

## Why Are the Elderly More Averse to Immigration When They Are More Likely to Benefit? Evidence across Countries

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# Why Are the Elderly More Averse to Immigration When They Are More Likely to Benefit? Evidence across Countries

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## Abstract

Using household surveys for 25 countries over a 12-year period, this paper investigates why the elderly are more averse to open immigration policies than their younger peers. We find that the negative correlation between age and pro-immigration attitudes is mostly explained by a cohort or generational change. In fact, once we control for year of birth, the correlation between age and pro-immigration attitudes is either positive or zero in most of the countries of our sample. Under certain assumptions, our estimates suggest that aging societies will tend to become less averse to open immigration regimes over time.

## Introduction

Most developed economies are expected to experience dramatic demographic changes in the near future. While there are currently four working-age individuals per elderly person in Europe, population projections show that this figure will shrink by half in 2050 (United Nations 2012). Although the phenomenon of aging

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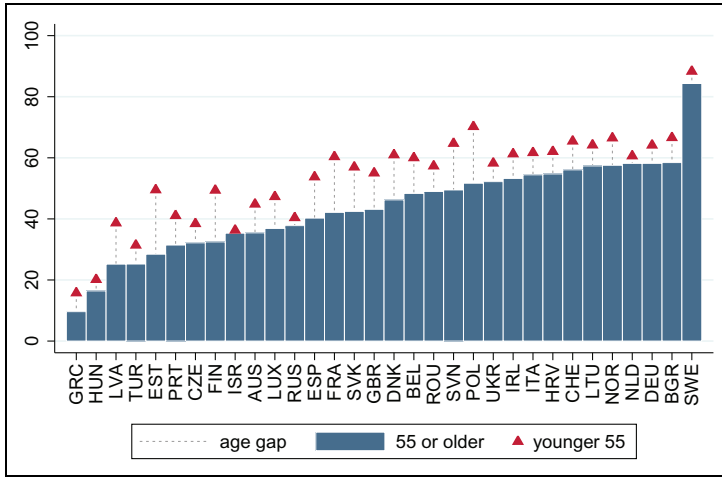
populations is affecting developed economies almost exclusively nowadays, developing countries will soon follow as many of them are currently witnessing a decrease in fertility and mortality rates. There is an increasingly large body of literature analyzing the potential consequences of the aging process on economic growth, fiscal outcomes, and the sustainability of pension systems (European Commission 2012). In face of a shrinking working-age population, measures to encourage the immigration of foreign workers could provide a promising policy option to help mitigate the aging process and its effects on the economy.

Even though the potential welfare gains from a more open immigration regime are enormous, most individuals tend to display high levels of opposition against increased immigration (see, e.g. Facchini and Mayda 2008; Card, Dustmann, and Preston 2012). In this context, the elderly represent one of the demographic groups with the highest levels of opposition to open immigration regimes in most countries (see Figure 1; also see Mayda 2006; O'Rourke and Sinnott 2006; Card, Dustmann, and Preston 2012). This stylized fact is striking as the elderly tend to be out of the labor force and thereby less likely to experience the potential short-term negative effects of immigration than working-age individuals. Given that individual preferences play a decisive role in the policy agenda, these empirical patterns raise concerns about the future of immigration policies in an aging world as the elderly will represent an increasingly larger share of the voting population.

Despite these concerns, the relationship between age and attitudes toward immigrants observed in cross-sectional surveys — even when controlling for other observable characteristics — cannot directly be interpreted as reflecting a change in attitudes over the life cycle. The old not only differ from the young in terms of age, but they were also born and raised in a different time, and in a different economic and institutional context. In fact, the observed patterns could reflect different preferences across cohorts or generations. For instance, if older cohorts grew up in a context of lower levels of international immigration than their younger counterparts did, they could have very different perceptions about immigrants that may remain fixed throughout their lives.<sup>1</sup> Hence, the relationship between age and attitudes toward immigrants observed in a cross section could be driven by both an age effect — that is, the fact that attitudes change with age — and a cohort effect — that is, the fact that attitudes are different across generations. If the cross-sectional age patterns were fully explained by a cohort effect, the political support for more open immigration regimes could actually increase in the future as younger cohorts replace those who are more averse toward increased

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<sup>1</sup>There is empirical evidence that life experiences at certain age levels can explain why some generations have different policy preferences than others. For example, Giuliano and Spilimbergo (2014) find that large macroeconomic shocks experienced during the critical years of adolescence and early adulthood, between the ages of 18 and 25, shape preferences for redistribution.



**Figure 1.** Positive attitudes toward immigrants of different race/ethnic group (gap between young and older than 55).

Source: Attitudes toward migrants were estimated from European Social Survey (see Data section for more details). The gap reflects the difference between the positive attitudes of individuals aged 54 years or younger minus the positive attitudes of individuals aged 55 years or older. Design weights used.

immigration. To our knowledge, this paper provides the first attempt to disentangle these effects for a large group of countries.

Economic theory suggests that individual attitudes would either be stable over the life cycle or become more pro-immigration as, for instance, older individuals are less likely to work and thereby less exposed to immigrants' competition in the labor market. In contrast, most of the empirical literature on this subject finds that older individuals are more averse toward immigration than their younger peers (see, for instance, Mayda 2006; O'Rourke and Sinnott 2006; Facchini and Mayda 2009; Card, Dustmann, and Preston 2012). Nevertheless, the *age effect* regarding preferences on immigration reported in most empirical studies includes both a true age effect and a cohort effect. To our knowledge, the only paper that attempts to separate these effects is Calahorrano (2013). Using panel data for Germany between 1999 and 2010, she finds that older cohorts are generally more averse to immigration in Germany. However, despite this generational effect, immigration concerns actually decrease over the life cycle relative to other issues. These results are in sharp contrast to those that come from a specification that does not control for year of birth.

To disentangle the age and cohort effects on attitudes toward immigrants, we use an approach similar to Calahorrano (2013). However, given the lack of comparable panel data surveys for a large group of countries, we use pooled cross sections from the European Social Survey (ESS) for the period 2002 to 2014. Using these repeated cross sections, we track birth cohorts over 12 years, which allows disentangling the

effects of age, cohort, and time on attitudes toward migrants. While this estimation strategy is less ideal than one based on actual longitudinal data as in Calahorrano (2013), it has been extensively used in the literature to identify cohort and age effects when the latter is not available (see, e.g. Deaton and Paxson 1994; Fernández-Villaverde and Krueger 2007; Aristei, Perali, and Pieroni 2008).

We first confirm the stylized fact found in the literature that older individuals are more averse than their younger peers with regard to immigration. However, when controlling for birth cohort, our estimates become more consistent with the predictions of economic theory, as the estimated age effect turns either positive or not statistically different from zero for most countries. In only four of the 25 countries in our sample, the age effect remains negative and significant.<sup>2</sup> This paper contributes to the literature by showing that the result found by Calahorrano (2013) for Germany holds for a larger set of countries. Moreover, this paper also shows that the results are robust to using different measures of attitudes toward immigration.

## Attitudes toward Immigration over the Life Cycle

Three main channels have been identified that may contribute to shape the attitudes of natives toward immigration. First, immigration can have an impact on the income distribution of the recipient economy through the labor market. On the one hand, native workers whose skills are very similar to those of the immigrant population tend to be concerned that the inflow of migrant workers may cause downward pressure on wages and increase labor market competition and thus the risk of unemployment. This concern, however, does not take into consideration that the effect of immigration on real wage income will also depend on the evolution of prices on the market of goods and services. If immigration reduces unskilled wages, this will tend to decrease the prices of low-skill-intensive goods and services, thereby raising the welfare of consumers (Cortes 2008). On the other hand, capital owners and workers whose skills complement those of immigrants are likely to benefit from a more open immigration regime.

Second, preferences on immigration may also be shaped by perceptions regarding the impact of immigration on fiscal outcomes. Different implications arise depending on whether a tax-adjustment or benefit-adjustment social security system is assumed. Facchini and Mayda (2009) find evidence consistent with the *tax-adjustment* model, where following an inflow of unskilled workers that may demand social assistance, tax rates would be increased to balance the government's budget. In this case, high-income individuals are more negatively affected by unskilled

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<sup>2</sup>It is important to mention that while we refer to the coefficients associated with age and cohort as "effects," we are not implying any causality but instead following the standard terminology used in cohort studies such as Deaton and Paxson (1997) and Calahorrano (2013).

immigration than low-income individuals, as they bear most of the additional cost to the welfare system. However, they are more positively affected than low-income individuals by an inflow of skilled migrants who would add to the tax base. Contrarily, Hainmueller and Hiscox (2010) find evidence consistent with the *benefit-adjustment* model, where lower-income natives are more likely to oppose low-skilled immigration because of concerns regarding overcrowding of public services.

Third, attitudes toward immigrants may also be affected by other factors such as opposition to different social norms and customs, as well as ethnic prejudice. Card, Dustmann, and Preston (2012) use the ESS to measure the relative importance of economic and compositional concerns — which are crucial to understand discrimination toward immigrants — in driving opinions about immigration policy. While they find that concerns over the effect of immigration on wages and taxes are important, differences in compositional concerns explain most of the variation in attitudes toward immigration across different native demographic groups. Finally, and related to this topic, there is a large body of empirical evidence about the sociocultural drivers of attitudes toward immigration outside the economics literature. For example, Hainmueller and Hiscox (2007, 2010) find little evidence regarding concerns about labor market competition as an important driver of attitudes toward immigrants in Europe and the United States. In contrast, their results are more consistent with these attitudes being propelled by deep-rooted cultural and ideological factors, such as racism and nationalism; or by people's perceptions of the impact of immigration on the nation as a whole, instead of their own self-interest.

These three channels have implications regarding the relationship between the age of an individual and his or her position regarding immigration. Regarding the first channel, given that older individuals are more likely to be out of the labor force — and thereby less concerned about the impact of immigrants on the labor market — and to have more savings than their younger counterparts — and thereby benefit from the increasing returns to capital brought about by immigration — they would have more incentives to support a more open immigration regime than their younger peers. At the same time, the impact of immigration on prices of goods and services intensive in migrants' work may also affect the attitudes toward immigration over the life cycle depending on the consumption patterns of these goods and services by age. Finally, if young and old workers are complementary factors of production, then even old individuals who are still in the labor force may benefit from immigration as migrants tend to be younger. In fact, there is evidence that establishments with mixed age teams have a higher productivity not only of older workers but also of young employees, suggesting that they are complementary factors of production (Göbel and Zwick 2013). Accordingly, Gang and Rivera-Batiz (1994) find that both in the United States and in Europe, an inflow of unskilled immigrants tends to raise the returns to experience in the host country. Peri and Sparber (2009) find that foreign-born workers in the United States specialize in occupations intensive in manual-physical labor skills which could be complementary to tasks of older individuals, as they would be less likely to have physically demanding jobs.

For the second channel, the life cycle effect on attitudes toward immigrants is most likely to operate through the impact of immigration on the sustainability of pension systems. Pension arrangements provided by the state in most European countries are *unfunded* pay-as-you-go pension schemes (PAYG), which means that no assets are set aside and benefits are paid directly from current workers' contributions and taxes (although several countries have hybrid systems which are partially funded). Under such a system, the life cycle pattern of natives' attitudes toward a more open immigration regime may vary, depending on whether pension benefits are fixed or tied to the wage level (Casarico and Devillanova 2003).

In an aging economy with an unfunded PAYG pension plan and defined (fixed) benefits, an inflow of migrant workers would improve the fiscal sustainability of the system. In such a setting, the elderly would be indifferent with respect to the way that their fixed pension receipts are funded, but they would still benefit from the increasing capital returns and decreasing prices of certain goods and services associated with immigration under the first channel. On the other hand, even though potentially still facing a decline in wages, those currently in the labor force would benefit from a declining social security contribution rate today and from immigrant's descendants contributing to their pension benefits in the future (Sand and Razin 2007). Thereby, the old's and young's preferences are closer together under this scenario than in one without a PAYG system (Calahorrano 2010).

By contrast, in a PAYG system where pension levels follow a wage growth index, older individuals will vote for a more restrictive immigration regime if they perceive that immigration will decrease wages (Scholten and Thum 1996; Haupt and Peters 1998). In other words, both retired and working-age individuals would be affected by the negative impact of immigration on wages. On the other hand, young workers would also benefit from a lower social security contribution rate. Thereby, the age gap in preferences toward immigration would also be smaller in this case than in a scenario without a PAYG system. Razin and Sadka (1999) argue that assuming perfect capital mobility and forward-looking individuals, the age gap in preferences would also be smaller in a PAYG system with fixed contributions and flexible pension benefits than in an economy without a pension system.

The first and second channels implicitly assume that attitudes toward immigrants are shaped by distributional concerns that affect individuals at different stages of their life cycle differently. However, the validity of the above considerations will depend on the degree to which preferences actually react to these economic concerns. Theories and research in the fields of sociology and psychology show that political attitudes and opinions are shaped during youth and tend to remain stable over the life cycle (Alwin and Krosnick 1991).<sup>3</sup> These considerations point to the

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<sup>3</sup>In particular, the impressionable-years hypothesis sustains that attitudes become more stable immediately following early adulthood and remain stable throughout the remainder of the life cycle.

potential importance of the third channel in explaining differences in attitudes toward immigrants between younger and older natives. Compositional concerns (e.g., with respect to the ethnic composition of society) regarding immigration can be assumed to be mainly driven by prejudice and related factors that are likely to remain stable during the life cycle. The empirical finding that most of the age gap in attitudes toward immigration is driven by compositional rather than by labor market concerns (Card, Dustmann, and Preston 2012) would suggest that the more negative attitudes of the elderly toward immigration tend to be the result of differences across cohorts rather than a life cycle pattern.

Evidence from the political science literature also suggests that noneconomic factors would help explain that different attitudes toward immigration across age groups are the result of generational differences rather than life cycle factors (see Hainmueller and Hiscox [2007, 2010] for a review of this literature). More specifically, if education tends to make people more tolerant, open to foreign cultures, and prone to critical thinking, we would expect that such traits would remain stable over the life cycle for individuals of the same cohort. Moreover, if changes in the education system over time contribute to explain the cohort differences in terms of attitudes toward migrants, this might imply that the negative correlation between age and attitudes toward immigration may become weaker when we control for year of birth.

In summary, while the labor market channel predicts that older individuals should be less averse to immigration than their younger counterparts, under a PAYG system the preferences regarding immigration across age groups should be more similar. Finally, older individuals could be more averse to immigration because of noneconomic factors such as compositional concerns and different levels of tolerance and openness. If this is the case, we would expect that the negative correlation between age and attitudes toward immigration is mostly driven by a generational or cohort effect.

## **Data and Methodology**

Ideally, to determine how perceptions change over the life cycle, we would like to follow individuals over time. However, long-running panels are rare in both developed and developing countries. To identify age patterns using repeated cross-sectional data, Deaton and Paxson (1994) and Deaton (1997) suggest an identification strategy that instead of tracking individuals follows the evolution of cohort averages over time. The procedure consists in dividing the individuals in the sample in cells defined by time-invariant characteristics such as year of birth and averaging the variable of interest over individuals belonging to each cell; then, the authors estimate a linear model using the variable of interest as a dependent variable, and cohort, age, and year dummy variables as independent variables. As we want to control for certain individual characteristics that change over the life cycle and are likely to affect the degree of pro-immigration attitudes, we estimate the models using stacked microdata from the cross-sectional surveys instead of averaging over



time-invariant characteristics. As a robustness check, we also construct a birth cohort panel and estimate the model using the standard decomposition approach as suggested by Deaton (1997) and the results are very similar to the ones reported in the paper. It is important to mention that estimators using pseudo-panel have a disadvantage when compared to actual longitudinal data in terms of precision, as the latter allow to follow individuals belonging to the same cohorts over time and have a higher number of observations (Verbeek and Nijman 1992). On the other hand, pseudo-panels are less affected by attrition issues than longitudinal surveys (Antman and McKenzie 2007).

To identify the effect of age on attitudes toward migration, we append household surveys from multiple years and estimate the following probit model:

$$\Pr(y_i = 1) = \Phi \left( \alpha + \sum_{a=19}^{80} \beta_a AGE_{a,i} + \sum_{c=1927}^{1994} \gamma_c COHORT_{c,i} + \sum_{y=2004}^{2014} \delta_y YEAR_{y,i} + \sum_{k=1}^K \theta_k x_{k,i} \right), \quad (1)$$

where  $y_i$  is a dummy variable equal to 1 if individual  $i$  exhibits pro-immigrant attitudes, and 0 otherwise;  $AGE$  and  $COHORT$  are dummy variables representing the individuals' age and cohort, respectively; and  $YEAR$  is a year dummy variable. The cohort or year-of-birth dummy variables are introduced in five-year intervals to avoid losing more degrees of freedom. Regarding the age and cohort effects, we estimate two alternative specifications, one using age and cohort dummy variables and another one where they enter the equation in a linear form.

The set of variables  $x$  contains individual characteristics such as gender, income, education, employment status, and other public benefits. The results presented in the next section do not control for whether the respondent is a pensioner or not, as we want to capture the effects of pensions, savings returns, and labor market outcomes on individual attitudes through an individual's age. The main reason for this decision is that we would expect that attitudes toward migration would not change in a discrete step as the person starts receiving pensions but rather change slowly during the life cycle as the person approaches retirement (Haupt and Peters [1998] explicitly consider this issue in their model of immigration and public pensions). In particular, if individuals are forward-looking, we would expect that as they approach retirement, they would gradually weight more heavily the positive effects of immigration on capital returns than its negative effects on the labor market even if they are in the labor force. As a robustness check, we also estimate a specification to test whether the age patterns change when controlling for pensioner status, but our main findings were not affected.<sup>4</sup>

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<sup>4</sup>The results are available from the authors upon request.

There is a large literature regarding the identification of age, cohort, and year effects (see McKenzie 2006; Schulhofer-Wohl 2013). A well-known challenge in this literature is that such effects cannot be identified without making specific assumptions, as they are perfectly collinear. We follow Deaton and Paxson (1994) and Deaton (1997) and implement their normalization of the year effects. By applying this approach, we assume that the year effects capture cyclical fluctuations that average to zero over the long run and are orthogonal to a time trend, so that all deterministic changes in the dependent variable are interpreted as a combination of age and cohort effects. More specifically, we use the following transformed year effects:

$$d_t^* = d_t - [(t - 1)d_2 - (t - 2)d_1],$$

from  $t = 2006, 2008, 2010, 2012, 2014$ , and where  $d_t$  is the year dummy variable, equal to 1 if the year is  $t$  and 0 otherwise (Deaton 1997).

The data for this paper come from the ESS for the survey years 2002, 2004, 2006, 2008, 2010, 2012, and 2014. The survey contains about 1,500 to 2,500 individual observations per country/year. The ESS covers 36 countries, 25 of which are included in our analysis as only those were surveyed in at least four years and thereby allow to observe at least two cohorts with the same age, a requirement to disentangle cohort and age effects. We exclude noncitizens from the sample, as we want to capture the preferences of potential voters.

Card, Dustmann, and Preston (2012) investigate the drivers of attitudes toward immigrants in Europe using, among others, the following variables of the ESS:

1. To what extent do you think (this country) should allow people of the *same race or ethnic group* as most people to come and live here?
2. To what extent do you think (this country) should allow people of a *different race or ethnic group* from most people to come and live here?

Where the possible answers to each question are:

1. Allow many to come and live here;
2. Allow some;
3. Allow a few;
4. Allow none;
5. Don't know.

These questions may not be strictly comparable across countries, as the answers could be affected by a host of other factors such as the current stock and composition of immigrants in each country. However, while we are aware of this limitation, the ESS has been extensively used in papers studying the determinants of attitudes toward immigration across countries (see, for instance, Facchini and Mayda 2009; Card, Dustmann, and Preston 2012). Moreover, Card, Dustmann, and Preston (2012)

mention that these questions in the ESS eliminate ambiguities by referring to *people who come to live in a country*, rather than to *immigrants*. In countries where citizenship is based on blood ancestry such as Germany, a translation of immigrants would include people who were born in the country but are not citizens.

We then create two alternative measures of pro-immigration attitudes. The first variable (*proimmigsame*) is equal to 1 if the individual would like many or some immigrants of the same race or ethnic group as the majority, and 0 otherwise (i.e., if the individual would like few immigrants or none from the same race or ethnic group). The second variable (*proimmigdiff*) is constructed following the same criteria used for *proimmigsame*, but it refers to immigrants of a different race or ethnic group from most people in the country. While *proimmigsame* is less likely to capture compositional concerns regarding immigration and more likely to capture purely economic concerns, *proimmigdiff* is more likely to capture a mix of both concerns regarding immigration (see Table 1). In contrast to the variable used by Calahorrano (2013), these two variables have a more direct connection with immigration policies. More specifically, while her measure is based on a survey question of how concerned individuals are regarding immigration in general, the ESS questions explicitly ask individuals about how open they believe borders should be. Moreover, the ESS makes the distinction between immigrants from the same or different race or ethnicity than the local population. As we find roughly the same patterns using either *proimmigsame* or *proimmigdiff*, we report the results using only *proimmigdiff* as the dependent variable and highlight the few cases where the results are different. Figures reporting the results for the *proimmigsame* variable can be found in the Supplemental Appendix S1.

Before discussing the results, we provide some intuition behind the methodology to identify age and cohort effects. Figure 2 shows the share of individuals by age in Germany reporting positive attitudes toward immigrants. We draw a separate line for each cohort, with older cohorts being toward the right. Each line has, in general, a positive slope, showing that individuals within each cohort become more pro-immigration as they become older; that is, the age effects can be expected to be positive. On the other hand, the lines shift downward for older cohorts, showing that younger cohorts are on average less averse to immigrants than their older counterparts used to be at the same age; that is, the cohort effects (or year-of-birth effects) can also be expected to be positive. This figure also illustrates one of the main limitations of this methodology, that is, that we do not observe a single cohort from the beginning of the life cycle until the end. Instead, we observe several and partially overlapping cohorts and assume that the detected age profiles also hold for those cohorts that are not observed at a given age. This is a strong assumption, given that the estimated profiles are based on the behavior observed in a given economic environment over a restricted time period.

As indicated above, another limitation of the methodology is that due to the transformation of the year effects implemented to address the multicollinearity of age, cohort, and year fixed effects, any deterministic trends in attitudes toward immigration are interpreted as a combination of age and cohort effects.

**Table I.** Descriptive Statistics.

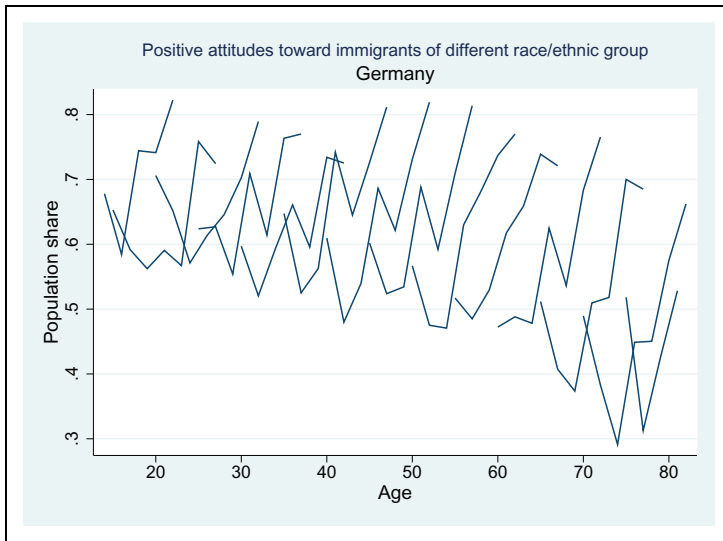
	Positive attitudes toward immigrants of same race/ ethnic group	Positive attitudes toward immigrants of different race/ ethnic group	Age (median)	Female (%)	Years of full-time education completed	Tertiary education (%)	Working for income (%)	Unlimited employment contract (% of working)	Social benefits or grants recipient (%)
Austria	61.6	42.5	43	53.1	12.4	10.0	59.8	63.7	3.0
Belgium	71.8	56.3	45	50.7	12.8	31.2	53.7	63.2	6.6
Bulgaria	75.6	63.3	50	56.8	11.3	21.0	46.3	63.9	3.4
Croatia	63.8	59.9	44	55.7	11.8	20.3	42.9	55.7	2.4
Czech Republic	48.5	36.5	45	50.9	12.7	12.6	57.6	61.1	2.8
Denmark	81.8	55.6	48	49.3	13.3	40.2	63.9	70.8	5.0
Estonia	66.3	41.9	46	58.8	12.9	32.3	58.0	71.8	2.4
Finland	62.1	42.8	49	50.9	13.0	32.8	55.4	64.4	6.7
France	66.3	54.8	45	52.6	12.6	28.6	55.7	44.6	4.0
Germany	79.5	62.0	48	49.2	13.6	28.5	56.3	68.4	5.3
Greece	36.1	13.9	44	56.2	10.7	18.7	45.4	28.5	1.1
Hungary	55.1	18.9	47	55.1	12.2	17.2	49.7	67.6	4.5
Ireland	67.9	58.8	44	54.3	13.5	31.2	49.4	38.5	11.7
Israel	78.3	36.0	42	54.1	13.3	39.1	56.6	33.6	8.3
Italy	68.5	59.7	43	51.0	11.2	10.3	49.0	43.8	1.0
Latvia	53.8	34.8	42	61.2	12.2	22.9	52.3	62.5	4.0
Lithuania	74.7	61.8	47	58.4	12.9	29.2	51.9	69.5	5.8
Luxembourg	62.3	44.7	41	48.6	12.5	16.3	52.7	62.1	1.4
Netherlands	65.8	59.8	47	53.7	13.3	27.3	60.9	65.7	9.1
Norway	78.6	63.7	45	47.6	13.5	37.0	69.1	71.8	4.0
Poland	74.6	64.9	43	51.8	12.0	16.0	50.3	49.8	1.7
Portugal	42.6	37.3	49	58.3	7.7	10.4	46.4	49.0	3.3
Romania	63.4	54.9	42	53.9	11.2	12.6	42.5	29.2	3.0
Russian Federation	67.9	39.7	43	58.4	12.6	55.5	58.1	66.9	0.9
Slovakia	63.6	52.4	45	54.6	13.1	18.3	54.3	66.9	3.7

(continued)

**Table I.** (continued)

	Positive attitudes toward immigrants of same race/ethnic group	Positive attitudes toward immigrants of different race/ethnic group	Age (median)	Female (%)	Years of full-time education completed	Tertiary education (%)	Working for income (%)	Unlimited employment contract (% of working)	Social benefits or grants recipient (%)
Slovenia	69.4	59.6	46	53.2	11.8	20.4	48.4	61.9	1.8
Spain	53.4	49.6	44	50.7	11.9	21.0	52.1	45.4	3.3
Sweden	90.6	86.9	46	49.5	12.8	28.5	62.8	69.1	3.6
Switzerland	83.0	62.2	47	51.7	11.4	26.9	62.6	68.8	1.3
Turkey	42.2	30.4	34	52.2	6.4	6.5	23.5	11.2	0.9
Ukraine	78.8	56.3	46	61.1	11.9	55.0	45.8	73.1	1.2
United Kingdom	61.4	50.9	47	53.2	13.3	34.1	57.0	60.5	9.1

Note: All summary statistics use design weights.



**Figure 2.** Positive Attitudes toward Immigrants by Age and Cohort in Germany.  
 Note: Each line shows the positive attitudes toward immigrants by age. Each line shows age patterns for each cohort, with older cohorts being toward the right.

## Age and Cohort Effects on Attitudes toward Immigration: Estimation Results

Table 2 shows the marginal effects from equation (1) using the pooled samples. Columns (1) and (2) do not control for birth cohort and, as expected, the coefficient associated with age is negative. Their magnitudes imply, for instance, that an individual aged 50 years is on average 2.7 and 1.4 percent less likely than an individual aged 40 years to have positive attitude attitudes toward migrants of the same or different race or ethnicity, respectively. However, when we control for birth cohort, the coefficient associated with age becomes positive but statistically not different from zero. The negative correlation between age and positive attitudes toward immigrants is now being captured by the cohort variable, as older generations are less likely to display positive attitudes toward immigration than their younger counterparts. It is also interesting that the coefficients associated with education and household income are positive and statistically significant in all four columns.

However, the results using the pooled country samples in Table 2 hide significant heterogeneity across countries. Figure 3 shows the estimated marginal effects of age from equation (1) using the dependent variable *proimmigdiff* and two specifications — both excluding the set of individual controls,  $X_i$ . The first one only includes age and survey year as explanatory variables (light-colored line); we call this specification “cross-sectional” as it captures the age patterns that typically

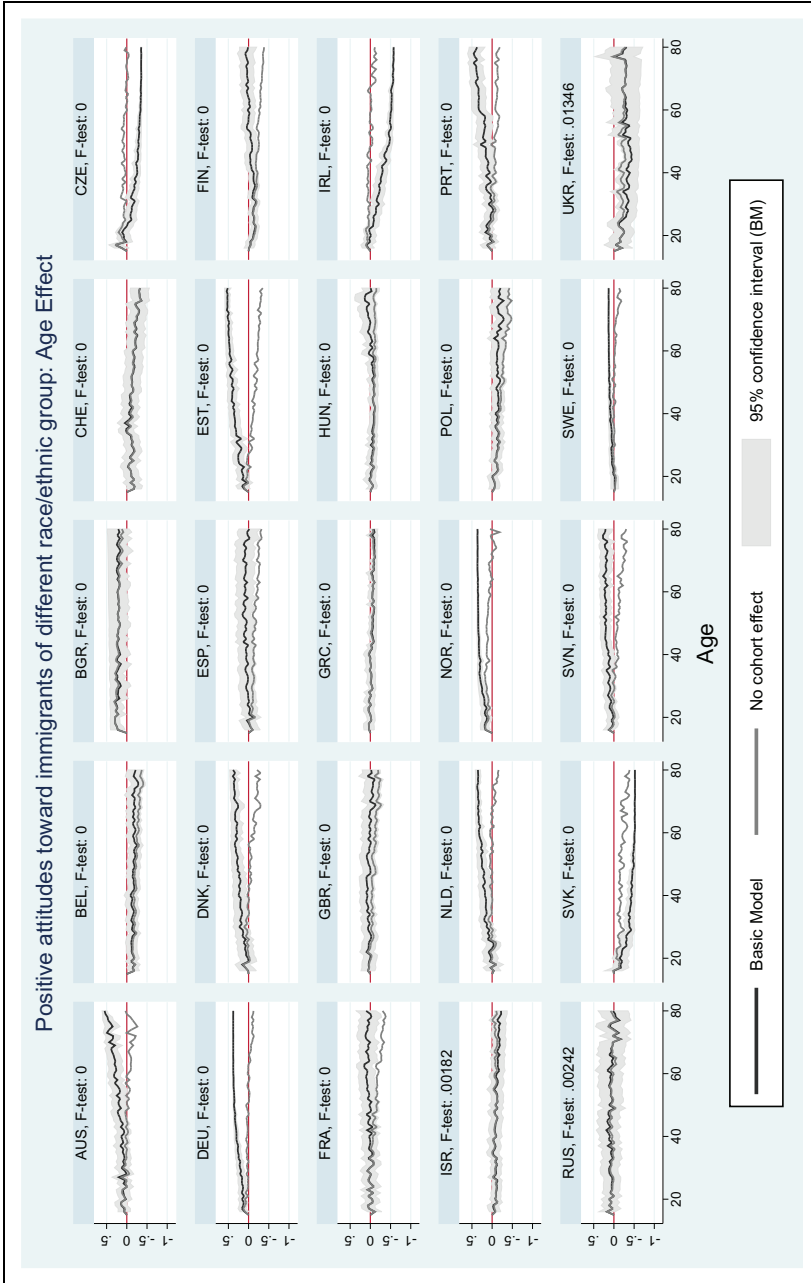
**Table 2.** Average Marginal Effects on Positive Attitudes toward Immigration.

	(1) Positive attitudes toward immigrants of different race/ethnic group	(2) Positive attitudes toward immigrants of same race/ ethnic group	(3) Positive attitudes toward immigrants of different race/ ethnic group	(4) Positive attitudes toward immigrants of same race/ ethnic group
Age	-0.0027*** (0.0003)	-0.0014*** (0.0003)	0.0021 (0.0020)	0.0023 (0.0018)
Birth Cohort			0.0047** (0.0020)	0.0037** (0.0018)
Selected respondent is female	0.0055 (0.0079)	0.0031 (0.0067)	0.0055 (0.0078)	0.0031 (0.0067)
Tertiary education	0.1538*** (0.0110)	0.1314*** (0.0094)	0.1543*** (0.0112)	0.1318*** (0.0095)
Household's total net income, all sources	0.0082*** (0.0019)	0.0103*** (0.0019)	0.0081*** (0.0019)	0.0102*** (0.0018)
Work for income	0.0035 (0.0043)	-0.0045 (0.0044)	0.0036 (0.0043)	-0.0043 (0.0044)
Have an unlimited labor contract	-0.0025 (0.0038)	-0.0039 (0.0039)	-0.0024 (0.0038)	-0.0039 (0.0039)
Social benefits or grants	-0.0055 (0.0158)	-0.0184 (0.0138)	-0.0054 (0.0159)	-0.0183 (0.0138)
Observation	208,960	209,330	208,960	209,330
R <sup>2</sup>	0.0940	0.0808	0.0939	0.0807

Note: Standard errors in parentheses. Sample includes 25 countries listed in Table 3, country fixed effects included, and standard errors clustered at the country level. Design weights used in regression. Columns (1) and (2) include year dummies; columns (3) and (4) include transformed year dummies as in Deaton (1997). In columns (3) and (4), birth cohort refers to year of birth; thereby, the higher the number, the younger the cohort.

\*\*\* $p < 0.01$ . \*\* $p < 0.05$ . \* $p < 0.1$ .

emerge from cross-sectional survey data. The second specification incorporates age, year-of-birth, and survey year dummy variables as explanatory variables (dark-colored line with confidence intervals). According to the model without any cohort controls, older people are less likely to exhibit positive attitudes toward immigrants than their younger peers in almost all countries considered. For instance, an 80-year-old individual in Estonia is about 30 percent less likely to report positive attitudes toward immigrants than an individual 20 years old or younger. Nevertheless, this stylized relationship becomes weaker when controlling for cohort effects. The dark-colored lines with confidence intervals show the life cycle pattern of attitudes toward immigrants. When controlling for year of birth, the age effects completely reverse in 13 countries — the most dramatic changes are observed in Austria, Estonia, Germany, and the Netherlands — showing that in those economies, the more negative attitudes of older individuals toward immigrants are primarily driven



**Figure 3.** Age Effects Estimated with or without Cohort Effects.

Note: Each line shows the average marginal effect of age on reporting positive attitudes toward immigrants. F-test is the  $p$ -value associated with the test that all dummy variables in the “Basic Model” are jointly insignificant. “Basic Model” refers to equation (1) but controlling for age, cohort, and year effects only. “No cohort effect” refers to equation (1), but controlling for age and year effects only, that is, compared to the “Basic Model” additionally excluding cohort controls and using year dummies. Design weights used in regressions.



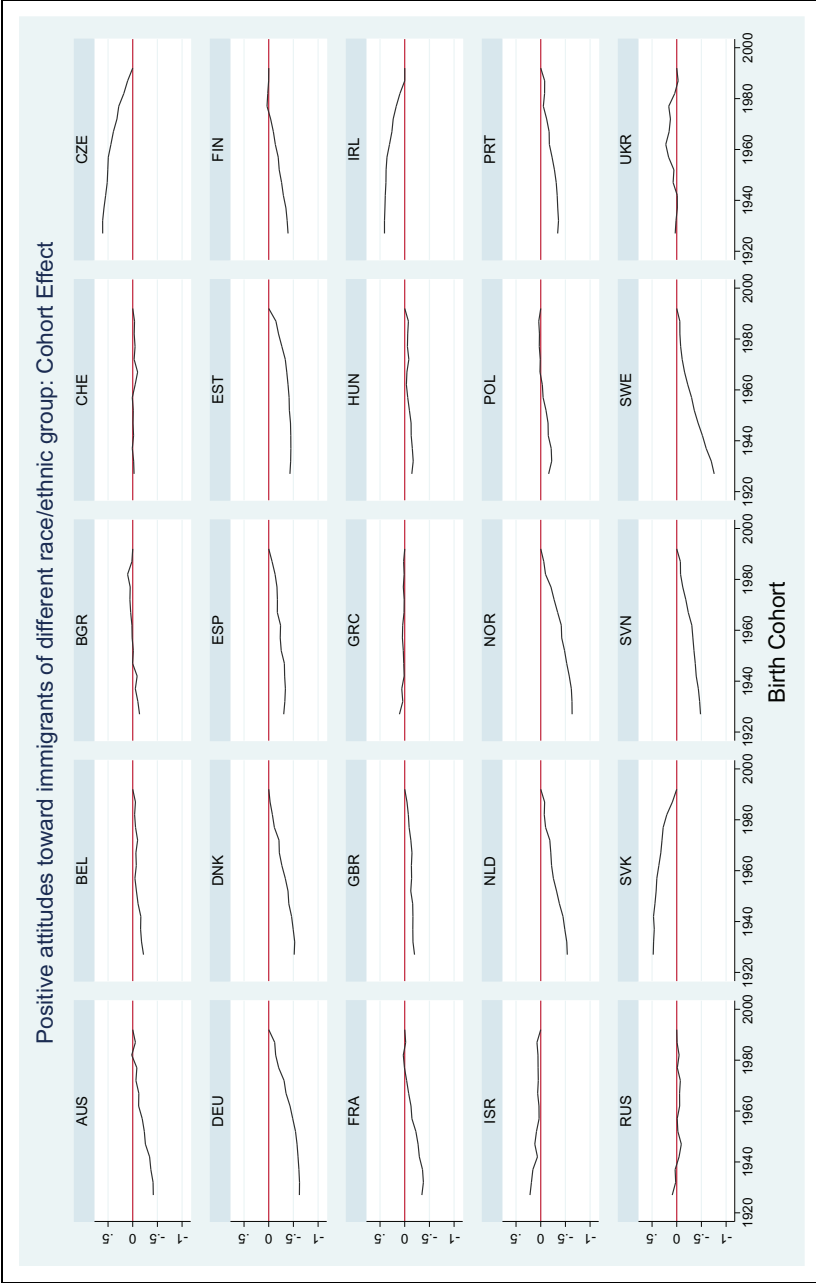
by a generational change. In other words, these results imply that in these countries within each cohort, the attitudes toward immigrants are expected to become more positive over the life cycle. For instance, in the case of Estonia, the age effect implies that when an individual reaches age 80, he will be expected to be about 50 percent more likely to display positive attitudes toward immigrants than when he was 20 years old. In contrast, the age effects become more negative when we control for cohort of birth in the Czech Republic, Ireland, and Slovakia. In other words, the more negative attitudes of the elderly toward immigrants among these countries seem to be driven by natives becoming more averse to immigrants throughout the life cycle.

Figure 4 displays the estimated cohort effects and shows that the generational change in the attitudes toward immigrants was significant among most of these economies, with younger cohorts being more welcoming of immigrants than their older counterparts in all countries except the Czech Republic, Ireland, Israel, Slovakia, and Greece. This finding is consistent with previous evidence that the more negative attitudes of the elderly toward immigrants are driven by compositional concerns instead of economic ones (Card, Dustmann, and Preston 2012), as policy attitudes are shaped during youth and remain stable thereafter (Alwin and Krosnick 1991). In addition, it is consistent with the literature pointing out the importance of cultural and ideational mechanisms to explain different levels of attitudes toward immigration, as they are likely to remain stable over the life cycle for a given cohort. This result also implies that over time, older cohorts will be replaced by new generations with a more positive perception of immigration in most of the countries in our sample.

The finding that attitudes toward immigration by age are largely unaffected by the race and ethnicity of migrants is puzzling. When comparing Figure 3 and Figure A2 in the Supplemental Appendix S1, there are only three countries — Denmark, Greece, and Russia — where the attitudes toward immigration by age are sensitive to whether they refer to immigrants from the same or different race and ethnicity.<sup>5</sup> However, the main finding is that the results are quite robust to the race or ethnicity of immigrants. The implications of both the empirical and theoretical literature of

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<sup>5</sup>More specifically, while natives in Denmark become more pro-immigration over the life cycle with respect to people from a different race or ethnicity, the age profile is rather flat with respect to immigrants from the same race or ethnicity. The reverse holds in Russia. Finally, while natives in Greece become significantly more pro-immigration of individuals of the same race or ethnicity, the age profile is rather flat (or with a slightly negative slope) with respect to immigrants from a different race or ethnicity. While the results for Greece are more consistent with a body of literature arguing that individuals become less liberal and thereby more concerned with compositional concerns over the life cycle (see, for instance, Tilley and Evans 2014; De Mello et al. 2017), the results for Russia and Denmark are surprising and could be an interesting topic for future research.



**Figure 4.** Cohort Effects on Positive Attitudes toward Immigrants.  
 Note: Each line shows the average marginal effect of age on reporting positive attitudes toward immigrants. Older cohorts are toward the left. The oldest cohort was born in 1927, and the youngest was born in 1994. Design weights used in regressions.

the political economy of immigration reforms outlined above suggest that the more positive attitudes of older individuals would mostly be driven by economic factors — which would be better reflected by the attitudes toward immigrants of the same race or ethnicity — rather than by lower levels of ethnic and racial prejudice — which are unlikely to vary with age. Our findings could reflect the fact that the prejudice of natives against immigrants is not as much related to their ethnic background so as to other immigrants' socioeconomic characteristics.

Figure 5 shows the estimated nonparametric age effects from equation (1) with and without controlling for other individual socioeconomic characteristics such as education, income, and gender. In general, including such control variables does not change significantly the patterns that emerge from the estimated age effects. In other words, the empirical results are driven by aging itself and not by other individual characteristics that may vary or not over the life cycle. Some exceptions include Ireland, Portugal, Slovakia, and Switzerland — where the age patterns become less steep — as well as Bulgaria.

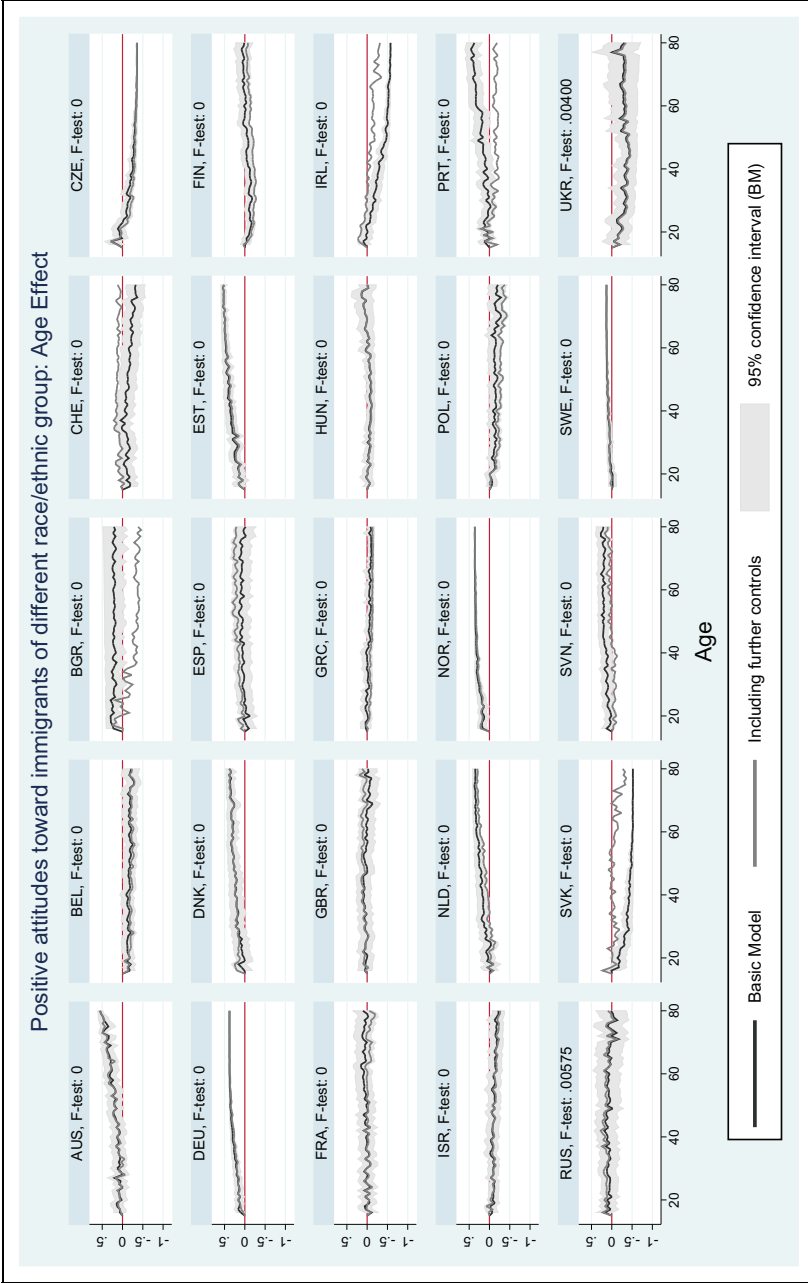
To better summarize our results and their statistical significance, Table 3 shows the coefficients and standard errors estimated using a probit model with both age and cohort of birth in linear form, and controlling for individual and household characteristics  $x$ .<sup>6</sup> These results confirm the above conclusions: Regardless of the racial or ethnic composition of immigrants, older individuals across most economies are more averse to immigration. However, this stylized fact is driven by a cohort effect. When controlling for year of birth, the effect of age on attitudes toward immigration becomes statistically insignificant or positive in most countries considered, and this is independent of the ethnicity or race of the immigrants. The fact that the coefficient associated with the year of birth is positive and statistically significant in many countries confirms the fact that the negative correlation between age and pro-immigration attitudes is driven mostly by older cohorts being more averse to immigration. It is important to keep in mind the caveat that these estimates might be affected by *attenuation bias*. However, as most countries in the sample are developed or middle-income economies, age and cohort are likely to be reported precisely in the survey.

## Robustness Checks

This section explores the robustness of the main results under two different scenarios. First, we test whether the results are affected by the specification of the trend component. Second, we examine whether the results could be driven by the short time span considered (10 years).

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<sup>6</sup>Table A1 in the Supplemental Appendix S1 shows that the results are the same when using a linear probability model (i.e., ordinary least squares).



**Figure 5.** Age Effects Estimated Controlling for Cohort and Other Individual Characteristics.

Note: Each line shows the average marginal effect of age on reporting positive attitudes toward immigrants. F-test is the  $p$ -value associated with the test that all dummy variables in the “Basic Model” are jointly insignificant. “Basic Model” refers to equation (1) but controlling for cohort and year effects only. “Including further controls” refers to equation (1) controlling for education, gender, household income, labor market status, formal worker, and recipient of state benefits. Design weights used in regressions.

**Table 3. Marginal Effect of Age on Positive Attitudes toward Immigration.**

Positive attitudes toward immigrants of the same race/ethnic group													
Without Controlling for Year of Birth													
	AUS	BEL	BGR	CHE	CZE	DEU	DNK	ESP	FIN	FRA	GRC	IRL	
Age	-0.0027*** (0.0003)	-0.0017*** (0.0005)	-0.0026*** (0.0003)	-0.0004 (0.0004)	-0.0015*** (0.0002)	-0.0007*** (0.0003)	-0.0003 (0.0004)	-0.0021*** (0.0003)	-0.0040*** (0.0004)	-0.0019*** (0.0004)	-0.0014*** (0.0005)	-0.0009* (0.0004)	-0.0000 (0.0003)
	ISR	NLD	NOR	POL	PRT	RUS	SVK	SVN	SWE	EST	HUN	UKR	
Age	0.0028*** (0.0003)	0.0005 (0.0004)	-0.0002 (0.0003)	-0.0044*** (0.0003)	-0.0033*** (0.0005)	0.0003 (0.0004)	-0.0026*** (0.0006)	-0.0033*** (0.0004)	-0.0002 (0.0002)	-0.0047*** (0.0003)	-0.0022*** (0.0004)	-0.0008* (0.0005)	
Controlling for Year of Birth													
	AUS	BEL	BGR	CHE	CZE	DEU	DNK	ESP	FIN	FRA	GRC	IRL	
Age	0.0100*** (0.0017)	-0.0010 (0.0012)	0.0015 (0.0050)	0.0062*** (0.0013)	-0.0110*** (0.0016)	0.0166*** (0.0008)	0.0029*** (0.0011)	0.0059*** (0.0015)	0.0024*** (0.0011)	0.0006 (0.0041)	-0.0028*** (0.0013)	0.0160*** (0.0020)	-0.0046 (0.0039)
Birth cohort	0.0123*** (0.0016)	0.0007 (0.0011)	0.0041 (0.0050)	0.0065*** (0.0012)	-0.0094*** (0.0016)	0.0172*** (0.0008)	0.0032*** (0.0011)	0.0080*** (0.0014)	0.0064*** (0.0011)	0.0026 (0.0041)	-0.0015 (0.0013)	0.0170*** (0.0019)	-0.0045 (0.0039)
	ISR	NLD	NOR	POL	PRT	RUS	SVK	SVN	SWE	EST	HUN	UKR	
Age	0.0070*** (0.0015)	0.0074*** (0.0012)	0.0063*** (0.0012)	-0.0048*** (0.0011)	0.0051 (0.0054)	-0.0090*** (0.0026)	-0.0059 (0.0063)	0.0035*** (0.0014)	0.0042*** (0.0007)	0.0116*** (0.0014)	0.0019 (0.0014)	-0.0040 (0.0026)	
Birth cohort	0.0042*** (0.0015)	0.0069*** (0.0012)	0.0065*** (0.0012)	-0.0004 (0.0012)	0.0084 (0.0053)	-0.0093*** (0.0026)	-0.0033 (0.0063)	0.0068*** (0.0014)	0.0044*** (0.0007)	0.0163*** (0.0014)	0.0038*** (0.0014)	-0.0032 (0.0026)	

(continued)

**Table 3.** (continued)

Positive attitudes toward immigrants of the different race/ethnic group													
Without Controlling for Year of Birth													
	AUS	BEL	BGR	CHE	CZE	DEU	DNK	ESP	FIN	FRA	GBR	GRC	IRL
Age	-0.0032*** (0.0005)	-0.0024*** (0.0003)	-0.0029*** (0.0006)	-0.0024*** (0.0004)	-0.0009** (0.0004)	-0.0021*** (0.0003)	-0.0040*** (0.0004)	-0.0023*** (0.0004)	-0.0053*** (0.0003)	-0.0038*** (0.0004)	-0.0030*** (0.0004)	-0.0015*** (0.0003)	-0.0016*** (0.0004)
	ISR	NLD	NOR	POL	PRT	RUS	SVK	SVN	SWE	EST	HUN	UKR	
Age	-0.0004 (0.0004)	-0.0001 (0.0004)	-0.0023*** (0.0003)	-0.0055*** (0.0003)	-0.0023*** (0.0005)	-0.0007 (0.0004)	-0.0032*** (0.0006)	-0.0041*** (0.0004)	-0.0009*** (0.0002)	-0.0071*** (0.0003)	-0.0016*** (0.0003)	-0.0026*** (0.0006)	
Controlling for Year of Birth													
	AUS	BEL	BGR	CHE	CZE	DEU	DNK	ESP	FIN	FRA	GBR	GRC	IRL
Age	0.0081*** (0.0017)	-0.0009 (0.0013)	-0.0061 (0.0056)	0.0012 (0.0016)	-0.0148*** (0.0015)	0.0178*** (0.0010)	0.0062*** (0.0014)	0.0043*** (0.0015)	0.0027** (0.0011)	-0.0021 (0.0043)	0.0011 (0.0013)	-0.0046*** (0.0014)	-0.0063 (0.0040)
Birth cohort	0.0110*** (0.0017)	0.0015 (0.0012)	-0.0033 (0.0056)	0.0035*** (0.0016)	-0.0138*** (0.0015)	0.0198*** (0.0010)	0.0102*** (0.0013)	0.0067*** (0.0014)	0.0080*** (0.0011)	0.0018 (0.0043)	0.0041*** (0.0013)	-0.0030*** (0.0014)	-0.0047 (0.0040)
	ISR	NLD	NOR	POL	PRT	RUS	SVK	SVN	SWE	EST	HUN	UKR	
Age	-0.0040** (0.0017)	0.0088*** (0.0013)	0.0123*** (0.0014)	-0.0051*** (0.0013)	-0.0018 (0.0053)	-0.0003 (0.0028)	-0.0041 (0.0065)	0.0029*** (0.0015)	0.0068*** (0.0009)	0.0105*** (0.0014)	0.0018 (0.0011)	-0.0038 (0.0032)	
Birth cohort	-0.0036** (0.0017)	0.0089*** (0.0012)	0.0146*** (0.0013)	0.0005 (0.0013)	0.0006 (0.0052)	0.0003 (0.0028)	-0.0008 (0.0065)	0.0069*** (0.0014)	0.0077*** (0.0009)	0.0176*** (0.0014)	0.0034*** (0.0011)	-0.0013 (0.0032)	

Notes: Each coefficient is the average marginal effect of age and year of birth on reporting positive attitudes toward immigrants. Birth cohort is the year of birth; thereby, a larger number represents a younger cohort. Other control variables include year effects, education, gender, household income, labor market status, formal worker, and recipient of state benefit. Design weights used. \*\*\*p < 0.01. \*\*p < 0.05. \*p < 0.1.

### *Are Age Effects Capturing Trends?*

As mentioned above, we use the normalization proposed by Deaton and Paxson (1994) to the trend so that it captures a cyclical component of attitudes. However, as mentioned by Deaton (1997), this procedure is dangerous when there are a few surveys, as it is difficult to separate trends from transitory components. We estimate a specification that excludes the transformed dummy variables — and does not include conventional year dummy variables either — to investigate whether the cyclical component is an important driver of the results. The results in Figure 6 show that the age profile is basically unaffected when we dropped the cyclical component in all countries except Poland; in other words, the way the cyclical component is introduced in the model does not seem to be driving the results.

### *Is the Period of Time Long Enough to Capture Life Cycle Effects?*

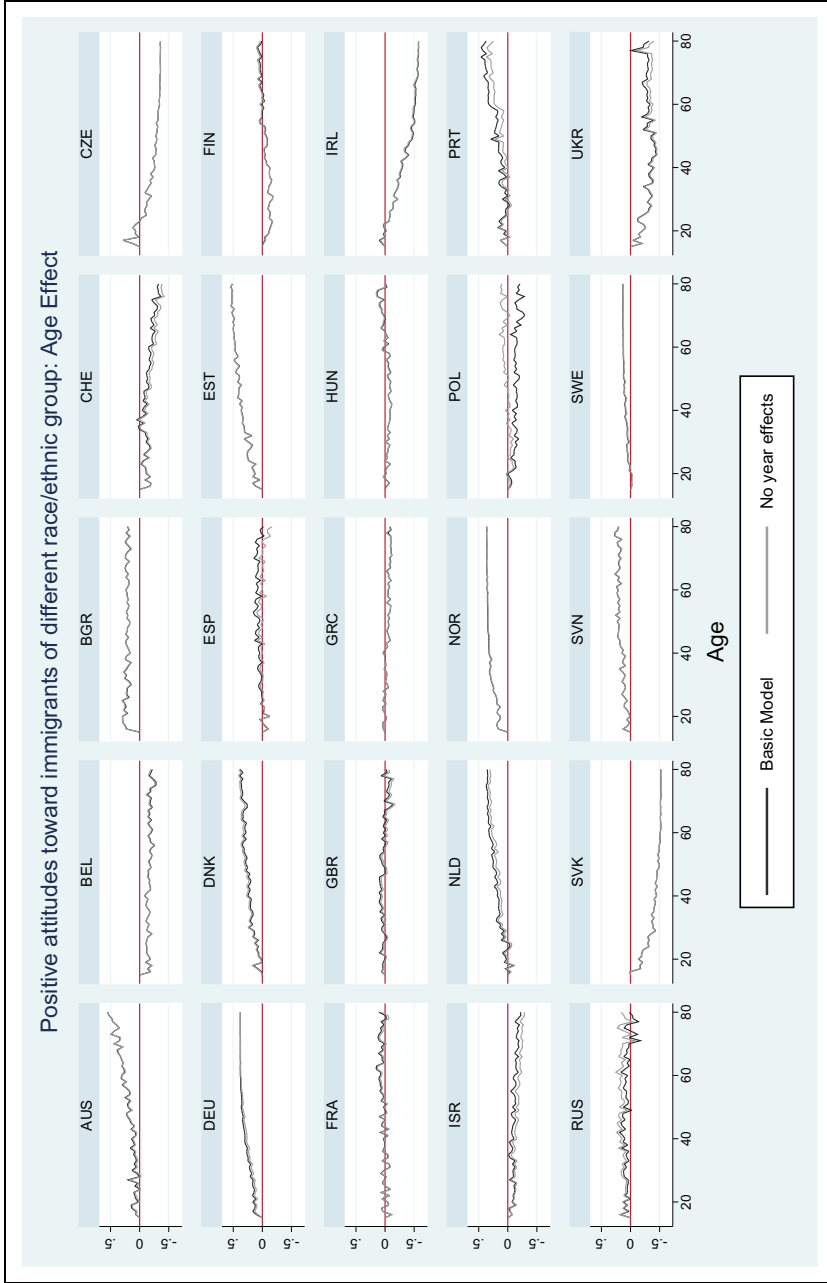
It could be argued that the period of time covered by the ESS — from 2002 to 2014 — may not be long enough to capture life cycle patterns. Preferences may change over a longer period of time, and 12 years cannot cover the same group of individuals from, for instance, age 20 to age 40. The period of time covered by papers trying to identify cohort and age effects on attitudes goes from 10 to 46 years.<sup>7</sup> Among those studies, Calahorrano (2013) is the closest to our paper and she also uses 12 years of individual-level longitudinal data from 1999 to 2010.

There is not a specific rule regarding the acceptable number of years of data required to identify life cycle effects. The methodology used in this paper relies on the assumption — common in this literature — that the age profiles of different cohorts are the same for the nonoverlapping age values across cohorts. To test whether this assumption is robust by whether we use 12 or more years, we need repeated cross sections covering a period of time longer than 12 years. To our knowledge, the only dataset that satisfies this requirement is the World Value Survey (WVS) spanning the years from 1990 to 2011, that is, a period covering 22 years. Unfortunately, the questions included in the WVS regarding immigrants are quite different from those of the ESS. Moreover, they are not available for all years, so we end up with only two countries from the European area: Spain (1990, 1995, 2000, 2007, and 2011) and Turkey (1990, 1996, 2001, 2007, and 2011).

The only question included in the WVS related to attitudes toward immigrants — and available for a sufficient number of survey years — is: *On this list are various groups of people. Could you please mention any that you would not like to have as*

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<sup>7</sup>For instance, Calahorrano (2013) uses data from 1999 to 2010; Sørensen (2013) uses data from 1985 to 2006; Tilley and Evans (2014) use data from 1964 to 2010; De Mello et al. (2017) use data from 2004 to 2013; Fullerton and Dixon (2010) use data from 1984 to 2008; Rhodebeck (1993) uses data from 1972 to 1988; Street and Cossman (2006) use data from 1988 to 2000; and Svallfors (2008) uses data from 1981 to 2002.



**Figure 6. Robustness Check: Age Effects with and without Controlling for Year.**  
 Note: Each line shows the average marginal effect of age on reporting positive attitudes toward immigrants. “Basic Model” refers to equation (1) controlling for cohort and year effects. “No year effects” refers to equation (1) without controlling for year effects. Design weights used in regressions.



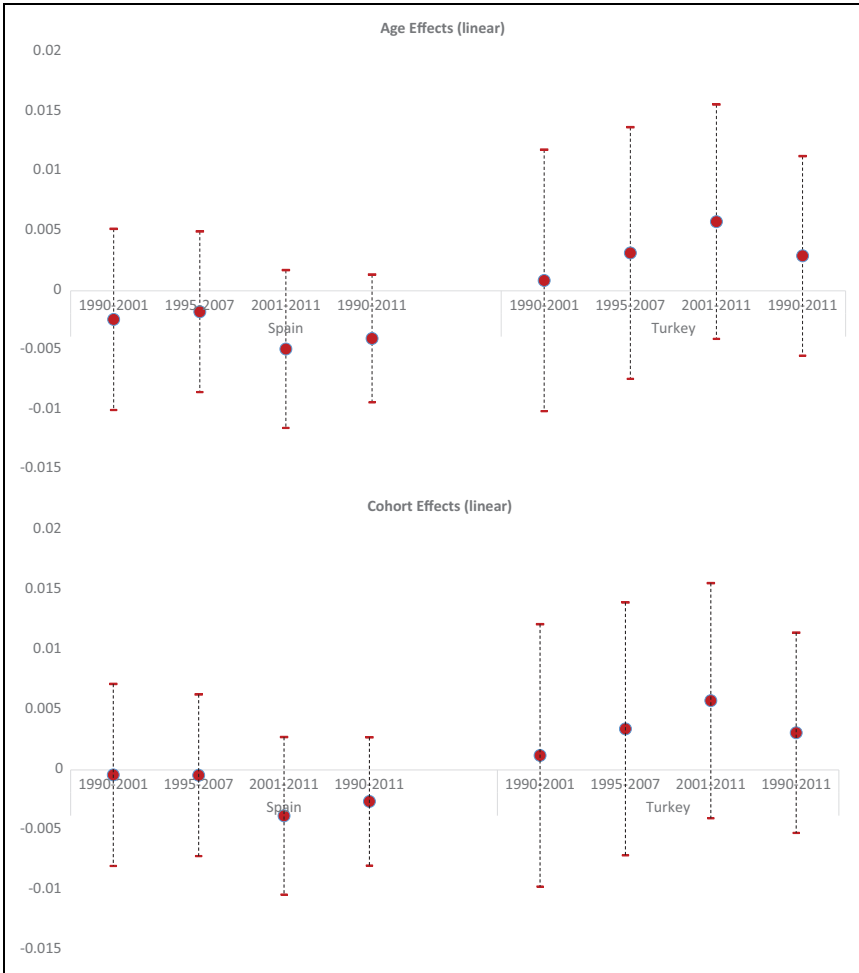
*neighbors?* The nonmutually exclusive list of people includes immigrants/foreign workers (our outcome of interest), as well as drug addicts, people of a different race, and heavy drinkers, among others. We use this question to test the assumption that the age profiles of different cohorts are very similar. We estimate equation (1) for three different subperiods (1990, 1995/1996, and 2000/2001; 1995/1996, 2000/2001, and 2007; 2000/2001, 2007, and 2011) and compare the estimated age profiles with those that emerge from using all five surveys covering 20 years. As mentioned above, the procedure to model year effects is problematic when the number of cross sections is too small. In this case, as we have only three cross sections for the 10-year panels, we model the year effects using simple year dummy variables and we introduce age and cohort in a linear way.

Figure 7 shows the estimated marginal effects of age and cohort for the four subsamples of Spain and Turkey, as well as their 95 percent confidence intervals. The effects have the same sign across subperiods for each country, and their confidence intervals overlap. Figure 8 shows the estimated effects of age and age-squared; even though the effects are slightly different across years, their confidence intervals overlap. Unfortunately, in most cases the effects are not statistically different from zero but, as mentioned at the beginning of this section, the goal of this robustness check was to test that the effects do not dramatically differ by using a 10-year pseudo-panel instead of a longer time span. The results suggest that the assumption that the age profiles of different cohorts are roughly similar seems to hold in this dataset. However, we should mention the caveat that we are unable to test the stability of the coefficients over a period of more than 20 years due to lack of data. This limitation should be kept in mind when interpreting the results of this paper.

## Discussion

As mentioned above, one of the main contributions of this paper is to investigate whether the findings of Calahorrano's (2013) seminal paper for Germany hold for a larger set of diverse countries. Our results display significant variation across countries, which shows that even though the results display some degree of external validity, they also raise the question of which are the drivers of such differences. While this task is beyond the scope of this paper, in this section we attempt to provide some answers. We first discard obvious candidates such as the level of development or the socialist legacy, as different age and cohort effects do not fall systematically in either one of these groups.

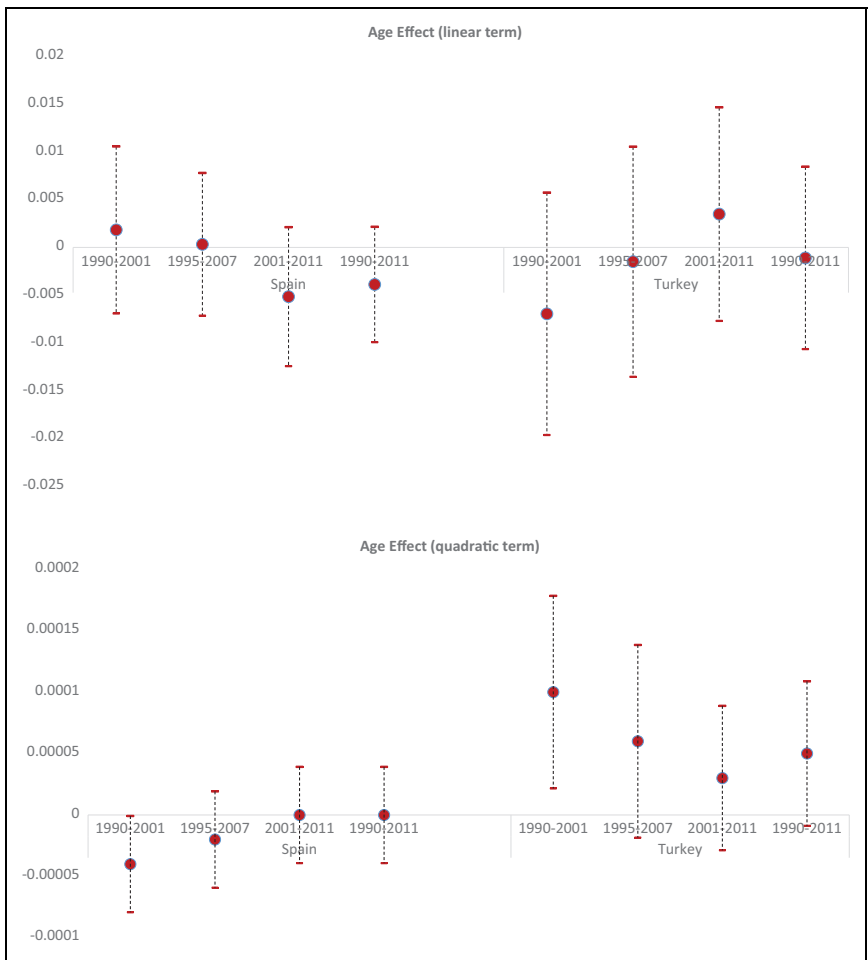
The literature review section above provides a framework to analyze why the age effects (after controlling for cohort of birth) vary by country. We use such framework to identify country characteristics that may explain why the age and cohort effects are different. Given the low number of observations — there are only 25 countries in our sample — we cannot estimate a regression using multiple explanatory variables. Therefore, we rely on descriptive statistics to compare countries



**Figure 7.** Robustness Check: 10- versus 20-year Pseudo-panels. Linear Marginal Effects. Note: Each point shows the estimated effect of age and year of birth on the probability of not mentioning immigrants/foreign workers as a group they would not like as neighbors. The dashed lines show the 95 percent confidence intervals.

across groups. We classify countries using the coefficients associated with age and birth cohort reported in Table 3 for the attitudes toward immigrants of a different race or ethnicity. It is important to note that these coefficients closely match the graphs of Figure 5, which control for individual characteristics.

We first try to analyze whether differences in the pension system play an important role. Unfortunately, we cannot test the hypothesis that the presence of a PAYG system tends to make the preferences of old and young individuals more similar, as



**Figure 8.** Robustness Check: 10- versus 20-year Pseudo-panels. Quadratic Marginal Effects. Note: Each point shows the estimated effect of age on the probability of not mentioning immigrants/foreign workers as a group they would not like as neighbors. The dashed lines show the 95 percent confidence intervals.

basically all the countries included in this analysis have either a PAYG system or a universal pension for the elderly (Schwarz et al. 2014). However, we can test whether specific features in the countries’ PAYG pension systems contribute to explain the gap in migration attitudes across countries. In particular, we analyze whether the correlation between age and attitudes toward immigration varies by factors that affect the sustainability of pension systems such as demographics. We expect that older natives would be more likely to favor immigration in economies whose PAYG systems are less intertemporally sustainable, as immigration would

alleviate the demographic pressures to the system and thereby help prevent a potential decrease in individual benefits (see Ivlevs 2008, 2012). Table 4 shows that countries where individuals become more pro-immigration over the life cycle (i.e., Group 3) also have less sustainable pension systems from the demographic point of view — when compared to countries in Group 1 — as their populations are on average older and display lower fertility rates.

As the effect of the pension systems on pro-immigration attitudes by age depends on the assumption that immigrant workers are in the formal sector and contribute to the pension fund, we explore the correlation with the skill composition of migrants. The higher the fraction of skilled immigrants, the higher the likelihood that they will be in the formal sector. We would expect that individuals would become more pro-immigration over the life cycle in countries where immigrants are more likely to work in the formal sector. However, Table 4 shows that immigrants in Group 3 countries are only slightly more skilled than their counterparts in Group 1.

The evolution of pro-immigration attitudes over the life cycle can also be affected through the labor market if the degree of complementarity between natives and foreigners varies with age and/or labor market experience. Table 4 shows the relationship between the age effects by country and labor market variables to explore this hypothesis. Consistent with models of complementarity between young and older workers (Göbel and Zwick 2013), we find that individuals tend to become more pro-immigration as they get older in countries where older individuals are more likely to participate in the labor market and have a job.

Finally, we also attempt to shed some light on the drivers of the different generational effects across countries. Based on the idea that education is correlated with stronger preferences for cultural diversity (Hainmueller and Hiscox 2010), we first explore whether countries that displayed more progress in terms of educational attainment over time also experienced more improvements in attitudes toward immigration across generations. The descriptive statistics in Table 5 do not support this hypothesis, as the improvements in educational attainment between 1990 and 2000 are not correlated with cohort effects across groups of countries.<sup>8</sup> In fact, countries where the new generations are less pro-immigration experienced the largest increase in educational attainment. We also explore whether older generations that grew up in countries with higher levels of immigration tend to display attitudes toward immigrants more positive than those of younger generations. We use the share of international migrants aged 65 years or older. As most migrants tend to be young when they arrive to the host country, a higher value of this variable may indicate that immigrants have been in the country of destination for a longer period of time. We find that countries where older generations are more proimmigration than their

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<sup>8</sup>Unfortunately, we do not have data on educational attainment for all countries in the sample before 1990 to capture changes over a longer time period.

**Table 4.** Age Effects Versus Country Characteristics.

	Population 65 years and older (% of total)	Fertility rate	Migrants with a college degree (% of migrants)	Employment rate of people aged 60–64 years	Labor force participation rate of people aged 60–64 years
Group 1 Negative age effect (Czech Republic, Greece, Israel, and Poland)	14.5	1.8	22.5	30.5	32.5
Group 2 Age Effect not different from zero (Belgium, Bulgaria, France, Hungary, Ireland, Portugal, Russia, Slovak Republic, Switzerland, Ukraine, and United Kingdom)	15.7	1.6	27.4	30.2	31.6
Group 3 Positive age effect (Austria, Denmark, Estonia, Finland, Germany, Netherlands, Norway, Slovenia, Spain, and Sweden)	16.9	1.6	23.0	37.7	39.6

Note: Each group is defined using the sign and statistical significance of the coefficients associated with age in Table 3, for attitudes toward immigrants of a different race or ethnicity. The share of population 65 years or older and the fertility rate (total births per woman) come from the World Development Indicators. The share of migrants with a college degree is based on data from DIOC OECD 2000 and 2010. The employment and labor force participation of older workers are the average for the 2002–2014 period and come from OECD Stats.

**Table 5.** Cohort Effects Versus Country Characteristics.

		College graduates (% of population, 2000–1990 change)	Migrants aged 65 years or older (% of total)
Group 1	Negative cohort effects (Czech Republic, Greece, and Israel)	29.4	21.4
Group 2	Cohort effects not different from zero (Belgium, Bulgaria, France, Ireland Portugal, Poland, Russia, Slovak Republic, and Ukraine)	20.6	16.3
Group 3	Positive cohort effects (Austria, Switzerland, Germany, Denmark, Spain, Finland, Netherlands, Norway, Slovenia, Sweden, Estonia, Hungary, United Kingdom)	26.1	13.9

Notes: Each group is defined using the sign and statistical significance of the coefficients associated with birth cohort in Table 3, for attitudes toward immigrants of a different race or ethnicity. “Negative cohort effects” mean that older generations had more positive attitudes toward immigrants than their younger counterparts. The share of college graduates in the population comes from the Barro–Lee tables, while the share of older migrants comes from DIOC 2000.

younger counterparts have on average older immigrants. This is consistent with older generations in Group 1 countries having greater exposure to immigrants in the past when compared to countries in Group 3.

In summary, while explaining the cross-country differences in the evolution of attitudes toward immigration over the life cycle and across generations is beyond the scope of this paper, an exploratory analysis suggests that demographic pressures and the labor market outcomes of older workers are related to the estimated age effects across broad country groups. At the same time, we find that the group of countries where attitudes toward immigration became more negative for younger generations also had a longer history of being recipients of immigrants than countries where younger generations are more pro-immigration than their older counterparts.

## Conclusions

Using household surveys for 25 countries between 2002 and 2014, we find that in most economies, older individuals are more averse toward immigrants because of a cohort or generational effect, not because they become more critical toward open immigration policies over the life cycle. The results from our preferred model specification show that in most countries, pro-immigration attitudes are either flat or increasing with an individual’s age. To our knowledge, this is the first paper to provide empirical evidence for a large number of countries consistent with the predictions of models of political economy regarding attitudes toward immigration

policies by age. Thereby, this paper shows that the initial findings of Calahorrano (2013) for Germany also hold for a larger set of countries. At the same time, the finding that immigration attitudes are mostly driven by a cohort effect, with older birth cohorts showing higher levels of opposition toward immigration, is at first glance consistent with existing evidence showing that the more negative attitudes of the elderly are largely explained by racial or ethnic prejudice — or compositional amenities — than by labor market concerns (Card, Dustmann, and Preston 2012). Nevertheless, we also find that older cohorts are more averse to immigrants from their same race or ethnic origin, suggesting that the attitudes of older cohorts against immigrants is not as much related to the ethnicity or race of immigrants so as to other immigrants' characteristics.

The estimated age and cohort profiles may have implications for the political economy of immigration reforms in aging economies. If these profiles remain stable in the future, the fact that the new cohorts will replace their older and more-averse-to-immigration counterparts may result in an increased overall support for more open immigration regimes over time. Accordingly, aging economies where individuals become less averse to immigration throughout the life cycle may also improve their overall attitudes toward immigrants as the elderly will represent a larger fraction of the voting population. Nevertheless, as it is the case with any extrapolation of current trends to the future, caution is needed as policy preferences can change in response to many economic and political events over time.

Finally, the estimated age and cohort profiles reveal significant heterogeneity across countries. For example, countries where older generations have more positive attitudes toward immigration also had a longer history of being recipients of immigrants than countries where older generations are less pro-immigration than their younger counterparts. Accordingly, countries where individuals become more pro-immigration over the life cycle also have less sustainable pension systems. While we attempted to provide some insights on this heterogeneity across countries, an investigation of the drivers of such differences represents an important direction for future research.

### **Authors' Note**

The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

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## Supplemental Material

Supplemental Appendix S1 is available in the online version of this article at <http://journals.sagepub.com/home/mrx>.

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