Welfare state, immigration policy, and political parties formation

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Abstract

This paper studies the political economy of immigration policies and redistribution. An inflow of relatively low-skilled immigrants can be mitigated by tight immigration policies. Due to complementarities across high-skill and low-skill tasks, more immigrants result in lower (higher) incomes for low (high)-skill natives. Immigrants are also more likely to be beneficiary of welfare transfers. We study a model of endogenous party formation when the native population votes simultaneously on immigration policy and redistribution. We show that low-skilled and high-skilled workers may form a winning coalition resulting in lower redistribution and a tighter immigration policy with respect to the preferred policy mix of the middle class. The result suggests that, when immigration is a salient political issue, support for redistribution may be weakened. It also provides a non-ideological rationale for the fact that anti-immigration political parties also tend to be in favor of lower redistribution.

Keywords: Immigration policy, Redistribution, Endogenous political party formation.

JEL Codes: D72; D78; J15.

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1 Introduction

Immigration is often seen as a threat to developed countries welfare states, and the issue has become particularly topical during the 2015 refugees crisis in Europe. On the one hand, the inflow of culturally different immigrants may undermine redistribution, insofar natives dislike immigrants and perceive them as undeserving net receivers of welfare transfers (see Alesina and Glaeser, 2004). On the other hand, if the immigrants' skill distribution differ from the one of the native population, they may change the income distribution among the native population, and benefit some skill groups while hurting others (see Ottaviano and Peri, 2012).

Most of the literature analyzes how immigration affects the support for redistribution, or how the generosity of the welfare state affects the aversion for immigration. In reality, these two issues are often debated simultaneously, and political parties can run on platforms including both dimensions. The recent rise of anti-immigration parties to a major political role in some European countries suggests that such parties are not single-issue parties, but have a position on a number of dimensions, including the size of redistribution.

In this paper, we do not take immigration as an exogenous variable, but we endogenize the immigration policy and let the native population vote simultaneously on the immigration policy and the level of redistribution. By allowing for political platforms including both dimension, we find that there is room for compromises across different groups of voters. We consider a model with endogenous party formation, and in which immigrants are relatively low skilled with respect to the native population. Voters do not dislike or distrust immigrant per se, but may be harmed by immigration through its effects on wages and on redistribution, for a given tax rate. We show that, if immigration policy and redistribution are voted simultaneously, both the level of redistribution and the number of immigrants admitted in the country will be smaller than the ones that would arise if the two dimensions were voted separately. The reason for this outcome is that low-skilled and high-skilled natives can form a coalition against the middle class. The low skilled give away redistribution in order to be sheltered from immigration. When immigration policy becomes very salient in the political debate, the support for redistribution may fall not because of a change in the natives tastes, but because of the result of the political process.

Our result suggests that the middle class would have an interest to commit on one of the two dimensions (for instance, imposing a minimum level of redistribution at the constitutional stage). This would imply a less tight immigration policy and higher levels of redistribution. Conversely, if this commitment is not possible, platform pushing for low redistribution and a strict immigration policy may emerge in equilibrium of the political process.

We also provide a rationale for the fact that xenophobic and anti-immigrant parties usually run on a platform advocating a less generous welfare state. The formation of such parties may be explained by process of endogenous coalition formation, and not by the fact that the distaste for redistribution and the distrust for immigrants are positively correlated in the native population.

In our model, the economy consists of a continuum of identical firms. Firms produce the final good Y with a constant return to scale technology. The final good is produced with two labor inputs, simple tasks and complex tasks. The tasks are complements. For simplicity, we ignore capital. The labor market is competitive and workers differ in their productivity level when hired to execute complex tasks. The skill level of the worker affects his productivity in complex tasks, but not in simple tasks. We consider a potential inflow of immigrants whose skill distribution is worse than the one of the natives, in a first order stochastic dominance sense. As a consequence, immigrants are more likely to be assigned to the low-skill simple task.

Preferences over the immigration policy, *i.e* the number of immigrant workers to be allowed in the country, depend on the effect on wages due to the inflow of low-skill immigrants. Immigrants are complement to high-skilled native labor, and substitute to low-skill native labor. In equilibrium, the wage of low-skill workers decreases in the number of immigrants admitted in the country, while the wage of higher skill workers increases in the number of immigrants workers. These preferences also depend on the effect of immigration on redistribution. This effect is negative for all workers: an inflow of immigrants with worse skill distribution increases total output less than it increases the population size.

High-skill workers are divided into two groups: very high-skill (those with productivity a_H), and medium-skill (those with productivity a_M). Henceforth, in the population there are three income groups: the rich, the middle class, the poor. We assume that none of this group is large enough to get the majority of votes in the election when all voters vote sincerely. We model a political game, where a representative for each group chooses a political platform. We also allow the political platform to have two-dimensions: income redistribution and immigration policy.

We adopt the citizen-candidate approach introduced by Osborne and Slivinsky (1996) and Besley and Coate (1997), so that politicians can only credibly offer their most preferred choice of redistribution and immigration. As in Levy (2004, 2005), we also allow party coalitions. If politicians choose to form a coalition, then the most preferred platform of the coalition is instead offered and cannot be renegotiated by the coalition members if the coalition wins the election. Politicians face a trade-off if/when they join a party coalition: they may have to compromise on their most preferred policies in order to increase their chances to win the election.

The political equilibrium of the game is one where poor and rich form a coalition against the middle class party and win the election. Their political platform is a compromise in each policy dimension, redistribution and immigration. Compared to their most preferred policies, the poor gives up some redistribution in order to obtain a tighter immigration policy, *i.e* fewer immigrants; compared to their most preferred policy, the rich grant some redistribution in exchange for allowing more immigrants in the country. The political party of the middle class prefers more redistribution and more immigrants compared to the bundle proposed by the winning coalition, but has no chance to win the election against the coalitions of the ends against the middle.

The political equilibrium entails a coalition of the ends against the middle, and so reminds to the analysis of Epple and Romano (1996) and Levy (2005). Epple and Romano (1996) study the case of voting over the provision of a good when private alternative exists. They show that a coalition between high-income and low-income households favoring low public provision may be opposed in equilibrium to a coalition of middle income households favoring high public provision. However, their analysis only considers a single voting dimension, and is due to the presence of non-single-peaked preferences. Levy (2005) consider a two-dimension voting problem, and shows that public education may result from a compromise between the rich and the young poor, who in exchange accept a reduction in income redistribution.

Our analysis is grounded in the extensive body of research that examines the labor market impact of immigration. Researchers are optimistic about the overall impact of immigration on native workers' wages, even if they find that low-skill natives may be hurt by an inflow of low-skill immigrants (Borjas 1995, 2003 and Ottaviano and Peri, 2012). More recently the literature models the impact of immigration on the labor market in less simplistic ways compared to previous research (see Battisti *et al.*, 2014, D'Amuri *et al.*, Dustman *et al.*, 2013), yet stressing an overall non-negative effect of immigration on the native labor market and economy, with different impacts on different skill types. See Hanson (2009) for a recent review of the empirical evidence of the consequences of labor migration. In line with this literature, our model generates both winners and losers from immigration, with low-skill workers' wages being negatively affected. Because our main focus is on the political economy of immigration, we rely on a simple analysis of the labor market effects of immigration which predicts complementarity between native and immigrant workers in the production function.

Our main focus is the study of the impact of immigration on the generosity of the welfare state, a topic extensively studied in the literature, both theoretical and empirical. Many scholars examine the effect of immigration on the welfare state. Finseraas (2008) and Stichnoth *et al.* (2009) analyze the evidence in the European Social Survey to assess the impact of immigration on the support for the welfare state. Both studies highlight two possible channels for the link between immigration and support for redistribution, and do not find a clear pattern concerning the relative importance of each of the two channels. On the one hand, a negative effect could be generated by distaste towards foreigners. This mechanism was also identified by Alesina *et. al* (1999) to explain the lack of support for public good provision in ethnic diverse regions. On the other hand, immigration may generate support for redistribution due to increased labor competition and increased risk of losing one's job.

We depart from this approach because we do not take immigration as an exogenous event. We model endogenous political party formation when both redistribution and immigration policies are to be chosen. We find that the negative support for redistribution needs not be motivated by distaste for foreign workers, but may be the outcome of a change in the supplies of political parties.

Our work is closer to Dolams and Huffman (2004) and Razin *et al.* (2014) who model a two-dimension policy space, including redistribution and immigration policies. Dolams and Huffman (2004), consider a dynamic model where individuals vote immigration policy and redistribution, anticipating the fact that immigrants may become voters and favor a high tax rate. Our paper does not rely on dynamic mechanisms to explain the fact that voters with extreme preferences over redistribution may form a coalition and oppose immigration while supporting a less generous welfare state than the middle class. Razin et al. (2014), considers a model of dynamic coalition formation when the society decides on the immigration policy and the generosity of the welfare state, both in terms of inter-generational redistribution and of intra-generational distribution. The main results rely on the fact that immigrants are younger and less skilled than the native population, and that natives anticipate that their admission into the country will help to sustain a pay-as-you-go pension system.

The paper is organized as follows. Section 2 introduces the model and the main assumptions. Section 3 describes the preferences over immigration and redistribution of the different native groups. Section 4 contains the main results on the political game. Section 5 concludes.

2 Economic environment

The production of the aggregate economic output and numeraire, Y, requires two sets of task: simple tasks and complex tasks. The population is constituted of workers with different productivity, a_j, if employed in complex tasks. There, productivity type can be high, medium or low, respectively $a_H > a_M > a_L$. For simplicity, we refer to a worker with productivity a_j as a worker of type j. a_j is the number of tasks completed by a worker of type j assigned to a complex task. Each worker assigned to the simple task, irrespective of his type, completes 1 task.

Workers of type L can only perform a simple task, hence $a_L = 0$, but workers of type H and M can perform both tasks. The total number of completed complex tasks is the number of workers θ_j of types H and M times their respective productivity a_H and a_M, and is defined by C. Let S be the total number of workers hired to execute simple tasks, which is also the number of completed simple tasks.

$C = \theta_H a_H + \theta_M a_M$ and S are the inputs in the aggregate production function $Y = y(C, S)$. The function $y : \mathbb{R}^2_{++} \to \mathbb{R}_+$ satisfies the following assumptions: it is concave and strictly increasing in both argument, is twice continuously differentiable in both arguments over $\mathbb{R}^2_{++}$, is homogeneous of degree 1, C and S are complements. We adopt this notation: $y_1 \equiv \frac{\partial y}{\partial C}$, $y_2 \equiv \frac{\partial y}{\partial S}$, $y_{12} \equiv \frac{\partial^2 y}{\partial C \partial S}$, $y_{12} \equiv y_{21}$, $y_{11} \equiv \frac{\partial^2 y}{\partial C^2}$, $y_{22} \equiv \frac{\partial^2 y}{\partial S^2}$.

There exists a measure 1 of firms that hire workers in a competitive labor market and can observe workers productivity prior to hiring. Firms post wages based on both productivity types and task, and then hire and assign workers to tasks simultaneously. The assignment of workers to tasks is driven by the incentive to maximize profits and competition. To simplify the analysis, we make the following assumption.

Assumption 1 *If all workers with productivity greater or equal to a_M are employed to execute the complex task, then $a_M y_1 > y_2$.*

This assumption ensures that all workers of type H and M are hired for the complex task and all workers L are employed for the simple task. Wages are equal to $w_H = a_H y_1$, $w_M = a_M y_1$ and $w_L = y_2$. It follows that $w_H > w_M > y_2$. The proof for the labor market equilibrium assignment is simple and sketched here. Given the equilibrium assignment of workers to tasks, in the competitive market a firm must pay its workers at their marginal productivity, hence $a_H y_1 + a_M y_1 + y_2 - w_H - w_M - w_L = 0$. Now, suppose that a firm assigns a worker of type L to the complex task. The profit will be negative at any wage greater than 0. A firm will not assign a worker of type H or M to the simple task at the lower wage y_2, otherwise these workers would be hired by another firm at their marginal productivity.

We consider a closed economy with fixed labor supply of native workers of measure N. Native workers choose the number of immigrants foreign workers I allowed in the domestic labor market. We let I^{MAX} be the highest possible number of immigrants (for instance, the number of foreigners filing for working visas) that can be allowed to enter the country, hence $I \in [0, I^{MAX}]$. In our main analysis, we assume that the distribution of types in the native population first order stochastically dominates the distribution of types among the immigrants. Unless specified, the following holds:

Assumption 2 *Let p_j be the proportion of type j, $j = H, M, L$ among the natives, and p^i_j the corresponding proportions among the immigrants. The distribution of productivity among natives first order stochastic dominates that of immigrants: $p^i_L > p_L$ and $p^i_M + p^i_H < p_M + p_H$.*

To simplify notation, the mass of native workers with ability j is $p_j N \equiv n_j$. We assume that for any j, $n_j < 1/2$. Immigrants allowed to enter the country are hired on the labor market together with native workers. We exclude any type of discrimination or dislike toward immigrants. The aggregate output when workers are either natives or immigrants is

$$Y = y(a_H[n_H + p^i_H I] + a_M[n_M + p^i_M I], n_L + p^i_L I). \tag{1}$$

Note that first order stochastic dominance implies that Assumption 1 necessary holds for all I as long as it holds when $I = 0$.

We let a tax system be in place to redistribute Y among all workers, included the allowed immigrants. Redistribution is achieved through a linear tax on labor income t, with $t \in [0, 1]$, and a lump-sum transfer T. Because the tax is distortionary, some output is lost if redistributed. Let the lump-sum be $T = t(1-t)\frac{Y}{N+I}$. This specification includes the distortionary effect of the tax and prevents the chosen tax rate to be $t = 1$.

The next Lemma summarizes the effect of change in the tax rate t and the total mass of immigrants I on redistribution.

Lemma 1 *An increase in the tax rate, t, raises the lump sum T if and only if $t \in [0, 1/2)$. An increase in the total mass of immigrants, I, reduces the lump sum T.*

The effect of t on T is $\frac{\partial T}{\partial t} = \frac{(1-2t)Y}{N+I}$. The effect of I on T is $\frac{\partial T}{\partial I} = \frac{t(1-t)Y}{N+I}[(a_H p^i_H + a_M p^i_M)y_1 + y_2 p^i_L - \frac{Y}{N+I}]$. The negative effect of immigration on T depends on the assumption that immigrants are less skilled than natives, hence their average wage is lower than the average income. Otherwise the direction of the effect would be reversed.

Workers' utility depends solely on their net consumption

$$U_j = w_j(1-t) + T.$$

We let the utility function be concave in t and I.

In the main analysis we focus on the case where type M workers have a wage lower than the average wage $Y/(N + I)$. As w_M rises with I [1], there exists a level of I such

[1] The derivative $\frac{\partial w_M}{\partial I} = a_M[(a_H p^i_H + a_M p^i_M)y_{11} + p^i_L y_{12}] > 0$. For the proof see the argument in Proof of Lemma 2 in the Appendix.

as type M's wage equal the average wage. We let $\hat{I}$ be such level of immigration and make the following assumption.

Assumption 3 $I^{MAX} \leq \hat{I}$ *for* $\hat{I}$ *solution of* $w_M(\hat{I}) = Y(\hat{I})/(N+\hat{I})$.

3 Preferences over immigration and tax rate

Only native workers can vote over t and I but the immigrants accepted in the country will pay taxes and receive the lump sum transfer. We describe the political game in the following section, and here describe native workers preferences over tax and number of immigrants. Wages for native workers depends on the level of immigration, via its effect on the economic output Y. The most preferred combination of tax rate and immigration for a native worker of type j is denoted by (t_j^*, I_j^*) and is derived from the system of first order conditions $\frac{\partial U_j}{\partial t}$, and $\frac{\partial U_j}{\partial I}$ for each j.

A worker of type H and one of type L have opposite preferences in terms of both redistribution and immigration. Types L clearly favor a high level of taxation because contribute less than they receive from redistribution. Types H dislike redistribution because have an income above average and hence are net contributors to redistribution. Types L dislike immigrants because an influx of immigrants, who are predominantly of type L by assumption, reduce their wages. Types H favor the arrival of immigrants, exactly because they are predominantly of type L and will be hired in the simple task. The complementarity of the production function ensures that type H's native wage increases with the number of immigrants. The first order conditions with respect to t and I for types H and L are:

$$\frac{\partial U_H}{\partial t} = -a_H y_1 + \frac{\partial T}{\partial t}, \tag{2}$$

$$\frac{\partial U_H}{\partial I} = (1-t)a_H[(a_H p_H^i + a_M p_M^i)y_{11} + p_L^i y_{12}] + \frac{\partial T}{\partial I}, \tag{3}$$

$$\frac{\partial U_L}{\partial t} = -y_2 + \frac{\partial T}{\partial t}, \tag{4}$$

$$\frac{\partial U_L}{\partial I} = (1-t)[(a_H p_H^i + a_M p_M^i) y_{21} + p_L^i y_{22}] + \frac{\partial T}{\partial I}. \tag{5}$$

(2) is strictly negative for any level of I. The wage of type H , $w_H = a_H y_1$, is greater than the average income, which appears in the positive term $\frac{\partial T}{\partial t} = t(1-t)\frac{Y}{N+I}$. Hence, type H 's favorite level of tax rate is equal to zero.

From the first order conditions for type L, the preferred tax and immigration level for L are $0 < t_L^* < 1/2$ and $I_L^* = 0$. First, types L's are better off without immigrants, as can be gathered from condition (5). By Lemma 1, an increase in the number of immigrants reduces the lump sum transfer T because it increases the population size more than it raises the total output Y, then $\frac{\partial T}{\partial I} < 0$. The term in the square bracket in (5) is the effect of I on the wage w_L. We show that this effect is always negative (see the proof of the following Lemma 2) for any level of t. Types L's preferred immigration level is zero. Second, we can solve the first order condition (4) for ${I_L}^* = 0$ to find the most preferred tax level ${t_L}^*$.

The most preferred level of immigrants for types H, given that ${t_H}^* = 0$, is the highest possible level available. By setting $t = 0$, the term $\frac{\partial T}{\partial I}$ in (3) is strictly positive. The term in square brackets in (3) multiplied by a_H is the effect of raising the level of immigrants on the wage of type H workers. The effect is positive.

Workers of type M have less extreme preferences than the other types. The derivative of U_M with respect to t and I are, respectively

$$\frac{\partial U_M}{\partial t} = -a_M y_1 + \frac{\partial T}{\partial t} \tag{6}$$

and

$$\frac{\partial U_M}{\partial I} = (1-t)a_M[(a_H p_H^i + a_M p_M^i) y_{11} + p_L^i y_{12}] + \frac{\partial T}{\partial I}. \tag{7}$$

The preferred choices of type M depends on the level of I^{MAX}, the highest number of immigrants available to enter the country. By Assumption 3, we restrict I^{MAX} to be smaller or equal to the level of immigrant workers $\hat{I}$ such as the wage of type M equals the average wage. Basically, we focus on the case where types M are net receivers of redistribution. Given that, type M prefers a tax rate greater than zero, that can be proven to be smaller than the level preferred by types L for any I, $0 < t^*_M < t^*_L < 1/2$. Because types M are hired in the complex task sector, an influx of immigrants into the simple task sector raises their wage, but it also reduces the lump sum transfer T. For $I^{MAX} \leq \hat{I}$, two cases can arise. First, the optimal choice of $I^*{}_M$ is interior, $0 < I^*{}_M < I^{MAX}$. Second, the optimal choice is constrained and equal to I^{MAX} if $I^*{}_M > I^{MAX}$.

The following lemma summarizes the most preferred combination of tax rate and immigration for a native worker of type j.

Lemma 2 *Workers with different productivities have different preferences for redistribution and immigration. The table summarizes the most preferred tax rate and immigration quota for native workers.*

Type	t^*_j	I^*_j
H	0	I^{MAX}
M	$0 < t^*_M < 1/2$	$0 \leq I^*_M \leq I^{MAX}$
L	$t^*_M < t^*_L < 1/2$	0

The proof for Lemma 2 is in the Appendix.

In order to characterize a political equilibrium, we establish some important properties of the marginal rate of substitution of I for t for type j: $MRS_j \equiv (U_I/U_t)_j$.

Lemma 3 *For type L and H, the marginal rate of substitution of immigration for tax U_I/U_t is positive for all $t \in [0, 1/2]$ and $I \in [0, I^{MAX}]$. Furthermore, for all $I^*_M < I^{MAX}$, the marginal rate of substitution of type L evaluated in $\{t^*_M, I^*_M\}$ is greater than the marginal rate of substitution of type H evaluated in $\{t^*_M, I^*_M\}$, i.e $MRS_{L,\{t^*_M, I^*_M\}} > MRS_{H,\{t^*_M, I^*_M\}}$.*

This Lemma implies that, at a given allocation, both type-L and type-H workers need lower immigration in exchange for lower taxes in order to remain indifferent. If the status quo is $\{t_M^*, I_M^*\}$, type-L workers are willing to accept a higher tax reduction than type-H workers in exchange for the same reduction in the number of immigrants. The proof is in the Appendix.

4 Political game

The level of redistribution and immigration quota are voted by the native population. We assume that political parties can compete by announcing their platform in an election. The winner is the party who collects the majority of votes. We adopt the political model of parties introduced by Levy (2004). This model is close to citizen-candidate paradigm (see Besley Coate, 1995, and Osborne and Slivinksy, 1996) with the difference that politician with different preferences may join in the same party. Since each party can only offer credible policies, the citizen-candidate implies that a candidate's platform must be his preferred platform. Levy (2004) introduces the possibility that the party platform is different from the ideal policy of its members, allowing that politician within the same party find a compromise. A platform is credible if it belongs to the Pareto set of the members of the party, otherwise it could be renegotiated after the elections. The political game extensive form is:

1. Each citizen chooses whether to stand for election or not.
2. Politicians decide whether to join in a party or to run as individual candidates (one-member parties).
3. Parties simultaneously choose whether to offer a platform and which one to offer.
4. The winning platform is the one that gets the majority of votes.

Without loss of generality (see Levi, 2004) we consider the scenario where three candidates, one for each type of worker, stand for election. We also assume that, if no coalition wins, this results in the worse possible outcome for all players (i.e. in government shutdown).

We look for stable political outcomes. Following Levy (2004), we define a set of equilibrium platforms as the set of pairs $\{t, I\}$ such as, given all platforms offered by the other parties, no party can change its action and improve the utility of all its members. An equilibrium winning platform is the pair $\{t^*, I^*\}$, belonging to the set of equilibrium platforms, that obtains the higher number of votes. A stable political outcome is an equilibrium winning platform such that no politician can break her party and receive a higher utility by offering a different platform or joining another party.

First of all, consider the case in which each politician runs independently. In this case, each politician has to run on his most preferred platform, in order to be credible. The winning party would be the one that represents the type-M workers, and the platform $P_M = \{t_M^*, I_M^*\}$ would be implemented. This is due to the fact that U_I/U_t is positive for both type-L and type-H voters. Figure 1 illustrates this point. We denote by B_j and the preferred bundles of type-j voters. If the type-H representative was to challenge the type-M representative in the elections with a platform $P_H = B_H = \{0, I^{MAX}\}$, she would be defeated, since all type-L voters would vote for $P_M = B_M$, which makes them better off than platform P_M. Similarly, if the type-L representative was to challenge with a platform $P_L = B_L = \{t_L^*, I_L^*\}$, all workers of type-H would vote for P_M.

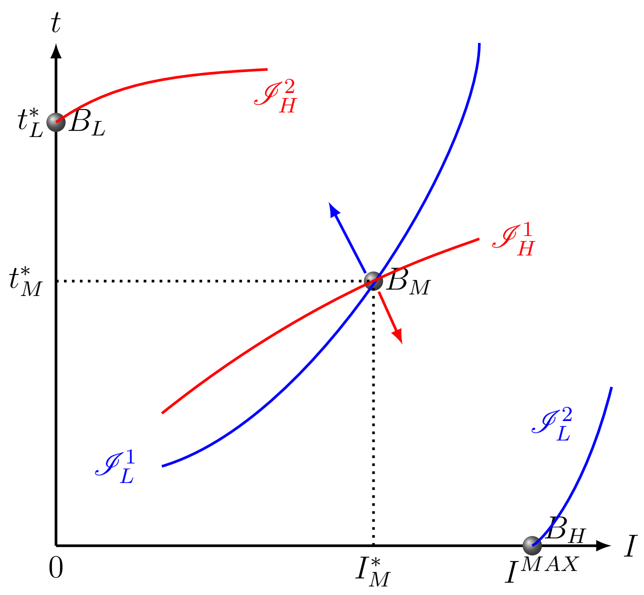


Figure 1: One-member parties

However, $\{t_M^*, I_M^*\}$ is not a set of equilibrium platforms whenever the most preferred level of immigration of M-type voters, I_M^*, is interior. A party formed by a type-L and a type-H politicians can propose a coalition platform that makes both type-L and type-H workers better off.

As illustrated in Figure 1, Type-L and -H voters have opposite preferences for the immigration policy. Type-L would like to set $I = 0$, while type-H would prefer $I = I^{MAX}$. They also differ in terms of preference for redistribution, with L in favor high tax and H in favor of no tax at all. However, we have shown in Lemma 3 that the marginal rate of substitution of I for t evaluated in $\{t_M^*, I_M^*\}$ is higher for type-L voters. Type-L voters are willing to accept a higher tax reduction than type-H workers in exchange for the same reduction in the number of immigrants. Then, there exists a set of policies with lower taxes compared to t_M^* and less immigrants compared to I_M^* such as both type-L and -H workers are better off.

This intuition is illustrated in Figure 2. The indifference curve of a type-L voter passing through any interior B_M (denoted by $\mathscr{I}_L^1$ in the figure) is always steeper than the indifference curve of a type-H voters passing for the same (t, I) bundle ($\mathscr{I}_H^1$). In words, type-L voters are always willing to reduce redistribution more than the type-H voters are willing to accept, in exchange of a reduction in the number of immigrants. Thus, any policy bundle lying below $\mathscr{I}_H^1$ and above $\mathscr{I}_L^1$ would be a Pareto improvement with respect to B_M for all type-H and type-L voters. In the figure, the curve K exemplifies the Pareto set of type-L and type-H voters. Along K, it is not possible to improve the utility of any type-H voter without harming type-L voters.

Consider any platform P_{HL}^* lying in the segment $[k_1, k_2]$ of the Pareto set K. A platform set including only P_{HL}^* is a set of equilibrium platforms, since no party can change its action and improve the utility of all its members. The party including the representatives of type-H and -L voters cannot propose any platform that would increase the probability of winning the election, or increase the utility of all members, since the platform belongs to the Pareto set. The politician of type M cannot propose credibly

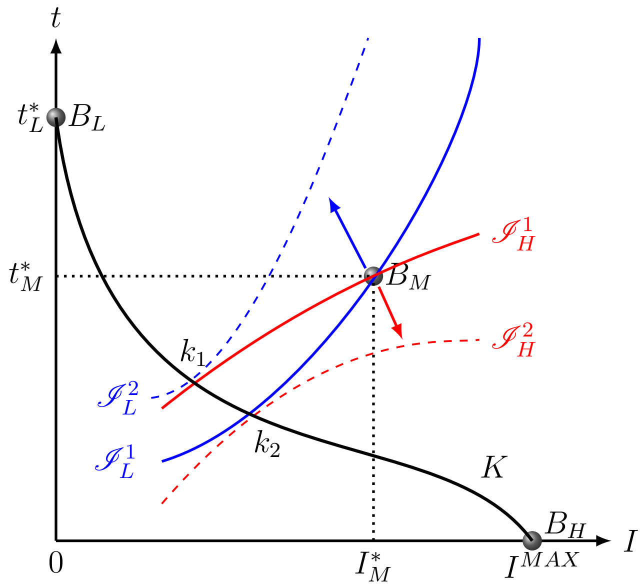


Figure 2: Equilibrium platforms

propose any winning platform. P_{HL}^* is then an equilibrium winning platform. This platform always entails a lower tax rate and a lower number of admitted immigrants than B_M.

Furthermore, it is possible to show that there exists no stable political outcome where a type-M politician participates to a winning coalition. If the politician of type M and of type H made a coalition, the type-M politician would always have an incentive to break the party before the election, propose its ideal platform, and win the elections (since L is running alone). A similar argument would apply for any coalition with the type-L politician. Then, the only stable political outcome must be such that politician H and L propose a joint platform, while M runs alone. In equilibrium, the platform proposed by type H and type L always wins. Then, any P_{HL}^* belonging to the Pareto set of type-H and -L voters is the only stable political outcome.

Up to this point we have only considered the case where $\{t_M^*, I_M^*\}$ is interior. If the solution is not interior, different cases are possible. If the problem of the type-M individual is constrained, and his optimal tax-immigrant pair is $(t_M^*(0), 0)$, then only stable political outcome is $P_M^* = (t_M^*(0), 0)$. In fact, we have established in Lemma 3 that for $I_M^* = 0$, the marginal rate of substitution of I for t evaluated in $\{t_M^*, I_M^*\}$ is higher for type-L voters. Then, no coalition between type-L and type-H voters is possible, since the number of immigrants admitted in the country cannot be smaller than zero. This situation is depicted in Figure 3.

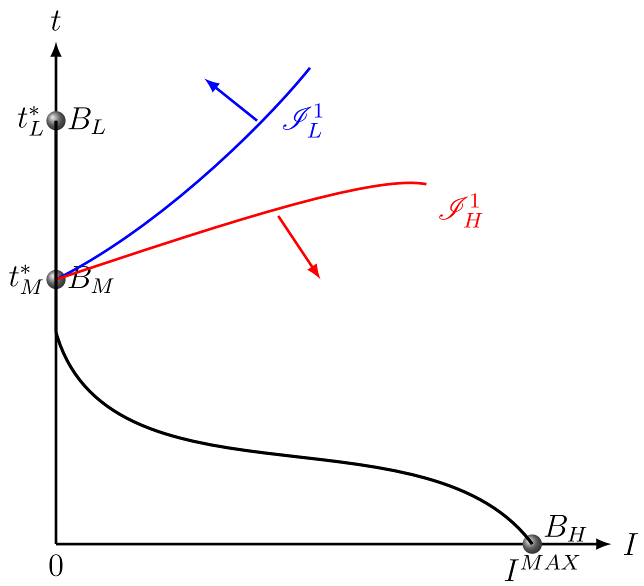


Figure 3: Corner solution $I_M^* = 0$

Conversely, if the optimal policy bundle for type-M voters is constrained and equal to $(t_M^*(I^{MAX}), I^{MAX})$, two cases may arise, as depicted in Figure 4. In Figure 2a $MRS_L > MRS_H$ when $I = I^{MAX}$, and the only stable political outcome is a platform P_{HL}^* proposed by the platform of H- and L- types. In Figure 2a $MRS_L < MRS_H$ in $(t_M^*(I^{MAX}), I^{MAX})$, the only stable political outcome is the platform P_M^* that maximizes the utility of type-M individuals.

Our results can be summarized by the following proposition.

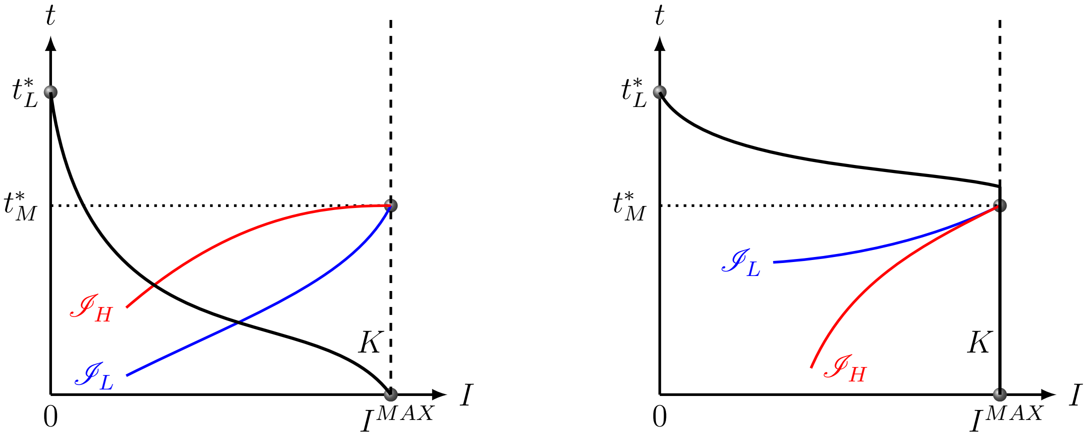
Proposition 1 *If voters decide on both the level of immigration and on redistribution, and* $0 < I_M^* < I^{MAX}$, *the only stable political outcome is such that politician H and L form a winning coalition with a platform* $P_{HL}^* = \{t_{HL}^*, I_{HL}^*\}$ *such that:*

i) $\{t_{HL}^*, I_{HL}^*\}$ *belongs to the Pareto set of types H and L.*

ii) $t_{HL}^* < t_M^*$.

ii) $I_{HL}^* < I_M^*$.

If $I_M^* = 0$, *then the only stable political outcome is the platform* $P_M^* = \{t_M^*(0), 0\}$. *If* $I_M^* = I^{MAX}$, *then the only stable political outcome is either* $P_M^* = \{t_M^*, I^{MAX}\}$ *or*



a–Coalition HL wins   b–Coalition M wins

Figure 4: Corner solution $I^*_M = I^{MAX}$

$P^*_{HL} = \{t^*_{HL}, I^*_{HL}\}$.

This proposition has two important implications. First, it provides a non-ideological rationale for the fact that xenophobic and anti-immigrant parties usually run on a platform advocating a less generous welfare state. In other words, the formation of these parties may be explained by the process of endogenous coalition formation, and not by the fact that individuals holding a distrust for immigrants are more likely to oppose redistribution. The compromise between high- and low-skill workers against immigration and for less redistribution may thus explains the emergence of right-wing parties opposing immigration when immigration becomes a political issues.

Second, the proposition implies the following corollary.

Corollary 1 *If voters decide simultaneously on the level of immigration and redistribution, both redistribution and the number of immigrants admitted to the country are (weakly) lower than in the case in which the two issues are not jointly voted upon.*

In fact, if the policies were not voted at the same time, type-M voters would win in each round of vote, and this would lead to their optimal policy mix to be implemented. In other words, our result suggest that, when immigration is a salient political issue, support for redistribution may be weakened. As a consequence the middle class may have an interest to commit on one of the two dimensions (for instance, imposing a minimum level of redistribution at the constitutional stage). This would result in a more lax immigration policy and higher levels of redistribution. Conversely, if this commitment is not possible, platform pushing for low redistribution and a strict immigration policy may emerge in equilibrium of the political process.

5 Conclusion

In this paper we have studied the political economy of immigration policies and redistribution. We study a static model of endogenous party formation, in which an inflow of relatively low-skilled immigrants can be mitigated by tight immigration policies. Due to complementarities across high-skill and low-skill tasks, more immigrants result in lower (higher) incomes for low (high)-skill natives. Immigrants are also more likely to be beneficiary of welfare transfers. We show that, when the native population vote simultaneously on immigration policy and immigration, low-skilled and high-skilled workers may form a winning coalition resulting in lower redistribution and a tighter immigration policy with respect to the preferred policy mix of the middle class. The result suggests that, when immigration is a salient political issue, support for redistribution may be weakened. It also provides a non-ideological rationale for the fact that anti-immigration political parties tend to be also in favor of lower redistribution.

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Appendix

Proof of Lemma 1. The lump sum T is defined by $t(1-t)\frac{Y}{N+I}$, a continuous and differentiable function of t and I. The first order derivative with respect to t, $(1-2t)\frac{Y}{N+I}$, is positive for $t \in [0, 1/2)$, and otherwise non-positive.

The first order derivative of T with respect to I is $\frac{\partial T}{\partial I} = \frac{t(1-t)}{N+I}[y_1(a_H p_H^i + a_M p_M^i) + y_2 p_L^i - \frac{Y}{N+I}]$ and negative because the term in square brackets is the difference between the average wage of immigrants and the average wage of the entire population $N + I$. This difference is positive because the distribution of types for natives first order stochastically dominates the one of immigrants. ■

Proof of Lemma 2.

We rewrite the first oder conditions with respect to t and I for the three types of workers.

Type-H worker: The first order derivative of U_H with respect to t is

$$\frac{\partial U_H}{\partial t} = -a_H y_1 + \frac{(1-2t)Y}{N+I}$$

The highest wage must be greater than the average wage, i.e. $a_H y_1 > \frac{Y}{N+I}$, hence $a_H y_1 > \frac{(1-2t)Y}{N+I}$. The first order derivative is negative for all $I \in [0, I^{MAX}]$ and $t \geq 0$.

The first order derivative of U_H with respect to I is

$$\frac{\partial U_H}{\partial I} = (1-t)\{a_H[(a_H p_H^i + a_M p_M^i)y_{11} + p_L^i y_{12}]\} + \frac{\partial T}{\partial I}$$

Since $t_H^* = 0$ the second term is equal to zero. We prove that the sign of the expression in curly brackets is positive and then the first order derivative is always positive for all $I \in [0, I^{MAX}]$. The production function is linear homogeneous, hence y_1 is homogenous of degree zero. By the Euler's theorem

$$y_1 \times 0 = (a_H p_H^i + a_M p_M^i)Iy_{11} + p_L^i I y_{12} + (a_H p_H + a_M p_M)y_{11}N + y_{12}p_L N. \qquad (8)$$

We prove that $(a_H p_H^i + a_M p_M^i)y_{11} + y_{12}p_L^i > 0$. Suppose instead that $-(a_H p_H^i + a_M p_M^i)y_{11} > y_{12}p_L^i$. Because of first order stochastic dominance, $p_L < p_L^i$ and $p_H + p_M > p_H^i + p_M^i$. Then $-(a_H p_H + a_M p_M)y_{11} > -(a_H p_H^i + a_M p_M^i)y_{11}$ and $y_{12}p_L^i > y_{12}p_L$. For the transitive property if $-(a_H p_H^i + a_M p_M^i)y_{11} > y_{12}p_L^i$, then $-(a_H p_H + a_M p_M)y_{11} > y_{12}p_L$ and (8) is violated. Then, $(a_H p_H^i + a_M p_M^i)y_{11} + y_{12}p_L^i >$. QED. We have proven that $I_H^* = I^{MAX}$ because the first order condition is always positive when $t = 0$.

Type-M worker: The first order derivative of U_M with respect to t is

$$\frac{\partial U_M}{\partial t} = -a_M y_1 + \frac{(1-2t)Y}{N+I}$$

By assumption, the wage of type-M is lower than the average wage for any I. Then, there exists an interior solution for $t_M^*(I)$ such that $a_M y_1 = (1-2t_M^*)\frac{Y}{N+I}$. The first order derivative with respect to I is

$$\frac{\partial U_M}{\partial I} = (1-t)\{a_M[(a_H p_H^i + a_M p_M^i)y_{11} + y_{12}p_L^i]\} + \frac{\partial T}{\partial I}$$

We proved that by the Euler's theorem $\{a_M[(a_H p_H^i + a_M p_M^i)y_{11} + y_{12}p_L^i]\} > 0$, and that $\frac{\partial T}{\partial I} = \frac{t(1-t)Y}{N+I}[(a_H p_H^i + a_M p_M^i)y_1 + y_2 p_L^i - \frac{Y}{N+I}]$. The term in square brackets is the difference between the average wage of immigrants minus the average wage in the population, a negative value. There can be an interior solution in $I_M^*(t)$ such as the first order derivative $\frac{\partial U_M}{\partial I} = 0$. However, if $I^{MAX} < I_M^*(t)$, the solution is constrained.

Last we prove that $1/2 > t_L^* > t_M^*$. The optimal tax rate for type-L is given by $y_2 = (1-2t_L^*)\frac{Y}{N}$, and for type-M is $a_M y_1 = (1-2t_M^*)\frac{Y}{N+I_M^*}$. By Assumption 1, $y_2 < a_M y_1$, hence $\frac{(1-2t_L^*)}{(1-2t_M^*)} < \frac{N}{N+I_M^*} < 1$. The inequality $(1-2t_L^*) < (1-2t_M^*)$ is true if and only if $t_L^* > t_M^*$.QED.

Type-L worker: The first order derivative or U_L with respect to I is

$$\frac{\partial U_L}{\partial I} = (1-t)[y_{21}(a_H p_H^i + a_M p_M^i) + y_{22}p_L^i] + \frac{\partial T}{\partial I}$$

The second term is always negative by Lemma 1. By the Euler's theorem

$$y_2 \times 0 = (a_H p_H^i + a_M p_M^i) I y_{21} + p_L^i I y_{22} + (a_H p_H + a_M p_M) y_{21} N + y_{22} p_L N. \qquad (9)$$

We prove that $(a_H p_H^i + a_M p_M^i) y_{21} + y_{22} p_L^i < 0$. Suppose instead that $(a_H p_H^i + a_M p_M^i) y_{21} > -y_{22} p_L^i$. Because of first order stochastic dominance, $p_L < p_L^i$ and $p_H + p_M > p_H^i + p_M^i$. Then $(a_H p_H + a_M p_M) y_{21} > (a_H p_H^i + a_M p_M^i) y_{21}$ and $-y_{22} p_L^i > -y_{22} p_L$. For the transitive property $(a_H p_H + a_M p_M) y_{21} > y_{21}(a_H p_H^i + a_M p_M^i) > -y_{22} p_L^i > -y_{22} p_L$, and (9) is violated. Then, $(a_H p_H^i + a_M p_M^i) y_{21} < -y_{22} p_L^i$. QED. We have proven that $I_L^* = 0$ because the first order condition is always negative, any t.

The first order derivative of U_L with respect to t is

$$\frac{\partial U_L}{\partial t} = -y_2 + \frac{(1-2t)Y}{N+I}$$

There exists an interior solution for t_L such as $y_2 = (1-2t_L^*)\frac{Y}{N}$.

■

Proof of Lemma 3.

The marginal rate of substitution between t and I for type-L is

$$MRS_L = \frac{\frac{\partial U_L}{\partial I}}{-\frac{\partial U_L}{\partial t}} = \frac{(1-t)[(a_H p_H^i + a_M p_M^i) y_{21} + y_{22} p_L^i] + \frac{\partial T}{\partial I}}{y_2 - \frac{\partial T}{\partial t}}$$

and for type-H is

$$MRS_H = \frac{\frac{\partial U_H}{\partial I}}{-\frac{\partial U_H}{\partial t}} = \frac{\frac{\partial U_H}{\partial I} = (1-t)\{a_H[(a_H p_H^i + a_M p_M^i) y_{11} + y_{12} p_L^i]\} + \frac{\partial T}{\partial I}}{a_H y_1 - \frac{\partial T}{\partial t}}$$

Consider first the case where I_M^* is interior. We can use the first order conditions for type-M to evaluate the marginal rate of substitutions above in $\{t_M^*, I_M^*\}$. For type-L, we find

$$MRS_{L,\{t_M^*,I_M^*\}} = \frac{(1-t)[(a_H p_H^i + a_M p_M^i)(y_{21} - a_M y_{11}) + p_L^i(y_{22} - a_M y_{12})]}{y_2 - a_M y_1}$$

By the Euler's theorem, $\{a_M[(a_H p_H^i + a_M p_M^i)y_{11} + y_{12}p_L^i]\} > 0$ and $y_{21}(a_H p_H^i + a_M p_M^i) + y_{22}p_L^i < 0$ (see Proof of Lemma 2). The denominator is negative, then $(\frac{dt}{dI})_{L,\{t_M^*,I_M^*\}} > 0$. For type-H we find

$$MRS_{H,\{t_M^*,I_M^*\}} = \frac{(1-t)[(a_H p_H^i + a_M p_M^i)y_{11} + y_{12}p_L^i]}{y_1}.$$

By the Euler theorem, the numerator is positive, then $(\frac{dt}{dI})_{H,\{t_M^*,I_M^*\}} > 0$ (see Proof of Lemma 2).

After simplification and rearrangements, we can show that

$$\begin{aligned} &MRS_{H,\{t_M^*,I_M^*\}} < MRS_{L,\{t_M^*,I_M^*\}} \iff \\ &y_1[(a_H p_H^i + a_M p_M^i)y_{21} + y_{22}p_L^i] < y_2[(a_H p_H^i + a_M p_M^i)y_{11} + p_L^i y_{12}], \end{aligned}$$

which is always true because the left hand side is negative and the right hand side is positive.

Consider now the case where (7) is strictly negative for all $0 \leq I \leq I^{MAX}$. Then, the problem of the type-M individual is constrained, and his optimal tax-immigrant pair is $(t_M^*(0), 0)$. Then, in $(t_M^*(0), 0)$

$$\frac{\partial T}{\partial I} < -(1-t)a_M[(a_H p_H^i + a_M p_M^i)y_{11} + p_L^i y_{12}].$$

Since in $(\frac{dt}{dI})_L$ decreases, and $(\frac{dt}{dI})_H$ increases in in $\frac{\partial T}{\partial I}$, we can write

$$MRS_{L,\{t_M^*,I_M^*\}} > \frac{(1-t)[(a_H p_H^i + a_M p_M^i)(y_{21} - a_M y_{11}) + p_L^i(y_{22} - a_M y_{12})]}{y_2 - a_M y_1},$$

and

$$MRS_{H,\{t_M^*,I_M^*\}} < \frac{(1-t)[(a_H p_H^i + a_M p_M^i)y_{11} + y_{12}p_L^i]}{y_1}.$$

Since $y_1[(a_H p_H^i + a_M p_M^i)y_{21} + y_{22}p_L^i] < y_2[(a_H p_H^i + a_M p_M^i)y_{11} + p_L^i y_{12}]$, then $(\frac{dt}{dI})_{H,\{t_M^*,I_M^*\}} < (\frac{dt}{dI})_{L,\{t_M^*,I_M^*\}}$.

Finally, consider the case where (7) is strictly positive for all $I \leq I^{MAX}$. Then, the problem of the type-M individual is constrained, and his optimal tax-immigrant pair is $(t_M^*(I^{MAX}), I^{MAX})$. Then, in $(t_M^*(I^{MAX}), I^{MAX})$

$$\frac{\partial T}{\partial I} > -(1-t)a_M[(a_H p_H^i + a_M p_M^i)y_{11} + p_L^i y_{12}].$$

Since in $(\frac{dt}{dI})_L$ decreases, and $(\frac{dt}{dI})_H$ increases in in $\frac{\partial T}{\partial I}$, we can write

$$MRS_{L,\{t_M^*,I_M^*\}} < \frac{(1-t)[(a_H p_H^i + a_M p_M^i)(y_{21} - a_M y_{11}) + p_L^i(y_{22} - a_M y_{12})]}{y_2 - a_M y_1},$$

and

$$MRS_{H,\{t_M^*,I_M^*\}} > \frac{(1-t)[(a_H p_H^i + a_M p_M^i)y_{11} + y_{12}p_L^i]}{y_1}.$$

Since $y_1[(a_H p_H^i + a_M p_M^i)y_{21} + y_{22}p_L^i] < y_2[(a_H p_H^i + a_M p_M^i)y_{11} + p_L^i y_{12}]$, it is not possible to rank the marginal rates of substitution of type-H and type-L individuals.

■