

# Roots of tolerance among second-generation immigrants

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**Abstract.** Tolerance – respecting individual choice and differences among people – is a prominent feature of modern European culture. That immigrants embrace this kind of liberal value is arguably important for integration, a central policy goal. We provide a rigorous study of what factors in the ancestral countries of second-generation immigrants – including formal and informal institutions – predict their level of tolerance towards gay people. Using the epidemiological method allows us to rule out reverse causality. Out of the 46 factors examined, one emerges as very robust: a Muslim ancestral background. Tolerance is lower the larger the share of Muslims in the country from which the parents emigrated. An instrumental-variable analysis shows that the main mechanism is not through the individual being a Muslim, but through the individual being highly religious. Two additional attitudes among people in the ancestral country (valuing children being tolerant and respectful, and valuing children taking responsibility), as well as impartial institutions in the ancestral country, predict higher individual tolerance. Our findings thus point to an important role for both formal- and informal-institutional background factors in shaping tolerance.

**Key words.** Tolerance; integration; liberal; culture; institutions; religion

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## 1. Introduction

‘In this world, which is getting more and more closely interconnected,  
we have to learn to tolerate each other.’  
—*Bertrand Russell, interviewed on BBC’s Face to Face, 1959*

Immigration to and within Europe is nothing new, but the public debate has intensified in recent years, as immigration flows have increased (UNHCR, 2019). Much of the public debate – such as that between Chancellor Angela Merkel and her challenger Martin Schulz in the 2017 German election campaign (El-Menouar, 2017) – concerns a lack of integration, which is thought to bring with it a number of social, economic, and political challenges. Some of these challenges are connected to formal institutions – e.g., high minimum-wage laws and strict employment protection regulation (Kahn, 2007; Skedinger, 2010) and excluding immigrants from voting (Slotwinski *et al.*, 2017) or citizenship (Weldon, 2006) – while others are related to informal institutions or culture more broadly (Blau *et al.*, 2011; Lundborg, 2013; Koopmans, 2016). For example, Bisin *et al.* (2011: 57) write that ‘when they have a strong identity, second-generation immigrants have a lower chance of finding a job than natives’. Hence, one central aspect of integration is a closer alignment of the norms and values of immigrants to those of the native population. If this can be achieved, it seems plausible to expect social harmony to be higher and the potential for integration to be greater.<sup>1</sup>

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<sup>1</sup> Bansak *et al.* (2016) show that Europeans are more positive to asylum seekers if they are more employable, have more coherent reasons for asking for asylum, have more severe vulnerabilities and if they are Christian rather than Muslim. We consider it reasonable that people will also be more positive towards immigrants if the immigrants are tolerant.

Facilitating integration is not the only reason to strive for tolerance. Locke (1689) and Mill (1859) argued for its ability to generate peace, harmony and individual freedom; and modern research indicates that tolerance brings both subjective well-being, by allowing people, especially minorities, to lead the lives they want without social and legal disapprobation (Corneo and Jeanne, 2009; Inglehart *et al.*, 2014), and economic development, by entailing low entry barriers for innovative people.<sup>2</sup>

Against this background, we ask what explains how tolerant second-generation immigrants in Europe are. Our main analysis focuses on tolerance towards gay people, an important indicator of liberal values typical of most European countries.<sup>3</sup> We provide the most comprehensive empirical investigation to date of the predictors of tolerance, examining several classes of possible explanatory variables – most notably, the following features of the countries from which the parents of the second-generation immigrants migrated: political institutions, economic institutions, legal institutions, fractionalization, economic factors and informal institutions (religion and culture). The idea is that these characteristics of the ancestral countries shape the values and norms of the parents, who grew up in those countries and who transmit them to their children. Hence, we relate the tolerance of children of immigrants in 31 European countries, all of them born and residing there, to features of the 150 countries from which their parents stem.<sup>4</sup> One advantage of this method is that it allows us to rule out reverse causality, since the individual-level tolerance of children growing up in a new country cannot influence basic features of the parents' home countries.

Our findings suggest that tolerance towards gay people among second-generation immigrants in Europe is related to one variable in a very robust way: the share of Muslims in the parents' home country. The higher the share, the lower the tolerance among today's second-generation immigrants. An instrumental-variable analysis suggests that the causal mechanism is the individual degree of religiosity rather than the individual being a Muslim. In addition, we find that three other features of the ancestral countries are positively related to tolerance in most model specifications – two values considered important for children to learn (tolerance and respect, and a feeling of responsibility), and impartiality, a measure of institutional quality. Finally, we look at

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<sup>2</sup> See Mokyr (1990: 12), McGranahan and Wojan (2007), Florida *et al.* (2008) and Berggren and Elinder (2012).

<sup>3</sup> Indeed, Akaliyski (2019) shows that substantial cultural convergence has occurred in the European Union, to the effect that a large share of Europeans in most countries today embrace 'emancipative and secular values', like tolerance. Against this background, our study provides a better understanding of the reasons for the remaining variation in tolerance across countries and groups of people; and the Akaliyski findings reinforce the view that tolerance among immigrants is an important value for fitting into their European countries of residence today.

<sup>4</sup> This method of regressing individual outcomes on ancestral-country factors has become established in social-science research; see, e.g., Fernández and Fogli (2009), Algan and Cahuc (2010) and Luttmer and Singhal (2011).

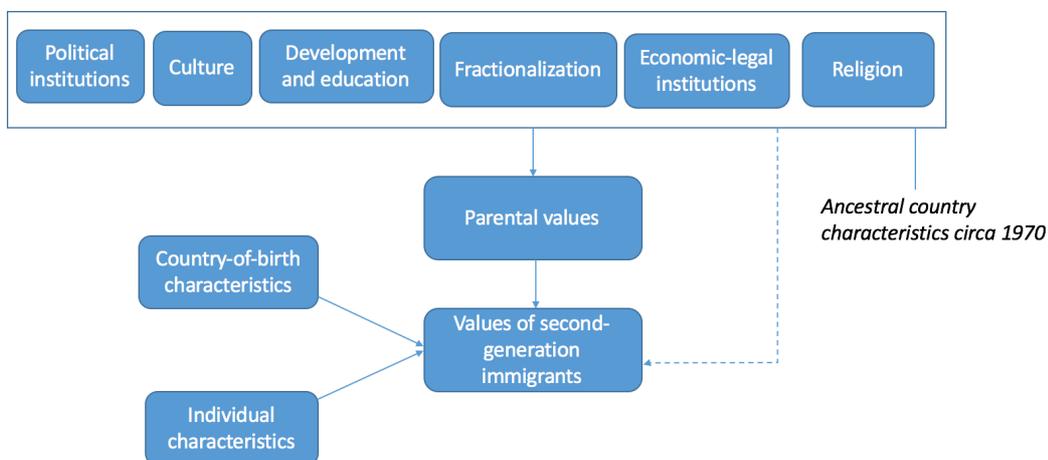
another dependent variable, attitudes towards the role of women, and find that the share wanting children to learn tolerance and respect and the Muslim share are significant predictors (positively and negatively) here as well, further strengthening our interpretation that these background factors are indicative of a liberal or an illiberal value orientation.

## 2. Theoretical framework, previous literature and our contribution

### *Theoretical framework*

We are interested in what determines the values of the second-generation immigrants. Tolerance can be conceived as an informal institution in the sense of North (1990), i.e., as a non-codified rule or norm that puts restrictions on attitudes towards and treatment of others, and as an internal institution in the sense of Voigt (2013) to the extent that manifestations of intolerance are sanctioned by members of society through social (rather than legal) mechanisms. It is in this sense akin to the role of the generality principle of Buchanan and Congleton (1998) in the context of formal institutions, which puts restrictions on what kind of political decisions are permissible.

Figure 1. The determinants of tolerance



Our theoretical framework links characteristics of the ancestral country, in which the first-generation immigrants were born and raised, to characteristics of their children. As Figure 1 shows, the type of values a second-generation immigrant holds is affected by individual characteristics, country-of-birth characteristics and parental values. The parental values, in turn, are influenced by the ancestral-country characteristics, which are grouped into six categories, as explained and motivated in online appendix 1.<sup>5</sup> This schematic understanding of the formation of values builds on

<sup>5</sup> In line with Krosnick and Alwin (1989) and Bergh and Öhrvall (2018), individuals' attitudes are assumed to be formed primarily during late adolescence and early adulthood and then remain relatively unchanged.

Bisin and Verdier (2000, 2001, 2011). They model two transmission channels for values: horizontal transmission (from the surrounding society) and vertical transmission (from the parents).<sup>6</sup> In our empirical analysis, we do not use parental values directly but the characteristics of the ancestral country, as indicated by the dashed line, for two reasons: there are no data on parental values and if one were to use them, it would introduce a risk for reverse causality.

Our theoretical approach does not point out a particular (set of) explanatory variables as important *a priori*, but allows for a wide range of factors (guided by a wider set of theories) to potentially affect tolerance.

### ***Previous literature and our contribution***

Research on the what explains tolerance is limited, especially from a cross-country perspective. Corneo and Jeanne (2009) examine whether people consider homosexuality justifiable and find that they are more likely to do so if GDP per capita is higher and if the country of residence has become an EU member; likewise, looking at individual variables, being female, having a higher income, being unmarried and being a student or a part-time worker are all related to more tolerance. Andersen and Fetner (2008) provide evidence that tolerance is negatively related to income inequality but also that the people become more tolerant with higher incomes. In a series of studies, Berggren and Nilsson (2013, 2014, 2015, 2016) look at tolerance as a function of economic-legal institutions, as measured by economic freedom indices and the KOF index of globalization. Among other things, they show that the quality of the legal system and monetary stability are positively associated with tolerance both towards people of a different race and towards gays and lesbians; that social trust enhances this effect of institutions; that more general taxation across U.S. states is conducive to tolerance towards atheists, communists and gay people; and that social and economic globalization seems to induce parents to want to teach their children tolerance.

Doebler (2015) focuses on various aspects of religion across Europe and generally finds that individual-level indicators (e.g., being a member of a religious denomination and attending religious services) predict moral rejection of homosexuality and intolerance against gays and lesbians. Belief in a personal God is related to the former but not very much to the latter measure of ‘homonegativity’. In addition, looking at country-level measures, religiosity, corruption, income inequality and non-equal rights are found to make moral rejection and intolerance more likely. Jäckle and Wenzelburger (2015) similarly use multilevel analysis to analyze the relationship between religion and attitudes towards homosexuality across 79 countries and find differences in how negative people are towards gays and lesbians depending on which religion they belong to.

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<sup>6</sup> Fernández (2011) and Soehl (2017) document that parents transmit values to their children.

Fielding (2018) documents a historic influence from migration patterns in the Middle Ages in the UK on attitudes towards immigrants today. Towns that historically welcomed Jews have more tolerant inhabitants today, indicating intergenerational transmission of attitudes and persistence over time, as well as one type of tolerance (towards Jews) encompassing another (towards all kinds of modern-day immigrants). Aldashev *et al.* (2012) show that legal reforms can influence social norms, not least in the area of family life, suggesting that cultural variables can be shaped by formal institutions. Lastly, Fernández *et al.* (2019) find evidence that political rhetoric, policy decisions and the prevalence of AIDS affected a development towards more favorable attitudes towards gay people in the United States. It demonstrates the malleability of values and attitudes like tolerance.

Compared to the existing studies of tolerance we add valuable insights in at least four ways.

(i) We rule out reverse causality and provide causal evidence for what shapes tolerance. As noted in our theoretical discussion (in online appendix 1), several variables that we (and previous studies) examine can both determine and be determined by tolerance, stressing the need to rule out reverse causality when testing the relationship empirically. (ii) We examine the richest set of potential explanatory variables in the literature so far, with a particular focus on formal and informal institutions, (iii) We use three model-specification approaches to examine the question (one thematic approach and two mechanical variable-selection methods), along with a number of robustness checks and extensions, as well as an instrumental-variable analysis to gain further understanding of relevant mechanisms. And (iv), we focus on immigrants and the link to integration, which arguably provides a further benefit of immigrants being tolerant.

### **3. Data and empirical method**

#### ***Data***

Our main outcome variable is *tolerance*, measured with a question from the second to sixth rounds of the European Social Survey (ESS), spanning the period 2004–2012, asking to what degree respondents agree with the statement that ‘gay men and lesbians should be free to live their own life as they wish’. Possible answers range from ‘Disagree strongly’, coded as 1, to ‘Agree strongly’, coded as 5, with intermediate categories ‘Disagree’ (2), ‘Neither agree nor disagree’ (3) and ‘Agree’ (4). In line with Inglehart and Abramson (1999), we consider this a useful indicator of tolerance overall and of liberal values. Likewise, Ekehammar and Akrami (2003) and Akrami *et al.* (2011) show how different types of prejudices (sexism, racism, homophobia and prejudice against the disabled) are clearly and positively correlated – in fact, they identify ‘generalized prejudice’ encompassing different types of prejudice in many people. This is reinforced by a factor analysis yielding a generalized prejudice factor explaining 50% to 60% of the variance. Our own correlation

analysis using the General Social Survey from the United States shows that tolerance towards gay people, measured by a willingness to let gay people speak in public, is positively and quite strongly related to tolerance also for atheists, communists and militarists – see Table A9 in online appendix 2.<sup>7</sup> Even though our tolerance measure is not a perfect indicator of tolerance overall or of a general liberal value orientation, it is arguably a useful predictor. Even so, we consider it worthwhile to identify factors that shape tolerance towards gay people, as we consider that an important outcome variable in its own right.<sup>8</sup>

In a complementary analysis, we replace the tolerance measure by another indicator of liberal values, the degree to which one agrees, on a five-point scale, with the statement ‘Women should be prepared to cut down on paid work for sake of family’, with a higher number indicating stronger disagreement (and a stronger liberal value orientation).

The ESS has representative samples for each country and round, and it features information about the country of birth of each respondent as well as of both parents. This enables us to look at second-generation immigrants and to identify which country the parents migrated from. The data span 31 European countries in which the second-generation immigrants were born and reside, which makes it likely that our findings are not the result of the particular conditions of some idiosyncratic country. The following countries of birth and residence for our second-generation immigrants are included: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine and United Kingdom. We are able to observe the tolerance of individuals whose parents come from about 150 countries from all over the world.<sup>9</sup> The fact that the second-generation immigrants stem from different background countries facilitates generalizations on the basis of our findings.<sup>10</sup>

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<sup>7</sup> We unfortunately do not have data to conduct a similar correlation analysis for Europe.

<sup>8</sup> We furthermore note that the intolerance of immigrants is sometimes used as an argument by anti-immigrant politicians – claiming, like the assassinated Dutch politician Pim Fortuyn or Geert Wilders in today’s Netherlands, that they threaten to undermine the liberal progress for gay people and women in the West. A related debate is taking place among some feminists, concerned about illiberal attitudes towards women among certain immigrant groups (Okin, 1999).

<sup>9</sup> More information about the ESS data can be accessed at <http://ess.nsd.uib.no/>. Table A10 in Online Appendix 2 presents all countries of origin of the parents of the second-generation immigrants.

<sup>10</sup> While we compare second-generation immigrants born in the same country but from different ancestral countries with each other, this group as a whole has similar observable characteristics as people in general in their countries of birth, e.g., in terms of health, income and marital status (see Ljunge, 2014a, 2014c, 2016).

As for explanatory factors, we sort 46 characteristics of the ancestral countries thematically into six groups: political institutions, culture, development and education, fractionalization, economic-legal institutions and religion. In addition, we include exogenous individual-level controls for age and gender throughout the analysis and, in a sensitivity analysis, further individual control variables: education, income, marriage status, employment status, subjective health and happiness. All these explanatory variables are defined and motivated, theoretically and empirically, in online appendix 1, where we also present regression tables and data sources. The summary statistics are in Table A11 in online appendix 2.

### ***Empirical method***

We apply the epidemiological method (Fernández, 2011) to infer how ancestral country characteristics influence tolerance among second-generation immigrants, using ordinary least squares (OLS) to estimate regressions of this kind:

$$\text{Tolerance}_{i\text{cat}} = \beta_1 X_a + \beta_2 Z_{i\text{cat}} + \gamma_{ct} + \varepsilon_{i\text{cat}}. \quad (1)$$

$\text{Tolerance}_{i\text{cat}}$  is the measure of the tolerance level of second-generation immigrant  $i$ , born and residing in country  $c$  with a parent born in country  $a$ , where  $a \neq c$ , in period  $t$ . The vector  $X_a$  contains the 46 characteristics of country  $a$  that may affect the tolerance of individuals whose parents stem from it.  $Z_{i\text{cat}}$  captures individual controls,  $\gamma_{ct}$  is the country-of-residence-by-year fixed effects, while  $\varepsilon_{i\text{cat}}$  is the error term.<sup>11</sup> Standard errors are clustered by the parent's birth country to allow for arbitrary correlations of the error terms among second-generation immigrants from the same ancestral country.<sup>12</sup> Importantly, we can rule out reverse causality by using this method, since the tolerance of an individual born and residing in country  $c$  cannot affect country-level features in the parents' birth country  $a$ , for spatial and temporal reasons.

The analysis is undertaken in two main ways: through systematic tests of the 46 variables grouped thematically and through mechanical tests. The first part consists of three steps: (1) each ancestral variable is regressed on tolerance one at a time; (2) then the variables are combined by category into cumulative models; (3) the variables that are statistically significant at the 5% level or lower in the preceding analysis are put in a regression together. The second part examines the roots

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<sup>11</sup> The fixed effects mean that we account for culture, institutions and all other unobserved differences which apply to all residents in country  $c$  in period  $t$ . Moreover, since the country fixed effects are included for each year, they account for non-linear trends that may differ across countries.

<sup>12</sup> The results are similar if using an ordered Probit or Logit model instead of OLS; these results are available upon request.

of tolerance using mechanical variable selection techniques, in the form of Extreme Bounds Analysis and LASSO (a machine learning method), which results in regressions with the most important variables for explaining tolerance. For both parts of the analysis, we then evaluate how the identified variables fare against each other in ‘horse races’; and we perform further robustness checks.

A main advantage of our empirical approach is that we impose few assumptions *a priori* on what matters, that is, we allow a wide set of factors to influence tolerance. Our priority is to avoid ‘bad assumptions’ about what influences tolerance, which risk being part of more narrow analyses that focus on a particular relationship. Given the state of the literature, which has far from settled how tolerance is shaped, we believe it to be a fruitful approach.

#### **4. Main empirical results**

We present our empirical results in three subsections. *The first* reports systematic tests of how the 46 ancestral-country characteristics, grouped thematically as indicated in Figure 1, predict tolerance. It ends with a ‘horse-race’ test with those variables from the thematic tests that showed a robust relationship to tolerance (having attained a 5% significance level both when entered individually and with the other variables of the group). Exogenous individual-level control variables and country-by-year fixed effects are always included. *The second subsection* presents two mechanical model-specification tests, EBA and LASSO, of which of the 46 variables that predict tolerance. While the preceding tests depend on our choice of how to group the variables thematically, the mechanical tests show what happens when they are grouped according to other principles. *The third subsection* contains a number of extensions, offering more precise information about the main results and about how robust they are.

##### ***Tolerance regressions: Six groups of explanatory variables and a ‘horse race’***

First, we study how *political institutions* in the parents’ country of birth relate to the tolerance of second-generation immigrants (see Table A1 in online appendix 1). All variables (democracy, communist regime, political stability, constraints on the executive, impartiality and professionalism) except communist regime are statistically significant at the 1 per cent or 5 per cent level when added individually, with positive signs in line with our theoretical predictions. When including all variables at once, only democracy is statistically significant, but the p-value is 0.055. None of these variables therefore go through to the ‘horse race’.

Second, we look at *culture*. We begin by presenting estimates for Hofstede’s five cultural dimensions (individualism, masculinity, pragmatism, power distance and uncertainty avoidance) –

see Table A2 in online appendix 1. Two of them attain statistical significance when added individually, and three of them do when included simultaneously: individualism (positive sign), masculinity (negative sign) and pragmatism (positive sign), where the signs are the expected ones. Pragmatism is the only factor that is strongly significant both on its own and in the cumulative model. A second set of cultural background factors are presented in Table A3 in online appendix 1 and capture what values people think are important to teach children (independence, hard work, feeling of responsibility, imagination, tolerance and respect, thrift, determination and perseverance, religious faith, unselfishness and obedience). While estimates for five of them are statistically significant when included one at a time, only two are still significant when they are all included: tolerance and respect (positive sign) and religious faith (negative sign).

Third, we examine *development and education*. Each of the six variables – GDP per capita, life expectancy, years of schooling, IQ, non-religious fraction and female labor force participation rate – are positive and statistically significant when added one by one (see Table A4 in online appendix 1). But in the cumulative model, only IQ and the female labor force participation rate remain significant.

Fourth, we look at *fractionalization*. All four indicators – income inequality, ethnic fractionalization, religious fractionalization and genetic diversity – are significantly related to tolerance, and all of them in a negative way (see Table A5 in online appendix 1). They have the same sign and similar significance, both individually and in the cumulative model.

Fifth, we focus on *economic-legal institutions*. The first indicators are the five areas of the Economic Freedom of the World index (size of government, quality of the legal system/protection of property rights, access to sound money, freedom to trade and regulation). It is clear that one area of economic freedom seems strongly related to tolerance: the quality of the legal system, with a positive sign (see Table A6 in online appendix 1). As argued in Berggren and Nilsson (2013, 2014), a higher-quality legal system can generate tolerance by ensuring that interactions between people are protected under the rule of law, which reduces the risk for opportunistic and exploitative behavior, which in turn enables people to trust and tolerate each other. We also examine the KOF index of globalization (Table A7 in online appendix 1). Even though indicators of both economic and social globalization are positive and significant when included separately, when put together, none of the globalization variables significantly predict tolerance, hence not providing support for the theoretical prediction in this domain.

Sixth, we come to *religion*. We include the religious adherence shares of Christianity, Judaism, Islam, Hinduism and Buddhism (Table A8 in online appendix 1). The robust finding is a significant negative relation between the share of Muslims and tolerance. While the share of Christians in the ancestral country is positively related to tolerance when entered on its own, the

estimate changes to negative and significant in the cumulative model, indicating a non-robust relationship. The fraction Jewish is significant and positive on its own, but it becomes insignificant in the cumulative model. The Hindu fraction is insignificant and negative on its own and becomes significantly negative in the cumulative model.

Lastly, we come to a *cumulative model with the strongest predictors*, from the six thematic analyses presented above, or a ‘horse race’. The analysis thus far has uncovered a number of significant predictors of tolerance across a spectrum of possible influences. To examine which of these are the most important we put the variables that are significant at the 5% level or lower (both when included individually and in the combined models) into a cumulative model to see which emerge as significant.<sup>13</sup> In a second specification GDP per capita in the ancestral country is added to account for the level of development. As can be seen in Table 1, only one of the strong candidates remains statistically significant at 5% or lower: the Muslim share.

Table 1. Cumulative model with the ten strongest explanatory variables

Dependent variable: Tolerance toward gay people		
	(1)	(2)
Pragmatism,	0.267	0.296
ancestral country	(0.138)*	(0.145)**
Tolerance and respect,	0.306	0.294
ancestral country	(0.237)	(0.219)
Religious faith,	0.209	0.229
ancestral country	(0.150)	(0.149)
IQ,	-0.000	-0.002
ancestral country	(0.005)	(0.005)
Female labor force participation,	0.003	0.003
ancestral country	(0.003)	(0.003)
Gini of income,	-0.002	-0.002
ancestral country	(0.003)	(0.003)
Ethnic fractionalization,	-0.121	-0.132
ancestral country	(0.094)	(0.096)
Religious fractionalization,	0.017	0.023
ancestral country	(0.110)	(0.111)
Genetic diversity,	-2.218	-2.435
ancestral country	(1.833)	(1.853)
Muslim fraction 1970,	-0.408	-0.396
ancestral country	(0.082)***	(0.083)***
Log of GDP per capita,		0.022
ancestral country		(0.023)

<sup>13</sup> We also require a sample of at least 42 ancestral countries to include a variable, which corresponds to the number advanced by Angrist and Pischke (2009) in order to have a sufficient number of clusters. The restriction is binding for the economic freedom category.

Individual controls (exogenous)	Yes	Yes
Country-by-year fixed effects	Yes	Yes
R-squared	0.229	0.229
Observations	11949	11949

Notes: The dependent variable is attitudes to the statement ‘Gays and lesbians free to live life as they wish’.

Both specifications study second-generation immigrants and estimate the effect of factors in the parents’ country of birth. Individual controls include age, age squared and gender. Standard errors in parenthesis, which allow for clustering on the parents’ birth country. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

### ***Mechanical model-specification tests***

The specification with the strongest predictors in Table 1 is based on a grouping of variables guided by a theoretical understanding of what predicts tolerance, along with a selection rule based on variable significance. Since the grouping of variables means that the number of control variables in each table is limited in a particular way, our results might derive from this manner of specifying the models – or there might be severe multicollinearity when similar variables are put into the same regressions (although collinearity tests indicate that this is not a problem). We therefore use alternative approaches to examine which the strongest predictors are.<sup>14</sup>

We use three mechanical variable selection methods to assemble ‘horse races’ corresponding to that of Table 1. First, we use Extreme Bounds Analysis (EBA)<sup>15</sup> to rank all variables by how often they are significant in predicting tolerance when all other variables are added in all possible combinations of up to three.<sup>16</sup> This unconditional EBA yields that the Muslim fraction in the ancestral country is significant at the 5% level or lower in 99.98% of all model combinations, which means that it ranks first among all the variables. A number of other variables are also very often significant, as indicated by the fact that the variable ranked tenth is significant in about 2/3 of the regressions.

Second, we follow a similar approach, but rank variables based on an EBA conditional on the Muslim fraction. This approach selects the variables that are most frequently significant when the Muslim fraction is always included in the model, along with all combinations of up to three of the remaining variables. The results from this exercise show that the significance shares become lower for other variables (the tenth most frequently significant variable is significant at the 5% level or lower in about 17% of the regressions).

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<sup>14</sup> Because of small sample sizes, we do not include economic freedom variables in these tests.

<sup>15</sup> For more on EBA, see, e.g., Sturm and de Haan (2005) and Gassebner *et al.* (2013).

<sup>16</sup> The individual controls (age, its square and gender), as well as all the country-by-year fixed effects, are always in the models – i.e., the other variables, characterizing the ancestral countries, are added to these in all combinations of up to three variables. In all, we conducted 9,177 regressions for each of the examined variables.

The third mechanical approach, a machine learning method, is fundamentally different. The Least Absolute Shrinkage and Selection Operator (LASSO) ranks variables based on how much they contribute to explaining the variation in the outcome variable. LASSO adds a penalty for including variables to the standard OLS objective of minimizing the squared deviations. The LASSO penalty is the sum of the absolute values of the estimated coefficients (betas), and the weight of the penalty is given by the parameter lambda.<sup>17</sup> The absolute values in the penalty induce the operator to set several coefficients to zero and hence shrink the model. By estimating the LASSO for a range of lambdas we rank variables by the order they are selected (assigned a non-zero coefficient). Muslim fraction in 1970 is the first variable selected by LASSO indicating that it is the most important factor for explaining tolerance. Subsequent variables are selected based on their marginal contribution to explaining tolerance conditional on the already included variables.

Table 2. Models based on mechanical specification

Dependent variable: Tolerance towards gay people			
Variable selection method:	EBA unconditional (1)	EBA conditional (2)	LASSO (3)
Muslim fraction 1970, ancestral country	-0.630 (0.155)***	-0.305 (0.051)***	-0.328 (0.056)***
Female labor force participation, ancestral country	-0.002 (0.002)	0.004 (0.002)	
Years of schooling (1985–95 avg), ancestral country	0.026 (0.014)*		
Christian fraction 1970, ancestral country	-0.106 (0.133)		
IQ, ancestral country	-0.003 (0.005)		
Democracy (polity2), ancestral country	-0.016 (0.008)**		
Religious fractionalization, ancestral country	-0.026 (0.116)		
Pragmatism, ancestral country	0.270 (0.146)*	0.229 (0.118)*	
Non-religious fraction year 1970, ancestral country	-0.185 (0.202)	-0.324 (0.221)	
Tolerance and respect, ancestral country	0.647 (0.245)**	0.227 (0.248)	0.034 (0.250)
Power distance, ancestral country		0.314 (0.103)***	0.239 (0.099)**
Economic globalization (actual flows), ancestral country		0.001 (0.001)	0.001 (0.001)

<sup>17</sup> For a thorough discussion of LASSO, see Hastie *et al.* (2009).

Impartiality, ancestral country	-0.001 (0.028)		0.070 (0.032)**
Ethnic fractionalization, ancestral country	-0.111 (0.085)		
Log of GDP per capita, ancestral country	0.042 (0.025)*		
Genetic diversity, ancestral country			-0.377 (1.082)
Professionalism, ancestral country			-0.020 (0.027)
Masculinity, ancestral country			0.006 (0.105)
Feeling of responsibility, ancestral country			0.507 (0.199)**
Unselfishness, ancestral country			0.398 (0.165)**
Individual controls (exogenous)	Yes	Yes	Yes
Country-by-year fixed effects	Yes	Yes	Yes
R-squared	0.240	0.187	0.182
Observations	11001	7987	9498

Notes: The dependent variable is attitudes to the statement ‘Gays and lesbians free to live life as they wish’.

The first specification includes the ten most frequently significant variables according to an unconditional EBA. The second column includes the ten most frequently significant variables according to an EBA conditional on Muslim fraction being in the model. The third specification includes the ten first variables selected by LASSO. All specifications study second-generation immigrants and estimate the effect of factors in the parents’ country of birth. Individual controls include age, age squared and gender. Standard errors in parenthesis, which allow for clustering on the parents’ birth country. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

For each of the three approaches, we take the top-ten-ranked variables and put them in in an OLS regression (with individual controls and fixed effects). This gives us Table 2. All underlying results are available on request. As can be seen, Muslim fraction is strongly significant in all three specifications based on mechanical variable selection. The results reinforce our finding that Muslim fraction is the most important and robust ancestral-country factor to explain tolerance.<sup>18</sup> Point estimates for the Muslim fraction are very similar in the conditional EBA- and LASSO-based models, while the point estimate is double the magnitude in the unconditional EBA. This appears to be due to issues of multicollinearity in the unconditional EBA, where the Muslim fraction has a VIF

<sup>18</sup> Muslim fraction is strongly significant also when conducting this type of analysis with the top three, five and eight (rather than the top ten) variables in each of the three mechanical approaches.

of 17 (and the Christian fraction has a VIF of 12).<sup>19</sup> There are no indications of multicollinearity in the conditional EBA or the LASSO models.

## 5. Extended empirical analysis

We conduct a number of further analyses to investigate the character and robustness of our results.

### *Sensitivity analysis regarding the Muslim share*

We have seen that the Muslim share is uniquely strong in predicting (in)tolerance in all models.<sup>20</sup> We undertake four additional tests that demonstrate its robustness even further.

(i) We include the Muslim fraction in all the cumulative models (in the rightmost columns) of all our thematic regression tables (Tables A1–A8 in online appendix 1) on political institutions, culture, etc. We find that the fraction of Muslims in the ancestral country remains negative and strongly statistically significant in all settings. Results are available on request.

(ii) The Muslim fraction estimate is not sensitive to the boundary values of the variable, such as comparing homogenous Muslim ancestries to those where no Muslims were present. Restricting the sample, based on the ancestral country Muslim share, from the top or the bottom, yields strongly significant estimates of similar magnitudes. Table A12 in online appendix 2 presents the estimates.

(iii) The Muslim fraction estimate is not the result of the parents emanating from a particular continent. When excluding ancestral countries from Africa, Asia, the Americas and Europe, respectively, the estimate does not change much and retains its statistical significance. The estimate is reduced and becomes insignificant when only European ancestral countries are included, but this is not surprising given the limited variation in Muslim shares there. Lastly, we add ancestral-continent fixed effects and again reassuringly find that the estimate retains both its size and statistical significance. For details, see Table A13 in online appendix 2.

(iv) We include five other measures of the influence of Islam in society: membership in the Organization of Islamic Cooperation (dummy), whether Islam is constitutionally entrenched (dummy), the Islamic State Index, the degree to which the constitution denotes the supremacy of Islam (SI-clause) and whether the constitution identifies Islam as a source of legislation (ISL-

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<sup>19</sup> The VIF for Muslim fraction is below the usual threshold of ten if the model is restricted to the top five variables.

<sup>20</sup> How Islam relates to another Western practice, that of the rule of law, is explored by Gutmann and Voigt (2018). Tolerance might be seen as an informal institution about treating people equally; the rule of law might be seen as a formal institution about treating people equally. On p. 355, they write: ‘[T]he equal treatment of all members of society and the creation of an independent judiciary are less likely than in otherwise comparable societies not under the influence of Islam’. This is overall in line with the findings of our study.

clause). The three first measures are from Gutmann and Voigt (2015) and the latter two from Gouda and Gutmann (2018).<sup>21</sup> These measures are all negatively related to tolerance when included on their own, but lose or continue not to display significance when the share of Muslims is included in the model, while the latter predictor always retains its strong significance. Results are presented in Table A14 in online appendix 2.

### ***The sensitivity of the results to the inclusion of further individual control variables***

In the analysis so far, we included age, age squared and gender as individual controls, as these are exogenous to the individual's tolerance level. However, it could be that other individual factors play a role in explaining tolerance and that omitting them biases the results. Even though these other individual control variables risk being endogenous, we included more of them to the specifications of Table 1 and report the findings in Table A15 in online appendix 2. Notably, Muslim share remains strongly statistically significant throughout this exercise. Among the newly added individual control variables, these are significantly and positively related to tolerance: female, tertiary education, health and happiness. Four are significantly and negatively related to tolerance: age, being out of the labor force, being a low-income earner and being married. Also when controlling for these individual characteristics, the Muslim share still plays a large explanatory role (even though the size of the point estimate is somewhat reduced).

### ***The role of selection***

Although we study second-generation immigrants who are born and reside in the destination country of their parents, selection of migrants could still be a concern. Uniform selection, if all migrants are a little more (or less) tolerant than the ancestral country average, is not a concern, since the variation used to identify estimates is in the form of differences across ancestries. The concern is if selection is differential in a way that mimics the estimated relationship between tolerance and the ancestral characteristic. In the case of Muslim share we would be concerned if migrants from Muslim countries were less tolerant than non-migrants in their ancestral country and if migrants from non-Muslim countries were more tolerant than the non-migrants. To address this concern, we study first-generation migrants and compare their tolerance to non-migrants in their ancestral country. The tolerance difference between migrants and non-migrants is plotted against the ancestral-country Muslim share in Figure 2.<sup>22</sup> It would be troubling if the relationship were

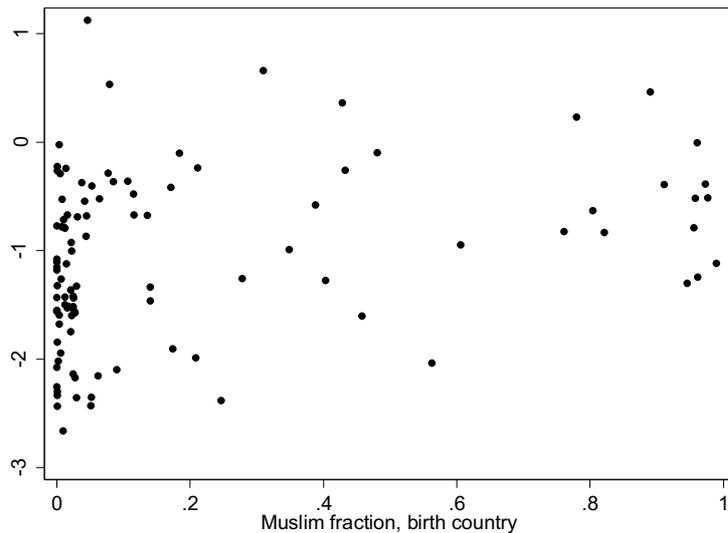
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<sup>21</sup> Gouda and Gutmann (2018) find that discrimination against religious minorities is higher in Muslim countries, but only if they implement Sharia law.

<sup>22</sup> The tolerance of migrants is measured by our independent variable, tolerance towards gay people. For ancestral country tolerance we need data for individuals also residing outside Europe (not covered by the ESS). We thus use the

negative, since that is what we get in the analysis above, but reassuringly, the relationship in the graph is positive. This indicates that our estimates of the Muslim share could be biased towards zero – the relationship in the graph works against finding a negative relationship between tolerance and Muslim share. Thus, there is no evidence of migrant selection driving our very robust estimate.

Figure 2. Tolerance differences between migrants and non-migrants across ancestral-country Muslim share



Notes: The vertical axis measures average differences in tolerance between first-generation migrants in Europe and non-migrants across the world by ancestral country. The horizontal axis increases with the Muslim share in the ancestral country.

***Attitudes towards women as dependent variable***

The analysis so far has used tolerance towards gay people as the dependent variable, interpreted by us as an indicator of a liberal value orientation. As a check of this interpretation, we make use of another such indicator from the ESS, the attitude towards the statement “Women should be prepared to cut down on paid work for sake of family”, with a higher number indicating stronger disagreement. The results, using the model specifications of Table 1, are reported in Table A16 in online appendix 2. Reassuringly, the share wanting children to learn tolerance and respect is positively, and the Muslim share negatively, related to supporting working women, further strengthening our interpretation that these factors of the ancestral countries are indicative of a liberal, or illiberal, value orientation.

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EVS/WVS question if tolerance and respect is a valued child quality. The two tolerance measures are differenced, after the ancestral country measure has been multiplied by five to align the scales.

### *Summary of the results of the extended analysis*

The Muslim share is a very robust predictor as it is strongly significant, both statistically and economically, in all the models. What other predictors are important? If we look at the findings of Tables 1 and 2, no other variable is significant in *all* these ‘horse races’. This means that their robustness is less clear than for the Muslim share. Still, some of the variables are relevant to consider. As a starting point, these are the variables that obtain a significance level of 5% or lower in any of the models: democracy, power distance, impartiality and three attitudes that are valued in children: tolerance and respect, a feeling of responsibility and unselfishness. In our view, some of these are more credible as predictors of tolerance than the others. If we add the two criteria that a variable should be significantly related to tolerance (at the 5% level or lower) when included on its own in the baseline models (Tables A1–A8 in online appendix 1) and have the same sign throughout all empirical exercises, three variables remain: two values considered important for children – tolerance and respect and a feeling of responsibility – as well as impartiality as an institutional quality. These results point to an important role for both values and institutions in shaping tolerance, in addition to the share of Muslims.

### **6. Instrumental-variable analysis**

What mechanism may explain the very robust finding that the Muslim share in the ancestral countries predicts intolerance? In order to gain further insight into this issue, and inspired by Acemoglu and Robinson (2005), we conduct an instrumental-variable analysis of the Muslim share using 2SLS. Our first idea is that the negative tolerance effect works through the individual second-generation immigrant being a Muslim her- or himself. Indeed, when using the Muslim fraction in the ancestral country as an instrument, the first stage reveals a strong positive relationship between being a Muslim and stemming from a country with a large Muslim fraction, and the second stage indicates that Muslims express lower tolerance. See column 1 of Table 3. But a second round of tests indicates that there is more to the story.

Table 3. Instrumental-variable analysis

Dependent variable: Tolerance towards gay people					
Instrument(s), ancestral country variables:	Muslim fraction 1970	Muslim fraction 1970	Muslim fraction 1970, Non-religious fraction	Muslim fraction 1970, Non-religious fraction, Religious faith	Muslim fraction 1970 Non-religious fraction
	(1)	(2)	(3)	(4)	(5)
Muslim (reported by the individual)	-1.256		-0.046	-0.118	0.180

	(0.272)***		(0.404)	(0.308)	(0.457)
Religious degree (reported by the individual)		-0.237 (0.022)***	-0.228 (0.075)***	-0.207 (0.055)***	-0.264 (0.085)***
GDP per capita, ancestral country					0.024 (0.017)
Individual controls (exogenous)	Yes	Yes	Yes	Yes	Yes
Individual controls (extended)	Yes	Yes	Yes	Yes	Yes
Country-by-year fixed effects	Yes	Yes	Yes	Yes	Yes
F-statistic, instrumenting for Muslim	27.34		13.58	10.81	11.98
F-statistic, instrumenting for religious degree		69.53	35.27	25.67	42.37
Hansen overidentification test (p-value)				0.727	
Observations	14448	14448	14448	13871	13872

Notes: The dependent variable is attitudes to the statement ‘Gays and lesbians free to live life as they wish’. All specifications study second-generation immigrants, using up to three factors in the parents’ country of birth as instruments for two individual characteristics (being a Muslim and the degree to which they consider themselves to be religious). Exogenous individual controls include age, age squared and gender; extended individual controls include marital and labor market status, education and income. Standard errors in parenthesis, which allow for clustering on the parents’ birth country. \* p<0.1, \*\* p<0.05, \*\*\* p<0.01

Our next idea is that the effect might work through the individual second-generation immigrant being religious, making a distinction between Muslims of varying religiosity and noting that also non-Muslims can be religious (even though Muslims express a higher degree of religiosity on average compared to Catholics and Protestants). Column 2 shows that the Muslim fraction in the ancestral country also strongly predicts the individual’s degree of religiosity, and that higher religiosity decreases tolerance. We estimate a model with both variables, being a Muslim and the religious degree, in column 3. In this model with two individual channels we need to add one instrument. We include the non-religious fraction in 1970 in the ancestral country, a plausible factor for predicting the individual’s religiosity. Interestingly, the religious degree estimate is virtually identical to that of column 2, while the estimate on being a Muslim is close to zero. The results suggest that the mechanism for the very robust result of Muslim share as a predictor of intolerance is the degree of individual religiosity of the second-generation immigrant rather than the particular type of religion (in line with Berggren and Bjørnskov, 2011, who show that religiosity, not membership of a particular religion, is related to lower social trust).

To examine if there is evidence against the exclusion restriction, we add a third instrument from the ancestral country: the share that thinks that religious faith is an important characteristic in children (another plausible instrument for individual religiosity).<sup>23</sup> In column 4, we report Hansen's J statistic, which shows we cannot reject the null hypothesis that the overidentification restrictions are valid. Lastly, in column 5, we add GDP per capita to the model of column 3, which yields similar results. The estimates on religious degree are similar, both in magnitude and significance, across specifications. Our conclusion is that the influence of the ancestral-country Muslim share works through individual religiosity, not as one might think at first through the individual being a Muslim as such.

## 7. Discussion and conclusions

Tolerance has many benefits, such as the respectful treatment of minorities, absence of conflict, innovativeness and subjective well-being. A society in which people assess and treat others on their merits rather than on their belonging to a certain group is a more cooperative, open and dynamic place. In a situation where Europe is continuing to receive a large number of immigrants, it becomes interesting to see what determines *their* degree of tolerance, since, in addition to other benefits, tolerance can arguably facilitate their integration into European societies. If one knows what the main determinants are, it becomes easier to try to stimulate the tolerance of those of foreign descent, should one wish to do so.

In this study, we identify factors that explain how tolerant second-generation immigrants are towards gay people, an indicator of liberal values widely held in many European countries today. The factors (46 in total) are features – not least formal- and informal-institutional ones – of the countries in which the parents of these second-generation immigrants were born and grew up, before migrating. By using this type of explanatory variables, we avoid the problem of reverse causality.

Our empirical analysis reveals that one factor stands out: the share of Muslims in 1970 in the parents' country of origin. The higher the share, the lower the tolerance. This finding is very robust, as it survives all robustness checks, including mechanical model-specification tests in the form of Extreme Bounds Analysis and LASSO. Regarding other background characteristics, results are more mixed, but we wish to highlight three additional variables that are relatively robustly

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<sup>23</sup> Separate IV estimations using only one instrument at the time suggest that both the ancestral-country non-religious fraction and the share in the ancestral country that states that religious faith is an important characteristic in children are plausible instruments: Both variables strongly predict individual religiosity on their own.

related to tolerance: valuing tolerance and respect in children, valuing a feeling of responsibility in children and impartial institutions. We have also exchanged tolerance for another outcome variable indicative of a liberal value orientation, viz., positive attitudes towards women working, and we find that the Muslim share and the share who think that children should learn tolerance and respect are (negative and positive) predictors of this attitude as well. Hence, both formal and informal institutions contribute to shaping the social attitudes of Europe's second-generation immigrants.

When considering how our findings may be useful for policymaking, a first thing to note is that tolerance among second-generation immigrants in Europe seems to be affected by influences from far away and from the past. Conditions in the parents' home countries exercise an influence. This suggests that integration is a long-term process and not always an easy one to shape by political means, especially not when cultural characteristics, such as tolerance, are involved.<sup>24</sup>

Still, there are implications for both migration and integration policies. To the extent that tolerance is valued, there may be rivalry between promoting tolerance and accepting migration from countries that had large shares of Muslims, as well as from countries that lack impartial institutions and do not value tolerance or a feeling of responsibility in children. Notably, our IV analysis reveals that the mechanism at work, linking ancestry from a country with a high Muslim share to intolerance, is individual religiosity. This indicates that being a Muslim is not the key avenue through which the influence works – indeed, Muslims can be more or less religious, and non-Muslims can be highly religious as well. This should mitigate fears that Muslims necessarily introduce less tolerance in European societies and rather points at the central role of devoutness. A process of secularization can reduce the strength of the link between originating from a Muslim-dominated country and intolerance.

Lastly, it bears noting that we have not, due to a wish to focus on proximate, policy-relevant cultural and institutional causes, included an analysis of the “deep” roots of tolerance, locating the *ultimate* determinants of this type of social attitude in factors such as prehistorical events, climate, geography and biogeography. We do, however, consider such a topic suitable for future research.

## **Supplementary material**

To view supplementary material for this article, please visit

<https://www.dropbox.com/s/qayefb4hrfn01w2/Supplementary%20material%20revised.docx?dl=0>.

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<sup>24</sup> With tolerance as the outcome variable, if one compares the point estimate of the share of Muslims for second-generation immigrants to that for first-generation immigrants, the former is about 58 per cent of the latter, indicating substantial persistence across generations.

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## **SUPPLEMENTARY MATERIAL FOR:**

### **Roots of tolerance among second-generation immigrants**

**Online appendix 1:** The background variables: Theory, data and results

**Online appendix 2:** Individual tables

## Online appendix 1: The background variables: Theory, data and results

Here, as a complement to sections 3 and 4, we present the explanatory variables used in our analysis. For each, we give theoretical considerations of why they are relevant to include and how they are thought to affect tolerance. We also provide information about what exact measures we use in the empirical analysis and their sources, as well as the regression tables.

### *Political institutions*

Political institutions refer to the rules of the political game, often codified in the form of a constitution. A first such set of rules constitute *democracy*. We expect the degree of democracy to relate positively to tolerance, as the essence of democracy is the equal right of citizens to participate in their self-determination. This strong basic view can be internalised in a democratic system, given an expressive function of law (Sunstein, 1996), indicating that formal institutions can influence norms.<sup>25</sup> A complementary reason to expect a positive effect of democracy are results showing that democracy increases social trust (Ljunge, 2014; Guiso, *et al.*, 2016) and that social trust in turn tends to stimulate the tolerance-generating power of formal institutions (Berggren and Nilsson, 2014). A hypothesis of Putnam (1993), which is confirmed empirically by Guiso *et al.* (2016), is that historical experience in free-city states in the north of Italy, where people had the right to decide about their own affairs to a large extent, brings with it social capital, not least a general expectation that others will do well by you. In these democratic settings, people learned to listen to others and work together – also, it seems reasonable to infer, with people who are different, since the trust that emerged was of the generalized sort, which suggests tolerance.<sup>26</sup>

It could also be that tolerance stimulates democracy: people who tolerate others may very well be more willing to let their fellow citizens rule. This indicates the importance of being able to rule out reverse causality when testing the relationship empirically.

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<sup>25</sup> This is not to say that democratic decisions automatically benefit minorities: since such decisions are often a function of voter sentiments, and if a majority is hostile to a certain minority, then it could be that this hostility is reflected also in democratic decisions. But this is a different thing than democracy as a system giving rise to a lack of tolerance or intolerance.

<sup>26</sup> One can add that procedural utility seems to emerge from democratic participation (Frey and Stutzer, 2005), and content citizens are arguably more prone to tolerance than discontent ones. Moreover, the opportunity to vote in local and regional elections increases the degree to which immigrants refrain from violations of legal norms (Slotwinski *et al.*, 2017), indicating social identification with and care for their new home country and possibly greater openness for the kind of values that characterize it.

As our measure of democracy, we use Polity2. The variable increases with the level of democracy and ranges between -10, for fully autocratic regimes, and 10, denoting fully democratic institutions. The source is the PolityIV project, and we use the values in Samanni et al. (2010).

An alternative set of political institutions were provided by *communism* in some countries. It is well-established that communism influenced preferences (Alesina and Fuchs-Schündeln, 2007) and that it destroyed social capital, most notably social trust and cooperation (Rainer and Siedler, 2009; Heineck and Süßmuth, 2013; Lichter *et al.*, 2015). People became suspicious of each other in a dictatorial system, built on official and everyday spies and surveillance, increasing the risk for intolerance towards those who differ from the mainstream way of life. But also here, reverse causality is a definite possibility: intolerant people may be more susceptible to favor a brutal political system that upholds political dogmas, even at the cost of persecution. To measure communism, we include a dummy, which takes the value one if the country's regime was communist in 1970, from Barro and McCleary (2003).<sup>27</sup>

A third variable is *political stability*. If there is no risk of violence or social unrest, and the political system remains safely intact, our hypothesis is that this will be beneficial for tolerance (in line with Hutchison, 2014). If people perceive a risk for chaos and conflict, they will be more inclined to care for themselves and be less interested in extending a generous attitude of openness towards others. Reverse causality could moreover obtain: e.g., a very intolerant group could be more inclined to want to upset the political order and implement policies of their own liking. The measure we use to capture this is the political stability estimate from the Worldwide Governance Indicators (WGI), provided by the World Bank.<sup>28</sup> Political stability combines several indicators measuring perceptions of the likelihood that the government in power will be destabilized or overthrown by possibly unconstitutional and/or violent means.

A fourth factor to consider is *constraints on the executive*. If power is not concentrated into the hands of one leader or one strong party, but rather restricted in some manner in a constitutional system, politics might proceed in a more calm and predictable manner. This speaks in favor of a positive effect on tolerance. It may, however, imply conservation of old institutions and difficulties in modernizing policy-making, which speaks in favor of a negative effect. One can also have reverse causality, if, e.g., an intolerant population favors a strong, populist leader and a political system that allows such a person to persevere. The measure we use is the 1960–2000 mean of an index, reported annually as a 7-point categorical variable (from 1 to 7) by the Polity IV data set,

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<sup>27</sup> Germany and Vietnam have fractional values due to their divided history.

<sup>28</sup> Data and documentation are available at <http://www.govindicators.org>. The data compiled by Samanni *et al.* (2010) from this source is used for this ancestral country characteristic.

quantifying the extent of institutionalized constraints on the decision-making power of chief executives. The variable is the same as in Ashraf and Galor (2013).

Fifth, we look at *impartiality*. If government officials treat everybody in the same situation in a similar manner, this can be expected to increase tolerance, as it suggests that those executing political power do not favor some groups or individuals over others (cf. Rothstein and Teorell, 2008). Reverse causality is a risk, however, since a tolerant population may give rise to demands for and an ample supply of public officials that wish to behave impartially. The measure we use is from the Quality of Government's expert survey as described in Dahlström *et al.* (2015).

Lastly, *professionalism* is considered. As a proxy of meritocracy, this suggests that people get public positions on the basis of competence, not due to personal contacts or belonging to a certain group. Hence, we believe this factor to be positive for tolerance. The causal direction could go the other way, though, since tolerant people could require that no one get positions without proper qualifications. The measure comes from the Quality of Government's expert survey (at the country level); see Dahlström *et al.* (2015) for details.<sup>29</sup>

The regression results (commented on in the article) are in Table A1.

Table A1. Political institutions

Dependent variable: Tolerance towards gay people							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Democracy (polity2),	0.021						0.016
ancestral country	(0.007)**						(0.008)
	*						*
Communist regime (1970),		0.084					0.062
ancestral country		(0.059)					(0.048)
Political stability,			0.091				0.000
ancestral country			(0.027)**				(0.056)
			*				
Constraints on the executive,				0.038			-0.003
ancestral country				(0.017)*			(0.019)
				*			
Impartiality,					0.076		0.058
ancestral country					(0.022)**		(0.051)
					*		
Professionalism,						0.083	-0.020
ancestral country						(0.022)**	(0.049)
						*	

<sup>29</sup> Data on impartiality and professionalism are available at <http://qog.pol.gu.se/data/datadownloads/qogexpertsurveydata>.

Individual controls (exogenous)	Yes						
Country-by-year fixed effects	Yes						
R-squared	0.226	0.222	0.224	0.224	0.225	0.224	0.227
Observations	14100	14100	14100	14100	14100	14100	14100

Notes: The dependent variable is attitudes to the statement ‘Gays and lesbians free to live life as they wish’.

All specifications study second-generation immigrants and estimate the effect of factors in the parents’ country of birth. Individual controls include age, age squared and gender. Standard errors in parenthesis, which allow for clustering on the parents’ birth country. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

## Culture

Another set of factors that theoretically relates to tolerance is captured by *culture*.<sup>30</sup> It is not only formal rules and systems that matter for tolerance, but also informal institutions, like norms, habits and moral beliefs, as well as social attitudes.

First, consider five aspects of national cultures: individualism, masculinity, pragmatism, power distance and uncertainty avoidance (see Hofstede *et al.*, 2010, for an introduction and for definitions). *Individualism* refers to the degree to which people in a society are awarded status based on individual achievement vs. the extent to which they are integrated into groups and feel group loyalty.<sup>31</sup> The expectation is that individualism affects tolerance in a positive manner, as people focus more on individual rather than group characteristics and are ruled less by insider-vs.-outsider thinking. *Masculinity* refers to values being assertive and competitive, as opposed to modest and caring (but all of these can be found both in men and women). Masculinity is likely negative for tolerance, as it implies valuing of getting ahead without consideration for others.<sup>32</sup> *Pragmatism* – sometimes referred to as long-term orientation – is the relative weight people in a society place on taking on the challenges of the future vs. keeping links to the past. In the latter, non-pragmatist case, people cling to traditions and evolved norms, regard social change with general skepticism and believe in absolute truths; while there is curiosity, openness and flexibility

<sup>30</sup> By “culture” is meant “those customary beliefs and values that ethnic, religious and social groups transmit fairly unchanged from generation to generation” (Guiso *et al.*, 2006: 23), or “the set of values and beliefs people have about how the world (both nature and society) works as well as the norms of behavior derived from that set of values” (Gorodnichenko and Roland, 2012: 213).

<sup>31</sup> This characteristic has been shown to matter a great deal for innovation and economic growth (Gorodnichenko and Roland, 2011a,b, 2017), but also, e.g., for democracy (Gorodnichenko and Roland, 2015), management practice (van Hoorn, 2014) and how trusting people are (van Hoorn, 2015).

<sup>32</sup> This would be in line with the findings of Leong and Ward (2006), which indicate that masculinity implies negative attitudes towards immigrants and multiculturalism.

in the former case. The hypothesis is that pragmatism entails tolerance.<sup>33</sup> *Power distance* refers to the extent to which people accept that power is distributed unequally in society. The theoretical relation to tolerance is, in our estimation, ambiguous: such an attitude can stimulate tolerance, since it suggests that people do not get upset by differences among people; but it may also be that people who accept differences are submissive, anti-individualist and accept differences out of fear, with underlying, somewhat aggressive feelings present. *Uncertainty avoidance* is an indicator of a society's rejection of ambiguity, the extent to which people feel uncomfortable in unstructured situations. We think it relates negatively to tolerance, since this attitude refers to whether the uncertainty associated with people who are different is embraced or rejected (in line with correlational evidence by Basabe and Valencia, 2007).

Second, consider ten qualities that people might think are important in children. They express values characteristic of a culture – not least made persistent through vertical transmission from parents to children (Bisin and Verdier, 2011). We expect the following effects on tolerance: *independence*: positive (since it implies an ability to think free of tradition and narrow norms); *hard work, feeling of responsibility, thrift and obedience*: ambiguous (negative if these attitudes indicate a conservative-authoritarian orientation, positive if they are individualist in character: that so long as people lead responsible lives and work hard, they are tolerated, even if they are otherwise different); *imagination*: positive (since it suggests an ability to empathize with those who are different); *tolerance and respect*: positive (almost by definition); *determination and perseverance*: ambiguous (we take this to concern the durability and intensity rather than the content of values); *religious faith*: negative (since most religions dislike gays and lesbians leading their lives as gays and lesbians); and *unselfishness*: positive (since unselfish people can be expected to embrace others freely, including minorities).

Naturally, reverse causality could apply in all of these cases: tolerance may drive the other cultural factors. This needs to be accounted for in the empirical analysis.

As empirical measures, we use the five cultural dimensions in Hofstede et al. (2010)<sup>34</sup>, while the ten qualities people might think are important in children are country averages across the first five waves of the integrated European Values Study and the World Values Survey (EVS/WVS).

Regression results (commented on in the article) are presented in Tables A2 and A3.

Table A2. Hofstede's five cultural dimensions

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<sup>33</sup> On pre-industrial agro-climatic characteristics and ensuing agricultural practices as a deep determinant of long-term orientation, see Galor and Özak (2016).

<sup>34</sup> Data are available at <http://www.geerthofstede.nl/dimension-data-matrix>. We use the variables scaled 0–100.

Dependent variable: Tolerance towards gay people						
	(1)	(2)	(3)	(4)	(5)	(6)
Individualism, ancestral country	0.228 (0.120)*					0.287 (0.135)**
Masculinity, ancestral country		-0.043 (0.110)				-0.169 (0.099)*
Pragmatism, ancestral country			0.401 (0.147)***			0.382 (0.138)***
Power distance, ancestral country				-0.035 (0.087)		0.102 (0.113)
Uncertainty avoidance, ancestral country					0.034 (0.127)	0.028 (0.131)
Individual controls (exogenous)	Yes	Yes	Yes	Yes	Yes	Yes
Country-by-year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.204	0.203	0.206	0.203	0.203	0.207
Observations	13722	13722	13722	13722	13722	13722

Notes: The dependent variable is attitudes to the statement ‘Gays and lesbians free to live life as they wish’.

All specifications study second-generation immigrants and estimate the effect of factors in the parents’ country of birth. Individual controls include age, age squared and gender. Standard errors in parenthesis, which allow for clustering on the parents’ birth country. \* p<0.1, \*\* p<0.05, \*\*\* p<0.01

Table A3. Valued qualities in children

Dependent variable: Tolerance towards gay people											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Independence, ancestral country	0.079 (0.164)										-0.006 (0.194)
Hard work, ancestral country		-0.145 (0.091)									0.013 (0.118)
Feeling of responsibility, ancestral country			0.539 (0.242)**								0.347 (0.258)
Imagination, ancestral country				0.153 (0.190)							-0.366 (0.324)
Tolerance and respect, ancestral country					0.697 (0.249)***						0.473 (0.226)**
Thrift, ancestral country						0.257 (0.181)					-0.054 (0.213)
Determination and perseverance, ancestral country							0.664 (0.289)**				0.177 (0.283)
Religious faith, ancestral country								-0.465 (0.133)***			-0.451 (0.136)***
Unselfishness, ancestral country									-0.057 (0.176)		0.043 (0.216)
Obedience, ancestral country										-0.309 (0.161)*	0.119 (0.250)

Individual controls (exogenous)	Yes										
Country-by-year fixed effects	Yes										
R-squared	0.218	0.219	0.219	0.218	0.220	0.219	0.220	0.223	0.218	0.219	0.224
Observations	15881	15881	15881	15881	15881	15881	15881	15881	15881	15881	15881

Notes: The dependent variable is attitudes to the statement ‘Gays and lesbians free to live life as they wish’. All specifications study second-generation immigrants and estimate the effect of factors in the parents’ country of birth. Individual controls include age, age squared and gender. Standard errors in parenthesis, which allow for clustering on the parents’ birth country. \* p<0.1, \*\* p<0.05, \*\*\* p<0.01

### ***Development and education***

Development and education constitute another set of potential predictors of tolerance. We include six variables. First, *GDP per capita* is an indicator of development level, and the modernization thesis (see, e.g., Inglehart and Baker, 2000) suggests that with economic development comes a shift in culture and values in a predictable direction: e.g., towards more gender equality, less submission to authority, weaker “family values” – and more tolerance. Thus, we expect the relationship between GDP per capita and tolerance to be positive (as also indicated empirically in Andersen and Fetner, 2008, and Corneo and Jeanne, 2009). The same expectation holds for another development indicator, *life expectancy*. Third, *education* involves the acquisition of more knowledge as well as social interaction with new people, both of which are arguably positively related to tolerance. Fourth, tolerance can be related to *IQ*. Cognitive ability enables people to see things from different perspectives and to challenge established, conventional thinking; in addition, it is negatively related to religiosity. For these reasons, we think a positive effect on tolerance is probable.<sup>35</sup> Fifth, *religiosity* in a general sense may play a role, and we expect it to do so in a negative way. It is important to include it with indicators of development to clarify what drives the results. Sixth, the *female labor participation rate* is an indicator of the degree to which women are let in to the labor market, which signifies openness and modernity, wherefore a positive association is to be expected.

Also here, we see a possibility for reverse causality. Tolerance may facilitate economic transactions and lead to higher GDP per capita and life expectancy; the latter can also increase if tolerance entails harmony between people in society. Tolerance can also open up the labor market, for women and others; and higher tolerance may stimulate a number of people who belong to minority groups to study.

Our empirical measures of economic development (GDP per capita), female labor force participation and life expectancy come from the World Development Indicators (data from Samanni

<sup>35</sup> For empirical indications in support, see, e.g., Kanazawa (2009), Cribari-Neto and Souza (2013) and Solon (2014).

et al. 2010), while data on the share of non-religious in 1970 is from Barro and McCleary (2003). Average years of schooling from 1985 to 1995 are from Chanda *et al.*, (2014), data on IQ is from Lynn *et al.* (2009) and geographical characteristics, disease environment and early development are from Ashraf and Galor (2013) and Chanda *et al.*, (2014).

Regression results (comment on in the article) are shown in Table A4.

Table A4. Development and education

Dependent variable: Tolerance towards gay people							
	Economic development	Social development	Human capital	IQ	Religion	Female LFP	Cumulative model
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
log of GDP per capita, ancestral country	0.115 (0.030)***						0.001 (0.044)
Life expectancy, ancestral country		0.012 (0.004)***					0.000 (0.006)
Years of schooling, ancestral country			0.057 (0.013)***				0.019 (0.016)
IQ, ancestral country				0.017 (0.004)***			0.009 (0.004)**
Non-religious fraction year 1970, ancestral country					0.592 (0.141)***		0.170 (0.172)
Female labor force participation, ancestral country						0.011 (0.003)***	0.007 (0.002)***
Individual controls (exogenous)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-by-year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.221	0.218	0.224	0.222	0.219	0.223	0.226
Observations	12459	12459	12459	12459	12459	12459	12459

Notes: The dependent variable is attitudes to the statement ‘Gays and lesbians free to live life as they wish’. All specifications study second-generation immigrants and estimate the effect of factors in the parents’ country of birth. Individual controls include age, age squared and gender. Standard errors in parenthesis, which allow for clustering on the parents’ birth country. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

### ***Fractionalization***

We next consider *fractionalization* – the presence of various differences within society. The general expectation is that cleavages in society bring with them reduced social cohesion, because of in-group/out-group thinking, asymmetric preferences and problems of coordination (Koopmans and Schaeffer, 2016). This will in turn reduce tolerance.<sup>36</sup> More specifically, we look at four indicators:

<sup>36</sup> There is a potential dynamic involved here: tolerant settings may become more fractionalized by welcoming people of different backgrounds, which may then in turn reduce tolerance.

income inequality, ethnic fractionalization, religious fractionalization and genetic diversity, with data from four sources. The Gini coefficient for income is the WDI measure as recorded in Samanni *et al.* (2010). The ethnic fractionalization data come from Ashraf and Galor (2013). Religious fractionalization is from Barro and McCleary (2003), and for genetic diversity we use the predicted values by Ashraf and Galor (2013).<sup>37</sup>

Regression results (commented on in the article) are in Table A5.

Table A5. Indicators of fractionalization

Dependent variable: Tolerance towards gay people					
	(1)	(2)	(3)	(4)	(5)
Gini of income, ancestral country	-0.010 (0.004)***				-0.006 (0.003)**
Ethnic fractionalization, ancestral country		-0.344 (0.128)***			-0.393 (0.113)***
Religious fractionalization, ancestral country			-0.337 (0.118)***		-0.337 (0.104)***
Genetic diversity, ancestral country				-3.908 (1.540)**	-4.951 (1.143)***
Individual controls (exogenous)	Yes	Yes	Yes	Yes	Yes
Country-by-year fixed effects	Yes	Yes	Yes	Yes	Yes
R-squared	0.229	0.229	0.230	0.228	0.234
Observations	14927	14927	14927	14927	14927

Notes: The dependent variable is attitudes to the statement ‘Gays and lesbians free to live life as they wish’.

All specifications study second-generation immigrants and estimate the effect of factors in the parents’ country of birth. Individual controls include age, age squared and gender. Standard errors in parenthesis, which allow for clustering on the parents’ birth country. \* p<0.1, \*\* p<0.05, \*\*\* p<0.01

### ***Economic-legal institutions***

Next, we turn to *economic-legal institutions*.<sup>38</sup> We look at two types of indicators: *economic freedom*, capturing the degree to which an economy is market-oriented, which consists of five areas (the size of government, legal structure and security of property rights, access to sound money, freedom to trade internationally and regulation of credit, labor and business), and *globalization*,

<sup>37</sup> All measures increase with diversity or fractionalization. The Herfindahl indices for ethnic and religious fractionalization, for example, measure the probability that two randomly selected individuals belong to different groups.

<sup>38</sup> On the theoretical relationship between political and economic institutions, see Acemoglu *et al.* (2005). Moreover, it is certainly not a novelty to argue that formal institutions affect culture – see Alesina and Giuliano (2015) for a review and Aldashev (2012a,b) for an analysis showing how legal reform can change social norms in the area of family life.

which consists of three areas (economic, social and political globalization).<sup>39</sup> For *economic freedom* and tolerance, we follow Berggren and Nilsson (2013) in positing a positive relationship between them, through market-oriented institutions and the economic processes they enable. The former refer to legal institutions that apply equally to everyone and that stipulate that rule-breakers will be punished, which will deter cheating and which will allow people the courage to interact and exchange with strangers. The market process can in turn stimulate tolerance by leading participants to internalize a default view of others as trustworthy and by entailing incentives not to discriminate on other bases than productivity.

For *globalization* and tolerance, we follow Berggren and Nilsson (2015) in expecting a positive effect. Globalization can influence people to take a positive outlook on people who are different, both through cultural influences and through economic interaction. People can also become more prone to teach their children tolerance in a globalized world, e.g., if they think that the children will become more successful in life if they tolerate people with other backgrounds.

As in previous cases, we see a distinct possibility for reverse causality. Tolerant countries may be more inclined to undertake institutional reforms that rely on the “anonymous” market and that open up to external influences. The empirical method used hence needs to be able to rule out this causal direction.

For economic freedom we use the aggregate index and its five areas in 1970 from the Fraser Institute.<sup>40</sup> To measure economic globalization, we use the KOF Index of Globalization (Dreher, 2006). Both the main index of economic globalization (denoted A) and its two sub-components (denoted A1, capturing actual flows, and A2, capturing restrictions) are measured in 1970. Social globalization is a summary measure of media use in 1970. We use the first principal component of WDI data from 1970 on the prevalence of TVs, radios, newspapers and telephone subscriptions by country.

Regression results (commented on in the article) are presented in Tables A6 and A7.<sup>41</sup>

Table A6. Five areas of economic freedom

Dependent variable: Tolerance towards gay people	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Economic Freedom Index (EFI),	0.057	0.035							

<sup>39</sup> Strictly speaking, although the main focus here is on institutions, some aspects of economic freedom and globalization concern economic outcomes rather than the underlying rules.

<sup>40</sup> Data can be found at <http://www.freetheworld.com>.

<sup>41</sup> In Table A6, we add GDP per capita in columns (2) and (9), since it has been shown to be related to the economic freedom index (Justesen, 2008; Rode and Coll, 2012). Note that due to data limitations the economic freedom regressions are based on a quite small sample (29 ancestral countries).

ancestral country	(0.029)*	(0.023)							
log of GDP per capita,			0.044						-0.009
ancestral country		(0.056)							(0.048)
EFI component 1 (size of government),			0.022				0.035		0.035
ancestral country		(0.012)*					(0.013)***		(0.013)**
EFI component 2 (property rights),			0.045				0.065		0.067
ancestral country		(0.019)**					(0.022)***		(0.025)**
EFI component 3 (access to sound money),			0.012				-0.021		-0.022
ancestral country		(0.008)					(0.016)		(0.018)
EFI component 4 (freedom to trade),			0.025				-0.000		0.001
ancestral country		(0.015)					(0.012)		(0.014)
EFI component 5 (regulation),						0.028	-0.001		-0.000
ancestral country						(0.018)	(0.018)		(0.019)
Individual controls (exogenous)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-by-year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.131	0.131	0.129	0.132	0.129	0.130	0.129	0.132	0.132
Observations	5845	5845	5845	5845	5845	5845	5845	5845	5845

Notes: The dependent variable is attitudes to the statement ‘Gays and lesbians free to live life as they wish’. All specifications study second-generation immigrants and estimate the effect of factors in the parents’ country of birth. Individual controls include age, age squared and gender. Standard errors in parenthesis, which allow for clustering on the parents’ birth country. \* p<0.1, \*\* p<0.05, \*\*\* p<0.01

Table A7. Economic and social globalization

Dependent variable: Tolerance towards gay people					
	(1)	(2)	(3)	(4)	(5)
Economic globalization (component A),	0.007				
ancestral country	(0.002)***				
Economic globalization (component A1),		0.003			0.002
actual flows, ancestral country		(0.001)*			(0.001)
Economic globalization (component A2),			0.006		0.004
restrictions, ancestral country			(0.002)***		(0.002)*
Social globalization,				0.053	0.020
ancestral country				(0.017)***	(0.017)
Individual controls (exogenous)	Yes	Yes	Yes	Yes	Yes
Country-by-year fixed effects	Yes	Yes	Yes	Yes	Yes
R-squared	0.145	0.141	0.146	0.144	0.146
Observations	8417	8417	8417	8417	8417

Notes: The dependent variable is attitudes to the statement ‘Gays and lesbians free to live life as they wish’. All specifications study second-generation immigrants and estimate the effect of factors in the parents’ country of birth. Individual controls include age, age squared and gender. Standard errors in parenthesis, which allow for clustering on the parents’ birth country. \* p<0.1, \*\* p<0.05, \*\*\* p<0.01

## Religion

The next set of factors is *religion*. We expect the general influence of religiosity to be negative for tolerance, since most religious traditions regard ‘a gay lifestyle’ as something deplorable. Admittedly, more liberal views have begun to emerge in certain religious contexts, which speak in favor of tolerant attitudes, but at least among the more conservative religions, such as Catholicism and Islam, the traditional view still seems to dominate.<sup>42</sup> Also here the causal direction could go from tolerance to religion: e.g., maybe an intolerant person embraces religion in order to get a respectable basis for his unwillingness to let others lead the lives they want to lead. As the empirical measure, we use the fraction who are religious by denomination in 1970, with data from Barro and McCleary (2003).

Regression results (commented on in the article) are shown in Table A8.

Table A8. Religions

Dependent variable: Tolerance towards gay people						
	(1)	(2)	(3)	(4)	(5)	(6)
Christian fraction 1970, ancestral country	0.322 (0.063)***					-0.174 (0.083)**
Jewish fraction 1970, ancestral country		0.647 (0.312)**				0.106 (0.218)
Muslim fraction 1970, ancestral country			-0.399 (0.058)***			-0.553 (0.098)***
Hindu fraction 1970, ancestral country				-0.068 (0.083)		-0.285 (0.104)***
Buddhist fraction 1970, ancestral country					0.178 (0.113)	-0.110 (0.160)
Individual controls (exogenous)	Yes	Yes	Yes	Yes	Yes	Yes
Country-by-year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.222	0.216	0.225	0.216	0.216	0.225
Observations	16347	16347	16347	16347	16347	16347

Notes: The dependent variable is attitudes to the statement ‘Gays and lesbians free to live life as they wish’. All specifications study second-generation immigrants and estimate the effect of factors in the parents’ country of birth. Individual controls include age, age squared and gender. Standard errors in parenthesis, which allow for clustering on the parents’ birth country. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

<sup>42</sup> This hypothesis is given empirical support in Doebler (2015) and Jäckle and Wenzelburger (2015). Somewhat relatedly, Gutmann and Voigt (2015, 2018) and Gouda and Potrafke (2016) find indications that legislation in states where Islam has a strong position tends to discriminate women and protect minorities worse. Moreover, Berggren and Bjørnskov (2011) find a negative relation between religiosity and social trust.

## Online appendix 2: Individual tables

Table A9. Correlation analysis of different types of tolerance

Variable	Tolerance homosexuals	Tolerance atheists	Tolerance racists	Tolerance communists	Tolerance militarists
Tolerance homosexuals	1.00				
Tolerance atheists	0.50	1.00			
Tolerance racists	0.35	0.51	1.00		
Tolerance communists	0.49	0.57	0.46	1.00	
Tolerance militarists	0.44	0.50	0.46	0.55	1.00

Notes: The data are from the General Social Survey (GSS). The variables refer to the willingness to let groups speak in public.

Table A10. Ancestral countries

Afghanistan	Greece	Oman
Albania	Grenada	Pakistan
Algeria	Guinea	Papua New Guinea
Angola	Guinea-Bissau	Paraguay
Argentina	Guyana	Peru
Armenia	Haiti	Philippines
Australia	Hong Kong, China	Poland
Austria	Hungary	Portugal
Azerbaijan	Iceland	Qatar
Bahrain	India	Romania
Bangladesh	Indonesia	Russian Federation
Barbados	Iran	Rwanda
Belarus	Iraq	Sao Tome and Principe
Belgium	Ireland	Saudi Arabia
Benin	Israel	Senegal
Bolivia	Italy	Seychelles
Bosnia and Herzegovina	Jamaica	Sierra Leone
Botswana	Japan	Singapore
Brazil	Jordan	Slovak Republic
Bulgaria	Kazakhstan	Slovenia
Burkina Faso	Kenya	Solomon Islands
Burundi	Korea, D.P.R.O.	Somalia
Cambodia	Korea, Rep.	South Africa
Cameroon	Kuwait	Spain
Canada	Kyrgyz Republic	Sri Lanka
Cape Verde	Laos PDR	St. Lucia
Central African Republic	Latvia	St. Vincent and the Grenadines
Chad	Liberia	Sudan
Chile	Libya	Suriname
China	Libya	Swaziland
Colombia	Liechtenstein	Sweden
Congo, Rep.	Lithuania	Switzerland
Costa Rica	Luxembourg	Syrian Arab Republic
Cote d'Ivoire	Macedonia, FYR	Taiwan
Croatia	Madagascar	Tajikistan
Cuba	Malaysia	Tanzania
Cyprus	Maldives	Thailand
Czech Republic	Mali	Togo
Denmark	Malta	Trinidad and Tobago
Djibouti	Mauritania	Tunisia
Dominica	Mauritius	Turkey
Dominican Republic	Mexico	Turkmenistan
Ecuador	Moldova	Uganda
Egypt, Arab Rep.	Monaco	Ukraine
Eritrea	Mongolia	United Arab Emirates
Estonia	Morocco	United Kingdom
Ethiopia	Mozambique	United States

Finland	Myanmar	Uruguay
France	Namibia	Uzbekistan
Gabon	Netherlands	Venezuela, RB
Gambia, The	New Zealand	Vietnam
Georgia	Nigeria	Yemen, Rep.
Ghana	Norway	Zimbabwe

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Table A11. Summary statistics

Variable	Mean	Standard deviation
<i>Individual characteristics</i>		
Tolerance towards gay people	3.75	1.25
Age	43.03	17.63
Female	0.54	0.50
Married	0.47	0.50
Never married	0.35	0.48
Upper secondary degree	0.52	0.50
Tertiary degree	0.31	0.46
Out of the labour force	0.43	0.50
Unemployed	0.05	0.22
Low income	0.22	0.41
Middle income	0.31	0.46
Health (self-assessed)	3.84	0.93
Happiness	7.19	2.06
Religious degree	4.58	3.09
Women should work less, care for family	2.86	1.19
<i>Ancestral-country characteristics:</i>		
Democracy (polity2)	5.90	5.63
Communist regime (in 1970)	0.43	0.49
Political Stability	0.12	0.90
Constraints on the executive	4.69	1.87
Impartiality	4.24	1.10
Professionalism	4.03	0.85
Gini of income	38.87	5.93
Ethnic fractionalization	0.30	0.19
Religious fractionalization	0.62	0.24
Genetic diversity (predicted)	0.73	0.01
GDP per capita (log)	9.32	0.88
Life expectancy (at birth)	72.15	6.20
Years of schooling	7.82	2.44
IQ	94.37	7.08
Non-religious fraction	0.16	0.19
Female labor force participation	39.73	11.73
Independence	0.42	0.13
Hard work	0.58	0.25
Feeling of responsibility	0.70	0.09
Imagination	0.17	0.07
Tolerance and respect	0.68	0.08
Thrift	0.39	0.11
Determination and perseverance	0.34	0.09
Religious faith	0.32	0.24
Unselfishness	0.26	0.10
Obedience	0.36	0.12
Individualism	0.53	0.20
Masculinity	0.53	0.21
Pragmatism	0.51	0.19

Power distance	0.64	0.23
Uncertainty avoidance	0.74	0.21
Christian fraction	0.59	0.36
Jewish fraction	0.01	0.02
Muslim fraction	0.21	0.36
Hindu fraction	0.01	0.08
Buddhist fraction	0.01	0.05
Economic Freedom Index (EFI)	5.90	1.08
EFI component 1 (size of government)	5.27	1.66
EFI component 2 (property rights)	6.08	1.85
EFI component 3 (access to sound money)	6.93	1.57
EFI component 4 (freedom to trade)	5.43	2.42
EFI component 5 (regulation)	5.55	1.31
Economic globalization (component A)	41.59	12.49
Economic globalization (A1 actual flows)	33.58	15.65
Economic globalization (A2 restrictions)	51.29	17.85
Social globalization (pca media)	0.60	1.95

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Table A12. Sample restrictions based on the Muslim share of the ancestral country

Dependent variable: Tolerance towards gay people					
Restriction on Muslim fraction in the ancestral country	<0.95	<0.90	>0	>0.05	>0.10
	(1)	(2)	(3)	(4)	(5)
Muslim fraction 1970, ancestral country	-0.286 (0.101)***	-0.276 (0.099)***	-0.387 (0.061)***	-0.419 (0.079)***	-0,377 (0.083)**
Individual controls (exogenous)	Yes	Yes	Yes	Yes	Yes
Country-by-year fixed effects	Yes	Yes	Yes	Yes	Yes
R-squared	0.255	0.255	0.215	0.182	0,144
Observations	14015	13985	12929	6090	3971

Notes: The dependent variable is attitudes to the statement ‘Gays and lesbians free to live life as they wish’.

All specifications study second-generation immigrants and estimate the effect of factors in the parents’ country of birth. Individual controls include age, age squared and gender. Standard errors in parenthesis, which allow for clustering on the parents’ birth country. \* p<0.1, \*\* p<0.05, \*\*\* p<0.01

Table A13. Sample restrictions based on immigrant parents' continent of birth

Dependent variable: Tolerance towards gay people						
Sample restriction based on the immigrant parents' continent of birth	Exclude Africa	Exclude Asia	Exclude Americas	Exclude Europe	Only Europe	Ancestral continent fixed effects
	(1)	(2)	(3)	(4)	(5)	(6)
Muslim fraction 1970, ancestral country	-0.388 (0.066)***	-0.426 (0.094)***	-0.408 (0.059)***	-0.415 (0.054)***	-0.190 (0.189)	-0.396 (0.080)***
Individual controls (exogenous)	Yes	Yes	Yes	Yes	Yes	Yes
Country-by-year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Ancestral continent fixed effects	No	No	No	No	No	Yes
Std. dev. of Muslim fraction in sample	0.283	0.272	0.357	0.431	0.063	0.351
R-squared	0.243	0.235	0.226	0.135	0.261	0.224
Observations	14648	14036	15604	4442	11646	16346

Notes: The dependent variable is attitudes to the statement 'Gays and lesbians free to live life as they wish'.

All specifications study second-generation immigrants and estimate the effect of factors in the parents' country of birth. Sample restrictions are based on the continent of birth of the immigrant parent(s). For example, 'Exclude Europe' excludes individuals who has at least one parent born in a European country different from the child's birth country; it does not exclude individuals with one native European parent. Individual controls include age, age squared and gender. Standard errors in parenthesis, which allow for clustering on the parents' birth country. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A14. Alternative indicators of ancestral-country dominance of Islam

Dependent variable: Tolerance toward homosexuals							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Organization of Islamic Cooperation, ancestral country	-0.364 (0.081)***					-0.060 (0.089)	
Islam constitutionally entrenched, ancestral country		-0.319 (0.062)***					0.064 (0.099)
Islamic state index, ancestral country			-0.094 (0.018)***				
SI-clause, ancestral country				-0.087 (0.076)			
ISL-clause, ancestral country					-0.149 (0.140)		
Muslim fraction 1970, ancestral country						-0.347 (0.043)***	-0.461 (0.125)***
Age, age sq., gender controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-by-year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.231	0.232	0.233	0.226	0.225	0.233	0.233
Observations	15374	15374	15374	15374	15374	15374	15374

Notes: The dependent variable is attitudes to the statement ‘Gays and lesbians free to live life as they wish’.

The SI-clause denotes the strength to which the constitution states the supremacy of Islam; the ISL-clause assumes a value of one if the constitution identifies Islam as a source of legislation, and zero otherwise. All specifications study second-generation immigrants and estimate the effect of factors in the parents’ country of birth. Individual controls include age, age squared and gender. Standard errors in parenthesis, which allow for clustering on the parents’ birth country. \* p<0.1, \*\* p<0.05, \*\*\* p<0.01

Table A15. Cumulative model with the ten strongest explanatory variables and additional individual control variables

Dependent variable: Tolerance towards gay people		
	(1)	(2)
Pragmatism,	0.236	0.280
ancestral country	(0.139)*	(0.145)*
Tolerance and respect,	0.208	0.190
ancestral country	(0.235)	(0.209)
Religious faith,	0.175	0.205
ancestral country	(0.151)	(0.149)
IQ,	0.002	-0.001
ancestral country	(0.005)	(0.005)
Female labor force participation,	0.001	0.001
ancestral country	(0.003)	(0.003)
Gini of income,	-0.003	-0.002
ancestral country	(0.003)	(0.003)
Ethnic fractionalization,	-0.128	-0.145
ancestral country	(0.096)	(0.098)
Religious fractionalization,	0.033	0.043
ancestral country	(0.106)	(0.108)
Genetic diversity (predicted),	-2.395	-2.734
ancestral country	(1.897)	(1.920)
Muslim fraction 1970,	-0.379	-0.360
ancestral country	(0.083)***	(0.082)***
log of GDP per capita,		0.034
ancestral country		(0.025)
Age	-0.007	-0.007
	(0.001)***	(0.001)***
Female	0.231	0.231
	(0.018)***	(0.018)***
Married	-0.119	-0.119
	(0.027)***	(0.027)***
Never married	0.004	0.004
	(0.037)	(0.037)
Upper secondary degree	0.033	0.033
	(0.022)	(0.022)
University degree	0.233	0.234
	(0.023)***	(0.023)***
Out of the labor force	-0.121	-0.122
	(0.021)***	(0.021)***
Unemployed	0.001	0.001
	(0.060)	(0.059)
Low income	-0.093	-0.093
	(0.024)***	(0.024)***
Middle income	-0.053	-0.054
	(0.029)*	(0.029)*
Health	0.038	0.038

	(0.015)**	(0.015)**
Happiness	0.021	0.021
	(0.009)**	(0.009)**
Constant	5.160	5.340
	(1.570)***	(1.555)***
Country-by-year fixed effects	Yes	Yes
R-squared	0.245	0.245
Observations	11493	11493

Notes: The dependent variable is attitudes to the statement ‘Gays and lesbians free to live life as they wish’.

All specifications study second-generation immigrants and estimate the effect of factors in the parents’ country of birth. Individual controls include age, age squared and gender. Standard errors in parenthesis, which allow for clustering on the parents’ birth country. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A16. Cumulative model with the ten strongest explanatory variables but with attitudes to women as the outcome variable

Dependent variable: Women should work less to take care of the family	
	(1)
Pragmatism,	-0.147
ancestral country	(0.168)
Tolerance and respect,	0.736
ancestral country	(0.198)***
Religious faith,	-0.012
ancestral country	(0.134)
IQ,	0.001
ancestral country	(0.005)
Female labor force participation,	0.002
ancestral country	(0.003)
Gini of income,	-0.010
ancestral country	(0.003)***
Ethnic fractionalization,	0.220
ancestral country	(0.131)*
Religious fractionalization,	-0.145
ancestral country	(0.148)
Genetic diversity,	-2.285
ancestral country	(2.031)
Muslim fraction 1970,	-0.334
ancestral country	(0.100)***
log of GDP per capita,	-0.098
ancestral country	(0.032)***
Individual controls (exogenous)	Yes
Country-by-year fixed effects	Yes
R-squared	0.149
Observations	7382

Notes: The dependent variable is attitudes to the statement ‘Women should be prepared to cut down on paid work for sake of family’. Answers range from ‘Agree strongly’, coded as 1, to ‘Disagree strongly’, coded as 5. All specifications study second-generation immigrants and estimate the effect of factors in the parents’ country of birth. Individual controls include age, age squared and gender. Standard errors in parenthesis, which allow for clustering on the parents’ birth country. \* p<0.1, \*\* p<0.05, \*\*\* p<0.01

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