Economic Shocks and Populism

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Fausto Panunzi, Nicola Pavoni, and Guido Tabellini[1,2,3,5]

Abstract: We study how voters' preferences between a safe incumbent and a risky opponent change in the aftermath of a negative aggregate shock. With reference-dependent preferences, economically disappointed voters become risk lovers, and hence are attracted by the more risky candidate. Survey data on the German SOEP are consistent with our assumptions and theoretical predictions on voters' behavior.

1 Introduction

The party systems of several Western democracies have been transformed by the rise of populism. Mainstream centrist and socialdemocratic parties have lost support, while new populist politicians have gained popularity and in some countries they have shaped government policy. Several empirical papers have shown that this transformation is associated with adverse economic shocks and economic insecurity. Survey evidence shows that individuals who feel economically insecure or fear a loss of social status are more likely to vote for populist parties (Guiso et al. 2017, Gidron and Hall 2017, Dal Bo et al. 2018). Communities that have suffered large employment losses due to import competition from China support populist parties and have become more polarized (Colantone and Stanig 2018, Autor et al. 2020). These recent phenomena are also consistent with historical evidence showing that large recessions induced by financial crisis are associated with increased polarization and a shift towards new radical right wing parties (Mian et al. 2014, Funke et al. 2016).

This association between populism and economic adversity is puzzling, because several populist parties or politicians support right wing policy platforms of tax cuts and welfare state retrenchments that benefit the rich but seem to run counter the interests of the weakest segments of society. And yet, populist parties have gained vote shares irrespective of their stance on redistribution. Why is this happening, and what are the implications of these phenomena?

In this paper we answer this question by taking the insights of reference-dependent preferences to political economics, that is we assume that voters evaluate economic outcomes relative to a reference point. This enables us to formalize the idea that populist politicians draw support from disappointed voters. In our setting, disappointment is induced by having actual income below one's reference point, and disappointment

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makes voters more willing to take risks.[1] A feature of the new populist politicians is that they are more risky than their mainstream counterparts. This is not just because they are new and untested. Populist politicians often reject external constraints and checks and balances limiting government discretion (Mueller 2017, Rode and Revuelta 2015), and support more radical and unconventional policies.[2] This intrinsic riskiness makes populist politicians particularly attractive to disappointed voters, who have already lost of a lot relative to their expectations and therefore attach a large value to the chance of getting back towards their reference point. For the same reason, instead, they are opposed by voters whose income is close to what they expected, and who are particularly fearful of risk because of their loss aversion. Negative aggregate shocks have the effect of inducing disappointment among some voters and therefore make more appealing the vote for risky parties and risky candidates.

The idea that populist politicians are attractive to some voters also because they are risky is supported by survey evidence. Exploiting data from the German Socio Economic Panel, we show that individuals who become highly disappointed with their economic situation also become very risk lovers and tend to switch towards populist and radical parties.

Our paper is related to a rapidly growing literature on populism, recently reviewed by Guriev and Papaioannou (2020) - see also Levy et al. (2020). This literature too seeks to explain why economic distress is associated with support for populist parties, and why voters hurt by adverse economic shocks support right wing policy platforms. A common explanation is that voters care about a second policy dimension, such as cultural issues or immigration policy (eg. Norris and Inglehart 2019, Bonomi et al. 2020, Huber 2017). They are thus prepared to accept less redistribution, in order to get the cultural or immigration policy that they prefer. Closer to this paper, Ali et al. (2023) show that, in survey data, negative emotions and life dissatisfaction are correlated with voting for populist candidates during the 2016 US elections.

Since the seminal work of Kahneman and Tversky (1979), a very large literature has explored the insights of prospect theory in a variety of economic settings (see the survey by Barberis 2013). Quattrone and Tversky (1988) provide experimental evidence that prospect theory may also explain voters' behavior. Among other observations, they (informally) point out that adverse economic circumstances may induce voters to seek political risks, and this may benefit lesser known challengers and hurt mainstream incumbents. We are not

[1] We follow the tradition of Bell (1985) and Loomes and Surgden (1986) who model disappointment using the framework of *reference-dependent preferences* later developed by Koszegi and Rabin (2006). They assume agents encodes outcomes as gains and losses relative to a reference point x and evaluate consumption using an additive separable utility of the form

$$u(c) + \mu(u(c) - u(x))$$

where $u(c)$ is interpreted as the 'intrinsic utility' of consumption and μ as a 'universal gain-loss utility function'. Reference-dependent preferences also build on Kahneman and Tversky's Prospect Theory in that they assume the function μ displays both *loss aversion* and *diminishing sensitivity* (see below for details). Koszegi and Rabin however abstract from 'probability weighting', a key ingredient of Prospect Theory that developed independently from the reference-dependence component over the years (for a recent survey on reference-dependent preferences and their relationship to Prospect Theory, see the Handbook Chapter by O'Donoghue and Sprenger, 2018).

[2] In emerging countries, populist governments often enacted overly expansionary macroeconomic policies that ultimately led to balance of payments crisis and economic collapse (Dornbusch and Edwards 1991, Edwards 2019, Herrera et al. 2019). Only a few Western democracies have had populist governments, but in Italy the uncertainty associated with the rise of populist parties was reflected in Credit Default Swaps (Balduzzi et al. 2020) and in comments in the press: "*Italy is on the brink of installing the most unconventional, inexperienced government to rule a western European democracy since the EU's founding Treaty of Rome in 1957*", Rome opens its gates to the modern barbarians, Financial Times, May 14, 2018. "*By abandoning traditional parties, unable to meet its needs, Southern Italy has declared its willingness to experiment something that it is not known yet and that could be better than the status quo. The opposite of risk aversion*". Drago and Reichlin, Corriere della Sera, March 13, 2018.

aware of any paper that formally explores the implications of this idea in a setting of electoral competition, where candidates differ in their intrinsic risk profiles.[3]

Some recent papers have studied the implications of reference dependent preferences for political behavior. Alesina and Passarelli (2019) and Lockwood and Rockey (2015) study electoral competition when voters are loss averse. Passarelli and Tabellini (2017) study political protests in a setting where citizens become angry if they feel that they are treated unfairly relative to their (endogenous) reference point. Grillo and Prato (2020) and Besley and Persson (2019) assume that endogenous political institutions shape citizens' reference points, and show how this in turn affects political incentives to strategically manipulate institutions. Binzell and Carvalho (2016) show that economic disappointment (modelled as reference dependence) has led to an Islamic revival in Egypt. None of these papers considers attitudes towards risk.

Reference dependent preferences in choices under uncertainty have been studied in several economic applications, following the seminal work by Koszegi and Rabin (2006), (2007). Our model of voters' behavior uses a similar approach, although rational and self-fulfilling expectations do not play a central role in our static setting.

A large empirical literature has studied the determinants of attitudes towards risk, using survey or experimental evidence (see for instance Dohmen et al. 2011). This literature often finds that risk aversion tends to increase during economic downturns, but there is also evidence that becoming unemployed is associated with increased preference for risk (Dohmen et al. 2016).

The outline of the paper is as follows. In Section 2 we study the German SOEP. Section 3 lays out the theoretical model of reference dependent preferences in a political setting. Section 4 discusses electoral competition over redistributive taxation.

2 Empirical Motivation

In this section we provide evidence that economically very disappointed and highly risk loving voters are more likely to vote for a populist politician. The Online Appendix provides summary statistics and more precise definitions.

2.1 Data

The data come from the core sample of individuals above 18 years of age in the German Socio-Economic Panel (SOEP), for the period 2008 to 2016.

Our dependent variable of interest is the dummy variable *populist*, that equals 1 if the respondent leans towards a populist party, and 0 otherwise - individuals who do not lean towards any party (about half of the sample) are coded as 0. Following Inglehart and Norris (2016) and von Beyme (1988), we classify as

[3]An older literature discusses under what conditions candidates have an incentive to announce risky policy platforms. In particular, Shepsle (1972) pointed out that, if voters are risk loving, then office seeking candidates have an incentive to randomize over extreme policy positions. Alesina and Cukierman (1990) and Aragones and Neeman (2000) show that, if candidates have partisan policy preferences, then they find it optimal to announce ambiguous policy positions, even if voters are risk averse and dislike ambiguity, because this increases their degrees of freedom over subsequent policy choices. More recently, Karakas and Mitra (2020) have studied electoral competition between an "establishment" and an "outsider" candidate that differ in their willingness to change the status quo, but voters' risk preferences do not play a role in their analysis.

populist the following parties: Alternative fur Deutschland (AfD), Piratenpartei, and the coalition of NPD, DVU, die Republikaner and die Rechte.

To capture whether a respondent is above or below his/her reference point, we measure dissatisfaction with household income: the variable *income dissatisfaction* ranges from 0 (completely satisfied) to 10 (completely dissatisfied). As discussed below, the theory predicts a non-monotonic effect of disappointment: mildly disappointed individuals who are close to their reference point are risk averse, due to loss aversion, while very dissatisfied individuals are risk loving. We thus define a dummy variable *extreme income dissatisfaction* that equals 1 if income dissatisfaction is equal to or above 7.

As a measure of risk attitudes, we use the question concerning self-reported risk aversion, namely: "Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks? Please tick a box on the scale, where the value 0 means: "unwilling to take risks" and the value 10 means: "fully prepared to take risk". We call this variable *risk_love*. Here too, to account for possible non-linearities in the data and isolate individuals with a high propensity to take risks, we also define the variable *extreme risk love*, a dummy variable that takes value of 1 if *risk love* is strictly above 8.[4]

We also control for household income (in logs), being male, two dummy variables for age class (under 28 and over 45 years of age, baseline is 28-45), two dummy variables for having reached lower-secondary school and tertiary education as the maximum level of education (the baseline is having completed upper secondary, the median level of education in Germany), and dummy variables for being unemployed, being out of the labor force, being a first and a second generation immigrant, and a dummy variable that equals 1 if the respondent was a resident of East Germany before 1990 or, if born after 1989, if he was a resident of East Germany in the year of the survey.

2.2 Results

Risk loving and support for populism We start by asking how risk attitudes correlate with support for populist parties. Table 1 reports the estimates of conditional logit regressions where the dependent variable is leaning towards a populist party (*populist*), and the variable of interest are our measures of risk preferences. Throughout we include year fixed effects. Standard errors are always clustered by individual. Average marginal effects are reported in square brackets.

Columns 1-4 are estimated on pooled data (over individuals and years) without individual fixed effects. Column (1) illustrates a positive correlation between being risk loving and leaning towards a populist party. The correlation is even stronger for individuals who are extremely risk loving (column 2). Controlling for individual features dampens the correlation with risk loving, but the estimated coefficient on *extreme risk love* increases further and remains highly significant (columns 3 and 4). In the specification of column (4), on average extreme risk lovers are 0.6 percentage points more likely to lean towards a populist parties (on top of the positive effect associated with being risk loving). Recalling that populist supporters are only about 1% of this sample on average, this is a large effect. Note that higher income is associated with not leaning towards populism, while being unemployed has a positive association with populism.

[4]Results are similar if the thresholds defining extreme dissatisfaction and extreme risk loving are higher.

Table 1. ***Risk Love and Populism***

Dep. var.	Populist Dummy					
	(1)	(2)	(3)	(4)	(5)	(6)
Risk Love	0.1170***	0.0896***	0.0553***	0.0253*	-0.0218	-0.0213
	(0.013)	(0.013)	(0.014)	(0.014)	(0.021)	(0.022)
	[0.0013]	[0.0010]	[0.0006]	[0.0003]	[-0.0039]	[-0.0041]
Extreme Risk Love		0.4807***		0.5445***	0.3219**	0.3327**
		(0.100)		(0.107)	(0.152)	(0.154)
		[0.0055]		[0.0061]	[0.0570]	[0.0633]
Unemployed			0.3844***	0.3703***		-0.0579
			(0.098)	(0.098)		(0.157)
			[0.0043]	[0.0041]		[-0.0110]
Income			-0.2655***	-0.2568***		-0.1765
			(0.051)	(0.051)		(0.119)
			[-0.0030]	[-0.0029]		[-0.0336]
Observations	206,783	206,783	197,164	197,164	7,728	7,529
Controls	No	No	Yes	Yes	No	No
Individual FE	No	No	No	No	Yes	Yes

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors in parentheses are clustered at the individual level, marginal effects in square brackets. Year fixed effects are included in all columns. Individual controls (where included) are dummy variables for gender, age group, immigrant status, education level, East Germany and being out of the labor force. Estimation is by logit in columns 1-4, by conditional logit in columns 5 and 6. Source: SOEP.

Columns 5 and 6 add individual fixed effects, and hence come closer to estimating a causal effect of attitudes towards risk on populist sympathies. Although the estimated coefficient on *risk love* is no longer statistically different from 0, the estimated coefficient on the dummy variable *extreme risk love* remains positive and significant, and not much smaller than in the pooled regressions. The average marginal effect rises by an order of magnitude. According to the specification in column 6, on average, becoming extremely risk loving increases the probability of leaning towards a populist party by over 6 percentage points (gross of the negative but insignificant effect associated with risk loving).[5]

Income dissatisfaction and support for populism According to reference-dependent preferences, being risk loving is triggered by income falling sufficiently below a reference point - e.g. Koszegi and Rabin (2009) and Pagel (2017). We don't observe the reference point, but we can use the question on income dissatisfaction as a measure of economic disappointment.

We first estimate a semi-reduced form, and ask whether support for populism is associated with *income dissatisfaction* and *extreme income dissatisfaction*. The estimates are displayed in Table 2, columns 1-4. In column 1 we don't include individual fixed effects. More dissatisfied individuals are more likely to lean towards populist parties, and the two income dissatisfaction variables absorb the effect of the two economic variables (unemployment and income) that, unlike in Table 1, are no longer statistically significant. In column 2 we add individual fixed effects. Being extremely dissatisfied remains highly significant, and the marginal effect is large: becoming extremely dissatisfied increases the probability of support for populism by over 7 percentage points. Income dissatisfaction on its own is no longer statistically significant. Note that, since we are controlling for being extremely dissatisfied, the estimated coefficient on *income dissatisfaction* captures the effect of being only moderately dissatisfied or being satisfied. Hence, the expected coefficient on this variable is indeed 0 or even negative, since individuals close to their reference are predicted to be loss averse.

In columns 3 and 4 we add the two indicators of risk loving to the right hand side, with and without individual fixed effects. Both *extreme income dissatisfaction* and *extreme risk love* remain statistically significant, although with smaller coefficients than when they are entered in isolation (compare columns 4 and 2 in Table 2, and column 4 in Table 2 with column 6 in Table 1). This suggests that becoming very dissatisfied has a direct association with support for populism, besides the possible induced effect on risk attitudes.

Last, we ask whether extreme income dissatisfaction is associated with being risk loving, as predicted by prospect theory. The answer is provided by columns 5 and 6 of Table 2, where the dependent variable is being extremely risk lover. The relationship between *extreme risk love* and income dissatisfaction is non-monotonic, as expected, both with and without individual fixed effects. Extreme risk lovers are either individuals who are more satisfied with their income and for which the dummy variable for being extremely dissatisfied is 0, or individuals who are extremely dissatisfied. In particular, the estimates with individual

[5]The average marginal effect is estimated conditional on the individual fixed effect being 0, i.e. for individuals who on average do not lean towards populism. Note that the sample size is much smaller when individual fixed effects are included, and this is responsible for the changes in the estimated coefficients. Estimating the pooled regressions (without individual fixed effects) on the smaller sample also yields large average marginal effects on *extreme risk love*, and similar estimated coefficients to those reported in columns 5 and 6, when fixed effects are included (results available upon request). This remark also applies to the regressions reported below.

Table 2. ***Income Dissatisfaction and Populism***

Dep. var.	Populist Dummy				Extreme Risk Love	
	(1)	(2)	(3)	(4)	(5)	(6)
Income	0.0804***	-0.0116	0.0857***	0.0005	-0.0820***	-0.0535***
Dissatisfaction	(0.020)	(0.028)	(0.020)	(0.029)	(0.012)	(0.014)
	[0.0009]	[-0.0023]	[0.0010]	[0.0001]	[-0.0027]	[-0.0075]
Extreme Income	0.4178***	0.3699**	0.3947***	0.3404**	0.7961***	0.3418***
Dissatisfaction	(0.102)	(0.149)	(0.103)	(0.151)	(0.062)	(0.082)
	[0.0046]	[0.0742]	[0.0044]	[0.0672]	[0.0262]	[0.0480]
Risk Love			0.0271*	-0.0213		
			(0.014)	(0.022)		
			[0.0003]	[-0.0042]		
Extreme Risk Love			0.4900***	0.3126**		
			(0.110)	(0.157)		
			[0.0055]	[0.0617]		
Unemployed	0.1475	-0.0380	0.1375	-0.0910	0.2661***	-0.0040
	(0.100)	(0.160)	(0.102)	(0.163)	(0.059)	(0.086)
	[0.0016]	[-0.0076]	[0.0015]	[-0.0180]	[0.0087]	[-0.0006]
Income	-0.0828	-0.1556	-0.0673	-0.1637	-0.1300***	-0.1008
	(0.054)	(0.119)	(0.055)	(0.120)	(0.034)	(0.062)
	[-0.0009]	[-0.0312]	[-0.0008]	[-0.0323]	[-0.0043]	[-0.0141]
Observations	194,482	7,389	189,226	7,205	196,200	19,605
Controls	Yes	No	Yes	No	Yes	No
Individual FE	No	Yes	No	Yes	No	Yes

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors in parentheses are clustered at the individual level, marginal effects in square brackets. The dependent variable is voting for a populist party in columns 1-4, being an extreme risk lover in columns 5 and 6. Year fixed effects are included in all columns. Individual controls (where included) are dummy variables for gender, age group, immigrant status, education level, East Germany and being out of the labor force. Estimation is by logit in columns 1, 3 and 5, by conditional logit in the remaining columns. Source: SOEP.

fixed effects suggest that becoming extremely dissatisfied increases the probability of becoming an extreme risk lover by almost 5 percentage points. This non-monotonic relationship between income satisfaction and risk preferences is consistent with the notion of reference-dependent preferences illustrated below, that being far below vs close to (or above) one's reference point has opposite effects on risk preferences.

In the online Appendix we also consider the effects of large negative income shocks (relative to a three year moving average of past household income). The results are qualitatively as expected, namely a large income loss is correlated with the respondent becoming more likely to lean towards a populist party, becoming a more extreme risk lover and more dissatisfied with his/her household income. The magnitude of these correlations with income losses is rather small, however. The appendix also shows that,once individual fixed effects are included, the pattern of missing observations is uncorrelated with the treatment variables of interest, suggesting that our results are not driven by non-responses.

All in all, these empirical findings suggest that risk attitudes play a relevant role in explaining support for populism, and that large economic disappointment can induce support for populist and radical parties by inducing a preference for political risk.

3 Voting Over Safe and Risky Candidates

In this section we show that large economic downturns create economic uncertainty through the political system. We consider voters with reference-dependent preferences who vote over two possible candidates, a moderate and a populist. 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 can be interpreted as saying that: i) parties cannot make binding policy promises ahead of the election, so that expected future policies and aggregate outcomes reflect the intrinsic features of their candidates, and ii) parties have limited choices of which candidates to field. In particular, the populist party, being anti-establishment and more radical, attracts candidates that are likely to enact more risky and on average less efficient policies, compared to the moderate candidate, or to react to future shocks in more unpredictable ways (e.g. by abandoning the Euro, or by trying untested and unconventional policies). Similarly, the moderate party cannot attract very unpredictable candidates. These restrictions on candidate choices could reflect the ideology of party insiders, or of the core voters who participate in primary elections. Although we do not model the entry or the choice of candidates, the evidence suggests that candidates of populist parties are drawn from a distribution of more inexperienced citizens that are negatively selected in their valence traits - eg. Dal Bo et al. (2018).

If voters have standard preferences, they would all be in favor of the moderate candidate. This is no longer true with reference-dependent preferences. Voters whose income is much below their reference point become risk-lover. For them, the risk associated to the populist candidate may be appealing and they may vote for him, provided that the difference in efficiency is not too large. We characterize who benefits from and who is most opposed to economic uncertainty: the very disappointed voters are the beneficiaries, the mildly disappointed (or close to disappointed) are the most opposed, while the very well off (relative to their

expectations) are mildly opposed. Although the relative preferences of voters between the two parties are non-monotone, we show that this simple model enjoys a single crossing property. If the median voter is sufficiently disappointed, the populist can prevail in the elections.

3.1 Model

Voters. There is a continuum of voters who differ in two dimensions. First, they differ in their income $\theta \geq 0$. Second, they have reference-dependent preferences, and they differ in their reference point $x \in [x_{min}, x_{max}]$. Each voter is hence identified by the pair (θ, x). Voters' preferences are represented by the expected utility function:[6]

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

where c is consumption with a given distribution F_c described below, and $\mu(\cdot)$ is a negative valued, increasing, and convex function that penalizes the voter whenever $c < x$.

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 differentiable three times with the following properties:*
(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). [7]

Conditions (i)-(iii) are standard in models of reference-dependent preferences (e.g., Koszegi and Rabin (2006)). Point (iv) of Assumption 1 is less standard and plays an important role in our results. In essence, a negative third derivative (i.e., a concave first derivative) is equivalent to having preferences for moving risk from high to low income levels. This assumption hence implies that more disappointed agents are more likely to prefer a more risky distribution of consumption.[8]

Candidates. There are two candidates. For a voter with income θ, the moderate (M) candidate offers the status quo, namely income θ. The populist candidate (P) instead is more risky and inefficient. For an agent who would have income θ with the moderate, the populist generates income $\theta - z + \eta$ where $z > 0$ and η is a random variable distributed over $[-\varepsilon, \varepsilon]$ with density h so that $\mathbf{E}(\eta) = \int_{-\varepsilon}^{+\varepsilon} \eta h(\eta) d\eta = 0$. The populist is therefore riskier than the moderate (because of the presence of the random shock η) and less efficient. The

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

[7] As an example consider the cubic polynomial form for μ and consider nonnegative consumption. For $c \geq x$, $\mu(c - x) \equiv 0$. While for $c - x \leq 0$, $c \geq 0$:

$$\mu(c - x) = a(c - x) + \frac{b}{2}(c - x)^2 + \frac{q}{3}(c - x)^3.$$

with $a > 0$, $b > 0$, $q \leq 0$, and $a - bx + qx^2 > 0$. Note that $\mu(0) = 0$ and, for $0 \leq c < x$, $\mu'(c - x) = a + b(c - x) + q(c - x)^2 > 0$, $\mu''(c - x) = b + 2q(c - x) > 0$ and $\mu'''(c - x) = 2q \leq 0$. The slope of μ is maximal at $c = x$ where it takes the value of a and it decreases to $a - bx + qx^2$ for $c = 0$.

[8] Consider indeed the difference between the expected value of μ of a zero mean gamble and the no gamble value evaluated with μ at a given t:

$$\mathbb{E}[\mu(t + \eta)] - \mu(t),$$

where η is a zero mean random variable (mean preserving spread). If we differentiate the previous expression with respect to t we get

$$\mathbb{E}[\mu'(t + \eta)] < \mu'(t),$$

where the inequality comes from the Jensen's inequality and our assumption of concave first derivative. This means - as claimed - that the (positive) gap between the expected gain of a zero mean gamble and the no gamble situation decreases with t.

parameter z is a measure of the inefficiency of the populist compared to the moderate. We assume $\varepsilon > z$ so that with some probability the populist can generate a 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.

Timing of Events Agents of type (x, θ) start with reference point x and known income θ. Then elections are held and the winner is elected. If the populist candidate wins, income shocks are realized and agents consume. Hence, if the moderate wins, agent with income θ and reference point x consumes $c_M(\theta) = \theta$ and enjoys utility:

$$w_M(\theta, x) = \theta + \mu(\theta - x);$$

If instead the populist is elected, the same agent has an expected consumption equal to $\mathbf{E}(c_P(\theta)) = \theta - z$ and enjoys an expected utility

$$w_P(\theta, x) = \theta - z + \int_{-\varepsilon}^{\varepsilon} \mu(\theta - z + \eta - x)h(\eta)d\eta.$$

Non-monotone support with Single Crossing. Thanks to the linearity of the baseline preferences, for each given z, the difference in expected utilities between the two candidates for voter of type (θ, x) is a function of the difference $\theta - x$ alone, namely:

$$w_M(\theta, x) - w_P(\theta, x) := \Delta(\theta - x) = z + \mu(\theta - x) - \int_{-\varepsilon}^{\varepsilon} \mu(\theta - x - z + \eta)h(\eta)d\eta. \tag{1}$$

We show next that the functions w_P and w_M satisfy a single crossing property. We start with a lemma. Consider a given z, and let $t := \theta - x$.

LEMMA 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.*

For $t > 0$, $\Delta(t)$ is positive for two reasons: first of all we have $z > 0$, in addition, only under P the voters might suffer (with positive probability) loss aversion. In this region, $\Delta(\cdot)$ decreases with t since the larger is t the lower the probability of suffering loss aversion. For $t < 0$, $\Delta(\cdot)$ is increasing again for two reasons: first of all Assumption 1(iv) guarantees that the less disappointed is the voter the less s/he seeks the risk of P. In addition, while under M the voters suffer loss aversion, under P the voter might avoid it with positive probability, and the closer the voter gets to the reference point the higher the probability of avoiding loss aversion.

Lemma 1 formalizes an important property of our framework. The lemma immediately implies that Δ is maximal at $t = 0$, that is, the voters who most prefer the moderate candidate are those with $\theta = x$, while at the inferior extreme of the support we have those most opposed to M. This feature of the model is consistent with the empirical evidence in Table 2.

Lemma 1 has another interesting implication, which is stated in the next proposition.

PROPOSITION 1. *Assume Assumption 1. For each given x, $w_M(\cdot, x)$ and $w_P(\cdot, x)$ can cross at most once, at an income level $\hat{\theta}(x) < x$.*

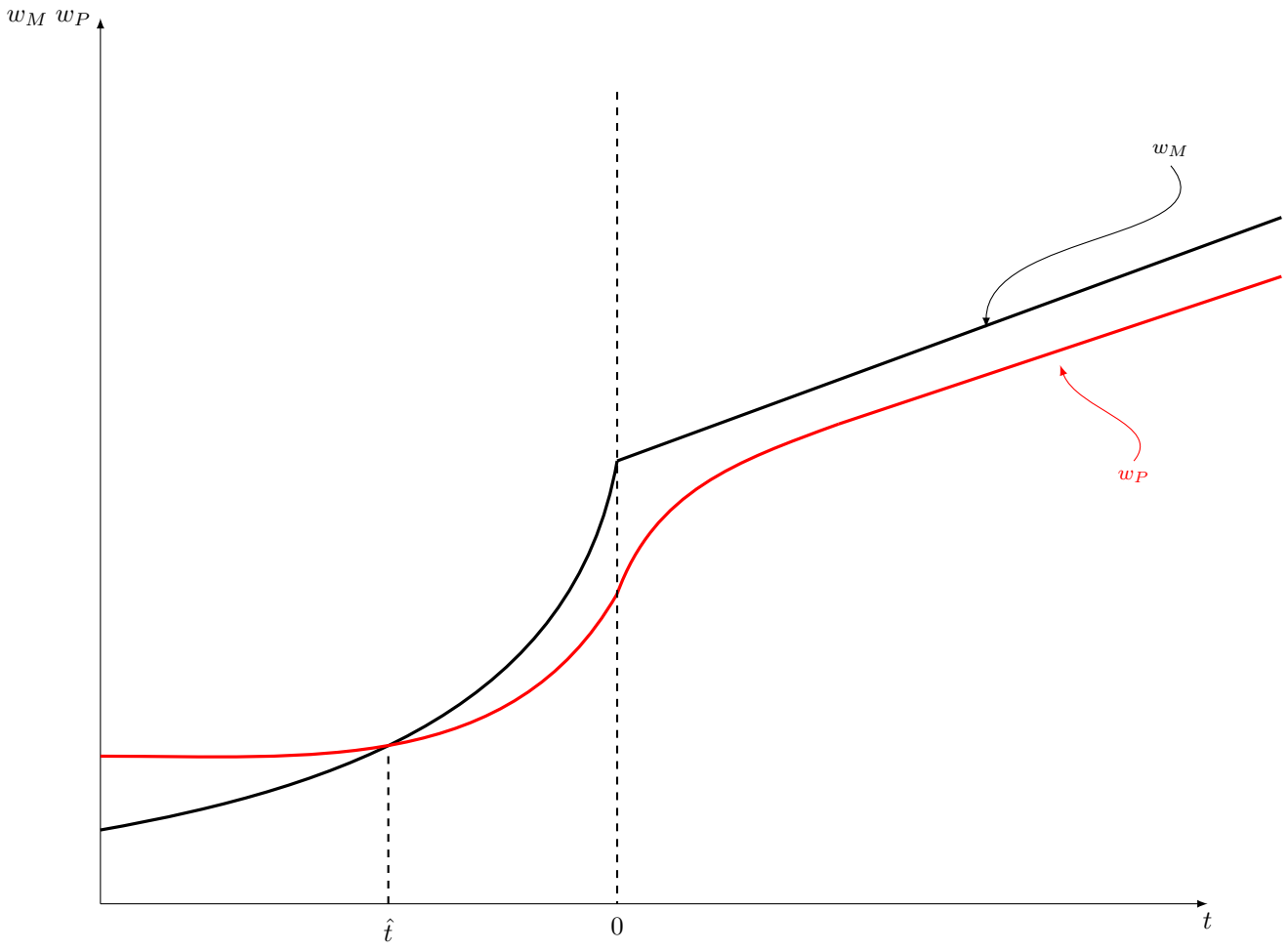

Figure 1. *An example of the single crossing in the space of* $t := \theta - x$.

As it is clear from the figure (and Lemma 1), what matters is not the value of income θ per se but its relation with the reference point x. Specifically, the threshold income $\hat{\theta}(x)$ in the proposition solves $\hat{\theta}(x) = \hat{t} + x$ where, $\Delta(\hat{t}) = 0$ in Lemma 1. Voters with income $\theta > \hat{\theta}(x)$ prefer candidate M, while those with income $\theta < \hat{\theta}(x)$ prefer candidate P. An example of the (single) crossing of the two curves is given in Figure 1, where we indicate with $\hat{t}$ the value at which the crossing occurs (assuming it exists, otherwise the moderate gets 100% of votes because of his superior efficiency).

Finally, who wins the election? Since we have single crossing at the level $\hat{t}$, candidate M wins if the median level of t exceeds $\hat{t}$, while candidate P wins in the opposite case.

Effect of income shocks Clearly, the same distribution of reference points can lead to different political outcomes for different distributions of income. In particular, large economic downturns may produce a

political demand for risky policy choices. If the downturn is deep enough, so that the fraction of agents below $\hat{t}$ increases, the vote share of the populist candidate increases.

Recall that by Assumption 1, the more disappointed an agent is - i.e., the farther left he is from the reference point - the more he benefits from policy uncertainty.

Let g be the joint density of voters' types in the population, with $g(\theta, x) = g(\theta|x)\ell(x)$, where ℓ represents the marginal of x. For each s, let $G(s|x) := \int_0^s g(\theta|x)d\theta$ be the cumulative income distribution among agents with reference point x. Consider the case where a negative aggregate shock moves the income distribution from G to $\underline{G}$.

PROPOSITION 2. *Suppose that, for each $x \in [x_{min}, x_{max}]$, we have $\underline{G}(\theta|x) \geq G(\theta|x)$ for all $\theta \leq x$. Then the vote share of the populist candidate is higher under $\underline{G}$ than under G.*

The assumption in Proposition 2 is quite intuitive: it can be seen as a non-parametric version of a negative aggregate shock that generates a downward shift of the income distribution. A sufficient condition for the required shift is that $G(\cdot|x)$ first order stochastically dominates $\underline{G}(\cdot|x)$ for each x. Note however that not all economic downturns are captured by a downward shift in the income distribution *conditional on the reference point.*[9]

The assumption allows for income shocks to be accompanied by a downwards shift in the distribution of the reference points, as individuals adjust their reference point in the same direction as their actual income, but this must be less than the downward shift in the income distribution.

4 Political Competition Over Taxes

In this section we discuss how our model can be extended to analyze the choice of a redistributive tax policy in the course of electoral competition. We have argued that reference-dependent preferences can explain the growing shares of votes for populist parties witnessed in recent years, as disappointed voters may see the riskiness of populist as a desirable feature. An important question concerns the policies chosen by different parties to counter or mitigate the adverse effects of those shocks. A central variable in this context is redistributive taxation. Who will place greater emphasis on redistribution, the populist or the moderate candidate?

Suppose that lower income individuals are more disappointed (or more likely to be disappointed). We can show that political equilibria can take two forms.[10] One possibility is an equilibrium with policy convergence, where both parties compete for the same marginal voter and choose the same tax policy. But a second possibility is that the equilibrium displays policy divergence. The populist candidate runs on a policy platform of lower redistribution, compared to the moderate candidate, and is supported by a coalition of rich voters and of poorer and very disappointed voters.

[9] It is easy to see from the proof that, in fact, a weaker sufficient condition is the first order shift to be true on 'average'. That is, for Proposition 2 holds whenever the 'average' distribution function Q, defined as $Q(\theta) := \int_{x_{min}}^{x_{max}} G(\theta|x)\ell(x)dx \ \forall\theta$, first-order stochastically dominates its counterpart $\underline{Q}$.

[10] This result has been shown for the case where all agents have the same reference point or x is increases deterministically with θ as long as disappointment is decreasing with net income. A more complete analysis is contained in our companion paper, Panunzi et al. (2023).

Equilibrium policy divergence is driven by the fact that the populist candidate has a stronger incentive to cut taxes compared to his moderate opponent. This incentive is fundamentally linked to the intrinsic riskiness associated with the populist candidate.

A lower tax rate, by making poor voters worse off, also increases their disappointment, and this makes them lean towards the more risky candidate. Hence, poor voters do not punish the populist candidate for a tax cut by as much as they would punish the safe candidate for the same reduction of the tax rate. Conversely, the moderate candidate stands to gain more support among poor, disappointed voters when advocating a higher tax rate.

Formally, consider a voter whose consumption c is below his reference point x. Then, his utility under the moderate is $w_M(c,x) = c + \mu(c-x)$. The derivative with respect to c is $\frac{dw_M}{dc} = 1 + \mu'(c-x)$. Under the populist, for the same level of expected consumption, his expected utility is $w_p(c,x) = c + \mathbb{E}[\mu(c-x)]$. Therefore, the derivative with respect to c is $\frac{dw_P}{dc} = 1 + \mathbb{E}[\mu'(c-x)]$. Note that $\frac{dw_M}{dc} - \frac{dw_P}{dc} = \mu'(c-x) - \mathbb{E}[\mu'(c-x)] > 0$, given our assumption about the third derivative of μ.[11] That is, the same increase in income (and consumption) has a greater impact on the utility of a disappointed voter if it is implemented by the moderate candidate. This in turn implies that the moderate candidate has more to gain by promising policies that benefit disappointed voters, compared to the populist candidate, because mitigating voter disappointment reduces the attractiveness of the more risky populist candidate. This effect is absent if voters are not disappointed.

Consider a policy that redistributes income from rich to poor voters. Suppose that, as plausible, richer voters are not disappointed (i.e they consume above their reference point), while poor voters are below their reference point. By the argument above, such a policy mitigates the disappointment of poor voters, making them less attracted to the populist candidate, with no offsetting effect on the disappointment of rich voters. Thus, the moderate candidate has more to gain, compared to the populist, by promising such a redistributive policy. In a follow up paper (Panunzi, Tabellini and Pavoni 2023), we show that this effect may induce divergence in equilibrium policy platforms: in such an equilibrium, the moderate candidate promises a higher level of redistributive taxation, compared to the populist candidate. As a result, the populist candidate is supported by a coalition of very rich and non-disappointed voters (attracted by the lower taxes) and of poor and very disappointed voters (attracted by the populist intrinsic riskiness).

Whether the equilibrium featuring divergent tax rates materializes or not hinges on the distribution of voters' wealth. This equilibrium is contingent on the moderate candidate's ability to attract mildly disappointed voters who favor redistribution and strongly oppose the populist candidate due to their loss aversion, as well as on the populist candidate's capacity to attract the rich voters, even at the expense of losing some support from impoverished voters. In essence, the higher local marginal incentives for the populist candidate to advocate for a lower level of redistribution must align with global conditions concerning the distribution of voters' wealth for divergence of tax rates to occur in equilibrium.

[11] By the convexity of μ, this conclusion is reinforced by the fact, that under the populist candidate, expected consumption is reduced by z.

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A Proofs

Proof of Lemma 1

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 the 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. □

Proof of Proposition 1

Proof. It is immediate from Lemma 1. Note that $\hat{\theta}(x) < x$, that is $\hat{t} < 0$. This is so since since for $t > 0$ in Lemma 1, we have $\Delta(t) > 0$. □

Proof of Proposition 2

Proof. Let

$$P(\hat{t}) := \int_{x_{min}}^{x_{max}} \int_{0}^{\hat{t}+x} g(\theta, x)d\theta dx = \int_{x_{min}}^{x_{max}} \int_{0}^{\hat{t}+x} g(\theta|x)d\theta\ell(x)dx = \int_{x_{min}}^{x_{max}} G(\hat{t} + x|x)\ell(x)dx$$

be the support to the populist under G. Similarly, $\underline{P}(\hat{t}) = \int_{x_{min}}^{x_{max}} \underline{G}(\hat{t} + x|x)\ell(x)dx$. Now recall that $\hat{t} < 0$. We hence have $\underline{P}(\hat{t}) \geq P(\hat{t})$ since by assumption $G(t + x|x) \leq \underline{G}(t + x|x)$ for all x and $t + x \leq x$. □