The Economic Effects of Electoral Rules: Evidence from Unemployment Benefits*

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Abstract

This paper provides a novel test of the link from electoral rules to economic policies. We focus on unemployment benefits because their classification as a broad or targeted transfer may vary — over time and across countries — according to the geographical dispersion of unemployed citizens, the main beneficiaries of the program. A simple theoretical model delivers unambiguous predictions on the interaction between electoral institutions and the unemployment rate in contestable and safe districts: electoral incentives induce more generous unemployment benefits in majoritarian than in proportional systems if and only if the unemployment rate is higher in contestable than in safe districts. We test this prediction using a novel dataset with information on electoral competitiveness and unemployment rates at district level, and different measures of unemployment benefit generosity for 16 OECD countries between 1980 and 2011. The empirical analysis strongly supports the theoretical predictions.

Electoral Rules, Unemployment Benefits, Swing Districts

JEL Codes: D72, D78, H53, J65

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1 Introduction

Economic policies largely differ across countries. Many recent theoretical studies have tried to identify the origins of this variation and, in particular, what systematic effect political institutions have on economic policies. A set of political institutions which has received much attention is *electoral rules*, which "determine how voters' preferences are aggregated and how the powers to make decisions over economic policy are acquired by political representatives" (Persson and Tabellini [2003], p.11).

These models suggest that electoral rules introduce important differences in the incentives faced by politicians, parties and voters. Key contributions focusing on the role of electoral incentives for office-seeking politicians share the view that electoral competition in majoritarian systems is concentrated in few *pivotal* electoral districts, which can be easily targeted by (incumbent) politicians with pork barrel spending, such as direct transfers and local public goods (Persson and Tabellini [1999, 2000]; Persson [2002]; Lizzeri and Persico [2001, 2005]; Myerson [1993]). Proportional representation features instead larger districts, and a more dispersed electoral competition, which induces parties to seek support from wide coalitions in the populations by providing general public goods and broad transfers. A related literature on the determinants of trade policies highlights a similar mechanism: majoritarian system countries are more likely than proportional representation countries to use trade barriers to benefit specific regions (Rogowski [1987]; Grossman and Helpman [2005]).[1] Electoral rules may also affect voters' behavior since it changes the logic of strategic delegation to politicians (Milesi-Ferretti, Perotti, and Rostagno [2002]). Finally, Austin-Smith [2000], Iversen and Soskice [2006, 2015], and Persson, Roland and Tabellini [2007] highlight the differences in the nature of political parties and in the partisan composition of the governing coalition

[1] Cox and McCubbins [1986] suggest instead that pork barrel is mainly partisan, and thus provided to core voters, albeit possibly residing in pivotal electoral districts. In a career-concerns model, Gelbach [2006] shows that majoritarian elections (labeled "electoral-college" elections) provide particularly weak incentives to efficiently provide local public goods. Bouton, Castanheira and Genicot [2018] show that heterogeneity in local — that is, sub-district — level characteristics can incentivize politicians to allocate resources more equally under majoritarian elections than under proportional representation.

across electoral rules, which, in turn, may lead to different policy outcomes.

There is a large empirical literature testing the predictions of these theories. A first strand of the literature uses government accounts and classifies expenditure items as broad or targeted. Persson and Tabellini [2003], Milesi-Ferretti, Perotti, and Rostagno [2002], Blume et al. [2009], and Funk and Gathmann [2013] find that majoritarian countries are indeed associated with higher levels of targeted spending and lower levels of universal spending than proportional representation countries. On the other hand, Aidt, Dutta, and Loukoianova [2006] investigate 10 European countries between 1830 and 1938 and find that electoral reforms from majoritarian to proportional systems led to a decrease in public good provision. A crucial methodological challenge of these studies — which remains unaddressed to date — is to identify which items in government budgets can be classified as broad or universal public goods, as opposed to targeted or particularistic transfers. These studies rely on subjective assumptions made by the researchers and the arbitrary nature of this classification has recently been the object of much scrutiny and criticism (Keefer [2004], Golden and Min [2013]). Another issue which arises with the manual classifications employed by these studies is that researchers have usually labelled the same type of expenditure as either targeted or broad for all countries and years. While consistency is often desirable, a given classification of government expenditures by types does not necessarily work for all countries and periods. One example is expenditure in infrastructure (e.g., roads), which are typically labeled as local public goods or targeted spending in developed countries (i.e., "pork barrel spending") but may represent a broad public good in developing countries.

The second strand of the literature compares trade barriers in majoritarian versus proportional systems using cross-country data. Empirical evidence in Evans [2009], Hatfield and Hauk [2014], and Rickard [2012] shows that majoritarian countries are more protectionist, while Mansfield and Busch [1995], Rogowski and Kayser [2002], Chang, Kayser, and Rogowski [2008], and Betz [2017] find the opposite. A challenge faced by these studies, and the potential origin of the discrepant results, is that trade barriers may take different forms: proportional representation countries are more likely to adopt non-tariff barriers, while majoritarian countries to use tariffs.

A third strand of the literature focuses on the behavior of individual legislators rather than incumbent party or governing coalition. Gagliarducci, Nannicini, and Naticchioni [2011] use micro data on Italian members of Parliament elected under a mixed electoral rule (75% majoritarian, 25% proportional) to test the effect of electoral rules on congressmen behavior. In a close-race regression discontinuity setup, they find that majoritarian congressmen present more bills targeted at their district of election and exert more effort in parliamentary activity. Stratmann and Baur [2002] use German data and find significant differences in committee membership, depending whether the legislator is elected though first-past-the-post or proportional representation. Legislators elected through first-past-the-post are members of committees that allows them to service their geographically based constituency, while legislators elected through proportional representation are members of committees that service the party constituencies. Finally, Gabel, Hix, and Malecki [2005], Fujiwara [2011], and Pellicer and Wegner [2013] show that electoral rules may also affect voters' behavior and the nature of political parties who gain representation in parliament.

This paper contributes to the debate on the existence of a channel of transmission from political institutions to economic policy by examining the effect of electoral rules on a particular welfare state program — unemployment benefits. We focus on unemployment benefits because their classification as a broad or targeted transfer may vary — both over time and across countries — according to the geographical dispersion of unemployed citizens, the main beneficiaries of the program. Our novel empirical approach overcomes the challenge of classifying public expenditures as broad public goods or targeted transfers, which has plagued much of the existing empirical literature on the topic. Our measure of the extent to which public spending is targeted rather than broad is continuous, does not rely on the subjective choice of the econometrician, and takes into account the specificities of the different countries in the sample.

We build a simple theoretical framework, based on a probabilistic voting model with heterogeneous districts, to identify the different incentives that office-seeking policy-makers face under majoritarian and proportional electoral systems when choosing how to target the swing districts. Besides providing a local public good, politicians may transfers resources to the unemployed individuals through unemployment benefits. Whether unemployment benefits represents a broad or a narrowly target policy depends on the unemployment distribution across electoral districts. This model provides a sharp empirical prediction: electoral incentives induce more generous unemployment benefits in majoritarian than in proportional systems if and only if the unemployment rate is higher in swing (or contestable) than in safe (or non-contestable) districts. Moreover, politicians in majoritarian systems are more reactive to changes in unemployment rates in either districts.

To provide a test of the differential effects of the two electoral rules, we use a novel dataset with detailed electoral and economic information at the district level for 16 OECD countries between 1980 and 2011 period, and employ panel analysis on different measures of unemployment benefit generosity. An important step of the empirical analysis and an original contribution of this paper — which can be of independent interest for scholars in comparative politics — is to identify what electoral districts are contestable or non-contestable within each country and over time. The empirical evidence strongly supports our theoretical predictions.

The paper proceeds as follows. Section 2 introduces our simple model of policy formation under the two electoral systems, and obtains our theoretical predictions. Section 3 describes our data and presents the empirical test of these predictions. Section 4 concludes.

2 Model

We consider a stylized country in which individuals may be employed or unemployed. Employed individuals receive a unitary wage and pay a proportional income tax, τ. Unemployed individuals receive an unemployment benefit, which consists of a transfer, f. Individuals value private consumption, which simply corresponds to their net income, and a local public good, g. The local public goods and the unemployment benefit system are financed through the tax revenues collected from the employed individuals.

The country is partitioned into I electoral districts of equal size. The utility an average individual in district $i \in I$ derives from policy (τ, f, g^i) is given by[2]

$$W^i\left(\tau, f, g^i\right) = n^i V(1-\tau) + (1-n^i)V(f) + V(g^i) \tag{1}$$

where $V(\cdot)$ is a differentiable, strictly increasing and strictly concave function, n^i is the employment rate in district i and $1-n^i$ is the unemployment rate in the same district. Policies are decided and financed at the national level. Hence, the budget constraint is

$$\tau \sum_{i=1}^{I} n^i = \sum_{i=1}^{I} (1-n^i) f + \sum_{i=1}^{I} g^i \tag{2}$$

where the left hand side represents the tax revenues and the two terms on the right hand side are the spending in unemployment benefits and local public goods.

In this simple model, agents take no economic decisions, and their utility level is entirely defined by the vector of economic policies $(\tau, f, g^i)_{i=1}^{I}$. These policy decisions are taken by the politicians. In particular, we consider a probabilistic voting model (Lindbeck and Weibull [1987, 1993], Coughlin [1992], Dixit and Londregan [1996], Persson and Tabellini [2000]), in which politicians running for election commit to an electoral platform, which amounts to a policy vector. Two parties, A and B, run for election. They are purely office-motivated and, thus, they choose policy platforms in order to maximize their probability of winning the elections.

[2] This specification can be interpreted in different ways. It may represent the expected utility of individuals who are behind a veil of ignorance regarding their employment status. In this case, n^i represents the employment rate at district level, but also the probability that each individual is employed. Alternatively, individuals may know their employment status, but they live forever and do not discount the future, and hence the utility function at equation (1) describes the utility of an average individual in district i, where n^i represents the proportion of time that he will spend employed. Both interpretations are compatible with the policy decisions described in the next section.

While inactive as economic agents, individuals do take political decisions, i.e., they vote for party A or B. In this probabilistic voting model, the voting decision of individual j in district i depends on three factors: (i) the utility provided by the two parties through their choice of policy platforms, and summarized by $W^i(\tau, f, g^i)$; (ii) an individual idiosyncratic component, σ^{ij}, that measures whether an individual is ideologically closer to party A (in which case $\sigma^{ij} < 0$) or B (so that $\sigma^{ij} > 0$), and is orthogonal to the economic preferences described at equation (1); and (iii) a common, country wide shock to party popularity, δ, that may favor party A (in which case $\delta < 0$) or B (so that $\delta > 0$). Hence, individual j in district i with idiosyncratic characteristic σ^{ij} will vote for party A if and only if

$$W^i\left(\tau_A, f_A, g_A^i\right) - W^i\left(\tau_B, f_B, g_B^i\right) - \sigma^{ij} - \delta > 0. \tag{3}$$

A strong individual ideology towards one party or another, σ^{ij}, will thus largely affect the individual voting decision. Each electoral district is populated by individuals with different ideologies and the distribution of ideologies within each district might be different. To capture these aspects, we consider a district specific distribution of individual ideologies, which, for simplicity, we assume to be uniform. Individual ideologies in district i are distributed according to the following density function $\sigma^i \sim U\left[-\frac{1}{2\varepsilon^i} + \overline{\sigma}^i, \frac{1}{2\varepsilon^i} + \overline{\sigma}^i\right]$ and it is centred around a district specific mean, $\overline{\sigma}^i$. The parameters $\overline{\sigma}^i$ and ε^i are crucial in our analysis. Large absolute values of $\overline{\sigma}^i$ denote a district with a very strong ideological component in favor of party A, $\overline{\sigma}^i < 0$, or B, $\overline{\sigma}^i > 0$. Instead, for $\overline{\sigma}^i$ close to zero, the district is more ideologically neutral. Lower levels of ε^i correspond to districts with more dispersion of ideology, whereas districts with higher ε^i have ideologies more concentrated around the mean $\left(\overline{\sigma}^i\right)$. Finally, we take the distribution of the popularity shock, δ, to be uniform on a support $\left[-\frac{1}{2\psi}, \frac{1}{2\psi}\right]$ and to be centred around zero, so that no party enjoys an electoral advantage.

It is now useful to summarize the timing of events. First, the two parties decide simultaneously and independently their electoral platform, which consists of a policy vector —

respectively, $(\tau_A, f_A, g_A^i)_{i=1}^I$ and $(\tau_B, f_B, g_B^i)_{i=1}^I$. In taking their policy decisions, parties know the distribution of ideological voters across districts and the distribution of the popularity shock but not their realizations. Before the election the popularity shock occurs. Then, voters choose which party to support, according to the expression in equation (3).

Parties choose their policies with the objective of maximizing their probability of winning the election. As largely acknowledged in the literature, however, different electoral systems provide different incentives for office-seeking politicians, who may hence optimally choose to select different policies under different regimes. The next subsections will directly address these aspects.

Before turning to this analysis, it is however convenient to discuss some simplifying assumptions. First, we consider two types of districts: *swing* (or *contestable*) districts and *safe* (or *non-contestable*) districts. There are I_S swing districts, which are assumed to be ideologically neutral (i.e., their distribution of ideology is centered around zero, or $\overline{\sigma}^S = 0$) and to have fewer voters with extreme ideology (i.e., large absolute values of σ^{Sj}) than safe districts (hence, ε^S is larger than in safe districts). Since voters with moderate ideologies are swayed more easily by electoral promises, these districts are more likely to swing from one party to the other or, in other words, to be contestable. The remaining $I_N = (I - I_S)$ districts are safe. We assume these districts have a more dispersed distribution of ideology, and thus more ideologically extreme voters, than swing districts, $\varepsilon^N < \varepsilon^S$. Furthermore, the distribution of ideologies in these districts is not centered around zero: we assume that half of the safe districts largely favors party A, while the other half largely favors party B. We denote the former as safe pro-A districts (N_A) and the latter as safe pro-B districts (N_B). Finally, we assume that the two sets of safe districts are symmetric. Hence, we have $\varepsilon^{N_A} = \varepsilon^{N_B} = \varepsilon^N < \varepsilon^S$, and $-\overline{\sigma}^{N_A} = \overline{\sigma}^{N_B} > 0$.

We denote the fraction of swing districts with $\mu = I_S/I$. The average employment rate in swing and safe districts is, respectively, n^S and $n^{N_A} = n^{N_B} = n^N$; and the average unemployment rate in swing and safe districts is, respectively, u^S and $u^{N_A} = u^{N_B} = u^N$. This means that $\overline{n} = n^S\mu + n^N(1-\mu)$ represents the average employment rate in the country; and, analogously, $\overline{u} = u^S\mu + u^N(1-\mu)$ is the average unemployment rate in the country. Finally, to obtain simple analytical solutions, the results in the following sections are derived assuming a logarithmic utility function, $V(x) = ln(x)$.

2.1 Proportional System

In a proportional system, political parties win the election if they obtain more than 50% of the votes, regardless of the districts where this electoral support is obtained. Using the machinery of probabilistic voting and some simple algebra, it is easy to show that the probability of party A winning the election is given by

$$\begin{aligned}\Pi_A^P &= \frac{1}{2} + \frac{\psi}{\overline{\varepsilon} I}\left\{\sum_{i\in S}\varepsilon^i\left[W^i\left(\tau_A, f_A, g_A^i\right) - W^i\left(\tau_B, f_B, g_B^i\right)\right] + \right. \\ &\left. + \sum_{i\in N}\varepsilon^i\left[W^i\left(\tau_A, f_A, g_A^i\right) - W^i\left(\tau_B, f_B, g_B^i\right)\right]\right\} \qquad (4)\end{aligned}$$

where $\overline{\varepsilon} = \mu\varepsilon^S + (1-\mu)\varepsilon^N$ and ψ represents the density of the country wide party popularity shock. Clearly, if both parties implement the same policy, i.e., $(\tau_A, f_A, g_A^i)_{i=1}^I = (\tau_B, f_B, g_B^i)_{i=1}^I$, and thus provide the same utility to all voters, their chances of winning the election is one half, and the actual winner will be entirely determined by the popularity shock.

Yet, parties may try to increase their probability of winning the election by an accurate choice of the policy platform. In particular, party A will maximize its chances of winning the election by solving the following optimization problem:

$$\begin{aligned}&\max_{\{\tau,f,g^i\}} \mu\varepsilon^S\left[n^S V(1-\tau) + (1-n^S)V(f)\right] + \frac{\varepsilon^S}{I}\sum_{i\in S}V(g^i) + \qquad (5) \\ &(1-\mu)\varepsilon^N\left[n^N V(1-\tau) + (1-n^N)V(f)\right] + \frac{\varepsilon^N}{I}\sum_{i\in N}V(g^i)\end{aligned}$$

subject to the budget constraint at equation (2).

In selecting the unemployment benefit, party A will weight the increase in utility that this policy brings to the unemployed individuals against the utility cost for the employed, due to the higher taxes that they are required to pay. Whether unemployed or employed individuals are electorally more relevant to the party will depend on the distribution of the unemployment rate across districts. If the unemployment rate is higher in the swing districts, the unemployed will enjoy more political power, as measured by ε^S, and party A will find advantageous to offer more generous transfers. Analogously, the level of local public good will not be homogenous across the country, as the swing districts will enjoy more local public good, $g^S > g^N$. Before turning to the next proposition that summarizes these results, it is convenient to define $\alpha^S = \mu\varepsilon^S/\overline{\varepsilon}$, as the importance of the swing voters in the swing districts relative to the average district, and $k = \left[\mu\varepsilon^S n^S + (1-\mu)\varepsilon^N n^N\right]$ as the average employment rate weighted by district political relevance. Finally, it is convenient to define the elasticity of the unemployment benefit transfer with respect to a change in the unemployment rate in the swing and in the safe districts respectively as $\eta^P_{f,u^S} = \frac{\partial f^P}{\partial u^S}\frac{u^S}{f^P}$ and $\eta^P_{f,u^N} = \frac{\partial f^P}{\partial u^N}\frac{u^N}{f^P}$. All proofs are in the Appendix.

Proposition 1 *Under proportional representation, both parties propose the same policy platform* $\left(\tau^P, f^P, g^{S,P}, g^{N,P}\right)$ *with* $f^P = \frac{(1-\overline{u})(\overline{\varepsilon}-k)}{2\overline{u}\overline{\varepsilon}}$, $\tau^P = 1 - \frac{k}{2\overline{\varepsilon}}$, *and* $g^{S,P} = \frac{(1-\overline{u})\varepsilon^S}{2\overline{\varepsilon}} > g^{N,P} = \frac{(1-\overline{u})\varepsilon^N}{2\overline{\varepsilon}}$ *. Moreover, the elasticities of the unemployment benefit with respect to a change in the unemployment rate in the swing and in the safe districts are, respectively,* $\eta^P_{f,u^S} = u^S\mu\left[\frac{\varepsilon^S}{(\overline{\varepsilon}-k)} - \frac{1}{\overline{u}(1-\overline{u})}\right]$ *and* $\eta^P_{f,u^N} = u^N(1-\mu)\left[\frac{\varepsilon^N}{(\overline{\varepsilon}-k)} - \frac{1}{\overline{u}(1-\overline{u})}\right] < 0$*. Finally,* $\eta^P_{f,u^S} > 0$ *if* $\frac{\varepsilon^S}{\varepsilon^N} > \frac{(1-\mu)u^N}{(1-\mu)u^N - \overline{u}^2}$.

In a proportional electoral system, parties have an incentive to please the swinger voters, that is, those that are easier to convince if targeted with an appropriate policy. This policy will typically be the local public good, which is always higher in the districts with more swing voters (higher ε). Unemployment benefit represents instead a national policy, which is provided to unemployed individuals in all districts. Yet, also the unemployment benefits can be used to please the swing voters. An increase in unemployment in the safe districts, u^N, is associated with a reduction in the unemployment benefits, $\eta^P_{f,u^N} < 0$, due to the negative effect of increasing taxes also in the swing districts to finance the system. However, an increase in unemployment in the swing districts may or may not increase the benefits, depending on the initial level of unemployment in the safe districts, and therefore on the overall fiscal burden that financing this increase imposes on the swing districts.

2.2 Majoritarian System

In a majoritarian system, a political party wins the election if it obtains more than 50% of the votes in more than 50% of the districts. For simplicity, we assume that the safe districts are sufficiently extreme in the distribution of ideologies (i.e., that the district-specific means, $\overline{\sigma}^{N_A}$ and $\overline{\sigma}^{N_B}$, are sufficiently distant from zero). When this is the case, the electoral competition in a majoritarian system focuses on the swing districts: party A wins districts N_A with large enough a probability and loses districts N_B with large enough a probability so that neither party finds it optimal to seek voters outside the swing districts.[3] Since we assumed that there is an equal share of pro-A and pro-B safe districts, a party wins the election if it wins in half of the swing districts. Hence, the probability party A wins the election is

$$\Pi^M_A = \frac{1}{2} + \frac{\psi}{I_S} \sum_{i \in S} \left[W^i \left(\tau_A, f_A, g^i_A \right) - W^i \left(\tau_B, f_B, g^i_B \right) \right]. \tag{6}$$

Unlike in the proportional system, parties election probabilities depend exclusively on the swing districts. Hence, parties will have an incentive to target only the individuals in

[3] This assumption may be relaxed at the cost of some additional algebra. Namely, if $\overline{\sigma}^{N_A}$ and $\overline{\sigma}^{N_B}$ are sufficiently close to zero, both parties will have to consider also voters in the safe districts in their optimization problem. In this case, the probability swing districts determine the outcome of the election is lower than unity but still higher than the probability safe districts turn out to be pivotal. As a consequence, this more general model would lead to the same kind of qualitative results about the comparison of majoritarian and proportional systems. Stroemberg [2008] shows formally how to derive equilibria for this more general case in a probabilistic voting model similar to ours but applied to purely redistributive policy within the U.S. electoral college.

these districts. Their optimization problem becomes:

$$\max_{\{\tau,f,g^i\}} n^S V(1-\tau) + \left(1-n^S\right) V(f) + \frac{1}{I_S}\sum_{i\in S} V(g^i) \tag{7}$$

subject to the budget constraint at equation (2).

Under the majoritarian system, the policy decisions become more extreme. Parties only seek to please the individuals in the swing districts and do not internalize the cost imposed on the individuals in the other districts – regardless of whether a party expects to win or to lose in these safe districts. A first consequence is that the level of local public goods will be very uneven across the country, with the voters in safe districts effectively getting none, $g^N = 0$. In selecting the unemployment benefit, the role of the unemployment in the swing districts becomes crucial: in absence of unemployment in the swing districts, there will not be any unemployment benefits. The next proposition summarizes the results.

Proposition 2 *Under majoritarian representation, both parties propose the same policy platform* $\left(\tau^M, f^M, g^{S,M}, g^{N,M}\right)$ *with* $f^M = \frac{(1-\overline{u})u^S}{2\overline{u}}$, $\tau^M = \frac{1+u^S}{2}$, $g^{N,M} = 0$ *and* $g^{S,M} = \frac{1-\overline{u}}{2\mu}$. *Moreover, the elasticities of the unemployment benefit transfer with respect to a change in the unemployment in the swing and in the safe districts are respectively,* $\eta^M_{f,u^S} = 1 - \frac{\mu u^S}{\overline{u}(1-\overline{u})}$ *and* $\eta^M_{f,u^N} = -\frac{u^N(1-\mu)}{\overline{u}(1-\overline{u})} < 0$. *Clearly,* $\eta^M_{f,u^S} > 0$ *if* $\overline{u}\,(1-\overline{u}) > \mu u^S$.

Increases in the unemployment rate among the safe districts, u^N, unambiguously reduce the unemployment benefits, $\eta^M_{f,u^N} < 0$, as they induce a net cost on the individuals in the swing districts. If instead the unemployment rises in these districts, parties may choose to increase the unemployment benefits, provided that unemployment in these districts is not already too large, as suggested by η^M_{f,u^S}.

2.3 Comparing Majoritarian and Proportional Systems

In both electoral systems, office-seeking parties choose their policy platform in an attempt to maximize their probability of winning the election. And in both cases the incentive is to please voters in swing districts. Hence, both parties will provide more local public goods in these districts, with a stark result in the majoritarian case that follows from the stronger incentives provided by this electoral system. The unemployment benefit represents instead a national program, since unemployed individuals in the entire country — that is, regardless of their district — are entitled to the same benefit. Hence, according to the existing literature reviewed in the previous section, ceteris paribus, one should expect this general spending item to be larger in proportional systems. However, if unemployment is concentrated in few districts, unemployment benefits may have a more local – and hence targetable – component. In this case, the unemployment benefit system resembles more closely a local transfer, and parties in a majoritarian system may be using it more effectively. Hence, whether we should expect more or less UB under a majoritarian system will depend on whether the districts with more unemployment are safe or swing. The next proposition presents this comparison, and addresses the differences in elasticities.

Proposition 3 *Unemployment benefits are higher under majoritarian system than under proportional representation, $f^M > f^P$, if and only if there is more unemployment in the swing than in the safe districts, $u^S > u^N$. Moreover, under a majoritarian system there is a higher elasticity of unemployment benefits to the unemployment rate in the swing districts, $\eta^M_{f,u^S} > \eta^P_{f,u^S}$, and a lower elasticity of unemployment benefits to the unemployment rate in the safe districts, $\eta^M_{f,u^N} < \eta^P_{f,u^N}$, than in proportional system.*

The first result of Proposition 3 shows that, ceteris paribus, the difference in the level of the transfer in a majoritarian and in a proportional electoral regime depends on the unemployment differential between swing and safe districts. The second result refers to the elasticities. Majoritarian systems are more reactive to changes in the unemployment rates. If the unemployment rate increases in the safe districts, we should observe a larger drop in majoritarian system; whereas if it rises in the swing districts, the benefits should increase more under majority rule.

3 The Empirical Analysis

To test these predictions empirically, we analyze unemployment benefit policies in 16 OECD countries over the period 1980–2011.

3.1 Data

Our sample consists of 16 OECD countries[4]. To test the theoretical predictions from Proposition 3 we need to combine an array of economic and political data at the national and sub-national level: labor market policies, electoral rules, and socio-demographic control variables at the national level; and unemployment rates, as well as measures of electoral competitiveness, at the district level.

Labor market policies are summarized by different measures of unemployment benefit generosity: replacement rates for families and for singles and an overall unemployment benefit generosity score (from Scruggs, Jahn and Kuitto [2017] Comparative Welfare Entitlements Dataset 2). The unemployment benefit replacement rate for families is defined as "the ratio of net unemployment insurance benefit paid to a household with an average production worker, dependent spouse, and two dependent children (aged 7 and 12) against the net income of such a household in work"; the unemployment benefit replacement rate for singles considers a single average production worker living alone with no children or other dependents; the unemployment benefit generosity score is an index that summarize various other policy parameters of an unemployment insurance scheme (waiting periods, eligibility duration and benefit levels when eligible) into a single generosity parameter.

Our measure of electoral rules is a dummy variable that classifies the electoral formula into "majoritarian" or "proportional". Although the classification into these two rough labels is not always clear-cut, we assign each observation to one of the two rules, on the basis of the prevailing component when the system is mixed.[5] Constitutional reforms are rare events

[4] A complete description of the data available for the different OECD countries is provided in the Data Appendix.

[5] Germany features an electoral system in which single MPs are elected in uninominal districts but the

as political institutions are quite stable features of a democratic society. Nevertheless, we do observe some changes in our classification of electoral rules over time. In the 1980s, France experienced a proportional system for a short period (1985–1986) before switching back to plurality rule. In 1993, Italy went from a full proportional system to an electoral system in which 75% of legislators were appointed through plurality rule and the remaining 25% according to proportional rule. In 2008, Italy returned to a closed-list proportional system. Unlike Persson and Tabellini [2003], who do not allow political institutions dummies to change, we take into account constitutional reforms in our dataset and we switch the electoral rule dummy starting from the year in which the first election took place under the new electoral rule (rather than from the year when the reform was approved).

One crucial step to bring our model to the data is to identify for each country which geographical areas (or electoral districts) are swing or contestable. For this purpose, we construct a novel database with electoral results at the district level for 16 OECD countries (Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Norway, Portugal, Spain, Sweden, Switzerland, UK, US) from 1980 to 2011. For each electoral district in each country, we collected from national statistical sources (available on the websites of the national Domestic Affair Department) the vote shares and the seats obtained by every political party at every election.

We use this large dataset to classify districts into swing (or contestable) and safe (or non-contestable). For majoritarian systems with uninominal districts, in which the party with more votes wins the seat, we follow the existing literature (Galasso and Nannicini, 2011) and use as a measure of competitiveness at the district level the difference in the vote shares of the first two parties. We provide three different classifications of swing districts.

total number of seats obtained in the Parliament by each party depends on the party total vote share. This mechanism may require the total number of seats in Parliament to vary election by election. Hence, the electoral competition faced by each MP takes place at district level, whereas the electoral competition for the parties is national. Since districts are uninominal, we use the measures of political competitiveness at district level introduced for the majoritarian system later in this section. We thus classify Germany as a majoritarian system. All empirical results reported in session 3.3 are robust to excluding Germany from our sample.

In the first two classifications, a district is swing if the difference in vote shares of the first two parties is, respectively, less than 10% and less than 5%. We call the former classification "large" and the latter "strict". The large classification will be our main specification, for reasons explained below. The third classification, called "median", uses the median of the distributions of the distance in vote shares to partition the districts into swing and safe. For proportional systems, in which more than one candidate is elected in each district, there is much less consensus in the literature on what constitutes an appropriate measure of district competitiveness (see, for example, Blais and Lago [2009], and Grofman and Selb [2009]). We choose to measure competitiveness at the district level with the change in the number of seats for the different parties.[6] This (ex-post) measure is, thus, discrete. However, unlike other measures that concentrate on the vote distance between two candidates (for example, the first two candidates or the last elected and the first non-elected candidate), it has the advantage of capturing the full magnitude of the change of seats in a district. Again, we provide three classifications. In the first two, a district is defined as swing if, respectively, at least one seat or at least two seats change(s) party from one election to the next. We call the former classification "large" and the latter "strict". For the third classification, called "median", we use the median of the distribution of the number of seats changed to partition the districts into swing and safe. Table 1 shows the average share of swing and safe districts in each country for our three classifications of contestability.

Once the electoral districts are classified into swing and safe, we track the evolution of unemployment rates in these two groups of regions. Data on local unemployment rates in the period 1980-2011 were collected from different sources (EUROSTAT, the OECD Regional Database, national statistics offices, and national labor force surveys). We assign to each electoral district the corresponding local unemployment rate. When districts are small, as it commonly happens in majoritarian systems, the same local unemployment rate may be

[6] To avoid double counting, we consider only either the increase or the decrease in the parties' seat, since the sum over all parties is zero, unless the total number of representatives elected in a district changes over time.

associated with more than one district. Instead, with large districts, which are more typical of proportional systems, more local unemployment rates may be associated with one district.[7] We then average the unemployment rates in each group of districts (weighted by population size) to create a time series of unemployment rates in the swing and safe districts for each country.

Our model highlights that changes in the unemployment rate in the swing and in the safe districts constitute a shock to the electoral incentives of the politicians, who may react by changing their offer of unemployment benefits. It is, thus, crucial for our identification strategy that these unemployment rate shocks are balanced across electoral systems, so that observed variations in unemployment benefits can be attributed only to the different incentives faced by politicians in different electoral systems. Table 2 shows the average unemployment rate in swing and safe districts for our different measures of electoral competitiveness. The difference in unemployment rate between majoritarian and proportional systems is statistically indistinguishable from zero in both swing and safe districts for all three classifications of electoral competitiveness. Table 3 reports the average difference in the unemployment rate of swing and safe districts for all our classifications of competitiveness. For two classifications, strict and median, the difference in unemployment rate between swing and safe districts is larger in majoritarian systems. For the other classification (large), no significant difference emerges between majoritarian and proportional systems. We thus concentrate our analysis on this last classification, for which the difference in unemployment rates is balanced across electoral systems. This classification (large) will thus be our most preferred one.

Finally, national economic and demographic variables are from SourceOECD and include per capita GDP, population aged 15–64 years, and population older than 65 years. Table 4 reports summary statistics for the variables used in our regressions. Table A.1 in the Data Appendix provides a complete description of the countries and years used in our panel.

[7] A complete description of the geographical disaggregation for the two sets of data and of the corresponding match is provided in the Data Appendix.

3.2 Empirical Model

To test our two distinct theoretical predictions from Proposition 3, we introduce two empirical models and present two sets of results. The first prediction is on the level of unemployment benefits: if there is more unemployment in swing than in safe districts, unemployment benefits are larger under majoritarian than under proportional representation and vice-versa. Hence, we define two cases. In Case I, a country i at time t has a larger unemployment rate in swing than in safe districts, $u_{it}^S > u_{it}^N$; in Case II, the unemployment rate is larger in safe than in swing districts, $u_{it}^S < u_{it}^N$. For these two cases, we run separately a model with the following functional form:

$$UB_{it} = \beta X_{it-1} + \gamma MAJ_{it-1} + \phi n_i + \lambda v_t + \epsilon_{it} \tag{8}$$

where UB_{it} is one of the measures of generosity of unemployment benefit policies described in the previous section, X_{it-1} is a vector of national economic and demographic controls and MAJ_{it-1} is the electoral rule dummy, coded 1 when the electoral formula is majoritarian. We use one year lags of the independent variables since we assume that changes in the environment at time t have an impact on policy outcomes only in the following period, due for instance to inertia in the legislative process. Variables in X_{it-1} include the lagged dependent variable to eliminate AR(1) serial correlation (see Arellano and Bond [1991]). Moreover, we use robust standard errors clustered by country, which provide correct coverage in the presence of any arbitrary correlation structure among errors within the country panels (Williams [2000]). Country fixed effects, n_i, and year fixed effects, v_t, are introduced to control, respectively, for countries' unobserved, time invariant heterogeneity and for shocks that are common to all countries in any given year. Finally, ϵ_{it} is a vector of error terms specific to each country. Because we introduce country dummies into the regressions, the coefficients of the independent variables represent a cross-country average of the longitudinal effect.

We focus on the coefficient γ in the two cases to test the difference in unemployment benefits between proportional and majoritarian systems. For the model to support our theory, γ should be positive in Case I ($u_{it}^S > u_{it}^N$) and negative in Case II ($u_{it}^S < u_{it}^N$).

Our second prediction concerns elasticities: majoritarian systems are more responsive than proportional systems to changes in the unemployment rate in both swing and safe districts. To test this prediction empirically, we modify the model at equation (8). First, we take logs of variables on both sides (with the exclusion of the electoral rule dummy) to interpret the coefficients of the independent variables as elasticities. Second, we include two separate regressors—unemployment rates in the swing and safe districts—and their interactions with the electoral rule. In fact, according to the theoretical model, majoritarian systems should always be more reactive to changes in unemployment levels both in swing and safe areas. Hence, we estimate:

$$\begin{aligned} \log\left(UB_{it}\right) \quad = \quad & \beta \log\left(X_{it-1}\right) + \gamma MAJ_{it-1} + \delta_1 \log\left(u_{it-1}^S\right) + \delta_2 \log\left(u_{it-1}^N\right) \qquad (9) \\ & + \zeta_1 \left(\log\left(u_{it-1}^S\right) * MAJ_{it-1}\right) + \zeta_2 \left(\log\left(u_{it-1}^N\right) * MAJ_{it-1}\right) + \phi n_i + \lambda v_t + \epsilon_{it} \end{aligned}$$

Here the main coefficients of interests are ζ_1, and ζ_2 that capture the different impact of an increase in the unemployment rate in the swing and safe districts in the majoritarian and proportional system. If the data are in line with our theory, ζ_1 should be positive and ζ_2 negative. Moreover, according to Proposition 2, the proportional system should have a negative elasticity with respect to unemployment in the safe districts (i.e., δ_2 negative), while our theory does not offer a clear prediction on δ_1. We run equation (9) for all districts and then separately for Case I and Case II. Since our theoretical model predicts that unemployment benefits become a policy instrument in majoritarian systems when the unemployment rate is larger in swing than in safe districts, we expect our results to be stronger in Case I ($u_{it}^S > u_{it}^N$).

3.3 Results

Table 5 presents regression estimates of the model described at equation (8) for a set of three dependent variables. These are, respectively, the unemployment benefit replacement rates for families and for singles and the unemployment benefit overall generosity score. For each set of regressions, we provide separate estimates for Case I and II. In all regressions, we control for additional variables (namely, the lagged dependent variable, per capita GDP, the share of population aged 15-64, and the share of population aged 65+), for country fixed effects and for years fixed effects. In Case I, i.e., when the unemployment rate is higher in swing than in safe districts, the replacement rate — both for families and for singles — is higher in majoritarian systems (of almost 3 percentage points). No difference across systems emerge for the overall generosity index. In Case II, i.e., when the unemployment rate is lower in swing than in safe districts, the replacement rate for families is lower in majoritarian systems (of 3.5 percentage points). No difference emerges in the replacement rate for singles, while the generosity index is higher (at the 10% level) in majoritarian systems. Hence, the results for replacement rates, which constitute a more direct measure of generosity, are fully in line with the predictions of the model.

In Table 6, we test our theoretical predictions on elasticities using the model at equation (9). For each variable of interest, we provide three sets of regressions: pooling all observations together, for Case I, and for Case II. We expect the results for the majoritarian system to be stronger in Case I, i.e., when the unemployment rate is higher in swing than in safe districts, since that is the case when politicians in majoritarian systems have an incentive to use unemployment benefits as electoral promises. As suggested by our theoretical model, majoritarian systems react more to increases in the unemployment rate in swing districts, by increasing the unemployment benefit generosity, as well as to increases in the unemployment rate in safe districts, by decreasing the unemployment benefit generosity. All these effects are strongly statistically significant (at 1% level) for all three measures of generosity: unemployment benefit replacement rates for families (Column 2) and for singles (Column 5) and the unemployment benefit overall generosity score (Column 8). No effect emerges in Case II, i.e., when politicians in majoritarian systems have no incentives to offer unemployment benefits. Again, our theoretical predictions are strongly supported by the data.

To confirm that our results are driven by the different electoral incentives provided by the geographical distribution of the unemployment rate, we run the following placebo test. Instead of the unemployment benefit replacement rates, we use the corresponding measure of replacement rates (for families and for singles) for public pension benefits. These measures of public pension generosity should not be affected by the distribution of the unemployment rates in the swing and safe districts. In fact, as shown in Tables 7 and 8, no difference between majoritarian and proportional system emerges in our two empirical specifications at equations (8) and (9). As a final robustness check, we perform our empirical analysis using our two additional measures of electoral competitiveness. Unlike our most preferred measure, these additional measures are not balanced in the difference in unemployment rate between swing and safe districts across electoral systems (see Table 3). The empirical evidence using these two measures is consistent with our previous results, albeit not always statistically significant (see Tables A.2 to A.5 in the Data Appendix).

4 Conclusions

Do political institutions affect economic policy, as the theoretical literature in comparative politics and political economy suggests? And which are the possible transition channels from electoral rules to economic outcomes? The theoretical literature has suggested several possible mechanisms, such as electoral incentives, voters and/or parties behavior or the degree of representation. Yet, the empirical literature has been less successful in identifying a link running from political institutions to economic outcomes.

This paper presents a novel test of the impact of electoral rules on an economic policy, namely unemployment benefits. The main contribution is to develop a test that allows to identify this effect on within-country variation in economic policy. To do this, we develop a simple theoretical framework, which delivers a sharp empirical prediction: if the unemployment rate is higher in swing than in safe districts, politicians provide more generous unemployment benefits in majoritarian than in proportional systems. We can then test how changes in the relative unemployment rate in these two types of districts (swing and safe) translate into policy outcomes under the two electoral rules.

We obtain empirical evidence on the differential effects of the two electoral rules on economic policy using panel analysis on a novel dataset with detailed information on local electoral competition for 16 OECD countries in 1980-2011. This empirical evidence strongly supports our theoretical predictions.

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Appendix

Proof of Proposition 1

The optimization problem at equation (5), subject to the budget constraint at equation (2), gives raise to the following first order conditions

$$FOC\ (g^i) : -\left[\mu\varepsilon^S n^S + (1-\mu)\varepsilon^N n^N\right]\frac{V'(1-\tau)}{I\overline{n}} + \frac{\varepsilon^i V'(g^i)}{I} = 0 \qquad i = S, N$$

$$FOC\ (f) : -\left[\mu\varepsilon^S n^S + (1-\mu)\varepsilon^N n^N\right]\frac{1-\overline{n}}{\overline{n}}V'(1-\tau) + \left[\mu\varepsilon^S(1-n^S) + (1-\mu)\varepsilon^N\left(1-n^N\right)\right]V'(f) = 0$$

Recall that $k = \left[\mu\varepsilon^S n^S + (1-\mu)\varepsilon^N n^N\right]$, so FOC (g^i) gives

$$\begin{aligned} g^S &= \frac{(1-\tau)(1-\overline{u})\,\varepsilon^S}{k} \\ g^N &= \frac{(1-\tau)(1-\overline{u})\,\varepsilon^N}{k} \end{aligned}$$

so that $\overline{g} = \mu g^S + (1-\mu)g^N = \frac{(1-\tau)(1-\overline{u})}{k}\overline{\varepsilon}$, whereas FOC (f) gives

$$f = (1-\tau)\frac{\overline{\varepsilon}-k}{k}\frac{1-\overline{u}}{\overline{u}}$$

Using the above expressions for $\overline{g}$ and f, we can rewrite the budget constraint at equation (2) as:

$$\tau = \frac{\overline{g}}{\overline{n}} + f\frac{1-\overline{n}}{\overline{n}} = \frac{\overline{g}}{1-\overline{u}} + f\frac{\overline{u}}{1-\overline{u}}\ ,$$

hence

$$\tau = 1 - \frac{k}{2\overline{\varepsilon}}\ .$$

Moreover, we have

$$\begin{aligned} g^S &= \frac{(1-\overline{u})\,\varepsilon^S}{2\overline{\varepsilon}} > g^N = \frac{(1-\overline{u})\,\varepsilon^N}{2\overline{\varepsilon}} \\ f &= \frac{(1-\overline{u})\,(\overline{\varepsilon}-k)}{2\overline{u}\overline{\varepsilon}} \end{aligned}$$

To obtain the elasticities η^P_{f,u^S} and η^P_{f,u^N} notice that

$$\begin{aligned} \frac{\partial f}{\partial u^S} &= \frac{\mu}{2\overline{u}^2\overline{\varepsilon}}\left[(1-\overline{u})\,\overline{u}\varepsilon^S - (\overline{\varepsilon}-k)\right] \\ \frac{\partial f}{\partial u^N} &= \frac{1-\mu}{2\overline{u}^2\overline{\varepsilon}}\left[(1-\overline{u})\,\overline{u}\varepsilon^N - (\overline{\varepsilon}-k)\right] \end{aligned}$$

Thus, $\eta^P_{f,u^N} = \frac{\partial f}{\partial u^N}\frac{u^N}{f} = (1-\mu)\,u^N\left[\frac{\varepsilon^N}{\overline{\varepsilon}-k} - \frac{1}{(1-\overline{u})\overline{u}}\right]$, and $\eta^P_{f,u^S} = \frac{\partial f}{\partial u^S}\frac{u^S}{f} = \mu u^S\left[\frac{\varepsilon^S}{\overline{\varepsilon}-k} - \frac{1}{(1-\overline{u})\overline{u}}\right]$.

Clearly, $\eta^P_{f,u^N} < 0$ if $\varepsilon^N(1-\overline{u})\,\overline{u} < \overline{\varepsilon}-k = \mu\varepsilon^S u^S + (1-\mu)\varepsilon^N u^N$, which can be re-written as $\varepsilon^N\mu u^S + (1-\mu)\varepsilon^N u^N - \varepsilon^N\overline{u}^2 < \mu\varepsilon^S u^S + (1-\mu)\varepsilon^N u^N$ or $\mu u^S\left(\varepsilon^N - \varepsilon^S\right) - \varepsilon^N\overline{u}^2 < 0$ since $\varepsilon^N < \varepsilon^S$.

Instead, to have $\eta^P_{f,u^S} > 0$ we need to have $\varepsilon^S(1-\overline{u})\,\overline{u} > \overline{\varepsilon}-k = \mu\varepsilon^S u^S + (1-\mu)\varepsilon^N u^N$, which can be re-written as $(1-\mu)\varepsilon^S u^N - \varepsilon^S\overline{u}^2 > (1-\mu)\varepsilon^N u^N$ or $\frac{\varepsilon^S}{\varepsilon^N} > \frac{(1-\mu)u^N}{(1-\mu)u^N-\overline{u}^2}$.

Proof of Proposition 2

The optimization problem at equation (7), subject to the budget constraint at equation (2), gives raise to the following first order conditions

$$FOC\;(g^N) : -n^S\frac{V'(1-\tau)}{I\overline{n}} < 0$$

$$FOC\;(g^S) : -n^S\frac{V'(1-\tau)}{I\overline{n}} + \frac{V'(g^i)}{I_S} = 0 \qquad \forall i \in S$$

$$FOC\;(f) : -n^S\frac{1-\overline{n}}{\overline{n}}V'(1-\tau) + (1-n^S)V'(f) = 0$$

Hence, we have

$$\begin{aligned} g^N &= 0 \\ g^S &= \frac{(1-\tau)(1-\overline{u})}{\mu(1-u^S)} \\ f &= \frac{(1-\tau)u^S(1-\overline{u})}{\overline{u}(1-u^S)} \end{aligned}$$

which, using the budget constraint in (2) become $g^S = \frac{1-\overline{u}}{2\mu}$ and $f = \frac{u^S(1-\overline{u})}{2\overline{u}}$ since $\tau = \frac{1+u^S}{2}$. Simple algebra shows that $\eta^M_{f,u^N} = \frac{\partial f}{\partial u^N}\frac{u^N}{f} = -\frac{(1-\mu)u^N}{\overline{u}(1-\overline{u})} < 0$, and $\eta^M_{f,u^S} = \frac{\partial f}{\partial u^S}\frac{u^S}{f} = 1 - \frac{\mu u^S}{\overline{u}(1-\overline{u})}$, which is positive if $\overline{u}(1-\overline{u}) > \mu u^S$.

Proof of Proposition 3

To show that $f^M = \frac{u^S(1-\overline{u})}{2\overline{u}} > f^P = \frac{(1-\overline{u})(\overline{\varepsilon}-k)}{2\overline{u}\overline{\varepsilon}}$ if and only if $u^S > u^N$ recall that $\overline{\varepsilon} - k = \mu\varepsilon^S u^S + (1-\mu)\varepsilon^N u^N$, and $\overline{\varepsilon} = \mu\varepsilon^S + (1-\mu)\varepsilon^N$. Hence, $f^M > f^P$ can be re-written as $u^S\overline{\varepsilon} > \overline{\varepsilon} - k$ or $(1-\mu)\varepsilon^N u^S > (1-\mu)\varepsilon^N u^N$, which holds if and only if $u^S > u^N$.

It is easy to see that $\eta^M_{f,u^S} = 1 - \frac{\mu u^S}{\overline{u}(1-\overline{u})} > \eta^P_{f,u^S} = \mu u^S\left[\frac{\varepsilon^S}{\overline{\varepsilon}-k} - \frac{1}{(1-\overline{u})\overline{u}}\right]$ if $1 > \frac{\mu u^S\varepsilon^S}{\overline{\varepsilon}-k}$, which is always satisfied since $\overline{\varepsilon} - k = \mu\varepsilon^S u^S + (1-\mu)\varepsilon^N u^N$. Analogously, it is straightforward to see that $\eta^M_{f,u^S} = -\frac{u^S\mu}{\overline{u}(1-\overline{u})} < \eta^P_{f,u^S} = u^S\mu\left[\frac{\varepsilon^S}{(\overline{\varepsilon}-k)} - \frac{1}{\overline{u}(1-\overline{u})}\right] < 0$.

Table 1: Share of Swing and Safe Districts, 1981-2011

Country	*Main Measure*		*Strict Measure*		*Median Measure*	
	% Swing	***% Safe***	***% Swing***	***% Safe***	***% Swing***	***% Safe***
Austria	76.3	23.7	46.5	53.5	42.4	57.6
Belgium	75.0	25.0	44.9	55.1	38.5	61.5
Canada	28.8	71.2	15.8	84.2	49.9	50.1
Denmark	74.2	25.8	45.9	54.1	23.9	76.1
Finland	77.6	22.4	32.9	67.1	20.4	79.6
France	44.9	55.1	25.4	74.6	50.0	50.0
Germany	43.3	56.7	21.7	78.3	50.0	50.0
Italy	54.3	45.7	33.0	67.0	49.0	51.0
Japan	46.3	53.7	27.1	72.9	50.0	50.0
Norway	93.1	6.9	39.6	60.4	30.7	69.3
Portugal	66.5	33.5	27.6	72.4	36.1	63.9
Spain	54.6	45.4	21.0	79.0	29.5	70.5
Sweden	82.5	17.5	38.0	62.0	34.4	65.6
Switzerland	54.5	45.5	18.1	81.9	25.6	74.4
United Kingdom	19.2	80.8	9.2	90.8	40.0	60.0
United States	13.6	86.4	7.2	92.8	49.7	50.3

Measures of contestability are computed using different criteria for proportional as opposed to majoritarian electoral systems. In proportional systems, Main and Strict Measures refer respectively to districts in which at least 1 or 2 seats have been reallocated in subsequent rounds of legislative elections, respectively. Median measure, on the other hand, refers to districts in which the number of seats reallocated in subsequent rounds was higher than the median number of seats reallocated across all districts in the election at stake. In majoritarian systems, Main and Strict Measures refer respectively to districts in which the margin of victory was lower than 10 or 5%, respectively. Median measure, on the other hand, refers to districts in which the margin of victory was higher than the median margin of victory across all districts in the election at stake.

Table 2: Unemployment Rates in Swing and Safe Districts

	Panel A: Main Measure					
Variable	**Swing Districts**			**Safe Districts**		
	Proportional	***Majoritatian***	***t-test***	***Proportional***	***Majoritatian***	***t-test***
Population-weighted unemployment rate	7.874 (5.425)	7.611 (2.415)	.263 (.468)	7.607 (5.854)	7.317 (2.089)	.291 (.496)
	Panel B: Strict Measure					
Variable	**Swing Districts**			**Safe Districts**		
	Proportional	***Majoritatian***	***t-test***	***Proportional***	***Majoritatian***	***t-test***
Population-weighted unemployment rate	7.662 (5.035)	7.649 (2.496)	.012 (.441)	7.963 (5.80)	7.392 (2.149)	.571 (.491)
	Panel C: Median Measure					
Variable	**Swing Districts**			**Safe Districts**		
	Proportional	***Majoritatian***	***t-test***	***Proportional***	***Majoritatian***	***t-test***
Population-weighted unemployment rate	7.791 (5.316)	7.613 (2.40)	.178 (.460)	7.896 (5.731)	7.298 (2.108)	.599 (.484)

Measures of contestability are computed using different criteria for proportional as opposed to majoritarian electoral systems. In proportional systems, Main and Strict Measures refer respectively to districts in which at least 1 or 2 seats have been reallocated in subsequent rounds of legislative elections, respectively. Median measure, on the other hand, refers to districts in which the number of seats reallocated in subsequent rounds was higher than the median number of seats reallocated across all districts in the election at stake. In majoritarian systems, Main and Strict Measures refer respectively to districts in which the margin of victory was lower than 10 or 5%, respectively. Median measure, on the other hand, refers to districts in which the margin of victory was higher than the median margin of victory across all districts in the election at stake.

Table 3: Differences in Unemployment Rates in Swing and Safe Districts

Panel A: Main Measure			
Variable	***Proportional***	***Majoritatian***	***t-test***
***Δ** Population-weighted unemployment rate (Swing - Safe)*	.320 (2.192)	.294 (.921)	.026 (.189)
Panel B: Strict Measure			
Variable	***Proportional***	***Majoritatian***	***t-test***
***Δ** Population-weighted unemployment rate (Swing - Safe)*	-263 (1.81)	.258 (.859)	-.521*** (.158)
Panel C: Median Measure			
Variable	***Proportional***	***Majoritatian***	***t-test***
***Δ** Population-weighted unemployment rate (Swing - Safe)*	-.150 (1.72)	.315 (.997)	-.465*** (.155)

Measures of contestability are computed using different criteria for proportional as opposed to majoritarian electoral systems. In proportional systems, Main and Strict Measures refer respectively to districts in which at least 1 or 2 seats have been reallocated in subsequent rounds of legislative elections, respectively. Median measure, on the other hand, refers to districts in which the number of seats reallocated in subsequent rounds was higher than the median number of seats reallocated across all districts in the election at stake. In majoritarian systems, Main and Strict Measures refer respectively to districts in which the margin of victory was lower than 10 or 5%, respectively. Median measure, on the other hand, refers to districts in which the margin of victory was higher than the median margin of victory across all districts in the election at stake.

Table 4: Summary Statistics

VARIABLES	N	Mean	SD	Min	Max
Majoritarian	387	0.398	0.490	0	1
Generosity score	386	10.05	2.735	2.600	14.50
Rep. rate single (100%)	384	0.604	0.175	0.0200	0.973
Rep. rate family (100%/0%)	384	0.661	0.139	0.126	0.952
Share working population	387	66.73	1.352	63.60	69.96
Share population >65	387	15.29	2.123	9.100	20.63
National unemployment	378	7.530	3.516	1.780	22.05
Log GDP	387	10.10	0.385	8.978	11.03
LogUnemp Swing	369	1.942	0.496	0.0269	3.205
LogUnemp Safe	344	1.888	0.535	-0.223	3.158

Table 5: Empirical Results

VARIABLES	UB Replacement Family		UB Replacement Single		UB Generosity Index	
	$U_{Swing} > U_{Safe}$	$U_{Swing} < U_{Safe}$	$U_{Swing} > U_{Safe}$	$U_{Swing} < U_{Safe}$	$U_{Swing} > U_{Safe}$	$U_{Swing} < U_{Safe}$
Majoritarian	0.0268**	-0.0356***	0.0279**	-0.00904	0.0500	0.391*
	(0.00987)	(0.0118)	(0.0101)	(0.0116)	(0.198)	(0.188)
Observations	195	140	195	140	199	142
R-squared	0.980	0.982	0.991	0.990	0.993	0.986
Country-Year Controls	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES

Standard errors in parentheses are clustered at the country level

* significant at 10% level; ** significant at 5% level; *** significant at 1% level

All specifications control for the lag of the dependent variable and for a set of country-year covariates. These include the unemployment rate at the national level, the log of per capita GDP, and the share of population in working age and older than 65. Countries in sample: Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Norway, Portugal, Spain, Switzerland, United Kingdom, and the United States.

Table 6: Empirical Results

VARIABLES	Log UB Replacement Family			Log UB Replacement Single			UB Generosity Index		
	All	$U_{Swing} > U_{safe}$	$U_{Swing} < U_{safe}$	*All*	$U_{Swing} > U_{safe}$	$U_{Swing} < U_{safe}$	*All*	$U_{Swing} > U_{safe}$	$U_{Swing} < U_{safe}$
Majoritarian	0.0582	-0.0869	-0.0720	-0.114	-0.0366	-0.0337	0.0553	0.0399	0.0832
	(0.0434)	(0.0742)	(0.0699)	(0.143)	(0.0670)	(0.139)	(0.0322)	(0.0635)	(0.0566)
LogUnemp Swing	0.0302	0.0344	0.0973	-0.00587	0.0355	0.472	-0.0153	-0.0480**	-0.0616
	(0.0190)	(0.0206)	(0.0655)	(0.0255)	(0.0281)	(0.290)	(0.0212)	(0.0218)	(0.100)
LogUnemp Safe	0.00484	-0.00807	-0.0586	0.00236	-0.00310	-0.480*	0.0105	0.0126	0.0886
	(0.00486)	(0.0180)	(0.0656)	(0.0108)	(0.0100)	(0.247)	(0.00635)	(0.00765)	(0.101)
Maj * LogUnemp Swing	0.176	0.477***	-0.0730	0.220	0.415***	-0.390	0.0752	0.210***	-0.0785
	(0.139)	(0.0852)	(0.177)	(0.130)	(0.0623)	(0.304)	(0.0497)	(0.0387)	(0.171)
Maj * LogUnemp Safe	-0.195	-0.456***	0.0291	-0.178	-0.410***	0.333	-0.0928	-0.218***	0.0383
	(0.140)	(0.0674)	(0.180)	(0.108)	(0.0399)	(0.297)	(0.0541)	(0.0345)	(0.178)
Observations	301	174	127	301	174	127	307	178	129
R-squared	0.971	0.985	0.967	0.959	0.997	0.941	0.992	0.995	0.990
Country-Year Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

Standard errors in parentheses are clustered at the country level

* significant at 10% level; ** significant at 5% level; *** significant at 1% level

All specifications control for the lag of the dependent variable and for a set of country-year covariates. These include the unemployment rate at the national level, the log of per capita GDP, and the share of population in working age and older than 65. Countries in sample: Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Norway, Portugal, Spain, Switzerland, United Kingdom, and the United States.

Table 7: Placebo Test

VARIABLES	SS Replacement Family		SS Replacement Single	
	$U_{Swing} > U_{Safe}$	$U_{Swing} < U_{Safe}$	$U_{Swing} > U_{Safe}$	$U_{Swing} < U_{Safe}$
Majoritarian	24.142	-2.958	81.310	-76.466
	(29.217)	(3.496)	(85.897)	(84.805)
Observations	181	126	181	126
R-squared	0.831	0.999	0.650	0.879
Country-Year Controls	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES

Standard errors in parentheses are clustered at the country level
* significant at 10% level; ** significant at 5% level; *** significant at 1% level
All specifications control for the lag of the dependent variable and for a set of country-year covariates. These include the unemployment rate at the national level, the log of per capita GDP, and the share of population in working age and older than 65. Countries in sample: Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Norway, Portugal, Spain, Switzerland, United Kingdom, and the United States.

Table 8: Placebo Test

VARIABLES	Log SS Replacement Family			Log SS Replacement Single		
	All	$U_{Swing} > U_{safe}$	$U_{Swing} < U_{safe}$	*All*	$U_{Swing} > U_{safe}$	$U_{Swing} < U_{safe}$
Majoritarian	0.326	0.567	-0.018	1.258	0.994	0.304
	(0.376)	(1.126)	(0.082)	(0.973)	(1.821)	(0.673)
LogUnemp Swing	0.006	0.110	0.0247	0.115	0.464	-0.292
	(0.101)	(0.412)	(0.069)	(0.262)	(0.766)	(0.309)
LogUnemp Safe	-0.048	-0.399	0.030	-0.171	-0.701	0.554
	(0.057)	(0.431)	(0.078)	(0.178)	(0.659)	(0.469)
Maj * LogUnemp Swing	0.277	0.074	-0.285	-0.446	-0.889	-1.463
	(0.377)	(0.870)	(0.254)	(0.764)	(1.373)	(2.431)
Maj * LogUnemp Safe	-0.279	-0.080	0.281	0.199	1.072	0.933
	(0.470)	(0.762)	(0.249)	(0.940)	(1.641)	(2.080)
Observations	278	160	118	278	160	118
R-squared	0.9275	0.852	0.999	0.791	0.735	0.894
Country-Year Controls	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES

Standard errors in parentheses are clustered at the country level
* significant at 10% level; ** significant at 5% level; *** significant at 1% level
All specifications control for the lag of the dependent variable and for a set of country-year covariates. These include the unemployment rate at the national level, the log of per capita GDP, and the share of population in working age and older than 65. Countries in sample: Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Norway, Portugal, Spain, Switzerland, United Kingdom, and the United States.

A.1 Data Appendix

We hereby provide additional information about the data used throughout the present contribution, their various sources, and the manipulation we had to enact in order to include them into our analyses.

A.1.1 Welfare Data

All the information about the structure and size of social insurance benefits in our sample comes from the Comparative Welfare Entitlements Dataset (CWED). This database collects systematic data on social insurance programs in 33 countries and 42 years[1], and covers all the 16 countries involved in our analysis.

A.1.2 Electoral Data

District-level electoral data have been sourced from various websites. The two main sources are the official online archives of each country's governmental electoral department[2] and Manuel Álvarez-Rivera's Election Resources on the Internet[3] website[4]. Data about Japan are taken from Chuo University's Faculty of Policy Studies (years from 1980 to 2003) and Professor's Ko Maeda webpage[5] (years2004-2005). Finally, United Kingdom and United States data are provided, respectively, by the Politics Resources[6] website and the Constituency –Level Elections Archive (CLEA)[7].

A.1.3 Unemployment Data

Information regarding yearly unemployment rates at the subnational level come from the OECD databases on regional labor markets, and are at either the NUTS 2 or NUTS 3 level. When combining these data with those on electoral outcomes, we try to implement the best matching on a district-year basis. Here, best means the one tracking more closely the correspondence between electoral and administrative units for a given country in a specific year. Therefore, mainly depending on data availability and the size of electoral districts, we alternatively employ both NUTS 2 and NUTS 3 unemployment rates. In particular, we use NUTS 2 unemployment rates for the following countries and periods: Austria 1990-2011, Belgium 1983-2011, Finland 1991-2007, France 1986-1987, Germany 1990-2011, Italy 1983-1992 and 2006-2011, Norway 1983-2011, Portugal 1991-2011, Spain 1982-2011, Sweden 1991-1999, Switzerland 1991-2007, United Kingdom 1983-1998, and United States 1980-1989.
We instead use NUTS 3 unemployment rates for: Canada 1990-2011, Denmark 1990-2011, France 1983-1985 and 1988-2011, Italy 1994-2005, Japan 1980-2005, Sweden 2000-2011, United Kingdom 1999-2011, and United States 1990-2011.

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[1] From 1970 to 2011, although in our analysis we only use data for the period 1980-2011.
[2] This source covers the following countries and periods: Belgium 1983-1994, Canada 1990-2011, Finland 1991-2007, France 1983-1985 and 1988-2011, Germany 1990-2011, Italy 1983-2011, Portugal 1991-2011, Spain 1982-2011, Sweden 1991-2011, and Switzerland 1991-2007.
[3] This source covers the following countries and periods: Austria 1990-2011, Belgium 1995-2011, Denmark 1990-2011 (district magnitudes taken from the official website of the Danish bureau of statistics), and Norway 1993-2011.
[4] http://electionresources.org/
[5] http://politicalscience.unt.edu/~maeda/
[6] http://www.politicsresources.net/area/uk/edates.htm
[7] http://www.electiondataarchive.org/

Although in most of the cases we have that an administrative district for which data on unemployment are available spans one or more electoral districts, in a few occasions we have unemployment information on a more disaggregate level than necessary (i.e. only at the NUTS 3 level, with no data at the NUTS 2 one). This is the case, namely, for Belgium from 1983 to 1999, Norway in 1996, and Switzerland from 1990 to 1999. However, since the OECD dataset on regional unemployment does also contain information about the population living in each statistical unit every year, we exploit this to compute weighted averages of unemployment rates at the relevant level, so that they track the size of the electoral districts and allow for an optimal matching.
Finally, an additional challenge is put forward by North-American countries (Canada and the United States), for which the size and location of specific single-member districts prevents from univocally matching them with NUTS 3 statistical units. Notably, for the United States, such difficulty is also a direct consequence of the frequent re-districting that characterizes this polity. In cases in which a multi-member district spans portions of different NUTS 3 units, we manually assign it to the unit that encompasses the largest part of the electoral district. This is done by visually inspecting electoral districts' maps from the 2013 Congressional Districts National Atlas.

A.1.4 Country-Year Covariates

The additional country-year variables that serve as controls in our analysis are all drawn from official OECD statistics.

Table A.1: Data Availability

Country	**Table 5** **Available Years**	**Table 6** **Available Years**
Austria	1994-2011	1996-2002 2007-2008
Belgium	1984-2011	1988-2011
Canada	1991-2011	1991-2011
Denmark	1991-2002 2007-2011	1995-2002 2007-2011
Finland	1992-2007	1992-2007
France	1984-2011	1984-2011
Germany	1992-2011	1992-2011
Italy	1984-2011	1984-2006 2008-2011
Japan	1995-2005	1995-2005
Norway	1994-2011	1997-2005 2010-2011
Portugal	1992-2011	2000-2011
Spain	1988-2011	1988-2011
Sweden	1995-2011	1995-2011
Switzerland	1992-2007	1992-2007
United Kingdom	1984-2011	1984-2011
United States	1981-2011	1981-2011
Total Observations	**341**	**307**

In each column, we refer to the regressions on *Generosity*, which have the highest number of observations. As shown in tables 5 and 6, the number of observations employed for the other specifications may be slightly lower due to the absence of specific country-year observations for the other two dependent variables.

Table A.2: Results with Strict Measure

VARIABLES	Replacement Family		Replacement Single		Generosity	
	$U_{Swing} > U_{Safe}$	$U_{Swing} < U_{Safe}$	$U_{Swing} > U_{Safe}$	$U_{Swing} < U_{Safe}$	$U_{Swing} > U_{Safe}$	$U_{Swing} < U_{Safe}$
Majoritarian	0.0154	-0.0205**	0.0103	0.00495	-0.0772	0.300**
	(0.00988)	(0.00894)	(0.00813)	(0.00668)	(0.240)	(0.104)
Observations	179	156	179	156	185	156
R-squared	0.977	0.984	0.988	0.992	0.992	0.988
Country-Year Controls	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES

Standard errors in parentheses are clustered at the country level
* significant at 10% level; ** significant at 5% level; *** significant at 1% level
All specifications control for the lag of the dependent variable and for a set of country-year covariates. These include the unemployment rate at the national level, the log of per capita GDP, and the share of population in working age and older than 65. Countries in sample: Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Norway, Portugal, Spain, Switzerland, United Kingdom, and the United States.

Table A.3: Results with Median Measure

VARIABLES	Replacement Family		Replacement Single		Generosity	
	$U_{Swing} > U_{Safe}$	$U_{Swing} < U_{Safe}$	$U_{Swing} > U_{Safe}$	$U_{Swing} < U_{Safe}$	$U_{Swing} > U_{Safe}$	$U_{Swing} < U_{Safe}$
Majoritarian	0.00882	-0.0199	0.00879	0.000133	-0.136	0.277**
	(0.00800)	(0.0144)	(0.00643)	(0.0136)	(0.235)	(0.122)
Observations	178	157	178	157	182	159
R-squared	0.977	0.985	0.988	0.991	0.991	0.990
Country-Year Controls	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES

Standard errors in parentheses are clustered at the country level
* significant at 10% level; ** significant at 5% level; *** significant at 1% level
All specifications control for the lag of the dependent variable and for a set of country-year covariates. These include the unemployment rate at the national level, the log of per capita GDP, and the share of population in working age and older than 65. Countries in sample: Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Norway, Portugal, Spain, Switzerland, United Kingdom, and the United States.

Table A.4: Results with Strict Measure

VARIABLES	Log Replacement Family			Log Replacement Single			Generosity		
	All	$U_{Swing} > U_{safe}$	$U_{Swing} < U_{safe}$	***All***	$U_{Swing} > U_{safe}$	$U_{Swing} < U_{safe}$	***All***	$U_{Swing} > U_{safe}$	$U_{Swing} < U_{safe}$
Majoritarian	0.0582	0.0971	-0.0530	-0.114	0.0910	0.00782	0.0553	0.208*	0.0255
	(0.0434)	(0.0748)	(0.0519)	(0.143)	(0.341)	(0.0663)	(0.0322)	(0.113)	(0.0540)
				-					
LogUnemp Swing	0.0302	-0.0278	0.0215	0.00587	-0.192	-0.0152	-0.0153	-0.0552	-0.0313
	(0.0190)	(0.0653)	(0.0461)	(0.0255)	(0.178)	(0.0635)	(0.0212)	(0.0379)	(0.0240)
LogUnemp Safe	0.00484	0.0381	0.0121	0.00236	0.0477	0.0115	0.0105	0.0169	0.00780
	(0.00486)	(0.0401)	(0.00716)	(0.0108)	(0.146)	(0.0111)	(0.00635)	(0.0280)	(0.00544)
Maj * LogUnemp Swing	0.176	0.368***	-0.0985	0.220	0.195	0.0661	0.0752	0.150**	-0.0197
	(0.139)	(0.0920)	(0.0812)	(0.130)	(0.175)	(0.123)	(0.0497)	(0.0565)	(0.0712)
Maj * LogUnemp Safe	-0.195	-0.432***	0.0743	-0.178	-0.305	-0.0709	-0.0928	-0.238***	0.0202
	(0.140)	(0.106)	(0.0721)	(0.108)	(0.317)	(0.110)	(0.0541)	(0.0788)	(0.0565)
Observations	301	163	138	301	163	138	307	169	138
R-squared	0.971	0.970	0.989	0.959	0.946	0.997	0.992	0.993	0.993
Country-Year Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

Standard errors in parentheses are clustered at the country level

* significant at 10% level; ** significant at 5% level; *** significant at 1% level

All specifications control for the lag of the dependent variable and for a set of country-year covariates. These include the unemployment rate at the national level, the log of per capita GDP, and the share of population in working age and older than 65. Countries in sample: Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Norway, Portugal, Spain, Switzerland, United Kingdom, and the United States.

Table A.5: Results with Median Measure

VARIABLES	Log Replacement Family			Log Replacement Single			Generosity		
	All	$U_{Swing} > U_{safe}$	$U_{Swing} < U_{safe}$	***All***	$U_{Swing} > U_{safe}$	$U_{Swing} < U_{safe}$	***All***	$U_{Swing} > U_{safe}$	$U_{Swing} < U_{safe}$
Majoritarian	0.0582	-0.00221	-0.0172	-0.114	-0.179	0.0416	0.0553	0.140	0.0426
	(0.0434)	(0.0816)	(0.0670)	(0.143)	(0.281)	(0.0877)	(0.0322)	(0.0957)	(0.0501)
LogUnemp Swing	0.0302	0.0381	-0.0245	- 0.00587	-0.0316	-0.0663***	-0.0153	0.00756	-0.0411*
	(0.0190)	(0.0501)	(0.0200)	(0.0255)	(0.145)	(0.0213)	(0.0212)	(0.0219)	(0.0233)
LogUnemp Safe	0.00484	0.0202	0.0159*	0.00236	0.0240	0.0119	0.0105	-0.0220	0.0111*
	(0.00486)	(0.0559)	(0.00831)	(0.0108)	(0.212)	(0.00988)	(0.00635)	(0.0324)	(0.00622)
Maj * LogUnemp Swing	0.176	0.321***	0.0192	0.220	0.170	0.109	0.0752	0.112**	0.0409
	(0.139)	(0.0904)	(0.0899)	(0.130)	(0.228)	(0.121)	(0.0497)	(0.0479)	(0.0713)
Maj * LogUnemp Safe	-0.195	-0.367***	-0.0384	-0.178	-0.174	-0.104	-0.0928	-0.174***	-0.0496
	(0.140)	(0.112)	(0.0758)	(0.108)	(0.274)	(0.110)	(0.0541)	(0.0549)	(0.0684)
Observations	301	160	141	301	160	141	307	164	143
R-squared	0.971	0.971	0.990	0.959	0.950	0.997	0.992	0.992	0.995
Country-Year Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

Standard errors in parentheses are clustered at the country level
* significant at 10% level; ** significant at 5% level; *** significant at 1% level
All specifications control for the lag of the dependent variable and for a set of country-year covariates. These include the unemployment rate at the national level, the log of per capita GDP, and the share of population in working age and older than 65. Countries in sample: Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Norway, Portugal, Spain, Switzerland, United Kingdom, and the United States.