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The Economic Effects of Electoral Rules: Evidence from Unemployment Benefits

Vincenzo Galasso[1] and Salvatore Nunnari[2]*

[1] *Bocconi University, IGIER and CEPR, Via Roberto Sarfatti, 25, 20100 Milano, Italy; vincenzo.galasso@unibocconi.it*
[2] *Bocconi University, IGIER and CEPR, Via Roberto Sarfatti, 25, 20100 Milano, Italy; salvatore.nunnari@unibocconi.it*

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. Due to electoral incentives, the difference in the unemployment generosity between majoritarian and proportional systems depends on the difference in the unemployment rate between contestable and 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.

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Economic policies largely differ across countries. Many recent theoretical and empirical 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 studies suggest that electoral rules introduce important differences in the incentives faced by office-seeking politicians. Some scholars argue that majoritarian systems provide the greatest incentives for politicians to cater to narrow interests: 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, on the other hand, features 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 (Grossman and Helpman, 2005; Rogowski, 1987).

Other scholars argue, instead, that politicians competing in proportional systems have stronger incentives to respond to narrow interests: Cox and McCubbins (1986) suggest that parties use targeted transfers to reward core voters, regardless of whether they reside or not 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. Genicot *et al.* (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.

Both arguments find empirical support. Persson and Tabellini (2003), Milesi-Ferretti *et al.* (2002), Blume *et al.* (2009), and Funk and Gathmann (2013) find that governments or parliaments elected with majoritarian rules

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are associated with higher levels of particularistic transfers than government or parliaments elected with PR rules. Gagliarducci *et al.* (2011) use data on Italian members of Parliament elected under a mixed electoral rule (75% majoritarian, 25% proportional) and find that majoritarian congressmen present more bills targeted at their district of election. Similarly, Stratmann and Baur (2002) use German data and find that legislators elected through first-past-the-post are members of committees that allows them to service their geographically based constituency. Evans (2009), Hatfield and Hauk (2014), and Rickard (2012) show that majoritarian countries are more likely to adopt trade policies which favor specific groups of citizens.

However, other studies report evidence that politicians elected via PR are more likely to favor narrow interests than politicians elected via majoritarian rules: Aidt *et al.* (2006) show that moving from a majoritarian to a PR system is associated with lower spending on broad transfers. Mansfield and Busch (1995), Rogowski and Kayser (2002), Chang *et al.* (2008), and Betz (2017) find that more proportional systems are associated with higher consumer prices and higher non-tariff barriers than majoritarian system, a proxy for policies favoring narrow producer groups at the expense of consumers. Similarly, Pagano and Volpin (2005) offer evidence that PR system privilege organized groups, such as entrepreneurs and employees, over consumers and shareholders.

Previous studies' conflicting conclusions for such an important and well studied topic are puzzling. One possible explanation for the contradictory findings is that these theories have proven difficult to test because of the operational challenges involved in classifying economic policies as broad or particularistic transfers. Golden and Min (2013) review more than 150 studies of distributive politics in more than three dozen countries and stress these methodological issues: "Examining government spending data, for instance, produces information on how much is spent on social security, on capital construction, on government salaries, and on emergency relief, among other categories. Which represent programmatic goods and which pork and patronage? Providing government jobs is political patronage if recipients are selected on the basis of partisan identity but is programmatic if job creation falls under a Keynesian macroeconomic strategy. Accurately classifying spending requires information about program details, but information may be unavailable or may require disputable judgment calls and deep on-the-ground knowledge of the context. Classifying spending in theoretically appropriate ways in multiple countries is also fraught with difficulties. [...] Even given identical policy design, the impact of government allocations differs in different developmental settings. For instance, in a wealthy country that enjoys adequate transportation networks, construction of a new road may mainly benefit the locality during construction. [...] But in a low-income country, in addition to the benefits that accrue to the individuals involved in construction, the entire community may enjoy benefits over many years from a paved road where none previously existed" (Golden and Min, 2013, p. 76). Similarly, as Genicot *et al.* (2018) note, a challenge faced by the studies comparing trade barriers using cross-country data, 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.

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 researcher, 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. In our model, the only difference between a majoritarian and a PR system is the way in which votes are translated into seats. In order to isolate and better evaluate the effect of differential electoral incentives, we compare environments that are otherwise identical, even if this means abstracting from other known differences between PR and majoritarian systems.[1] Besides providing a local public good, politicians may transfer 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 sharp empirical predictions. For a given average unemployment rate, the difference in the unemployment benefit generosity between majoritarian and proportional systems is increasing in the distance of the unemployment rate between swing (or contestable) and safe (or non-contestable) districts. When the unemployment rate is

[1] Rae (1971), Katz (1980), Austen-Smith (2000), Iversen and Soskice (2006, 2015), and Persson *et al.* (2007) highlight the differences in the nature and the strength of the political parties and in the partisan composition of the governing coalition across electoral rules. Gabel *et al.* (2005), Fujiwara (2011), and Pellicer and Wegner (2013) show that electoral rules may also affect voters' behavior (i.e., their propensity to vote sincerely or strategically) and the nature of political parties who gain representation in parliament. In our model, both systems share the assumptions that parties are homogeneous and purely office motivated; that party discipline is strong; that voters vote expressively (or as if they are pivotal); and that there is no potential entrant.

higher in swing than in safe districts, the unemployment benefits are more generous in majoritarian than in proportional systems. Finally, 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 data set 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. We use a specification with country fixed effects to exploit the within country variation in the electoral law that took place twice in France and Italy and once in Japan. We also run a specification without country fixed effects, which exploits the variation in the electoral law across countries. 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 and is robust to use different measures of contestability.

This study is not the first to suggest the potential importance of voters' geographic dispersion for democratic politics. Our paper is closely related to a set of contributions in comparative politics which highlight the role of the geographical concentration of narrow interests in determining politicians' propensity to offer particularistic transfers (McGillivray, 2004; Rickard, 2009, 2012). While our mathematical model formalizes some of their insights, it also innovates on existing approaches. We share with Rickard (2009, 2012) the idea that politicians are more responsive to voters' needs when they are geographically concentrated. However, our model highlights this is mediated by the electoral relevance of the districts where beneficiaries are concentrated in (and differently so for different electoral rule). Our model shares with McGillivray (2004) the underlying logic for the incentives faced by politicians in a majoritarian system but offers a different insight for PR systems. While McGillivray (2004) assumes that potential entrants constitute a threat and lead politicians to cater to core voters, our model shows that, in PR systems, parties have incentives to cater to moderate or persuadable voters wherever they reside. Empirically, we investigate labor policies rather than trade policies. Moreover, we are able to test the predictions of our model more directly, using measures of electoral districts' contestability and of the benefit induced by the policy to voters in these districts.[2]

[2] The cross-country evidence in McGillivray (2004) is based on case studies (Chapter 4) and on a panel data set where the dependent variable is stock price dispersion between the industries within a country (a proxy for trade policy change) and the key explanatory variable is a measure of change in government. Rickard (2009, 2012) uses a more direct measure of economic outcomes and voters' geographic concentration but does not control for the electoral relevance of districts.

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 $\left(\tau, f, g^i\right)$ is given by[3]

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

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 $\left(\tau, f, g^i\right)_{i=1}^{I}$. 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.

While inactive as economic agents, individuals do take political decisions, that is, they vote for party A or B. In this probabilistic voting model, the

[3]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 not only 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 in 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.

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 $W^i\left(\tau, f, g^i\right)$; (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 in 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, an individual j in district i with idiosyncratic characteristic σ^{ij} votes 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}, thus largely affects 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, $\left(\tau_A, f_A, g_A^i\right)_{i=1}^{I}$ and $\left(\tau_B, f_B, g_B^i\right)_{i=1}^{I}$. 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 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 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, $V(x) = ln(x)$.

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

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

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., $\left(\tau_A, f_A, g_A^i\right)_{i=1}^I = \left(\tau_B, f_B, g_B^i\right)_{i=1}^I$, 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 maximizes its chances of winning the election by solving the following optimization problem:

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

subject to the budget constraint in Equation (2).

In selecting the unemployment benefit, party A weights 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 depends on the distribution of the unemployment rate across districts. If the unemployment rate is higher in the swing districts, the unemployed enjoy more political power, as measured by ε^S, and party A finds 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 $\alpha^S = \mu\varepsilon^S/\bar{\varepsilon}$, 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 who are easier to convince if targeted with an appropriate policy, regardless of the district where they reside. The policy used to convince these voters is typically the local public good, which is always higher in the districts with more swing voters (higher ε). At the same time, districts with fewer swing voters are not completely neglected, as improving electoral success in these district is still useful, and some local public good is provided in all districts (i.e., $g^{N,P} > 0$). Unemployment benefit represents instead a national policy, which is provided to unemployed individuals in all districts and cannot be targeted to electorally more relevant districts. Yet, since with PR every vote counts, also the unemployment benefits is used to please the swing voters and some insurance against unemployment is always offered (i.e., $f^P > 0$). 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.

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.[4] 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

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

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

[4]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 US electoral college.

only the individuals in 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 in Equation (2).

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* $\overline{u}\,(1-\overline{u}) > \mu u^S$.

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 is 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 are no unemployment benefits.

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}.

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 depends 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. (1) *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, $u^S > u^N$. For a given average unemployment rate, the difference in the unemployment benefit generosity between majoritarian and proportional systems, $f^M - f^P$, is increasing in the distance of the unemployment rate between swing and safe districts, $u^S - u^N$.*

(2) *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.

The Empirical Analysis

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

Data

Our sample consists of 16 OECD countries.[5] 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 levels: labor market policies, electoral

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

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 *et al.*, 2017, Comparative Welfare Entitlements Data set 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.[6] Constitutional reforms are rare events 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. Japan switched from a proportional to a majoritarian system in 1996. We take into account these reforms in our data set and we switch the electoral rule dummy starting from the year in which the first election took place under the new electoral rule (see Table A.1).

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

[6]Germany features an electoral system in which single MPs are elected in uninominal districts but the 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 are robust to excluding Germany from our sample.

district level for 16 OECD countries (Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, and the United States) 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 data set 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. 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 is 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 by considering the change in the number of seats won by the different parties.[7] This (ex-post) measure is, thus, discrete. However, unlike other measures that concentrate on the vote distance between two candidates (e.g., 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, which is our main specification, "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

[7] 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.

Table 1: Share of swing and safe districts.

	Main measure		Strict measure		Median measure	
Country	% 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	44.7	55.3	24.1	75.9	49.8	50.2
Germany	43.3	56.7	21.7	78.3	50.0	50.0
Italy	54.1	45.9	32.4	67.6	49.1	50.9
Japan	47.9	52.1	17.6	82.4	34.0	66.0
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 one or two 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.

corresponding local unemployment rate. When districts are small, as it commonly happens in majoritarian systems, the same local unemployment rate may be 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.[8] 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.

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

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. These unemployment measures will be used in the empirical analysis to test the second prediction in Proposition 3. 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. This difference is used in the empirical analysis to test the first prediction in Proposition 3. 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) is our most preferred one.

Since we want to test the policy reaction to unemployment shocks, we need to consider the role of veto players (see Tsebelis, 2002). From the Data set of Political Institutions, we include a variable that measures the number of checks on the power of the executive. 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.

Empirical Model

To test the relevance of electoral systems for the policy response to unemployment, we exploit two sources of variation. First, we run the empirical models described below with country fixed effects, in order to exploit the within country variation induced by those countries (France, Italy, and Japan) that modified their electoral systems over time. Second, we run our regression models without country fixed effects to capture also the cross-country variations.

From Proposition 3, we obtained two distinct theoretical predictions. Hence, we introduced two different empirical models. The first prediction is on the level of unemployment benefits: for a given average unemployment rate, the difference between the unemployment benefit generosity in majoritarian versus proportional systems increases in the difference in unemployment rate between

Table 2: Unemployment rate in swing and safe districts.

Variable	Swing districts			Safe districts		
	Proportional	Majoritatian	t-test	Proportional	Majoritatian	t-test
Panel A: Main measure						
Population-weighted	7.460	7.611	−0.151	7.194	7.317	−0.123
unemployment rate	(0.35)	(0.195)	(0.459)	(0.396)	(0.168)	(0.481)
Panel B: Strict measure						
Population-weighted	7.243	7.649	−0.406	7.554	7.392	0.162
unemployment rate	(0.327)	(0.201)	(0.434)	(0.377)	(0.173)	(0.479)
Panel C: Median measure						
Population-weighted	7.346	7.613	−0.267	7.500	7.298	0.203
unemployment rate	(0.349)	(0.193)	(0.453)	(0.368)	(0.170)	(0.473)

Standard errors in parentheses are clustered at the country level. *Significant at 10% level; **Significant at 5% level; ***Significant at 1% level. 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 one or two 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.

Variable	Proportional	Majoritatian	t-test
Panel A: Main measure			
Δ Population-weighted unemployment rate (Swing − Safe)	0.262 (0.145)	0.294 (0.074)	−0.032 (0.180)
Panel B: Strict measure			
Δ Population-weighted unemployment rate (Swing − Safe)	−0.287 (0.115)	0.258 (0.069)	−0.545*** (0.151)
Panel C: Median measure			
Δ Population-weighted unemployment rate (Swing − Safe)	−0.185 (0.110)	0.315 (0.080)	−0.500*** (0.149)

Standard errors in parentheses are clustered at the country level. *Significant at 10% level; **Significant at 5% level; ***Significant at 1% level. 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 one or two 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	St. dev.	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	0.020	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
Checks	387	4.305	1.482	2	16
Log unemployment in swing districts	369	1.942	0.496	0.0269	3.205
Log unemployment in safe districts	344	1.888	0.535	−0.223	3.158

swing and safe districts. When this difference is positive, unemployment benefits are larger under majoritarian than under proportional representation and vice-versa. To test this prediction, we run the following regression model:

$$\begin{aligned} UB_{it} &= \rho\left(u^S_{it-1} - u^N_{it-1}\right) + \gamma MAJ_{it-1} + \delta\left(u^S_{it-1} - u^N_{it-1}\right) * MAJ_{it-1} \\ &\quad + \beta X_{it-1} + \phi n_i + \lambda v_t + \epsilon_{it} \end{aligned} \tag{8}$$

where UB_{it} is one of the measures of generosity of unemployment benefit policies described in the previous section, $\left(u^S_{it-1} - u^N_{it-1}\right)$ is the difference in unemployment rate between swing and safe districts, MAJ_{it-1} is the electoral rule dummy, coded 1 when the electoral formula is majoritarian, $\left(u^S_{it-1} - u^N_{it-1}\right) * MAJ_{it-1}$ is the interaction term between the previous two variables, and X_{it-1} is a vector of political, economic, and demographic controls. 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. As explained, we run this model with and without country fixed effects, n_i.

Our coefficient of interest is δ, which captures the intereaction between the difference in unemployment rate between swing and safe districts and the majoritarian electoral rule. According to the theoretical results in Proposition 3, we expect δ to be positive. We run this regression model on the entire sample, as well as on two separate subsamples, which we denote as Case I ($u^S_{it} > u^N_{it}$) and Case II ($u^S_{it} < u^N_{it}$). With this sample splitting, we can analyze possible heterogenous effects under these two circumstances. In fact, in Case I, the unemployment is larger in the swing districts — and hence the incentive to react is highest in the majoritarian systems — and viceversa in Case II.

The second prediction from Proposition 3 is that 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 thus use as regressors the unemployment rates in the swing and safe districts, and their interactions with the electoral rule. We also include the set of control variables, X_{it-1}, used in Equation (8), country fixed effects, n_i, and year fixed effects, v_t. Since our theoretical prediction is about the elasticity of the policy response to changes of the unemployment benefits, we take logs of variables on both sides (with the exclusion of the electoral rule dummy) in order to interpret the coefficients of the independent variables as elasticities of the policy response to changes in the unemployment rates. Hence, we estimate:

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

Here the main coefficients of interest are ζ_1 and ζ_2 that capture the different impact of an increase in the unemployment rate, respectively, in the swing and safe districts between 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 this regression model with and without country fixed effects. Moreover, we run it on the entire sample, as well as on two separate subsamples, Case I ($u_{it}^S > u_{it}^N$) and Case II ($u_{it}^S < u_{it}^N$), to undercover possible differences in the magnidutes of the effects.

Results

Table 5 presents regression estimates of the model described in 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 the whole sample, for Cases 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, the share of population aged 65+ and the number of checks), for country fixed effects and for years fixed effects. In the regressions using the entire samples (results in columns 1, 4, and 7 of Table 5), the coefficient of interest (on the interaction term) is always positive and statistically significant (at 5%, 1%, and 10% respectively for the UB replacement for family, for singles, and for the overall generosity index). Hence, the difference in the unemployment rate between swing and safe districts lead to more unemployment rate generosity in majoritarian (versus proportional) systems. These results are confirmed — and even strengthened, in case I, i.e., when the unemployment rate is higher in swing than in safe districts. No differential response across electoral systems emerges instead for any generosity indicator in Case II, i.e., when the unemployment rate is lower in swing than in safe districts. Also Table 6 presents regression estimates of the model described

Table 5: Results on unemployment benefit generosity (with country FE).

	Replacement family			Replacement single			Generosity		
Variables	Full sample	$U_{\text{Swing}} > U_{\text{Safe}}$	$U_{\text{Swing}} < U_{\text{Safe}}$	Full sample	$U_{\text{Swing}} > U_{\text{Safe}}$	$U_{\text{Swing}} < U_{\text{Safe}}$	Full sample	$U_{\text{Swing}} > U_{\text{Safe}}$	$U_{\text{Swing}} < U_{\text{Safe}}$
Δ UR* Majoritarian	0.012**	0.016***	0.004	0.009***	0.010***	0.003	0.054*	0.093***	0.031
	(0.005)	(0.003)	(0.008)	(0.002)	(0.002)	(0.005)	(0.030)	(0.022)	(0.134)
Observations	335	181	154	335	181	154	341	185	156
***R*-squared**	0.978	0.982	0.981	0.987	0.990	0.989	0.990	0.994	0.989
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 electoral system, the difference in the employment rate between swing and safe districts, the unemployment rate at the national level, the log of per capita GDP, the number of checks on the executive 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: Results on unemployment benefit generosity (without country FE).

	Replacement family			Replacement single			Generosity		
Variables	Full sample	$U_{\text{Swing}} > U_{\text{Safe}}$	$U_{\text{Swing}} < U_{\text{Safe}}$	Full sample	$U_{\text{Swing}} > U_{\text{Safe}}$	$U_{\text{Swing}} < U_{\text{Safe}}$	Full sample	$U_{\text{Swing}} > U_{\text{Safe}}$	$U_{\text{Swing}} < U_{\text{Safe}}$
Δ UR*									
Majoritarian	0.012***	0.017***	0.001	0.010***	0.012***	−0.001	0.069***	0.080***	0.112
	(0.004)	(0.003)	(0.006)	(0.002)	(0.002)	(0.007)	(0.018)	(0.027)	(0.102)
Observations	335	181	154	335	181	154	341	185	156
***R*-squared**	0.976	0.980	0.977	0.986	0.989	0.986	0.989	0.993	0.986
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	NO	NO	NO	NO	NO	NO	NO	NO	NO

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 electoral system, the difference in the employment rate between swing and safe districts, the unemployment rate at the national level, the log of per capita GDP, the number of checks on the executive 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.

in Equation (8), but without country fixed effects, in order to exploit also the cross-country variation. These results are fully in line with those of the regressions with country fixed effects — indeed even stronger.

In Table 7, we test the second theoretical predictions of Proposition 3 on the elasticities using the specification in Equation (9) with country fixed effects. 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, that is, 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) in Case I. They are also significant (at 10% level) for two measures (UB replacement rates for singles at Column 4 and the UB overall generosity score at Column 7) in the whole sample. No effect emerges instead in Case II, that is, when politicians in majoritarian systems have no incentives to offer unemployment benefits. Table 8 reports the regression estimates of the model described in Equation (9), but without country fixed effects. Again, these results are fully in line with (indeed even stronger than) those of the regressions with country fixed effects.

To confirm that our results are driven by the different electoral incentives provided by the geographical distribution of the unemployment rate, we run a 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 9 and 10, no difference between majoritarian and proportional system emerges in our two empirical specifications in 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 as statistically significant (see Tables A.2–A.5).

Table 7: Results on unemployment benefit generosity — elasticities (with country FE).

Variables	Log replacement family: Full sample	Log replacement family: $U_{\text{Swing}} > U_{\text{safe}}$	Log replacement family: $U_{\text{Swing}} < U_{\text{safe}}$	Log replacement single: Full sample	Log replacement single: $U_{\text{Swing}} > U_{\text{safe}}$	Log replacement single: $U_{\text{Swing}} < U_{\text{safe}}$	Log generosity: Full sample	Log generosity: $U_{\text{Swing}} > U_{\text{safe}}$	Log generosity: $U_{\text{Swing}} < U_{\text{safe}}$
Majoritarian	0.014	−0.044	−0.096	−0.169	−0.045	−0.057	0.012	0.041	0.051
	(0.039)	(0.071)	(0.086)	(0.177)	(0.072)	(0.152)	(0.033)	(0.037)	(0.062)
Unemployment swing	0.025	0.030	0.037	−0.026	0.024	0.360	−0.020	−0.052**	−0.079
	(0.018)	(0.032)	(0.044)	(0.025)	(0.032)	(0.268)	(0.021)	(0.024)	(0.084)
Unemployment safe	0.003	−0.012	−0.014	0.007	−0.006	−0.424	0.009	0.015**	0.110
	(0.006)	(0.021)	(0.054)	(0.009)	(0.009)	(0.258)	(0.006)	(0.007)	(0.096)
Maj. * Unemp. swing	0.188	0.431***	0.042	0.287*	0.411***	−0.275	0.096*	0.209***	−0.000
	(0.138)	(0.090)	(0.138)	(0.158)	(0.075)	(0.311)	(0.050)	(0.037)	(0.140)
Maj. * Unemp. safe	−0.186	−0.430***	−0.055	−0.222*	−0.402***	0.253	−0.097*	−0.219***	−0.010
	(0.137)	(0.080)	(0.140)	(0.115)	(0.050)	(0.316)	(0.051)	(0.037)	(0.150)
Observations	322	181	141	322	181	141	328	185	143
***R*-squared**	0.969	0.984	0.965	0.956	0.997	0.937	0.992	0.995	0.992
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 the lag of a set of country-year covariates. These include the unemployment rate at the national level, per capita GDP, the share of population in working age and older than 65, and the number of checks on the executive. Countries in sample: Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Norway, Portugal, Spain, Switzerland, United Kingdom, and the United States.

Table 8: Results on unemployment benefit generosity — elasticities (without country FE).

Variables	Log replacement family			Log replacement single			Log generosity		
	Full sample	$U_{\text{Swing}} > U_{\text{safe}}$	$U_{\text{Swing}} < U_{\text{safe}}$	Full sample	$U_{\text{Swing}} > U_{\text{safe}}$	$U_{\text{Swing}} < U_{\text{safe}}$	Full sample	$U_{\text{Swing}} > U_{\text{safe}}$	$U_{\text{Swing}} < U_{\text{safe}}$
Majoritarian	−0.054***	−0.054**	−0.076	−0.129	−0.026*	−0.545*	0.007	0.016	0.039
	(0.016)	(0.022)	(0.067)	(0.077)	(0.015)	(0.284)	(0.019)	(0.015)	(0.048)
Unemployment swing	0.027*	0.022	0.069	0.016	0.000	0.312	0.000	−0.015	−0.029
	(0.013)	(0.016)	(0.051)	(0.019)	(0.010)	(0.196)	(0.012)	(0.011)	(0.061)
Unemployment safe	0.007	0.008**	−0.050	0.017	0.004**	−0.378*	0.008	0.010	0.050
	(0.004)	(0.004)	(0.044)	(0.010)	(0.002)	(0.206)	(0.008)	(0.006)	(0.066)
Maj. * Unemp. swing	0.178*	0.365***	−0.114	0.248***	0.407***	−0.056	0.104**	0.204***	0.011
	(0.100)	(0.072)	(0.144)	(0.071)	(0.051)	(0.439)	(0.039)	(0.031)	(0.114)
Maj. * Unemp. safe	−0.160	−0.356***	0.138	−0.201***	−0.406***	0.254	−0.110***	−0.220***	−0.032
	(0.101)	(0.080)	(0.162)	(0.068)	(0.048)	(0.500)	(0.034)	(0.030)	(0.124)
Observations	322	181	141	322	181	141	328	185	143
***R*-squared**	0.967	0.981	0.957	0.954	0.997	0.916	0.991	0.994	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	NO	NO	NO	NO	NO	NO	NO	NO	NO

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

Table 9: Results of placebo on social security generosity.

Variables	SS replacement rate family			SS replacement rate single		
	Full sample	$U_{\text{Swing}} > U_{\text{Safe}}$	$U_{\text{Swing}} < U_{\text{Safe}}$	Full sample	$U_{\text{Swing}} > U_{\text{Safe}}$	$U_{\text{Swing}} < U_{\text{Safe}}$
Δ UR* Majoritarian	0.472	−21.789	4.111	−8.701	−41.036	5.183
	(3.386)	(22.630)	(3.619)	(11.329)	(40.092)	(17.025)
Observations	331	182	149	331	182	149
***R*-squared**	0.918	0.839	1.000	0.74	0.671	0.867
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 electoral system, the difference in the employment rate between swing and safe districts, the unemployment rate at the national level, the log of per capita GDP, the number of checks on the executive 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 10: Results of placebo on social security generosity — elasticities.

Variables	Log SS replacement family			Log SS replacement single		
	Full sample	$U_{\text{Swing}} > U_{\text{safe}}$	$U_{\text{Swing}} < U_{\text{safe}}$	Full sample	$U_{\text{Swing}} > U_{\text{safe}}$	$U_{\text{Swing}} < U_{\text{safe}}$
Majoritarian	0.492	1.376	−0.040	1.162	2.350	−0.054
	(0.371)	−1.392	(0.063)	(0.989)	−2.381	(0.430)
Unemployment swing	0.091	0.662	0.007	0.517	1.299	−0.240
	(0.136)	(0.749)	(0.065)	(0.544)	−1.418	(0.217)
Unemployment safe	−0.013	−0.334	0.062	−0.120	−0.575	0.655
	(0.024)	(0.362)	(0.078)	(0.142)	(0.598)	(0.530)
Maj. * Unemp swing	0.065	−0.630	−0.196	−0.600	−1.749	−0.872
	(0.218)	(0.971)	(0.193)	(0.745)	(2.106)	(1.621)
Maj. * Unemp safe	−0.194	0.248	0.218	0.274	1.097	0.632
	(0.282)	(0.844)	(0.202)	(0.673)	(1.752)	(1.428)

(*Continued*)

Table 10: (*Continued*)

Variables	Log SS replacement family: Full sample	Log SS replacement family: $U_{\text{Swing}} > U_{\text{safe}}$	Log SS replacement family: $U_{\text{Swing}} < U_{\text{safe}}$	Log SS replacement single: Full sample	Log SS replacement single: $U_{\text{Swing}} > U_{\text{safe}}$	Log SS replacement single: $U_{\text{Swing}} < U_{\text{safe}}$
Observations	323	182	141	323	182	141
***R*-squared**	0.925	0.845	1.000	0.775	0.700	0.884
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 the lag of a set of country-year covariates. These include the unemployment rate at the national level, per capita GDP, the share of population in working age and older than 65, and the number of checks on the executive. Countries in sample: Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Norway, Portugal, Spain, Switzerland, United Kingdom, and the United States.

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 sharp empirical predictions. For a given average unemployment rate, the difference in the unemployment benefit generosity between majoritarian and proportional systems is increasing in the distance of the unemployment rate between swing and safe districts. When the unemployment rate is higher in swing than in safe districts, the unemployment benefits are more generous in majoritarian than in proportional systems. Furthermore, politicians in majoritarian systems are more reactive to changes in unemployment rates in either districts.

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

Appendix

Proof of Proposition 1

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

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

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

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

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

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

To obtain the elasticities η^P_{f,u^S} and η^P_{f,u^N}, note 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 in Equation (7), subject to the budget constraint at Equation (2), gives raise to the following first-order conditions

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

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

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

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

(1) 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 $u^S > u^N$. Moreover, $f^M - f^P = \frac{u^S(1-\overline{u})}{2\overline{u}} - \frac{(1-\overline{u})(\overline{\varepsilon}-k)}{2\overline{u}\overline{\varepsilon}} = \frac{(1-\overline{u})}{2\overline{u}\overline{\varepsilon}}\left[\overline{\varepsilon}u^S - \overline{\varepsilon} + k\right]$. After simple algebra, we have $f^M - f^P = \frac{(1-\overline{u})\varepsilon^N(1-\mu)}{2\overline{u}\overline{\varepsilon}}\left(u^S - u^N\right)$.

(2) 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 $\eta^M_{f,u^S} = -\frac{u^S\mu}{\overline{u}(1-\overline{u})} < \eta^P_{f,u^S} = u^S\mu\left[\frac{\varepsilon^S}{(\overline{\varepsilon}-k)} - \frac{1}{\overline{u}(1-\overline{u})}\right] < 0$.

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