

The political economy of the welfare effect of immigration

Jerome Gonnor^a

^aToulouse School of Economics

This draft: December 10, 2017

Abstract

This paper develops a model to analyze the welfare effect of immigration on the outcome of a majority vote among natives on both the composition of public spending and the quota of unskilled immigration. Public spending can be of two types, spending on rival goods (social transfers) and non-rival goods (public goods). I provide a theoretical framework that is consistent with the perception of the welfare effect of immigration at the individual level, which posits that welfare-dependent natives are more averse to immigration, and with macro-level evidence that countries with more generous welfare policies exhibit less restrictive views on immigration, in line with the compensation hypothesis. In particular, I derive the following equilibrium conditions : I find that an equilibrium with positive immigration is possible under some conditions on the size of the unskilled native majority and the level of redistribution in the host country, when social transfers are high enough with respect to low-skill natives labour income. I also provide some empirical support for the predictions of the model in OECD countries.

JEL Classification: H41, H53, J61, D72

1 Introduction

In most developed countries, views on immigration are shaped by economic and non-economic factors, such as natives' concerns about cultural alienation, loss of national identity, threats to security, and economic consequences (Card et al., 2005, 2012; Mayda, 2006; Hainmueller and Hiscox, 2007, 2010; O'Rourke and Sinnott, 2006), yet individuals with low socio-economic status and income exhibit consistently more restrictive attitudes towards immigration (Scheve and Slaughter, 2006; Facchini and Mayda 2006; Dustman and Preston, 2007; Huber, 2016; Hatton, 2016), the recent literature has focused on two main economic channels to explain for this persistent bias amongst natives at the bottom of the job hierarchy : The *labour market* effect and the *welfare* effect.

The labour market effect suggests that immigration leads to more intensive labour market competition, which can adversely impact natives' wages and is commonly associated with immigrants stealing natives' jobs and creating unemployment. However, while empirical findings show that more educated, high-income individuals are indeed more willing to accept all kind of immigration (Facchini and Mayda 2009), numerous studies have contributed to undermine the claim that labour market competition shapes attitudes toward immigration. Analysis of individual data across several European countries indicates that economic hostility to immigration is driven by concerns about effects on public finances as much as and probably more than by effects on labour market outcomes (Dustmann and Preston, 2006, 2007, Hainmueller and Hiscox 2007, 2015, Boeri, 2010). Recent works also conclude that the labour market channel does not appear to have substantial effects on immigration preferences (Bauer 2013, Hainmueller and Hopkins (2014), Hainmueller et al. 2015) and find no evidence that unemployed people are more averse to immigration than others (Hatton 2016, Jaime-Castillo et al. 2016).

The welfare effect refers to natives' hostility to low-skilled immigration because of immigrants' pressure on public services, which can either increase taxes to maintain welfare assistance or reduce social benefits per capita. Although some empirical support exists for the first scenario - Mayda (2006, Hanson et al. (2007), and Facchini and Mayda (2009) find that high-skill natives are more likely to oppose further immigration in regions where welfare benefits are relatively generous -, other studies indicate that immigrants' fiscal contribution is perceived much more negatively by natives with low economic status, suggesting that fears of benefit-cutting may be more salient. Boeri (2010) shows that the poorest and the least educated individuals are those most concerned about the fiscal implications of immigration in Europe, while Hainmueller and Hiscox (2010) report that in US states with high fiscal exposure, natives with low incomes are most opposed to low-skilled immigrants, with this opposition decreasing in income. Moreover, evidence of a welfare effect of immigration exists at the macro level, where the level of social expenditures in a given country has been found to influence positively attitudes toward immigration amongst natives, both skilled and unskilled (Crepaz and Darmon (2008), Finseraas (2012), Ceobanu and Escandell (2010), Burgoon et al (2012), Artiles Meardi (2014), Jaime Castillo et al. (2016)). These findings suggest that a *compensation* mechanism plays out in these countries, by which higher welfare

transfers create less opposition to immigration as native workers fear competition with immigrants more when social benefits are scant.

Therefore, while fiscal concerns about the erosion of social transfers make welfare-entitled natives relatively more averse to immigration, a higher level of social protection seems to help mitigate those concerns. Another important dimension that the analysis of the fiscal effect of immigration must take into account is the nature of the public good under scrutiny. Indeed, the nature of the public good influences both the net fiscal effects of immigrants (Smith and Edmonston 1997; Wadensjö and Orre 2002) and individual attitudes towards immigration (Hanson and Scheve 2007, Kerr 2011, Preston 2014), which vary to the extent that public spending is both redistributive and non-rival (Hanson and Scheve 2007, Kerr 2011, Preston 2014). In OECD countries, while many studies have showed that the general contribution of immigrants to the public purse is positive, there is evidence that foreign-born households have a slightly higher social benefits take-up rate than native born households. The OECD 2013 International Migration Outlook Report concludes that immigrant households are on average twice as likely to receive social assistance, 1.3 times more likely to receive unemployment benefits, and 1.5 times more likely to receive housing allowance. Insofar as immigrants impose a small but significant fiscal cost on the native population in terms of social expenditures while contributing to the provision of less rival public services, there is ground for distinguishing between the type and nature of public services.

In this paper, I attempt to provide a theoretical framework and further empirical evidence for the welfare effect of immigration and the compensation hypothesis. I develop and test a micro-founded model where the tax rate is set exogenously and the fiscal burden of immigration takes the form of benefit-cutting rather than tax adjustment. My intuition is that when public finances are constrained and public opinion significantly opposed to increasing taxes, it is reasonable to assume that natives' redistributive preferences will materialize through the tax-expenditure policy that governs the allocation of public funds and not the amount of those public funds. Also, because what matters for voters is not only the total amount but the nature of public spending, I distinguish between two types of publicly financed goods and services: rival and non-rival, to which unskilled immigrants make respectively a negative and positive financial contribution. Immigrants pay taxes and are entitled to both types of public goods, hence their fiscal contribution - what they contribute in taxes VS their usage of public services - can be divided up as follows: For some public goods not subject to congestion effects, the skill differential between natives and immigrants is offset by the non-rival nature of these goods, hence immigrants make a positive contribution. However, their net contribution to the financing of social expenditures is always negative as social transfers (both in-kind and cash) are essentially rival. Fiscal policy then becomes a double-edged sword: When social expenditures are primarily financing non-rival goods, the potential fiscal contribution of immigrants to public spending is greater, at the expense of lower social transfers for poorer natives ex-ante. On the other hand, when the share of social expenditures increases, immigrants represent a greater financial cost and lower potential benefits ex-post.

Based on this rationale, I look at how redistribution and immigration preferences shape a political equi-

librium where natives vote over the tax-expenditure policy - the allocation of public funds between rival social transfers and non-rival public goods - and the immigration quota - the share of new low-skilled immigrants allowed into the host country-. I discuss under which conditions an equilibrium with positive immigration can exist, and how the tax rate in the economy influences the choice of the majority.

An interesting implication of my model is that it accounts for both the adverse welfare effect of social protection at the individual level and its positive impact on immigration attitudes at the macro-level in countries with more generous welfare policies. I find that while natives with a higher share of welfare benefits in private income may entertain more restrictive views on immigration, when the political process allows for the level of both social protection and unskilled immigration to be jointly determined, low-skill, welfare dependent natives may prefer a higher level of social expenditures along with greater immigration, in support of the compensation hypothesis. By allocating a higher share of public funds to social transfers, natives are left with greater private consumption and less public good per-capita, which alleviate the fiscal burden of immigration and make their contribution to the non-rival public goods more profitable. I find that an equilibrium with positive immigration requires the income tax and inequality level to be such that redistribution provides low-skill natives with sufficient high welfare transfers. Namely, it requires that the native unskilled majority is not too strong, and that the income tax and income inequalities between skilled and unskilled natives are high enough. Also, I find that a higher income tax ex-ante will yield an equilibrium featuring a higher level of social expenditures and immigration.

To test these predictions, I use data from seven rounds of the European Social Survey in which individuals express their attitudes towards low-skill immigration and report a large set of individual characteristics, as well as macro-data on social protection from the OECD database. I find results in line with the literature, showing that low-income individuals are indeed more averse to immigration, but also offer new evidence that the welfare effect is more salient amongst individuals who rely heavily on welfare benefits, independently of their income and education. At the macro-level, I provide somewhat robust evidence that natives from countries with a higher average level of social expenditures exhibit more positive views on low-skilled immigration.

This paper relates to the political economy literature on immigration and redistribution. A first strand of literature includes voting models where the outcome is decided as a function of the relative salience and the distribution of preferences for the redistribution and immigration issues (Alesina and Glaeser 2004, Roemer et al. 2004, 2006). Within the class of micro-founded models to which my paper belongs, some models choose not to endogenize immigration: Mayr (2007) examines the effect of immigrants on income redistribution via majority voting on the income tax. She finds that the tax equilibrium depend on the size of the native majority and whether or not immigrants are allowed to vote. Her predictions are closely related to our findings that the equilibrium outcome depends on the composition of the native economy, and in particular on the size of the unskilled majority. On the other hand, Razin et al. (2000) and Hanson (2003) both expect a retrenchment of the welfare state

when low-skill immigration increases, as the median voter expects to switch from a position where she benefits from redistribution to one where she loses after the arrival of immigrants. Amongst papers in which the immigration quota is endogenous, Ortega (2010) builds a dynamic model where agents vote over redistribution and immigration to analyze the sustainability of the welfare state, and shows that unskilled natives use the unskilled immigration quota as a political device to guarantee redistribution. Iturbe et al. (2016) have a model where voters decide over the level of unskilled immigration and the tax policy to finance a public good. They find that when the political weight of the rich is greater, the preferred policy platform of low and medium-skilled individuals are exacerbated in the form of greater immigration aversion and greater support for redistribution.

My paper contributes to this literature in two ways. First, it expands the political economy theory of immigration and redistribution by looking at a new type of equilibrium where agents do not choose the level of redistribution but the *design* of the redistributive policy by deciding how much of the tax proceeds is spent on rival social transfers. This new approach provides some theoretical support for the compensation hypothesis which, to the best of our knowledge, did not formerly exist. Second, I offer more precise estimation of the salience of the welfare effect at the individual level by showing that welfare-benefit dependence has a significant negative impact on attitudes immigration, controlling for individual income and education level.

The rest of the paper is organized as follows: Section 2 introduces the setting. Section 3 presents and discusses the model. Section 4 presents the empirical results and Section 5 concludes.

2 The economy

There is a mass 1 population of natives who differ in exogenous skill l (low) and h (high) in respective proportions λ_l and λ_h , such that $\lambda_l + \lambda_h = 1$ and $\lambda_l > \frac{1}{2}$ (the majority of the native population is unskilled). This native population votes over the quota of unskilled immigration $\lambda_l^m \geq 0$. We denote the post-immigration population as $P = 1 + \lambda_l^m$.

Individuals - both immigrants and natives - provide inelastically one unit of labor supply to a measure 1 of firms that produce a good with the linear production function:¹

$$Y = (\lambda_l + \lambda_l^i)y_l + \lambda_h y_h$$

The immigrant workforce therefore enters our production function as perfect substitute to the native workforce². High and low productivity workers differ in gross pre-tax income y_h and y_l , with $y_h > y_l$ set exogenously.

I assume that government revenue finances public expenditures according to a welfare programme taxing all wages at rate τ . A share $(1 - \mu)$ of the proceeds is spent on rival social transfers, while the remainder is spent on other public goods, which we represent here by a single perfect public good.³ In the remainder of the paper, we will refer to τ as the tax rate and μ as the tax-expenditure policy.

The government budget constraint simply writes:

$$G = \tau Y \tag{1}$$

I assume that immigrants and natives both pay taxes and are eligible for public transfers t and g ⁴.

The per-capita amount of private good is then $t = \frac{(1-\mu)G}{P}$ while the per-capita amount of non-rival public-good writes $g = \mu G$.

¹A linear production function abstracts from labour market effect of immigration. Including such effects is possible although not relevant here, and would be at the expense of tractability. Besides, as mentioned previously, empirical findings document generally small effects of immigration on natives wage (Dustmann 2014, Hanson 2002)

²Although some controversy exists in the literature, most studies conclude to very large elasticities (Card (2009), Ottaviano and Peri (2012), D'Amuri et al. (2010), and Manacorda et al. (2012)) or perfect substitutability (Aydemir and Borjas (2007) and Borjas et al. (2008, 2010), Borjas, Grogger, and Hanson (2012)) between immigrants and natives of the same skill category

³Included in this composite public good are traditional tasks of government such as quasi-pure public good - defence, maintenance of public order and safety, and the construction and maintenance of infrastructure - as well as other congestible goods that are hardly rival in consumption so that the marginal cost of providing them is smaller than their average, per-capita cost, such as fire protection, waste management and water supply, etc. . I include in this category all public goods to which newly arrived low-skilled immigration can contribute through their taxes. Conversely, I expect immigration to congest public goods and services in connection with the development of the welfare state, such as health, education, social services and social benefits, financed through consumption and transfers which fall mostly under the category of individual rival goods, such as unemployment and sickness benefits, pensions, etc., both in cash and in-kind

⁴We could assume heterogeneous fiscal entitlement but this would not serve the purpose of the model and make analytical resolution unnecessarily complicated

We assume a benefit-adjustment mechanism, where immigration impact the level of per-capita public and private goods t and g while the tax rate τ remains constant. Using previous definitions, we obtain the following effect of immigration on public transfers:

$$\begin{cases} \frac{dt}{d\lambda_l^m} = \frac{(1-\mu)\tau}{1+\lambda_l^m} [y_l - \bar{y}] \leq 0 \\ \frac{dg}{d\lambda_l^m} = \mu\tau y_l \geq 0 \end{cases} \quad (2)$$

where $\bar{y} = \frac{Y}{P}$ is the average income in the post-immigration population.

Because immigration always has a positive impact on the host economy's output, i.e. $\frac{dY}{d\lambda_l^m} = y_l > 0$, the arrival of unskilled immigrants increases the level of per-capita public good⁵. At the same time, because those immigrants are unskilled, it comes immediately that $y_l < \bar{y}$, which implies that immigration decreases the per-capita private transfer t .

Therefore, immigrants' s net contribution to social transfers is negative while their net contribution to the public good is positive for any immigration quota λ_l^m .

Finally, we let c_i denote individuals' private consumption such that $c_i = (1 - \tau)y_i + t$, and assume that individuals have a Cobb-Douglas utility function U of the form $U(c, g) = c^a g^{1-a}$, with $\frac{1}{2} < a < 1$.

⁵Results remain qualitatively unchanged if we consider a somewhat congested public good, as long as congestion is low enough so that the fiscal effect of immigration on the public good remains positive, i.e. $\frac{dg}{d\lambda_l^m} > 0$

3 The Model

In the following analysis, we first derive a preliminary result on the welfare effect of immigration, showing that natives' fiscal concerns over low-skilled immigration are not only driven by individual income in absolute terms but also in relation to how much social benefits they receive. Next, we solve a political equilibrium where natives vote over the immigration policy λ_l^m and the tax-expenditure policy μ when the tax rate τ is set exogenously, and explore how this equilibrium responds to a variation in the tax rate.

3.1. A preliminary result

The individual utility function gives us that the preferred immigration quota is defined implicitly as the solution to the following FOC:

$$\frac{dg}{dc_i} \frac{dt}{d\lambda_l^m} + \frac{dg}{d\lambda_l^m} = 0 \quad (3)$$

where $\frac{dg}{dc_i} = \frac{a}{1-a} \frac{g}{c_i}$ is the marginal rate of substitution between private consumption and public good. Notice that the fiscal cost of immigration on social transfer $\frac{dt}{d\lambda_l^m}$ has weight $\frac{dg}{dc}$. Because unskilled natives are less willing than skilled natives to give away private consumption in exchange for public goods ($\frac{dg}{dc_l} > \frac{dg}{dc_h}$), the fiscal cost of immigration is relatively larger to them.

Transforming equation (3) yields the following implicit expression for the optimal immigration quota $\lambda_l^{m*} \geq 0$:

$$\frac{a}{1-a} h_i(\lambda_l^m) [y_l - \bar{y}] + y_l = 0 \quad (4)$$

where $h_i = \frac{t}{c_i}$ is the share of private transfers t in native i 's private consumption.

Proposition 1: *The preferred immigration quota λ_l^{m*} decreases with the share of welfare benefits in private consumption. Skilled natives prefer a higher unskilled immigration quota than unskilled natives.*

Observe that h_i increases with the demogrant t and decreases with labour income y_i . Because we assume in the model that the demogrant t is universal and high-skill natives earn a higher pre-tax income than low-skill natives, it comes immediately that the share of welfare transfers in skilled natives' private consumption is lower than that of unskilled natives. High-skill natives are less dependent on welfare benefits and thus less exposed to the fiscal cost of immigration. Therefore, the preferred immigration quota of high-skill natives is greater than the immigration quota preferred by low-skill natives⁶.

⁶This result remains qualitatively unchanged if we consider means-tested benefit where only unskilled natives receive the transfer t or if we do not restrict our utility function to be a Cobb-Douglas

3.2. Political equilibrium

In the political equilibrium, natives choose policy vector (μ, λ_l^m) simultaneously through majority voting. Because the majority of the native population is unskilled, the political outcome will be the policy vector preferred by unskilled natives with income y_l . In what follows, we refer to unskilled natives policy preference as μ^* and λ_l^{m*} .

Rewriting natives' utility function as a function of policy variables μ and λ_l^m , we obtain:

$$V_i(\mu, \lambda_l^m) = [(1 - \tau)y_i + \tau(1 - \mu)\bar{y}(\lambda_l^m)]^a [\tau\mu Y(\lambda_l^m)]^{1-a} \quad (5)$$

Therefore, maximizing equation (5) with respect to μ , we obtain unskilled natives' preferred tax-expenditure policy μ^* as:

$$\mu^* = (1 - a) \left[\frac{1 - \tau}{\tau} \gamma_l(\lambda_l^m) + 1 \right] \quad (6)$$

where $\gamma_l(\lambda_l^m) = \frac{y_i}{\bar{y}(\lambda_l^m)}$ measures the ratio between the income of unskilled natives over the average income in the post-immigration population. First, notice that natives always prefer a strictly positive level of spending on public goods because the marginal benefit of both goods goes to $+\infty$ when their per-capita level goes to 0. Therefore, μ^* is always strictly positive because only public provision of the public good is allowed in the model. Also, equation (6) tells us that the preferred tax-expenditure policy μ is increasing with immigration⁷. When the economy hosts a greater share of unskilled immigrants, natives prefer to put more weight on public good transfers for the following reasons: First, the demogrant t decreases with immigration, which makes it less profitable to redistribute tax proceeds in the form of private transfers. Second, because immigrants make a positive contribution to the public good, a higher immigration quota incentivize natives to devote a greater share of public spending on the public good in order to make the most out of immigrants' contribution. Therefore, natives prefer to trade ex-ante protection against the adverse effect of immigration for ex-post benefits from immigration by choosing a higher value of μ when unskilled immigration increases.

Likewise, maximizing equation (5) with respect to λ_l^m , the preferred immigration quota λ_l^{m*} of unskilled natives is defined implicitly as:

$$\mu = (1 - a) \left[\frac{1 - \tau}{\tau} \frac{\gamma_l(\lambda_l^{m*})}{1 - \frac{a}{\gamma_l(\lambda_l^{m*})}} \right] + 1 \quad (7)$$

Equation (7) tells us that the preferred immigration quota is decreasing with the share of public good in the tax-expenditure policy μ^* . When a greater share of public spending is spent on public good

⁷Because the average wage in the post-immigration population is decreasing with immigration ($\frac{d\bar{y}}{d\lambda_l^m} \leq 0$), we have that $\frac{d\gamma_l}{d\lambda_l^m} \geq 0$ and therefore, $\frac{d\mu}{d\lambda_l^m} \geq 0$

⁸Differentiating (7), we obtain that $\frac{d\lambda_l^{m*}}{d\mu} = \frac{\tau}{(1-a)(1-\tau)} \frac{\gamma_l}{\frac{d\gamma_l}{d\lambda_l^{m*}}(\gamma_l - 2a)}$, which is unambiguously negative since $\frac{d\gamma_l}{d\lambda_l^{m*}} > 0$, $a > \frac{1}{2}$ and by construction, $\gamma_l \leq 1$

transfers, immigration becomes less profitable for two reasons. First, natives obtain a higher per-capita transfer in public good, which decreases its marginal utility. Because immigrants contribute positively to the provision of public good, their fiscal contribution to natives' welfare is lower. At the same time, a smaller share of social transfers increases the marginal utility of private consumption. Since immigrants impose a fiscal cost on those transfers, natives become more hostile to their arrival. Therefore, when a higher share of tax proceeds finances the public good, the ex-ante loss in private consumption trumps the additional benefit ex-post that natives derive from immigration.

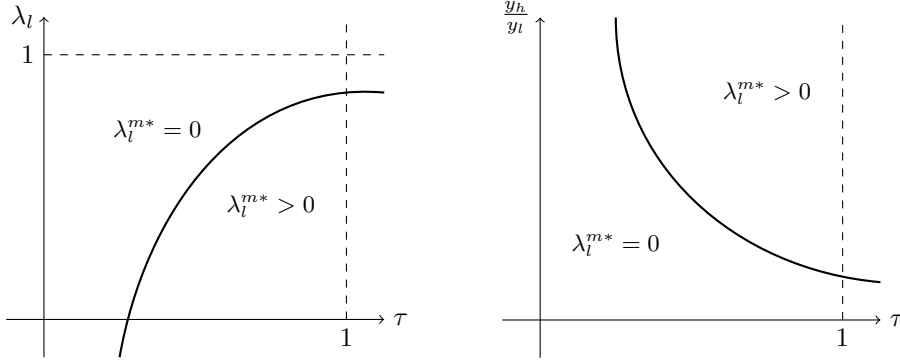
We define a political equilibrium as the vector $(\mu^*, \lambda_l^{m*}, \tau, \lambda_l, y_h, y_l)$ such that (μ^*, λ_l^{m*}) is the choice of the median voter given $\tau \in [0, 1]$ and λ_l, y_h , and y_l .

Proposition 3.1: *The equilibrium share of public spending on public goods μ^* is always strictly positive and such that $\mu^* \in [1 - a, 1]$. Moreover, there exists a political equilibrium featuring a strictly positive level of immigration ($\lambda_l^{m*} > 0$) if $\delta(\tau) > \gamma_l^0$, where $\delta(\tau) = \frac{\tau}{\frac{1-a}{a} + \tau}$ and $\gamma_l^0 = \gamma_l(0) = \frac{1}{\lambda_l + (1-\lambda_l)\frac{y_h}{y_l}}$.*

While the first part of the proposition is trivial, the existence of a political equilibrium with positive immigration is less intuitive. First, notice that γ_l^0 is the ratio of the low-skill wage over the average wage in the pre-immigration population. It increases with the share of low-skill natives (λ_l) and decreases with pre-tax income inequalities ($\frac{y_h}{y_l}$), while $\delta(\tau)$ is an increasing function of τ . Therefore, a political outcome with immigration is more likely when the tax rate and the share of low-skill natives pre-tax income inequalities increase, and when the share of low-skill natives decreases. Put differently, this means that unskilled natives are more likely to let immigrants enter the country when the per-capita social transfer t (which is an increasing function of τ and y_h and decreases with λ_l) is large enough with respect to their labour income y_l . As the ratio between the private transfer and the unskilled wage goes up, the marginal value of spending more public money on private transfers (a higher μ) increases because an increase in the share of tax proceeds allocated to those transfers will provide greater protection against the fiscal cost of immigration, ceteris paribus. Therefore, when the exogenous parameters of the model τ, λ_l, y_h , and y_l satisfy the condition stated in Proposition 3.1, unskilled natives are willing accept some immigration ($\lambda_l^{m*} > 0$) in exchange for greater social transfers (see Figure 1 below).

Note that this observation is somewhat at odds with the result of section 3.1, where we found that immigration aversion increased with the share of social benefits in individual private consumption. This is because when natives are not offered the chance to adjust the level of social transfers by voting over μ , the compensation mechanism we have just described cannot play out and the burden of immigration is determined for a given fiscal policy by the share of welfare benefits in private consumption.

Figure 1: *Equilibrium with and without immigration*



Using (6) and (7), we obtain the following proposition:

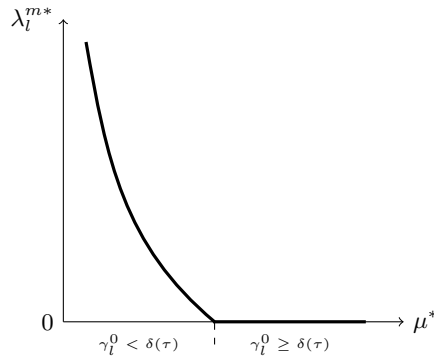
Proposition 3.2: *A political equilibrium $(\mu^*, \lambda_l^{m*}, \tau, \gamma)$ is such that*

$$(\mu^*, \lambda_l^{m*}) = \begin{cases} \left((1-a) \left[\frac{1-\tau}{\tau} \gamma_l^0 + 1 \right], 0 \right) & \text{if } \gamma_l^0 \geq \delta(\tau) \\ \left(\frac{1}{1+\frac{a}{1-a}\tau}, \frac{a}{1-a}\tau \left[\frac{1}{\gamma_l^0} - 1 \right] - 1 \right) & \text{if } \gamma_l^0 < \delta(\tau) \end{cases} \quad (8)$$

We therefore identify two types of political equilibria:

- A *corner* equilibrium with no immigration ($\lambda_l^{m*} = 0$)⁹
- An *interior* equilibrium with strictly positive immigration ($\lambda_l^{m*} > 0$)

Figure 2: *Equilibrium path*



When $\gamma_l^0 < \frac{\tau}{\frac{1-a}{a} + \tau}$, unskilled natives choose a positive immigration quota λ_l^{m*} . The benefit from increasing the share of social transfers in the tax-expenditure policy is sufficiently large so that low-skill natives let some immigrants enter the country and contribute to the provision of public good while increasing the per-capita transfer t to insulate them from the fiscal cost of those immigrants. Therefore,

⁹We refer here somewhat abusively to a corner equilibrium because the immigration policy is always equal to zero. However, this equilibrium does not fully correspond to the definition of a corner equilibrium as the tax-expenditure policy still varies with the exogenous parameters of the model

the interior equilibrium outcome is such that the immigration quota is positive ($\lambda_l^{m*} > 0$) and the tax-expenditure policy μ^* allocates a greater share of public funds to the provision of private transfers than in the corner equilibrium without immigration¹⁰. Figure 2. graphs the equilibrium path of the political outcome in the diagram (μ, λ_l^m) for given exogenous parameters of the model τ and γ_l^0 .

Turning to comparative statics, the preferred tax-expenditure policy μ^* and the immigration quota λ_l^{m*} respectively decreases and goes up with the tax rate τ , indicating that when public spending increases, low-skilled natives prefer greater social transfers and more immigration.

When there is no immigration ($\lambda_l^{m*} = 0$), the expression of μ^* is independent from the immigration quota. A marginal increase in the tax rate does not affect the equilibrium value of immigration, hence its effect on the equilibrium tax-expenditure policy is only channeled through natives' relative preferences for the public and private good. Therefore, an increase in the tax rate will increase the share of social expenditures in public spending ($d\mu^* < 0$) as long as low-skill natives prefers marginally to allocate an extra unit of public money to the provision of social transfers rather than the provision of public good. On the other hand, when the political outcome features some immigration ($\lambda_l^{m*} > 0$), the intuition is as follows: *Ceteris paribus*, a higher tax rate makes an increase in the share of social expenditures in public spending more profitable for unskilled natives and provides higher protection against the fiscal cost of immigration. Therefore, the trade-off whereby low-skill natives let immigrants contribute to the public good and get compensated in the form of social transfers is reinforced, leading to a political outcome with a lower μ and a higher λ_l^m . In Figure 2, an increase in the tax rate shifts the equilibrium outcome to the left along the equilibrium path.

Proposition 3.3: *In equilibrium, a higher tax rate τ is associated with a strictly greater share of social expenditures in public spending and a weakly higher immigration quota: $\frac{d\mu^*}{d\tau} < 0$ and $\frac{d\lambda_l^{m*}}{d\tau} \geq 0$*

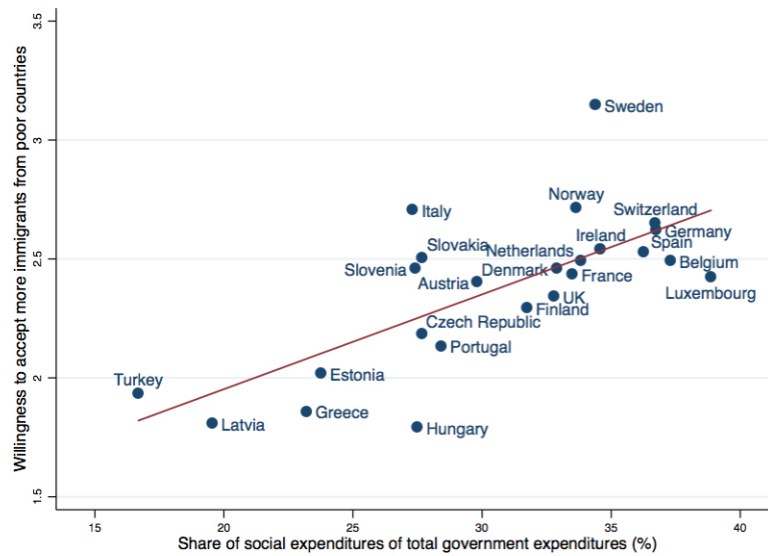
The model therefore predicts a monotonic relationship between immigration preferences and social expenditures. Although the present version of the paper does not contain any conclusive empirical evidence of this prediction, our result fits the data rather well (see Figure 3.a) and is in line with previous findings based upon cross-sectional comparison of countries that social expenditures and attitudes toward immigration are positively correlated.

¹⁰One can check trivially that $(1 - a) \left[\frac{1-\tau}{\tau} \gamma_l(0) + 1 \right] > \frac{1}{1 + \frac{a}{1-a}\tau}$ when $\gamma_l^0 \geq \delta(\tau)$

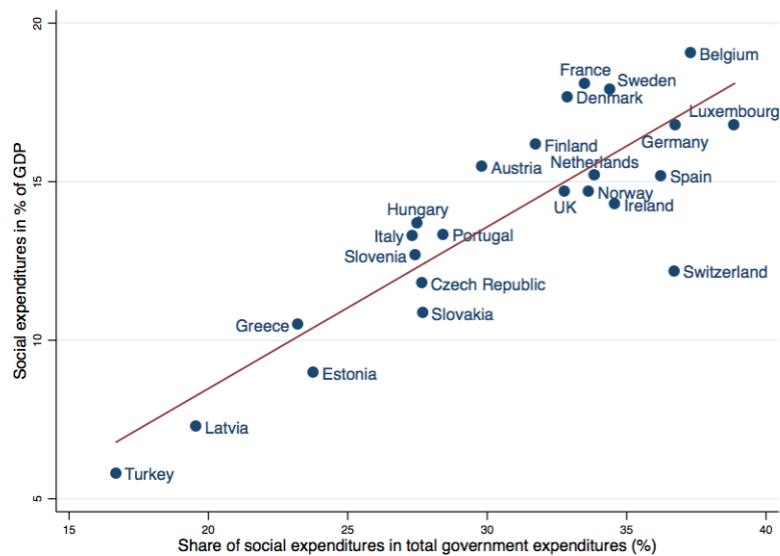
Proposition 3.3 also delivers an auxiliary prediction on the relation between τ and μ , suggesting that countries with a higher level of public spending (a greater τ in our model) should spend a greater share of their public funds on the provision of social transfer (a lower value of μ in equilibrium). This prediction fits quite strongly the general pattern observed for OECD countries¹¹ (see Figure 3.b).

Figure 3:

(a)



(b)



¹¹Source: OECD database. All figures are country level averages for the period 2002-2012

4 Empirical results

4.1 Testable hypotheses

Building on the preliminary result of section 3.1 that natives' preferences towards low-skill immigration will be negatively correlated with the share of welfare benefits in personal income, we test the welfare effect hypothesis in an original way. To the best of our knowledge, existing studies - to the exception of Huber 2016 - focus on the impact of variables such as income, education, socio-economic status or labour market position to establish the salience of the welfare effect of immigration, therefore using proxy rather than direct welfare measures. This approach bears the risk of capturing only imperfectly the actual effect of social expenditure on immigration attitudes. In what follows, we try to identify the impact of the welfare effect in a more direct way by looking at the impact of welfare benefits entitlement on attitudes towards immigration beside the traditional socio-economic variables found in the literature.

H1 *Welfare-dependent, low-income individuals have more restrictive views on immigration*

Our second empirical investigation examines the validity of the compensation hypothesis, which assumes that higher level of social expenditures make low-income natives less sensitive to the adverse fiscal effect of immigration in the long-run. We expect that individuals living in countries that spend more on social protection exhibit more positive views on immigration as a result of the compensation mechanism outlined in our theoretical model.

H2 *On average, countries with a higher level of social expenditures and a greater share of social expenditures in public spending have more positive views toward immigrants*

4.2 Data and methods

I use data extracted from seven rounds of the European Social Survey database (2002-2014). The dataset covers a total of 26 countries ¹².

There are several questions asked about immigrations in the survey, but I focus on the one that best captures the degree of aversion towards further immigration based on economic considerations, and most importantly towards low-skilled immigration, without priming the racial issue. This variable is *impcntr*. It measures the answer of natives to the question: *To what extent (country) should allow people from the poorer countries outside Europe to come and live here?* The four possible answers are: allow many to come and live here (1), allow some (2), allow a few (3), or allow none (4). I relabel the variable as *pro-imm* and rescale it so that "allow none" corresponds to lower score on the scale (1) and "allow

¹²- namely Austria, Belgium, Cyprus, Switzerland, Czech Republic, Denmark, Greece, Germany, Estonia, Spain, Finland, France, United Kingdom, Hungary, Ireland, Italy, Latvia, Luxembourg, Russia, Netherlands, Norway, Portugal, Slovakia, Slovenia, Sweden, and Turkey. This list may vary across years due to inconsistency in the data. Some countries were not surveyed on every round

many” to the highest score” (4).

Because I want to test for the relationship between natives’ attitudes towards immigration and their economic status, I construct new variables that capture the education and income level of natives but also their *welfare* status, i.e how much individual rely on welfare benefits. Using the International Standard Classification of Education (ISCED), I build dummy variable *lowed* for education levels coded as ”less than lower secondary education” or ”lower secondary education completed”, variable *meded* for ”upper secondary education completed” or ”post-secondary non-tertiary education”, and *highed* for ”tertiary education completed”. Next, I use data on household income to capture individual economic situation. The variable *hincfel* captures how respondents feel about household income. Possible answers are: living comfortably on present income (1); coping on present income (2); difficult on present income (3); or very difficult on present income (4). I construct a dummy variable *lowinc* that takes value 1 if *hincfel* is equal to 3 or 4, and zero otherwise. Finally, I build the variable *welfare_dep* to test whether welfare dependence influences immigration preferences. I use survey variable *hincsrca*, which captures natives’ main source of income among the following options: Wages or salaries (1), Income from self-employment (excluding farming) (2), Income from farming(3), Pensions (4), Unemployment/redundancy benefit (5), Any other social benefits or grants (6), Income from investments (7), savings etc., and Income from other sources (8). The dummy variable *welfare_dep* takes value 1 when *hincsrca* is equal to 4, 5, or 6, i.e when the household’s main source of income is composed of social benefits.

To test for the effect of macro variables, I use social expenditures net of spending on pensions. Our measure of social expenditure does not include spending on public pensions for two main reasons: First, spending on public pensions depends on the demographic structure of each country. Second, in most countries, public pensions depend mostly on previous contributions during working life. Therefore, only immigrants who contribute to the system are eligible to get pensions, whereas our dependent variable *pro_imm* captures attitudes toward the arrival of new immigrants.

I use data on social expenditures as % of GDP (*soc_exp*) and total government expenditures in % of GDP to create the variable *share_socexp*, which captures the share of social expenditures in total government spending ¹³. I compute *share_socexp* as

$$\frac{\text{Social expenditures as \% of GDP}}{\text{Total government expenditures as \% of GDP}} \times 100$$

Beside our variables of interest, the set of regressors also includes the age of respondents¹⁴ and several dummy variables to control for whether the respondent is a man, if she is born abroad, if she lives in a rural area, if she is religious. I also control for labour force participation through dummy variable

¹³Source: All macro data are extracted from the OECD database. Social expenditures are net public social expenditures including social benefits and social transfers in kind (series D62.D63PS13S)

¹⁴I drop all observations for respondents under the age of 18

pdwrk, which tells whether or not the respondent has done paid work in the last 7 days, and respondents' ideology (self declared placement on the left-right scale, from 0 - left - to 10 -right-). For macro-level regressions, I include the harmonised unemployment rate and the percentage of foreign population as country-year control variables. Finally, all regressions are run with country and year dummies to control for fixed effects. A summary table of variables can be found in Table 2.

Because of the structure of the dependent variable, I use a pooled logit regression :

$$Y_{ijt} = \alpha X_{ijt} + \beta Z_{jt} + d_t + c_j + \varepsilon_{ijt} \quad (9)$$

Y_{ijt} is the score of the dependent variable where i corresponds to the individual, j to the country, and t to the year. X_{ijt} is a set of individual characteristics and Z_{jt} a set of country-level variables. d_t is a set of year dummies and c_j controls for country fixed effects. Finally, ε_{ijt} is an idiosyncratic error term.

4.3 Results

The coefficients in Table 2 show that individual characteristics play out as expected. Older male living in rural areas are more averse to immigration. A higher self-declared placement on the left-right ideological scale is also associated with more negative immigration opinions. On the other hand, respondents born in a foreign-country views migrants more positively, and education is increasingly positively correlated with better attitudes towards low-skilled immigration. Because a lower income and a greater share of social benefits in private consumption put individuals at risk of losing a significant part of their financial resources as a consequence of fiscal leakage, we thus expect that people with lower income and a higher share of social benefits will exhibit consistently greater anti-immigration sentiment than the rest of the population. Column 1 of Table 2 shows indeed that being welfare dependent leads to entertaining more restrictive immigration views. This effect is statistically significant and the coefficient associated with the welfare dependence variable remains significant and negative (although it loses half its magnitude) when controlling for low-income and labour force participation.

Therefore, our results corroborate the prediction of the model that individuals with high welfare dependence are more averse to immigration. To test the robustness of this, I use an alternative measure for individual attitudes toward immigration. Instead of the variable *impcntr*, I use the variable *imsmetn* as dependent variable, which captures the respondents' answer to the question "To what extent (country) should allow people of same race/ethnic group as the majority to come and live here?". When using this specification, the coefficients of interest do not lose any statistical significance and turn out to be of even greater magnitude (the coefficient for welfare-dependence decreases from -0.07 in the baseline specification to -0.12).

To explore the validity of my second hypothesis, I estimate equation (12) by looking at the effect of the average social expenditures in each country using both *soc_exp* and *share_soc_exp*, controlling for

country-year unemployment and the stock of foreign born population. For each variable, I look at the average social expenditure for a given country along the period under analysis to parse out the effect of cross-country variations on attitudes toward immigration, rather than capturing the aggregate - both within and between country - effect of social expenditures. Because our two measures of social expenditures are strongly correlated¹⁵, I do not include them in the same regression. I report in Table 3 the coefficients of all macro variables, omitting individual characteristics and country and year dummies.

Table 3 yields estimates in line with previous studies based upon cross-sectional comparison of countries (Artiles and Meardi 2014; Ceobanu and Escandell 2010; Mau and Burkhardt 2009; Jaime-Castillo et al. 2016). As expected, the mean value of social expenditures in % of GDP and the share of social expenditures in public spending social expenditure have a significant, positive effect on individual attitudes towards immigration. These coefficients carry over to column (3) and (4), which controls for the unemployment rate, without losing much of their magnitude. However, the coefficients reported in column (5) and (6) indicate that both variables fail to have any positive significant effect on immigration attitudes when controlling for the percentage of foreign-born population. Therefore, while it seems that higher average level of social expenditures are associated with more positive views on low-skilled immigration, controlling for the share of foreign-born population nullifies our result¹⁶. I plan to address this issue and develop a better estimation procedure in the near future. In particular, I expect to be able to replicate the results of Jaime-Castillo et al. (2016), who conclude to a statistically significant effect of social expenditures on attitudes toward immigration using a dataset very close to mine.

¹⁵see Figure 3.a

¹⁶This could be related to the fact that multilevel estimation often suffers from the lack of a sufficiently large number of countries in order to properly estimate country effects in the long-run. This issue, which is often overlooked in the literature, is pointed out by Bryan and Jenkins (2013)

5 Conclusion

This paper considers the effect of redistribution (a lump-sum benefit and a pure public good) on immigration preferences via majority voting, when both the tax-expenditure policy (the share of public money allocated to the provision of the private benefit and the public good) and the immigration quota are endogenous. There are two types of workers, skilled and unskilled, amongst natives, while immigration is restricted to unskilled workers who make a respectively negative and positive contribution to the provision of private transfers and public goods. Because unskilled natives' private consumption depends to a larger extent on welfare benefits, the fiscal cost of immigration is greater for them and they are hence more averse to immigration than skilled natives. However, if the private transfer is large enough with respect to the unskilled pre-tax labour income, unskilled natives can benefit from allowing some immigrants enter the country and contribute to the provision of the public good while increasing the share of public funds allocated to the private transfer, thereby ensuring some compensation against the adverse fiscal impact of immigrants. In line with the compensation hypothesis, I find that this trade-off has more grip in countries where public spending and social expenditures are higher. Finally, I extend the results of the empirical literature by providing new evidence for the welfare effect of immigration at the individual level.

References

- [1] Alesina, Alberto and Glaeser, Edward Ludwig. *Fighting poverty in the US and Europe: A world of difference*. Oxford University Press, 2004.
- [2] Artiles, Antonio Martín and Meardi, Guglielmo. “Public opinion, immigration and welfare in the context of uncertainty”. In: *Transfer: European review of labour and research* 20.1 (2014), pp. 53–68.
- [3] Bauer, Thomas K, Flake, Regina, and Sinning, Mathias G. “Labor market effects of immigration: evidence from neighborhood data”. In: *Review of International Economics* 21.2 (2013), pp. 370–385.
- [4] Boeri, Tito. “Immigration to the Land of Redistribution”. In: *Economica* 77.308 (2010), pp. 651–687.
- [5] Burgoon, Brian, Koster, Ferry, and Van Egmond, Marcel. “Support for redistribution and the paradox of immigration”. In: *Journal of European Social Policy* 22.3 (2012), pp. 288–304.
- [6] Card, David, Dustmann, Christian, and Preston, Ian. “Immigration, wages, and compositional amenities”. In: *Journal of the European Economic Association* 10.1 (2012), pp. 78–119.
- [7] Card, David, Dustmann, Christian, and Preston, Ian. “Understanding attitudes to immigration: The migration and minority module of the first European Social Survey”. In: (2005).
- [8] Ceobanu, Alin M and Escandell, Xavier. “Comparative analyses of public attitudes toward immigrants and immigration using multinational survey data: A review of theories and research”. In: *Annual review of sociology* 36 (2010), pp. 309–328.
- [9] Crepaz, Markus ML and Damron, Regan. “Constructing tolerance: How the welfare state shapes attitudes about immigrants”. In: *Comparative Political Studies* (2008).
- [10] Dustmann, Christian and Frattini, Tommaso. “The fiscal effects of immigration to the UK”. In: *The economic journal* 124.580 (2014).
- [11] Dustmann, Christian and Preston, Ian P. “Racial and economic factors in attitudes to immigration”. In: *The BE Journal of Economic Analysis & Policy* 7.1 (2007).
- [12] Facchini, Giovanni and Mayda, Anna Maria. “Does the welfare state affect individual attitudes toward immigrants? Evidence across countries”. In: *The review of economics and statistics* 91.2 (2009), pp. 295–314.
- [13] Facchini, Giovanni, Mayda, Anna Maria, and Puglisi, Riccardo. “5 Individual Attitudes towards Immigration”. In: *Immigration and Public Opinion in Liberal Democracies* 52 (2013), p. 129.
- [14] Finseraas, Henning. “Anti-immigration attitudes, support for redistribution and party choice in Europe”. In: *Changing Social Equality. The Nordic Welfare Model in the 21st Century* (2012), pp. 23–44.

- [15] Hainmueller, Jens and Hiscox, Michael J. “Attitudes toward highly skilled and low-skilled immigration: Evidence from a survey experiment”. In: *American Political Science Review* 104.01 (2010), pp. 61–84.
- [16] Hainmueller, Jens and Hiscox, Michael J. “Educated preferences: Explaining attitudes toward immigration in Europe”. In: *International Organization* 61.02 (2007), pp. 399–442.
- [17] Hainmueller, Jens, Hiscox, Michael J, and Margalit, Yotam. “Do concerns about labor market competition shape attitudes toward immigration? New evidence”. In: *Journal of International Economics* 97.1 (2015), pp. 193–207.
- [18] Hainmueller, Jens and Hopkins, Daniel J. “Public attitudes toward immigration”. In: *Annual Review of Political Science* 17 (2014).
- [19] Hanson, Gordon H, Scheve, Kenneth, and Slaughter, Matthew J. “Public finance and individual preferences over globalization strategies”. In: *Economics & Politics* 19.1 (2007), pp. 1–33.
- [20] Hatton, Timothy J. “Immigration, public opinion and the recession in Europe”. In: *Economic Policy* 31.86 (2016), pp. 205–246.
- [21] Huber, Peter and Oberdabernig, Doris A. “The impact of welfare benefits on natives’ and immigrants’ attitudes toward immigration”. In: *European Journal of Political Economy* (2016).
- [22] Iturbe-Ormaetxe, Iñigo and Romero, J Gabriel. “Financing public goods and attitudes toward immigration”. In: *European Journal of Political Economy* 44 (2016), pp. 159–178.
- [23] Jaime-Castillo, Antonio M, Marqués-Perales, Ildefonso, and Álvarez-Gálvez, Javier. “The Impact of Social Expenditure on Attitudes Towards Immigration in Europe”. In: *Social Indicators Research* 126.3 (2016), pp. 1089–1108.
- [24] Kerr, Sari Pekkala and Kerr, William R. *Economic impacts of immigration: A survey*. Tech. rep. National Bureau of Economic Research, 2011.
- [25] Mayda, Anna Maria and Facchini, Giovanni. “Individual attitudes towards immigrants: Welfare-state determinants across countries”. In: (2006).
- [26] Mayr, Karin. “Immigration and income redistribution: a political economy analysis”. In: *Public Choice* 131.1-2 (2007), pp. 101–116.
- [27] O’rourke, Kevin H and Sinnott, Richard. “The determinants of individual attitudes towards immigration”. In: *European journal of political economy* 22.4 (2006), pp. 838–861.
- [28] Ortega, Francesc. “Immigration, citizenship, and the size of government”. In: *The BE Journal of Economic Analysis & Policy* 10.1 (2010).
- [29] Preston, Ian. “The effect of immigration on public finances”. In: *The Economic Journal* 124.580 (2014).
- [30] Razin, Assaf and Sadka, Efraim. “Unskilled migration: a burden or a boon for the welfare state?” In: *The Scandinavian Journal of Economics* 102.3 (2000), pp. 463–479.

- [31] Roemer, John E, Lee, Woojin, and Straeten, Karine Van der. *Racism, xenophobia, and distribution: Multi-issue politics in advanced democracies*. Harvard University Press, 2007.
- [32] Ruhs, Martin. “Is Unrestricted Immigration Compatible with Inclusive Welfare States? The (Un) Sustainability of EU Exceptionalism”. In: *The (Un) Sustainability of EU Exceptionalism (June 24, 2015)* (2015).
- [33] Scheve, Kenneth F and Slaughter, Matthew J. “Labor market competition and individual preferences over immigration policy”. In: *Review of Economics and Statistics* 83.1 (2001), pp. 133–145.
- [34] Sides, John and Citrin, Jack. “European opinion about immigration: The role of identities, interests and information”. In: *British journal of political science* 37.03 (2007), pp. 477–504.
- [35] Smith, James P and Edmonston, Barry. “The New Americans”. In: *Washington, DC: National Academy* (1997).
- [36] Tingley, Dustin. “Public finance and immigration preferences: A lost connection?” In: *Polity* 45.1 (2012), pp. 4–33.
- [37] Wadensjö, Eskil and Orrje, Helena. *Immigration and the public sector in Denmark*. Aarhus Universitetsforlag, 2002.

Tables

Table 1: Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.
Pro-immigration from poorer European countries	2.37	0.91	1	4
Age	47.76	17.69	18	123
Middle education	0.33	0.47	0	1
High education	0.16	0.36	0	1
Born out of country	0.1	0.3	0	1
Male	0.47	0.5	0	1
Live in rural area	0.67	0.47	0	1
Religious	0.6	0.49	0	1
Placement on left right scale	5.14	2.19	0	10
Welare dependent	0.29	0.46	0	1
Low income	0.25	0.43	0	1
Doing last 7 days: paid work	0.55	0.5	0	1
Mean social expenditures (% of GDP)	14.47	2.84	5.8	19.05
Mean share of soc exp. in public exp.	31.69	4.63	16.68	38.86
Unemployment rate (in %)	8.08	3.68	2.55	24.79
Foreign population (in %)	11.9	6.35	2.9	35.01

Table 2: The welfare effect

	Pro_imm		
	(1)	(2)	(3)
Age	-0.014*** (-10.91)	-0.013*** (-8.84)	-0.014*** (-9.68)
Middle education	-0.031 (-0.53)	0.040 (0.77)	0.023 (0.44)
High education	0.457*** (7.50)	0.528*** (9.10)	0.483*** (8.66)
Born out of country	0.351*** (5.17)	0.297*** (4.57)	0.335*** (5.11)
Male	-0.052 (-1.79)	-0.029 (-1.02)	-0.042 (-1.44)
Live in rural area	-0.163*** (-8.26)	-0.174*** (-9.17)	-0.170*** (-9.04)
Religious	-0.042 (-0.99)	-0.027 (-0.71)	-0.030 (-0.80)
Placement on left right scale	-0.112*** (-6.02)	-0.111*** (-5.64)	-0.114*** (-5.90)
Low income	-0.333*** (-11.66)		-0.341*** (-10.93)
Doing paid work last 7 days	0.063** (3.26)		0.038* (2.31)
Welfare dependent		-0.152*** (-5.08)	-0.070** (-2.69)
Observations	231022	198551	195808

Ordered logit regressions; country and year dummies included; design weights used
 t statistics in parentheses are computed from standard errors clustered by country

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3: Social expenditures and immigration attitudes

	Pro_imm					
	(1)	(2)	(3)	(4)	(5)	(6)
Mean social expenditures	0.260***		0.235***		-0.010	
	(23.04)		(13.01)		(-0.07)	
Mean share of soc exp. in public exp.		0.119***		0.108***		0.068
		(23.04)		(13.01)		(0.07)
Unemployment rate			-0.019	-0.019	-0.016	-0.016
			(-0.75)	(-0.75)	(-0.81)	(-0.81)
Foreign population					-0.028	-0.028
					(-0.77)	(-0.77)
Observations	179491	179491	173206	173206	131462	131462

t statistics in parentheses

IV-probit estimator. All estimators include year dummies. Standard errors are clustered

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$