

# Attitudes towards immigration: does the regional birth rate matter?

**Tom Ivlevs**

School of Economics, University of Nottingham

E-mail: [tom.ivlevs@nottingham.ac.uk](mailto:tom.ivlevs@nottingham.ac.uk)

*Draft version*

*This version: April 2007*

## Abstract:

*Labour immigration has often been proposed as a tool to ensure pension system sustainability in aging societies. This paper attempts to ascertain whether individual immigration preferences – a demand side component of the immigration policy market – are affected by regional birth rates which are used as a proxy for aging. I concentrate on two transition economies – Latvia and Ukraine – which experienced a drastic fall in birth rates in the 1990s. Currently, birth rates differ significantly across the regions in both countries, and I hypothesise that individuals, especially the elderly, should be more aware of pension financing problems and as a consequence more favourable to immigration in the areas with low birth rates. The empirical results support this hypothesis. In Latvia, pro-immigration sentiment is negatively related to municipal birth rates and older individuals are less favourable to immigration if birth rates are high. In Ukraine, age positively affects pro-immigration attitudes if regional births are low and negatively if births are high. In both countries, females and ethnic majority individuals seem to be more aware of aging and pension financing problems than males and ethnic minorities.*

JEL: F22, H55, J61

## Introduction

In recent years, the issues of aging population, sub-replacement fertility rates and pension systems sustainability have entered the top of political and economic agenda in most countries of the industrialised world. In this context, labour immigration – the increase of the working-age population being able to contribute to pension programs - has been often seen and suggested as one of the tools for solving aging-related problems.

However, the recognition of the fact that immigration may be a key element in assuring pension systems sustainability does not imply that all countries are eager to liberalise their immigration policies. In any democratic society the implementation of a particular policy is a more or less perfect reflection of the voters' majority will. Applied to immigration, this means that governments implement immigration policies taking into account public opinion (representative democracy) or, alternatively, the citizens vote directly in referenda on whether to increase or decrease the number of foreign workers in their country (direct democracy).

The attitudes of the citizens towards immigration<sup>1</sup> and the determinants of these attitudes are therefore of central interest for the determination of the immigration policy.

A wide range of considerations affect individual attitudes towards immigration. They range from purely economic to purely cultural ones. From the economic perspective, people may think that immigrants reduce wages or increase unemployment (labour-market effects) or contribute to or rely excessively on public welfare (welfare-state effects). On the other – non-economic - side, the reasons why domestic residents oppose immigrants include racism, xenophobia, threats to national identity, social norms and cultural and security considerations.

Over the last decade, the increasing availability of opinion polls data has resulted in the expansion of the empirical literature on attitudes towards immigration. Scheve and Slaughter (2001), Mayda (2006) and O'Rourke and Sinnott (2006) find empirical evidence that domestic residents are more favourable to immigrants with different skills, thereby confirming the labour market competition hypothesis. The possibility of the immigrants' excessive dependence on social welfare is exploited by Hanson et al. (2004) and Facchini and Mayda (2006) who find that richer individuals oppose low-skilled immigration. Practically all studies (Dustmann and Preston (2004), Mayda (2006) and O'Rourke and Sinnott (2006)) point to a significant role of racial and nationalistic motives in explaining negative attitudes towards immigrants.

The objective of this paper is to assess the role of regional birth rates in the determination of attitudes towards immigration. The variable belongs to the family of the welfare-state determinants of immigration attitudes and, to the best of my knowledge, so far has been neglected in the empirical literature.

I argue that regional birth rates should be negatively related to pro-immigration sentiment. In regions where births are relatively low domestic residents should be more aware of the difficulty of financing their pensions in the future and therefore be more pro-immigrant. Inversely, high birth-rates should reduce native population's reliance on immigrants for pensions financing and make them relatively less pro-immigrant. My second hypothesis is that the relationship between age and immigration attitudes becomes more positive (or less negative) in areas where few children are born, since the concerns about the amount of pension grow as the pensioning age approaches.

To test these hypotheses, I concentrate on two transition economies – Latvia and Ukraine. In 1990s, both countries experienced a dramatic fall in fertility rates which since then have remained among the lowest in the world. Average pensions in Latvia and Ukraine, which are financed for the major part by pay-as-you-go systems, have systematically been below national subsistence income levels. Coupled with gradual increase in life expectancy and high emigration rates in Latvia, these factors might contribute to a real awareness that immigrants are necessary to assure public pension programs.

However, birth rates considerably vary in different parts of Latvia and Ukraine. Assuming that individuals have less than perfect information about demographic situation in all regions of their country, this may lead to different degrees of perception of the aging population problem in different geographical areas and could probably explain some part of heterogeneity in attitudes towards immigrants.

The empirical results support the hypotheses that individuals in areas with relatively low (high) birth rates are more (less) favourable to immigrants. In Latvia, I find that pro-immigration sentiment is negatively related to municipal birth rates and that older individuals are less favourable to immigration if birth rates are high. In Ukraine, age positively affects pro-immigration attitudes if regional births are low and negatively if births are high. Another interesting result is that in both countries females and ethnic majority individuals are more

---

<sup>1</sup> In what follows, the terms “attitudes towards immigration” and “immigration preferences” are used interchangeably.

aware of aging and pension financing problems and immigration as a possible solution for them, compared to males and ethnic minorities. These findings are robust to the inclusion of individual and region-level control variables.

The remainder of the paper is organised as follows. Section one reviews the literature on attitudes towards immigration, highlighting its economic aspects. Section two briefly discusses how immigration preferences and regional birth rates could be linked. Section three presents the data and empirical results. Conclusions follow.

## 1. Attitudes towards immigration: what do we know?

In a democratic society, any policy carried out by the government should to a certain extent mirror citizens' attitudes towards particular issues<sup>2</sup>. Immigration policy is not an exception: tight immigration legislation, which is observed in most developed countries today, presumably results from the relatively weak "demand" for immigration, as reflected by the negative attitudes towards immigration (Mayda (2006), Facchini and Mayda (2006)). Therefore, it is essential to understand what effect immigration leaves on residents' welfare and what determines individual immigration preferences.

Clearly, a number of economic, cultural, social, historical and political considerations enter individuals' utility function. Moreover, the weight of each of these factors vary greatly across population groups, and the approaches to study immigration issues differ among social scientists. Most theoretical contributions in economics recognize the primacy of economic factors in shaping immigration preferences, and rely on rational behavior of agents. On the contrary, researchers in sociology and political science emphasize the role of non-economic factors, such as xenophobia, rising insecurity, cultural differences etc., often neglecting economic influences on attitudes formation<sup>3</sup>. The major focus of this paper is on the economic and aging-related determinants on individual immigration preferences, therefore the following overview takes into account only the contributions where they are addressed<sup>4</sup>.

In recent years, the increasing availability of survey data has permitted to test which, economic or non-economic, determinants better explain individual attitudes towards immigration. Dustmann and Preston (2004) suggest that racial attitudes, labor market concerns, and welfare concerns are three main factors which shape individual preferences towards immigration. Based on the analysis of the British Social Attitudes Survey data 1983-1991, they conclude that among the factors forming the opinion towards further immigration the most important is racially motivated opposition. Kessler (2001) finds a consistent and significant role for economic self-interest in shaping policy preferences over immigration policy in the United States in 1992-2000. Mayda (2006) uses individual-level data sets for a wide range of developed and developing countries and finds that attitudes towards immigration are related to labor-market concerns, security and cultural considerations, as well

---

<sup>2</sup> See e.g. Rodrik (1995) for the determination of trade policy, where individual preferences represent a demand side, and policymakers' preferences and the institutional structures of the government – supply side of the policy market.

<sup>3</sup> The most probable reason (at least, for the economists) for such polarization resides in difficulty of explicit treatment of non-economic factors in individual utility functions. Non-economic variables rarely comply with the logic of standard economic modelling, since they are often of qualitative nature, and sometimes do not correspond to rational behaviour. See e.g. Hillman and Weiss (1999) arguing that "the economic considerations that are stressed by the theory of international factor movements only partially explain the propensity of national states to control and restrict immigration. Immigration policies also reflect cultural preferences and affinities, and perhaps likes and dislikes that are contained in the collective memories of different people".

<sup>4</sup> For contributions addressing cultural, social and political determinants, see e.g. Norris (2005), Lahav (2004) and Tonry (1997).

as individual feeling towards political refugees and illegal immigration<sup>5</sup>. However, labor-market variables play a key and robust role in preference formation, after controlling for non-economic variables. Thus the author rejects the view where only non-economic factors shape attitudes towards immigration<sup>6</sup>.

Scheve and Slaughter (2001) argue that the economic determinants of immigration preferences are a function of “the aggregate costs and benefits from immigration, the fiscal impact on the public sector, and the impact of immigrants on native labor market returns”. They also assume that the latter consideration is the most important and controversial economic factor shaping individual immigration preferences. However, despite the fact that “most papers find effects of immigration on wages and employment prospects of native workers that are either modest or absent” (Dustmann and al. (2005)), several studies have provided empirical support for the labour market competition hypothesis in the determination of individual attitudes towards immigration. In particular, Mayda (2006) assumes that richer skill abundant (poorer low-skill abundant) countries attract low-skilled (high-skilled) migrants and empirically proves that individual skill and pro-immigration attitudes are positively (negatively) correlated in countries where the skill composition of natives relative to immigrants is high (low). In other words, domestic residents are opposed to immigrants with the same skill level. O’Rourke and Sinnott (2006) obtain similar results using the same data set.

While labour market effects seem to be the most important factor in shaping immigration preferences, native individuals may also be concerned by the issues related to public payments, especially if immigrants affect them adversely. The primary concern that the natives usually evoke is that the fiscal burden from immigration might more than offset any potential gain from the inflow of foreign workers<sup>7</sup>.

Facchini and Mayda (2006) analyze welfare state determinants of individual attitudes towards immigration. They argue that the way the welfare state adjusts to the inflow of foreigners is central to determining attitudes to immigration. Under the first scenario, per capita income transfers are maintained unchanged, therefore unskilled immigration makes high-income natives worse off through higher taxes. Under the second scenario, tax rates are kept constant, implying low-income natives will be harmed more by low-skilled immigration since it leads to lower per capita transfers<sup>8</sup>. Facchini and Mayda find empirical support for the first scenario: cross-country data show that high income natives oppose (favor) immigration in countries where immigration is unskilled (skilled). Furthermore, they show that individual skill and income have opposite effects in immigration preferences. Given a positive correlation between skills and income, this is explained by the interaction of labor market and welfare state effects which partially offset each other when immigration attitudes are formed<sup>9</sup>.

---

<sup>5</sup> Specifically, among non-economic factors, concerns about the impact of immigration on crime rates and individual perceptions of foreigners covary with immigration attitudes. Racist feelings have a very strong, negative and significant impact on pro-immigration preferences

<sup>6</sup> O’Rourke and Sinnott (2006) perform a similar analysis of immigration preferences, using the same data set. They also find that attitudes towards immigration reflect nationalist sentiment among residents. However, they note that possible reverse causality may exist, since it is possible that patriotism and chauvinism might be enhanced by anti-immigrant sentiment.

<sup>7</sup> The evidence, however, is not unambiguous. For example, from the European point of view, in Austria, Belgium, France and Holland the dependence or immigrants on welfare has generally been higher than that of locals, while the opposite is true in Germany, Greece, Portugal, Spain and the UK (Commander et al. , 2006).

<sup>8</sup> In the case of skilled immigration, the relationships would be inverted under both scenarios.

<sup>9</sup> Therefore, “the very same skilled and high income German businessman may feel ambivalent regarding the arrival of immigrants he might benefit from hiring them (labor market complementarity) but be hurt by paying their way through the welfare state” (Facchini and Mayda (2006)).

## 2. Attitudes towards immigration and aging.

Population ageing is another important factor that could affect natives' stance on immigration. In most developed countries, the dependency ratios are constantly growing, and the natural question arises how the pensions of increasing number of retired people will be financed. Immigration is often proposed as a cure for the improvement of pension scheme budgets, especially if immigrants are young, skilled and net contributors to the welfare state (see e.g. Storesletten, 2000). Thus, if a domestic working or retired individual expects that immigration will help assure her pension, she will be pro-immigrant, *ceteris paribus*. However, the importance of this factor in individuals' utility function may vary strongly across population (for example, across different age groups), and negative cultural, social or income effects from immigration may easily outweigh the brighter prospects to receive pension in the future. The way pensions are financed (pay-as-you-go or funded systems) are also important.

The evidence of whether immigrants represent a net burden or contribution to national welfare differs across countries. Commander et al. (2006) argue that in Austria, Belgium, France and Holland the dependence on immigrants on welfare has generally been higher than that of locals, while the opposite is true in Germany, Greece, Portugal, Spain and the UK. Nannestad (2004) finds a net burden of immigration in Denmark, while Sinn (2001) shows that the members of the German pension system gain on average €175,000 from each immigrant (which is more than from a native child), since a State does not have to invest into immigrants' education.

From the theoretical perspective, Razin and Sadka (2000) show that even low-skilled immigrants, who may be net beneficiaries of the welfare system, will be favored by natives because of positive pension externality. This result holds if an economy has an access to international capital markets. However, this gain may not be distributed equally between different age groups. Scholten and Thum (1996) study the link between immigration and the resulting positive externality within the pension system in overlapping generations model where the decision over immigration is made in direct democracy. They assume myopic voting behaviour and find that the median voter's preference reflects an inefficient level of immigration. Haupt and Peters (1998) extend their analysis by considering fully rational agents and conclude that the resulting immigration policy is more liberal<sup>10</sup>. In both models, the gain from immigration accrues to the old and they will favor it, whereas younger individuals will be more anti-immigrant<sup>11</sup>.

Thus, the positive effect of immigration on raising pension funds should also positively affect individual attitudes towards immigration. This may be especially true in the countries where populations are ageing and the level of pensions is low. Therefore, such demographic processes as increasing life expectancy, decreasing birth rates or decreasing death rates should be associated with pro-immigration attitudes.

I first hypothesize that the degree of the perception of aging problem and the resulting change in immigration preferences may change at regional level within the same country. For example, people living in a geographical area where the number of new births is particularly low could consider immigration as a means of assuring pension system more seriously, compared to individuals living in areas where birth rates are high.

My second hypothesis is that the elderly (who in general would be the first to suffer from the insufficient pension funds) should be more pro-immigrant or less anti-immigrant in low birth areas than their counterparts in high-birth areas. This may be explained by the

---

<sup>10</sup> However, this outcome depends on the underlying pension system.

<sup>11</sup> In a similar analysis, Krieger (2003) explores the effect from low-skilled immigration on pensions under different pension schemes. However, he divides population into skilled, unskilled and retiree groups, and not by age.

relatively low geographical mobility of the elderly, especially in countries where their standard of living is sufficiently low.

However, it should also be noted that the positive age effect on immigration preferences which is driven by intergenerational transfer considerations could be more than offset by the “social norms” negative age effect on immigration attitudes (Hillman, 2002). The assumption that the old place a higher value on existing (or traditional) social norms than do the young is one of the explanations of the negative effect of age on immigration preferences in the existing empirical studies (e.g. O’Rourke and Sinnott, 2006). Therefore, I expect an overall negative effect of age on immigration attitudes but I want to test whether this negative effect diminishes as the regional birth rate goes down.

### 3. Data and empirical results.

#### 3.1. Countries and survey data

To test my hypotheses, I focus on two transition economies - Latvia and Ukraine. Both countries experienced a dramatic fall in birth rate during the first half of 1990s (see graphs 1a and 1b below). As in the majority of countries of former socialist block, this fall was caused by the worsening of economic and social conditions and uncertainty about the future during the initial stage of transition (e.g. Sobotka (2003), Philipov and Dorbritz (2003)). However, despite the gradual economic recovery in the second half of 90s and the beginning of 2000s, the birth rate remained low at sub-replacement low levels in both countries. At the same time, the death rate did not decrease from the pre-transition levels and is actually on an upward trend in Ukraine. As a result, the natural increase of the population turned from positive 1990 levels of 1 and 0.5 pro mille to negative levels of -5 and -7.9 pro mille in 2005 in Latvia and Ukraine, respectively. Given a very slow increase in life expectancy in both countries, a negative natural increase implies that the aging of the population was largely a result of lower birth rate in transition. This is consistent with the situation in other Central and Eastern European countries (Philipov and Dorbritz, 2003).

Thus, the sharp fall in the number of births experienced by transition economies, coupled with practically unchanging death rates and life expectancy, might create particular population awareness that immigrants are able to contribute to the sustainability of pension schemes and assure higher levels of pensions in the future for the local residents. Therefore, I choose the birth rate as a major variable characterizing the aging process and, by assumption, affecting attitudes towards immigration in Ukraine and Latvia. An additional reason for choosing these two countries is their low average pension level<sup>12</sup>. It should also be mentioned that while both countries have opted for the Swedish model of pension financing (the combination of compulsory PAYG contributions for all workers and compulsory individual contributions for younger individuals), current pensions rely largely on PAYG contributions of current workers.

At the same time, non-negligible regional variations in birth rates exist within both Ukraine and Latvia (e.g in Ukraine the highest regional (oblast’) birth rate was 71 % above the lowest regional birth rate in 2003 and in Latvia the similar figure (NUTS 4 level) was 51% in 2004, see graph 2). There are multiple reasons for this. First, historically, different regions

---

<sup>12</sup> In Latvia, a pensioner received on average 115 EUR/month in 2005 and 137 EUR/month in 2006 (source: Central Statistical Bureau of Latvia). In Ukraine, an average pension was 20 EUR/month in 2003 and 30 EUR/month in 2004 (source: State Statistics Committee of Ukraine). In both countries, these pension levels constitute appr. 75% of the minimum subsistence income levels.

of the two countries have been subject to different religious and cultural influences which might have left an impact on people's family planning behavior and today's regional birth rates. Second, both Ukraine and Latvia host important ethnic minority populations (ethnic Russians and/or Russian speakers) which in certain cases are concentrated in particular regions and for various reasons have different fertility rates compared to the ethnic majority population. Third, higher levels of economic development of particular areas may be associated with higher birth rates, because of the brighter future prospects and the fact that young individuals are usually attracted to booming regions from economically disadvantaged regions.

Before turning to data and empirical model, recall that my basic hypotheses are: 1) lower regional births are associated with more favorable attitudes towards immigration and 2) the expected negative effect of age on immigration preferences should be mitigated by pension financing considerations in low birth areas. In order to test these hypotheses, I require data on individual immigration preferences, on the one hand, and birth rates (or other variable(s) reflecting the aging of the population), on the other, at a sufficiently disaggregated (regional, district, municipal) level. In addition, socio-economic characteristics of individuals are necessary in order to isolate the effect of aging-related determinants from other factors influencing immigration preferences, such as cultural affinities, education, income etc.

For Latvia, I use the survey conducted in 2005 by the Marketing and Public Opinion Research Centre<sup>13</sup> which contains information on attitudes towards immigration of people aged 15-74. The sample consists of 1060 face-to-face interviews and closely replicates population's territorial, gender, age, ethnic and education distributions. A set of socio-economic characteristics of the respondents includes age, gender, marital status and children information, income, education level, ethnic origin, citizenship and the place of residence. The information on the latter is available at a very disaggregated (local municipality ("pagasts") or NUTS 5) level.

Ukrainian data comes from the 2<sup>nd</sup> Round of the European Social Survey (2004). It contains 2031 observations (face-to-face interviews) and provides information on immigration preferences of people aged 14-92 along with a wide range of respondents' socio-economic characteristics. The data is dispersed at region ("oblast") level, with 23 out of country's 25 regions being represented.

### 3.2. Empirical model

The empirical model is defined as follows:

$$y_i = \alpha birth_r + \beta age_i * birth_r + \chi' x_i + \delta' z_r + \varepsilon, \quad (1)$$

where  $y_i$  is a dependent variable reflecting immigration preferences of individual  $i$ ,  $birth_r$  is regional birth rate serving as a proxy for the degree of population aging at regional level,  $age_i * birth_r$  is an interaction variable which will show whether older individuals are more pro-immigrant in low-birth areas,  $x_i$  is a vector of (control) variables capturing respondents' individual characteristics,  $z_r$  is a vector of region-specific (control) variables and  $\varepsilon$  is an error term.

From the Latvian dataset I use the two questions to construct the independent variable: 1) "What is your attitude towards the inflow of foreign workers into Latvia?" with possible

---

<sup>13</sup> [www.skds.lv](http://www.skds.lv)

answers “very negative”, “rather negative”, “rather positive” and “very positive” and 2) “Should the government of Latvia facilitate or restrict the inflow of foreign workers into Latvia?” with possible answers “should facilitate”, “should do nothing” and “should restrict”. The two questions will be used in different specifications to check how robust the results are.

The respondents of the EES survey were asked to describe their attitudes towards immigrants of the 1) “same ethnic origin/race as the majority”, 2) “different ethnic origin/race compared to the majority “ and 3) “immigrants from poorer countries outside Europe” with possible answers “allow many to come and live here”, “allow some”, “allow a few” and “allow none”. Note that the first question does not make an explicit distinction between race and ethnic origin which in the case of Ukraine may be particularly misleading. As in most Eastern European countries, in Ukraine a clear distinction is made between different ethnic origins and it is not clear whether potential immigrants from the neighboring countries (Moldova, Belarus, Russia) were considered of the same ethnic origin/race or not. Therefore, I will only use the second and the third question for individual attitudes towards immigration.

The main independent variable – birth rate – is defined as number of births per 1000 inhabitants. For the data, which comes from the national statistical offices of both countries, I choose the year before the year of interviews. The births data at local municipalities (NUTS 5) level (Latvia) and region level (Ukraine) is then matched with the information on the place of residence from both surveys.

### 3.3. Results

Given the qualitative nature of the dependent variable, ordered probit approach is used. The data from both countries are analyzed separately (not pooled), since sample sizes are sufficiently large and some variables are not defined in the same manner. Table A1 in the appendix provides summary statistics and definitions of the variables used in the analysis.

Table 1 reports empirical results for ordered probit regressions. Different specifications of eq. (1) are used. In the Latvian case, I obtain a negative and significant impact of local birth rates on immigration preferences (specification [1]), implying that on average people are more pro-immigrant in areas where few children are born. At the same time, the coefficient of age is negative and significant which confirms the hypothesis that the concerns about the change in social norms on which older individuals place a relatively high value (Hillman (2002), O’Rourke and Sinnott (2006)) more than compensate a possible positive pension externality. However, a negative and significant coefficient of the interaction term *municipality birth rate\*age* (specification [2]) suggests that in areas with lower births older people are more anti-immigrant, other things being equal. Therefore, different degrees of the perception of aging and pension financing problems are very likely to affect individual immigration preferences in Latvia and the effect is stronger the older an individual is.

The negative and significant effects of birth rates and birth rate and age interaction term persist in specifications (3) and (4) where I use the question “Should the government restrict or allow more immigration?” to proxy individual immigration preferences. However, the level of significance of both coefficients is lower (but still below 10%) and the age coefficient is not significant. The latter may be explained by the fact that younger respondents could be more anti-immigrant when asked about concrete government immigration policy thereby flattening the negative effect of age out.

In the case of Ukraine (specifications [5] and [6]), all three aging-related variables (age, birth rate and their interaction term) turn to be significant in the same specifications<sup>14</sup>. A closer inspection of the signs and values of the coefficients, as well as figure 3 below suggest that the impact of age on immigration preferences changes from negative to positive as birth rate goes down, *ceteris paribus*. Specifically, respondents were more anti-immigrant (pro-immigrant) with age if the birth rate in their region was higher (lower) than 8,72 births pro mille. This level of birth rate divides the sample into 40/60 parts, implying that for 40 % (60%) of the respondents pro-immigration attitudes were an increasing (decreasing) function of age because of the relatively low (high) birth rate in their region.

An alternative way to interpret the results is as follows. For individuals younger than 47 years, living in high birth region is associated with more positive immigration attitudes, while for those older than 47 – with more negative immigration attitudes. Again, this is evidence in favour of the hypothesis that older people are more concerned with pension financing problem in areas where few children are born and see immigration as a possible solution.

Two more points need to be stressed for Ukraine. First, the positive impact of age on immigration preferences in low-birth areas is very unusual, since all previous empirical studies (e.g. Mayda (2006) and O'Rourke and Sinnott (2006)) found a negative relationship between age and pro-immigration attitudes. A possible reason for the Ukrainian result is its relatively low, below-subsistence pension level, making people, especially the older, to consider immigration as a real tool to maintain or increase their well-being. A second interesting finding is that in Ukraine younger individuals are more pro-immigrant in high birth regions and more anti-immigrant in low births regions.

### 3.3.1. Robustness checks

To check how robust the main results of this study are, I run the same regressions for different groups of individuals and/or include additional explanatory variables into the regressions.

First, I exclude respondents living in Riga from the Latvian sample (they represent 32% of all observations, could be an outlier and therefore affect the regional birth rate coefficient). This considerably reduces the sample size, but increases the variation of the regional birth rate variable. However, the results reported in specification [1] of table 2 suggest that if the respondents living in the capital are not taken into account, the coefficient of the municipality birth rate is still negative and significant at 1% meaning that, *ceteris paribus*, people are more favourable to immigration in municipalities with low birth rates. The interaction term of age and birth rate is also negative and highly significant (spec. [2]), implying that older respondents are more anti-immigrant where birth rates are high. Similar results are obtained for the sample of citizens of Latvia (spec. [3] and [4]) who have the voting rights (and would therefore vote on immigration policy) and represent about 75% of all the respondents<sup>15</sup>.

The results obtained in table 1 also do not change qualitatively if I exclude the income variable from the regressions (spec. [5] and [6]). This allows taking into account the

---

<sup>14</sup> Note that in the case of Latvia the inclusion of the three variables in the same specifications ((1) and (4), table 1a) leads to insignificant coefficients. High correlation between age variable and the interaction term coupled with a relatively small sample size is the most probable reason. If the specification includes the interaction term with either age or birth rate variable (not shown in table 1a), only the interaction term is significant (and negative).

<sup>15</sup> Note about non-citizens in Latvia.

respondents who could not report their income and increases the sample size by almost 30% (from 708 to 916 observations). Next, I replace the municipal birth rate (62 geographical units - rural municipalities and cities) by district birth rate (24 country districts and 7 largest cities), (spec. [7] and [8]) and again obtain the negative relationship between birth rates and pro-immigration preferences as well as negative age and birth rate interaction term.

However, I obtain important differences if the whole Latvian sample is divided by gender and ethnic lines. The results reported in specifications [9] – [12] suggest that females, and not males, are more concerned with aging problems. For males, birth rate coefficient is not significant and the interaction term is significant at 10%. For females, both coefficients are negative and significant at 1%. Note the age coefficient is negative and significant for females and insignificant for males, suggesting that the former are more concerned about immigration-induced change in social norms than the latter.

Then, a difference also exists between Latvian speakers sub-sample (about 60% of observations) and Russian speakers sub-sample (40%). The coefficient of the birth rate variable is negative and significant for ethnic majority respondents and negative but insignificant for the ethnic minority. A possible explanation could be a lower geographical dispersion of Russian speakers since most of them live in big cities and in the eastern part of Latvia. Nevertheless, the age and birth rate interaction term is negative and highly-significant for both ethno-linguistic groups. Interestingly, the age coefficient is insignificant for ethnic Latvians and negative and highly significant for Russian speakers implying that ethnic minority individuals place a higher value on social norms and are more concerned by their change than Latvian-speakers.

For the case of Ukraine, I find that the results reported in table 1 are consistent with the Ukrainian speakers sub-sample (spec. [17] of table 2). Namely, pro-immigration attitudes are positively correlated with age where birth rates are low and negatively where birth rates are high, and relatively old respondents become more anti-immigrant as birth rate goes up, *ceteris paribus*. Contrarily, neither age, birth rate and their interaction term nor their combination is significant for the Ukrainian ethnic minority sub-sample.

Concerning males and females sub-samples, I find that age coefficient is negative and significant for the former and positive and significant for the latter (spec. [18]-[20]). This reinforces the previous finding for Latvia that women are more concerned by the aging and pension financing problems than men. Note, however, that the Ukrainian men become less anti-immigrant with age as the regional birth rate goes down.

Finally, I want to know whether two other aging-related variables also explain individual immigration preferences. The birth rate is now replaced by death rate and natural increase. The former is measured as a number of deaths per 1000 inhabitants and the latter is the difference between the birth rate and the death rate. Data sources and geographical disaggregating are the same as for birth rates variable. The results are reported in specifications [21]-[28] of table 2.

In the case of Latvia (spec. [21]-[24]), the coefficients of the death rate and natural increase are insignificant, but the interaction effects between age and these two variables turn to be negative and significant. This means that individuals are more anti-immigrant with age in areas where deaths and natural increase of the population are high. Both higher deaths and higher natural increase imply lower ratio of pensioners over working population in the future, thereby providing additional evidence that individual immigration preferences are explained by aging and pensions financing concerns. However, in the Ukrainian sample (spec. [25]-[28]) neither death rate and natural increase nor their interaction terms with age are significant determinants of individual immigration preferences.

To sum up, the findings of negative relationship between pro-immigration sentiment and regional birth rates, as well as more anti-immigrant attitudes of the elderly in areas with

high births are robust if different specifications and sub-samples are used. Nevertheless, it should be noted that the immigration attitudes of females and ethnic majority individuals are affected by aging considerations to a higher degree than those of males and ethnic minorities. A positive correlation between age and pro-immigration attitudes in the Ukrainian women sample should also be emphasised. It contradicts the previous empirical evidence of negative age effect on immigration preferences, but is in line with the predictions of the theoretical models of Scholten and Thum (1996) and Haupt and Peters (1998) where the major gains from immigration accrue to the old through positive pension externality.

## Concluding remarks.

As the ratio of working-age population over the old-age pension recipients is expected to decrease over time in most industrialised countries, a question arises how the pensions of the elderly will be financed in the future. Labour migration has often been proposed as a solution, especially in countries with unfunded pension systems. The problem is particularly acute in transition economies of Central and Eastern Europe since they experienced a drastic fall in fertility rates in 1990s. In addition, pensions remain at sub-subsistence levels there, implying that people could seriously consider that immigration is necessary to assure their future income.

This paper explores whether immigration preferences of a person depend on the birth rate of the place he or she lives. My hypothesis is that within a particular country lower regional birth rates should be associated with more favourable attitudes towards immigration. This is due to the fact that people do not have perfect information on the number of births in other country regions leading to different degrees of perception of ageing problems across different regions. This should be particularly true for older individuals due their lower geographic mobility and for countries with relatively low income and pension levels limiting this geographical mobility.

I consider two transition economies – Latvia and Ukraine – where, on the one hand, both birth rates and pension levels are low and, on the other, important differences in regional birth rates exist. The analysis is based on 2003 and 2005 survey data containing information on individual immigration preferences and respondents' place of residence (municipality for Latvia and region for Ukraine).

The empirical results largely support the hypothesis that immigration preferences should be inversely related to variables reflecting population aging. I find that in Latvia individuals living in areas with low births are more pro-immigrant and that the negative effect of age on immigration preferences is stronger if birth rates are high, other things equal. In Ukraine, a correlation between age and pro-immigration sentiment is negative if birth rates are high, but becomes positive if birth rates are low. In addition, women and ethnic majority population appear to be more aware of pension financing problems and immigration as a possible solution for them.

The extension of the analysis to other countries in the region and to Western EU States is a possible direction of future research.

## References

Commander, S., Heitmueller, A., and Tyson L., (2006), "Migrating Workers and Jobs: A Challenge to the European Social Model", IZA Discussion Paper No. 1933

Dustmann, C., Preston, I., (2004), Racial and economic factors in attitudes to immigration. CReAM discussion paper No. 01/04.

Facchini, G., Mayda, A., (2006), Individual attitudes towards immigration: Welfare-state determinants across countries. IZA discussion paper No. 2127.

Hanson, G., Scheve, K., Slaughter, M., (2004), Public finance and individual preferences over globalization strategies. Mimeo.

Haupt, A., and Peters, W., (1998) "Public pensions and voting on immigration", *Public Choice* 95 : 403-413.

Kessler, A., (2001), "Immigration, economic insecurity, and the "ambivalent" American public". The Center for Comparative Immigration Studies Working Paper No. 41, University of Texas

Krieger, T., (2003), 'Voting on Low-Skill Immigration under Different Pension Regimes', *Public Choice*, 117: 51-78.

Lahav, G., (2004), *Immigration and Politics in the New Europe: Reinventing Borders*, Cambridge: Cambridge University Press

Mayda, A., (2006), Who is against immigration? A cross-country investigation of individual attitudes towards immigrants. Forthcoming in *Review of Economics and Statistics*.

Nannestad, P., (2004), Immigration as a challenge to the Danish welfare state? *European Journal of Political Economy* 20: 755–767.

Norris, P., (2005), *The Radical Right: Voters and Parties in the Electoral Market*, Cambridge University Press, New York/Cambridge UK.

O'Rourke, K., Sinnott, R., (2006), The determinants of individual attitudes towards immigration. *European Journal of Political Economy* 22: 838-861.

Philipov, D. and Dorbritz, J., (2003), Demographic consequences of the transition in countries in Central and Eastern Europe. *Population Studies Series 39*. Strasbourg, Council of Europe.

Razin, A., and Sadka, E., (2000), "Unskilled migration: A burden or a boon for the welfare state?" *Scandinavian Journal of Economics* 102: 463-479.

Scheve, K., Slaughter, M., (2001), Labour market competition and individual preferences over immigration policy. *Review of Economics and Statistics* 83: 133-145.

Scholten, U., and Thum, M., (1996), "Public pensions and immigration policy in a democracy", *Public Choice* 87: 347-361.

Sinn, H.-W., (2001) "The value of children and immigrants in a pay-as-you-go pensionsystem: A proposal for a partial transition to a funded system", IFO-Studien, 47:77-94.

Sobotka, T., (2003), Re-emerging diversity: Rapid fertility changes in Central and Eastern Europe after the collapse of the communist regimes. *Population* 58 (4-5): 451-486

Storesletten, K., (2000), Sustaining Fiscal Policy Through Immigration. *Journal of Political Economy* 108(2): 300-323.

Tonry, M., (Ed.), (1997), *Ethnicity, Crime, and Immigration: Comparative and Cross-National Perspectives*. Chicago: University of Chicago Press.

Table 1. Attitudes towards immigration.

Ordered probit regressions						
Country	Latvia				Ukraine	
Dependent variable	Attitudes towards immigrants		Should the government restrict or allow more immigration?		Attitudes towards immigrants of different ethnic origin/race	Attitudes towards immigrants from poorer countries outside Europe
	(1)	(2)	(3)	(4)	(5)	(6)
<u>Demographic variables</u>						
Birth rate	-0.088***		-0.074*		0.119**	0.100*
Age	-0.013***		-0.007		0.021**	0.022**
Age*birth rate		-0.002***		-0.001*	-0.003**	-0.003***
<u>Labour market</u>						
Primary education (LV)	-0.078	-0.082	0.105	0.091		
Higher education (LV)	-0.033	-0.028	0.083	0.084		
Years of education (UA)					0.019**	-0.001
Income per family member (LV)	0.002***	0.002***	0.002***	0.002***		
Unemployed	0.076	0.061	0.672**	0.654**	0.135	0.138
<u>Other individual characteristics</u>						
Majority ethnic origin	-0.615***	-0.611***	-0.887***	-0.881***	-0.209***	-0.085
Has a child	-0.003	-0.018	0.216	0.203	-0.010	0.107*
Married	-0.008	-0.001	0.111	0.120	-0.072	-0.139**
Male	-0.002	-0.009	-0.046	-0.049	-0.040	-0.056
Student	0.174	0.147	0.565*	0.520*	-0.024	0.017
Retired	-0.039	0.007	0.173	0.223	-0.060	-0.051
<u>Region-specific variables</u>						
Capital /Big city	0.048	0.031	-0.309*	-0.337*	-0.073	-0.047
Rural area	0.146	0.155	0.063	0.082	-0.020	0.056
Ethnic composition	0.113	0.066	-0.355	-0.420	-0.001	0.000
Unemployment rate (LV)	0.010	0.004	-0.010	-0.010		
Average regional wage (UA)					0.001	0.000
Number of obs.	708	708	672	672	1806	1722
Prob>chi <sup>2</sup>	0.000	0.000	0.000	0.000	0.000	0.0025
Pseudo R <sup>2</sup>	0.053	0.058	0.106	0.105	0.0101	0.0068

Note: Robust standard errors used to calculate significance levels of coefficients.

\* - coefficient significant at 10%

\*\* - coefficient significant at 5%

\*\*\* - coefficient significant at 1%

Table 2. Robustness checks

Dependent var.	Attitudes towards immigrants (1 – very negative, .... 4 – very positive)							
Country	Latvia							
Sample	Outside Riga		Citizens		Without income variable		District birth rates	
	1	2	3	4	5	6	7	8
Birth rate	-0.087***		-0.104***		-0.082***		-0.151**	
Age	-0.005		-0.009**		-0.010***		-0.013***	
Age*birth rate		-0.001***		-0.002***		-0.001***		-0.002***
Number of obs.	470	470	568	568	916	916	708	708
Dependent var.	Attitudes towards immigrants ((1 – very negative, .... 4 – very positive)							
Country	Latvia							
Sample	Males		Females		Latvian-speakers		Russian-speakers	
	9	10	11	12	13	14	15	16
Birth rate	-0.062		-0.106***		-0.103***		-0.084	
Age	-0.008		-0.016***		-0.008		-0.017***	
Age*birth rate		-0.001*		-0.002***		-0.001***		-0.002***
Number of obs.	301	301	407	407	432	432	276	276
Dependent var.	Attitudes towards immigrants of different ethnic origin/race (1 – very negative, .... 4 – very positive)							
Country	Ukraine							
Sample	Ukrainian-speakers	Females	Males					
	17	18	19	20				
Birth rate	0.132*	0.086	0.092**					
Age	0.025**	0.024**		-0.011***				
Age*birth rate	-0.003**	-0.002	-0.001***					
Number of obs.	986	1132	674	674				
Dependent variable	Attitudes towards immigrants (1 – very negative, .... 4 – very positive)				Attitudes towards immigrants of different ethnic origin/race (1 – very negative, .... 4 – very positive)			
Country	Latvia				Ukraine			
	21	22	23	24	25	26	27	28
Age	-0.013***		-0.013***	-0.016***	0.000	-0.004	0.000	-0.002
Death rate	-0.014				0.009			
Age*death rate		-0.001**				0.000		
Natural increase			-0.019				-0.004	
Age*nat.inc				-0.000*				0.000
Number of obs.	708	708	708	708	1806	1806	1806	1806

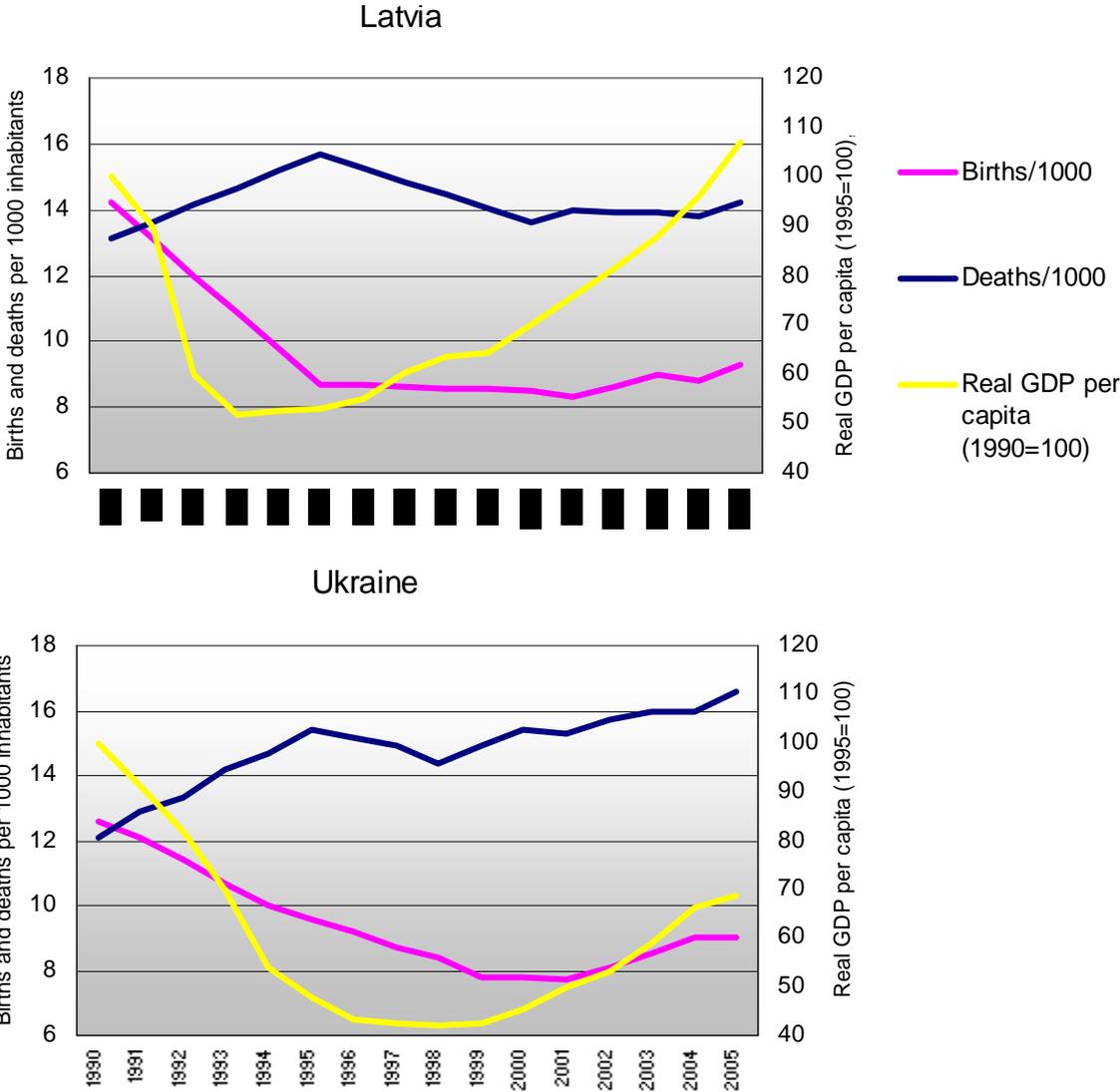
Note: Robust standard errors used to calculate significance levels of coefficients.

\* - coefficient significant at 10%, \*\* - coefficient significant at 5%, \*\*\* - coefficient significant at 1%.

All specifications include the same control variables as in specifications [1]-[6] of table 1.

For all specifications,  $\text{prob.} > \chi^2 = 0.000$  (Wald test), except specification [15] which is significant at 5% and specifications [17], [19] and [20] which are significant at 10%.

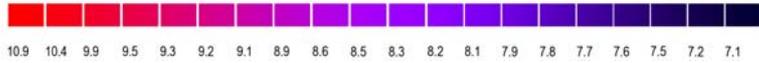
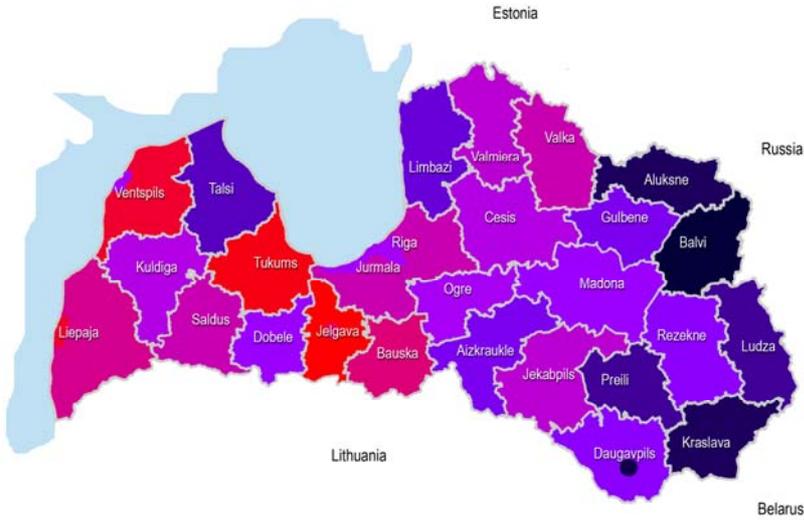
Graph 1. The evolution of birth rate, death rate and real GDP per capita in Latvia and Ukraine during the transition



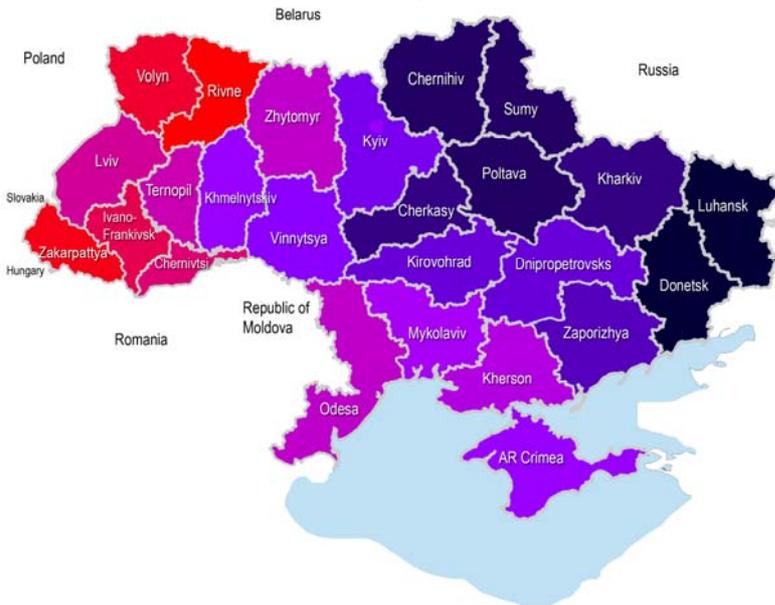
Source: National Statistics Offices of Latvia and Ukraine.

Graph 2. Regional birth rates in Latvia and Ukraine.

**Latvia**



**Ukraine**



Graph 3. Attitudes towards immigration, age and regional births in Ukraine.

