Mass media, attitudes towards immigration and policy preferences

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Abstract: We study the determinants of individuals' attitudes towards immigrants and immigration policy, with a focus on media influence. The consumption of political news from any media-source and the use of Internet have been considered. We argue that media influence individuals' beliefs about immigration that, in turn, affect preferences about immigration policy. Using data from the last wave of the European Social Survey, we estimate media demand and the effect of media use on beliefs about immigration and preferences towards immigration policy. We make use of different estimation strategies including 2SLS, control-function approach and simultaneous-equations modeling. Our results confirm previous findings in that beliefs play a key role in forming policy preferences. Media instead are an important determinant of beliefs, less so for preferences. Exposure to political content might both increase as well as reduce pro-immigrant stances, respectively for left-wing and right-wing oriented individuals, in line with the "echo-chamber" effect. The effect of Internet appears to be less significant.

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Introduction

In recent years, economists as well as sociologists and political scientists have increasingly focused their attention on the economic and cultural causes of the rise of populist parties, both on the right and on the left.[3] From the analysis of the electoral programs of European political parties Inglehart and Norris (2016) find a growing emphasis on non-economic issues such as immigration, terrorism, civil unions, abortion, rights etc. The cultural dimension therefore seems to have become more important in parties' programs, probably due to a growing polarization in society determined by values, which is superimposed on that deriving from social classes, economic inequalities and redistributive policies. On the other hand, the demand for populism reflects the increase in economic insecurity resulting from rising inequalities in post-industrial societies. Moreover, the worsening of economic conditions of a large share of the population drives up anti-immigrant sentiments and distrust in economic institutions.[4]

The key role of individuals and parties' attitude towards immigration clearly emerges as one of the factors explaining the upsurge of populism. Several papers have analyzed the determinants of attitude towards immigration and/or immigration policy considering as explanatory variables individual characteristics as well as country level features.[5] They have emphasized the role played by economic as well as cultural factors.

Few papers have analyzed the influence of media on individuals' attitudes towards immigration, and to the best of our knowledge, we are the first to consider the effect of internet use.[6] Media influence individuals' values and beliefs because they offer information; however, this information may be biased. [7] Moreover, even if media offer unbiased information, since individuals like to hear news that confirm their priors, there is a serious risk that media-use induces polarized opinions and extreme values. [8] This is even more so in the case of Internet. In fact, despite the potential of online communication to increase pluralism, thanks to the expansion of the variety and amount of accessible information, there is growing concern that

[3] Inglehart and Norris (2016), characterise populism along two orthogonal components: the "horizontal" right/left dimension, which mainly refers to the economic aspect, and the "vertical" dimension, which refers to the cultural opposition to multiculturalism and to the rights of minorities. Along this dimension, at the opposite end of populism the authors place what they call "liberal cosmopolitanism".

[4]See for example Guiso et al. (2017) "Populism: Demand and Supply" and Rodrik, D (2018) "Populism and the economics of globalization"

[5] Hainmueller and Hopkins (2014), Hainmueller and Hiscox (2007), Sides and Citrin (2007), Mayda (2006).

[6] Facchini et al. (2017), Agovino et al. (2016), Herda (2014), Aalberg and Strabac (2010), Héricourt and Spielvogel (2014).

[7] In recent years, the economic and social impact of exposure to the media have been widely analyzed (See Della Vigna and La Ferrara, 2015 for a survey). The political economy literature has stressed that if media influence voters' preferences, then government, companies and interest groups have an incentive to manipulate the media and induce them to report biased information (see Prat and Strömberg, 2013 and literature therein cited).

[8] See Mullainathan and Shleifer (2005); Iyengar, S., Hahn, K.S. (2009); Gentzkow and Shapiro (2010 and 2011). Psychologists refer to this discomfort as "cognitive dissonance". This is triggered by a situation in which a person is confronted with facts that contradict personal beliefs, ideals, and values.

greater access to information may lead to selective exposure to information that reinforces existing perspectives and fosters confirmation bias leading to political fragmentation and social polarization.[9]

In this paper, we argue that media consumption influences the individual attitude towards immigration that, in turn, affects preferences about immigration policy. We also allow for the direct effect of media on preference. The consumption of political news from any media-source and the use of Internet have been considered.

Few papers focalized on the effects of media on attitudes towards immigration in a comparative cross-country framework considering either its informative role or its (negative) influence due to coverage and framing. [10] [11] The general result is that, after controlling for socioeconomic and demographic characteristics and taking into account country-level features related to standard labour market and welfare state considerations, media exposure is significantly correlated with public opinion on immigration.

Using data from the World Values Survey for the period 2005-2009, Agovino et al. (2016) find that the effect of newspaper coverage and framing on public opinion attitude towards immigration depends on the degree of trust in media. For people with high trust in the media, news coverage and negative framing hve a significant effect in increasing opposition towards immigration. For those with low trust in the media, news on immigration have no significant effects, although the negative "tone" of news radicalizes individuals' priors, proxied by their political orientations.

Using the European Social Survey data, some recent papers investigate the effects of media exposure on knowledge about immigration and in particular on perception of immigrant population size. Herda (2010) finds that TV news exposure results in an overestimation of the immigrant population size while reading political newspapers is associated to a more accurate perception. Aalberg and Strabac (2010) show that TV viewing in general is associated with lower levels of knowledge, while there is a positive but non-significant relationship between watching TV news and knowledge about immigration. They also show that although the variability in the levels of knowledge among European countries is quite large, differences in media systems do not add any predictive power to their analyses.

[9] In the extreme, individuals may be trapped in a so-called "echo chamber", in which individuals are exposed only to information from like-minded individuals and beliefs are reinforced by communication and repetition inside a closed system.

[10] The coverage effect refers to the fact that when media extensively cover a topic it becomes salient. The framing effect refers to the "tone" used.

[11] Meltzer et al. (2017) and Eberl et al. (2018) are two recent reviews of studies concerned with media coverage and media effects on public opinion related to immigration in Europe. Specifically, Eberl et al. (2018) report a systematic review of academic journal publications using qualitative and quantitative content analysis methods, as well as research linking media content and public opinion. It emerges that the great majority of these studies focus on national media systems and only include newspapers and television broadcasts, while online media are largely neglected. Moreover, they argue that although findings from individual countries offer a somewhat systematic picture of country differences and similarities, there is little comparative cross-country research.

The paper closest to ours is Héricourt and Spielvogel (2014). Using data from the European Social Survey (2002-2010), they investigate the joint determination of beliefs and policy preferences about immigration considering both individual socioeconomic characteristics and media consumption. Their results suggest that individuals who spend more time to get information on social and political matters through newspapers (and radio to a lesser extent) have a better opinion on the economic impact of immigration compared with individuals who devote time to other types of content. Conversely, TV broadcasts focused on news and politics have a negative influence on policy preferences, although not on beliefs. This suggests a clear opposition between reading the newspaper and watching TV, the former having a strong positive impact, and the latter, a negative one.

Differently from them, we also consider Internet and make use of the latest European Social Survey data, which was made available, for 2016. We also address the potential endogeneity of media and beliefs by employing several estimation strategies, different from those in Hericourt and Spielvogel (2014)[12]. These include 2SLS, control-function approach and simultaneous-equations modeling. Finally, we test for the presence of the so-called "echo chamber" effect.

Our results confirm previous findings in that beliefs play a key role in forming policy preferences. Media instead are an important determinant of beliefs, less so for preferences. Exposure to political content might both increase as well as reduce pro-immigrant stances, respectively for left-wing and right-wing oriented individuals, in line with the "echo-chamber" effect. The effect of Internet appears to be less significant.

In what follows, we present the details on the data and the empirical strategy used. Then we report the main findings, draw conclusions and derive some policy implications.

[12] Their choice of estimation technique (in particular matching, used to deal with the endogeneity of media) was driven by the fact that they considered 6 different dimensions of media consumption, namely: political versus all the other content respectively from newspapers, radio and TV. In the last round of the ESS there is no way to distinguish between various media except for internet, versus political news deriving from any other source. Thus, we end up with 2 dimensions of media consumption.

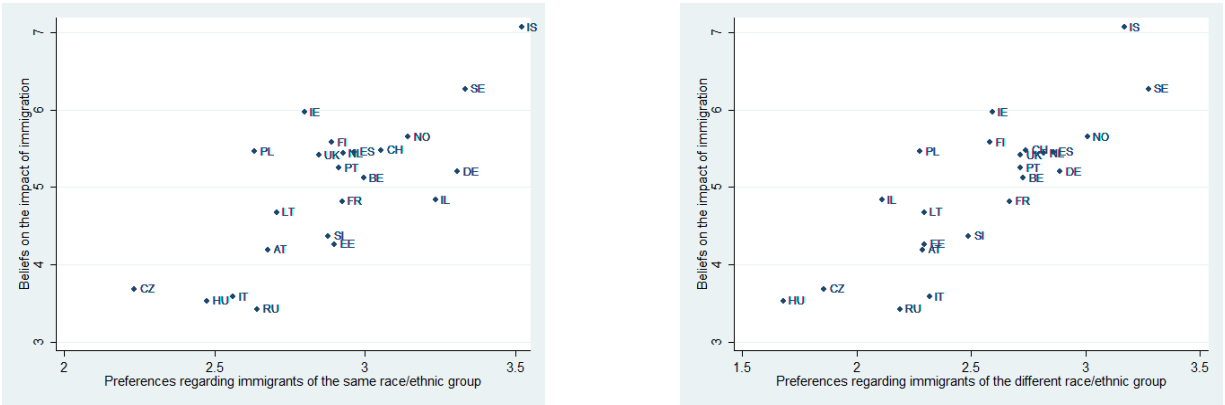
1. Data and empirical strategy

1.1. Data

We use round 8 of the European Social Survey (ESS).[13] The data were collected in 2016-2017, i.e. in the aftermath of the European migrant crisis. Data on media use have traditionally made part of the ESS, nevertheless both the set of available variables as well as the format of information collected were changing over time, especially after the year 2010.[14] The 2016 round reports the time spent 'watching, reading or listening political news' (without distinguishing between different media) and the time spent 'using internet'.[15] This same round offers a rich set of variables regarding immigration. To assess individual attitudes towards immigrants (in what follows referred to as Beliefs), we use the answers to the following question: 'Is [country] made a worse or better place to live by people coming to live here from other countries?' In turn, policy preferences regarding immigration (Preferences) are evaluated against the answers: 'To what extent do you think [country] should allow people of the same (different) race or ethnic group as most country's people to come and live here?'

Figure 1 shows the differences among countries in terms of beliefs on the impact of immigration and preferences towards immigration policy. Countries where people tend to believe that immigration makes good generally show more support to open immigration policy (for the immigrants of the same and different ethnicity, with the respective correlation coefficients being 0,44 and 0,54).

Figure 1. Beliefs on the impact of immigration versus preferences regarding immigration policy



Source: Authors' elaborations using ESS 2016

[13] Source: http://www.europeansocialsurvey.org

[14] This excludes the time component from our analysis, be it in the form of pooled data or pseudo-panel techniques (for different applications to earlier rounds of the ESS see e.g. Olivera 2015, Hericourt and Spielvogel 2014).

[15] The two respective questions sound as: 'On a typical day, about how much time do you spend watching, reading or listening to news about politics and current affairs?' and 'People can use the internet on different devices such as computers, tablets and smartphones. How often do you use the internet on these or any other devices, whether for work or personal use?'

Beliefs range on a scale from 1 to 10, Preferences on a scale from 1 to 4, whereby the higher values in both cases stand for more pro-immigrant stances. Table B.1 in the Appendix contains details on these and other variables definition, whereas Table A2 provides descriptive statistics for our subsample of observation.

Using the same ESS data over the period 2002-2016 Heath and Richard (2019) show that Nordic countries have been the most favorable to immigration, whereas the opposite is true for some Eastern European countries. Moreover, immigrants with European background are generally preferred. Despite the average level of support for immigration being quite high, there are nevertheless countries with population being strongly polarized on ground of attitudes to immigration as well as immigration policies. We here use the second release of the ESS 2016 covering 23 countries[16] , which is close to the benchmark considered as sufficient in order to credibly use the country fixed effects, defined at (30)25 for (non)linear models (see Bryan and Jenckins, 2015).[17]

1.2. Empirical model

It is reasonable to assume that Beliefs regarding the impact of immigration predetermine Preferences regarding the immigration policy (see Fig. 1 above). At the same time, there may be unobserved factors affecting both. This raises an issue of endogeneity of Beliefs. In addition, Beliefs and Preferences may be influenced by mass media, with the latter in turn being a choice variable, thus potentially endogenous. The estimation of the following four equations is thus involved:

$$Pol\_news_i = \alpha_1 \cdot X_i + \alpha_2 \cdot IV_1 + e_1 \quad (1)$$

$$Internet_i = ß_1 \cdot X_i + ß_2 \cdot IV_2 + e_2 \quad (2)$$

$$Beliefs_i = b_1 \cdot X_i + b_2 \cdot Pol\_news_i + b_3 \cdot Internet_i + b_4 \cdot IV_3 + u_i \quad (3)$$

$$Preferences_i = p_1 \cdot X_i + p_2 \cdot Beliefs_i + p_3 \cdot Pol\_news_i + p_4 \cdot Internet_i + \varepsilon_i \quad (4)$$

where Xi is a vector of explanatory variables including years of education, age, sex, citizenship, employment status, living context, religiosity, citizenship, political orientation, migration background; IV_1, IV_2 and IV_3 stand for a set of excluded instruments; e1 /e2/ u_i /ε_i are the error terms. Note that media enter the equation of Beliefs and that of Preferences, which was done to check for both direct effect of media on Preference and indirect effect, i.e. passing through Beliefs.

To simplify the interpretation of results, we treat the categorical dependent variables as an expression of the underlying linear variables and rely on a linear-probability type estimator. This does not

[16] The countries considered include Austria, Belgium, Switzerland, the Czech Republic, Germany, Estonia, Spain, Finland, France, Hungary, Ireland, Israel, Iceland, Italy, Lithuania, the Netherlands, Norway, Poland, Portugal, Russia, Sweden, Slovenia, and the United Kingdom.

[17] In alternative, we check for the effects of country characteristics, such as GDP, risk to media pluralism, freedom of press, and income Gini (see last column in Tab. A.3).

change substantially the results and has been pointed out as a viable strategy (see Olivera 2014 and studies sited therein).

To address the complex issue of endogeneity, we make use of several methods, which serves also to check the robustness of our findings. The first one is a standard 2SLS approach. Proper identification in our case would require the inclusion of at least three instruments, for Political news, Internet and Beliefs. The exposure to Political news is instrumented by Political engagement, whereas the use of Internet by broadband coverage, both measured at the level of regions. As for Beliefs, we check the relevance and validity of the two instrumental variables. As suggested by Hericout and Spielvogel (2014), one potential candidate is the level of satisfaction with country's government. It is assumed that a person satisfied with the job of the government would hardly blame immigrants, and, on the opposite, the one who is unhappy with government's actions might also oppose immigration. The other instrument that we use is an individual judgment about how safe (s)he feels walking alone in the area of residence after dark. Individuals who declare to feel unsafe are likely to blame immigrants, which could reinforce their anti-immigrant beliefs. At the same time, there is no reason for such feelings to affect policy preferences directly, other than passing through beliefs.

The use of the 2SLS approach becomes rather cumbersome in the context of several endogenous variables, especially if one decides to use the interaction terms involving some of them. Our particular interest was in testing the co-called "echo chamber effect", which would mean using the interaction terms between our two media variables with variables identifying ideological position (e.g. left-wing or right-wing oriented). As suggested in the literature, in order to deal with the endogeneity of the interaction term, one could use as an instrument the product between the exogenous variable and an instrument used for the original endogenous variable (see e.g. Ozer-Balli, H. and Sørensen, 2013). We report the estimates obtained this way, and as a form of a robustness check go further by estimating the system of equations. Meyer et al. (2016) demonstrate that the use of full-system estimation instrumental-variables simultaneous equations modeling (IV-SEM) can be a partial remedy for the weak instruments. In our case there is no reason to believe in a fully simultaneous system of equation. Nevertheless, by allowing for recursive nature of the model, we are able to capture and account for correlation between the error terms of equations entering the system. When it is at place, the joint estimation is thought to be more efficient.

1.3. Main findings

Table A3, in the Appendix, reports the single equation estimates. Panel A(B) stands for Policy preferences towards same (different) ethnicity immigrants. Single equations OLS[18] estimates - with and without Beliefs and Media - precede 2SLS estimates. Beliefs appear to be an important predictor of

[18] Table A5 reports the estimates obtained with ordered probit, which does not substantially change the results, despite the coefficients are different.

preferences towards immigration, more so when it comes to allowing immigrants of different ethnicity to live in the country. Political news appears to negatively affect preferences, and the opposite can be observed for internet.

The standard 2SLS technique nevertheless does not allow for a nested structure of the model we had in mind (see equations 1 through 4 above), whereby media enter the equation of both Beliefs and Preferences. Despite the estimates in Tab. A5 suggest that the direct effect of media on Preferences might be absent, as a next step we choose to make use of the control-function approach. In our case, this implies estimating the demand for media equations first, and then using the predicted values for media in order to correct for endogeneity in both of the main equations (see Terza et al. 2008)[19]. The same is done for Beliefs entering the equation for Preferences.

The control-function approach was initially meant to deal with endogeneity by also preserving the ordered structure of the dependent variables. In this case, Terza et al. (2008) suggest using two-stage residual inclusion (2SRI), which performs better in the case of non-linear models. After ascertaining that the results do not change substantially once we treat the dependent variables as liner (see Tab. A5 as opposed to A3), for the ease of interpretation we decided stick to linear estimation methods, also when performing the control-function estimation, and use respectively the 2SPS.

The results of the control-function approach are reported in Table A6, supplemented with the estimates of the demand for media equations (Tab. A6.1). The latter suggest that higher educated individuals consume more political news and use more internet. They are more tolerant to immigrants, which is also the case for women, left-oriented and people with immigration background. Right-oriented, unemployed and people living in the rural area tend instead to think that immigrants make country a worse place to live. The instrumental variables perform well, in that they are highly significant and have an expected sign. In regions characterized by high interest in politics, people follow more political news, whereas higher coverage by broadband explains longer exposure to the internet.

Coming back to the main part of the model (Tab. A6), we now may say that political news work in the direction of increasing tolerance to immigrants, while the opposite seems to be true for internet. Media do not seem to have direct impact on policy Preference, but there is space for it to manifest by acting on Beliefs, which are an important predictor of preferences.

We rely on two instrumental variables to correct for the endogeneity of Beliefs, namely personal judgement regarding safety in the local area, as well as the level of satisfaction with the government actions. The relevance of the instrumental variables has been ascertained by estimating the F-statistic to check for their joint significance. The obtained value (198.2) is far beyond the commonly accepted (10). We thus conclude that they are good predictors of Beliefs.

[19] This is also called two-stage predictor substitution (2SPS), widely used in the case of linear models.

Finally, we perform the estimation of the system of equations, assuming that media are consumed at first place, they influence beliefs about immigration, as well as policy preferences, both directly and indirectly (via Beliefs). The results are reported in Table A.7 (obtained using the CMP procedure, Roodman 2009). They suggest that Political news are an important determinant of both Beliefs and Preferences regarding immigration policies, and they turn to exert a negative effect. Once we add the interaction terms for media and political orientation (extreme left and right) the results slightly change (Tab.A8). In particular, the negative effect on Beliefs remains and the one on Preferences becomes negative. Note that the interaction terms appear to be highly significant in the equation for Beliefs, whereas not significant in the equation for Preferences. Our interpretation is that the effect of media on Preferences is largely non-significant for people with extreme political views, who in turn tend to be reassured in their Beliefs, as the interaction terms turn to be significant in the preceding equation for Beliefs. Navigation through internet tends to increase pro-immigrant stances for the left-wing and reinforces the anti-immigrant stances for the right-wing. The remaining effect on people without clear political orientation would be pushing them to choose anti-immigrant views.

As to the other individual characteristics, more educated people, women and young generations show up as more favorable to immigrants. Public sector employees appear less worried about the negative effects of immigration, and the opposite for unemployed. This is probably due to how economic insecurity manifests. Big metropolitan areas are more open to immigration, whereas the opposite occurs in the rural areas, possibly due to more traditional views therein. Having immigration background does matter, even if it refers to the previous generation (mother/father or both born outside the country), by enhancing openness to new immigrants.

Concluding remarks

In recent years, there has been an upsurge of public debates on migration issues. At the same time, the documented polarization of attitudes towards immigration and its impact on society [20]– both within and between countries – suggests that ideology more than knowledge motivates public opinion on these topics. Since attitudes and values have an impact on policy decisions, there is a serious risk that parties and governments implement policies that are the result of uninformed opinions; the more so in the case of populist parties that praise the virtue of the common person as opposed to the competencies of the elites. In this framework, mass media have a role in the production and dissemination of correct information. However, the threat of media capture and more generally the pressure on media outlets to give priority to newsworthy and controversial issues might jeopardize this important role. Moreover, in the case of social-media and, more generally, user-generated content, fake news and incorrect information resound as in an "echo chamber", accomplice algorithmic generated filter bubbles.

In this paper, we have documented that popular Beliefs regarding the effects of immigrants play a key role in forming policy preferences. In turn, we show that media have a potential to change Beliefs. Mainly through this channel, they might impact on policy choices. In a democratic society, everybody is assumed to be free in forming the opinion. But, there might be hidden ways to influence this process, including the transmission of biased information or fake news. Individual characteristics, such as education and, in the case of online news, digital literacy are remedies that lessen the effects of media bias. Policy intervention could strengthen, spread and promote these merits and also act upon the media system with policies aimed at increasing pluralism and contrast the spread of fake news.

[20] See Heath and Richards (2019).

References

Aalberg, T. and Strabac, Z. (2010). Media use and misperceptions. Nordicom Review, 31(1), 35–52

Agovino M., M.R. Carillo and N. Spagnolo (2016). 'The effect of news on the radicalization of public opinion towards immigration'.

Bryan, M. L. and Jenkins, S. P. (2015) Multilevel modelling of country effects: a cautionary tale. European Sociological Review, 1-20. DOI: 10.1093/esr/jcv059.

Della Vigna, S. and La Ferrara, E. (2015). Economic and Social Impacts of the Media, NBER Working Paper No. 21360.

Facchini G., A.M. Mayda and R. Puglisi, (2017). "Illegal immigration and media exposure: evidence on individual attitudes," IZA Journal of Migration and Development, Springer; vol. 7(1), 1-36.

Gentzkow, M., Shapiro, J.M., 2010. What Drives Media Slant? Evidence from U.S. Daily Newspapers. Econometrica 78(1), 35–71.

Gentzkow, M., Shapiro, J.M., 2011. Ideological Segregation Online and Offline. The Quarterly Journal of Economics 126(4), 1799-1839.

Guiso, L, H Herrera, M Morelli, M and T Sonno (2017), "Populism: Demand and Supply", CEPR Discussion Paper 11871.

Hainmueller, J., and Hiscox, M. J., 2007, Educated Preferences: Explaining Attitudes Toward Immigration in Europe, International Organization, 61, 399-442.

Hainmueller, J. and D.J. Hopkins, 2014, Public Attitudes Toward Immigration, Annual Review of Political Science Vol. 17, pp. 225–249.

Herda, D. (2010). How many immigrants? Foreign-born population innumeracy in Europe. Public Opinion Quarterly, 74(4), 674–695.

Heath, A. and L. Richards (2019). 'How do Europeans differ in their attitudes to immigration?: Findings from the EuropeanSocial Survey 2002/03 – 2016/17", OECD Social, Employment and Migration Working Papers, No. 222, OECD Publishing, Paris. [http://dx.doi.org/10.1787/0adf9e55-en]

Héricourt, J., and Spielvogel G., 2014, Beliefs, Media Exposure and Policy Preferences on Immigration: Evidence from Europe, Applied Economics, 46, 225-239.

Inglehart e Norris, 2016, Trump, Brexit, and the Rise of Populism: Economic Have-Nots and Cultural Backlash, HKS Faculty Research Working Paper Series n. 16-026.

Iyengar, S., Hahn, K.S., 2009. Red Media, Blue Media: Evidence of Ideological Selectivity in Media Use. Journal of Communication 59, 19–39.

Mayda A. M., 2006, Who Is Against Immigration? A Cross-Country Investigation of Individual Attitudes toward Immigrants. The Review of Economics and Statistics, 88, 10-30.

Meltzer, C. et al. (2017) "Media Effects on Attitudes toward Migration and Mobility in the EU: a literature review", REMINDER Project.

Meyer, K.A., Gulikey, D.K.,Tien, H.-C., Kiefe, C.I., Popkin, B.M., Gordon-Larsen, P. (2016) 'Instrumental-Variables Simultaneous Equations Modle of Physical Activity and Body Mass Index', American Journal of Epidemiology, 184(6):465-476.

Mullainathan, S., Shleifer, A., 2005. The Market for News. The American Economic Review 95(4), 1031-1053.

Olivera, J. (2014) Preferences for redistribution after the economic crisis, Economics and Business Letters, 3(3): pp. 137-145.

Ozer-Balli, H. and Sørensen, B.E. (2013) 'Interaction effects in econometrics', Empirical Economics, 45(1): pp.583-603.

Rodrik, D (2018), "Populism and the economics of globalization", Journal of International Business Policy.

Sides, J. and J. Citrin (2007) European Opinion about Immigration: The Role of Identities, Interests and Information. British Journal of Political Science, Vol. 37, No. 3 pp. 477-504.

Terza, J.V., Basu, A., Rathouz, P.J., 2008. Two-stage residual inclusion estimation: Addressing endogeneity in health econometric modeling. Journal of Health Economics vol. 27, 531-543.

Appendix A

Table A.1. Variables definition

Variables	Description
Beliefs	Ranges from 0 to 10. The values correspond to the following answers to question: 'Is [country] made a worse or a better place to live by people coming to live here from other countries?' Worse (00) … Better (10).
Preferences same/different ethnicity immigrants	Ranges from 1 to 4. The values correspond to the following answers to question: 'To what extent do you think [country] should allow people of the *same race or ethnic group as/ different race or ethnic group from* most [country]'s people to come and live here'. Recoded as: 1. Allow none; 2...; 3…; 4. Allow many, so that the higher values are associated to a more pro-immigrant position.
Use of Media	
Political news	On a typical day, about how much time do you spend watching, reading or listening to news about politics and current affairs? [measured in minutes, transformed in hours]
Internet	On a typical day, about how much time do you spend using the internet on a computer, tablet, smartphone or other device, whether for work or personal use [measured in minutes, transformed in hours] ǂ
Personal characteristics	
Education	Years of full-time education completed.
Age	Age of respondent [at the time of the interview].
Woman	Dummy variable: =1 if a person is female, 0 otherwise.
Public	Dummy variable: =1 if a person works in a public sector, 0 otherwise.
Unemployed	Dummy variable: =1 if a person declares to be unemployed, 0 otherwise.
Big city	Dummy variable: =1 if a person declares to live in a big city.
Small town	Dummy variable: =1 if a person declares to live in a small town.
Rural area	Dummy variable: =1 if a person declares to live in a rural area.
Religious	Dummy variable: =1 if a person considers him/herself as belonging to any particular religion or denomination, 0 otherwise.
Immigrant	Dummy variable: =1 if a person was born outside the country, 0 otherwise.
Immigrant background	Dummy variable: =1 if person's mother or father (or both) were born outside the country, 0 otherwise.
Left-wing	Placement on left-right political scale, ranging from 0(Left) to 10(Right): =1 if 0-3, 0 otherwise.
Center	Placement on left-right political scale, ranging from 0(Left) to 10(Right): =1 if 4-6, 0 otherwise.
Right-wing	Placement on left-right political scale, ranging from 0(Left) to 10(Right): =1 if 7-10, 0 otherwise.
Safe	How safe do you feel walking alone in this area after dark? 1.Very safe… 4. Very unsafe
Gov_action	Now thinking about the [country] government, how satisfied are you with the way it is doing its job? 0. Extremely dissatisfied…. 10. Extremely satisfied.
Regional characteristics (at NUTS II level whenever possible, with the total of 168 regions considered)	
Political engagement	Political engagement (index measure), calculated as the regional mean of the interest in politics [POLINT, in reverse order, so that higher values correspond to higher political engagement].
Broadband coverage	Broadband coverage (measured by percentage of households covered by broadband).†

Source: ESS 2016 if not otherwise specified, † Eurostat.

Table A2. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Beliefs	41,815	5.914696	2.396321	1	11
Preferences_same	42,116	2.517072	.911086	1	4
Preferences_diff	42,209	2.87723	.8789484	1	4
Political news	43,272	1.422079	2.276342	0	23.8
Internet	43,272	2.287498	2.811268	0	24
Education	42,911	13.03426	3.815513	0	30
Age	43,272	49.2087	18.5949	15	95
Female	43,272	.5249122	.4993848	0	1
Public	43,272	.2848724	.4513589	0	1
Left-oriented	37,837	.2125433	.4091125	0	1
Right-oriented	37,837	.2615694	.4394951	0	1
Religious	43,272	.5915373	.4915552	0	1
Noncitizen	43,272	.0457109	.2088597	0	1
Immigrant	43,272	.1057959	.3075798	0	1
Imm. background	43,272	.1839527	.3874501	0	1
Unemployed	43,272	.0582132	.2341488	0	1
Big city	43,272	.3229109	.4675944	0	1
Rural area	43,272	.3623128	.4806741	0	1
AT	43,272	.0448327	.2069389	0	1
BE	43,272	.0407423	.1976948	0	1
CH	43,272	.0349187	.1835759	0	1
CZ	43,272	.0510492	.2201006	0	1
EE	43,272	.0466352	.2108588	0	1
ES	43,272	.0446709	.2065827	0	1
FI	43,272	.0443474	.2058681	0	1
FR	43,272	.047629	.2129824	0	1
HU	43,272	.0364439	.1873941	0	1
IE	43,272	.0626964	.242419	0	1
IL	43,272	.0566417	.2311594	0	1
IS	43,272	.0201054	.1403624	0	1
IT	43,272	.0558791	.2296907	0	1
LT	43,272	.045734	.20891 0	1	
NL	43,272	.0386624	.1927913	0	1
NO	43,272	.0331854	.1791226	0	1
PL	43,272	.0385006	.1924037	0	1
PT	43,272	.0288639	.167426	0	1
RU	43,272	.0524589	.2229531	0	1
SE	43,272	.0357044	.1855542	0	1
SI	43,272	.0300425	.1707063	0	1
UK	43,272	.0444167	.2060215	0	1
Political engagement	43,272	2.41545	.2915911	1.67	3.04
Broadband coverage	43,272	84.01712	8.736634	61.5	100
Safe	42,914	1.93219	.7677201	1	4
Government	42,194	4.454069	2.402023	0	10

Table A.3 Baseline model

A. Policy preferences with regard to immigrants of the same ethnicity

Variables	OLS (1)	OLS (2)	2SLS (3)	2SLS (4)	2SLS (5)
Beliefs		0.137***	0.177***	0.189***	0.133***
Political news				-0.154	-0.308***
Internet				0.299***	-0.002
Education	0.038***	0.024***	0.020***	-0.014	0.026***
Age	-0.002*	-0.000	-0.000	0.021***	0.004
Female	0.008	0.005	0.006	-0.004	-0.076***
Public	0.043***	0.030**	0.027*	0.088**	0.061**
Left-oriented	0.171***	0.101***	0.082***	0.080**	0.193***
Right-oriented	-0.069	-0.018	-0.002	-0.011	-0.030
Religious	-0.009	-0.008	-0.005	0.080**	-0.009
Non-citizen	-0.050	-0.086	-0.089**	-0.049	0.010
Immigrant	0.083*	0.033	0.004	0.006	0.042
Imm. background	0.110**	0.051	0.039	-0.003	-0.010
Unemployed	-0.092***	-0.052***	-0.041	0.063	0.024
Big city	0.052**	0.035*	0.033*	-0.032	0.050**
Rural area	-0.026	-0.020	-0.017	0.047*	0.001
GDP					0.005***
Risk to media plur.					-0.001
Freedom of press					0.009***
Gini					0.023***
Constant	2.799***	2.115***	1.912***	0.730**	0.230
Observations	36,861	36,119	35,490	35,490	28,727
B. Policy preferences with regard to immigrants of different ethnicity					
Beliefs		0.177***	0.203***	0.216***	0.192***
Political news				-0.218	-0.165***
Internet				0.300***	0.149***
Education	0.040***	0.023***	0.020***	-0.013	0.005
Age	-0.005***	-0.003***	-0.003***	0.019***	0.008***
Female	0.017	0.012	0.010	-0.016	-0.031*
Public	0.041***	0.023**	0.020	0.087**	0.057**
Left-oriented	0.214***	0.125***	0.112***	0.121***	0.176***
Right-priented	-0.146**	-0.082*	-0.071***	-0.074**	-0.114***
Religious	-0.032	-0.033*	-0.030**	0.048	0.002
Non-citizen	-0.031	-0.077***	-0.086**	-0.034	-0.036
Immigrant	0.046	-0.019	-0.031	-0.019	-0.014
Imm. background	0.098***	0.025	0.015	-0.025	-0.031
Unemployed	-0.076***	-0.026	-0.024	0.092	0.051
Big city	0.090***	0.066***	0.066***	-0.000	0.012
Rural area	-0.002	0.007	0.010	0.071***	0.033*
GDP					0.003***
Risk to media plur.					-0.003**
Freedom of press					0.002
Gini					0.035***
Constant	2.508***	1.621***	1.487***	0.312	-1.113***
Observations	36,811	36,078	35,451	35,451	28,715

Standard errors clustered at country level; *** p<0.01, ** p<0.05, * p<0. 1. Country-fixed effects included in columns 1-4, selected country characteristics in column 5.

Table A4. The effect of media on beliefs and preferences

VARIABLES	OLS_Beliefs (1)	2SLS_Beliefs (2)	OLS_Pref_same (3)	2SLS_Pref_same (4)	OLS_Pref_dif (5)	2SLS_Pref_dif (6)
Political news	0.028***	1.552*	0.006*	0.360	0.007***	0.238
Internet	0.033***	0.078	0.018***	0.115	0.018***	0.189
Education	0.091***	0.067	0.035***	0.020	0.038***	0.015
Age	-0.006***	-0.026	-0.000	0.000	-0.004***	0.003
Female	0.015	0.356**	0.011	0.097**	0.020	0.084*
Public	0.087*	-0.115	0.045***	0.007	0.042***	0.029
Left-oriented	0.512***	0.261**	0.168***	0.107***	0.211***	0.161***
Right-priented	-0.377***	-0.526***	-0.072*	-0.111***	-0.149**	-0.188***
Religious	-0.012	0.046	-0.003	0.035	-0.027	0.027
Non-citizen	0.296**	0.309	-0.047	-0.022	-0.028	-0.001
Immigrant	0.332***	0.132	0.082*	0.039	0.045	0.014
Imm. background	0.405***	0.281**	0.106**	0.067*	0.094***	0.048
Unemployed	-0.277***	-0.512*	-0.089***	-0.120	-0.073***	-0.073
Big city	0.125***	-0.016	0.047*	-0.014	0.084***	0.014
Rural area	-0.022	-0.012	-0.022	-0.004	0.001	0.033
Constant	4.924***	4.483**	2.730***	2.294***	2.437***	1.740***

Note: Standard errors clustered at country level; *** p<0.01, ** p<0.05, * p<0.1. Country-fixed effects included

Table A5. Baseline model: ordered probit estimates

VARIABLES	Policy_preferences same ethnicity	Policy_preferences different ethnicity	Policy_preferences same ethnicity	Policy_preferences different ethnicity
Beliefs			0.207***	0.282***
Education	0.053***	0.055***	0.038***	0.037***
Age	-0.002*	-0.007***	-0.001	-0.006***
Female	0.009	0.024	0.004	0.020
Public	0.063***	0.057***	0.050***	0.039***
Left-oriented	0.266***	0.315***	0.194***	0.229***
Right-oriented	-0.092	-0.195**	-0.021	-0.125**
Religios	-0.021	-0.049	-0.023	-0.058*
Non-citizen	-0.073	-0.042	-0.137*	-0.126***
Immigrant	0.112**	0.060	0.041	-0.037
Immigration background	0.156***	0.135***	0.079	0.040
Unemployed	-0.122***	-0.106***	-0.069***	-0.039
Big city	0.080**	0.126***	0.064**	0.111***
Rural area	-0.031	-0.001	-0.025	0.013
Constant cut1	-1.480***	-1.184***	-0.581***	0.029
Constant cut2	-0.495***	-0.058	0.499***	1.349***
Constant cut3	0.875***	1.315***	1.995***	2.952***
Observations	36,861	36,811	36,119	36,078
Pseudo R-squared	0.065	0.092	0.127	0.194

Note: Standard errors clustered at country level; *** p<0.01, ** p<0.05, * p<0. Country-fixed effects included.

Table A6. Control-function approach

VARIABLES	Beliefs	Prefer_same	Beliefs	Prefer_diff
Beliefs_pred	.	0.181***	.	0.209***
Political news_pred	1.845***	0.049	1.856***	-0.054
Internet_pred	-0.552**	0.091	-0.584**	0.124
Education	0.127***	0.010	0.133***	0.008
Age	-0.066***	0.005	-0.068***	0.005
Female	0.512***	0.026	0.488***	0.012
Public	-0.257***	0.034	-0.262***	0.050
Left-oriented	0.382***	0.053**	0.393***	0.096***
Right-oriented	-0.439***	-0.019	-0.439***	-0.085***
Religios	-0.128**	0.018	-0.140**	-0.008
Non-citizen	-0.123	-0.068	-0.148	-0.047
Immigrant	0.010	0.016	0.005	-0.019
Immigration background	0.416***	-0.007	0.434***	-0.013
Unemployed	-0.490***	-0.042	-0.500***	-0.010
Big city	0.056	-0.008	0.057	0.019
Rural area	-0.349***	0.006	-0.345***	0.031
Safe	-0.482***		-0.425***	
Government	0.198***		0.213***	
Constant	6.593***	1.539***	6.501***	0.978***
lnsig_1	0.716***		0.712***	
lnsig_2	-0.266***		-0.258***	
atanhrho_12	0.364***		0.512***	
sig_1	2.046***		2.037***	
sig_2	0.766***		0.773***	
rho_12	0.349***		0.471***	
Observations	30,811	30,811	30,811	30,811

A6.1 Demand for media equations estimated at the preliminary stage

VARIABLES	Political news (i)	Internet(ii)
Education	0.012**	0.114***
Age	0.015***	-0.061***
Female	-0.223***	-0.076*
Public	0.143***	-0.119**
Left-oriented	0.151***	0.092*
Right-oriented	0.096**	0.090*
Religios	-0.027	-0.260***
Non-citizen	0.001	-0.126
Immigrant	0.110	0.006
Immigration background	0.073	0.179**
Unemployed	0.168**	-0.208**
Big city	0.067	0.258***
Rural area	-0.009	-0.187***
Political eng. (i) / BB_coverage (ii)	0.468***	0.025***
Constant	-1.168***	1.580**
F-stat	9.76	11.85
Observations	37,557	37,557
R-squared	0.085	0.246

Note: Standard errors clustered at country level; *** p<0.01, ** p<0.05, * p<0. Country-fixed effects included.

Table A7. System of equations

VARIABLES	Political news (1)	Internet (2)	Beliefs (3)	Preferences (4)
Beliefs				0.205***
Political news	.		-0.212***	0.071***
Internet			0.011	-0.021
Education	0.013***	0.115***	0.084***	0.022***
Age	0.015***	-0.062***	-0.003	-0.006***
Female	-0.223***	-0.077*	0.155***	0.024*
Public	0.142***	-0.120**	0.093**	0.008
Left-oriented	0.154***	0.093*	0.617***	0.104***
Right-oriented	0.096**	0.088*	-0.428***	-0.076***
Religios	-0.026	-0.259***	-0.094**	-0.032**
Non-citizen	0.000	-0.126	0.164	-0.090**
Immigrant	0.113	0.006	0.290***	-0.044
Immigration background	0.075	0.179**	0.420***	0.017
Unemployed	0.166**	-0.212**	-0.115	-0.041
Big city	0.073	0.260***	0.181***	0.062***
Rural area	-0.007	-0.187***	-0.146***	0.006
Political engagement	0.353**			
Broadband_coverage		0.023***		
Safe			-0.466***	
Government			0.195***	
Constant	-0.850**	1.777***	4.994	1.532
lnsig_1	0.770***			
lnsig_2	0.901***			
lnsig_3	0.752***			
lnsig_4	-0.335***			
atanhrho_12	0.040***			
atanhrho_13	0.246***			
atanhrho_14	-0.202			
atanhrho_23	0.039			
atanhrho_24	0.104*			
atanhrho_34	-0.128***			
Log pseudolikelihood = -316848.66				
Wald chi2(143) = 21559.99				
Observations	37,557	37,557	37,557	37,557

Note: Standard errors clustered at country level; *** p<0.01, ** p<0.05, * p<0.
Country-fixed effects included.

Table A8. System of equations: testing for the echo-chamber effect

VARIABLES	Political news (1)	Internet (2)	Beliefs (3)	Preferences (4)
Beliefs				0.204***
Political news	.		-0.730***	-0.014***
Internet			-0.361	-0.180***
Left-oriented*Political news			0.025	0.003
Left-oriented*Internet			0.052***	0.007
Right-oriented*Political news			-0.034**	-0.006
Right-oriented*Internet			-0.037**	0.001
Education	0.013***	0.115***	0.132***	0.041***
Age	0.015***	-0.061***	-0.018	-0.014***
Female	-0.222***	-0.075*	0.005	-0.007
Public	0.141***	-0.123**	0.120*	-0.000
Left-oriented	0.152***	0.093*	0.562***	0.109***
Right-oriented	0.096**	0.091*	-0.209***	-0.047*
Religios	-0.031	-0.264***	-0.204**	-0.078***
Non-citizen	-0.001	-0.125	0.116	-0.109**
Immigrant	0.115	0.011	0.372***	-0.027
Immigration background	0.078	0.183**	0.521***	0.048*
Unemployed	0.160**	-0.219**	-0.106	-0.061*
Big city	0.087*	0.274***	0.328***	0.116***
Rural area	-0.011	-0.190***	-0.225***	-0.026
Political engagement	-0.071			
Broadband_coverage		0.010		
Safe			-0.465***	
Government			0.194***	
lnsig_1			0.772***	
lnsig_2			0.902***	
lnsig_3			1.037***	
lnsig_4			-0.175***	
atanhrho_12			0.041***	
atanhrho_13			0.683***	
atanhrho_14			0.067	
atanhrho_23			0.386	
atanhrho_24			0.628***	
atanhrho_34			0.178	
Constant	0.376	2.941***	6.501***	2.163
Log pseudolikelihood = -316814.9				
Wald chi2(143) = 22954.02				
Observations	37,557	37,557	37,557	37,557

Note: Standard errors clustered at country level; *** p<0.01, ** p<0.05, * p<0.
Country-fixed effects included.