Electoral Systems and Immigration*

****Estimations in Progress-****

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Abstract

We study the effect of electoral systems on openness to immigration. According to the literature, in our model plurality systems induce the use of locally provided public goods rather than transfers, whereas the opposite occurs under proportional representation. However, we show that mass immigration may reverse this result, and bias also a proportional system towards the use of public goods. Since immigration can be used in order to expand the tax base, a politician can retain higher rents when immigrants are not entitled to transfers; this shifts the incentives to the use of public goods or, alternatively, to the extension of voting rights. Finally, plurality systems are always more open to immigration. We find support for our results on a cross-section of 33 OECD countries.

Keywords: electoral systems, rent extraction, immigration.

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1 Introduction

A well developed literature is concerned with studying the effect of the electoral systems on the level and the allocation of public expenditures. Typically, it is found that plurality systems provide incentives to the use of public goods rather than transfers, while the opposite occurs for proprotional systems (see, for example, Persson and Tabellini, 2002; Lizzeri and Persico, 2001; Milesi-Ferretti et al., 2002). The reason for such a result is that different electoral systems imply different constituencies and therefore different instruments in order to win the majority of seats in a Parliament.

So far however, the possible relationship between electoral systems and openness to immigration has not yet been investigated. Both governments and voters are aware of the redistributional effects of immigration, which might affect the

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income distribution in several ways, for example by reducing wages and/or the extent of the welfare benefits.

Immigration control, therefore, can be considered as a form of income redistribution other than transfers and public goods. As a consequence, the electoral system should affect the government's incentives also with respect to openness to immigration.

In what follows, we develop a model of representative democracy with retrospective voting in the line of Persson and Tabellini (2002). We test our predictions on a cross-section of 35 OECD countries over the 1998-2006 period, and, accordingly with our results, we find that plurality systems produce more per-capita immigration inflows.

The paper is organized as follows: the next two sections describe, respectively, the electoral system and the voters. Section 4 presents the government and its objective; section 5 introduces our model; sections 6,7,8 provide the results under the different electoral systems, section 9 summarizes and compares the effect of the electoral systems, sections 10-11 are devoted to our empirical analysis, and section 12 concludes our paper. The proofs are gathered in the Appendix.

2 The electoral systems

A majoritarian system partitions n voters into C constituencies. For simplicity, we assume that to win the election a candidate has to win in $1/2$ constituencies, and $1/2$ votes are sufficient to win in each constituency. As a consequence, the successful candidate has to "buy" $n/4$ voters, who must be provided with the reservation utility they require in order to re-appoint the incumbent government[1].

A proportional system, instead, can be thought as a single constituency where $n/2$ votes are required in order to be re-elected. Therefore a politician has to satisfy $n/2$ voters. With some abuse of notation, in what follows we are going to denote the majorities required to win the elections under the different electoral systems ($n/4$, $n/2$) as the "decisive voters".

3 Voters

Consider a country populated by n natives and (potentially) by m immigrants. Immigrants have no voting rights. The $i-th$ voter utility is given by

$$\omega_i = w(n+m)(1-t) + f + g_i^{\alpha} g_{-i}^{\beta} \qquad i = 1, ...n \tag{1}$$

$$0 < \beta < \alpha < 1; \qquad \alpha + \beta < 1.$$

[1] We use a retrospective voting model in which voters re-appoint the incumbent politician only if they are provided with their reservation utility.

where $w(n+m)(1-t)$ is the individual net wage, and $0 \leq t \leq 1$ is a flat-rate tax.

f is a transfer allocated on the basis of some individual charachteristics (for example, age, the number of dependent children, and so on). As a consequence entilement to transfers does not depend on the voter's constituency. In other words, we adopt the view of Milesi-Ferretti et al., (2002), (henceforth MF): while public goods can be provided on a territorial basis, transfers are universal.

g_i denotes the per capita amount of public goods the voter enjoys directly in her own environment (for example, her town or her constituency). On the other hand, the remaining amount of public goods g_{-i} that the voter does not use directly, affects her utility via an externality. This is in the very nature of public goods.

In order to have consistent results we assume

$$\frac{1}{2} < \alpha g_i^{\alpha-1} g_{-i}^{\beta} < 1. \tag{2}$$

In other words, the marginal utility from g_i should be neither too concave, neither linear. As it will be clearer in what follows, this is required because if the marginal utility of public goods were too low, a politician would never "buy" consensus by distributing public goods. On the other hand, if the marginal utility from public goods were too high, there would be no reason to use transfers.

In our model, it is crucial to stress two features: first of all, for the government it is possible to target g_i very precisely. We share the MF view that most of public goods expenditures are inherently local: a government can decide where to build a hospital, a school, a bridge and so on. On the other hand, we also stress that public goods create a positive externality for all agents different from i (denoted by $-i$), and therefore public goods that are not directly enjoyed by the voters are still complementary.

Voters adopt a retrospective voting strategy: if the incumbent government provides them at least with a reservation utility ϖ they are going to re-appoint it, otherwise they choose another politician.

4 The government

In our model, the goverment is self-interested and non-ideological. For simplicity, it includes a single politician, say the prime minister. (For this reason, in what follows, "government" and "politician" are used as synonims). His objective is to maximize the rents he is able to extract.

The aggregate budget constraint is

$$tw(.)(n+m) = g + f(\delta n + \rho m) + r \tag{3}$$

where g is the aggregate expenditure for public goods, f is a transfer granted to a share $0 \leq \delta \leq 1$ of the natives and to a share $0 \leq \rho \leq 1$ of the immigrants, r denotes the rents left to the politician. Rents are residual, and they are

retained after transfers and public goods are distributed. Of course, a rent-seeking government has no incentive to satisfy more than half the voters. As a consequence, when it uses transfers in order to buy re-election, it identifies a criterion able to entitle only the required majority. Therefore, we set $\delta = 1/2$, and we can rewrite the aggregate budget constraint:

$$tw(.)(n+m) = g + f(\frac{n}{2} + \rho m) + r. \tag{4}$$

It is important to stress that it is quite difficult to deny transfers to immigrants: once they meet the required criteria, they are entitled as well as the natives, and ρ could be close to unity. This is the very reason why there exist concerns over the existence of welfare magnets (see Peridy (2006); Lemos and Portes (2008); and Kaushal (2005)).

5 The model

We consider a very simple model of retrospective voting à la Persson and Tabellini, where decisions are sequential. The timing of the game is the following:

1) voters set a reservation utility ϖ required in order to re-appoint an incumbent government

2) the government decides whether opening the economy to immigration, and to what extent, in order to maximize its own rents

3) the government collects taxes, and chooses the allocation of tax revenues between transfers and public goods in order to maximize its own rents

4) vote is held, and the government is re-elected if the majority of voters receive at least ϖ.

We solve the decision problem backwards. When deciding how to allocate the fiscal revenues, the government has two alternatives: being re-appointed by providing the decisive voters with the required reservation utility ϖ, or retaining the whole fiscal revenues for itself and lose the elections.

In order to simplify the exposition of our model, it is useful to introduce immediately the following lemmas:

Lemma 1 *Under assumption (2), in a majoritarian system a government trying to maximize its own rents has an incentive to satisfy the decisive voters through public goods* (g_i) *rather than through transfers* (f)[2].

Proof. See the appendix. ■

Lemma 2 *In a proportional system, a government trying to maximize its own rents has an incentive to satisfy the decisive voters through transfers* (f) *rather than through public goods* (g_i) *only if* ρ *is not too high* $(\rho < \rho^*)$.

[2] For this to be true the sufficient condition $\alpha g_i^{\alpha-1} g_{-i}^{\beta} > 1/2$ must hold. This is equivalent to state that the utility generated by public goods $g_i^{\alpha} g_{-i}^{\beta}$ cannot be "too" concave, because otherwise it could be worth to compensate $n/2$ voters with f rather than $n/4$ voters with g_i. We can assume that this condition holds without loss of generality.

Proof. See the appendix ■

Lemmas 1 and 2 reproduce a well-known outcome in the literature: a majoritarian system biases public spending towards public goods, whereas a proportional system creates a bias towards transfers.

In lemma 2 we introduce, however, an important caveat: when the economy is open, the access of non-voting immigrants to transfers can change the politician's incentives: immigration puts pressure on transfers provision without any electoral advantage. If too many immigrants are entitled, it could be convenient to shift from the use of tranfers to the use of public goods as it happens within a majoritarian system. An interesting implication is that if changing the welfare system radically is too difficult, the politician might have an incentive to entitle immigrants to vote.

As we are going to see in what follows, the intuition for this result is that the rents a politician can retain by exploiting immigration are higher when immigrants expand the tax base, but they do not benefit from public expenditure. This is more likely to occur when electoral redistribution is based on public goods rather than on transfers.

6 Plurality system

Suppose for the moment being that in stage 4 elections are held and the government is re-elected.

6.1 Stage 3: provision of public goods

To understand the behaviour of the government, consider first a situation in which it is re-elected by unanimity. From the incumbent politician's point of view, unanimity is useless: in order to win the elections he only needs to convince $n/4$ voters. He can exploit this situation to increase the rents he retains after securing re-election. Therefore, he can reduce public expenditures for $3n/4$ voters and compensate the remaining $n/4$ by increasing the per capita amount of public goods g_i they receive[3] (see Lemma 1).

If resources for $3n/4$ non-decisive voters decrease by Δg_{-i}, the remaining $n/4$ lose $\beta g_i^{\alpha} g_{-i}^{\beta-1} \Delta g_{-i}$. In order to confirm the incumbent politician, the latter must receive an increase in g_i sufficient to offset their individual loss, i.e.

$$\Delta g_i = \frac{\beta g_i}{\alpha g_{-i}} \Delta g_{-i} \tag{5}$$

The net marginal benefit for the goverment is given by

$$Net\ Benefit = \Delta g_{-i} - \frac{n}{4}\left(\frac{\beta g_i}{\alpha g_{-i}} \Delta g_{-i}\right) \tag{6}$$

[3] This practice implies that a government is able to target public expenditures very precisely. This is possible because constituencies include smaller units, like counties or towns.

Of course, the government reduces g_{-i} until the net marginal benefit is zero, i.e.

$$g_i = \frac{4\alpha}{n\beta} g_{-i} \tag{7}$$

The above expression establishes a trade-off between g_i and g_{-i}.

Consider now stage 2: the government has to choose whether to open the economy to immigration, i.e. the value of m.

6.2 Stage 2: immigration

In stage 3 the government has set public goods provision at a level sufficient to obtain re-election in an economy with no immigration. When immigration is allowed however, voters are going to suffer a loss in their wage $w(.)$ proportional to the extent of immigration:

$$Loss = w(.)'(1-t)\Delta m.$$

Consider now the increase in the fiscal base (FB) caused by immigration:

$$\Delta FB = t[w(.)'(n+m) + w(.)]\Delta m \tag{8}$$

Of course, if the increase in the fiscal base is negative the government chooses autarky. However, we are not interested in this trivial case and we focus on what happens when

$$\mid w(.)' \mid (n+m) < w(.).$$

The politician has to compensate $n/4$ voters by increasing their per capita share of public goods so as to obtain

$$\alpha g_i^{\alpha-1} g_{-i}^{\beta} \Delta g_i = \mid w(.)' \mid (1-t)\Delta m. \tag{9}$$

The politician allows immigration until

$$t[w(m)'(n+m) + w(m)] = \frac{\mid w(m)' \mid (1-t)}{\alpha g_i^{\alpha-1} g_{-i}^{\beta}} \left(\frac{n}{4}\right) \tag{10}$$

i.e. until the marginal increase in the fiscal base equals the marginal electoral cost of opening the economy.

Now we move to the first stage of the game.

6.3 Stage 1: reservation utility

In the first stage of the game, a voter has to set her reservation utility ϖ. Of course, she will set the highest reservation utility compatible with the politician's incentives.Consider therefore the behaviour of the politician.

Suppose that in the current period an incumbent politician extracts a rent r. At the end of the period elections are held, and let R be the expected discounted utility of remaining in office. Under a retrospective voting strategy,

the politician is going to win the elections with certainty if he provides $n/2$ voters with ϖ at least. Otherwise, voters are going to punish him by appointing a new government. When a politician is not concerned about re-election, he simply predates the whole fiscal base, and sets $r = tw(.)(n+m)$.

Suppose finally that because of a distortion caused by rent extraction only a share $0 < \gamma < 1$ of the rents can be consumed, while $(1-\gamma)$ is wasted. The politician's utility in case of re-election is

$$U = \gamma r + R. \tag{11}$$

On the other hand, when he does not care abour re-election his utility is

$$U = \gamma t w(.)(n+m) \tag{12}$$

The rent compatible with the incentive constraint is thus

$$r = tw(.)(n+m) - \frac{R}{\gamma}. \tag{13}$$

Now we can exploit the government's budget constraint (3), and expression (7) in order to get the highest g_i compatible with the incentive constraint[4]. We have therefore

$$g_i^* = \frac{R4}{\gamma n}\left(\frac{\alpha}{\alpha+\beta}\right) \tag{14}$$

and

$$g_{-i}^* = \frac{R}{\gamma}\left(\frac{\beta}{\alpha+\beta}\right) \tag{15}$$

By substituting (14) and (15) into (1) we obtain ϖ:

$$\varpi_i = w(m_M^*)(1-t) + \left(\frac{4}{n}\right)^{\alpha}\left(\frac{R}{\gamma}\right)^{\alpha+\beta}\left(\frac{\alpha^{\alpha}\beta^{\beta}}{(\alpha+\beta)^{\alpha+\beta}}\right) \tag{16}$$

of course, (16) concerns only $n/4$ decisive voters, whereas the remaining $3n/4$ receive

$$\omega_{-i} = w(m_M^*)(1-t) + \left(\frac{4}{3n}\right)^{\alpha}\left(\frac{R}{\gamma}\right)^{\alpha+\beta}\left(\frac{\alpha^{\beta}\beta^{\alpha}}{(\alpha+\beta)^{\alpha+\beta}}\right) \tag{17}$$

Expressions (16) and (17) close the model in a majoritarian system.

7 Proportional System: $\rho < \rho^*$

As we have stated in proposition 1, whithin a proportional electoral system we have two outcomes: when the share of immigrants entitled to transfers exceeds $\rho^* \equiv \frac{n}{2m}\left(\frac{1}{\alpha g_i^{\alpha-1} g_{-i}^{\beta}} - 1\right)$, for the politician redistribution through public goods dominates redistribution through transfers. We are going to examine the first case. Assume again that the government is re-elected in stage 4.

[4]Remark that, under the hypothesis $\alpha g_i^{\alpha-1} g_{-i}^{\beta} > 1/2$, $f = 0$ (see footnote 2).

7.1 Stage 3: provision of transfers

Recall that under proportional representation there are $n/2$ decisive voters. Again, the politician can try to reduce public expenditures for half the voters, compensate the other half, and retain a rent. Since we are in the case $\rho \leq \rho^*$, the compensation occurs via a transfer f, and $g_i = 0$ (see Lemma 2). More precisely, the increase in f must offset the loss of g_i:

$$\Delta f = \alpha g_i^{\alpha-1} g_{-i}^{\beta} \Delta g_i \tag{18}$$

Therefore, the politician reduces g_{-i} until his net marginal benefit is zero. This implies

$$\Delta g_i \frac{n}{2} \geq \alpha g_i^{\alpha-1} g_{-i}^{\beta} \Delta g_i (n + 2\rho m)$$

the above condition can be rearranged into

$$\rho \leq \frac{n}{2m} \left(\frac{1}{\alpha g_i^{\alpha-1} g_{-i}^{\beta}} - 1 \right) \equiv \rho^*$$

and since we are in the case $\rho < \rho^*$ it follows that the marginal benefit of decreasing g_i is always positive, thus we conclude that $g_i = g_{-i} = 0$. Now we move to stage 2.

7.2 Stage 2: immigration

When deciding to what extent to open the economy to immigration, the politician has to compensate the wage loss suffered by $n/2$ voters because of immigration. In other words, he must give the decisive voters a transfer

$$\Delta f = \mid w(.)' \mid (1-t)\Delta m. \tag{19}$$

The marginal return of opening the economy is given by the increase in the fiscal base:

$$\Delta FB = t(w(m)'(n+m) + w(m))\Delta m.$$

To compute the marginal cost paid by the politician in order to compensate the decisive voters, recall that ρm immigrants are also entitled to transfers. Again, the politician allows immigration until the marginal increase in the fiscal base equals the marginal electoral cost of opening the economy:

$$t(w(m)'(n+m) + w(m))\Delta m = \mid w(m)' \mid (1-t)\Delta m \left(\frac{n}{2} + \rho m \right) \tag{20}$$

and he sets m_{P1}^* such that the above condition holds with equality.

7.3 Stage 1: reservation utility

In the first stage of the game voters set their reservation utility ϖ. We proceed as in section 6.3.

The incentive-compatible rent is

$$r = tw(m^*_{P1})(n+m) - \frac{R}{\gamma}. \tag{21}$$

Now we exploit again the government's budget constraint (3) in order to get the highest f compatible with the incentive constraint, substitute it into (1) and obtain ϖ. We have therefore

$$f^* = \frac{R}{\gamma}\left(\frac{2}{n+2\rho m^*_{P1}}\right) \tag{22}$$

and

$$\varpi_i = w(m^*_{P1})(1-t) + \frac{R}{\gamma}\left(\frac{2}{n+2\rho m^*_{P1}}\right) \tag{23}$$

while non-decisive voters receive no transfers:

$$\omega_{-i} = w(m^*_{P1})(1-t) \tag{24}$$

8 Proportional System: $\rho \geq \rho^*$

When the share of immigrants entitled to transfers exceeds ρ^*, the politician finds it more convenient to use g_i in order to buy re-election, therefore $f = 0$ (see Lemma 2). This finding shows that immigration puts under special pressure transfers-based social welfare systems. As usual, we assume that the politician is re-elected in stage 4, and we find the equilibrium by backwards induction.

8.1 Stage 3: provision of public goods

In this case, the politician compensates the loss due to the reduction of g_{-i} with an increase in g_i. The individual compensation must satisfy

$$\Delta g_i = \frac{\beta g_i}{\alpha g_{-i}} \Delta g_{-i} \tag{25}$$

and g_{-i} is reduced until

$$g_i = \frac{\alpha 2}{\beta n} g_{-i}. \tag{26}$$

8.2 Stage 2: immigration

In Stage 2 the politician has to solve the problem of finding the optimal m. Now the decisive voters have to be compensated with public goods.

$$\Delta g_i = \frac{\mid w(.)' \mid (1-t)\Delta m}{\alpha g_i^{\alpha-1} g_{-i}^{\beta}} \tag{27}$$

as for the previous sections, it is conveniento to increase immigration until

$$t(w(m)'(n+m) + w(m))\Delta m = \frac{\mid w(.)' \mid (1-t)\Delta m}{\alpha g_i^{\alpha-1} g_{-i}^{\beta}} \left(\frac{n}{2}\right) \tag{28}$$

8.3 Stage 1: reservation utility

The reservation utility ϖ is computed as in the previous section, by substituting $f = 0$ and by using (26) to obtain g_{-i}. The final result is

$$g^*_{iP2} = \frac{R}{\gamma}\left(\frac{\alpha}{\alpha+\beta}\right)\frac{2}{n} \tag{29}$$

$$g^*_{-iP2} = \frac{R}{\gamma}\left(\frac{\beta}{\alpha+\beta}\right) \tag{30}$$

by substituting (29) and (30) into (1), we get the equilibrium utilities for the voters:

$$\varpi_i = w(m^*_{P2})(1-t) + \left(\frac{2}{n}\right)^{\alpha}\left(\frac{R}{\gamma}\right)^{\alpha+\beta}\left(\frac{\alpha^\alpha\beta^\beta}{(\alpha+\beta)^{\alpha+\beta}}\right) \tag{31}$$

(decisive voters), and

$$\omega_{-i} = w(m^*_{P2})(1-t) + \left(\frac{2}{n}\right)^{\alpha}\left(\frac{R}{\gamma}\right)^{\alpha+\beta}\left(\frac{\alpha^\beta\beta^\alpha}{(\alpha+\beta)^{\alpha+\beta}}\right) \tag{32}$$

(non-decisive voters). By comparing (31) and (32) to (16) and (17), it is immediate to verify that the only difference with respect to a majoritarian system is the number of decisive voters ($n/2$ instead of $n/4$).

9 Electoral systems with immigration

In this section we compare the results obtained under the different electoral systems with respect to public goods, rents and immigration.

9.1 Immigration

Conditions (10), (20) and (28) define the optimal level of immigration, $m^*_m, m^*_{p1}, m^*_{p2}$ respectively. Remark that the LHS (the marginal increase in the tax base) is the same in all the expressions. On the other hand, the marginal cost is lowest under the majoritarian system and highest under the proportional system. Therefore, as far as the the marginal benefit is decreasing in m, we have $m^*_m > m^*_{p2} > m^*_{p1}$. This is summarized in the following proposition:

Proposition 3 *(Electoral systems and openness to immigration): Majoritarian electoral systems produce more freedom of immigration with respect to proportional systems.*

Proof. See the appendix. ■

In other words, the welfare state becomes more expensive under proportional representation, and, from the politician's point of view, transfers to immigrants are a loss, because they are not useful to "buy" the consensus needed for re-election. Therefore, one has to expect that either immigration or the entitlement

to welfare benefits are restricted in proportional electoral systems. A drastic solution to this problem could be accepting high levels of illegal immigration.

Alternatively, there could exist an incentive to grant the immigrants voting rights.

9.2 Public goods and rents

Firstly, we remark that in our simplified model it is not possible to state under which electoral system voters are better off: since we do not know the equilibrium wage, it is impossible to compare their utility under the different electoral regimes. For the same reason, it is impossible to compare the utility gap between decisive and non-decisive voters under the different electoral systems.

It is interesting, however, to observe that the amount of resources to be allocated in public goods or transfers is always the same ($\frac{R}{\gamma}$), and it corresponds to the resources available after the politician's IC is satisfied. This means that the fiscal base exceeding $\frac{R}{\gamma}$ goes into rents for the politician. Since the fiscal base is larger with the majoritarian system we conclude that, in our simplified model, the increase in immigration benefits only the politician.

The latter effect explains why the proportional system generates less immigration: when the economy is open to immigration, $\frac{R}{\gamma}$ is diluted among natives and immigrants.

Summarizing, we confirm several results in the literature, namely: 1) the majoritarian system concentrates public goods on the decisive voters and reduces transfers; 2) the proportional systems reduces public good provision and provides more transfers; 3) benefits from public expenditures are more evenly distributed under the proportional system, which makes it necessary to "buy" the consensus of half the voters; 4) rents for the politician are higher under the majoritarian system.

10 The data

This section discusses the key variables in our empirical analysis. Our sample consists of 33 OECD countries from 1996 to 2008.

We measure openness to immigration as the per-capita inflow of foreign population averaged over the 1996-2008 period to get rid of short-term effects. This endogenous variable is defined "inflows_pop". Our regressors are 10 exogenous variables that include institutional and economic factors.

The institutional variables concern electoral systems and electoral rules. They are taken from the DPI database (Keefer, 2006) of the World Bank. In particular we classify electoral rules by means of 3 dummy variables: "plurality", "pr" and "housesys".

In plurality systems, legislators are elected using a winner-takes-all/first past the post rule. The dummy "plurality" is 1 if this system is used, and 0 otherwise.

The dummy "pr" is 1 if candidates are elected on the basis of a proportional

rule and/or if our sources specifically call the system "proportional representation".

Since some electoral systems allow for a mix of proportional and majoritarian seats, the dummy "housesys" is coded 1 if the majority of the seats of the House are elected under plurality rule, and zero if most of the seats are proportional.

The regressors related to economic variables are the following: total government expenditure as percentage of GDP (tot_exp); total tax receipts as percentage of GDP (tot_tax); total trade-to-GDP-ratio (openness); total population (popt). The source of these data is OECD Online Statistics (2011).

We also check a number of other control variables. The dummy "EU" takes values 1 for EU countries. The dummy "colonial_emp" is 1 if a country had a colonial empire in the past. The dummy "civil_legal " is 0 if a country has a legal system based on common law and is 1 otherwise. (Source: Bertocchi and Strozzi, 2010).

Table 1 displays the cross-sectional 1996-2008 average, standard deviation, minima and maxima for each variables for the whole sample.

Table 2 shows cross-country correlation, with data averaged over the full period for which we have observations for each variable-country pair.

These correlations are not inconsistent with the theoretical predictions summarized in the proposition 3. The dummy "plurality" is highly correlated to the dummy "housesys", thus in the regressions we don't consider "housesys" to avoid multicollinearity problem.

The lack of correlation with political institutions reassures that focusing on inflows_pop will not systematically bias our results.

11 Results [preliminary]

In our preliminary regressions "plurality" and "openness" are significant at the 5% level, with the expected positive sign. Thus, our preliminary results are consistent with the prediction that plurality electoral systems produce more freedom of immigration. On the other hand, it is not possible to identify a negative effect of proportional electoral systems, perhaps because in practice politicians are able to restrict the entitlement to transfers, for example by turning a blind eye on illegal immigration or by using residence requirements.

12 Conclusions

[Very Preliminary]

A famous quote by Milton Friedman states "*It is just obvious that you can't have free immigration and a welfare state*". According to our results, this could sound "*you can't have free immigration and a proportional electoral system*". Mass immigration puts transfer-based welfare systems under pressure. Reducing the benefits, however, means losing re-appointment for the incumbent politician. There are a number of action he may take in order to secure re-election and his

own rents: first of all, he could simply close the border; then, he could deny welfare access to immigrants by establishing residence requirements or even by accepting a considerable illegal immigration. Another -perhaps more difficult- alternative could be reforming the welfare state towards a more intense use of public goods ($\rho \geq \rho^*$). Finally, immigrants could be granted voting rights. In such a case, transfers to immigrants would contribute to re-election.

For the moment, our results confirm that plurality electoral systems are associated with higher per-capita rates of immigration. Therefore we conclude that, apparently, plurality systems favor international labor mobility.

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13 Appendix

Proof of Lemma 1): .

We want to prove that in a majoritarian system equilibrium transfers are zero. The aim of the politician is reducing as much as possible the expenditure in order to retain rents, subject to the constraint of maintaining the decisive voters ($\frac{n}{4}$) on their reservation utility. Therefore, as a first step, it is possible to reduce public good provision g_{-i} for $3n/4$ and compensate the remaining $n/4$ with g_i or f. Consider a reduction Δg_{-i}. If transfers are used to compensate the decisive voters, the marginal cost of compensating a single voter is $\Delta f = \beta g_i^{\alpha} g_{-i}^{\beta-1} \Delta g_{-i}$ Since there are $(\frac{n}{2} + \rho m)$ individuals entitled to transfers, the marginal compensation cost is $\beta g_i^{\alpha} g_{-i}^{\beta-1} \Delta g_{-i} (\frac{n}{2} + \rho m)$. On the other hand, by using public goods, the marginal compensation cost will be $\frac{\beta g_i}{\alpha g_{-i}} \Delta g_{-i} \frac{n}{4}$ Compensation through public goods dominates if

$$\frac{\beta g_i}{\alpha g_{-i}} \Delta g_{-i} \frac{n}{4} < \beta g_i^{\alpha} g_{-i}^{\beta-1} \Delta g_{-i} (\frac{n}{2} + \rho m)$$

Since $\alpha g_i^{\alpha-1} g_{-i}^{\beta} \geq 1/2$ and $0 < \rho < 1$, this is always the case.

Consider now the possibility of reducing g_i and increasing f. In this case, the politician saves $\Delta g_i \frac{n}{4}$ and needs $\alpha g_i^{\alpha-1} g_{-i}^{\beta} \Delta g_i (\frac{n}{2} + \rho m)$ in order to compensate the utility loss. The net marginal benefit will always be negative:

$$\Delta g_i \frac{n}{4} - \alpha g_i^{\alpha-1} g_{-i}^{\beta} \Delta g_i (\frac{n}{2} + \rho m) < 0$$

when $\alpha g_i^{\alpha-1} g_{-i}^{\beta} \geq 1/2$. Therefore, equilibrium transfers are zero.

Derivation of ρ^*.

AGGIUNGERE proof che lo strumento di compensazione è lo stesso in stadio 2, quando si compensa per M.

Proof of Lemma 2):

We want to prove that in a proportional system, in equilibrium, $g_i = g_{-i} = 0$. Suppose the politician has to decide whether to reduce g_i for $n/2$ voters and compensate them with f, or viceversa. The marginal cost of compensating the loss of a single voter is $\Delta f = \alpha g_i^{\alpha-1} g_{-i}^{\beta} \Delta g_i$. Again, $(\frac{n}{2} + \rho m)$ individuals are entitled to transfers, and the marginal compensation cost is $\alpha g_i^{\alpha-1} g_{-i}^{\beta} \Delta g_i (\frac{n}{2} + \rho m)$The net marginal benefit of reducing g_i and increasing f is given by

$$\Delta g_i \frac{n}{2} - \alpha g_i^{\alpha-1} g_{-i}^{\beta} \Delta g_i (\frac{n}{2} + \rho m) > 0 \qquad \text{if}$$

$$\rho < \frac{n}{2m} \left(\frac{1}{\alpha g_i^{\alpha-1} g_{-i}^{\beta}} - 1 \right) \equiv \rho^*$$

that is true by construction. Therefore, in equilibrium, $g_i = 0$. It follows that g_{-i} is zero as well, because its impact on the utility of the decisive voters is zero.

Table1

TABLE I

SUMMARY STATISTICS

Variable	Obs	Mean	Std. Dev.	Min	Max
inflows_pop	33	.0057648	.0050542	.0000893	.0271295
tot_exp	33	41.96662	8.674711	20.39885	55.74815
growth_rate	33	3.347581	1.319379	1.126667	6.609099
openess	33	87.93042	49.3191	24.22415	269.255
tot_tax	33	25.64591	6.604044	15.92076	47.78052
eu	33	.6363636	.4885042	0	1
plurality	33	.4848485	.5075192	0	1
pr	33	.8484848	.3641095	0	1
housesys	33	.3333333	.4787136	0	1
colonial_emp	33	.2424242	.4351941	0	1
civil_legal	33	.7878788	.4151488	0	1
popt	33	3.56e+07	5.61e+07	447660.8	2.94e+08

Table2

TABLE II

CROSS_COUNTRY CORRELATION (1996-2008)

	inflow~p	popt	tot_exp	growth~e	openess	tot_tax	eu	plural~y	pr	housesys	coloni~s	civil_lega~n
inflows_pop	1.0000											
popt	-0.2423	1.0000										
tot_exp	-0.0044	-0.2736	1.0000									
growth_rate	0.0378	-0.2492	-0.3935	1.0000								
openess	0.5396	-0.4809	0.1233	0.4617	1.0000							
tot_tax	0.2099	-0.3324	0.6282	-0.2898	0.0604	1.0000						
eu	0.0284	-0.3406	0.6187	0.0485	0.4575	0.1809	1.0000					
plurality	0.0580	0.4384	-0.3892	-0.3467	-0.5305	-0.2611	-0.4011	1.0000				
pr	0.1391	-0.4313	0.1494	0.1190	0.2828	0.0466	0.2076	-0.4356	1.0000			
housesys	-0.1732	0.4947	-0.4616	-0.2346	-0.5092	-0.1269	-0.5345	0.7289	-0.5976	1.0000		
colonial_emp	-0.0174	0.0680	0.2804	-0.4663	-0.1100	0.0147	0.4276	0.1586	-0.1554	0.0500	1.0000	
civil_legal	-0.1423	-0.2269	0.1421	-0.1169	0.1897	-0.2154	0.3782	-0.2382	0.4009	-0.4193	0.1206	1.000