

CRISEI

Centro di Ricerca Interdipartimentale in Sviluppo Economico e Istituzioni

Discussion Paper Series

*The effect of news on the radicalization
of public opinion towards immigration*

**Massimiliano Agovino, Maria Rosaria Carillo,
Nicola Spagnolo**

**Discussion Paper
No. 01
Settembre 2016**

ISSN: 2280-9767



CRISEI - Università di Napoli - Parthenope

Università degli Studi di Napoli - Parthenope

CRISEI

*The effect of news on the radicalization of
public opinion towards immigration*

M. Agovino*, M.R. Carillo*, N. Spagnolo[°]

*Parthenope University of Naples

[°] CAMA, Canberra, Australia

& Brunel University London, UK

Comitato Editoriale

Carlo Altavilla,
Maria Rosaria Carillo,
Floro Ernesto Caroleo,
Marco Esposito,
Luigi Moschera,
Oreste Napolitano,
Alessandro Sapio

Via Generale Parisi, 13 - 80132 –
Napoli (Italy) Tel. (+39) 081 547 42 36
Fax (+39) 081 547 42 50

URL: <http://www.crisei.uniparthenope.it/DiscussionPapers.asp>

THE EFFECT OF NEWS ON THE RADICALIZATION OF PUBLIC OPINION TOWARDS IMMIGRATION

MASSIMILIANO AGOVINO^a, MARIA ROSARIA CARILLO^{a*} AND NICOLA SPAGNOLO^{b,c}

^aUniversity of Naples, Parthenope, Italy

^bCentre for Applied Macroeconomic Analysis (CAMA), Canberra, Australia

^cDepartment of Economics and Finance, Brunel University London, U.K.

August 24, 2016

Abstract

This paper analyses the effects of newspaper coverage and the tone of news on immigration on the attitude of natives towards immigration in 19 countries (World Values Survey Database) for the period 2005-2009. The results can be summarised as follows: coverage and the negative tone of news have a significant effect in reducing the attitudes towards immigration for people with high trust in the media; for those with low trust in the media, news on immigration has no significant effects. In the latter case coverage and the negative tone of news radicalizes individuals' prior preferences and prejudices on immigration, where the latter are proxied by individual political orientations.

Keywords: Fuzzy analysis, Immigration, News.

JEL Classification: H890, J150, Z190

*Corresponding author: Professor Maria Rosaria Carillo, Department of Economics, University of Naples Parthenope, Tel: +390815474207. Email: carillo@uniparthenope.it

1 Introduction

The sustained immigration flows experienced in recent years by more developed countries have often led to a growing aversion of residents to immigration. This makes it challenging to implement any policies aimed at favouring the immigrant integration process and reducing the risk of unrest and social friction. However, although a low degree of aversion of natives to immigration would be a key factor for the successful implementation of integration policies, the main determinants of attitudes to immigration are still unclear. The scale of the recent influx of asylum seekers from the Middle East to Europe has further highlighted the crucial role played by the media, since immigration is effectively the main item on the international political agenda. To evaluate the great influence that the media have in forming attitudes to immigration, suffice it to think that in October 2015 the photograph of a dead Syrian child on a beach in Turkey published in the main European journals was sufficient to provoke a dramatic change in European public opinion, becoming much better disposed to welcoming asylum seekers from Syria.

The present paper aims to shed some light on this issue, investigating whether and to what extent the media influence native attitudes towards immigration, and if so, determining the channels through which this influence takes place. The influence of media news on public opinion is widely recognized by the political science and communication studies literature which mainly focuses on the effects of political preferences on individual perceptions (McCombs and Shaw, 1972; Erbring et al., 1980; Entman, 1993). Analysis of the impact of media news upon preferences vis-à-vis immigration assumes even more importance given that the media are often not neutral but rather biased¹ towards a particular ideology (Groseclose and Milyio, 2005; Gentzkow and Shapiro, 2006, 2010; Della Vigna and Kaplan, 2007). The media "bias" may have major effects not only on political attitudes but also on attitudes to immigration. In this paper we also shed some light on this aspect.

The media has been found to affect public opinion through different channels. The coverage effect (or agenda-setting effect), which refers to the fact that when a topic is extensively covered by media it becomes very prominent in the public opinion, has been widely discussed (McCombs and Shaw, 1972). Another important aspect is the frame effect, which refers to the fact that also the tone used by the media influences public opinion. Entman (1993) offered the following definition of the effect in question: "To frame is to select some aspects of the news ...and make them more salient.. in such a way as to promote a particular problem definition, moral evaluation and/or treatment recommendation". Finally, it has been stressed that the influence of media news depends also on the timing of the news release (Hastie and Park, 1989; Chong and Druckman, 2009). In this regard, two cases are distinguished: the effects of exposure to media is subject to a learning process, in this case the effect of media is captured by the accumulation of news received in a given period; the effect of exposure is subject to a decay over time, in this case only the news released not too back in time are relevant for the formation of public opinion.

In this paper we investigate the news effect on the attitude of natives towards immigration, considering all the above aspects. In particular, we analyse whether and under what conditions the coverage and tone of news on immigration influence individual preferences vis-à-vis

¹Media "bias" refers to the fact that journalists and news producers may select news and the way in which events and stories are reported in such a way to suggest a particular interpretation of these events.

immigration and in what direction, since the "sign" of this influence is unclear. According to McCombs and Shaw (1972) and Erbring et al. (1980), from the total news coverage individuals distinguish the main issues on which to form an opinion about from those to be used for judging politicians and other important aspects of social life. However, forcing people to form an opinion on an issue does not give any indication about the direction of such influence. In the case of immigration there may be a rise in the pro-immigration attitudes of natives, but the opposite may also hold. Our hypothesis is that a broad coverage of news on immigration shifts the perception of people on this issue, increasing the fear of possible adverse consequences. In other words, wide news coverage on immigration may induce alarmism in public opinion (Thompson, 1995), thereby attenuating the pro-immigration attitude. This effect is amplified when the tone of news is mainly negative.

A further aspect analysed is whether media exposure interacts with people's prior beliefs and preferences regarding immigration. In other words, we analyse whether the media change the impact of individual previous beliefs and preferences. Indeed, media news may reinforce or attenuate the previous preferences of people regarding immigration. In this case the media effect is not only direct but also indirect, becoming longer lasting and more pervasive. This indirect effect has been neglected in the literature, although it would have major implications. Our results show that when people have little trust in the media, there are indirect effects which reinforce previous beliefs, further eroding the pro-immigration attitude in the case of individuals with negative prior preferences and beliefs, while reinforcing the pro-immigration attitude of individuals with positive prior preferences, where the prior beliefs and preferences are captured by individual political opinions. Finally, we control for the news time structure. We take this aspect into account by defining indexes of news of different time lags and a cumulative index over a longer period of time. In order to provide answers for such questions we estimate the effect of media news on an index that captures the pro-immigration attitude of natives. The pro-immigration attitude index, constructed by means of fuzzy sets theory², takes into account for several elements, such as trust in foreigners, desirability of ethnic diversity and preferences for immigration policies. Our results suggest that the coverage of news on immigration, as well as the tone, influences the attitude of natives towards immigration, with the latter having a stronger effect. However, these effects are statistically significant only for people who have high trust in the media. In the opposite case, media news influences pro-immigration attitudes only indirectly by interacting with their prior preferences, captured by their political orientation, which becomes stronger. The time structure of news is also found to be significant, with the most effective news being that released not too far back in time.

The paper is structured as follows. Section 2 presents a review of the literature and the main motivations of the paper. Section 3 presents a description of the model. Section 4 introduces the data and descriptive statistics. Section 5 offers the empirical results and Section 6 concludes.

²The use of this methodology in economics is quite new and the best-known studies based on the fuzzy sets theory are multidimensional analysis of poverty (see Cerioli and Zani, 1990; Cheli and Lemmi, 1995, and Chiappero-Martinetti, 2000).

2 Literature and Motivations

This paper contributes to different strands of the literature on immigration, the main one being the literature on the determinants of individual attitudes to immigration. A major contribution concerns the distinction between economic and non-economic factors (Facchini, Mayda and Puglisi, 2010). Among economic factors, those related to the labour market competition hypothesis have been widely discussed, according to which, when forming their preferences concerning immigration, people take into account the effects that it would have on their income. Scheve and Slaughter (2001) find that in the USA unskilled workers have lower pro-immigration attitudes with respect to skilled workers. They state that this finding is consistent with the labour market competition hypothesis, arguing that immigration in the USA is, for the most part, formed by unskilled workers. Mayda (2006) finds that individual skill is positively correlated with pro-immigration attitudes in countries where immigrants are unskilled, whereas the opposite holds in countries where immigrants are more skilled than natives. This result supports the competition labour market hypothesis, with economic factors being the main determinants of pro-immigration attitudes.

Other major economic factors are fiscal pressure and the welfare system, both of which have a detrimental effect on pro-immigration attitudes. Facchini and Mayda (2009) argue that, since usually immigrants are unskilled relative to the native population, the tax rate will increase in order to maintain or increase the benefits deriving from the welfare state. This induces a growing aversion to immigration especially among older people and unskilled workers as both categories are in competition with immigrants for welfare services. In most of the cited papers the skill level is interpreted as an economic factor. However, some do not share the same view, arguing that the skill level is a driver for immigration attitudes mainly because of non-economic indicators. Hainmuller and Hiscox (2007, 2010) suggest that better educated people are more pro-immigration because they are more open to different cultures and more cosmopolitan. Gang et al. (2013) consider education as a factor that could be inversely associated to negative attitudes to immigrants because of more tolerant cultural values and less labour market competition. They find a significant and negative relation for several European countries over the period 2003-2004. However, they were unable to disentangle the net contribution of the two driving factors considered. Facchini, Mayda and Mendola (2013) empirically investigate the drivers of individual attitudes to immigration in South Africa. Their results suggest that the level of education is more correlated to non-economic factors, which are indeed the main drivers of individual attitudes to immigration. These results shift the focus onto the role played by non-economic factors, such as culture, beliefs, political orientation, religion and racial orientation. Arguments not in support of immigration may be motivated by reasons which relate to the cultural and ethnic difference of the immigrant population, with natives being concerned about the potential loss of national identity and cultural heterogeneity.

Dustman and Preston (2007) and Dustman et al. (2011) explicitly model the influence of racially-driven concerns in forming views about immigration, and establish that racial/cultural prejudice is the main underlying channel through which overall attitudes are driven, largely overcoming welfare and labour market concerns. O'Rourke and Sinnott (2006) include national identity and nationalist sentiment in their analysis of the main drivers of pro-immigration attitudes. They find that these factors are stronger than labour market

considerations. Moreover, they control for age, with older people attaching a higher value to traditional social norms than their younger counterparts and therefore being more anti-immigration than the young.

The influence of media news on public opinion is one of the main non-economic drivers for attitudes to immigration. There is an extensive literature on the influence of the media on public opinion. However, few papers have analysed media effects on native attitudes towards immigration. Facchini et al. (2009) estimate the correlation among attitudes to illegal immigration and media exposure in the USA. They find a strong positive correlation between the media coverage on immigration and the attitude to anti-illegal immigration policy. Boomgaarden and Vliegenthart (2009) analyse whether the media play a role in forming anti-immigration attitudes and find that not only is coverage important but also the tone of news significantly influences anti-immigration attitudes. Hericourt and Spielvogel (2014) propose an empirical model in which individual media consumption is considered as one of the determinants and find a negative effect of media exposure to pro-immigration attitudes. However, they do not use news on immigration, but an index capturing the general exposure to media news, without any distinction about the type of news released. Facchini, Mayda and Mendola (2013) also control for the role of media, and find that on average media exposure is positively related to pro-immigration attitudes. However, they do not control for the tone of news about immigration or for other underlying factors such as political orientation.

Our paper innovates with respect to this literature since we consider only news on immigration, and we differentiate between the tone of news and the time in which it is released. Moreover, we take into account the possibility that the media interact with other cultural factors such as trust in media and individual political orientation. We argue that the influence of media news is not only direct but also indirect, since the tone and the extent of news coverage could signal other aspects, such as media slant, and indirectly convey other information that people process in forming their opinion on immigration. To some extent this paper is also related to the literature on media bias. Media bias or media slant has been extensively explored elsewhere. Mullainathan and Shleifer (2005) theoretically justify the reasons for the media shaping news in order to meet consumer expectations. Groseclose and Milyo (2005) find empirical evidence that major media in the USA have a liberal bias and propose an objective measure of the slant of news towards a particular political ideology. It has been shown that media bias can have significant effects on political attitudes (Stromberg, 2004, Gentozkow and Shapiro, 2004, Della Vigna and Kaplan, 2007). However, few have analysed the effects of this phenomenon with respect to attitude towards immigration. In our paper we do not measure media slant, but we consider it an indirect factor that can explain the influence of media news on pro-immigration attitudes.

The definition of the pro-immigration index further differentiates this paper from the previous literature, most of which uses either dichotomous or polytomous indexes of pro-immigration attitudes, constructing a binary index. Hainmueller and Hiscox (2007), in their study about how economic concerns shape attitudes to immigration, build a measure of support for immigration as a categorical variable, which takes on the integer value associated with one of five response categories, and study the effect of covariates on pro-immigrant behaviour using an ordered probit model. Considering economic and non-economic determinants of attitudes to immigrants, Mayda (2006) builds two dependent variables: a polytomous variable

termed “opinions about immigrants” and a dichotomous variable equal to one for individuals who express pro-immigration attitudes and zero otherwise. Again, Facchini et al. (2009) use a dummy variable to capture preferences for immigration policies. Nevertheless, even if the dichotomisation of the dependent variable facilitates the interpretation of results, it results in a loss of information associated to the attitudes of natives to immigrants. Our approach differs from that of previous papers in its construction of an index of pro-immigration attitudes using fuzzy theory. This allows us to take into account a wider set of variables that characterise attitudes to immigration. The clear advantage and novel contribution is to have a multidimensional and continuous index which is the synthesis of a set of components rather than a standard binary index.

3 The Model and Empirical Strategy

In its most general specification the model proposed takes the following form:

$$\text{Pr o-Im migration Index}_i = c + \text{News Index}_i + \text{News Right}_i + \text{News Left}_i + \text{Right}_i + \text{Left}_i + Y_i + W_i + \epsilon_i \quad (1)$$

News index is our variable of interest, which is defined in different manners, in order to take into account for the different channels through which media news influence public opinion: the coverage effect, the frame or the tone effect, and the time structure media news. The variables NewsRight_i and NewsLeft_i measure the interaction between news exposure and the political orientation of individual respondents declaring having a right or left political orientation, respectively. Right_i and Left_i are the variables of political orientation. Y_i and W_i are vectors of individual and country level control variables, respectively. We take into account also the trust that people have in media, since we consider, in turns, respondents declaring to have high trust in media and respondents declaring to have no trust in media news.

3.1 Pro-immigration Index

The attitude of natives to immigration, like many socioeconomic phenomena, is characterised by many factors (e.g. social and/or, political tolerance towards immigrants, etc.) that should be considered in constructing the dependent variable. Accordingly, we construct a pro-immigrant index which is continuous and takes into account the whole spectrum of preferences, opinions and beliefs that are expected to form native attitudes to immigrants. To construct such an index, we use the fuzzy theory according to which four steps have to be followed: 1) the choice of the variables that define the pro-immigrant attitude; 2) the construction of the membership function (MF); 3) the calculation of the weights associated with each MF; and finally, 4) the aggregation of the MF.

We identify eight categories of characteristics which, according to their intensity, determine attitudes towards immigrants. We consider:

i) social tolerance. In this case we consider the question: Do you want immigrants/ foreign workers as neighbours? This question returns a dichotomous response: yes (value 1) or no (value 2);

ii) economic tolerance. In this case we consider the question: When jobs are scarce, employers should give priority to [domestic] people over immigrants. This question returns a polytomous response: Agree (value 1), Neither (value 2), Disagree (value 3);

iii) political tolerance. In this case we consider the question: How about people from other countries coming here to work? Which of the following do you think the government should do? This question returns a polytomous response: Let anyone come who wants to? (value 1), Let people come as long as there are jobs available? (value 2), Place strict limits on the number of foreigners who can come here? (value 3), Prohibit people from coming here from other countries? (value 4);

iv) trust. In this case we consider the question: I'd like to ask you how much you trust people from various groups. Could you tell me whether you trust people of another nationality completely, somewhat, not very much or not at all? This question returns a polytomous response: trust completely (value 1), trust somewhat (value 2), do not trust very much (value 3), do not trust at all (value 4);

v) requisites for citizenship. The following questions are considered: In your opinion, how important should the following be as requirements for somebody seeking citizenship of your country? Specify for each requirement if you consider it very important, rather important or not important. In this case, we identify three questions concerning requirements for citizenship: a) Having ancestors from my country ; b) Being born on my country's soil; c) Adopting the customs of my country. The questions return a polytomous response: very important (value 1); rather important (value 2); not important (value 3);

vi) ethnic diversity. Finally, we consider the question: Turning to the question of ethnic diversity, with which of the following views do you agree? Please use this scale to indicate your position. This question returns a polytomous response: ethnic diversity erodes a country's unity (value 1),. . . , ethnic diversity enriches life (value 10).

For each of these variables we proceed to the construction of the MF. The MF allows us to transform a discrete variable in to a continuous one. The MF corresponds to the totally fuzzy and relative approach suggested by Cheli and Lemmi (1995). In particular, let X be a set of elements $x \in X$, a fuzzy subset A of X is a set of ordered pairs:

$$[x, u_A(x)], \quad \forall x \in X \quad (2)$$

where $u_A(x)$ is the membership function of x to A in the closed interval $[0, 1]$. If $u_a(x) = 0$ then x does not belong to A , while if $u_a(x) = 1$ the x completely belongs to A . If $0 < u_a(x) < 1$, the x partially belongs to A and its membership to A increases according to the values of $u_a(x)$. In particular, $u_a(x) = 1$ identifies a situation of full achievement of the target (a resident very inclined to host an immigrant), $u_a(x) = 0$ denotes a total failure (a resident little inclined to host an immigrant) and $0 < u_a(x) < 1$ refers to a situation in between these two extremes.

The notion of frequency was considered to define the membership function. In particular, taking into account a set of n units (individuals denoted by the subscript i) and assuming a non-linear and monotonic relation between the p manifest variables X_s ($s = 1, 2, \dots, p$) and the degrees of membership, and ordering the modalities of X_s , we obtain the following membership function:

$$\left\{ \begin{array}{l} u_A(x_i) = 0, \\ u_A(x_i) = u_A(x_{i-1}) + \frac{F(x_i) - F(x_{i-1})}{1 - F(x_{i(l)})}, \\ u_A(x_i) = 1, \end{array} \quad \begin{array}{l} x_i \leq l \\ l < x_i < u \\ x_i \geq u \end{array} \right\} \quad (3)$$

where $F(X_{si})$ is the sampling cumulative function of the variable X . $x_{i(l)}$ is the highest value $x_i \leq l$. If $l = x_i = \min(x_i)$ and $u = x_n = \max(x_i)$, the membership function (3) corresponds to the totally fuzzy and relative approach suggested by Cheli and Lemmi (1995).

The weights calculated and associated with each MF in our case are: 0.040394 (social tolerance); 0.250882 (economic tolerance); 0.079867 (political tolerance); 0.090633 (trust); 0.132814 (A. requisites for citizenship); 0.133584 (B. requisites for citizenship); 0.162159 (C. requisites for citizenship); 0.109666 (ethnic diversity). Weights sum up to one.

Zani et al. (2011) suggest to compare the solutions obtained using different weighting criteria. Therefore, we compute the fuzzy composite index with three weighting criteria: equal weight for each variable; normalised weights as inverse functions of the fuzzy proportion of each variable; and normalised factor loadings applying principal component analysis to the rank correlation matrix (Zani et al., 2010; OECD, 2008). In particular, we calculate the correlation coefficients among fuzzy indicators obtained with different weights. The correlation between the pairs of indicators is very high (always greater than 0.90). Finally, we aggregate the MF through a weighted arithmetic mean.

3.1.1 Media News

Looking at our main variable of interest: News, we consider several aspects of the potential news effects: the coverage (i.e. the extension and the frequency of a particular topic covered by the media with no distinction between the positive, negative or neutral tone associated to it) and the frame effect (i.e. the effect of the tone, whether positive or negative) and the temporal structure of the news (i.e. the timing of news coverage). In particular the news index used (Eckstein and Tsiddon 2004) has the following form:

$$News\ Index\ Negative\ (All) = \ln[e + Negative\ (All)\ News] \quad (4)$$

In order to capture the influence of the time structure of news, we establish three different news indexes: one- and two-year lags respectively, and an index given by the accumulation of news across an interval of five years. Using an extensive search string, we first counted all news stories (see Boomgaarden and Vliegenthart, 2009) containing words indicating articles dealing with immigration and integration, which are immigration-related but not with a negative connotation. Then we counted the number of stories that included the previous words as well as negative connotation words "Crime, Discrimination, Illegal Immigration, Hate, Race, Tension and Violence". The latter is our news (negative) index.

The coverage effect, as discussed above, can have mixed effects. Extensive coverage can lead to the acceptance of immigrants by natives but can also create fear as the phenomenon may be perceived as being out of control. The "tone" (or frame) is a different channel through which media news influences public opinion (Iyengar and Kinder, 1987). The argument is that public opinion is greatly influenced by the tone associated to reported news. In order to

capture this effect we considered both negative news on immigration, and the total number of news items on immigration³.

Along with the two main determinants discussed above, we extend the analysis by considering the radicalization of previous prejudices and beliefs. Broad coverage may have the effect of further strengthening the initial position. The effect is captured by interactions between news and individual political orientation. A further contribution of this paper is to consider the trust that people state that they have in media news. Given that media slant is a phenomenon widely recognized by public opinion (Gentzkov and Shapiro, 2010), it is reasonable to believe that people with little trust in media consider a large coverage and/or a negative (positive) tone of news as signals of strong media slant and react by reinforcing and radicalizing their prior beliefs. To our knowledge, this is the first paper to consider individuals with high or low trust in media news separately.

The third aspect that we consider is the effect of the time structure of news. The rationale is that news impacts on public opinion differently depending on the news release lag with respect to the survey release. Political scientists (Hastie and Park, 1986; Chong and Druckman, 2010) suggest that the media effect duration depends on the way people process the information they have been exposed to. The major distinction is between individuals who engage in on-line processing and individuals who use memory-based processing. On-line processors routinely integrate considerations about a specific issue. Hence the information has longer time effects and an opinion is formed by using all the news received for a certain period of time, whereas memory-based processing individuals use only information they can remember the most and are thus more influenced by recent news. The difference between the two is that on-line processing, using a wider spectrum of information, is likely to be less sensitive to media exposure.

3.1.2 Control Variables

A problem that arises in the case of media news is the endogeneity of news indexes. The argument is that some common factors, at individual and country level, can lead to potential endogeneity and self selection. For instance, some variables at individual level, such as racial prejudice, influence both attitudes and the tone of media coverage, with the latter potentially reflecting the political preferences of the majority. We alleviate the potential bias controlling for individual political orientation. Moreover, further variables, at individual and country level, are considered as confounding factors.

A first set of control variables, at individual level, captures personal attitudes, beliefs and ideological position. In particular, we control for the degree of tolerance, trust in others, degree of altruism and, as mentioned above, political orientation. Moreover, we also account for age and gender (a dummy where male is equal to one), since some authors (Facchini et al., 2009) find that pro-immigration attitudes attenuate with age, while males have a lower pro-immigration attitude. Individual socioeconomic background is measured by working status (which is a dummy variable equal to one if employed and zero otherwise), and the skill level of the respondent, in order to test for the hypothesis that the unemployed and less educated workers have lower pro-immigrant attitudes. Finally, we account for income (those with lower

³If the tone is relevant we are expected to observe a coefficient negative and larger with respect to the total number of news.

income may feel they are competing with immigrants for welfare state services), respondent geographical location (size of the town where respondents live) and individual country macro-economic conditions, measured by GDP per capita, and unemployment (countries with more solid macro fundamentals are expected to be more open to immigration).

4 Data Analysis

We use data from the World Values Survey Database, Wave 5, 2005-09, for 19 countries (Bulgaria, Cyprus, Finland, Georgia, Germany, Hungary, Italy, Moldova, Norway, Poland, Romania, Serbia and Montenegro, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine and USA).⁴ Data for the News Index are collected from Bloomberg. A first visual summary of the pro-immigrant index distributions for political orientation is provided in Figure 1. Higher estimated weights are associated to economic tolerance (0.25) followed by requisites for citizenship (0.16) and trust (0.13). It can be seen from these figures that the distributions are quite similar for people who vote right and moderate. In particular, we note that the modal value of the indicator is about 0.4. By contrast, the distribution of the indicator for people who vote for left-wing parties is more shifted to the right, showing a greater propensity towards immigration. Moreover, the distribution is bimodal, with the higher mode characterised by a lower propensity towards immigrants (with a value slightly higher than 0.4).

Please Insert Figures 1-2 and Tables 1-2 about here

Furthermore, we report the pro-immigration index distributions conditional upon the degree of trust in news (high trust and no trust). The unconditional distribution is also shown as the benchmark distribution. Figure 2 shows that news has an effect on distribution tails: we observe that the distribution of people with high trust in news has a very small right tail compared to distribution of people with low trust. The inclusion of news on immigration reduces the propensity to immigration. Consequently, news on immigrants has the effect of fattening the left tail of the distribution.

In the case of the distribution of those who have no trust in news, we observe that the right tail of the distribution is less pronounced compared to that of those who have high trust in news. Clearly, the distribution of people with no trust in news is very similar to the benchmark distribution except for the extreme values. Tables 1 and 2 present a set of descriptive statistics for the variables of interest. The pro-immigration index average is particular high in the cases of Finland, Norway, Sweden and Switzerland, albeit experiencing higher volatility. Georgia has the lowest (0.317), whereas the remaining 14 countries considered range between 0.408 (Poland) and 0.499 (United States). On average, individual respondents who stated they had a political orientation to the right or left were almost equally split, with ten countries out of 19 showing a higher percentage associated to a right-wing political orientation. Descriptive statistics on news are also very informative. Countries with the highest negative index (exposure to negative news) are Germany, Italy, Spain and the United States, whereas Bulgaria, Cyprus, Finland, Moldova and Serbia are countries less exposed to negative news.

⁴The latest data were released by the World Value Survey Database, Wave 6, 2010-2014 but were not considered in order to avoid possible distortions following the recent global crisis.

The same pattern emerges for exposure to all news. Finally, there were more individuals, on average, claiming to have no trust in the media than those that very much trusted the media with the notable exception of Serbia and Montenegro.

5 Empirical Results

The results for Eq.(4) are reported in Tables 3 and 4 report. In Model I, in order to estimate the direct effect of news, we use the one-year lag news index⁵ (i.e. the index is constructed with news reported on the year before the survey was released); in Model II, we use the two-year lag news index, constructed with news reported two years before; and finally in Model III we use a cumulative news index measured by news issued from one year to six years before the survey was released.

The results obtained show that there is a difference between people with high trust in media news and those with low trust in media news. In the former case the coverage of news on immigration (captured by all news) has a negative and statistically significant effect on the pro-immigrant index, while in the case of people with low trust in media news or none at all, the coefficient is still negative but not statistically significant (see Table 4). The same occurs when we consider the tone of news: the coefficient is negative and significant only for people with high trust in media news, even if the negative tone shows a larger coefficient with respect to news coverage. Hence a broad coverage as well as a negative tone reduces the propensity of natives towards immigration only for people who have trust in the media; for those who have little or no trust there is no statistical significant effect. The negative sign indicates that a wide coverage of news on immigration creates alarmism, in the sense that the phenomenon is believed to be out of control. A higher probability is thus assigned to the occurrence of adverse effects (Thompson, 1995). Obviously if the tone of the news is negative, this effect is amplified.

It is interesting to note that the coverage and tone news indexes are statistically significant only for those with high trust in media news, but this does not mean that there is no effect of media news on those that have little trust in the media. Indeed, the results show that in this case the terms given by the interaction between the political opinion and the news index are statistically significant and show the same sign as the term for political orientation.

Hence, the tone and coverage of news on immigration affect the pro-immigration attitudes of people with low trust in media news only indirectly, reinforcing their preferences derived from political orientation. In this case there is a radicalization effect, which is not present for people with high trust in news, for whom the interaction terms are not significant. This result can be explained by the fact that those who have no trust in the media attribute high probability to the occurrence of "media slant" (Besley and Prat, 2006; Gentzkow and Shapiro, 2006; Sutter, 2001) and to the possibility that the media may be used as a propaganda tool. If people believe that there is a high probability of media bias, they may consider a wide coverage and a negative tone of news on immigration as signals of such bias, and react by becoming more confident in their own judgment. An implication of this result is that a wide coverage and a negative tone of news on immigration may radicalize public opinion,

⁵Please note that as survey releases vary across countries, the news indexes were calculated accommodating such differences.

which occurs mainly in countries where people have low trust in media news and where the media have a high political slant. The political orientation variables show that right-wing individuals have a negative propensity towards immigration, whereas their left-wing counterparts have a higher pro-immigration attitude ⁶ The time structure of news reveals that all indexes, one- and two-year lag indexes as well as the cumulative index, influence pro-immigration attitudes. However, the main effects occur when one-year and two-year lag news are considered, indicating a dominance of memory-based individuals.

Please Insert Tables 3 and 4 about here

Control variables at individual level, such as tolerance, altruism and trust, are all statistically significant and have a positive sign as expected. Since employment also has a positive sign, labour market competition can reduce the propensity for immigration, a finding which is in line with the literature (Mayda, 2006, O'Rourke and Sinnott, 2006). Age shows a negative sign; this implies that older people have a lower pro-immigration index, which also agrees with findings reported elsewhere (Mayda, 2006). Variables capturing income and education show that people with higher income (\geq Euros 58,000) have an higher pro-immigration attitude compared to low ($<$ Euros 15,000) and medium (Euros 30,000 – 35,000) income. A similar pattern emerges with respect to education with a higher level of education (secondary school or higher degree completed) having a higher effect on pro-immigration attitudes compared to low education (primary school completed). These results confirm those obtained by Mayda (2006), Hainmueller and Hiscox (2007) and Facchini et al. (2009), even if it is not clear whether they depend on the market labour channel or on different cultural attitudes of more skilled people. Finally, we found that individuals living in large towns (population \geq 100,000) have higher pro-immigration attitude, also this result confirms the more "openness" of people living in more urban area already found by the previous literature. Overall, our results confirm the important role of some individual variables, even if it is not always clear whether this depends on cultural or economic motives given the strong interrelationship between the two (Facchin, Mayda and Puglisi, 2009).

The control variables at country level, unemployment and GDP per capita are statistically significant, with the estimated coefficients indicating respectively a negative (unemployment) and positive (GDP per capita) effect, as one would expect. The effect of unemployment confirms the relevance of labour market channels: in the case of high unemployment, people do not prefer high immigration levels because of market competition, while a high level of development makes countries more open and favourable to immigration given the greater economic opportunities but also the different effect that the level of development has on the skill composition of workers. However, the level of GDP per capita can also capture other characteristics of countries not completely limited to labour market factors, such as the level of social capital, a lower level of criminality and so on, however we are unable to disentangle the different types of motivations.

⁶These results have to be interpreted with respect to the reference point, given by individuals with a centrist political orientation.

6 Conclusions

This paper analysed the effects of media coverage on individuals' pro-immigration attitudes. The novel pro-immigration attitude index proposed is calculated by means of fuzzy analysis. Furthermore, the distinction between coverage, tone and the time dimension differentiate this study from previous works. The results can be summarised as follows: Both the coverage and tone effects attenuate attitudes towards immigration only for people with high trust in the media while, interestingly, for individuals with no trust in the media, news on immigration strengthens political beliefs and prior preferences, further eroding the pro-immigration attitude in the case of individuals with negative prior preferences and beliefs, while increasing the pro-immigration attitude in the case of individuals with positive prior preferences. Therefore, in the latter case news radicalizes individuals' prior preferences and prejudices on immigration where the prior beliefs and preferences are captured by individual political opinions. Analysis of the time structure of news reveals that the most effective news was that produced one year before the survey was released.

References

- [1] Besley, T., and Prat A. 2006. Handcuffs for the Grabbing Hand? Media Capture and Government Accountability, *American Economic Review*, 96, 720-736.
- [2] Boomgaarden H. G, and Vliegenthart R., 2009, How News Content Influences Anti-immigration Attitudes: Germany, 1993-2005, *European Journal of Political Research*, 48, 516-542.
- [3] Cerioli A., and Zani S., 1990, A Fuzzy Approach to the Measurement of Poverty. In: Dagum C., Zenga M. (eds) *Income and Wealth Distribution, Inequality and Poverty*. Springer Verlag, Berlin, 272-284.
- [4] Cheli B., and Lemmi A., 1995, A Totally Fuzzy and Relative Approach to the Multidimensional Analysis of Poverty, *Economic Notes*, 24, 115-134.
- [5] Chiappero-Martinetti, E., 2000, A Multidimensional Assessment of Well-being Based on Sen's Functioning Approach, *Rivista Internazionale di Scienze Sociali*, 1008, 207-239.
- [6] Chong D., and Druckman J. N., 2010, Dynamic Public Opinion: Communication Effects over Time, *American Political Science Review*, 100, 663-680.
- [7] Della Vigna S. and Kaplan E., 2007. The Fox News Effect: Media Bias and Voting, *The Quarterly Journal of Economics*, Oxford University Press, 122, 1187-1234.
- [8] Dustman C., and Preston I., 2007, Racial and Economic Factors in Attitudes to Immigration, *The B.E., Journal of Economic Analysis* 67, 1-37.
- [9] Dustman, C., Fabbri, F., and Preston, I., 2011. Racial Harassment, Ethnic Concentration, and Economic Conditions*, *The Scandinavian Journal of Economics*, 113, 689-711.
- [10] Eckstein, Z., and Tsiddon, D., 2004, Macroeconomic Consequences of Terror: Theory and the Case of Israel, *Journal of Monetary Economics*, 51, 971-1002.

- [11] Erbring, L., Goldenberg E. and Miller A., 1980, Front Page News and Real World Cues: A New Look at Agenda-setting by the Media, *American Journal of Political Science* 24, 16-47.
- [12] Entman, R. M. 1993, Framing: toward Clarification of a Fractured Paradigm, *Journal of communication*, 43, 51-58.
- [13] Facchini, G., Mayda, A. M., and Puglisi, R., 2009, Illegal Immigration and Media Exposure: Evidence on Individual Attitudes, CEPR Discussion Papers, 7593.
- [14] Gang, I. N., Rivera-Batiz, F. L., and Yun, M. S., 2013, Economic Strain, Education and Attitudes towards Foreigners in the European Union, *Review of International Economics*, 21, 177-190.
- [15] Gentzkow, M. A., and Shapiro J. M., 2004. Media, Education and Anti-Americanism in the Muslim World, *Journal of Economic Perspectives*, 18, 117-133.
- [16] Gentzkow M. A. and Shapiro J. M., 2006. Media Bias and Reputation, *Journal of Political Economy*, University of Chicago Press, vol. 114, 280-316,
- [17] Gentzkow, M. and Shapiro, J. M., 2010, What Drives Media Slant? Evidence From U.S. Daily Newspapers, *Econometrica*, 78, 35-71.
- [18] Groseclose, T. and Milyio J., 2005, A Measure of Media Bias, *Quarterly Journal of Economics*, 120, 4, 1191-1237.
- [19] Hainmueller, J., and Hiscox, M. J., 2007, Educated Preferences: Explaining Attitudes Toward Immigration in Europe, *International Organization*, 61, 399-442.
- [20] Hastie, R, and Park B., 1986, The Relationship between Memory and Judgment Depends on Whether the Judgment Task Is Memory-based or On-line, *Psychological Review*, 93, 258-268.
- [21] Héricourt, J., and Spielvogel G., 2014, Beliefs, Media Exposure and Policy Preferences on Immigration: Evidence from Europe, *Applied Economics*, 46, 225-239.
- [22] Iyengar, S., and Kinder, D.R.,1987, News that Matters. Chicago: University of Chicago Press.
- [23] 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.
- [24] McCombs, M, and Shaw, D., 1972. The Agenda-setting Function of Mass Media, *Public Opinion Quarterly* 36, 176-184.
- [25] Mullainathan, S., and Shleifer, A., 2005. The Market for News. *American Economic Review*, 95, 4, 1031-1053.
- [26] OECD, 2008, Handbook on Constructing Composite Indicators, European Commission, <http://www.oecd.org/std/clits/42495745.pdf>.

- [27] O'Rourke, K. H., and Sinnott, R. 2006. The Determinants of Individual Attitudes towards Immigration, *European Journal of Political Economy*, 22, 838-861.
- [28] Scheve, K. F., and Slaughter, M. J., 2001, Labor Market Competition and Individual Preferences over Immigration Policy, *Review of Economics and Statistics*, 83, 133-145.
- [29] Stromberg, D., 2004,. Radio's Impact on Public Spending, *The Quarterly Journal of Economics*, 189-221.
- [30] Sutter, D., 2001, Can the Media Be So Liberal? The Economics of Media Bias, *The Cato Journal*, 20, 431-451.
- [31] Zani S., Milioli M.A., and Morlini I., 2010, Fuzzy Composite Indicators: an Application for Measuring Customer Satisfaction. Atti del XVI Convegno della Società Italiana di Statistica, Padova, 16-18 June.
- [32] Zani S., Milioli M.A., and Morlini I., 2011, Fuzzy Methods and Satisfaction Indices. In: Kennett R. S., Salini S. (eds.) *Modern Analysis of Customer Surveys*. Wiley - New York, 439-456.

Table 1: Descriptive Statistics

	Obs.	Pro Immigration Index				Right		Left	
		Mean	S.D.	Min	Max	Mean	S.D.	Mean	S.D.
Bulgaria	661	0.431	0.187	0.004	0.957	0.189	0.391	0.346	0.476
Cyprus	1017	0.430	0.201	0.000	0.981	0.255	0.436	0.331	0.471
Finland	929	0.544	0.219	0.000	1	0.321	0.466	0.249	0.433
Georgia	1090	0.317	0.161	0.004	0.931	0.362	0.481	0.132	0.338
Germany	1559	0.504	0.232	0.000	1	0.167	0.373	0.384	0.486
Hungary	892	0.405	0.161	0.000	0.981	0.281	0.449	0.171	0.376
Italy	813	0.491	0.209	0.000	0.993	0.264	0.441	0.428	0.495
Moldova	922	0.423	0.175	0.000	0.991	0.377	0.485	0.208	0.406
Norway	978	0.661	0.233	0.000	1	0.345	0.476	0.287	0.452
Poland	784	0.408	0.173	0.033	0.993	0.326	0.469	0.169	0.375
Romania	1180	0.488	0.203	0.000	0.993	0.403	0.491	0.148	0.228
Serbia	1209	0.441	0.193	0.067	0.993	0.212	0.409	0.474	0.499
Slovenia	784	0.449	0.219	0.000	1	0.244	0.431	0.274	0.446
Spain	861	0.463	0.201	0.000	1	0.187	0.391	0.496	0.501
Sweden	897	0.801	0.183	0.021	1	0.389	0.488	0.348	0.476
Switzerland	1084	0.611	0.217	0.037	1	0.267	0.442	0.341	0.474
Turkey	1067	0.431	0.208	0.000	0.988	0.421	0.493	0.257	0.437
Ukraine	635	0.481	0.189	0.081	1	0.279	0.449	0.176	0.381
United States	1142	0.499	0.211	0.000	0.993	0.278	0.428	0.183	0.341

Note: The Pro-immigration Index is calculated according to Fuzzy Set Theory. Right and Left measure political orientation. SD stands for standard deviation.

Table 2: Descriptive Statistics (cont.)

	News Index (Cumulative)		Negative News Index (Cumulative) * Trust			
	Negative	All	High Trust in News		No Trust in News	
	Index	Index	Mean	S.D.	Mean	S.D.
Bulgaria	5.62	14.07	0.323	1.309	0.408	1.459
Cyprus	6.92	14.24	0.353	1.524	1.088	2.521
Finland	6.53	13.98	0.049	0.564	0.231	1.209
Georgia	5.76	12.47	0.491	2.741	1.619	4.787
Germany	18.89	36.67	0.255	2.189	1.741	5.482
Hungary	10.05	20.25	0.135	1.158	1.892	3.931
Italy	15.22	31.93	0.112	1.303	1.591	4.659
Moldova	5.55	11.11	0.241	1.131	0.475	1.554
Norway	12.61	25.84	0.091	1.067	0.335	2.029
Poland	8.98	20.03	0.309	1.638	0.572	2.195
Romania	8.65	18.25	0.601	2.201	0.615	2.225
Serbia	6.54	16.31	0.686	2.001	0.384	1.548
Slovenia	7.01	13.68	0.116	0.895	0.226	1.748
Spain	16.81	34.12	0.273	2.127	0.554	4.317
Sweden	10.78	22.26	0.072	0.879	0.148	1.815
Switzerland	13.87	29.41	0.102	1.187	0.217	2.518
Turkey	14.15	29.06	0.358	2.221	0.735	4.565
Ukraine	11.08	20.21	0.453	2.197	0.827	4.001
United States	21.41	44.11	0.299	2.512	0.618	5.186

Note: The News Index used has the following form: News Index Negative (Positive+Negative) = $\ln[e + \text{Negative (Positive + Negative) News}]$. Descriptive statistics for High Trust and No trust in News measure the interactions between individual's trust in the media and the News Index.

Table 3: Immigration and Media Exposure

Model	High Trust in Media News			No Trust in Media News		
	I	II	III	I	II	III
Negative News						
News	-0.0205*** (0.009)	-0.0181** (0.008)	-0.0046** (0.001)	-0.0024 (0.004)	-0.0045 (0.003)	-0.0011 (0.001)
NewsRight	-0.0201 (0.124)	-0.0176 (0.012)	-0.0045* (0.002)	-0.0134** (0.006)	-0.0121** (0.006)	-0.0022** (0.001)
NewsLeft	0.0119 (0.125)	0.0157 (0.011)	0.0029 (0.002)	0.0135** (0.006)	0.0143** (0.006)	0.0029** (0.001)
Right	-0.0066 (0.004)	-0.0064 (0.004)	-0.0067 (0.004)	-0.0029 (0.005)	-0.0032 (0.005)	-0.0033 (0.005)
Left	0.0477*** (0.005)	0.0476*** (0.005)	0.0478*** (0.005)	0.0435*** (0.001)	0.0436*** (0.005)	0.0434*** (0.005)
Individual and Country Level Control Variables						
Unemployment		-0.0091*** (0.000)		Income Low		0.0047 (0.027)
GDP		0.0016*** (0.000)		Income Medium		0.0058 (0.011)
Tolerance		0.0501*** (0.004)		Income High		0.0919*** (0.013)
Altruism		0.0236*** (0.004)		Education Low		0.0285 (0.031)
Trust		0.0976*** (0.004)		Education High		0.0893*** (0.031)
Employment		0.0243*** (0.004)		Small Town		-0.0161** (0.006)
Age		-0.0005*** (0.000)		Large Town		0.0265*** (0.007)
Gender		-0.0042 (0.0041)				
Obs.	18504					

Note: ***, **, * denote rejection of the null hypothesis at the 1%, 5%, and 10% levels. Standard errors (reported in brackets) are robust to the distribution of the underlying residuals. The negative news index is defined as follows: negative news index = $\ln[e+\text{negative story counts news}]$. The variables NewsRight and NewsLeft measure the interaction between news exposure and individual respondents stating they have a Right or Left political orientation, respectively. Furthermore, our analysis considers, in turn, respondents who have high trust and no trust in media news. Right and Left control for political orientation (prejudice) only. Income low, medium and high is equal to $< 15,000$, $30,000 - 35,000$ and $> 58,000$ Euros per year, respectively. Education low and high stand for completed primary school and secondary or higher degree, respectively. Small and big cities refer to < 2000 and $> 100,000$ habitants, respectively. In Model I, II and III we use the one-year, two-year and cumulative news index (measured by news issued in the five year interval before the survey was released), respectively.

Table 4: Immigration and Media Exposure

Model	High Trust in Media News			No Trust in Media News		
	I	II	III	I	II	III
All News						
News	-0.0101** (0.004)	-0.0090** (0.004)	-0.0022** (0.001)	-0.0014 (0.001)	-0.0023 (0.002)	-0.0005 (0.003)
NewsRight	-0.0096 (0.005)	-0.0088 (0.006)	-0.0021* (0.001)	-0.0062** (0.003)	-0.0057** (0.003)	-0.0011* (0.000)
NewsLeft	0.0058 (0.005)	0.0081 (0.005)	0.0014 (0.001)	0.0064** (0.003)	0.0068** (0.003)	0.0014** (0.000)
Right	-0.0066 (0.004)	-0.0064 (0.004)	-0.0067 (0.004)	-0.0029 (0.005)	-0.0032 (0.005)	-0.0034 (0.005)
Left	0.0477*** (0.005)	0.0480*** (0.005)	0.0478*** (0.005)	0.0435*** (0.005)	0.0436*** (0.005)	0.0435*** (0.005)
Individual and Country Level Control Variables						
Unemployment		-0.0091*** (0.000)		Income Low		0.0120 (0.095)
GDP		0.0016*** (0.000)		Income Medium		0.0257*** (0.009)
Tolerance		0.0298*** (0.003)		Income High		0.0919*** (0.013)
Altruism		0.0308*** (0.004)		Education Low		0.0363 (0.019)
Trust		0.0601*** (0.003)		Education High		0.1001*** (0.015)
Employment		0.0175*** (0.004)		Small Town		-0.0158** (0.007)
Age		-0.0008*** (0.000)		Large Town		0.0243*** (0.008)
Gender		-0.0041 (0.0041)				
Obs.		18504				

Note: ***, **, * denote rejection of the null hypothesis at the 1%, 5%, and 10% levels. Standard errors (reported in brackets) are robust to the distribution of the underlying residuals. The (positive + negative) news index is defined as follows: (positive + negative) news index = $\ln[e+(\text{positive story counts} + \text{negative story counts}) \text{ news}]$. The variables NewsRight and NewsLeft measure the interaction between news exposure and individual respondents declaring having a Right or Left political orientation, respectively. Furthermore, our analysis considers, in turns, respondents stating they have high trust and no trust in media news. Right and Left control for political orientation (prejudice) only. Income low, medium and high is equal to < 15,000, 30,000 – 35,000 and > 58,000 Euros per year, respectively. Education low and high stands for completed primary school and secondary or higher degree, respectively. Small and big cities refer to < 2000 and > 100,000 inhabitants, respectively. In Model I, II and III we use the one-year, two-year and cumulative news index (measured by news issued in the five-year interval before the survey was released), respectively.

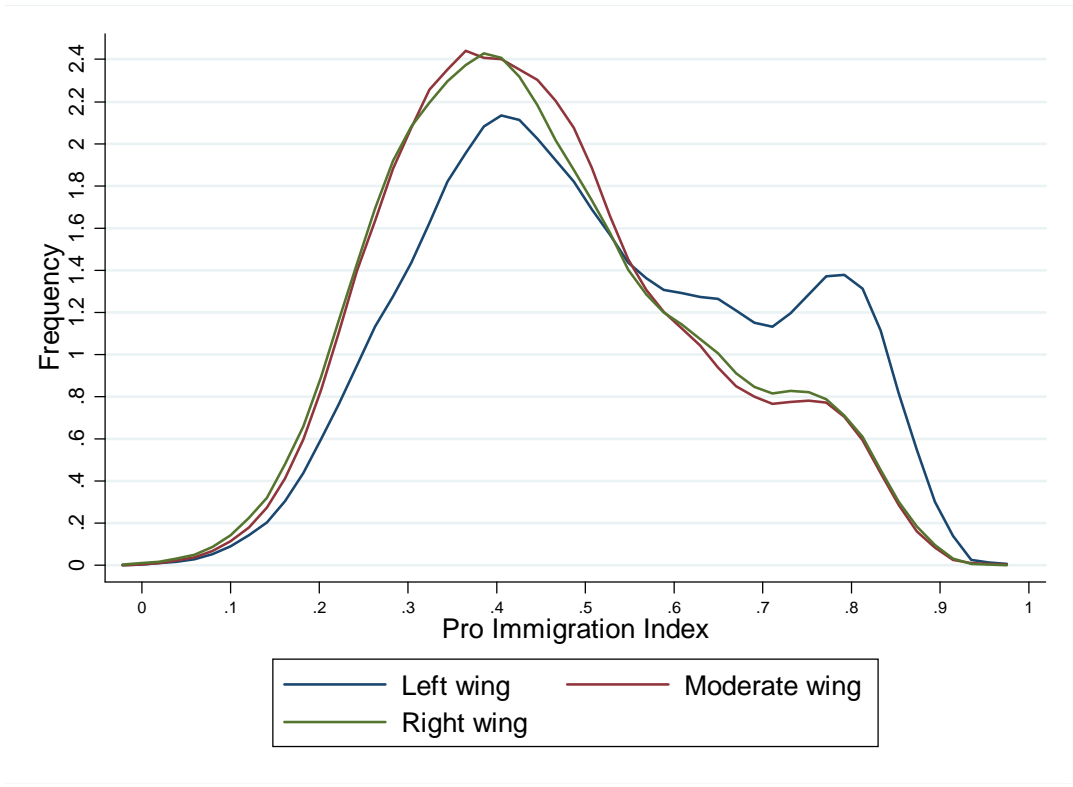


Figure 1:

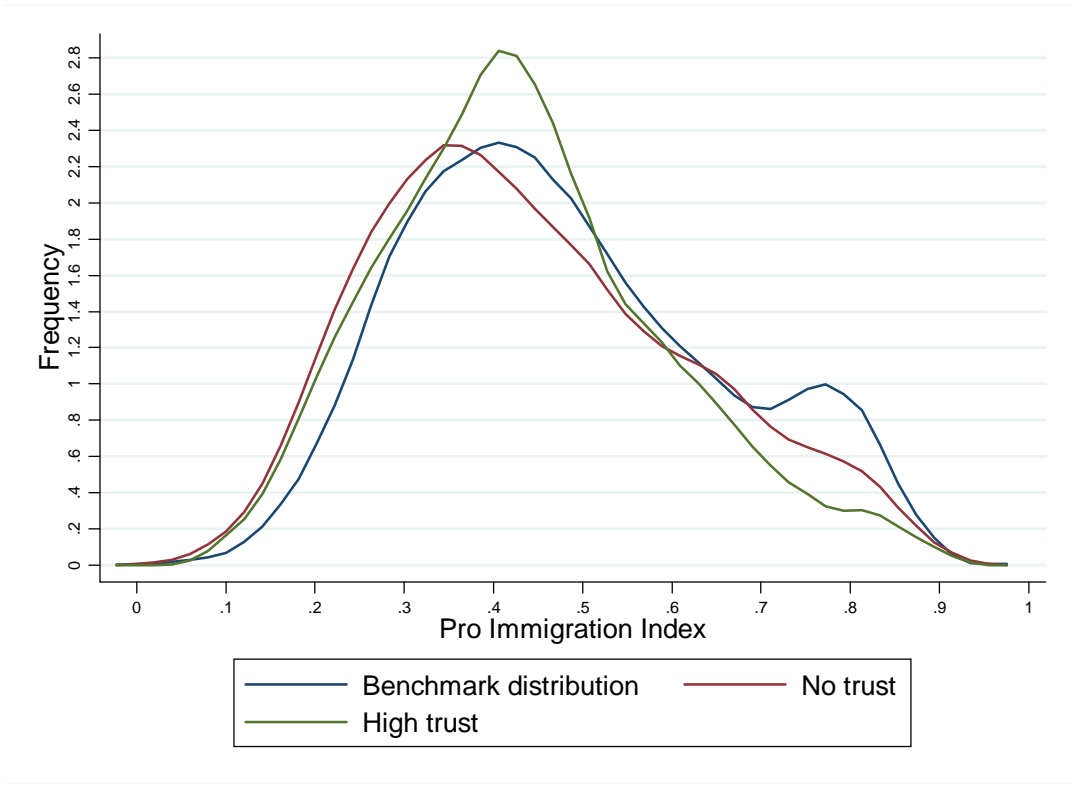


Figure 2: