Electoral Incentives and Economic Policy across Political Regimes*

Vincenzo Galasso†
Bocconi University, IGIER, and CEPR

Salvatore Nunnari‡
Columbia University

April 2014

Abstract

This paper provides a direct test of the link from electoral rules to an economic policy – Unemployment Benefits. Our theoretical model delivers unambiguous predictions on the interaction between electoral institutions and a time varying event, namely the unemployment rate in pivotal and non-pivotal districts. Electoral incentives induce more generous UB transfers in majoritarian than in proportional systems if the unemployment rate is higher in pivotal than in non-pivotal districts. Using a dataset with local information on electoral competitiveness and unemployment rates, and different measures of UB generosity for 21 OECD countries in the 1980-2001 period, our panel analysis strongly supports these predictions.
Keywords: Electoral Rules, Unemployment Benefits, Pivotal Districts.
JEL Classification: D72, D78, H53, J65

*We thank Stefano Gagliarducci, Tommaso Nannicini, Guido Tabellini, Michele Pellizzari, Per Fredriksson, Andrea Mattozzi, Per Pettersson-Lidbom and Michiko Ueda for detailed comments. We are also grateful for comments from the audience at the 2010 MPSA Conference in Chicago, the 2011 APSA Conference in Seattle, the University of Manheim, the CREI-CEPR Conference on "Politics, Information and the Macroeconomy" and the University of Bologna workshop in "Economics and Politics". We thank Michel Serafinelli for research assistance. All remaining errors are ours.

†PAM-IGIER, via Roentgen 1, 20136 Milano, Italy, vincenzo.galasso@unibocconi.it

‡Department of Political Science, Columbia University, 420 W 118th Street, New York, NY 10025, snunnari@columbia.edu.

1 Introduction

Economic policies largely differ across electoral rules. Existing empirical evidence suggest for instance that more redistribution takes place under proportional representation, while locally targeted transfers or public goods and pro-consumer policies are more common in majoritarian electoral systems (see Rogowski and Kayser [2002], Milesi-Ferretti, Perotti, and Rostagno [2002], Persson and Tabellini [2003] and Iversen and Soskice [2006]). Yet, much less is known on the nature of a direct link from political institutions to economic policy, and on the possible channels through which electoral rules may affect economic policy decisions. This paper concentrates on the different electoral incentives that political systems provide to office-seeking politicians. We focus on a specific welfare state program - unemployment benefit (UB) - which may be classified as broad or targeted depending on the geographical dispersion of unemployment. Our simple theoretical model provides a clear testable implication, which is empirically validated on OECD country panel data: electoral incentives induce more generous UB transfers in majoritarian than in proportional systems if the unemployment rate is higher in pivotal than in non-pivotal districts.

Electoral rules introduce important differences in the electoral incentives of office-seeking politicians, in the voters' choices, in the parties' behavior and in the degree of political representation. Key contributions focusing on the role of electoral incentives for office-seeking policy-makers (see Stein and Bickers [1994], Persson and Tabellini [1999, 2000], Lizzeri and Persico [2001, 2005], and Denemark [2000]) share the view that in majoritarian systems electoral competition is concentrated in few pivotal electoral districts, which can be easily targeted by the (incumbent) politicians with pork barrel spending, such as direct transfers and local public goods[1]. Proportional representation features instead larger districts,

[1]A parallel literature suggests instead that pork barrel is mainly partizan, and thus provided to core voters (see f.e., Cox and McCubbins [1986], Levitt and Snyder [1995], Balla, Lawrence,

and a more disperse electoral competition, which induces parties to seek support from wide coalitions in the populations by providing general public goods and broad transfers. Political institutions may also affect voters behavior since strategic delegation by the voters to the politicians changes under the different electoral rules (see Milesi-Ferretti, Perotti, and Rostagno [2002], Gabel, Hix, and Malecki [2005] and Fujiwara [2011]). Austin-Smith [2000], Iversen and Soskice [2006], Persson, Roland and Tabellini [2007], and Pellicer and Wegner [2013] highlight the differences in the nature of the political parties and in the partisan composition of the governing coalition across electoral rules, which may lead to different policy outcomes. Differences may exist also in the geographical location of voters, with the right-wing electorate being more concentrated in rural areas, which may favor more conservative policies in majoritarian systems, given the overrepresentation of voters in these areas (see Rodden [2010]). Hence, by affecting politicians', voters' and/or parties' behavior and political representation, electoral rules may influence economic policy decisions[2].

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 benefit (UB) - whose classification as a broad or targeted transfer may vary, over time and across countries, according to the geographical dispersion of unemployment. 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

Maltzman, and Sigelman [2002], Ansolabehere and Snyder [2006]), albeit possibly still 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.

[2]A more critical strand of literature has instead challenged the view that such causality link may actually exist (see Acemoglu [2005], Aghion, Alesina, and Trebbi [2004], Cusack, Iversen, and Soskice [2007], and Ticchi and Vindigni [2010]) by arguing that political institutions are endogenous. Since rational economic and political agents understand the implication of different electoral rules on economic outcomes, they will have induced preferences over political institutions. Hence, electoral rules and economic policies may be jointly determined by the preferences of the political elite.

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 (UB). Whether UB represents a broad or a narrowly target policy depends on the unemployment distribution across electoral districts. This model provides a sharp empirical prediction: when the unemployment rate is higher in pivotal than in non-pivotal districts, politicians provide more generous UB transfers in majoritarian than in proportional systems. 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 dataset with novel and detailed information on local electoral relevance and constituence interests for 21 OECD countries in the 1980-2001 period, and employ panel analysis on different measures of UB generosity. The empirical evidence strongly supports our theoretical predictions. We find that in majoritarian systems politicians are more reactive to an increase in the unemployment rates both in the pivotal and non-pivotal districts than in proportional system. If the unemployment rate is higher in pivotal than in non-pivotal districts, politicians provide more generous UB transfers in majoritarian systems.

Unlike our paper, the existing empirical contributions exploit mainly the variation in economic policy across countries to draw inference on constitutional effects (Aidt, Duta, and Loukoianova, [2006]; Milesi-Ferretti, Perotti, and Rostagno, [2002]; Persson and Tabellini, [2003]). As discussed in detail in Acemoglu [2005], the identification of casual effects with this cross country analysis is hindered by omitted variables and selection bias problems[3]. Indeed, Persson and Tabellini [2003] and Milesi-Ferretti, Perotti, and Rostagno [2002] tried to exploit the interaction between constitutional rules and other time-varying variables, such as

[3]Acemoglu [2005] provides a critical appraisal also of other estimation technics, such as instrumental variable, used in Persson and Tabellini [2003].

unobserved common or country-specific shocks, or variables related to business and electoral cycle, using the methodology introduced by Blanchard and Wolfers [2000],[4] to identify these interaction terms using within-country variability. The drawback is that while these estimates are suggestive of some economic effects of political constitutions, they however do not represent a direct test of the predictions from the theoretical model. In a recent paper, Funk and Gathmann [2013] use reforms in electoral rules at Swiss local (canton) level to identify the effects of proportional and plurality rules on economic outcomes. They find supporting evidence that broad public spending is larger under proportional representation, and narrow spending prevails under majority rules. Although their empirical strategy exploits within-canton electoral variations, thanks to most cantons switching from plurality to proportional rule over time, their analysis may still remain open to omitted variables problems, if unobservable factors are correlated with both the switches in electoral rules and with public spending.[5] Finally, 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.

The paper proceeds as follows. Section 2 introduces our simple model of policy formation under the two electoral systems, and obtains the main theoretical predictions. Section 3 tests our predictions for the differences between the two systems, and Section 4 concludes. All proofs are in the appendix.

[4]The focus on indirect constitutional effects, captured by the interactions between the constitutions and other variables, further alleviates the concern of endogeneity. In fact, the possibility that historical or cultural determinants of the constitution would also influence these interactions seems more remote than the likelihood of a direct influence of the constitution on economic policy.

[5]The authors provide several robustness checks to address this issue.

2 The Model

We consider a stylized economy in which individuals may be employed or unemployed. Employed individuals receive a unitary wage and pay a 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.

Our country is assumed to be partitioned in districts. There are I districts of equal size. The utility of an average voter[6] in district $i \in I$ is given by the following utility:

$$V^i(\tau, f, g_i) = n_i V(1-\tau) + (1-n_i)V(f) + V(g_i) \tag{1}$$

where n_i represents the employment rate in district i and $1-n_i$ is the unemployment rate. 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

[6]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 foreover and do not discount the future (their discount future is equal to zero), and hence the utility function at eq. 1 describes the utility of an average individual in district i, where now n_i represents the proportion of time that he will spent employed. Both interpretations are compatible with the policy decisions described in the next section.

voting model (Lindbeck and Weibull [1987], Lindbeck and Weibull [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 office-seeking and have no preferences on the policy vector to implement. Hence, they set the policies in order to maximize their probability of winning the elections.

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

$$V^i\left(\tau^A, f^A, g_i^A\right) - V^i\left(\tau^B, f^B, g_i^B\right) - \sigma_j - \delta > 0. \tag{3}$$

A strong individual ideology (or simpathy) towards one party or another, σ, will thus largely affect the individual voting decision. Each electoral district is populated by individuals with different ideology, σ. To capture this aspect, we consider a district specific distribution of individual sympathy, which, for simplicity, we assume to be uniform. Therefore, in every district i, the individual ideology is 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 sympathy (or ideology), whereas districts with higher ε^i are more concentrated around the mean $\left(\overline{\sigma}^i\right)$, and have more non-ideological individuals. 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 the events. First, the two parties decide simultaneously and independently their electoral platform, which consists of a policy vector – respectively, $V^i\left(\tau^A, f^A, g_i^A\right)$ and $V^i\left(\tau^B, f^B, g_i^B\right)$. In taking their policy decisions, parties know the distribution of ideological voters across districts and the distribution of the popularity shock. Before the election the popularity shock occurs. Then, voters choose which party to support, according to the expression in eq. 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 assumption. First, we consider two types of districts: swing (or pivotal) and non-pivotal districts. There are I_S swing districts, which are assumed to be ideologically neutral (i.e.their distribution of ideological voters is centred around zero, or $\overline{\sigma}^S = 0$) and to have more non-ideological voters and less extremists (i.e., few individuals with large absolute values of σ, or $\varepsilon_{_S}$ large). Since these non-ideological voters can more easily be swayed by the use of proper policies, these districts are more likely to be swing districts. The other $(I - I_S)$ districts are non-pivotal. They have a more disperse distribution of ideology, $\varepsilon_{_N} < \varepsilon_{_S}$, and thus more ideologically extreme voters. Furthermore, their distribution of ideological

voter is not centred around zero. Indeed, we assume that half of these non-pivotal districts largely favour party A, while the other half favors party B. We denote the former as non-pivotal pro-A districts (NA) and the latter as non-pivotal pro-B districts (NB). Hence, we have that $\varepsilon_{NA} = \varepsilon_{NB} = \varepsilon_N < \varepsilon_S$; $\overline{\sigma}^{NA} < 0$ and $\overline{\sigma}^{NB} > 0$. Without loss of generality, we can assume symmetry across the two sets of non-pivotal districts, so that $\overline{\sigma}^{NB} = -\overline{\sigma}^{NA}$. The fraction of pivotal districts is equal to $\mu = I_S/I$, whereas the average employment in these swing districts is n_S, and n_N in the non pivotal districts (regardless of their ideological bias), so that $\overline{n} = n_S\mu + n_N(1-\mu)$ is the average employment rate in the country; and, analogously, $\overline{u} = u_S\mu + u_N(1-\mu)$ is the average unemployment rate. Finally, to obtain simple analytical solutions, we consider a logarithmic utility function.

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

$$\begin{aligned}\Pi_A^P &= \frac{1}{2} + \frac{\psi}{\overline{\varepsilon} I}\left\{\sum_{i\in S}\varepsilon_i\left[V^i\left(\tau^A, f^A, g_i^A\right) - V^i\left(\tau^B, f^B, g_i^B\right)\right] + \right. \\ &\left. + \sum_{i\in N}\varepsilon_i\left[V^i\left(\tau^A, f^A, g_i^A\right) - V^i\left(\tau^B, f^B, g_i^B\right)\right]\right\} \qquad (4)\end{aligned}$$

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., $\left(\tau^A, f^A, g_i^A\right) = \left(\tau^B, f^B, g_i^B\right)$, and thus provide the same utility to the voters, their chances of winning the election is one half, and the actual winner will entirely be determined by the popularity shock.

Yet, parties may try to increase their probability of winning the election by an

accurate use of the policy vector. In particular, party A will maximize its chances of winning the election by solving the following optimization problem:

$$\max_{\{\tau,f,g_i\}} \mu\varepsilon_{_S}\left[n_{_S}V(1-\tau)+(1-n_S)V(f)\right]+\frac{\varepsilon_S}{I}\sum\nolimits_{i\in S}V(g_i)+ \tag{5}$$
$$(1-\mu)\varepsilon_N\left[n_NV(1-\tau)+(1-n_N)V(f)\right]+\frac{\varepsilon_N}{I}\sum\nolimits_{i\in N}V(g_i)$$

subject to the budget constraint at eq. 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 pivotal districts, the unemployed will enjoy more political power, as measured by ε, and more generous transfers will emerge. 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 pivotal districts relative to the average districts, and $k = [\mu\varepsilon_S n_S + (1-\mu)\varepsilon_N n_N]$ as the average employment rate weighted by the political relevance of the individuals according to their district type. Finally, it is convenient to define the elasticity of the unemployment benefit transfer with respect to a change in the unemployment in the pivotal and in the non-pivotal 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* $\left(\tau^P, f^P, g^P_S, g^P_N\right)$ *with* $f^P = \frac{(1-\overline{u})(\overline{\varepsilon}-k)}{2\overline{u}\overline{\varepsilon}}$, $\tau^P = 1-\frac{k}{2\overline{\varepsilon}}$, *and* $g^P_S = \frac{(1-\overline{u})\varepsilon_S}{2\overline{\varepsilon}} > g^P_N = \frac{(1-\overline{u})\varepsilon_N}{2\overline{\varepsilon}}$. *Moreover, the elasticities of the unemployment benefit transfer with respect to a change in the unemployment in the pivotal and in the*

non-pivotal 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* $\frac{\varepsilon_S}{\varepsilon_N} > \frac{(1-\mu)u_N}{(1-\mu)u_N - \overline{u}^2}$.

Under the proportional 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 the unemployment in the non-pivotal 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 pivotal districts may or may not increase the benefits, depending on the initial level of the unemployment in the non-pivotal 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. Assume for simplicity that the non-pivotal districts are sufficiently extreme in the distribution of preferences[7], so that in the non-pivotal pro-A districts (NA) party A always wins and viceversa in the pro-B districts (NB). Since we assumed that there is an equal share of pro-A and pro-B non pivotal districts, a party wins the election if it wins in half of the pivotal districts. Hence, the probability of party A winning the election in this

[7]This assumption may be relaxed at the cost of some additional algebra. Namely, in their optimization problem both parties will have to consider also the voters in these non-pivotal districts.

majoritarian electoral system is simply

$$\Pi_A^M = \frac{1}{2} + \frac{\psi}{I_S} \sum_{i \in S} \left[V^i \left(\tau^A, f^A, g_i^A \right) - V^i \left(\tau^B, f^B, g_i^B \right) \right]. \tag{6}$$

Unlike in the proportional system, parties election probabilities depend exclusively on the pivotal districts. Hence, parties will have an incentive to target only the individuals in these districts. Their optimization problem becomes:

$$\max_{\{\tau, f, g_i\}} n_S V(1-\tau) + (1-n_S) V(f) + \frac{1}{I_S} \sum\nolimits_{i \in S} V(g_i) \tag{7}$$

subject to the budget constraint at eq. 2.

Under the majoritarian system, the policy decisions become more extreme. Parties only seek to please the individuals in the pivotal 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 non-pivotal districts. A first consequence is that the level of local public goods will be very uneven across the country, with the non-pivotal voters effectively getting none, $g_N = 0$. In selecting the unemployment benefit, the role of the unemployment in the pivotal 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 pivotal and in the non-pivotal districts are respectively,* $\eta_{f,u_S}^M = 1 - \frac{\mu u_S}{\overline{u}(1-\overline{u})}$ *and* $\eta_{f,u_N}^M = -\frac{u_N(1-\mu)}{\overline{u}(1-\overline{u})} < 0$. *Clearly,* $\eta_{f,u_S}^M > 0$ *if* $\overline{u}\,(1-\overline{u}) > \mu u_S$.

Increases in the unemployment rate among the non-pivotal districts, u_N, unambiguously reduce the unemployment benefits, $\eta_{f,u_N}^M < 0$, as they induce a net

cost on the individuals in the pivotal districts. If instead the unemployment rises in these districts, parties may choose to increase the unemployment benefits, provided that the unemployment in these sector 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 the voters in the swing districts. Hence, both parties will provide more local public good in the swing 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 more or less pivotal. 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 non-pivotal districts, $u_S > u_N$. Moreover, under a majoritarian system there is a higher elasticity of the transfers to the unemploy-*

ment in the swing districts, $\eta^M_{f,u_S} > \eta^P_{f,u_S}$*, and a lower elasticity of the transfers to the unemployment in the non-pivotal districts,* $\eta^M_{f,u_N} < \eta^P_{f,u_N}$*, than in proportional system.*

The first result of the above proposition 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 pivotal and non-pivotal 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 non-pivotal 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 OECD countries over the period 1980-2001.

3.1 Data

Our sample consists of 21 OECD countries[8]. To test the two theoretical predictions we use five sets of data: on labor market policies, on electoral rules, on electoral relevance of subnational geographical units, local unemployment rates, and economic and demographic control variables at the national level. Labor market policies are summarized by three different variables: the unemployment benefit family replacement rate, the unemployment risk coverage, and an unemployment benefit generosity score (from Scruggs [2004] Welfare State Entitlements Data Set). The unemployment benefit family replacement rate is defined as "the

[8]A complete description of the data available for the different OECD countries is provided in the data appendix.

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"; while the unemployment risk coverage is "the percentage of the labor force insured for unemployment risk".[9] The unemployment benefit generosity score is an index that summarize various 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 base of the prevailing component when the system is mixed. Constitutional reforms are rare events and 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 rule for a short period (1985-1986) before switching back to plurality rule; in the 1990s three countries of our sample pursued electoral reforms: in 1993 Italy went from a full proportional rule to a system where 75% of legislators were appointed through plurality rule and the remainding 25% according to proportional rule; in 1994 Japan moved to a semi-proportional system (single non-transferable votes) to a mixed system with most seats in the majoritarian tier; finally, in 1996 New Zealand moved from a plurality rule system to a mixed system in which most legislators are elected by proportional rule[10]. 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

[9]Notice that this differs from the percentage of unemployed individuals, who are currently receiving benefits.

[10]As described in the data appendix, complete data for New Zealand begins only in 1996.

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 districts) are pivotal. For this purpose, we used data drawn from the World Value Survey (WVS) on political ideology of the interviewed. We define as "potential swing voters" the individuals who declared themselves in the middle of the right/left ideological scale (i.e. those who placed themselves on 5 or 6 in a scale between 1 and 10) and as "pivotal regions" those areas in the first quintile of the distribution of "potential swing voters".[11] Once the regions are classified[12] in pivotal and non-pivotal, we track the evolution of unemployment rates in these two groups of regions. Data on regional unemployment rates and regional population in the period 1980-2001 were collected from different sources (EUROSTAT, the OECD Regional Database, national statistics offices, and national labor force surveys). Hence, the grid of subnational level regions that we define for each country depends on the geographical disaggregation of the available data on ideological affiliation and local unemployment rates. Since we need to match these two different sets of data, for each country we use the regions from the least disaggregated dataset (typically the WVS data) and we re-arrange accordingly the information from the most disaggregated ones[13]. This approach will tend to produce a downward bias against finding an correlation in majoritarian systems, where the (smaller) electoral districts are the crucial units. We then average the unemployment rates in each group of regions (weighted by

[11]Four waves of the WVS were conducted during the period of interest for our analysis, in 1981, 1990, 1995, and 1999-2001. However, different countries were involved in different waves and sometimes, in the same wave, respondents from different countries were asked a different set of questions. Even when we have data on ideological position and geographical location of the respondents for more than one wave, the number of observations for single wave/region is small and, therefore, we pooled together the data from all waves to have a more robust index of ideological leaning of regions. As a consequence, our classification in "pivotal" or "non pivotal" areas is time invariant.

[12]The level of geographical disagregation of the WVS data may differ across countries varying from administrative regions or lenders (f.e., NUTS 2 or 3 for the European countries) to macrozones. A detailed description of this disagregation is in the data appendix.

[13]A complete description of the geographical disagregation for the two sets of data and of the corresponding match is provided in the data appendix.

population size) to create for each country a time series of unemployment rate in the pivotal and non-pivotal districts.

Our last set of data includes time series of national economic and demographic control variables. These controls are from SourceOECD and include per capita GDP, welfare expenditure as a % of GDP, and population 15-64 years old. Table 1 presents summary statistics with observations classified by the electoral rule in place. The differences between the two groups (majoritarian and proportional) in overall unemployment rates, unemployment rates in the pivotal districts, and unemployment rates in the non-pivotal districts are significantly different from zero (respectively, at the 10%, the 5% and the 1% level) with PR associated with higher unemployment. However, this does not undermine the validity of our results. In fact, as dictated by our theoretical predictions and described in detail in the next section, our identification strategy relies on the within-country variation in the relative rates of unemployment in pivotal and non-pivotal districts. The difference in unemployment rate between pivotal and non-pivotal districts is not significantly different from zero in either institutional group (majoritarian and proportional). Moreover, also the difference in the ratio of the unemployment rate in the pivotal and non-pivotal districts between the institutional group (majoritarian and proportional) is not significantly different from zero.

3.2 Empirical Model

Since we want to test two distinct theoretical predictions, we introduce two empirical models and present two sets of results. The first prediction is on the level of unemployment benefit: if there is more unemployment in the swing than in the non-swing districts, the unemployment benefits are higher under majoritarian than under proportional representation. To test this prediction, we run a model

with the following functional form:

$$UB_{it} = \beta X_{it-1} + \gamma MAJ_{it-1} + \delta \frac{U^S_{it-1}}{U^N_{it-1}} + \zeta \left(\frac{U^S_{it-1}}{U^N_{it-1}} * MAJ_{it-1} \right) + \phi n_i + \lambda v_t + u_{it} \quad (8)$$

where UB_{it} is one of the measures of the unemployment benefit policy described in the previous section, X_{it-1} is a vector of national economic and demographic controls, MAJ_{it-1} is the electoral rule dummy (coded 1 when the electoral formula is majoritarian), U^S_{it-1} and U^N_{it-1} is the unemployment rate respectively in the swing and non-swing districts. 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]). We use the ratio between the unemployment rates in the two groups because, according to the model, what matters is the difference between the two. Moreover, n_i are country fixed effects and v_t are year fixed effects to control respectively for countries' unobserved, time invariant heterogeneity and for shocks that are common to all countries in any given year. Finally, u_{it} is a vector of error terms specific to each country. Because we introduce country dummies into the regressions, the coefficients on the independent variables represent a cross-country average of the longitudinal effect.

We focus on δ and ζ, to test, respectively, the impact on these policies of a relative increase of the unemployment level in the swing districts in the proportional system, and how different this impact is in a majoritarian system. For the model to support our theory, ζ should be positive.

Our second prediction concerns the elasticities: majoritarian systems are more

responsive than proportional systems to changes in the unemployment rate in non-pivotal districts, as well as to changes in unemployment in the pivotal districts. To test this prediction empirically, we introduce two differences to the model at eq. 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, instead of using the ratio of unemployment levels in the two groups, we include two separate regressors (unemployment rates in the swing and non-swing districts) and their interactions with the electoral rule. This second difference is due to the fact that, according to the theoretical model, majoritarian systems should always be more reactive to changes in unemployment levels both in swing and non-swing areas. Hence, we estimate:

$$\begin{aligned} \log\left(UB_{it}\right) &= \beta \log\left(X_{it-1}\right) + \gamma MAJ_{it-1} + \delta_1 \log\left(U^S_{it-1}\right) + \delta_2 \log\left(U^N_{it-1}\right) \\ &+\zeta_1 \left(\log\left(U^S_{it-1}\right) * MAJ_{it-1}\right) + \zeta_2 \left(\log\left(U^N_{it-1}\right) * MAJ_{it-1}\right) + \phi n_i + \lambda v_t + u_{it} \end{aligned} \tag{9}$$

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 pivotal and non-pivotal 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 in the non-pivotal districts (i.e. δ_2 negative), while our theory does not offer a clear prediction on δ_1.

3.3 Results

Table 2 presents regression estimates of the model described at eq. 8 for a set of three different dependent variables. These are respectively the unemployment benefit generosity score (columns 1-4), the family replacement rate (columns 5-8) and the unemployment risk coverage (columns 9-12) . In the first column of each

set of regressions (columns 1, 5 and 9) we examine the role of the national level of unemployment rate, the electoral rule and their interaction, besides controlling for a usual set of additional explanatory variables (namely, the lagged dependent variable, per capita GDP, welfare expenditure as a share of GDP, and the share of population aged 15-64). We cannot reject the null hypothesis of these coefficients being equal to zero, which implies that, regardless of the electoral rule, the overall level of unemployment in the country does not affect labor market policies. This result is in line with our theoretical model, and justifies a further look at regional labor markets. In columns 2, 6 and 10, we add the ratio between the unemployment rate in the swing and non-swing districts, and its interaction with the electoral rule dummy. The coefficient of this ratio is not significantly different from zero thus suggesting that, in the proportional system, the impact on the labor market policies of an increase of the unemployment level in the swing districts is negligible. However, the coefficient of the interaction is significant and positive for all dependent variables, but the unemployment risk coverage. Hence, in a majoritarian system, an increase of the unemployment level in the swing districts leads to more generous unemployment benefits and to more spending, than in a proportional system. Separate regressions on the subsamples of country/years with majoritarian electoral rule (columns 3, 7 and 11) and with proportional representation (columns 4, 8 and 12) suggest that the results are driven by the effect in the majoritarian system.

In Table 3, we test our theoretical predictions on the elasticities using the model at eq. 9. The coefficients of the interaction variables (columns 2, 6 and 10) suggest that with a majoritarian system is in place, the reaction to a change in the unemployment rate is more pronounced than with a proportional system. In particular, the generosity of the unemployment spending increases more as a result of higher unemployment in the pivotal districts – the coefficient of log(unemp_piv)*maj is positive and significant in all cases but when we consider

unemployment benefit family replacement rates. Moreover, it decreases more as a result of higher unemployment in the non-pivotal districts – again the coefficients of log(unemp_nopiv)*maj is negative and significant in all cases but with the unemployment benefit family replacement rates. Separate regressions on the subsamples of majoritarian and proportional systems provide similar evidence.

4 Conclusions

Is there a casual link going from political institutions to economic policy, as a recent theoretical literature in comparative politics has suggested? And which are the possible transition mechanisms through which electoral rules affect economic outcomes? While a wide body of theoretical literature has suggested several possible channels, ranging from the different electoral incentives that electoral rules provide to office-seeking politicians to their impact on voters and/or parties behavior or degree of representation, the empirical literature has been less succesful in identifying a link running from political institutions to economic outcomes.

This paper provides 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 pivotal than in non-pivotal districts, politicians provide more generous UB transfers in majoritarian than in proportional systems. We can then test how changes in the relative unemployment in these two types of districts (pivotal and non-pivotal) translate into policy outcomes under the two electoral rules.

Evidence on the differential effects of the two electoral rules on economic policy were obtained by using panel analysis on a novel dataset with detailed information on local electoral relevance and constituent interests for 29 OECD countries in

1980-2001. These empirical evidence strongly supports our theoretical predictions.

References

[1] Acemoglu, Daron. 2005. "Constitutions, Politics, and Economics: A Review Essay on Persson and Tabellini's 'The Economic Effects of Constitutions'," *Journal of Economic Literature*, 43: 1025-48.

[2] Aghion, Philippe, Alberto Alesina, and Francesco Trebbi. 2004. "Endogenous Political Institutions," *Quarterly Journal of Economics*, 119: 565- 612.

[3] Aidt, T.S., Jayasri Duta, and Elena Loukoianova. 2006. "Democracy Comes to Europe: Franchise Extension and Fiscal Outcomes 1830-1938," *European Economic Review*, 50: 249-83.

[4] Ansolabehere, Stephen and James M. Snyder. 2006. "Party Control of State Government and the Distribution of Public Expenditures," *Scandinavian Journal of Economics*, 108(4): 547-569.

[5] Arellano, Manuel and Stephen Bond, 1991. "Some Tests of Specification for Panel Data: MonteCarlo Evidence and an Application to Employment Equations, " *Review of Economic Studies* 58, 277-297.

[6] Austen-Smith, David. 2000. "Redistributing under proportional representation," *Journal of Political Economy* 108(6): 1235-1269.

[7] Balla, Steven J., Eric D. Lawrence, Forrest Maltzman, and Lee Sigelman. 2002. "Partisanship, Blame Avoidance, and the Distribution of Legislative Pork, " *American Journal of Political Science*, 46: 515—25.

[8] Blanchard, Olivier and Justin Wolfers. 2000. "The Role of Shocks and Institutions in the Rise of European Unemployment: The Aggregate Evidence," *The Economic Journal* 110(462): C1–C33.

[9] Coughlin, Peter. 1992. *Probabilistic Voting Theory*, Cambridge, Cambridge University Press.

[10] Cox, Gary W. and Matthew D. McCubbins. 1986. "Electoral Politics as a Redistributive Game, " *Journal of Politics* 48: 370—89.

[11] Cusack Thomas R., Torben Iversen, and David Soskice. 2007. "Economic Interests and the Origins of Electoral Systems," *American Political Science Review*, 101(3): 373-391.

[12] Denemark, David. 2000. "Partisan Pork Barrel in Parliamentary Systems: Australian Constituency-Level Grants," *Journal of Politics* 62: 896–915.

[13] Dixit, Avinash and John Londregan. 1996. "The Determinants of Success of Special Interests in Redistributive Politics," *The Journal of Politics*, 58(4): 1132—1155

[14] Fujiwara, Thomas. 2011. "A Regression Discontinuity Test of Strategic Voting and Duverger's Law", *Quarterly Journal of Political Science*, 6(3–4): 197–233.

[15] Funk, Patricia, and Christina Gathmann. 2013. "How do Electoral Systems Affect Fiscal Policy? Evidence from Canton Parliaments, 1890-2000" *Journal of the European Economic Association*, 11(5): 1178-1203

[16] Gabel Matthew, Simon Hix, and Michael Malecki. 2005. "Reconsidering the Economic Effects of Constitutions,"mimeo, Washington University in St. Louis.

[17] Gagliarducci Stefano, Tommaso Nannicini, and Paolo Naticchioni. 2011. "Electoral Rules and Politicians' Behavior," *American Economic Journal: Economic Policy*, 3(3): 144-174.

[18] Gelbach Scott. 2006. "Electoral Institutions and the National Provision of Local Public Goods," *Quarterly Journal of Political Science* 2(1): 5–25.

[19] Iversen Torben and David Soskice. 2006. "Electoral Institutions and the Politics of Coalitions: Why Some Democracies Redistribute More Than Others, " *American Political Science Review*, 100(2): 165-181.

[20] Levitt, Steven D. and James M. Snyder. 1995. "Political Parties and the Distribution of Federal Outlays," *American Journal of Political Science*, 39: 958—80.

[21] Lindbeck, Assar and Jorgen W. Weibull. 1987. "Balanced-Budget Redistribution as the Outcome of Political Competition," *Public Choice*, 52: 273—297.

[22] Lindbeck, Assar and Jorgen W. Weibull. 1993. "A Model of Political Equilibrium in a Representative Democracy," *Journal of Public Economics*, 51: 195—209.

[23] Lizzeri, Alessandro and Nicola Persico. 2001. "The Provision of Public Goods under Alternative Electoral Incentives, " *American Economic Review* 91: 225-245.

[24] Lizzeri, Alessandro and Nicola Persico. 2005. "A Drawback of Electoral Competition, " *Journal of European Economic Association*, 3: 1318-48.

[25] Milesi-Ferretti Gianmaria., Roberto Perotti, and Massimo Rostagno. 2002. "Electoral Systems and the Composition of Public Spending, " *Quarterly Journal of Economics* 117: 609-657.

[26] Pellicer Miquel and Eva Wegner. 2013. "Electoral Rules and Clientelistic Parties: A Regression Discontinuity Approach," *Quarterly Journal of Political Science* 8(4): 339–371.

[27] Persson, Torsten, Gerard Roland, and Guido Tabellini. 2007. "Electoral Rules and Government Spending in Parliamentary Democracies," *Quarterly Journal of Political Science* 2(2): 155–188.

[28] Persson, Torsten and Guido Tabellini. 1999. "The Size and Scope of Government: Comparative Politics with Rational Politicians, "1998 Alfred Marshall Lecture, *European Economic Review* 43: 699-735.

[29] Persson, Torsten and Guido Tabellini. 2000. *Political Economics: Explaining Economic Policy*, Cambridge: MIT Press.

[30] Persson, Torsten and Guido Tabellini. 2003. *The Economic Effects of Constitutions*, Cambridge: MIT Press.

[31] Rodden, Jonathan. 2010. "The Geographic Distribution of Political Preferences, "*Annual Review of Political Science*, 13: 321-340

[32] Rogowski, Ronald and Mark A. Kayser. 2002. "Majoritarian Electoral Systems and Consumer Power: Price-Level Evidence from the OECD Countries," *American Journal of Political Science*, 46(3): 526-539.

[33] Scruggs Lyle. 2004. Welfare State Entitlements Data Set: A Comparative Institutional Analysis of Eighteen Welfare States, Version 1.1

[34] Snyder James M. 1991. "On Buying Legislatures, "*Economics and Politics*, 3(2): 93-109.

[35] Stein, Robert M. and Kenneth N. Bickers. 1994. "Congressional Elections and the Pork Barrel, "*Journal of Politics* 56: 377—99.

[36] Ticchi, Davide and Andrea Vindigni. 2010. "Endogenous Constitutions, "*Economic Journal,*120: 1—39.

[37] Williams, Rick. 2000. "A Note on Robust Variance Estimation for Cluster-correlated Data, "*Biometrics* 56: 645-646.

Appendix

Proof of Proposition 2.1

The optimization problem at eq. 5, subject to the budget constraint at eq. 2, gives raise to the following first order conditions

$$FOC\ (g_i) : -\left[\mu\varepsilon_S n_S + (1-\mu)\varepsilon_N n_N\right]\frac{V'(1-\tau)}{I\overline{n}} + \frac{\varepsilon_i V'(g_i)}{I} = 0 \qquad i = S, N$$

$$FOC\ (f) : -\left[\mu\varepsilon_S n_S + (1-\mu)\varepsilon_N n_N\right]\frac{1-\overline{n}}{\overline{n}}V'(1-\tau) + \left[\mu\varepsilon_S(1-n_S) + (1-\mu)\varepsilon_N\left(1-n_N\right)\right]V'\left(f\right) = 0$$

Recall that $k = [\mu\varepsilon_S n_S + (1-\mu)\varepsilon_N n_N]$, 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 eq. 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

$$\begin{aligned} g_{_S} &= \frac{(1-\overline{u})\,\varepsilon_{_S}}{2\overline{\varepsilon}} > g_{_N} = \frac{(1-\overline{u})\,\varepsilon_{_N}}{2\overline{\varepsilon}} \\ f &= \frac{(1-\overline{u})\,(\overline{\varepsilon}-k)}{2\overline{u\varepsilon}} \end{aligned}$$

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 $\mu u_S(\varepsilon_{_N} - \varepsilon_{_S}) - \varepsilon_N\overline{u}^2 < 0$ 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 2.2

The optimization problem at eq. 7, subject to the budget constraint at eq. 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 at eq. 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 2.3

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
Summary Statistics

	Majoritarian						Proportional					
	N	MEAN	SD	10th	50th	90th	N	Mean	SD	10th	50th	90th
Economic and Demographic Variables												
Overall unemployment rate	109	8.133	3.029	4.730	8.160	11.620	168	9.584	5.242	3.480	9.175	17.320
Unemployment rate in swing districts	109	7.402	3.827	2.223	7.032	12.660	168	8.455	4.503	3.275	7.806	15.047
Unemployment rate in non-swing districts	109	7.256	2.485	3.956	7.412	10.261	168	8.661	5.260	3.139	7.852	16.631
GDP per capita	109	1905311	2348566	295599.4	982899.8	5946900	168	468007.4	688566.1	79920.9	189185.7	1557773
Welfare expenditure (% GDP)	109	18.373	6.055	11.320	18.000	27.230	168	23.979	4.557	17.920	24.455	29.890
Population 15-64 years old (% tot pop)	109	66.583	1.619	65.008	66.273	68.301	168	66.859	1.660	64.543	67.308	68.613
Labor Market Policy Variables												
UB generosity score	103	6.290	1.310	4.321	6.646	7.550	135	8.482	2.869	4.519	9.763	10.867
UB family replacement rate	103	0.585	0.104	0.390	0.598	0.702	131	0.654	0.158	0.554	0.689	0.806
Unemployment risk coverage	94	0.795	0.160	0.542	0.800	1.000	118	0.784	0.144	0.642	0.833	0.929

Note: Countries coded as "majoritarian" are Australia, Canada, France (1980-84 and 1987-2001), Italy (1994-2001), Japan (1980-93), South Korea, UK, US ; Countries coded as "proportional" are Austria, Belgium, Denmark, Finland, France (1985-86), Germany, Greece, Ireland, Italy (1980-1993), Japan (1994-2001), Netherlands, Norway, New Zealand, Spain, Sweden, Switzerland.

Table 2
Unemployment Rate in Pivotal vs Non-Pivotal Districts, Electoral Rule and Labor Market Policies

Dependent Var	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
	UB Generosity Score				*UB Family Replacement Rate*				*Unemployment Risk Coverage*			
Unemp	-.003	-0.010	-0.009	-0.021	-.001	-0.002	0.006	-0.005	.007	0.005	0.008	0.001
	(.022)	(0.020)	(0.027)	(0.042)	(.004)	(0.004)	(0.006)	(0.005)	(.005)	(0.004)	(0.008)	(0.002)
Maj	.368	-.661			.052	-.141			.054	-.119		
	(.247)	(.473)			(.046)	(.089)			(.052)	(.124)		
Unemp*Maj	-.010				-.003				-.006			
	(.023)				(.004)				(.005)			
Unempratio		0.169	0.199	0.794**		-0.074	-0.070	0.101**		-0.101	-0.101	0.029**
		(0.397)	(0.564)	(0.353)		(0.075)	(0.129)	(0.042)		(0.108)	(0.174)	(0.014)
Unempratio*Maj		0.793**				0.147**				0.132		
		(0.386)				(0.074)				(0.121)		
Constant	-13.741	-13.962*	-20.510	14.233	-.194	-.0740	-2.945	-1.858	-2.778	-2.342	-3.160	.098
	(8.451)	(8.209)	(13.804)	(16.915)	(1.497)	(1.472)	(3.013)	(1.930)	(1.813)	(1.801)	(3.775)	(.656)
Observations	220	220	123	97	213	213	116	97	193	193	104	89
R-squared	0.9301	0.8978	0.8463	0.7808	0.7838	0.7678	0.4555	0.7553	0.0328	0.0275	0.024	0.9922
Countries	18	18	14	7	18	18	14	7	17	17	13	6
Group	ALL	ALL	PROP	MAJ	ALL	ALL	PROP	MAJ	ALL	ALL	PROP	MAJ

Robust standard errors in parentheses
Country and Year Fixed Effects in all specifications
* significant at 10% level; ** significant at 5% level; *** significant at 1% level
Other controls: lagged dependent variable, gdp per capita, welfare expenditure as a % of gdp, population 15-64 yo

Table 3
Unemployment Rate in Pivotal vs Non-Pivotal Districts, Electoral Rule and Elasticity of Labor Market Policies

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dependent Var	*log (UB Generosity Score)*				*log (UB Family Replacement Rate)*				*log (Unemployment Risk Coverage)*			
Log(Unemp)	0.005				-0.007				.018*			
	(.022)				(0.030)				(.009)			
Maj	.060	.052			.0239	.114			.058**	.039		
	(.054)	(.056)			(.075)	(.078)			(.023)	(.025)		
Log(Unemp)*Maj	.009				.009				-.028**			
	(.025)				(.033)				(.011)			
Log(Unemp_piv)		0.02	0.117	0.121**		0.153	0.250**	0.202***		-0.058	-0.041	0.021
		(0.068)	(0.075)	(0.055)		(0.095)	(0.124)	(0.065)		(0.038)	(0.050)	(0.014)
Log(Unemp_piv)*Maj		0.152**				0.069				0.089**		
		(0.069)				(0.095)				(0.040)		
Log(Unemp_nopiv)		-0.027	-0.131*	-0.102		-0.164*	-0.223*	-0.231***		0.070*	0.044	-0.006
		(0.069)	(0.078)	(0.068)		(0.097)	(0.126)	(0.080)		(0.037)	(0.050)	(0.016)
Log(Unemp_nopiv)*Maj		-0.141*				-0.091				-0.105**		
		(0.077)				(0.108)				(0.041)		
Constant	-6.29**	-7.028***	-14.659***	2.538	-0.766	-2.021	-4.167	-23.531**	-3.519**	-3.198**	-6.419***	.727
	(2.760)	(2.602)	(3.645)	(7.904)	(3.647)	(3.501)	(5.121)	(8.827)	(1.370)	(1.353)	(2.385)	(1.920)
Observations	220	220	123	97	212	212	115	97	191	191	102	89
R-squared	0.9705	0.9552	0.8694	0.9047	0.9457	0.8978	0.8631	0.7777	0.9594	0.9374	0.7613	0.9945
Countries	18	18	14	7	18	18	14	7	17	17	13	6
Group	ALL	ALL	PROP	MAJ	ALL	ALL	PROP	MAJ	ALL	ALL	PROP	MAJ

Robust standard errors in parentheses
Country and Year Fixed Effects in all specifications
* significant at 10% level; ** significant at 5% level; *** significant at 1% level
Other controls: lagged dependent variable, gdp per capita, welfare expenditure as a % of gdp, population 15-64 yo