The Political Economy of Open Borders
Theory and Evidence on the role of Electoral Rules*

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Abstract

Institutions matter for the political choice of policies, and hence the consideration of the median voter's preferences should not be considered sufficient. We study theoretically and empirically how different electoral systems affect the level of openness of a country or city, zooming on the labor market as the main source of heterogeneous economic preferences towards immigration. The general result is that a polity is more likely to display open border policies when its electoral rules tend towards proportional representation or, more generally, the more unlikely it is that policymaking can be supported by a plurality of voters who do not constitute an absolute majority. There is evidence for this result at all levels in terms of correlations, and we establish causality via regression discontinuity design for the Italian case.

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1 Introduction

Among the determinants of policies in a democracy, the preferences of the different classes of voters are a fundamental component. The influence that such preferences have on the policy making process depends, however, on the polity's institutional system. The electoral system, the separation of powers, and all institutions affecting accountability, may be crucial factors for a policy outcome. This paper studies the interplay of preferences and institutions for the determination of immigration policies, which are now salient in many countries and divide the electorate even in cities and regions.[1]

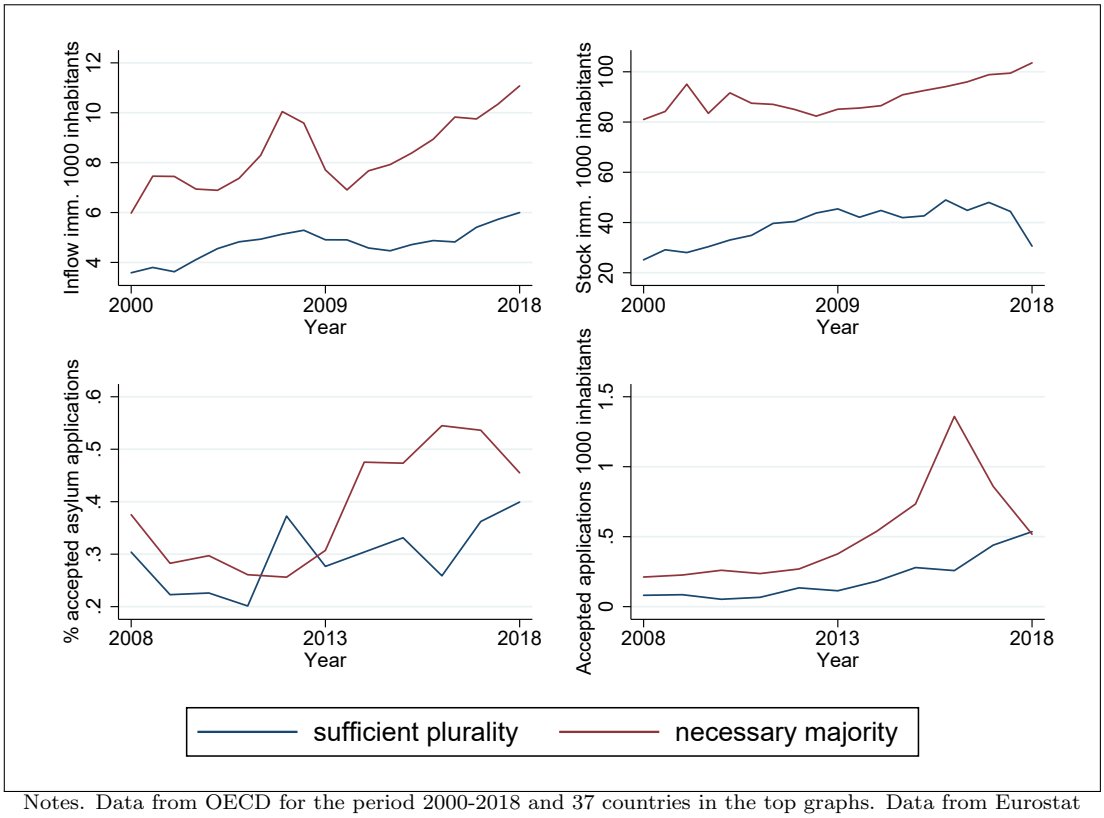
Political economists often focus on median voter preferences, and this choice limits the ability to evaluate the role of institutions. A country with an electoral system like plurality rule and a country using proportional representation, for example, could have median voters with exactly the same preference on the salient policy dimension and yet they may implement different policies. In this paper, we divide the electoral systems into two categories, and we study if and how they can lead to the implementation of different immigration policies. In the *sufficient plurality* category (SP) we include all systems where the winner of the relevant elections is the candidate with the most votes. As already indicated by political scientists (e.g., Riker, 1982), a critical feature of this system is that a plurality of votes may be sufficient to elect the winner and form a government. In the second category, which we call *necessary majority* (NM) we include systems like dual ballot majority voting and proportional representations, which require an absolute majority of the votes to elect the winner(s) that will form a government. Looking at the variation across countries in terms of electoral rules and in terms of the openness of their borders, an interesting observation can be made: countries with (NM) electoral systems appear to exhibit more openness towards migrants than countries with (SP) electoral systems. Figure 1 displays openness in terms of inflows as well as stocks, for both economic migrants and asylum seekers, for countries with (NM) electoral systems relative to countries with (SP) electoral systems.[2] In all the four measures considered, countries with (NM) electoral systems appear to be more open

[1]For other papers studying the role of electoral systems for different types of economic and political outcomes, see Lizzeri and Persico (2001), Morelli (2004), Pagano and Volpin (2005), Iversen and Soskice (2006), Persson, Tabellini, and Trebbi (2003), Persson, Roland and Tabellini (2007), Galasso and Nunnari (2019), Genicot, Bouton, and Castanheira (2020), Gulino (2020). Russo and Salsano (2019) develop a different model about how electoral rules can influence openness.

[2]We use data and information from the OECD, Eurostat, the Quality of Government Institute and the World Bank Database of Political Institutions. Table A1 provides a description of the political and electoral systems used across the 37 OECD countries. It also indicates the classification of the electoral systems distinguishing between SP and NM. For countries with a presidential or a semi-presidential system, we focus on the electoral system used to elect the president.

compared to countries that use (SP) electoral systems. The difference is particularly strong for recent years, during which the salience of the migration issue has increased.

Figure 1: Cross-countries evidence: sufficient plurality vs necessary majority



Notes. Data from OECD for the period 2000-2018 and 37 countries in the top graphs. Data from Eurostat for the period 2008-2018 and 24 countries in the bottom graphs. The four graphs compare countries with (NM) electoral systems with countries with (SP) electoral systems . The top-left graph provides evidence of the total inflow of immigrants every 1000 inhabitants. The top-right graph provides evidence on the stock of immigrants every 1000 inhabitants. In the bottom-left graph, evidence on the share of accepted asylum applications over the total number of applications. In the bottom-right graph, evidence on the number of accepted asylum applications every 1000 inhabitants.

We claim that the explanation of this variation relates to the labor market, and hence we address this "stylized fact" using a political economy model with endogenous occupational choice, inspired by Austen-Smith (2000). Natives as well as immigrants have heterogeneous productivity, but in general we expect immigrants to compete more on the supply side of the labor market than on the demand side. For this reason, native voters with high productivity who expect to occupy managerial or entrepreneurial positions tend to favor immigration. On the other hand, the fear of competition or substitution intuitively creates ceteris paribus a more likely preference for closed borders within the working class. In addition, there is

an important and often neglected third class of voters, namely those who are out of the labor force – the *out-class* henceforth. This class includes pensioners and the discouraged. Since these voters are not active on the labor market, their stances on immigration policies are not affected directly by wage and employment considerations, but crucially depend on the immigrants' impact on welfare spending. Immigration increases tax revenue, but it also subtract resources from natives, so the net effect is unclear and depends on specific circumstances. Since the impact of immigration on welfare spending affects all classes, the economy-driven preferences of the average member of the out-class for openness of borders are shown to be intermediate, in between the more positive preferences of the managing class and the more negative preferences of the working class.

Given this, we can now give the reader the most important intuition about the mechanism that links electoral rules to immigration policies: if a country uses plurality rule, the most likely decision maker is the working class (through whichever party(ies) represent their interests), because the working class constitutes the plurality among the three classes almost everywhere. Under plurality rule, a labor party could get the absolute majority of seats even if it only has just above 1/3 of votes in each constituency. On the other hand, if an institutional system uses proportional representation, or it requires in any case absolute majority representation in a government, then the working class alone cannot call the shots, and the often neglected out-class is pivotal. It should now be clear that, even if two countries both have a worker as median voter, a net positive evaluation of openness by the out-class can suffice to determine open borders in any system where the government has to be supported by an absolute majority of voters.[3] Beside pure PR, even a mixed system or an electoral rule involving run-offs still requires the winner to receive an absolute majority of votes or to form alliances and coalitions in the second round.

We first propose a model that formalizes the above intuition in general, obtaining an equilibrium characterization fully consistent with the suggestive evidence of Figure 1 on economic migrants. We then adjust the model to the case of asylum seekers and obtain once

[3]For this intuition about our mechanism and for the formal model, we are implicitly assuming that voters vote for parties or candidates that compete to best represent the interests of the three classes of citizens on the immigration dimension alone, or that immigration policy is one of the most salient ones so that it matters significantly for the choice of whom to vote for. To see evidence of the global increase of migration pressures, see e.g. the UN international migration report of 2017.

The topic of immigration policy has risen to the top in most countries' issue importance rankings, in political campaigns, rhetoric, debates and actions. In the 2015 edition of the Pew Research Centers annual policy priorities survey, 52 percent of Americans rated immigration a top priority for the President and Congress. (Pew Research Center, 2015), and since then the salience of immigration has further increased in Europe as well.

again an equilibrium characterization fully consistent with the suggestive evidence in Figure 1 on asylum seekers. In both versions of the model the preferences of the out-class are indeed pivotal in a NM system, determining the potentially different outcome with respect to SP systems. The causal mechanism is then tested on Italian data.

The labor market argument at the heart of our mechanism has the testable implication that voters economy-driven preferences on immigration should display a J pattern: putting the labor productivity of citizens on the horizontal axis and an indicator of openness attitude on the vertical axis, such an indicator should first decrease, find a minimum for a value of labor productivity corresponding to the typical working class member who fears substitution from immigrants, and then increase. Using data from a survey run by the Italian National Election Studies (ITANES) association in 2011, we provide descriptive evidence in favor of the J-shaped relation, decreasing from out-class to working class and then increasing quite a bit when moving to the managerial class.[4] The evidence about the J-shaped economy-driven attitudes towards migration confirms that the observations of Figure 1 could have a causal interpretation based on our proposed mechanism, but in order to establish causality we abandone the cross-country observations and focus on a quasi-natural experiment, using data from Italian municipalities.

We exploit two institutional features of Italian municipalities. First, we take advantage of the refugee allocation policy developed by the Italian Home Office through "The Protection System for Asylum Seekers and Refugees" (SPRAR) system. The features of SPRAR are that municipal governments decide whether to submit a bid to open a refugee center or not, and municipalities that accept to host refugees and asylum seekers receive fiscal grants from the central government (Gamalerio, 2019). Second, we exploit the fact that an Italian municipalities' electoral system changes from plurality rule (a SP system) to dual ballot (an NM system) when the municipal population is above 15,000 inhabitants (Bordignon et al., 2016). This allows us to implement a regression discontinuity design (RDD) analysis to study the effect of different electoral systems on the probability of opening a refugee center.

The results of the RDD analysis confirm the prediction of the theoretical model. The probability of opening a SPRAR center is approximately 14 percentage points higher for NM municipalities than in SP municipalities. Moreover, consistent with our mechanism, we show that the result comes entirely from the subsample of municipalities where the working class is the plurality class but does not have the absolute majority, so that the difference between SP and NM municipalities is in terms of which one is the pivotal class. Conversely, the

[4] An analogous pattern emerges also when using the European Value Survey.

complementary subsample of municipalities where the working class constitutes the absolute majority, or does not have the plurality of votes, does not display any significant difference between SP and NM towns, exactly as our theory suggests.

An additional heterogeneity analysis further reinforces our model's main intuition: under plurality rule, the working class can decide policies without compromises, whereas with NM systems like dual ballot or proportional representation the working class alone cannot call the shots. The heterogeneity analysis also reinforces the idea that our results are due to economic and labor market concerns by part of the working class. We provide evidence that instead potential effects on culture and compositional amenities do not drive our result. Our results are robust to the use of different bandwidths, are not due to random chances, and they are not driven by other mechanisms studied in the literature on electoral systems.[5]

The remainder of the paper is organized as follows. Section 2 places our paper in the context of existing literature. In Section 3, we describe the Italian context. Sections 4 and 5 contain our general model and our main results, respectively. We introduce our empirical evidence in Section 7. Section 8 concludes.

2 Related Literature

Our theory focuses exclusively on the *economic* preferences of the three main classes of citizens, and the survey evidence in section 7.3.1 shows that indeed the J-shaped relation between productivity and preferences for openness holds exclusively on the domain of economic preferences. Cultural attitudes, on the other hand, have the out class often at the bottom of the openness preference ranking. Our analysis of the Italian quasi-natural experiment highlights the importance of economic drivers in the overall political positioning of the relevant classes of voters. When it is the case that cultural concerns dominate the economic concerns, then the electoral system should play no role. Hence the fact that we find that electoral rules do matter supports the idea that the economic factors play a significant role, regardless of whether they win or lose in a hypothetical horse-race with culture. For evidence on the economic and noneconomic factors that drive attitudes towards migration, see Mayda (2006), Facchini and Mayda (2009), Dustmann and Preston (2007), Card et al. (2012).

For papers that have studied how individual attitudes influence policy outcomes see Benhabib (1996), Dolmas and Huffman (2004), Facchini and Mayda (2008), Facchini et al.

[5]For example, the role of extreme political parties and the number of candidates (Bordignon et al., 2016), total fiscal grants (Bracco and Brugnoli, 2012; Ferraresi et al., 2015; Cipullo, 2019), and electoral turnout (Barone and De Blasio, 2013).

(2011), and Tabellini (2020). For evidence on the relationship between immigration and anti-immigrant attitudes and voting behavior, the literature has produced conflicting results: some papers have found a positive effect of immigration on anti-immigrant attitudes and voting (e.g., Barone et al., 2016; Tabellini, 2020), other papers have provided evidence of a negative effect (Vertier, Viskanic, and Gamalerio, 2020), and other papers evidence of a mixed effect (Dustmann et al., 2019; Steinmayr, 2020; Mayda et al., 2020). In our model the evaluations of the pros and cons of immigration by individual citizens is mediated also by their subjective probability of finding a job, hence political preferences can also be influenced by misperceptions about the impact that immigrants can have on the reduction of such a subjective probability or on the wage, in line with the findings of Alesina et al. (2019).

The literature on the economic consequences of migration suggests, in line with our model, that the losers are more likely to be the low-skilled native workers that fear the competition from migrants in the labor market (Dustmann et al., 2013; Borjas, 2014; Borjas and Monras, 2017; Monras, 2019; Clemens and Hunt, 2019; Edo et al., 2019; Mayda et al., 2020), and that may have the largest misperceptions about immigrants (Alesina et al., 2019).

3 The Italian Context

3.1 Italian municipalities: general features and electoral systems

In Italy today there are around 8000 municipalities. They manage a series of essential services, such as garbage collection, water supply, infrastructure, transport, welfare, housing, and municipal police. Municipal governments fund these services through a mix of local taxes and grants from higher levels of government. Mayors are the most crucial figures within municipal governments, especially after Law 81/1993 introduced their direct election.[6] The electoral term of a mayor lasts five years, and second-term mayors cannot run for a third consecutive election. Law 81/1993 introduced the current electoral rules for Italian municipalities. Before 1993, municipalities below 5,000 inhabitants were using a plurality system with panachage, while municipalities above 5,000 inhabitants were using a party-list proportional system (Gulino, 2020). The new electoral rules introduced in 1993 established that municipalities below the 15,000 inhabitants threshold elect the mayor and the municipal council using a plurality system with a single round;[7] on the other hand, municipalities above

[6] An example of the mayors' power is that they can freely choose the municipal government's ministries. Besides, if the municipal Council wants to dismiss the mayor, it needs to call for new elections.

[7] In this system, mayoral candidates receive the support of only one list for the municipal council, and voters can express only one preference for the mayor and the list. The mayoral candidate who attracts the

15,000 inhabitants use a dual ballot electoral system.[8] As described below, the identification strategy used in this paper exploits this sharp change in the electoral rules at the 15,000 inhabitants threshold to implement a regression discontinuity design.

3.2 Refugee reception in Italy

In Italy, the system for hosting refugees and asylum seekers has two levels of reception: at the first level there are centers for first aid and hospitality (CPSA), hospitality centers (CDA), reception centers for asylum seekers (CARA) and centers for extraordinary reception (CAS, from 2014);[9] at the second level of reception, we find the so called "Protection System for Asylum Seekers and Refugees" (SPRAR), introduced in 2002 by Law 189/2002. The focus of our empirical analysis are these SPRAR centers, since they have longer term aims compared to first-level reception centers. The purpose of SPRAR centers is to host refugees and asylum seekers arriving from first-level reception centers and to help them integrate into the society, by providing services such as Italian language courses and job market orientation. Over the period studied in this paper, SPRAR and CAS centers have represented the two main types of refugee centers diffused on the Italian territory.[10]

The SPRAR refugee centers are also the only type of refugee centers that are managed directly by the municipalities, and hence offer us the necessary variation for our analysis. When the Home Office needs to allocate refugees and asylum seekers in new SPRAR centers, it issues a tender, calling for competition among municipalities interested in opening a new center. The tender indicates the period during which municipalities can submit the bids,

greatest share of votes is elected mayor. The system assigns a majority of 2/3 of the council seats to the list connected to the winning candidate. The remaining seats are distributed proportionally.

[8]Under this system, every mayoral candidate can receive the support of more than one list for the municipal council. In the first round, voters vote for the mayoral candidate and the municipal councilors, and the two votes can be disjoint. The mayoral candidate who at the first round gets more than 50 percent of the votes is elected mayor. If no candidate gets more than 50 percent of the votes, the first two candidates go to the second round, where they can be supported also by the lists associated with the mayoral candidates excluded from the second round. During the second round, voters vote only for the mayoral candidates. The candidate who gets the biggest shares of votes is elected mayor. The dual ballot system assigns 60 percent of the seats of the municipal council to the lists connected to the winning candidate, while the remaining seats are distributed proportionally.

[9]These centers receive asylum seekers who have just arrived in Italy: they identify them, provide medical assistance, and collect applications for asylum. The Italian central government manages them directly or through the provincial offices (prefetture) of the internal affairs ministry. Between 2011-2013, the Italian government opened another type of temporary center (ENA, Emergency North Africa) to deal with migrants coming from North Africa following the Arab Spring.

[10]From the "Atlante SPRAR", total available places in 2018 in SPRAR centers have been 35,881, which have allowed SPRAR centers to host 41,113 refugees and asylum seekers over the year.

the rules of the competition, and the total funds available. Municipal governments decide whether to participate to the tender by submitting a bid, in which they provide details on the management costs, the location of the center, the number of places, the services provided, and the cooperatives or firms that will provide these services. The Home Office evaluates the bids submitted by the municipalities and creates a ranking that indicates which municipalities will receive the grants for covering the costs, the exact amount of money they will get, and which bids are instead rejected.

Depending on the tender, fiscal grants transferred from the central government cover between 80% and 100% of the costs of the SPRAR centers within a municipality.[11] A small share of these grants is assigned directly to the refugees and asylum seekers for small personal expenses (the so called "pocket money").[12] A significant share of the grants is instead used to fund the activities of the SPRAR centers, such as teaching Italian, providing job market orientation, and health support.

The implementation of the activities funded by SPRAR fiscal grants, and the opening of SPRAR centers in general, can potentially generate positive spillovers for various reasons. First, the grants represent a source of income for firms, health and social professionals, and cooperatives that provide services to the reception center. Second, SPRAR centers typically use flats to host refugees. The owners of these flats may be residents who can benefit from renting out their property. Third, the money spent to buy goods and services for refugees and asylum seekers represents revenues for local shops and services providers (e.g., food, clothes, local transport). Besides, the social and health services provided to refugees and asylum seekers can also benefit the local population, as they can complement and reinforce the local welfare system.[13] Fourth, Law 225/2016 introduced an additional yearly bonus of approximately 500-700 euros per refugee hosted that municipalities can freely spend in other services and goods.[14] The direct effects on the labor market are significant: municipalities sometimes employ refugees and asylum seekers hosted in SPRAR centers in public utility

[11] Municipalities usually cover their part of the costs figuratively, like, for example, using municipal buildings and flats to host refugees or asking municipal employees to dedicate some hours to the refugee center. Also, municipalities demand cooperatives and firms that manage the center to cover these costs. Hence, these costs do not usually represent a monetary expense for municipalities.

[12] The estimate is that the total daily cost for hosting one refugee is, on average, 35 euros. The "pocket money" is, on average, 2.5 euros per day.

[13] For information on the services provided by SPRAR centers, the relationship with local socio-economic actors and the types of accommodation used, see the various editions of the "Atlante SPRAR" published over the years in the SPRAR webpage.

[14] In the model, we assume that these spillovers accrue to the native population in a uniform way. For the purposes of our theoretical results, the only thing that matters is that they do not alter the relative position of the three occupations on the matter of immigration.

works and, thanks to the job orientation services provided by SPRAR centers, refugees and asylum seekers may end up being hired by local firms.[15]

4 Model

We begin by constructing a general model that explains the cross-country evidence shown in Figure 1. In Section 6, we will adapt the model and its conclusions to the Italian case described above, and derive testable predictions from it.

We consider two countries that are identical in every aspect, except for the electoral system they use. Both countries have a mass one of native individuals. Each country faces the potential entrance of $q \in (0,1)$ migrants and must decide whether to close its borders or keep them open. We denote by $Q \in \{0, q\}$ the number of migrants allowed endogenously in a country, with $Q = q$ if the country has allowed migrants to enter and $Q = 0$ otherwise.

4.1 Endogenous Occupational Choices

All individuals (native or immigrant) are characterised by a type $\theta \in (0, \bar{\theta})$. The distribution of types in the population of natives is assumed to be uniform on the support. The set of immigrants entering each of the two countries in each period is sampled from a distribution $h(\theta)$. For the moment, we only impose that $\theta h(\theta)$ is non-decreasing in θ. We will be more precise about its characteristics later in the paper.

Within each country, individuals can decide to work or to remain out of the labour force (the out class, o). If they decide to work, they can choose to join the managing class (e) or the working class (l). We think of the managing class as containing both entrepreneurs and managers of larger companies, and we ignore the distinction between the two sub-groups. Similarly, the working class includes both employees and autonomous workers.[16] All individuals looking for a job (independently of whether they are in the managing or working class)

[15] For example, the 2018 "Atlante SPRAR" indicates that, in that year, 9845 refugees and asylum seekers hosted by SPRAR centers attended at least one professional training course. Besides, in the same year, 5363 refugees and asylum seekers hosted by SPRAR centers found a job. The main sectors of employment were catering/food services, agriculture, and industry. In terms of regulation, since the introduction of Decree-Law 142/2015, asylum seekers can work after 60 days they have applied for asylum. Before Decree-Law 142/2015, they had to wait for six months from the application.

[16] As contracts are usually designed to align managers' utility to employers' interests, including the two occupations in the same class is just a simplifying assumption. In addition to this, it is not hard to show that, fixing productivity, autonomous workers must earn in equilibrium the same occupation utility as when employed as dependent labor because of competition, as in Banerjee and Newman (1993).

have to pay a cost of searching $c > 0$. An individual of type θ finds a job in their chosen occupation with probability $\pi(\theta)$. We assume $\pi'(\theta) > 0$ and $\lim_{\theta \to 0} \pi(\theta) > 0$.

If an individual of type θ finds a job in the managing class, she can employ L units of labor to produce an amount $F(L, \theta)$ of consumption good, which is assumed to be the only good consumed in the economy and whose price is normalized to one. The function $F(\cdot, \cdot)$ is at least twice differentiable, strictly increasing in both arguments, strictly concave in L and strictly convex in θ. Furthermore, we also assume that $\partial^2 F / \partial \theta \partial L > 0$ for all $\theta > 0$. Letting w be the wage paid for each unit of labor, the individual's gross income is

$$y_e(L, w, \theta) = F(L, \theta) - wL.$$

If an individual finds a job within the working class, she inelastically provides θ units of labor and receives a gross income

$$y_l(w, \theta) = \theta w.$$

Gross income is taxed at a rate $\tau \in [0, 1]$ and all individuals receive an equal amount of benefits $b(Q)$, independently of whether they work or not. In this section, we intentionally remain vague on the sources of these benefits, to keep the model as general as possible. The only relevant assumption is that benefits depend on the level of immigration in the country.[17]

The (expected) net income $x_j(\cdot, \theta)$ of a native individual of type θ in occupational class $j \in \{e, l, o\}$ is then

$$x_e(L, w, Q, \theta) = (1 - \tau)\pi(\theta) y_e(L, w, \theta) + b(Q) - c$$

$$x_l(w, Q, \theta) = (1 - \tau)\pi(\theta) y_l(w, \theta) + b(Q) - c$$

$$x_o(w, Q, \theta) = b(Q)$$

For any wage level w and any type θ, let $L(w, \theta)$ denote the amount of labour that maximizes $x_e(L, w, Q, \theta)$. Given the assumptions on the production function, $L(w, \theta)$ is strictly decreasing in w and strictly increasing in θ. Since from now on we will only consider the optimal amount of labour demanded by employers, we will sometimes simplify notation by using L instead of $L(w, \theta)$.

[17] One could think of benefits as being financed by taxation. Migrants would then affect benefits through two channels: on the one hand, they would increase tax revenues by being employed in a country; on the other hand, their very presence would reduce the amount of resources to be redistributed to natives (both because they would be entitled to benefits and because of additional expenses to support their arrival and integration).

For a given immigration level Q in the country, and for any tax level τ and wage w, let $\lambda_j = \lambda_j(w, Q)$[18] be the set of types choosing occupational class $j \in \{e, l, o\}$. Notice that, for $j \in \{l, e\}$, λ_j represents the set of individuals *aiming to* find a job in the managing or working class. Definition 4.1 adapts the concept of *sorting equilibrium* contained in Austen-Smith (2000) to our framework. More precisely, our definition takes into account the uncertainty faced by individuals when looking for a job. An *expected sorting equilibrium* is a wage rate at which expected labour demand equals expected labour supply, when all agents act rationally.

Definition. *At any fixed tax rate $\tau \in [0, 1]$ and number of immigrants $Q \in \{0, q\}$, an expected sorting equilibrium is a wage rate $w^* = w^*(Q)$ such that*

$$\int_{\lambda_e(w^*,Q)} \pi(\theta) L(w^*, \theta) \left[\frac{1}{\bar{\theta}} + Qh(\theta)\right] d\theta = \int_{\lambda_l(w^*,Q)} \pi(\theta)\theta \left[\frac{1}{\bar{\theta}} + Qh(\theta)\right] d\theta$$

and for all $\theta \in (0, \bar{\theta})$, for all $j, j' \in \{e, l, o\}$, $\theta \in \lambda_j(w^*, Q)$ implies $x_j(\cdot, \theta) \geq x_{j'}(\cdot, \theta)$.

In the remainder of the paper, we make the following assumptions

Assumption 1. *For all C,*

a) $\left[\int_{\lambda_e(w^*,Q)} \frac{\theta}{\bar{\theta}} d\theta\right]_{Q=0} < 1/3.$

b) The distribution of immigrant types $h(\theta)$ is such that

$$\left[\int_{\lambda_l(w^*,Q)} \pi(\theta)\theta h(\theta) d\theta - \int_{\lambda_e(w^*,Q)} \pi(\theta) L(w^*, \theta) h(\theta) d\theta\right]_{Q=q} \geq 0$$

The first item in Assumption 1 states that the set of individuals hoping to find a job in the managing class when no immigrants enters the country is never the relative majority (plurality) in society. The second item imposes more structure on the distribution of immigrant types, $h(\theta)$: it states that the immigrants moving to a country contribute relatively more to the supply side of the labour market.[19]

[18] In the interest of notation, throughout the paper we will omit the dependence on variables that are not of interest, whenever this does not generate confusion.

[19] For the purposes of our model, what matters is that native individuals *believe* that $h(\theta)$ satisfies this assumption. This is in line with the documented misperceptions of natives about immigrant characteristics discussed in the introduction.

4.2 Class Voting

The decision to admit the migrants or not is made by majority rule within a country's Parliament. We assume there exist three parties in the country, representing the three different occupations. We denote by $\mathcal{E}$ the party representing the managing class, by $\mathcal{L}$ the party of the working class and by $\mathcal{O}$ the party of the out class.[20] Each party wants to maximise the average utility of the native individuals in the class it represents. That is,

$$u_{\mathcal{E}}(w^*, Q) = (1-\tau)\hat{y}_e(L, w^*, Q) + b(Q) - c$$

$$u_{\mathcal{L}}(w^*, Q) = (1-\tau)\hat{\theta}_l(w^*, Q)w^* + b(Q) - c$$

$$u_{\mathcal{O}}(w^*, Q) = b(Q)$$

where

$$\hat{y}_e(L, w^*, Q) = \frac{\int_{\lambda_e(w^*,Q)} \pi(\theta) y_e(L, w^*, \theta) d\theta}{\int_{\lambda_e(w^*,Q)} d\theta}$$

$$\hat{\theta}_l(w^*, Q)w^* = \frac{\int_{\lambda_l(w^*,Q)} \pi(\theta)\theta d\theta}{\int_{\lambda_l(w^*,Q)} d\theta} w^*$$

are the average gross income within the managing and working classes, respectively.

Assumption 2.

a) $\frac{\partial \hat{y}_e(L,w^*,Q)}{\partial w} < 0$

b) $\frac{\partial}{\partial w}[\hat{\theta}_l(w^*, Q)w^*] > 0$

The assumption states that average expected income in the managing class is decreasing in wage, while average expected income in the working class is increasing. We will return to the assumption and comment further once we have introduced some preliminary results.

Natives vote for the party representing their occupation before any immigration decision is taken (migrants have no voting rights). In one country, obtaining the plurality of votes is enough for a party to form a single-party government and fully control immigration decisions. The country represents the group labelled *sufficient plurality* in the introduction, and we therefore denote it by SP. In the other country, the government can only be formed with the

[20] An important component of the out class in the data will be the pensioners. This subclass is not directly generated in the model, since adding age would unnecessarily complicate the analysis. But it should be clear that the interests of pensioners vis a vis immigration in terms of its marginal impact on their economic utility should be in line with the other members of the out class explicitly modeled as voluntarily unemployed.

support of at least 50% of the population. If one party receives the absolute majority of the votes, it will be able to independently determine the immigration policy, as in country SP. If no party passes that threshold, borders will be kept open (closed) if at least two parties, whose vote shares sum to more than 50%, support (oppose) immigration. This corresponds to the group we labelled *necessary majority* in the introduction and we therefore denote it by NM.

5 Theoretical Results

We begin by proving the existence and uniqueness of an expected sorting equilibrium and by characterizing it. Lemma 1 is an adaptation of the equivalent proposition in Austen-Smith (2000). Its proof can be found in the Appendix.

Lemma 1. *For all $\tau \in [0,1)$ and $Q \in \{0,q\}$, there exists a unique expected sorting equilibrium, $w^* = w^*(Q)$. The equilibrium is characterized by an ordered pair of types $\theta^1 = \theta^1(w^*,Q)$ and $\theta^2 = \theta^2(w^*,Q)$, such that*

$$\begin{aligned}\lambda_o(w^*,Q) &= (0,\theta^1)\\ \lambda_l(w^*,Q) &= [\theta^1,\theta^2]\\ \lambda_e(w^*,Q) &= (\theta^2,\bar{\theta}).\end{aligned}$$

An individual of type θ^1 is indifferent between remaining out of the labor force and trying to find a job in the working class. The type satisfies

$$\pi(\theta^1)(1-\tau)\theta^1 w^* = c \tag{1}$$

An individual of type θ^2 is indifferent between joining the working class or the managing class. This type is implicitly defined by

$$F(L(w^*,\theta^2),\theta^2) - w^* L(w^*,\theta^2) = w^*\theta^2 \tag{2}$$

Lemma 2. $\frac{\partial\theta^1}{\partial w} < 0$ *and* $\frac{\partial\theta^2}{\partial w} > 0$.

We are now in a better position to comment on Assumption 2 (which, as a reminder, stated that average expected income in the managing and working class where, respectively, decreasing and increasing in wage). An increase in the wage rate increases labor costs and therefore decreases expected profits for members of managing class. This decreases average

expected profits within the class. At the same time, higher wages make the working class more attractive, inducing low types within the managing class to change occupation (i.e. $\partial\theta^2/\partial w > 0$, in Lemma 2). Since these types make lower expected profits, this increases the average. Assumption 2.a requires the first effect to be stronger than the second.

Turning to Assumption 2.b, when the wage rate increases, labor income increases for all members of the working class. Moreover, when low types from the managing class move to the working class, average expected income increases. At the same time, higher wages attract lower types of individuals, who would otherwise decide to remain out of the labour force ($\partial\theta^1/\partial w < 0$, in Lemma 2). The expected income earned by these individuals has a negative effect on the average within the class. Assumption 2.b requires this last effect to be small enough. The assumption is equivalent to imposing the following upper bound on the elasticity of θ^1 with respect to the wage rate:

$$\left|\frac{\partial\theta^1}{\partial w}\frac{w}{\theta^1}\right| < \frac{\theta^2 - \theta^1}{\theta^1}.$$

The assumption that immigrants contribute more to the supply side of the labor market (Assumption 1.b) implies

Lemma 3. $w^*(q) < w^*(0)$.

Rewriting $\underline{w}^* = w^*(q)$ and $\bar{w}^* = w^*(0)$, then, Lemmas 2 and 3 imply

$$\theta^1(\bar{w}^*, 0) < \theta^1(\underline{w}^*, q) < \theta^2(\underline{w}^*, q) < \theta^2(\bar{w}^*, 0).$$

We now turn to parties' positions on the immigration policy. Party $\mathcal{O}$ will not oppose immigration whenever migrants have a (weakly) positive effect on the net benefits they receive. That is, whenever

$$b(q) - b(0) \geq 0 \tag{3}$$

The equivalent conditions for parties $\mathcal{L}$ and $\mathcal{E}$ are

$$b(q) - b(0) \geq (1-\tau)[\hat{\theta}_l(\bar{w}^*, 0)\bar{w}^* - \hat{\theta}_l(\underline{w}^*, q)\underline{w}^*] \tag{4}$$

and

$$b(q) - b(0) \geq (1-\tau)[\hat{y}_e(L, \bar{w}^*, 0) - \hat{y}_e(L, \underline{w}^*, q)], \tag{5}$$

respectively. By Assumption 2, the right-hand side of (4) is positive, while the right hand side of (5) is negative. The effect of immigration on benefits impacts all classes in the same way.

In addition to that, the wage drop due to intensified competition on the labor market harms the working class and benefits the managing class. This creates a J-shaped relationship between the average ability within an occupational class and its position on immigration: the out class (represented by party $\mathcal{O}$) will always be more open to immigration than the working class (represented by party $\mathcal{L}$) and less open to immigration than managing class (represented by party $\mathcal{E}$).

For any wage w and immigration level Q, let $\sigma_{\mathcal{P}}(w, Q)$ denote the vote share of party $\mathcal{P}$, so that

$$\sigma_{\mathcal{O}}(w, Q) = \frac{\theta^1}{\bar{\theta}} \qquad \sigma_{\mathcal{L}}(w, Q) = \frac{\theta^2 - \theta^1}{\bar{\theta}} \qquad \sigma_{\mathcal{E}}(w, Q) = \frac{1 - \theta^2}{\bar{\theta}}$$

Proposition 1. *There exists no scenario in which country SP is more open to immigration than country NM: either the two countries choose the same immigration policy, or country SP closes its borders while country NM keeps them open. The latter happens when party $\mathcal{O}$ favors immigration, party $\mathcal{L}$ opposes it and $\sigma_{\mathcal{O}}(\bar{w}^*, 0) \leq \sigma_{\mathcal{L}}(\bar{w}^*, 0) < 1/2$.*

An important element to highlight in the proof of Proposition 1 is the pivotal role played by party $\mathcal{O}$ (or equivalently, the out class) in country NM. As discussed above, in terms of preferences for immigration, this party sits in between the other two. When no party has the absolute majority of votes, then, $\mathcal{O}$ will always find the support of another party to implement its preferred immigration policy. More formally, whenever (3) holds, (5) must hold too, so that both $\mathcal{O}$ and $\mathcal{E}$ will support an open border policy. If (3) does not hold, instead, (4) must be violated too and party $\mathcal{L}$ will support party $\mathcal{O}$'s decision to close the borders. The main implication of this is that, party $\mathcal{O}$ will be the key-decision maker in country NM whenever the working class does not constitute the absolute majority in the population. This is contrast with what happens in country SP, where party $\mathcal{L}$ only needs the plurality of votes to form a government. Then, when the working class constitutes the relative, but not absolute, majority in the population, immigration policy in the two countries will be dictated by two different parties, $\mathcal{O}$ in country NM and $\mathcal{L}$ in country SP. The difference in the two parties' positions on immigration then drives the result in the proposition.

Proposition 1 provides and explanation for the cross-country evidence shown in the introduction. The remainder of the paper aims at establishing a causal relationship between electoral systems and immigration policies. To this purpose, we exploit features of Italian municipal elections described in Section 3 and combine them with data about the refugee reception program in Italy. The next section connects our general model to the specific Italian scenario and allows us to draw testable predictions.

6 Electoral Rules and endogenous SPRAR

In this section, we re-interpret SP and NM as municipalities, which only differ in the electoral system used to elect their mayor. We now let q represent the share of immigrants that would move to municipality $M \in \{SP, NM\}$ if a SPRAR center was opened there. The location of the SPRAR center is decided through a first price sealed bid auction. Each municipality M can submit a bid to the central government. Submitting a bid is costless. The municipality that submits the lowest bid receives transfers equal to its bid in exchange for opening the center on its territory (ties are broken by a coin toss). The other municipality receives nothing.

We denote by C the total cost of opening and managing a SPRAR center (with all its associated services) and by $s(Q)$ a monetary measure of the positive spillovers generated by it, which were described in Section 3.2. We set $s(q) > s(0) = 0$. Cost and benefits are born and accrued uniformly across the native population. The transfers received by the central government are primarily used to cover the cost C, and any remaining sum is equally distributed across the population. Denoting by γ the (winning) bid submitted by a municipality, and normalizing any redistribution at the national or local level to zero, the benefits received by native individuals in the municipality are $b(q) = s(q) + \gamma - C$ if the SPRAR center is open, $b(0) = 0$ otherwise.

The bid submitted by each municipality is decided by its elected mayor. We assume all parties ($\mathcal{E}$, $\mathcal{L}$ and $\mathcal{O}$) have active branches in both municipalities and have one candidate running for mayor. Natives vote for the party representing their occupation before any SPRAR center is open.[21] In municipality SP, the mayor is elected by plurality rule. In municipality NM, the mayor is elected with a dual ballot system: if one candidate obtains more than 50% of the votes, he/she will be elected. If no candidate reaches the threshold, the two candidates with the largest share of votes will compete by majority rule in a second round. In the second round, the excluded candidate transfers his/her votes to the competing candidate that guarantees the highest expected payoff. We assume ties are resolved in favor of party $\mathcal{L}$.[22] It might be worth pausing at this point to stress how a dual ballot system matches the definition of *necessary majority* we gave in the general model. In this system,

[21] The opening of the SPRAR center depends on the outcome of the auction and is therefore an uncertain event in the eyes of voters. Given this uncertainty, voters might prefer to base their voting decisions on the status quo. Qualitatively, our results would not change if we assumed forward looking voters. In this case, the conditions in Proposition 2 should be reformulated in terms of occupational choices when the SPRAR center is open.

[22] This is to avoid unnecessary complications in the analysis of highly unlikely scenarios.

a major needs the votes of at least 50% of the population to be elected. If the votes of his/her own party (or equivalently of the class he/she represents) are not enough to meet that threshold, the mayor needs the electoral support of another party (class). In practice, this means that when no party has the absolute majority of the votes, any decision must have the approval of at least two parties to be implemented.

The timing is as follows: first, mayors are elected. Then, each elected mayor decides whether to participate to the auction and which bid to submit. All decisions are taken simultaneously and a mayor cannot observe whether the other has entered the auction before submitting the bid. Finally, the SPRAR center is opened and transfers are implemented. Unless differently specified, all assumptions and definitions made in Section 4 still hold here.

Our main conclusions in the previous section stand on two observations. First, the out class (represented by party $\mathcal{O}$) is more open to immigration than the working class (represented by party $\mathcal{L}$) and less open than the managing class (represented by party $\mathcal{E}$). To adapt the observation to the Italian context considered here, define by $\underline{\gamma}_{\mathcal{P}}$ the minimum bid that party $\mathcal{P}$ would be willing to submit to open a SPRAR center on its territory. This is the bid that would make a party indifferent between winning the auction or not.

$$\begin{aligned}
\underline{\gamma}_{\mathcal{O}} &= C - s(q) \\
\underline{\gamma}_{\mathcal{L}} &= C - s(q) + (1-\tau)[\hat{\theta}_l(\bar{w}^*, 0) - \hat{\theta}_l(\underline{w}^*, q)] \\
\underline{\gamma}_{\mathcal{E}} &= C - s(q) + (1-\tau)[\hat{y}_e(L, \bar{w}^*, 0) - \hat{y}_e(L, \underline{w}^*, q)]
\end{aligned}$$

Assumption 2 implies $\underline{\gamma}_{\mathcal{E}} < \underline{\gamma}_{\mathcal{O}} < \underline{\gamma}_{\mathcal{L}}$, as the bid for party $\mathcal{L}$ and party $\mathcal{L}$ consider the economic losses and gains generated by the arrival of migrants in the corresponding occupational classes. Given the competition generated by the auction, we expect that a municipality led by party $\mathcal{O}$ (or $\mathcal{E}$) always submit a lower bid than a municipality led by party $\mathcal{L}$, and should therefore be more likely to open a SPRAR center on its territory.

The second important observation we made in the previous section is that party $\mathcal{L}$ has less chances to control the decision making process under a *necessary majority* system than under a *sufficient plurality* one. The same conclusions apply in this context. When a second round is reached in the dual ballot system, party $\mathcal{O}$ plays a similar pivotal role as in the general model. If the party is a contestant in the second round, it always wins with the support of the excluded party. If the party is not a contestant in the second round, it determines the electoral result by supporting party $\mathcal{E}$. Then, party $\mathcal{L}$ decides on the size of the submitted bid only when the working class constitutes the absolute majority in the population. Proving the result requires to consider parties' anticipation of the outcome of the auction under different

winners of the second round, and is therefore slightly less straightforward than the equivalent result in the general model. We show the full proof in the appendix.

The two observations, combined, imply that the bid submitted by municipality NM never exceeds the one submitted by municipality SP, and there are cases in which it can be strictly lower.

Proposition 2. *The equilibrium bids submitted by the two municipalities are*

$$(\hat{\gamma}_P, \hat{\gamma}_D) = \begin{cases} (\underline{\gamma}_{\mathcal{L}}, \underline{\gamma}_{\mathcal{L}}) & \text{if } \sigma_{\mathcal{L}}(\bar{w}^*, 0) \geq \frac{1}{2} \\ (\underline{\gamma}_{\mathcal{L}}, \underline{\gamma}_{\mathcal{L}} - \epsilon), \epsilon \to 0 & \text{if } \sigma_{\mathcal{O}}(\bar{w}^*, 0) \leq \sigma_{\mathcal{L}}(\bar{w}^*, 0) < \frac{1}{2} \\ (\underline{\gamma}_{\mathcal{O}}, \underline{\gamma}_{\mathcal{O}}) & \text{if } \sigma_{\mathcal{L}}(\bar{w}^*, 0) < \sigma_{\mathcal{O}}(\bar{w}^*, 0) \end{cases}$$

The first and third cases in Proposition 2 correspond to scenarios in which the same party ($\mathcal{L}$ and $\mathcal{O}$, respectively) is elected in both municipalities. By a race to the bottom argument *à la Bertrand*, the two mayors will undercut their bids up to the point in which they are both indifferent between submitting a bid or not. In this case, each municipality will win the auction with probability one-half. In the second case, party $\mathcal{L}$ has the relative majority of votes and is therefore elected in municipality SP. However, since it does not have the absolute majority, in country NM it will be defeated by a "coalition" between the other two parties, who will support each other in the second round. In this case, municipality NM can submit a bit just below the minimum bid of municipality SP, securing the opening of the SPRAR center. This matches exactly the result stated in the second part of Proposition 1. Its testable implications are summarized in the following corollary.

Corollary 1. *Whenever $\sigma_{\mathcal{O}}(\bar{w}^*, 0) \leq \sigma_{\mathcal{L}}(\bar{w}^*, 0) < 1/2$, municipality NM opens the SPRAR center and receives strictly more transfers than municipality SP.*

7 Empirical evidence

7.1 Empirical strategy

We use a sharp regression discontinuity design (RDD) to test the effect of different electoral systems on the probability of opening a SPRAR refugee center and SPRAR fiscal grants. We exploit an institutional feature introduced by the Italian government in 1993 (see Law 81/1993), such that municipalities with less than 15,000 inhabitants elect the mayor and the municipal council using a single round plurality electoral system, while cities above the

threshold use a dual ballot electoral system. This institutional set up represents an interesting framework already exploited in the literature (Bordignon et al., 2016), which enables us to estimate the following specification:

$$Y_{it} = \rho_0 + \rho_1 POP^*_{it} + \beta_0 DB_{it} + \beta_1 DB_{it} * POP^*_{it} + \varepsilon_{it} \tag{6}$$

where the dependent variable Y_{it} captures the probability of opening a SPRAR refugee center and SPRAR fiscal grants for municipality i at time t. The treatment variable DB_{it} is equal to 1 for municipalities with more than 15,000 inhabitants (i.e., dual ballot municipalities) and 0 for towns below the threshold (i.e., plurality municipalities). The running variable POP^*_{it}, which we obtain subtracting 15,000 from the population of the municipalities measured from the most recent census (i.e., either the 2001 or the 2011 Censuses), determines the assignment to treatment. At the threshold $POP^*_{it} = 0$ the electoral system sharply changes from a plurality to a dual ballot electoral system.

Following Gelman and Imbens (2018), we estimate the coefficient of interest β_0 by local linear regression (LLR). In practice, we run equation 6 on the subsample $POP^*_{it} \in [-h, +h]$ around the 15,000 inhabitants threshold, where the optimal bandwidth h is obtained using the Calonico, Cattaneo and Titiunik (2014) and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth selector. In all the tables, we report conventional RDD estimates with a conventional variance estimator (Conventional), bias-corrected RDD estimates with a conventional variance estimator (Bias-corrected), and bias-corrected RDD estimates with a robust variance estimator (Robust). We cluster standard errors at the local labor-area level.[23]

7.2 Data, descriptive statistics, and balance tests

Our dataset contains information on municipal socio-economic features, the characteristics of the elected mayors, and refugee centers opened by Italian towns, and SPRAR fiscal grants. The source of the data on municipal socio-economic characteristics is the Italian Statistical Office (Istat), and more specifically, 1991, 2001, and 2011 Censuses. Data on the balance sheets of Italian municipalities comes from the Aida PA dataset (Bureau van Dijk). The Italian Home Office provides data on the characteristics of the elected mayors. Finally, Gamalerio (2019) built the dataset on SPRAR tenders, refugee centers, and fiscal grants,

[23]Local labor-areas are sub-regional areas formed by groups of municipalities that share common socio-economic characteristics. In our dataset, we could identify 268 local labor-areas taking the information from the 2011 Census.

collecting the data from different sources such as the Italian Home Office, the official webpage of the SPRAR program, and the "Briguglio archive, an online archive with migration documents. Table A2 describes the variables in the dataset, and the sources used, while Table A3 provides a brief description of the tenders studied in this paper.[24]

We collected all the information contained in the dataset for the 2010-2017 period and all municipalities between 10,000 and 30,000 inhabitants.[25] The choice of keeping municipalities between 10,000 and 30,000 inhabitants enables us to work with a balanced sample around the 15,000 inhabitants threshold,[26] and exclude from the data other population thresholds at which other policies change (Bordignon et al., 2016).[27] We also drop municipalities from three Special Statute Regions (i.e., Trentino-Alto Adige, Valle d'Aosta, and Friuli-Venezia Giulia), because electoral rules are different in these regions.[28] Finally, we keep observations for which we do not have missing values in the dependent and independent variables used in the empirical analysis.

We implement the analysis using data collapsed at the municipality and year of election level.[29] The sample used contains information on 685 municipalities and 875 observations. Table A4 reports the descriptive statistics of all the variables in the sample. As indicated by Proposition 2 and Corollary 1 in the model, our analysis must distinguish between munic-

[24]Starting from 2017, the Italian Home Office has started to accept bids for SPRAR centers on a rolling basis (see Ministerial Decree 10 August 2016, n. 200). We include all bids submitted over 2017 in our initial dataset, collapsing them to one observation at the municipality level for all towns in our data.

[25]Our model results apply to periods in which the migration issue is salient for voters. Hence, studying the 2010-2017 period enables us to focus on a period in which migration was a salient issue in Italy. Besides, as Cipullo (2019) describes, up until 2010, municipalities with more than 15,000 inhabitants could nominate a CEO (Direttore Generale) at the top of the administrative bureaucracy. Municipalities below the threshold did not have such a prerogative. Excluding the period before 2010 from our analysis enables us to avoid the overlap with other policies.

[26]As described below, we use an initial sample made of 875 observations. Among these observations, 456 are below the 15,000 inhabitants threshold, and 419 above the threshold.

[27]As described by Bordignon et al. (2016), the closest policy population thresholds are 10,000 (at which various policy like the wage of the mayor, the size of the council and the municipal government change) and 30,000 (at which the wage of the mayor and the size of the council change).

[28]For the Special Region Sicilia, we drop electoral mandates outside the period 2011-2016, during which different electoral rules applied. For the Special Region Sardegna, we keep electoral terms from 2012, because before 2012 the electoral laws were different compared to the other Regions.

[29]As described above, the population from the most recent Census (i.e., 2001 or 2011) determines the assignment of a municipality to one of the two electoral systems and the value of the running variable POP^*_{it}. The municipal population from the 2001 Census assigned a specific electoral law to the municipalities for elections up to 2012, the population from the 2011 Census assigned the electoral law for elections since 2013. For a few observations, for which the election's date falls between the initial and the final date of a tender, and for which the population used is different from the one of the previous election, it is not clear whether to use the 2001 or 2011 Census to calculate the running variable POP^*_{it} and the treatment DB_{it}. Therefore, before collapsing the data, we have dropped these observations to deal with this measurement error issue. Keeping these cases leaves the results quantitatively and qualitatively unchanged.

ipalities in which the working class (l) is the biggest group, but not the absolute majority, and municipalities in which either the working class represents more than 50% of the adult population or the out class (o) is the biggest group. To distinguish between these two groups of municipalities, we use data from the 2011 Census to calculate the shares of the managing (e), working (l), and out (o) classes over the municipal adult population composed by natives and EU nationals (i.e., those who can vote at municipal elections).[30] As we can see from Panel B of Table A4, 62% of the observations in our sample enter in the first group, which we call Corollary 1 sample, and the remaining observations form the other group, labeled here No Corollary 1 sample.

Besides, in the theoretical model, we assume that the share of individuals hoping to enter the managing class (e) when no immigrants enter the country is never the plurality in society (Assumption 1.a). Panel B of Table A4 reports the shares of managing (e), working (l), and out (o) classes in our data.[31] As we can see, the managing class (e) is at most 8% of the adult population in our data. Also, in the model, the three classes are ordered following the parameter $\theta \in (0, \bar{\theta})$. In column 1 of Table A5, we regress the log of the municipal income per capita measured in 2011 on the shares of the three classes to verify that our classification is consistent with the sorting equilibrium in the model. We use the out class as the default category, such that the coefficients can be interpreted as a percentage change in per capita income following a 1 percent increase in the share of the working class or the managing class, compensated by an equivalent reduction in the out class share. Consistent with the model, the coefficient in column 1 of Table A5 suggests that the out class represents the poorer class, the working class the intermediate one, and the managing class the richer one.

Finally, the empirical strategy used in this paper relies on two main identification assumptions. First, pre-treatment municipal characteristics need to behave continuously across the 15,000 inhabitants threshold. We test this assumption in Tables A6, which shows that mu-

[30] More in detail, the share of the out class (o) is the sum of pensioners and inactive persons who do not look for a job divided by the municipal adult population. In the managing class (e), we find entrepreneurs and professionals (e.g., lawyers). The share of the working class (l) is equal to the sum of employees and unemployed individuals actively looking for a job divided by the municipal adult population. We also add to this group self-employed individuals with no employees (e.g., shopkeepers), given that their social status, wages, and working conditions are similar to those of employees. The data from the 2011 Census groups the number of entrepreneurs, professionals, and self-employed together. Conversely, the 2001 Census splits them into two separate groups (entrepreneurs and professionals on one side and self-employed on the other). We apply the shares from the 2001 Census to the absolute number from the 2011 Census to estimate the number of entrepreneurs, professionals, and self-employed for the 2011 Census.

[31] The shares of managing (e), working (l), and out (o) classes do not sum up to 1 in all municipalities. The reason is that we do not consider in our analysis students and homeworkers, occupations for which our theoretical model does not have clear and unambiguous predictions regarding preferences over migration policies. For this reason, we exclude them from the analysis.

nicipal characteristics taken from the 2001 Census do not change discontinuously across the threshold. Second, there must not be sorting of municipalities across the 15,000 inhabitants threshold, i.e., municipalities must not be able to manipulate their population numbers to self-select on their preferred side of the threshold. The manipulation test (Cattaneo, Jansson, and Ma, 2018) in Figure A1 shows that this is not the case, given that the density of the running variable does not change discontinuously at the threshold.

7.3 Results

We divide the main results of our empirical analysis in four parts. First, we present results from survey data, which provide evidence in line with the the policy preferences of the three occupations described in the theoretical model. Second, we describe the main results of the RDD analysis. Third, we develop a heterogeneity analysis which shows how the RDD results are driven by the mechanism suggested by the theoretical model. Finally, we describe the robustness checks.

7.3.1 Survey evidence on the J-shaped relationship

One important feature of our theoretical model is that the relationship between the three occupations and their average position on immigration policies is J-shaped due to labor market concerns. This J-shaped relationship is such that the out class will be more open to immigration than the working class and less open to immigration than the managing class. This section provides descriptive evidence on the J-shaped relationship between openness preferences and productivity using a survey run by Italian National Election Studies (ITANES) association in 2011.[32] We use this survey because it has the nice feature that respondents are asked about the expected impact of immigration on natives' employment and culture.[33] Besides, it is possible to find in the survey the respondents' occupation, such that we can distinguish between individuals from the out, working and managing classes in the same way we do with the Italian municipalities data.

The results of this analysis are in Table 1. In columns 1-2, we report the results relative to the question in which the respondents need to say whether they agree with the sentence "Immigrants are a threat for natives jobs". In columns 3-4, the sentence of reference is

[32]We replicate the analysis also using the cross-countries 2017 European Values Study Survey, obtaining similar results. These results can be made available upon request.

[33]Five waves compose the 2011 ITANES survey. We focus on the first wave, which is when the respondents were asked these specific questions on migration. During this first wave, 2313 individuals answered both questions on immigration's expected impact on natives' employment and culture.

Table 1: Descriptive evidence on J-shaped relationship

	(1)	(2)	(3)	(4)
	2011 ITANES survey			
Dependent variables	Immigrants are a threat for natives jobs		Immigrants are a threat for natives culture	
Possible answers	1 = strongly agree, 2 = agree 3 = disagree, 4 = strongly disagree			
Working class	-0.121**	-0.129**	-0.055	-0.085
	(0.056)	(0.055)	(0.057)	(0.057)
Managing class	0.253**	0.026	0.236**	0.044
	(0.102)	(0.100)	(0.099)	(0.106)
Constant	2.891***	3.056***	2.932***	3.148***
	(0.045)	(0.169)	(0.058)	(0.184)
Observations	2,313	2,313	2,313	2,313
Mean outcome	2.734	2.734	2.835	2.835
Covariates	No	Yes	No	Yes

Notes. 2011 ITANES survey data. Independent variables: a) working class = 1 if respondent is part of the working class; b) managing class = 1 if respondent is part of the managing class; c) the out class is the default category. Covariate added in all columns: dummy =1 for the residual classes (i.e., students, homeworkers and no occupation reported). Covariates added in columns 2 and 4: dummy variables for educational qualification, age, dummy variable for gender, dummy variables for number of children, dummy variables for personal economic situation, dummy variable for married people, municipal population, dummy variables for closer political party, province fixed effects. Standard errors clustered at province level in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

"Immigrants are a threat for natives culture". The possible answers go from 1 to 4, where 1 means that the respondent strongly agrees with the sentence and 4 that she/he strongly disagrees. The reported coefficients refer to two dummy variables. The first dummy variable is equal to 1 if the individual is part of the working class, while the second is equal to 1 if the individual is part of the managing class. The default category is the out class. Hence, the coefficients reported indicate how the working and managing classes' average opinions differ from those of the individuals in the out class. Given the structure of the dependent variables used, higher values of the coefficients indicate a more positive opinion toward immigrants' potential impact. We estimate the coefficients in columns 1 and 3 without additional covariates. We control for covariates and provincial fixed effects in columns 2 and 4.

Two main indications emerge from Table 1. First, individuals in the managing class appear to be the ones with the most positive opinions about migration along both dimensions. Second, differences between individuals in the out class and the working class emerge in

relation to the labor market. At the same time, we find no differences in preference for what concerns the cultural impact. Consistent with our model, we find evidence of a J-shaped relationship in relation to concerns about the labor market: the average respondent from the working class has a more negative opinion compared to the average respondent from the out class. In contrast, the average respondent from the managing class has a more favorable opinion. The results in the regressions in which we add covariates and provincial fixed effects go in the same directions that those from the unconditional regressions.

Hence, the results in Table 1 indicate that the working class is the one with a more negative average opinion relative to immigration's labor market impact. Conversely, we do not find statistically significant differences between the out and the working classes for what concerns immigration's cultural impact. In the analysis below, we provide evidence on the causal impact of electoral systems on the openness of migration policies and how this seems to be driven by differences in opinions regarding immigration's potential labor market impact.

7.3.2 RDD analysis: main results

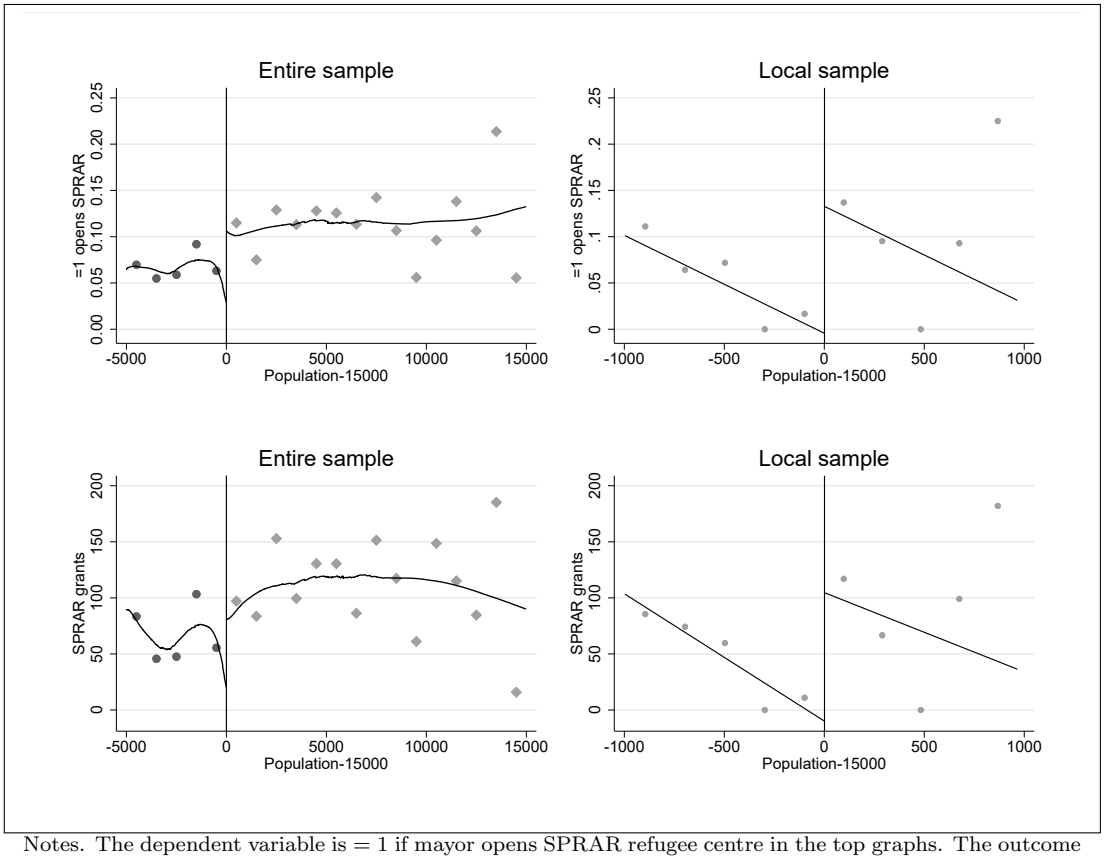
We test the predictions in Proposition 2 and Corollary 1 using the dataset described above, and running model (6) by RDD to estimate the coefficient of interest β_0. We estimate β_0 by local linear regression (LLR), using the Calonico, Cattaneo and Titiunik (2014) and Calonico, Cattaneo and Farrell (2018) MSE-optimal bandwidth selector. We implement the analysis using three samples. First, the entire sample of municipalities between 10,000 and 30,000 inhabitants. Second, municipalities satisfying the conditions of Corollary 1 (Corollary 1 sample), which are those that should drive the main results. Third, municipalities for which Corollary 1 does not hold (No Corollary 1 sample). By Proposition 2, these municipalities should submit the same bid. We report the main results in Table 2. We use two dependent variables, collapsed at municipal and year of election levels.[34] In Panel A, the dependent variable is the probability of opening a SPRAR refugee center. In Panel B, we use as dependent variable the fiscal grants.[35] We run regressions in odd columns without covariates. In

[34]Some municipalities open SPRAR centers together, through municipalities' unions, which are local institutions introduced by groups of towns that want to provide local public goods jointly. For these situations, we have assigned the dependent variables' values to all municipalities in the union. When possible, we have verified which towns within the union effectively opened the SPRAR center, using sources from the web. For these cases, we have assigned the dependent variables' values only to the municipalities that effectively received the refugees and the grants.

[35]Given that the RDD analysis compare municipalities with the same population size, we use as dependent variable the total amount of fiscal grants received. Using fiscal grants per capita as dependent variable does not change our results. To reduce the influence of outliers, we winsorize fiscal grants at the 95 percent level.

even columns, we repeat the analysis controlling for municipal and mayoral characteristics.[36] Figure 2 provides a graphical visualization of the baseline results of our RDD analysis, both from a global and a local perspective.

Figure 2: The effect on refugee centre and SPRAR grants: plurality vs dual ballot



Notes. The dependent variable is = 1 if mayor opens SPRAR refugee centre in the top graphs. The outcome variable is SRAR grants in the bottom graphs. The line in the graphs on the left is a local polynomial regression (i.e., locally weighted scatterplot smoothing). The line in the graphs on the right is a spline 1st-order polynomial in the normalized population size (i.e., population minus 15,000). Scatter points are averaged over 1000-inhabitants intervals in the graphs on the left, and over 200–inhabitants intervals in the graphs on the right.

[36] A recent literature has studied the differential impact of the dual ballot and plurality electoral systems on a series of outcomes, such as the quality of the local political class (Barone and De Blasio, 2013; Galasso and Nannicini, 2017; De Benedetto, 2018), fiscal grants (Bracco and Brugnoli, 2012; Ferraresi et al., 2015; Cipullo, 2019), electoral turnout (Barone and De Blasio, 2013), and the number of candidates (Bordignon et al., 2016). Adding these outcomes as covariates to our analysis enable us to exclude their potential influence on our dependent variables. Besides, to exclude the potential role of other types of refugee centers managed by the Italian Central Government, we also add two dummy variables for the first level centers (CPSA, CDA, and CARA) and centers for extraordinary reception (CAS and ENA).

Table 2: The effect on refugee centre and SPRAR grants: plurality vs dual ballot

	(1)	(2)	(3)	(4)	(5)	(6)
Polynomial	Linear	Linear	Linear	Linear	Linear	Linear
Covariates	No	Yes	No	Yes	No	Yes
Sample	Entire sample	Entire sample	Corollary 1 sample	Corollary 1 sample	No Corollary 1 sample	No Corollary 1 sample
Panel A: =1 open SPRAR centre						
Conventional	0.126*	0.121**	0.190*	0.148**	0.013	0.024
	(0.074)	(0.057)	(0.111)	(0.068)	(0.051)	(0.029)
Bias-corrected	0.145*	0.135**	0.223**	0.171**	-0.001	0.025
	(0.074)	(0.057)	(0.111)	(0.068)	(0.051)	(0.029)
Robust	0.145*	0.135**	0.223*	0.171**	-0.001	0.025
	(0.088)	(0.068)	(0.130)	(0.083)	(0.062)	(0.037)
Observations	875	875	539	539	336	336
BW Loc. Poly. (h)	1284	1144	1226	1332	1725	1626
Effective Observations	171	160	107	113	84	81
Panel B: SPRAR grants						
Conventional	104.656*	106.400***	119.213*	105.807**	60.350	34.632
	(55.639)	(37.967)	(66.423)	(41.999)	(83.041)	(33.829)
Bias-corrected	121.575**	119.744***	144.502**	122.475***	56.778	47.015
	(55.639)	(37.967)	(66.423)	(41.999)	(83.041)	(33.829)
Robust	121.575*	119.744***	144.502*	122.475**	56.778	47.015
	(65.841)	(45.577)	(79.938)	(52.132)	(104.650)	(40.208)
Observations	875	875	539	539	336	336
BW Loc. Poly. (h)	1285	1099	1170	1410	1768	2180
Effective Observations	171	150	105	118	85	114

Notes. The estimated coefficients capture the effect of a dual ballot electoral system, compared to a plurality electoral system. Estimates reported: conventional RD estimates with a conventional variance estimator (Conventional), bias-corrected RD estimates with a conventional variance estimator (Bias-corrected), and bias-corrected RD estimates with a robust variance estimator are reported (Robust). The sample includes municipalities in the period 2010-2017 within the optimal bandwidth selected by one common MSE-optimal bandwidth selector (Calonico et al., 2017) around the cut-off of 15,000 residents. Outcome variable: = 1 if mayor opens SPRAR refugee centre in Panel A; grants linked to SPRAR programme in Panel B. Covariates in columns 2, 4 and 6: share of children (<=19), share elderly (>=65), share of graduate, area (sq km), share of foreign population, altitude, dummy for North-West regions, dummy for North-East regions, dummy for Centre regions, number of firms, dummy for special regions, age of the mayor, dummy for female mayor, dummy for graduate mayor, dummy variables for left-wing, right-wing and Five-Stars Movement mayors, total transfers, electoral turnout, # candidates, dummy for CAS/ENA refugee centres, dummy for first level reception centre, dummy for sprar centres opened by union of municipalities. Standard errors clustered at local labour area level in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

The results in columns 1-2 of Table 2 and Figure 2 confirm the predictions of our theoretical model. Municipalities that elect the mayor using a dual ballot electoral system are more likely to open a SPRAR refugee center and receive more SPRAR grants. Specifically, municipalities with a dual ballot electoral system have a probability of opening a SPRAR center approximately 14 percentage points higher than municipalities with a plurality electoral system. The results also show that municipalities above the threshold receive SPRAR specific fiscal grants that are around 121 thousand euros higher than the grants received

by municipalities just below 15,000 inhabitants. The effect on both dependent variables is positive and statistically significant for both the entire sample of municipalities (columns 1-2 of Table 2) and towns in the Corollary 1 sample (columns 3-4 of Table 2). As predicted by the model, we do not find statistically significant results for municipalities in No Corollary 1 sample (columns 5-6 of Table 2). Finally, the results are robust to the inclusion of covariates.[37]

7.3.3 Heterogeneity analysis

The main explanation for the results in Table 2 provided by the theoretical model is that, under plurality rule, the working class can decide the policies implemented alone, even without representing the majority of the population. Conversely, with an electoral system like a dual ballot or proportional representation, which requires the winner to receive a majority of votes, the working class alone cannot call the shots. Besides, the theoretical model suggests that we should observe these results when the working class is the most hostile to receiving migrants due to economic concerns, specifically the fear of competition in the labor market. Tables 3 provides evidence that further corroborate this explanation.

In Table 3, we repeat the analysis by splitting the sample driving our results (i.e., Corollary 1 sample) in various ways. First, in columns 1-2 of Table 3, we run the RDD regressions by distinguishing between dual ballot municipalities that during the election did not go to the second round (column 1) and dual ballot municipalities that did it (column 2), and we compare them to plurality towns. Suppose the story in our model is correct. In that case, we should expect municipalities that did go to the second round (i.e., where the winner is more likely to need the support of more than one class and where the out class is more likely to be pivotal) to behave differently than municipalities with a plurality system (i.e., where the working class is more likely to be the pivotal class). Conversely, we can expect the pivotal class to be the same (i.e., the working class) in dual ballot municipalities that did not go to the second round and municipalities with a plurality system.[38] Columns 1-2 of Table 3 show that this is effectively the case.[39]

[37] Our model predicts that all municipalities submit a bid, while our dataset contains municipalities that never do. The theoretical predictions can be easily adjusted by introducing a small cost of submitting a bid. This leads to a mixed strategy equilibrium where not all municipalities submit a bit for sure. More details are available upon request.

[38] Consistent with this intuition, the evidence in columns 2-3 of Table A5 shows that, in dual ballot municipalities, an increase in the share of the working class compared to the out and the managing classes is negatively correlated with the probability of going to the second round in an election.

[39] Besides, in an additional exercise, we compare plurality towns to dual ballot municipalities that did go

Table 3: Heterogeneity analysis 1
Corollary 1 sample only

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Polynomial	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear
Covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample	No second round	Went to second round	< median ratio out + managing classes over working class	> median ratio out + managing classes over working class	Hit by crisis	No hit by crisis	< median children	> median children
Panel A: =1 open SPRAR centre								
Conventional	-0.027	0.197**	0.026	0.157*	0.086***	0.048	0.173	0.122**
	(0.037)	(0.077)	(0.036)	(0.090)	(0.030)	(0.083)	(0.109)	(0.057)
Bias-corrected	-0.041	0.230***	0.042	0.198**	0.139***	0.049	0.203*	0.137**
	(0.037)	(0.077)	(0.036)	(0.090)	(0.030)	(0.083)	(0.109)	(0.057)
Robust	-0.041	0.230**	0.042	0.198*	0.139***	0.049	0.203*	0.137*
	(0.053)	(0.091)	(0.043)	(0.114)	(0.048)	(0.104)	(0.123)	(0.071)
Observations	351	445	269	270	269	270	268	271
BW Loc. Poly. (h)	853.4	1335	1987	1254	1629	1406	1207	1480
Effective Observations	54	97	71	61	64	64	54	60
Panel B: SPRAR grants								
Conventional	-39.958	125.685***	24.068	138.705**	70.341**	44.601	177.534***	55.661
	(38.298)	(47.085)	(43.784)	(56.699)	(32.573)	(50.237)	(54.070)	(56.024)
Bias-corrected	-53.542	152.762***	32.358	170.551***	95.717***	46.171	211.024***	84.967
	(38.298)	(47.085)	(43.784)	(56.699)	(32.573)	(50.237)	(54.070)	(56.024)
Robust	-53.542	152.762***	32.358	170.551**	95.717**	46.171	211.024***	84.967
	(54.034)	(55.994)	(52.698)	(68.993)	(44.442)	(62.704)	(62.198)	(66.278)
Observations	351	445	269	270	269	270	268	271
BW Loc. Poly. (h)	850.2	1422	2259	1273	1819	1553	1203	1622
Effective Observations	53	102	84	61	71	66	54	71

Notes. The estimated coefficients capture the effect of a dual ballot electoral system, compared to a plurality electoral system. Estimates reported: conventional RD estimates with a conventional variance estimator (Conventional), bias-corrected RD estimates with a conventional variance estimator (Bias-corrected), and bias-corrected RD estimates with a robust variance estimator are reported (Robust). The sample includes municipalities in the period 2010-2017 within the optimal bandwidth selected by one common MSE-optimal bandwidth selector (Calonico et al., 2017) around the cut-off of 15,000 residents. Outcome variable: = 1 if mayor opens SPRAR refugee centre in Panel A; grants linked to SPRAR programme in Panel B. Covariates in all columns: share of children (<=19), share elderly (>=65), share of graduate, area (sq km), share of foreign population, altitude, dummy for North-West regions, dummy for North-East regions, dummy for Centre regions, number of firms, dummy for special regions, age of the mayor, dummy for female mayor, dummy for graduate mayor, dummy variables for left-wing, right-wing and Five-Stars Movement mayors, total transfers, electoral turnout, # candidates, dummy for CAS/ENA refugee centres, dummy for first level reception centre, dummy for sprar centres opened by union of municipalities. Standard errors clustered at local labour area level in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Second, in columns 3-4 of Table 3, we further demonstrate that the effect is due to the fact that different classes can be pivotal with different electoral systems. Specifically, we distinguish between municipalities in which the ratio between the sum of the out and managing classes over the share of the working class is smaller than the median, and municipalities in which this ratio is bigger than the median. If the story of our model were correct, the working class should likely to be pivotal in both plurality and dual ballot municipalities when this

the second round distinguishing between dual ballot towns in which the winner experienced an increase in the vote shares between the first and the second rounds below the median, and towns with an elected mayor with an increase above the median. Suppose the story of our model is correct. In that case, we should expect the difference between plurality towns and dual ballot municipalities to be bigger in those cases in which the winner experienced a bigger increase in vote shares between the first and the second round, a fact that indicates that the elected mayor was more likely to receive the support of more than one class. The results of this additional exercise show indeed that this is the case. Results can be made available upon request.

ratio is small (i.e., the working class is relatively big to the other two classes). Conversely, when this ratio is big (i.e., when the out and managing classes have a size relatively closer to the one of the working class), we should expect the out class to be pivotal in dual ballot towns and the working class in plurality municipalities. In line with our theoretical model, the effect is stronger is driven by the subsample in column 4, in which the out class is more likely to be pivotal in municipalities above the 15,000 inhabitants threshold, and the working class is more likely to be pivotal below the threshold.

Third, we split the sample between municipalities hit strongly by the 2007-2009 Great Recession and those that performed better during the crisis. To do so, we coded as municipalities negatively hit by the economic crisis as those that experienced average percentage growth in income below the median in the years 2007-2009.[40] If the results in Table 2 were due to economic and labor market concerns by part of the working class, then we should expect these to be driven by municipalities negatively hit by the Great Recessions, as these should be the places with stronger economic concerns. Columns 5-6 of Table 3 confirm this intuition. Besides, while the survey evidence in Table 1 shows that individuals in the working class are those more concerned about the economic implication of migration, the members of this class may also worry about the potential effect on compositional amenities, and, in particular, the education sector (Halla, Wagner, and Zweimller, 2017).[41] If concerns about the educational sector were driving our results, we should expect the distance in terms of openness between plurality (i.e., where the working class is more likely to be pivotal) and dual ballot municipalities (i.e., where out class is more likely to be the relevant party) to be biggerer in areas with a share of children above the median. However, the evidence in columns 7-8 of Table 3 shows that this is not the case. This evidence suggests that concerns about schools are unlikely to be the main factor driving our results.

To conclude, the results in Table 3 indicate that our analysis's baseline effect seems to be driven by the group of municipalities in which the pivotal class is more likely to differ across electoral systems. They also point to the working class as the one with the more restrictive position. The results in Table 3, combined with those in column 1 of Table 1, suggest that this seems to be due to concerns relative to the potential competition in the labor market by part of migrants. This evidence is consistent with the J-shaped relationship described in the theoretical model and with the intuition that this can lead to different migration policies across different electoral systems.

[40] The Italian Ministry of Economy and Finance provides data on yearly income at the municipal level.

[41] We expect the group of parents worried about the potential negative effect of immigration on schools to correlate more with the working class rather than the out class, which is composed mostly of pensioners.

7.3.4 RDD analysis: robustness checks

In this subsection, we describe the results of a series of robustness checks. First, we show how the RDD coefficients change if we use different bandwidths. Specifically, Figure A2 provides evidence of the "bias-variance trade-off" (Cattaneo, Idrobo, Titiunik, 2019) that usually characterizes RDD estimates: when we consider smaller bandwidths, both the coefficients and the standard errors become bigger. The evidence in Figure A2 is reassuring, as it indicates that our results are robust to the choice of the local bandwidths around the 15,000 inhabitants threshold. Second, in Figure A3, we show that our results are not due to random chances. More in detail, we run a series of RDD regressions at 500 fake thresholds below the 15,000 inhabitants cut-off and 500 fake thresholds above the cut-off (i.e., thresholds between 13,500 and 14,000 inhabitants and between 16,000 and 16,500 inhabitants). Figure A3 reports the c.d.f. of the t-statistics from these regressions. Most of the t-statistics lie in the interval (-2,2). This result suggests that it is not possible to find statistically significant coefficients at these fake thresholds.

Finally, Bordignon et al. (2016) show that fiscal policy volatility is lower in dual ballot municipalities than in plurality ones. More specifically, they find that the time and cross-sectional variances of the municipal business property tax is lower in dual ballot municipalities. They interpret this result as a consequence of the smaller influence of extreme political parties under dual ballot. To rule out this alternative mechanism, we run model 6 using the time and cross-sectional variance of the probability of opening a SPRAR center and of SPRAR grants as dependent variables. If the mechanism indicated by Bordignon et al. (2016) was driving our results, we should observe a lower variance of these dependent variables in dual ballot municipalities. The results in Table A7 exclude this possibility, given that the dual ballot system has a positive or no effect on the two dependent variables.[42]

[42]We could explain this positive effect in two ways. First, it may be a mechanical consequence of the fact that municipalities above the threshold receive more SPRAR fiscal grants and have a higher probability of opening a SPRAR refugee center. Second, it could be because a higher number of political parties influence the decision over the refugee policy in dual ballot municipalities than in plurality towns. If true, the second explanation would be consistent with our theoretical model, especially for the Corollary 1 sample, in which two parties decide over the refugee policy in dual ballot municipalities. In contrast, in towns below the threshold, only one political party takes the decision. In any case, the mechanism described by Bordignon et al. (2016) does not seem in place for refugee policies.

8 Concluding Remarks

Different institutions can affect policy outcomes on immigration through the effects that they may have on election outcomes and on the relative influence of different groups on policy decisions. This paper explains *how* and *how much* different electoral rules can affect policy decisions on immigration. The theory (explaining the how) as well as the empirical analysis (explaining the how much) are the novel contributions of the paper. The key insight is that different occupations generate different preferences on immigration policies, and different electoral rules give different relative power to such different occupational groups.

The paper's general theoretical result is that a polity is more open when the electoral system is closer to a proportional representation than a majoritarian system. More generally, a polity is more open toward migrants when it is less likely that policies are chosen by a plurality of voters who do not represent the absolute majority. We provide empirical evidence on the paper's theoretical insights. Countries with a proportional system appear to be more open toward migration than countries using a plurality system, and we show that the difference between SP and NM systems exists also when looking at Italian municipalities, and with a clear causality that we establish using regression discontinuity design.

We conjecture that SP and NM systems may have similar and equally relevant differential implications for other policy dimensions when salient. Moreover, it is possible to establish that if we consider fiscal policy together with immigration policy the results of this paper continue to hold, and can actually be even stronger: as established in Austen-Smith (2000), one feature of proportional representation systems (or any other system in the NM category) is that there is an endogenous level of fiscal redistribution higher than in an SP system. This implies that in an NM system the working class tends to be ceteris paribus smaller, and this enlarges the set of cases in which the pivotal class is the out-class. Thus, the theoretical results definitely hold, and even stronger, in the presence of endogenous redistributive politics.

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Appendix A1

Table A1: Majority vs. Plurality in OECD countries

(1)	(2)	(3)	(4)
Country	Political system	Electoral system	Sufficient plurality (SP) or Necessary Majority (NM)
Australia	Parliamentary	Instant-runoff voting (IRV)	SP
Austria	Parliamentary	Proportional	NM
Belgium	Parliamentary	Proportional	NM
Canada	Parliamentary	FPTP	SP
Chile	Presidential	Dual ballot	NM
Colombia	Presidential	Dual ballot	NM
Czech Republic	Parliamentary	Proportional	NM
Denmark	Parliamentary	Proportional	NM
Estonia	Parliamentary	Proportional	NM
Finland	Parliamentary	Proportional	NM
France	Presidental	Dual ballot	NM
Germany	Parliamentary	Proportional	NM
Greece	Parliamentary	Proportional with 50 seats plurality bonus	SP
Hungary	Parliamentary	Parallel voting (mix FPTP and proportional)	SP
Iceland	Parliamentary	Proportional	NM
Ireland	Parliamentary	Proportional	NM
Israel	Parliamentary	Proportional	NM
Italy	Parliamentary	75% FPTP and 25% proportional up to 2001 elections Proportional with plurality bonus up to 2013 37% FPTP and 61% proportional since 2018 election	SP up to 2013 elections, NM since 2018 election
Japan	Parliamentary	Parallel voting (mix FPTP and proportional)	SP
Korea	Presidential	Plurality	SP
Latvia	Parliamentary	Proportional	NM
Lithuania	Semi-presidential	Dual ballot	NM
Luxembourg	Parliamentary	Proportional	NM
Mexico	Presidential	Plurality	SP
Netherlands	Parliamentary	Proportional	NM
New Zealand	Parliamentary	Mix member proportional (MMP)	NM
Norway	Parliamentary	Proportional	NM
Poland	Presidential	Dual ballot	NM
Portugal	Parliamentary	Proportional	NM
Slovak Republic	Parliamentary	Proportional	NM
Slovenia	Parliamentary	Proportional	NM
Spain	Parliamentary	Proportional	NM
Sweden	Parliamentary	Proportional	NM
Switzerland	Parliamentary	Proportional	NM
Turkey	Parliamentary	Proportional	NM
United Kingdom	Parliamentary	FPTP	SP
USA	Presidential	FPTP	SP

Notes. OECD countries.

Table A2: Variables definition and sources

Variable	Definition	Sources
	SPRAR and refugee reception variables	
SPRAR grants	SPRAR related fiscal grants	Gamalerio (2019)
SPRAR center	=1 if municipality opens SPRAR center	
Union	=1 if SPRAR centres openend by union of municipalities	
First level reception	=1 for municipalities that hosted a first level reception center	Italian Home Office
CAS/ENA	=1 for municipalities that hosted a CAS/ENA refugee centers	Openpolis
	Mayoral characteristics	
Postgraduate	= 1 if mayor has a college degree	Italian Home
Age	age of mayor	Office (*anagrafe amministratori locali)*
Female	= 1 if mayor is a woman	
Center-left	= 1 if mayor is from center-left coalition	
Center-right	= 1 if mayor is from center-right coalition	
Five stars movement	= 1 if mayor is from five stars movement	
# candidates	# candidates at municipal elections	
	Municipal characteristics	
% foreign	% foreign population living in the municipality	Italian Statistical Office (ISTAT)
Altitude	altitude of the municipality	2001 Census
Area	municipal area in square kilometers	
% graduate	% graduate municipal population	
# firms	# firms per capita at municipal level	
% children	% municipal population < 19	
% elderly	% municipal population > 65	
Population	municipal population at the beginning of electoral term	
North-West	=1 for municipalities in the north-west Regions	
North-East	=1 for municipalities in the north-east Regions	
Centre	=1 for municipalities in the central Regions	
Special region	=1 for municipalities in Special Statute Regions	
Turnout	electoral turnout = ratio between valid ballots casted during the first round and adult municipal population	Italian Home Office (*archivio elezioni)*
# candidates	number of candidates during municipal elections	
Total transfers	current + capital per capita transfers from higher levels of government	Aida Pa (Bureau van Dijk)
	Shares occupations	
% out of labor force	pensioners and inactives as a share adult population	Italian Statistical Office (ISTAT)
% employees	employees and unemployed as a share adult population	2011 Census
% employers	employers as a share adult population	

Table A3: SPRAR tenders

(1)	(2)	(3)	(4)	(5)	(6)
Tender	Year	Date starts	Date ends	Date opens	Years active
1	2010	30/09/2010	30/10/2010	21/01/2011	2011-2013
2	2013	04/09/2013	19/10/2013	29/01/2014	2014-2016
3	2015	23/05/2015	22/07/2015	04/12/2015	2016
4	2015-2016	14/10/2015	14/02/2016	31/05/2016	2016-2017
5	2016	27/08/2016	30/10/2016	19/01/2017	2017-2019
6	2017	-	-	-	2017-2020

Notes. Sources: Home Office, SPRAR, and Gamalerio (2019). Description columns: 1) In column 1, Tender is the number assigned by this paper; 2) In column 2, Year is the year in which the tender is issued by the Home Office; 3) The starting date of the tender in column 3 (Date starts); 4) The deadline for application to the tender is in column 4 (Date ends); 5) The date of opening of the refugee centre is in column 5 (Date opens); 6) If municipality i participates to the tender, then the refugee centre remains active for the years indicated in column 6 (Years active). The last row (i.e., tender 6) refers to year 2017, during which the Italian Home Office accepted bids for SPRAR centers on a rolling basis (see Ministerial Decree 10 August 2016, n. 200).

Table A4: Descriptive statistics

	(1) Obs.	(2) Mean	(3) St. dev.	(4) min	(5) max
Panel A: Sprar dependent variables					
Sprar grants	875	88.73	192.17	0.00	654.78
Sprar centre	875	0.09	0.19	0.00	1.00
Panel B: Shares occupations					
% working class	875	0.49	0.04	0.34	0.61
% out class	875	0.31	0.04	0.19	0.43
% employers	875	0.04	0.01	0.01	0.08
Corollary 1 sample	875	0.62	0.49	0.00	1.00
Panel C: Municipal characteristics					
% children	875	0.20	0.04	0.12	0.34
% elderly	875	0.17	0.04	0.06	0.29
% graduate	875	0.05	0.02	0.01	0.16
Area	875	54.35	55.64	2.00	342.00
% foreign	875	0.02	0.02	0.00	0.11
Altitude	875	157.69	164.56	0.00	1049.00
North-East	875	0.23	0.42	0.00	1.00
North-West	875	0.24	0.43	0.00	1.00
Centre	875	0.19	0.39	0.00	1.00
# firms	875	1129.10	505.58	340.00	3373.00
Special Region	875	0.01	0.09	0.00	1.00
Total transfers	875	296.22	169.33	104.62	2460.00
Turnout	875	0.69	0.08	0.03	0.92
# candidates	875	4.45	1.52	2.00	11.00
CAS/ENA	875	0.27	0.45	0.00	1.00
First level reception	875	0.00	0.03	0.00	1.00
Union	875	0.04	0.12	0.00	1.00
Panel D: Mayoral characteristics					
Age	875	50.39	9.55	28.00	77.40
Female	875	0.11	0.32	0.00	1.00
Postgraduate	875	0.61	0.49	0.00	1.00
Centre-left	875	0.32	0.47	0.00	1.00
Centre-right	875	0.20	0.40	0.00	1.00
Five stars movement	875	0.01	0.10	0.00	1.00

Notes. Municipalities between 10,000 and 30,000 inhabitants. Electoral terms between 2010 and 2017.

Table A5: Comparison different classes on income and second round elections

	(1)	(2)	(3)
Dependent Variables	Log income	Went to second round	Went to second round
Working class	0.019***	-0.017*	-0.017*
	(0.002)	(0.009)	(0.009)
Managing class	0.035***	0.008	
	(0.007)	(0.033)	
Observations	685	419	419

Notes. OLS estimates. Dependent variables: 1) log income = log of municipal income per capita; 2) went to second round = 1 for dual ballot municipalities that went to the second round of the election. Independent variables: a) working class = share of the working class at muncipal level; b) managing class = share of the managing class at municipal level; c) the out class is the default category. Contol variables added in all the regressions: share of the residual classes (i.e., students and homeworkers), share of children (<=19), share of graduate, area (sq km), share of foreign population, altitude, dummy for North-West regions, dummy for North-East regions, dummy for Centre regions, dummy for special regions. Standard errors clustered at local labour area level in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table A6: Balance tests on municipal covariates

Dependent Variables	(1) Children	(2) Elderly	(3) Graduate	(4) Area	(5) Foreign Population	(6) Altitude	(7) North-West	(8) North-East	(9) Centre	(10) # firms	(11) Special Region
Conventional	0.013	0.001	-0.006	22.872	0.000	0.936	-0.001	-0.175	-0.030	-66.128	0.054
	(0.012)	(0.011)	(0.005)	(18.123)	(0.004)	(40.366)	(0.129)	(0.125)	(0.108)	(79.122)	(0.052)
Bias-corrected	0.016	-0.002	-0.007	25.960	0.000	-4.077	-0.015	-0.182	-0.063	-81.164	0.069
	(0.012)	(0.011)	(0.005)	(18.123)	(0.004)	(40.366)	(0.129)	(0.125)	(0.108)	(79.122)	(0.052)
Robust	0.016	-0.002	-0.007	25.960	0.000	-4.077	-0.015	-0.182	-0.063	-81.164	0.069
	(0.014)	(0.013)	(0.006)	(21.686)	(0.005)	(48.551)	(0.155)	(0.149)	(0.124)	(93.102)	(0.067)
Observations	875	875	875	875	875	875	875	875	875	875	875
BW Loc. Poly. (h)	1838	2148	1860	1985	1658	1840	1931	1800	1622	1827	2345
Effective Observations	244	291	246	268	218	244	257	239	216	242	313

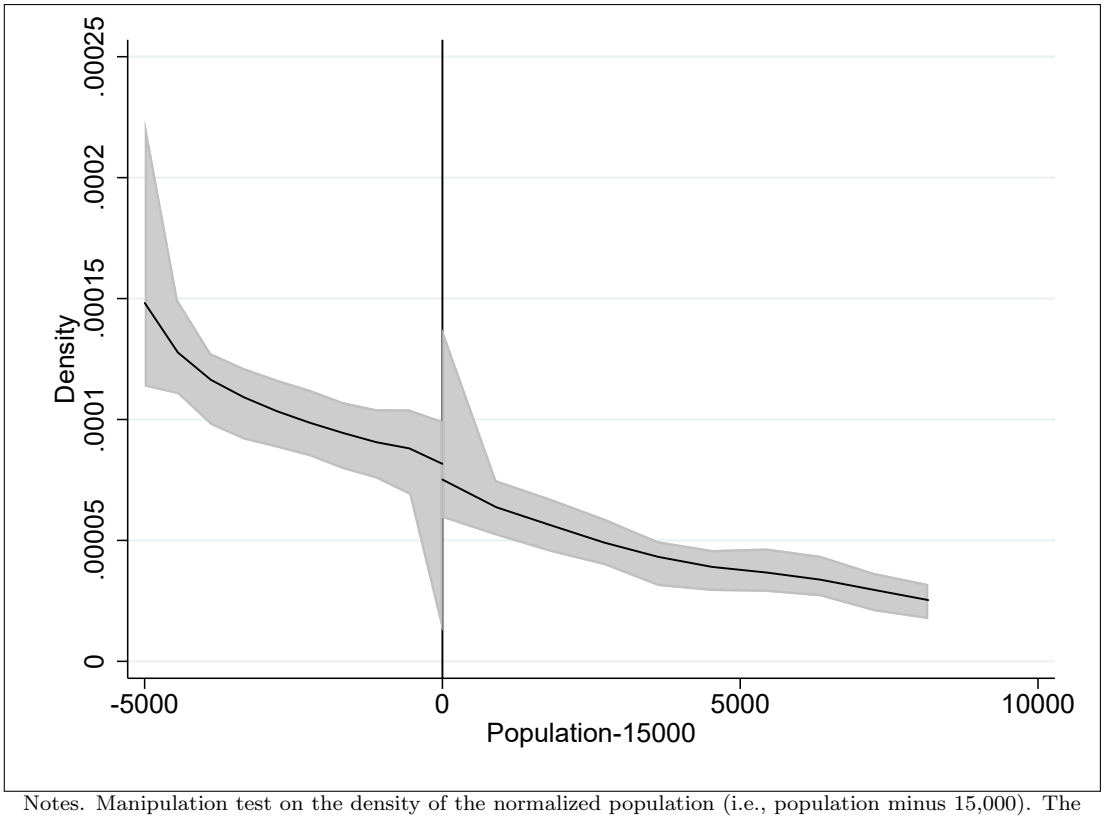
Notes. The estimated coefficients capture the effect of a dual ballot electoral system, compared to a plurality electoral system. Estimates reported: conventional RD estimates with a conventional variance estimator (Conventional), bias-corrected RD estimatesc with a conventional variance estimator (Bias-corrected), and bias-corrected RD estimates with a robust variance estimator are reported (Robust). The sample includes municipalities in the period 2010-2017 within the optimal bandwidth selected by one common MSE-optimal bandwidth selector (Calonico et al., 2017) around the cut-off of 15,000 residents. Outcome variables: share of children (<=19), share elderly (>=65), share of graduate, area (sq km), share of foreign population, altitude, dummy for North-West regions, dummy for North-East regions, dummy for Centre regions, number of firms, dummy for special regions. Standard errors clustered at local labour area level in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table A7: Alternative stories: the effect on policy volatility

	(1)	(2)	(3)	(4)
Dependent	Time variance	Time variance	Cross-sectional variance	Cross-sectional variance
Variables	SPRAR centre	SPRAR grants	SPRAR centre	SPRAR grants
Conventional	0.062	29,368.571*	0.125***	53,650.573***
	(0.039)	(17,515.268)	(0.045)	(20,782.904)
Bias-corrected	0.072*	35,340.339**	0.148***	66,154.305***
	(0.039)	(17,515.268)	(0.045)	(20,782.904)
Robust	0.072	35,340.339*	0.148***	66,154.305***
	(0.046)	(20,408.674)	(0.054)	(24,013.234)
Observations	875	875	99	99
BW Loc. Poly. (h)	1455	1438	1131	1274
Effective Observations	178	178	23	25

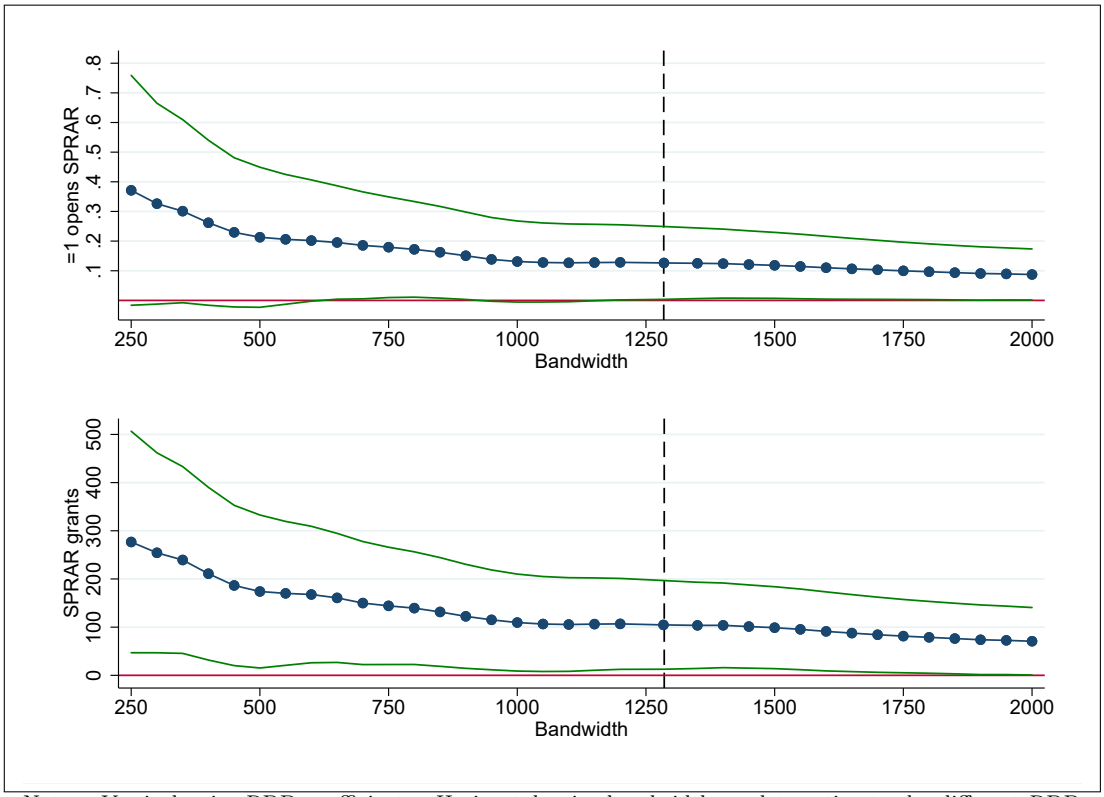
Notes. The estimated coefficients capture the effect of a dual ballot electoral system, compared to a plurality electoral system. Estimates reported: conventional RD estimates with a conventional variance estimator (Conventional), bias-corrected RD estimatesc with a conventional variance estimator (Bias-corrected), and bias-corrected RD estimates with a robust variance estimator are reported (Robust). The sample includes all municipalities from ordinary statute regions in the period 2010-2017 within the optimal bandwidth selected by one common MSE-optimal bandwidth selector (Calonico et al., 2017) around the cut-off of 15,000 residents. The dependent variables are: 1) in Columns 1-2, the variance of the the dependent variables over time within municipalities and electoral terms; 2) in Column 3-4, the variance of the dependent variables across municipalities averaged over bins of 100 inhabitants. Standard errors clustered at local labour area level in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Figure A1: Manipulation test on the density of running variable



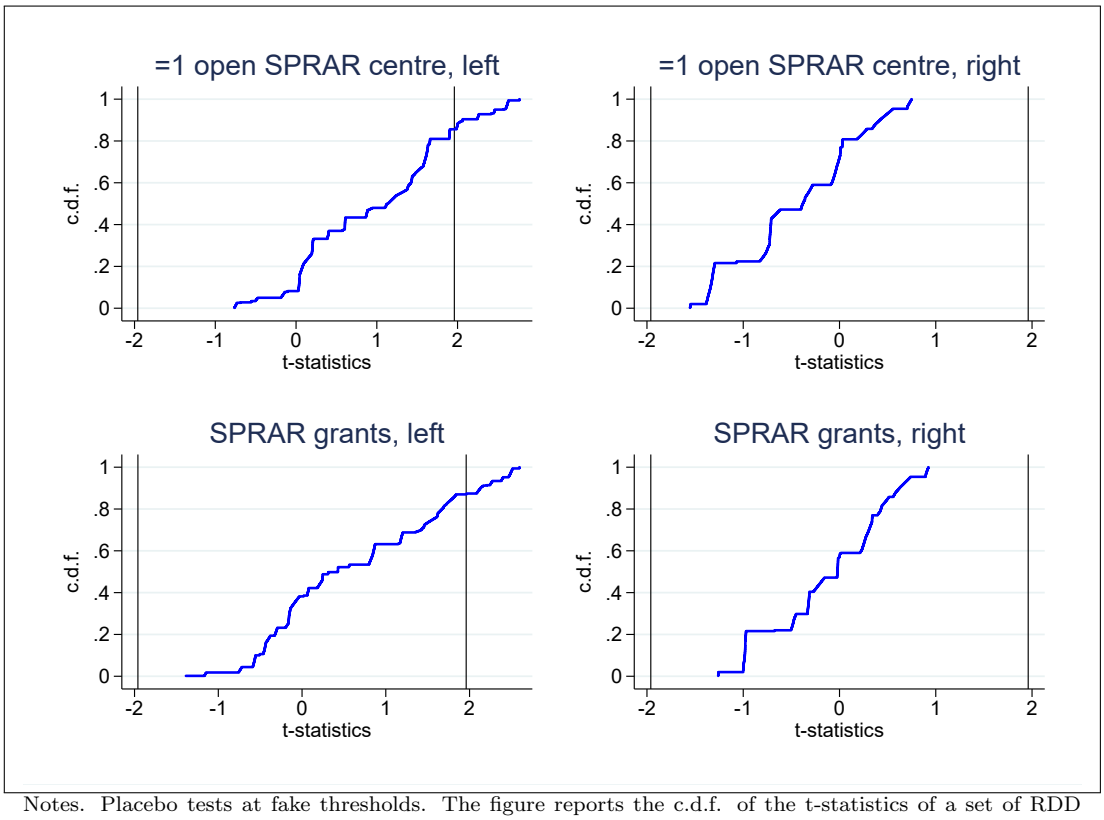
Notes. Manipulation test on the density of the normalized population (i.e., population minus 15,000). The manipulation test uses the procedure developed by Cattaneo, Jansson, and Ma (2018). T-statistics: the conventional test statistics is -0.3221, while the robust one is 1.4018.

Figure A2: RDD estimates with different bandwidths



Notes. Vertical axis: RDD coefficients. Horizontal axis: bandwidth used to estimate the different RDD coefficients. The dashed vertical line represents the CCT optimal bandwidth. The central blue line represents the estimates. The green lateral lines capture the 90% confidence interval.

Figure A3: Placebo tests at fake thresholds



Notes. Placebo tests at fake thresholds. The figure reports the c.d.f. of the t-statistics of a set of RDD regressions at 500 fake thresholds below and 500 fake thresholds above the 15,000 inhabitants threshold (i.e. thresholds from 13,500 to 14,000, and from 16,000 to 16,500). The RDD model is run using a local linear regression. The vertical lines indicate t-statistics of -2 and 2. The top graphs report the c.d.f. of the t-statistics for the SPRAR centre dependent variable (respectively to the left and to the right of the 15,000 threshold). The bottom graphs report the c.d.f. of the t-statistics for SPRAR grants (respectively to the left and to the right of the 15,000 threshold).

Appendix A2

Proof of Lemma 1. The proof closely follows the proof of Proposition 1 in AS. We begin by showing that, at any sorting equilibrium, the set of types must be partitioned as described in the statement of the proposition. Suppose w is a sorting equilibrium. Since $x_d(w, Q, \theta)$ is constant in θ,

$$\frac{\partial x_l(w, Q, \theta)}{\partial \theta} = (1 - \tau)[\pi'(\theta)\theta w + \pi(\theta)w] > 0$$

and $x_l(w, Q, 0) = b(Q) - c < x_d(w, Q, 0)$, there must exist a type $\theta^1 = \theta^1(w, Q)$ such that $x_l(w, Q, \theta^1) = x_d(w, Q, 0)$. This type is uniquely defined by (1).

Now notice that $x_l(w, Q, \theta) \geq x_e(w, Q, \theta)$ if and only if

$$(1 - \tau)y_e(L, w, \theta) + b(Q) - c \geq (1 - \tau)\theta w + b(Q) - c$$

These are the incomes of an employer or employee, respectively, as considered by AS. Then, by Proposition 1 in the paper, there exists a unique type $\theta^2 = \theta^2(w, Q)$ such that $x_l(w, Q, \theta^2) \leq x_e(w, Q, \theta^2)$, for all $\theta \leq \theta^2$ and $x_l(w, Q, \theta^2) \geq x_e(w, Q, \theta^2)$ for all $\theta \geq \theta^2$.[1] This type is implicitly defined by (2). Finally, as in AS, the fact that w is a sorting equilibrium implies that $\theta^1 < \theta^2$. Then,

$$\begin{aligned} \lambda_o(w^*, Q) &= (0, \theta^1) \\ \lambda_l(w^*, Q) &= [\theta^1, \theta^2] \\ \lambda_e(w^*, Q) &= (\theta^2, \bar{\theta}). \end{aligned}$$

as stated in the proposition. We now show that a sorting equilibrium exists and is unique. For any wage level w, expected labor demand now can be written as

$$\int_{\theta^2}^{\bar{\theta}} \pi(\theta)L(w, \theta)\left[\frac{1}{\bar{\theta}} + Qh(\theta)\right] d\theta.$$

Differentiating with respect to w we get

$$\int_{\theta^2}^{\bar{\theta}} \pi(\theta)L_w(w, \theta)\left[\frac{1}{\bar{\theta}} + Qh(\theta)\right] d\theta - \pi(\theta^2)L(w, \theta^2)\left[\frac{1}{\bar{\theta}} + Qh(\theta^2)\right]\frac{\partial \theta^2}{\partial w}$$

As proven in AS,[2]

$$\frac{\partial \theta^2}{\partial w} = \frac{L(w, \theta^2) + \theta^2}{F_\theta(L(w, \theta^2), \theta^2) - w} > 0$$

[1] AS, proof of Proposition 1, page 1258.

[2] AS, Proof of Proposition 1, page 1258.

and, since $L_w(w,\theta) < 0$, expected labor demand must be decreasing in w. Consider labor supply now. Using the results above, this can be written as

$$\int_{\theta^1}^{\theta^2} \pi(\theta)\theta \left[\frac{1}{\bar{\theta}} + Qh(\theta)\right] \theta.$$

As before, differentiating with respect to w gives

$$\pi(\theta^2)\theta^2 \left[\frac{1}{\bar{\theta}} + Qh(\theta^2)\right] \frac{\partial \theta^2}{\partial w} - \pi(\theta^1)\theta^1 \left[\frac{1}{\bar{\theta}} + Qh(\theta^1)\right] \frac{\partial \theta^1}{\partial w} \tag{7}$$

Using (1), we get

$$\frac{\partial \theta^1}{\partial w} = -\frac{\pi(\theta^1)\theta^1}{w[\pi'(\theta^1)\theta^1 + \pi(\theta^1)]} < 0,$$

which in turn implies that (7) is positive. Then, expected labor supply is increasing in the wage rate. Finally, since $\lim_{w\to 0} \theta^1 = \bar{\theta}$, $\lim_{w\to\infty} \theta^1 = 0$ and $\lim_{w\to\infty} \theta^2 = \bar{\theta}$, expected labor demand must be larger than expected labor supply at $w = 0$, while the contrary must hold for w large enough. Then, the two functions must cross at one unique sorting equilibrium wage w^*.

□

Proof of Lemma 3. The wage rates $w^*(0)$ and $w^*(q)$ are implicitly defined by

$$\int_{\theta^2(w^*(0),0)}^{\bar{\theta}} \pi(\theta) L(w^*(0),\theta) \frac{1}{\bar{\theta}} d\theta - \int_{\theta^1(w^*(0),0)}^{\theta^2(w^*(0),0)} \pi(\theta)\theta \frac{1}{\bar{\theta}} d\theta = 0$$

and

$$\int_{\theta^2(w^*(q),q)}^{\bar{\theta}} \pi(\theta) L(w^*(q),\theta) \left[\frac{1}{\bar{\theta}} + qh(\theta)\right] d\theta - \int_{\theta^1(w^*(q),q)}^{\theta^2(w^*(q),q)} \pi(\theta)\theta \left[\frac{1}{\bar{\theta}} + qh(\theta)\right] d\theta = 0$$

respectively. Taking the difference between the two equations and rearranging terms, we get

$$\left[\int_{\theta^1(w^*(q),q)}^{\theta^2(w^*(q),q)} \pi(\theta)\theta q h(\theta)d\theta - \int_{\theta^2(w^*(q),q)}^{\bar{\theta}} \pi(\theta)L(w^*(q),\theta)qh(\theta)d\theta\right] + \frac{1}{\bar{\theta}}\left[\int_{\theta^2(w^*(0),0)}^{\bar{\theta}} \pi(\theta)L(w^*(0),\theta)d\theta - \int_{\theta^2(w^*(q),q)}^{\bar{\theta}} \pi(\theta)L(w^*(q),\theta)d\theta\right] - \frac{1}{\bar{\theta}}\left[\int_{\theta^1(w^*(0),0)}^{\theta^2(w^*(0),0)} \pi(\theta)\theta d\theta - \int_{\theta^1(w^*(q),q)}^{\theta^2(w^*(q),q)} \pi(\theta)\theta d\theta\right] = 0 \quad (8)$$

Because of Assumption 1.b, the first term in square brackets is positive. By Lemma 2 and since employers' labour demand is a decreasing function of the wage rate, the functions

$$\int_{\theta^2(w,0)}^{\bar{\theta}} \pi(\theta)L(w,\theta)d\theta$$

and

$$\int_{\theta^1(w,0)}^{\theta^2(w,0)} \pi(\theta)\theta d\theta$$

are a decreasing and increasing in w, respectively. If $w^*(q) > w^*(0)$, the second term in square brackets in (8) would be positive and the third would be negative, leading to a contradiction. □

Proof of Proposition 1. We begin by proving the second part of the statement. Suppose that party $\mathcal{O}$ favors immigration, party $\mathcal{L}$ opposes it and $\sigma_{\mathcal{O}}(\bar{w}^*, 0) \leq \sigma_{\mathcal{L}}(\bar{w}^*, 0) < 1/2$. Since party $\mathcal{L}$ has the relative majority of votes, it will be able to form a single party government in country S and close its borders. Since no party has the absolute majority of votes, instead, a coalition government will be formed in country C. If party $\mathcal{O}$ favors immigration, so must party $\mathcal{E}$ (formally, (3) implies (5)). Then, the two parties will form a coalition to support an open border policy.

Let us now consider all other possible scenarios, to show that the two countries will always implement the same immigration policy. Suppose first that party $\mathcal{L}$ favors immigration. Then, all parties must also support an open border policy (formally, (4) implies (3), which in turn implies (5)) and immigrants will be admitted in both countries. Suppose instead that party $\mathcal{O}$ opposes immigration. Then, the $\mathcal{E}$ is the only party that might favor of immigration. By Assumption 1.a, its electoral support is too small to form a single-party government, and no other party will be willing to form a coalition with it. Then, both countries will close their

borders. Finally, suppose that party $\mathcal{L}$ opposes immigration and party $\mathcal{O}$ favors it (which in turn implies that party $\mathcal{E}$ favors immigration too). If $\mathcal{L}$ has the absolute majority of votes ($\sigma_{\mathcal{L}}(\bar{w}^*, 0) \geq 1/2$) it will form a single-party government and close the borders in both countries. If instead $\mathcal{O}$ has the relative majority of votes ($\sigma_{\mathcal{L}}(\bar{w}^*, 0) < \sigma_{\mathcal{O}}(\bar{w}^*, 0)$), then it will form a single-party government in S and a single-party government or coalition government (with $\mathcal{E}$) in country C. In both cases, borders will be kept open. □

Proof of Proposition 2. We decompose the proof of the proposition in two parts. First, we look elected mayors' decisions at the moment of participating to the auction. The results are stated in Lemma 4

Lemma 4. *In equilibrium, mayors always participate to the auction. Moreover,*

- *If the mayors elected in the two municipalities belong to the same party $\mathcal{P}$, then $\gamma_M = \underline{\gamma}_{\mathcal{P}}$ for all M.*
- *If a mayor from party $\mathcal{P}$ is elected in municipality M, a mayor from party $\mathcal{P}' \neq \mathcal{P}$ is elected in municipality M' and $\underline{\gamma}_{\mathcal{P}} > \underline{\gamma}_{\mathcal{P}'}$, then $\gamma_M = \underline{\gamma}_{\mathcal{P}}$ and $\gamma_{M'} = \underline{\gamma}_{\mathcal{P}} - \epsilon$, with $\epsilon \to 0$.*

Proof of Lemma 4. If the mayor of municipality M does not participate to the auction, the mayor of municipality M' wants to participate and bid the highest possible bid, so there can be no equilibrium where no mayor submits a bid. If a mayor in municipality M' submits a bid γ, then the mayor in municipality M wants to submit a bid $\gamma - \epsilon$. When this is not feasible and municipality M does not participate to the auction, γ must be sub-optimally low. Then, there can be no equilibrium where only one municipality participate to the auction.

Suppose both elected mayors belong to party $\mathcal{P}$. Since bidding is costless, there always exists an equilibrium where both mayors submit a bid $\underline{\gamma}_{\mathcal{P}}$ and are indifferent between participating to the auction or not. By a race to the bottom argument *à la Bertrand*, this equilibrium is also unique, as whenever one submits a bid $\gamma > \underline{\gamma}_{\mathcal{P}}$, the other wants to undercut the bid.

Suppose now that a mayor from party $\mathcal{P}$ is elected in municipality M and a mayor from party $\mathcal{P}' \neq \mathcal{P}$ is elected in municipality M'. Further, let $\underline{\gamma}_{\mathcal{P}} > \underline{\gamma}_{\mathcal{P}'}$. If municipality M submits a bid $\underline{\gamma}_{\mathcal{P}}$, municipality M' best responds by submitting a bid $\underline{\gamma}_{\mathcal{P}} - \epsilon$, with $\epsilon \to 0$. Municipality M cannot undercut the bid further, and any bid higher than $\underline{\gamma}_{\mathcal{P}}$, or not participating to the auction at all, would be as good as bidding $\underline{\gamma}_{\mathcal{P}}$. By the same race to the bottom argument used above, this equilibrium is unique. □

The second step in the proof of the proposition is to identify the winning mayors in each municipality. The result then follows from Lemma 4.

When the working class constitutes the absolute majority in the population (first case in the proposition) party $\mathcal{L}$ wins the election in both municipalities.

If the working class only constitutes the relative majority (second case in the proposition), party $\mathcal{L}$ will win in municipality SP. In municipality NM, party $\mathcal{L}$ will compete in a second round with one of the other two parties. Since $\underline{\gamma}_{\mathcal{E}} < \underline{\gamma}_{\mathcal{O}} < \underline{\gamma}_{\mathcal{L}}$, Lemma 4 implies that if either the candidate of party $\mathcal{O}$ or the one of party $\mathcal{E}$ are elected, municipality NP will win the auction with a bid slightly below $\underline{\gamma}_{\mathcal{L}}$. If the candidate of party $\mathcal{L}$ wins, instead, then the two municipalities will win the auction with probability one-half. Anticipating this, parties $\mathcal{O}$ and $\mathcal{E}$ will always support each other in the second round.

Lastly, consider the third case in the proposition. Because of Assumption 1.a, party $\mathcal{O}$ must win the election in municipality SP. In municipality NM, two possible scenarios can occur. First, the out class could constitute the absolute majority in the population. In this case party $\mathcal{O}$ wins in municipality NM too. In the second scenario, the out class is only the relative majority. Then, party $\mathcal{O}$ competes in the second round with another party. If this party is $\mathcal{L}$, party $\mathcal{O}$ receives the support of party $\mathcal{E}$ and wins the election. This is a direct consequence of Lemma 4 as before. If the other party competing in the second round is $\mathcal{E}$, the winner will be determined by the support of party $\mathcal{L}$. If $\mathcal{E}$ wins, then by Lemma 4 municipality NM will win the auction with a bid $\underline{\gamma}_{\mathcal{O}} - \epsilon < \underline{\gamma}_{\mathcal{L}}$. If $\mathcal{O}$ wins, then the two municipalities will submit a bid $\gamma_{\mathcal{O}}$ and each will win with probability one-half. The second scenario guarantees a higher expected utility to party $\mathcal{L}$ (i.e. a lower expected loss) so the party will support party $\mathcal{O}$. □