][\mathbf{E}\theta - \theta - i'(\tau_M^*)]dG(\theta)$$

If this expression is negative at the point τ_M^*, then the optimal tax rate under the populist is $\tau_P^* < \tau_M^*$. If it is positive, then $\tau_P^* > \tau_M^*$.

Note that $\theta_x^P(\tau, \eta) = \theta_x^M(\tau) + \left[(z - \eta)/(1 - \tau)\right]$ and that the second term is positive when $\eta < z$ and negative otherwise. Using these observations, the expression (A.13) can be written as the sum of two terms, namely:

$$\int_0^{\theta_x^M(\tau_M^*)} [E\mu'(c_P(\theta, \tau_M^*) - x) - \mu'(c_M(\theta, \tau_M^*) - x)][E\theta - \theta - i'(\tau_M^*)]dG(\theta)]$$
$$+ \int_{-\varepsilon}^{z} \int_{\theta_x^M(\tau_M^*)}^{\theta_x^P(\tau_M^*, \eta)} \mu'[(c_P(\tau_M^*, \theta) - x][\mathbf{E}\theta - \theta - i'(\tau_M^*)]dG(\theta)\frac{1}{2\varepsilon}d\eta \tag{A.14}$$

where we have used the fact that, for $\theta_x^P(\tau_M^*, \eta) < \theta_x^M(\tau_M^*)$, voters with income $\theta \geq \theta_x^P(\tau_M^*, \eta)$ are above their reference point and hence for these voters $\mu'[(c_P(\tau_M^*, \theta) - x] = 0$.

Using (A.12), the first term, in turn, can be further decomposed in:

$$\int_0^{\theta_x^M(\tau_M^*)} [E\mu'(c_P(\theta,\tau_M^*)-x)-\mu'(c_M(\theta,\tau_M^*)-x)][E\theta-\theta-i'(\tau_M^*)]dG(\theta)]$$
$$=\int_0^{\tilde{\theta}^M(\tau_M^*)} [E\mu'(c_P(\theta,\tau_M^*)-x)-\mu'(c_M(\theta,\tau_M^*)-x)][E\theta-\theta-i'(\tau_M^*)]dG(\theta)]$$
$$+\int_{\tilde{\theta}^M(\tau_M^*)}^{\theta_x^M(\tau_M^*)} [E\mu'(c_P(\theta,\tau_M^*)-x)-\mu'(c_M(\theta,\tau_M^*)-x)][E\theta-\theta-i'(\tau_M^*)]dG(\theta)]$$

Note that $E\mu'(c_P(\theta,\tau)-x)-\mu'(c_M(\theta,\tau)-x)\leq 0$ because of our assumptions about the third derivative of μ, with equality if $\mu'''=0$. This implies that the first term is negative: redistribution is more effective for the moderate, and thus, he wants to set a higher tax rate for the voters whose income is below the average. But the second term is positive: disappointed voters whose income is above the average are harmed more by a higher tax rate, and hence they become even more disappointed. This effect induces the populist to set a higher tax rate than the moderate. The smaller the fraction of voters in the range $[\tilde{\theta}^M(\tau_M^*),\theta_x^M(\tau_M^*)]$, the more likely the overall effect is negative, implying a lower tax rate for the populist. Intuitively, according to these two terms, $\tau_P^*<\tau_M^*$ if, at τ_M^*, there are few disappointed voters who would like $\tau<\tau_M^*$.

Next, consider the second term in (A.14). If (A.11) holds, then (A.12) also holds, and this in turn implies $\mathbf{E}\theta-\theta-i'(\tau_M^*)<0$ in the range $\theta>\theta_x^M(\tau_M^*)$. Hence the second term is always negative. The intuition is the following: when the populist is "unlucky" ($\eta<z$), there are voters whose income is above the average who may become disappointed, whereas this does not occur under the moderate. For them, a higher tax rate is more harmful under the populist than under the moderate. Thus, this pushes τ_P^* down.

Overall, we have two effects that go in the direction of a lower tax rate for the populist and one that goes in the opposite direction. Summarizing, we can conclude that $\tau_P^*<\tau_M^*$ if the following condition holds:

$$\int_{\tilde{\theta}^M(\tau_M^*)}^{\theta_x^M(\tau_M^*)} [E\mu'(c_P(\theta,\tau_M^*)-x)-\mu'(c_M(\theta,\tau_M^*)-x)][E\theta-\theta-i'(\tau_M^*)]dG(\theta)]$$
$$<-\int_0^{\tilde{\theta}^M(\tau_M^*)} [E\mu'(c_P(\theta,\tau_M^*)-x)-\mu'(c_M(\theta,\tau_M^*)-x)]$$
$$\times[E\theta-\theta-i'(\tau_M^*)]dG(\theta)]$$
$$-\int_{-\varepsilon}^{z}\int_{\theta_x^M(\tau_M^*)}^{\theta_x^P(\tau_M^*,\eta)} \mu'[(c_P(\tau_M^*,\theta)-x][\mathbf{E}\theta-\theta-i'(\tau_M^*)]dG(\theta)\frac{1}{2\varepsilon}d\eta$$

This condition is satisfied if $\mu'''=0$, because the LHS is 0 while the RHS is positive, or if the fraction of voters in the range $[\tilde{\theta}^M(\tau_M^*),\theta_x^M(\tau_M^*)]$ is small, relative to the range $[0,\tilde{\theta}^M(\tau_M^*)]$. Namely if, at τ_M^*, there are few disappointed voters that would benefit from $\tau<\tau_M^*$, compared to the size of disappointed voters who would benefit from $\tau>\tau_M^*$.

Probabilistic Voting. Note that the socially optimal tax rates are also the Nash equilibrium tax rates chosen by each type of candidate in a probabilistic voting model of electoral competition, if all income groups are equally responsive to policy favors, and if the two candidates move simultaneously (Persson and Tabellini 2002). This equilibrium always exists, because the probability of winning is a smooth function of the tax rate selected by each candidate, taking the opponent's tax rate as given. Thus, the conditions stated above, under which the socially optimal tax rate is lower under the populist than under the moderate government, also imply that, with probabilistic voting, the populist candidate promises a lower tax rate than the moderate. Hence, under these conditions, in equilibrium the populist candidate is supported by a coalition that over-represents poor disappointed voters and very rich voters.

Appendix B: Empirical Analysis: Synthetic Control Method

This appendix provides detailed information on the empirical analysis presented in Section 2 of the paper.

B.1. Data

Our analysis builds on the comprehensive leadership database constructed by Funke, Schularick, and Trebesch (2023), which draws from the Archigos database to identify and classify political leaders across major economies. The dataset spans from 1900 (or independence) to 2020, encompassing 1,482 leaders with 1,853 leader spells. Among these, Funke, Schularick, and Trebesch identify 53 populist leaders (3.4%) who served 72 leader spells (3.9%). The geographic coverage includes major advanced and emerging market economies, the nine largest South American states, and ten key emerging markets from Asia and Africa. It combines two sources for GDP data: historical records from the Macrohistory Database (Jorda, Schularick, and Taylor 2017) and recent World Bank statistics.

Following Funke, Schularick, and Trebesch (2023)'s baseline specification, our estimation sample focuses on 18 countries that experienced 27 distinct episodes of populist governance. Several countries in our sample, including Argentina, Brazil, Ecuador, Italy, and Peru, underwent multiple populist periods. Table B.1 provides detailed country-level information.[29]

B.2. Empirical Strategy: Synthetic Control Method

Given the challenges in establishing causal relationships between populist governance and economic outcomes, we employ the Synthetic Control Method (SCM) as our primary empirical strategy. This approach, pioneered by Abadie and Gardeazabal

29. Compared to the sample of countries in Funke, Schularick, and Trebesch (2023), we exclude Slovakia from our analysis, due to insufficient data for calculating the 10-year rolling standard deviation.

TABLE B.1. Populist episodes sample for SCM estimation: Volatility.

	Year 1	Year 2	Year 3	Year 4	Total Episodes
Argentina	1947	1974	1990	2004	4
Bolivia	1953				1
Brazil	1952	1991			2
Chile	1953				1
Ecuador	1953	1961	1969	1997	4
India	1967				1
Israel	1997				1
Italy	1995	2002			2
Japan	2002				1
Mexico	1971				1
New Zealand	1976				1
Peru	1986	1991			2
Philippines	1999				1
South Korea	2004				1
Taiwan	2001				1
Thailand	2002				1
Turkey	2004				1
Venezuela	2000				1

(2003) and Abadie, Diamond, and Hainmueller (2010), and further developed in political economy applications by Abadie, Diamond, and Hainmueller (2015), enables systematic comparison between populist-led economies and synthetic counterfactuals. For a comprehensive review of the method, see Abadie (2021).

The SCM implementation consists of two key stages:

1. Construction of Comparison Units: We employ a data-driven procedure to assign non-negative weights to control countries, minimizing the disparity between observed trends in treatment and control units during the pre-treatment period. This approach ensures that our synthetic control closely mirrors the pre-populist economic trajectory of the treated country.

2. Generation of Counterfactuals: For each populist episode, we construct a synthetic counterfactual using data from a ± 15-year window around the leadership transition. The method rests on the assumption that this synthetic control approximates the economic trajectory the treated country would have followed absent populist leadership.

The weight determination process varies by outcome variable:

- For GDP level effects, following Funke, Schularick, and Trebesch (2023), we use real GDP per capita as the primary matching variable
- For GDP growth volatility effects, we match on pre-treatment trends of our key variable: the 10-year rolling standard deviation of per capita real GDP growth

More specifically, for each populist episode e, we let X_0^e denote the vector of covariates in the treatment country and X^e the matrix of covariates for all preselected[30] counterfactual countries i. W^e denotes the vector of individual weights w_i^e, $i = 1, ..., I$. The optimal weighting vector $\hat{W}^e$ is chosen to minimize the following mean-squared error:

$$\min_{\{W_e\}} \left(X_0^e - X^e W^e\right)' V^e \left(X_0^e - X^e W^e\right), \quad e = 1, ..., E,$$
$$\text{s.t.} \sum_{i=1}^{I} w_i^e = 1 \quad \forall e$$
$$w_i^e \geq 0 \quad \forall e, i.$$

where V^e is a positive semidefinite and symmetric matrix. In our case, its elements are chosen so as to minimize the mean squared prediction error of the outcome variable for the pre-intervention periods (see Abadie, Diamond, and Hainmueller 2010).

To estimate the effect of populist leaders on GDP volatility, we compute the standard deviation of the real annual GDP per capita growth of country i in year t, calculated with a rolling window of 10 years. That is,

$$\sigma_{i,t} = \left(\sum_{k=0}^{9} \frac{\left(g_{i,t-k} - \bar{g}_t\right)^2}{9}\right)^{\frac{1}{2}} \tag{B.1}$$

where $\sigma_{i,t}$ represents the standard deviation, $g_{i,t-k}$ is the real GDP growth in period $t-k$, and $\bar{g}_t$ is the average value calculated as

$$\bar{g}_t = \sum_{k=0}^{9} \frac{g_{i,t-k}}{10}. \tag{B.2}$$

It is important to highlight that, since the dependent variable is a rolling calculation of 10 years, the 1st until the 9th post-treatment observation include GDP growth information from the pre-treatment period. For example, the 6th post-treatment standard deviation includes: 4 observations of GDP growth from the pre-treatment period and 6 observations of GDP growth from the post-treatment period.

For episodes that occurred during wartime, we assigned missing values corresponding to the war years. In total, six episodes were adjusted due to proximity to war periods.

Uncertainty Quantification. The uncertainty in the control group comes from randomness in the construction of the synthetic control weights in the pretreatment period (in-sample uncertainty) and from the out-of-sample prediction due to the stochastic error after the treatment (out-of-sample uncertainty). We implement both methods to obtain the confidence intervals using a simulation-based approach for in-sample (quantified through 200 simulations), and a sub-Gaussian bounds approach for

30. Of course, we drop those countries that experienced a populist leadership during the episode.

the out-of-sample uncertainty. Following Funke, Schularick, and Trebesch (2023), our displayed confidence intervals reflect only out-of-sample uncertainty, as these provide more conservative bounds. A more detailed explanation of the construction of the confidence interval follows.

The confidence intervals are based on Cattaneo, Feng, and Titiunik (2021) and on Cattaneo et al. (2025). We implement both methods to obtain the confidence intervals: using a simulation-based approach for in-sample uncertainty (quantified through 200 simulations), and a sub-Gaussian bounds approach for the out-of-sample uncertainty. However, following Funke, Schularick, and Trebesch (2023), in our graphs we only consider the out-of-sample uncertainty to construct the confidence interval, as it generally results in wider bands compared to in-sample uncertainty.

B.3. Results

The results are displayed in Figure 1 in the main text. The uncertainty in the control group comes from randomness in the construction of the synthetic control weights in the pretreatment period (in-sample uncertainty) and from the out-of-sample prediction due to the stochastic error after the treatment (out-of-sample uncertainty). We implement both methods to obtain the confidence intervals using a simulation-based approach for in-sample (quantified through 200 simulations), and a sub-Gaussian bounds approach for the out-of-sample uncertainty. Following Funke, Schularick, and Trebesch (2023), our displayed confidence intervals reflect only out-of-sample uncertainty, as these provide more conservative bounds. Detailed derivations of these intervals are available in the Online Appendix.

A populist taking power is not a random event. Consistently with other findings, Funke, Schularick, and Trebesch (2023) document that: "Populists often enter the government in the wake of economic financial crises, when growth performance is weak." (p. 3273). In the SCM, such pre-existing weak economic performance is captured in the construction of the control group.

B.4. Computing the Average Effect

From the synthetic control estimation, we can obtain the standard deviation path for each treated populist episode and its respective synthetic control, from period -15 to +15. We use this information to obtain an "average" effect of the populist leader on GDP per capita volatility.

For each episode e, we define the two following dummies:

$$P_i^e = \begin{cases} 1 & \text{if the observation corresponds to the country experiencing the populist leader} \\ 0 & \text{if the observation corresponds to the synthetic control associated to episode} \end{cases}$$

and

$$T_t^e = \begin{cases} 1 & \text{if the year corresponds to a post-treatment period, i.e, } t \in [1, 15] \\ 0 & \text{if the year corresponds to a pre-treatment period, i.e, } t \in [-15, 0] \end{cases}$$

We can now run the following regression:

$$\tilde{\sigma}^e_{i,t} = \gamma^e_0 + \gamma_1 P^e_i \times T^e_t + \gamma_2 T^e_t + \gamma^e_3 P^e_i + \varepsilon^e_{i,t} \tag{B.3}$$

where $\tilde{\sigma}^e_{i,t}$ is the 10-years rolling standard deviation of either the treated country (if $P^e_i = 1$) or the synthetic control obtained from the SCM estimation (if $P^e_i = 0$), γ^e_0 is the episode-specific constant, $\varepsilon^e_{i,t}$ represents the error term, and $t \in [-15, 15]$. The estimation hence quantifies an "average" effect of a populist leader on GDP per capita growth volatility.

The results are shown in columns (1) and (2) of Table 1 in the main text. The estimated effect of increasing the standard deviation of growth by 0.72 percentage points corresponds to an increase of about 20% relative to the average standard deviation of growth in the 15 pre-treatment periods.

For completeness, in Table B.2 we report the estimation results where we replace $\tilde{\sigma}^e_{i,t}$ for the log of real GDP.

TABLE B.2. Effect of populism on real log GDP.

	(1)	(2)
Populist	-0.0919***	-0.0919*
	(0.0155)	(0.0531)
Clustered S.E. at observation-episode level	No	Yes
R squared	0.49	0.49
Number of observations	1,644	1,644

Notes: This table reports the effect of populism on real log GDP. Standard errors are shown in parentheses. ***, **, * represents significance at 1%, 5% and 10%, respectively.

Appendix C: Supporting Evidence on Voting Patterns

This appendix provides supporting evidence on party platforms and voting behavior discussed in Section 8 of the paper.

C.1. Redistributive Stance of Populist Parties

We examine the redistributive platforms of different party families across major Western European countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, the Netherlands, Spain, Sweden, and the United Kingdom.

We group parties into four main families: right-wing populist, left-wing populist, center-right, and center-left. We neglect niche parties, one-issue parties, and non-populist parties with radical policy positions. Only populist parties with a vote share of at least 5% in at least one parliamentary election between 2006 and 2020 are included (the party list is based on data from Manacorda, Tabellini, and Tesei (2025), see Table C.1). We rely on Norris (2020) for the classification of populist parties and define them as left-wing or right-wing based on their ideological position as reported in the Chapel Hill Expert Survey (CHES, Rovny et al. 2025).[31]

Center-right parties are those that CHES classifies as belonging to the Conservative or Christian-Democratic party family. Center-left parties are those that CHES classifies as belonging to the Socialist or Green party family. Thus, center-right and center-left parties tend to be mainstream, and correspond to the moderate candidate in the model.

Figure C.1 illustrates the average redistributive stance of each party family in each country as measured in CHES (averaged over time and parties), with 95% confidence intervals. Higher values correspond to being more pro-redistribution.[32]

31. We use the variable Ideology [lrgen], which reports the party's overall ideological stance (0=extreme left, 5=center, 10=extreme right). Right-wing populist parties are those scoring above 5, left-wing populist those scoring below 5.

32. To measure the parties' redistributive stance, we rely on the variable "redistribution" in CHES, which reports the party's position on rich-to-poor redistribution at four points in time: 2006, 2010, 2014, 2019. This variable varies between 0 (strongly favors redistribution) and 10 (strongly opposes). We recode it as 10 - redistribution.

Panel A

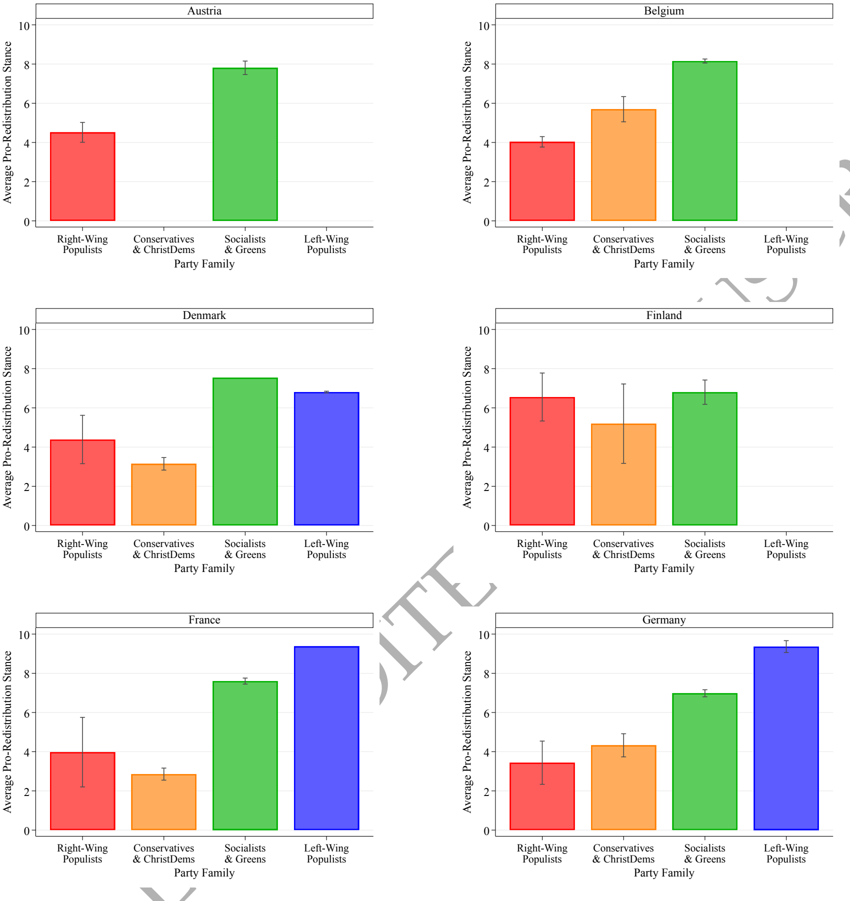

FIGURE C.1. The Redistributive platforms of party families in Europe.

Panel B

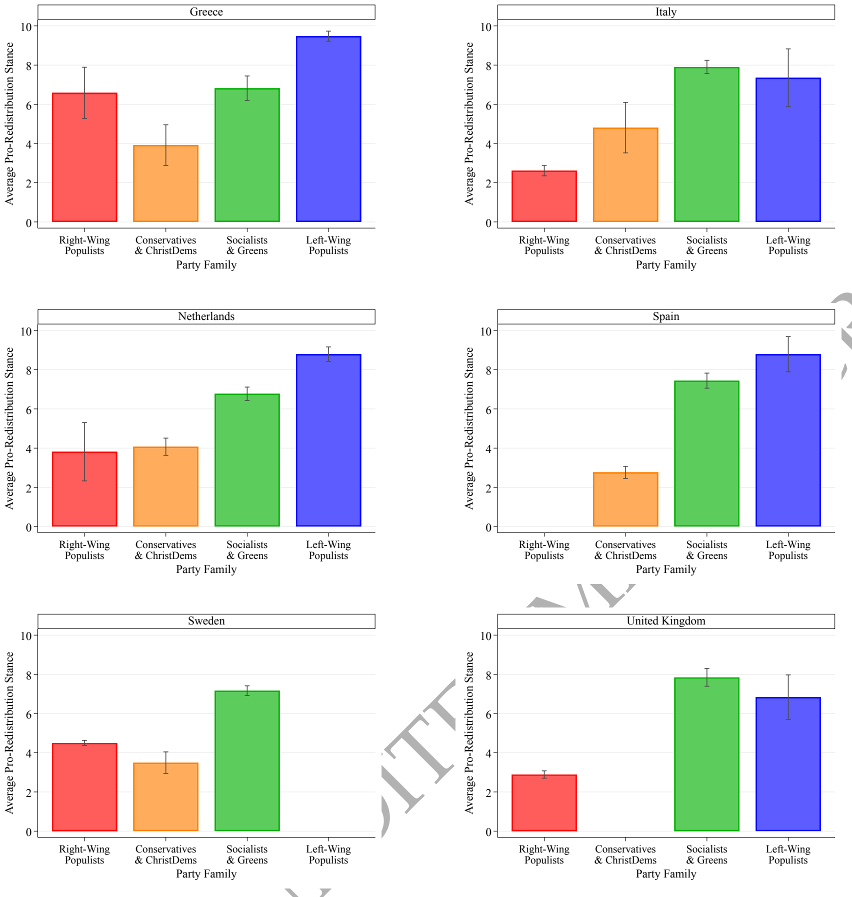

FIGURE C.1. The redistributive platforms of party families in Europe (continued). Error bars mark the 95% confidence intervals (CIs), estimated using the normal distribution, for the mean of the redistributive platform of each party family across all years available. Denmark (centre–left) and France (left–wing populists) only have one observation, hence, no confidence intervals are available for these party families. Additionally, for Germany (right-wing populists), Greece (right-wing populists), Spain (left-wing populists), and Italy (left-wing populists) only two years of data are available.
ALT TEXT: Figure with 10 panels, each showing the mean pro-redistribution stance (scale 0 to 10) of 4 party families for a single Western European country. In most countries, right-wing populists score lowest or among the lowest on redistribution, while left-wing populists, when present, score highest. Error bars show 95 percent confidence intervals.

TABLE C.1. List of “Big” populist parties.

Country	Populist Parties
Austria	Austrian People’s Party; Freedom Party of Austria
Belgium	New Flemish Alliance; Flemish Interest
Denmark	Social Democrats; Liberal Alliance; Danish People’s Party
Finland	The Finns Party
France	National Front; France Unbowed
Germany	The Left; Alternative for Germany
Greece	Communist Party of Greece; Independent Greeks; Coalition of the Left and Progress; Golden Dawn
Italy	Five Star Movement; Northern League; Forza Italia
Netherlands	Socialist Party; Party for Freedom
Spain	Podemos
Sweden	Christian Democrats; Sweden Democrats
United Kingdom	Conservative Party; Labour Party; UK Independence Party

Notes: This table reports the country and name of each populist party included in Figure C.1. Parties were selected if they obtained a vote share of at least 5% in at least one parliamentary election between 2006 and 2020 (based on data from data from Manacorda, Tabellini, and Tesei 2025), and if they were classified as populist by Norris (2020).

C.2. Who Votes for Populist Parties: Variable Definitions

Data used in Table 2 are taken from the European Social Survey (ESS), as described in the text. Below we provide a precise definition of all variables used in the analysis.

- *Voted for populist party:* dummy variable taking value 1 if an individual reports having voted for a populist party at the last national elections of their country, and 0 if he voted for another party (answer to: “Which party did you vote for in the last national elections?”).
- *Income difficulties*: dummy variable taking value 1 for individuals who are experiencing economic difficulties and 0 otherwise. Specifically, the variable equals 1 for those who answer 3 or 4 to the ESS question “Which of the descriptions on this card comes closest to how you feel about your household’s income nowadays?”, to which the possible responses are 1 “Living comfortably on present income”; 2 “Coping on present income”; 3 “Difficult on present income”; 4 “Extremely difficult on present income”.
- *Gender*: dummy taking value 1 if respondent is female.
- *Age and age squared*.
- *Rural/urban residence*: dummy equal to 1 if respondent describes their domicile as being located in a “country village” or in a “farm home or countryside” and 0 otherwise (“big city”, “suburbs or outskirts of big city”, or “town or small city”).
- *Married*: dummy taking value 1 if respondent is married.
- *Education*: categorical variable coding 7 levels of maximum educational attainment of the respondent based on ISCED classification.
- *Unemployed*: dummy equal to 1 if respondent is unemployed or inactive.
- *Retired*: dummy taking value 1 if respondent is retired.

- *Immigrant*: dummy taking value 1 if the respondent was born in a different country than the one where the survey is taken.
- *Income quintile*: income quintiles based on self-reported household income of respondent. The original variable in the ESS reports deciles, which have been aggregated into 5 groups made up of 2 deciles each.
- *Region fixed effects*: regions are coded according to their NUTS-2 (or NUTS-1, where NUTS-2 is unavailable) classification.

References

[1] Abadie, Alberto, and Javier Gardeazabal (2003). "The Economic Costs of Conflict: A Case Study of the Basque Country." *American Economic Review*, 93(1), 113–132.

[2] Abadie, Alberto, Alexis Diamond, and Jens Hainmueller (2010). "Synthetic Control Methods for Comparative Studies: Estimating the Effect of California's Tobacco Control Program." *Journal of the American Statistical Association*, 105, 493–505.

[3] Abadie, Alberto, Alexis Diamond, and Jens Hainmueller (2015). "Comparative Politics and the Synthetic Control Method." *American Journal of Political Science*, 59, 495–510.

[4] Abadie, Alberto (2021). "Using Synthetic Controls: Feasibility, Data Requirements, and Methodological Aspects." *Journal of Economic Literature*, 59, 391–425.

[5] Alesina, Alberto, and Francesco Passarelli (2019). "Loss Aversion in Politics." *American Journal of Political Science*, 63, 936–947.

[6] Algan, Yann, Sergei Guriev, Elias Papaioannou, and Evgenia Passari (2017). "The European Trust Crisis and the Rise of Populism." *Brookings Papers on Economic Activity*, 309–382.

[7] Aragones, Enriqueta, and Thomas R. Palfrey (2002). "Mixed Equilibrium in a Downsian Model with a Favored Candidate." *Journal of Economic Theory*, 103, 131–161.

[8] Arkhangelsky, Dmitry, Susan Athey, David A. Hirshberg, Guido W. Imbens, and Stefan Wager (2021). "Synthetic Difference-in-Differences." *American Economic Review*, 111, 4088–4118.

[9] Cattaneo, Matias D., Yingjie Feng, and Rocio Titiunik (2021). "Prediction Intervals for Synthetic Control Methods." *Journal of the American Statistical Association*, 116, 1865–1880.

[10] Cattaneo, Matias D., Yingjie Feng, Filippo Palomba, and Rocio Titiunik (2025). "scpi: Uncertainty Quantification for Synthetic Control Methods." *Journal of Statistical Software*, 113(1), 1–38.

[11] Clarke, Damian, Daniel Pailañir, Susan Athey, and Guido Imbens (2023). "Synthetic Difference-in-Differences Estimation." IZA Discussion Paper No. 15907.

[12] Dal Bo, Ernesto, Frederico Finan, Olle Folke, Torsten Persson, and Johanna Rickne (2023). "Economic Losers and Political Winners: Sweden's Radical Right." *Review of Economic Studies*, 90, 675–706.
[13] Funke, Manuel, Moritz Schularick, and Christoph Trebesch (2016). "Going to Extremes: Politics after Financial Crises, 1870–2014." *European Economic Review*, 88, 227–260.
[14] Funke, Manuel, Moritz Schularick, and Christoph Trebesch (2023). "Populist Leaders and the Economy." *American Economic Review*, 113, 3249–3288.
[15] Gennaioli, Nicola, and Guido Tabellini (2025). "Presidential Address: Identity Politics." *Econometrica*, 93, 1937–1967.
[16] Grillo, Edoardo, and Carlo Prato (2023). "Reference Points and Democratic Backsliding." *American Journal of Political Science*, 67, 71–88.
[17] Groseclose, Tim (2001). "A Model of Candidate Location When One Candidate Has a Valence Advantage." *American Journal of Political Science*, 45, 862–886.
[18] Guiso, Luigi, Helios Herrera, Massimo Morelli, and Tommaso Sonno (2024). "Demand and Supply of Populism." *Economica*, 91, 588–620.
[19] Guriev, Sergei, and Elias Papaioannou (2020). "The Political Economy of Populism." *Journal of Economic Literature*, 60, 753–832.
[20] Hacker, Jacob S., and Paul Pierson (2020). *Let Them Eat Tweets: How the Right Rules in an Age of Extreme Inequality*. Liveright.
[21] Jorda, Oscar, Moritz Schularick, and Alan M. Taylor (2017). "Macrofinancial History and the New Business Cycle Facts." *NBER Macroeconomics Annual*, 31, 213–263.
[22] Kőszegi, Botond, and Matthew Rabin (2006). "A Model of Reference-Dependent Preferences." *Quarterly Journal of Economics*, 121, 1133–1165.
[23] Kőszegi, Botond, and Matthew Rabin (2007). "Reference-Dependent Risk Attitudes." *American Economic Review*, 97(4), 1047–1073.
[24] Krasa, Stefan, and Mattias Polborn (2010). "Competition between Specialized Candidates." *American Political Science Review*, 104, 745–765.
[25] Krasa, Stefan, and Mattias Polborn (2012). "Political Competition between Differentiated Candidates." *Games and Economic Behavior*, 76, 249–271.
[26] Krasa, Stefan, and Mattias Polborn (2014). "Social Ideology and Taxes in a Differentiated Candidates Framework." *American Economic Review*, 104, 308–322.
[27] Lockwood, Ben, and James Rockey (2020). "Negative Voters? Electoral Competition with Loss-Aversion." *Economic Journal*, 130, 2619–2648.
[28] Manacorda, Marco, Guido Tabellini, and Andrea Tesei (2025). "Mobile Internet and the Rise of Communitarian Politics." CESifo Working Paper Series No. 9955.
[29] Milgrom, Paul, and Ilya Segal (2002). "Envelope Theorems for Arbitrary Choice Sets." *Econometrica*, 70, 583–601.
[30] Norris, Pippa, and Ronald Inglehart (2019). *Cultural Backlash: Trump, Brexit and Authoritarian Populism*. Cambridge University Press.
[31] Norris, Pippa (2020). "Measuring Populism Worldwide." HKS Working Paper No. RWP20-002.

[32] Panunzi, Fausto, Nicola Pavoni, and Guido Tabellini (2024). "Economic Shocks and Populism." *Economic Journal*, 134, 3047–3061.
[33] Passarelli, Francesco, and Guido Tabellini (2017). "Emotions and Political Unrest." *Journal of Political Economy*, 125, 903–946.
[34] Persson, Torsten, and Guido Tabellini (2002). *Political Economics*. MIT Press.
[35] Quattrone, George A., and Amos Tversky (1988). "Contrasting Rational and Psychological Analyses of Political Choice." *American Political Science Review*, 82, 719–736.
[36] Rovny, Jan, Jonathan Polk, Ryan Bakker, Liesbet Hooghe, Seth Jolly, Gary Marks, Marco Steenbergen, and Milada Anna Vachudova (2025). "The 2024 Chapel Hill Expert Survey on Political Party Positioning in Europe: Twenty-Five Years of Party Positional Data." *Electoral Studies*, 97.