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Abstract

Integration of immigrants is a two-way process, the success of which depends both on immigrants and on natives. We provide new evidence on the determinants of individual attitudes towards immigration, using data from the 2005 and 2010 waves of the German Socio-Economic Panel. In particular, we show that bitterness in life is strongly associated with worries about immigration. This effect cannot be explained just by concerns that immigrants are competing with oneself in the labor market. Instead, it appears that people who feel that they have not got what they deserve in life oppose immigration for spiteful reasons.

JEL-Codes: D720, F220, J610.

Keywords: immigration, bitterness, native attitudes.

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“Bitter people, on the other hand, are hard to appease and keep their anger for a long time; for they hold back their temper. But they cease being angry when they retaliate, for vengeance brings an end to anger by producing pleasure instead of pain.”

Aristoteles, *Nicomachean Ethics*, trans. 1975

1. Introduction

In coming years, most rich countries are going to face a shortage of workers due to population aging and declining fertility. Immigrants are arguably needed to fill the gap left by the retiring baby-boom generation. Despite potential gains for receiving countries, there is a strong opposition towards further immigration in the United States and several European countries.¹ Across Europe, the rise of anti-immigration parties has shifted the whole political spectrum towards more restrictive policies from 1980s onwards (Semyonov et al. 2006, Arzheimer 2009). The current economic crisis has increased public opposition to immigration in recent years in several European countries and the United States, while attitudes in Germany, which weathered the crisis better than other countries, have remained about the same (German Marshall Fund 2014). Negative attitudes by natives may hamper immigrants’ integration through labor market discrimination, resulting in lower wages, higher unemployment, and underutilization of their human capital (Bertrand and Mullainathan 2004, Kaushal et al. 2007). In addition, increasing hostility against immigrants is likely to have substantial negative effects on their mental and physical health (Harrell et al. 2003, Johnston and Lordan 2012) and makes it harder for host countries to attract qualified workers.

Our paper addresses the question in to what extent bitterness in life is an important driver of negative attitudes towards immigration. Using micro data from the German Socio-Economic Panel (SOEP) we find that bitter people are more likely to have worries on immigration. A strong relationship between bitterness and negative attitudes towards immigration could be observed for two reasons. First, bitter people could worry that immigration will worsen their personal position, for example by increasing competition for jobs. Second, bitter people who feel that they have not got what they deserve in life could oppose immigration for spiteful reasons. That is, they feel that since life or society has denied them opportunities, such opportunities should also be denied to others. One target could be immigrants who leave their home country to improve their position in life.

¹ See table A1 in the appendix.

We find that the link between bitterness in life and worries about immigration holds for different socio-demographic groups and even after controlling for job security. The latter suggests that spiteful reasons play an important role in explaining why bitter people have a more negative attitude towards immigration. To rule out that the correlation between bitterness and negative attitudes towards immigration is driven by time-invariant unobservable individual-specific factors, we analyze individual changes in bitterness and attitudes towards immigration over time. Estimates from linear probability models with individual fixed effects indicate that growing bitterness over time is associated with increasing worries about immigration, while decreasing bitterness is associated with having fewer worries about immigration. Importantly, the relationship we establish does not reflect the effects of general life satisfaction. When we include bitterness and life satisfaction as explanatory variables at the same time in a panel analysis, changes in bitterness are strongly related to changes in worries towards immigration. Changes in life satisfaction, instead, have only a weak link to changes in worries towards immigration.

The paper contributes to two different strands of the economic literature. The first strand analyses the determinants of individual attitudes towards immigration. The main focus in these studies has been the role of labor market effects and redistribution in shaping attitudes towards immigration (e.g. Scheve and Slaughter 2001, Mayda 2006, Facchini and Mayda 2009, Ortega and Polavieja 2012). Card et al. (2012) conclude that compositional amenities, related to people's preferences on with what type of people they would like to live in the same neighborhoods and interact in workplace or schools and in society at large, are much more important in explaining attitudes towards immigration policy than economic concerns. Our findings suggest that bitterness may be an important driving force behind compositional concerns. The role of personal traits has received only limited attention so far (Gallego and Pardos-Prado 2014). The second strand of the literature deals with locus of control and its implications for economic behavior (Cobb-Clark and Schurer 2013). Among others, it has been show that an external locus of control, defined as believing that outcomes in life are due to external factors, has a negative impact on job search effort during unemployment (Caliendo et al. 2015). We contribute to this strongly growing literature by refining the measurement of locus of control and disentangling bitterness and locus of control.

The paper is organized as followed. Section 2 reviews the relevant literature and discusses the concept of bitterness and its potential link to attitudes towards immigration. Section 3 introduces the data used and provides descriptive statistics. In section 4 we discuss the

difference between bitterness and locus of control. Section 5 contains the results from our empirical analysis, while Section 6 concludes the paper.

2. Related Literature

Previous research has shown that economic interests are shaping native attitudes towards immigration. Natives are more likely to oppose immigration if they are competing with immigrants in the labor market (Ortega and Polavieja 2012). Those who expect to experience negative wage or employment effects through the inflow of foreign workers, are more likely to be against immigration. In addition to this, attitudes depend on the distributional effect of immigration. Those who expect to lose out through immigration induced changes in taxes and transfers are likely to have more worries about immigration and are more likely to favor restrictive immigration policies (Facchini and Mayda 2009).

In terms of non-economic determinants, there is a growing literature indicating that individual attitudes towards immigration are also shaped by concerns about negative effects of immigration on local amenities and perceived threats to the existing culture (O'Rourke and Sinnott 2006). Card et al. 2012 conclude that worries about negative effects on local compositional amenities, like crime, are important drivers in opposition to immigration. Empirical evidence further suggests that education is positively correlated with pro-immigration attitudes beyond its effect through the labor market channel (Hainmüller and Hiscox 2010). In other words, educated people tend to have, independent of own economic interests, a preference for multicultural societies. Finally, social dominance orientation, chauvinism, right-wing authoritarianism, and neuroticism tend to be associated with more negative attitudes, while agreeableness is associated with more positive attitudes (Duckitt and Sibley 2010, Gallego and Pardos-Prado 2014).

Bitterness is a complex emotion, comprising a sense of having been let down and a feeling of being a loser, a desire to fight back and, at the same time, feeling helpless (Linden and Maercker 2011). Psychologists interpret bitterness (embitterment) as a mixture of anger and hopelessness, arising from feeling unjustly treated by other people or fate. During the current economic crisis, many rich countries have experienced large-scale unemployment and reductions in the living standard. This has been associated with individual-level tragedies, exemplified most dramatically by an increase in the number of suicides in crisis countries (Stuckler et al. 2009, Chang et al. 2013). Unemployment and loss of trust in the future make

people bitter (Smith 1985, Muschalla and Linden 2011) which could also affect their attitude towards immigration.

3. Data & Descriptive Statistics

For the empirical analysis we make use of data from the German Socio-Economic Panel (SOEP), which is a representative micro data set on persons, families and households in Germany.² The panel data set was started in 1984 and contains a large array of socio-economic variables including variables measuring immigration background, education and labor market status. For a detailed overview about the SOEP we refer to Wagner et al. (2007).

For this paper it is particularly valuable that the SOEP also provides detailed information on personal values and opinions, including a question on bitterness. It reads as: “Compared to other people, I have not achieved what I deserve.” The question was asked in 1999, 2005 and 2010. However for the purpose of comparability, we focus on 2005 and 2010 since these were the only years in which respondents were asked to give an answer on a 7-point scale, 1 being the lowest value, while 7 is reported by individuals who totally agree with the statement. The corresponding variable serves as our main explanatory variable.

Furthermore, the SOEP includes a question allowing to measure worries about immigration. The question asked is: “How is it with the following topic – immigration to Germany – do you have worries about it?” The possible answers are “big worries”, “some worries”, or “no worries”. The corresponding variable is used as the dependent variable in our empirical exercise. We construct three different versions of it which we define in the corresponding sections. The question has been recently used also by other authors to study attitudes towards immigration (e.g. Calahorrano 2013, Lancee and Pardos-Prado 2013, Avdeenko and Siedler 2015). Given the wording and framing, the question is able to capture negative attitudes towards immigration, which are at the same time salient for the respondent (Lancee and Pardos-Prado 2013).

We restricted most of our analysis to respondents aged at least 18 and at most 65. The aim is to focus on native working-age individuals who potentially could compete with immigrants in the labor market. An exception is column (3) in Table 4, in which we analyze pensioners including respondents older than 65. Throughout the analysis, we exclude respondents who

² The data used comes from the Socio-Economic Panel (SOEP), data for years 1984-2010, version 27, SOEP, 2011, doi: 10.5684/soep.v27.

are themselves immigrants or whose parents were immigrants. In other words, we focus on native attitudes towards immigration.

For education we rely on the International Standard Classification of Education (ISCED) of the UNESCO. Education is measured by a dummy coded as 1 if the respondent is high skilled (Isced 5 or 6, corresponding to first and second grade of tertiary education). Household status is measured by two variables: a dummy coded as 1 if the respondent is single, and a dummy coded as 1 if at least one child lives in the household of the respondent. Income is measured by log real net monthly household income of the respondent.³ With respect to the employment status we distinguish between three different outcomes: working (full or part-time), being unemployed, and being outside the labor force. Regional differences are captured by dummy variables for the German federal states (“Länder”). Finally, we also control for self-reported life-satisfaction which is measured on an 11-point scale, 0 being the lowest value, while 10 is reported by individuals who are very satisfied with their life, all things considered.

We find that negative attitudes towards immigration are strongly correlated with self-reported bitterness in life, measured by a question on whether respondents feel they have not achieved what they deserve. Among those who are very bitter, 43.4 percent have big worries about immigration, while the corresponding share is only 15.6 percent among those who are not bitter at all (Figure 1). The relationship between bitterness and worries about immigration can be observed for men and women, for different age groups, as well as when analyzing people living in former East and West Germany separately.⁴

4. Bitterness vs. Locus of Control

The bitterness question was previously used as a measure of locus of control by some authors (see for example Heineck and Anger 2010, Caliendo et al. 2015) while referring to the original definition of locus of control by Rotter (1966). We think this is not correct. The two original questions used by Rotter have a different content and meaning. The first question of Rotter (1966) is: “In the long run people get the respect they deserve in this world.” The second question sounds: “Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.” Both questions therefore ask about general statements how people think that effort is rewarded in the existing world and society. Instead, the question in the SOEP asks explicitly whether the respondent thinks that he/she has not achieved what he/she

³ We adjust for the size of the household by dividing household income by the number of adults in the household, though this makes little difference to the results.

⁴ See figures A1 to A3 in the appendix.

deserves compared to other people. This is a very different question and statement about personal disappointment and feeling unfairly treated. Therefore, the SOEP question should not be used as a measure for locus of control, but instead serves as a good measure for personal bitterness. It is further noteworthy, that none of the other surveys containing measures of locus of control like the NYLS or HILDA uses the aforementioned question as a measure of locus of control.

To compare bitterness and locus of control, we constructed two variables capturing locus of control of respondents following the approach of Caliendo et al. (2015). The first measure is a standardized, continuous full index of locus of control, which is increasing with the belief to have an internal locus of control. The second measure is a dummy variable taking the value of one if the respondent has an internal locus of control. The latter is defined as having a full index of locus of control larger than the corresponding median in the population in a given year. The unconditional correlation between the corrected locus of control dummy by Caliendo et al. (2015) and our bitterness variable is -0.37 .⁵ People with an internal locus of control are less likely to be bitter. However, as table 1 shows, being bitter is not necessarily connected with having an external locus of control. About 38% of the bitter people in our sample have an internal locus of control.⁶ On the other hand, almost half of the non-bitter respondents belong to the half of the population that have an external locus of control.

Since bitterness is positively correlated with having an external locus of control and is only one of the nine components used to measure locus of control, it has to be expected that using corrected measures of locus of control will not change the results of Caliendo et al. (2015), Heineck and Anger (2010) and other papers using locus of control measures including the bitterness question. Nonetheless, it would be advisable to use a corrected locus of control measure excluding the bitterness question in future research. Moreover, it would be promising to include the bitterness questions in other surveys like the General Social Survey or the European Social Survey to test in how far the link between bitterness and worries on immigration holds in other contexts and whether bitterness affects economic behavior like search effort during periods of unemployment.

⁵ The only difference to the approach of Caliendo et al. (2015) is to exclude the question on bitterness in constructing the locus of control measures.

⁶ We define being bitter as responding “6” or “7” to the bitterness question.

5. Econometric Analysis

In this section, we analyze the relationship between bitterness and attitudes towards immigration empirically. First, in Section 5.1 we provide simple cross-sectional estimates for the full sample and selected subsample groups. Moreover, we assess the robustness of our results when including measures for locus of control and life satisfaction. In Section 5.2 we show results from models with individual fixed effects which allow controlling for time constant unobserved individual heterogeneity.

5.1 Cross-sectional Evidence

To analyze the nexus between bitterness and attitudes towards immigration we start estimating ordered logit regressions where the dependent variable y_i has three different outcomes (j =big worries (value 1), some worries (value 2), no worries (value 3)):

$$\Pr(y_i = j) = \Pr(k_{j-1} < \alpha + \beta Bitterness_i + \gamma X_i + \varepsilon_i \leq k_j), \quad (1)$$

with k_j being parameter estimates of the cut-off parameters, transforming the continuous latent variable into 3 categories.⁷ $Bitterness_i$ is a vector of five dummy variables measuring the degree of bitterness. The reference category is being not bitter at all. X_i is a vector of controls that include gender, age, age squared, tertiary education, marital status, child in the household, employment status, household income per head and regional fixed effects. We therefore control for all types of characteristics that has been shown to be important in shaping native attitudes towards immigration. ε_i is the idiosyncratic error term. Standard errors are clustered at the individual level. To ease interpretation, we report marginal effects for having big worries.

First, we estimate equation (1) for the full sample in 2010. The corresponding results are reported in table 2. We start in with a parsimonious specification in column (1) in which we only control for gender and age. We find a significant and almost monotonic relationship between bitterness and worries about immigration. The bitterer a person is, the more likely she/he is to have big worries about immigration. Estimates in columns (2) to (4) show that the strong link between bitterness and big worries about immigration holds when controlling for further socio-demographic and regional differences. The magnitude of the link is remarkable. The estimates suggest that those respondents who feel really bitter (bitterness level of 7) have a 20 percentage point higher probability of having larger worries on immigration than those

⁷ k_0 is $-\infty$ and k_3 is $+\infty$.

who are not bitter at all. The main finding that bitter people are more likely to have big worries about immigration holds also in 2005, suggesting that the pattern is stable over time (table 3).

To analyze to what extent worries about immigration can be attributed to job insecurity, we ran separate regressions for civil servants who have permanent employment contracts, for employed people who are not civil servants, and for pensioners and people who are unemployed or outside the labor force, without being retired (table 4). In all these groups, bitter people are more worried about immigration. Furthermore, the link between bitterness and worries about immigration holds for groups with different education levels in the labor market (table 5). The fact that bitterness is related to more negative attitudes towards immigration independently of job insecurity and education suggests that spiteful reasons play an important role in explaining why bitter people have a more negative attitude towards immigration.

In the next step, we incorporated worries on crime in our analysis. International survey data indicates that many people are concerned that immigration increases crime, although the limited empirical evidence on the causal relationship between crime and immigration does not support this view (Bianchi et al. 2012). As a consequence, worries on crime and immigration are strongly correlated. Card et al. (2012) have shown that worries about increased crime through immigration are a combination of economic and compositional concerns. To test in how far our results might be driven by concerns about crime, we ran separate regressions for respondents with no worries, some worries, or big worries about crime. The estimates in table 6 show that the strong relationship between bitterness and worries about immigration holds for all groups. The influence of bitterness seems to be more pronounced among those people who have worries on crime, but also persists among the minority of respondents who do not have any worries on crime at all.

Next, we tested in how far our results survive when we include measures of locus of control. The corresponding results are displayed in table 7. We do not find any significant effect of locus of control on native attitudes towards immigration. More important, neither the magnitude nor the significance of our bitterness coefficients are affected when introducing locus of controls variables. This finding strongly strengthens our previous results and supports our claim that the question used for defining bitterness is indeed not an appropriate measure for locus of control.

As negative life events are linked to both bitterness and life satisfaction, the latter is a potential contender with bitterness when linking emotions to attitudes towards immigration. Indeed, the same data set that we used has been previously used to show that personal and economic choices matter for life satisfaction (Headey et al. 2010). We find that life satisfaction, however, plays only a minor role in explaining attitudes towards immigrants and only two of the coefficients of different levels of life satisfaction are statistically significant (table 8). Moreover, neither the significance nor the size of the estimated bitterness coefficients are hardly affected. This finding considerably strengthens our interpretation that bitterness is strongly associated with attitudes towards immigration.

5.2 Longitudinal Evidence

As Figure 2 shows, there is enough individual-level variation in bitterness to run panel estimations exploiting individual within variation in bitterness over time. As the distribution of changes in bitterness is symmetric around zero, our results should not be distorted by any social trends that would affect both bitterness and attitudes towards immigrants. To analyze the relation between changes in bitterness and having worries on migration we estimate the two linear probability models with individual fixed effects:

$$More_Worries_{it} = \alpha + \beta Bitterness + \gamma X_{it} + \mu_i + \eta_{it}, \quad (2)$$

$$Less_Worries_{it} = \alpha + \beta Bitterness + \gamma X_{it} + \mu_i + \eta_{it}, \quad (3)$$

with “More worries_{it}” being a dummy coded as 1 if the person was more worried in 2010 and 0 if the person was equally worried or less worried in 2010. “Fewer worries_{it}” is a dummy coded as 1 if the person was less worried in 2010 and 0 if the person was equally or more worried in 2010. Both dependent variables have value zero in 2005. X_{it} is a vector containing controls for age, age squared, tertiary education, marital status, child in the household, employment status, household income, and regional fixed effects. Finally, μ_i captures the individual specific time-constant component of the error term, while η_{it} is the idiosyncratic disturbance term. Standard errors are again clustered at the individual level.

The corresponding estimates are presented in table 9. The estimates show that growing bitterness over time is associated with increasing worries about migration, while decreasing bitterness is associated with having fewer worries about migration. An increase in bitterness by 6 points, from not bitter to very bitter, is associated with a 6.5 percentage points higher probability of having big worries on immigration. This is in so far remarkable, as we control

for changes in marital and employment status as well as income which could be potential sources of growing bitterness. Nonetheless, since we are not able to exploit any kind of exogenous variation in bitterness we do not claim that our estimates are causal.

6. Conclusions

We showed that bitterness is strongly associated with negative attitudes towards immigration. Those who feel that they have not got what they deserve in life are more likely to have worries about immigration. This relationship does not only hold in the cross-sectional context, but also in the longitudinal dimension. Increasing bitterness is associated with growing worries about immigration. One explanation is that those who are bitter have spiteful or envious preferences (Falk et al. 2005). They are deeply disappointed from life and wish to deny opportunities to improve one's life also to others, including immigrants. An alternative interpretation behind the link between bitterness and attitudes towards immigration is that opportunities and potential success of others could make own failure hurt even more.

With respect to policy, our paper highlights that bitterness among citizens is likely to result in growing worries and opposition to immigration. Economic turmoil like the current economic crisis, are likely to have not only direct adverse effects on the integration of immigrants, but also indirect negative effects through growing bitterness. Bitterness can be expected to have also other negative effects on society, further highlighting need for policy measures trying to prevent it. Future research should therefore identify the drivers of individual bitterness and analyze further implications of bitterness on economic behavior.

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Figure 1: Relationship between bitterness and having big worries about immigration. Germany, 2010. Wording of the question on worries about immigration in the SOEP questionnaire: “How is it with the following topic – immigration to Germany – do you have worries about it?” Possible answers: “Big worries” “Some worries” “No worries”. Wording of the question on bitterness in the SOEP: “Compared to other people, I have not achieved what I deserve.” Answers are on a 7-point scale, 1 being the lowest value, and 7 denoting total agreement with the statement. n=10,844.

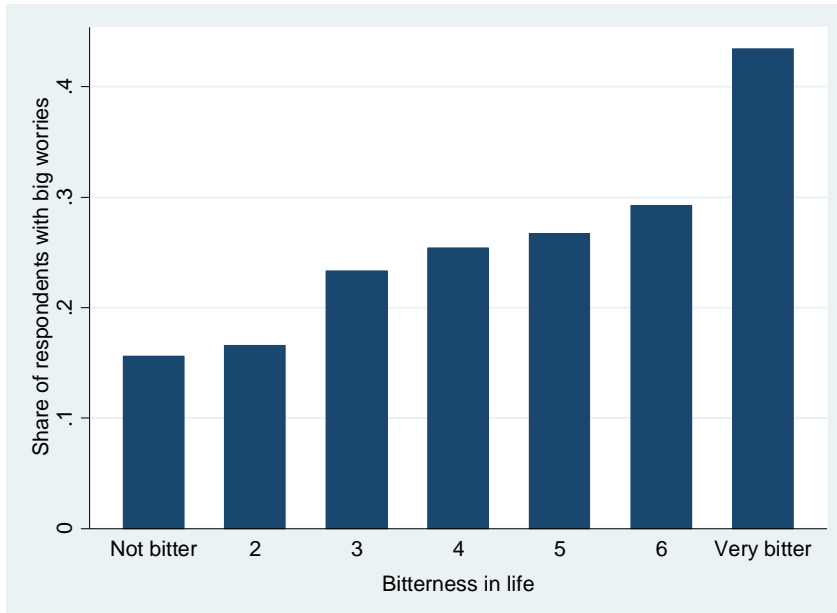


Figure 2: Distribution of changes in bitterness between 2005 and 2010 for persons who were in the SOEP data in both years. n=8,291.

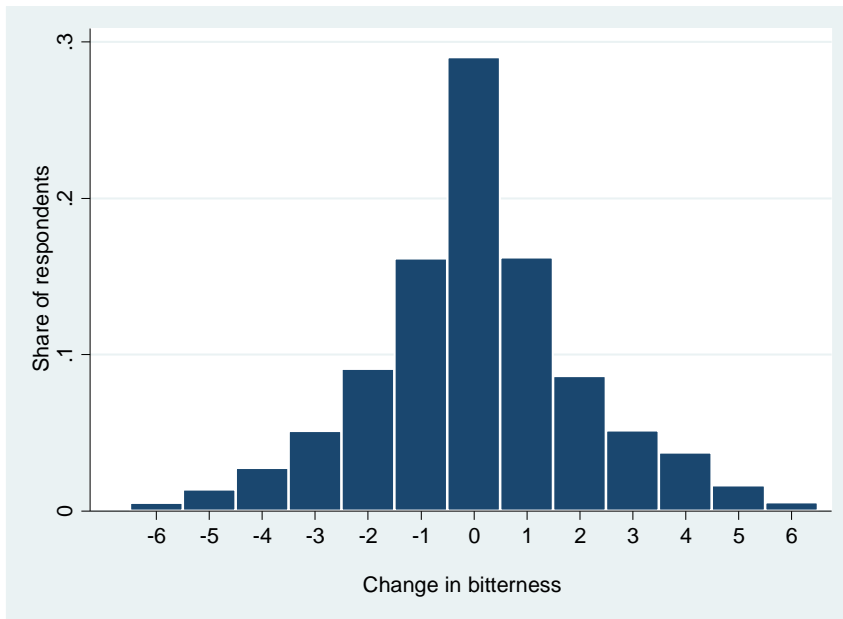


Table 1: Relationship between bitterness and Locus of Control, 2010. n=10,844

	Locus of Control		Total
	External	Internal	
Being not bitter	4,581	4,784	9,365
in %	48.92	51.08	100.00
Being bitter	848	510	1,358
in %	62.44	37.56	100.00

Table 2: Bitterness and having big worries about immigration. The table reports marginal effects from ordered logit regressions using SOEP data from 2010. Bitter_1 (being not bitter at all) is the reference category. Standard errors, clustered at the individual level, are reported in parentheses. *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level.

	(1)	(2)	(3)	(4)
Bitter_2	0.030*** (0.008)	0.027*** (0.008)	0.024*** (0.008)	0.023*** (0.008)
Bitter_3	0.085*** (0.011)	0.070*** (0.010)	0.061*** (0.010)	0.060*** (0.010)
Bitter_4	0.120*** (0.011)	0.095*** (0.011)	0.078*** (0.011)	0.076*** (0.011)
Bitter_5	0.142*** (0.012)	0.117*** (0.011)	0.102*** (0.011)	0.099*** (0.011)
Bitter_6	0.155*** (0.015)	0.136*** (0.014)	0.121*** (0.014)	0.117*** (0.014)
Bitter_7	0.258*** (0.027)	0.227*** (0.027)	0.202*** (0.027)	0.201*** (0.027)
Gender and age	Yes	Yes	Yes	Yes
Education & household status	X	Yes	Yes	Yes
Employment status & income	X	X	Yes	Yes
Regional fixed effects	X	X	X	Yes
Observations	10,844	10,844	10,844	10,844
McFadden's adj. Pseudo R ²	0.0193	0.0409	0.0457	0.0455

Table 3: Bitterness and having big worries about immigration. Table reports marginal effects from ordered logit regressions using SOEP data from 2005. Bitter_1 (being not bitter at all) is the reference category. Standard errors, clustered at the individual level, reported in parentheses. *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level.

	(1)	(2)	(3)	(4)
Bitter_2	0.010 (0.011)	0.007 (0.011)	0.004 (0.011)	0.005 (0.011)
Bitter_3	0.072*** (0.014)	0.057*** (0.014)	0.047*** (0.014)	0.045*** (0.014)
Bitter_4	0.128*** (0.013)	0.100*** (0.013)	0.084*** (0.013)	0.085*** (0.013)
Bitter_5	0.129*** (0.014)	0.099*** (0.014)	0.080*** (0.014)	0.080*** (0.014)
Bitter_6	0.158*** (0.017)	0.138*** (0.017)	0.117*** (0.018)	0.117*** (0.018)
Bitter_7	0.215*** (0.025)	0.181*** (0.025)	0.157*** (0.025)	0.163*** (0.025)
Gender and age	Yes	Yes	Yes	Yes
Education & household status	X	Yes	Yes	Yes
Employment status & income	X	X	Yes	Yes
Regional fixed effects	X	X	X	Yes
Observations	12,809	12,809	12,809	12,809
McFadden's adj. Pseudo R ²	0.0143	0.0320	0.0357	0.0399

Table 4: Bitterness and having big worries about immigration in different subsamples. The Table reports marginal effects from pooled ordered logit regressions using SOEP data from 2005 and 2010. A time dummy is included in all specifications. Bitter_1 (being not bitter at all) is the reference category. Standard errors, clustered at the individual level, reported in parentheses. *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level. Column (1): Civil servants only. Column (2): All other respondents who work (without civil servants). Column (3): Pensioners only (including people older than 65). Column (4): All non-working respondents (without pensioners).

	(1)	(2)	(3)	(4)
	Civil servants	Other employed	Pensioners	Not working
Bitter_2	0.030 (0.018)	0.012 (0.009)	0.002 (0.014)	0.022 (0.017)
Bitter_3	0.053* (0.029)	0.064*** (0.011)	0.035** (0.017)	0.040** (0.020)
Bitter_4	0.024 (0.027)	0.090*** (0.011)	0.046*** (0.016)	0.079*** (0.020)
Bitter_5	0.088** (0.036)	0.086*** (0.012)	0.092*** (0.018)	0.110*** (0.024)
Bitter_6	0.106*** (0.040)	0.112*** (0.015)	0.128*** (0.022)	0.156*** (0.027)
Bitter_7	0.099 (0.082)	0.203*** (0.025)	0.227*** (0.030)	0.158*** (0.038)
Gender and age	Yes	Yes	Yes	Yes
Education & hh status	Yes	Yes	Yes	Yes
Income	Yes	Yes	Yes	Yes
Regional fixed effects	Yes	Yes	Yes	Yes
Observations	1,523	15,829	8,152	4,498
McFadden's adj. Pseudo R2	0.0613	0.0616	0.0495	0.0610

Table 5: Bitterness and having big worries about immigration in different education groups. Table reports marginal effects from pooled ordered logit regressions using SOEP data from 2005 and 2010. The analysis includes only self-employed or employed persons who are not civil servants. Table reports marginal effects from pooled ordered logit regressions. A time dummy is included in all specifications. Bitter_1 (being not bitter at all) is the reference category. Standard errors, clustered at the individual level, reported in parentheses. *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level. Column (1): All low skilled (Isced level 1 or 2) respondents. Column (2): All medium skilled (Isced level 3 or 4) respondents. Column (3): All high skilled (Isced level 5 or 6) respondents.

	(1)	(2)	(3)
	Low skilled	Medium skilled	High skilled
Bitter_2	0.044 (0.044)	0.007 (0.013)	0.009 (0.009)
Bitter_3	0.131*** (0.049)	0.057*** (0.016)	0.048*** (0.014)
Bitter_4	0.085* (0.044)	0.086*** (0.016)	0.088*** (0.016)
Bitter_5	0.097** (0.047)	0.090*** (0.016)	0.061*** (0.015)
Bitter_6	0.093* (0.054)	0.118*** (0.021)	0.093*** (0.020)
Bitter_7	0.285*** (0.073)	0.183*** (0.033)	0.194*** (0.046)
Gender and age	Yes	Yes	Yes
Household status	Yes	Yes	Yes
Income	Yes	Yes	Yes
Regional fixed effects	Yes	Yes	Yes
Observations	1,415	9,291	5,123
McFadden's adj. Pseudo R2	0.0164	0.0361	0.0562

Table 6: Bitterness, having big worries about immigration and worries on crime. Table reports marginal effects from ordered logit regressions using SOEP data from 2010. Table reports marginal effects from pooled ordered logit regressions. Bitter_1 (being not bitter at all) is the reference category. Standard errors, clustered at the individual level, reported in parentheses. *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level. Column (1): Respondents with no worries on crime. Column (2): Respondents with some worries on crime. Column (3): Respondents with big worries on crime. Column

	(1)	(2)	(3)
	Worries on crime		
	No	Some	Big
Bitter_2	0.006 (0.005)	0.013** (0.006)	-0.002 (0.027)
Bitter_3	0.011* (0.006)	0.036*** (0.009)	0.065** (0.031)
Bitter_4	0.020** (0.009)	0.038*** (0.009)	0.057* (0.029)
Bitter_5	0.030*** (0.010)	0.056*** (0.011)	0.074** (0.029)
Bitter_6	0.039*** (0.014)	0.058*** (0.013)	0.091*** (0.033)
Bitter_7	0.007 (0.013)	0.128*** (0.033)	0.185*** (0.043)
Gender and age	Yes	Yes	Yes
Household status	Yes	Yes	Yes
Income	Yes	Yes	Yes
Regional fixed effects	Yes	Yes	Yes
Observations	1,927	5,333	3,567
McFadden's adj. Pseudo R2	0.0399	0.0297	0.0214

Table 7: Bitterness and locus of control. The table reports marginal effects from ordered logit regressions using SOEP data from 2010. Bitter_1 (being not bitter at all) is the reference category. Standard errors, clustered at the individual level, are reported in parentheses. *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level. LOC Full Index is a standardized full index of locus of control, while LOC Indicator is a dummy variable taking the value of one if the respondent has an internal locus of control (see Caliendo et al. (2015) and Section 4.

	(1)	(2)	(3)
Bitter_2	0.023*** (0.008)	0.024*** (0.008)	0.023*** (0.008)
Bitter_3	0.061*** (0.011)	0.064*** (0.011)	0.063*** (0.011)
Bitter_4	0.078*** (0.011)	0.081*** (0.012)	0.080*** (0.011)
Bitter_5	0.100*** (0.012)	0.104*** (0.012)	0.103*** (0.012)
Bitter_6	0.118*** (0.014)	0.122*** (0.015)	0.120*** (0.015)
Bitter_7	0.207*** (0.027)	0.211*** (0.028)	0.209*** (0.027)
LOC Full Index		0.004 (0.004)	
LOC Indicator			0.006 (0.007)
Gender and age	Yes	Yes	Yes
Education & household status	Yes	Yes	Yes
Employment status & income	Yes	Yes	Yes
Regional fixed effects	Yes	Yes	Yes
Observations	10,723	10,723	10,723
McFadden's adj. Pseudo R2	0.0462	0.0462	0.0462

Table 8: Bitterness and life satisfaction. The table reports marginal effects from ordered logit regressions using SOEP data from 2010. Bitter_1 (being not bitter at all) is the reference category. Standard errors, clustered at the individual level, are reported in parentheses. *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level. Bitter_1 (being not bitter at all) is the reference category for bitterness and LifeSatisfaction_1 (completely unsatisfied) for life satisfaction. Standard errors, clustered at the individual level, are reported in parentheses. *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level.

	(1)	(2)
Bitter_2	0.023*** (0.008)	0.023*** (0.008)
Bitter_3	0.060*** (0.010)	0.054*** (0.011)
Bitter_4	0.076*** (0.011)	0.064*** (0.011)
Bitter_5	0.099*** (0.012)	0.091*** (0.012)
Bitter_6	0.117*** (0.014)	0.111*** (0.014)
Bitter_7	0.202*** (0.027)	0.188*** (0.026)
LifeSatisfaction_1		0.045 (0.120)
LifeSatisfaction_2		-0.000 (0.096)
LifeSatisfaction_3		-0.068 (0.080)
LifeSatisfaction_4		-0.094 (0.073)
LifeSatisfaction_5		-0.059 (0.080)
LifeSatisfaction_6		-0.103 (0.071)
LifeSatisfaction_7		-0.114 (0.072)
LifeSatisfaction_8		-0.123* (0.072)
LifeSatisfaction_9		-0.127* (0.067)
LifeSatisfaction_10		-0.115* (0.069)
Gender and age	Yes	Yes
Education & household status	Yes	Yes
Employment status & income	Yes	Yes
Regional fixed effects	Yes	Yes
Observations	10,829	10,829
McFadden's adj. Pseudo R2	0.0454	0.0470

Table 9: Changes in bitterness and changes in worries about immigration. The table reports estimates from a linear probability model with individual fixed effects and different levels of bitterness in panel regressions using data from 2005 and 2010. The dependent variable “More worries” in column (1) measures whether a person was more worried about immigration in 2010 than in 2005, with the dummy variable having value 1 for 2010 if the person was more worried in 2010 and 0 if the person was equally worried or less worried in 2010. The dependent variable “Fewer worries” in column (2) has value 1 for 2010 if the person was less worried in 2010 and 0 if the person was equally or more worried in 2010. Both dependent variables have value zero for 2005. Bitter_1 (being not bitter at all) is the reference category. Standard errors, clustered at the individual level, are reported in parentheses. *** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level.

	(1) More worries about immigration	(2) Fewer worries about immigration
Bitter_2	0.016* (0.008)	-0.009 (0.013)
Bitter_3	0.017* (0.010)	-0.035** (0.016)
Bitter_4	0.023** (0.010)	-0.026* (0.016)
Bitter_5	0.027*** (0.010)	-0.036** (0.016)
Bitter_6	0.035*** (0.012)	-0.049*** (0.018)
Bitter_7	0.065*** (0.019)	-0.006 (0.025)
Age	Yes	Yes
Education & household status	Yes	Yes
Employment status & income	Yes	Yes
Regional fixed effects	Yes	Yes
Observations	23,653	23,653
R-squared	0.111	0.375
Number of persons	16,258	16,258

Appendix

Figure A1: Relationship between bitterness and having big worries about immigration. Germany 2010, Men (n=5,206.) vs. Women (n=5,638). See Figure 1.

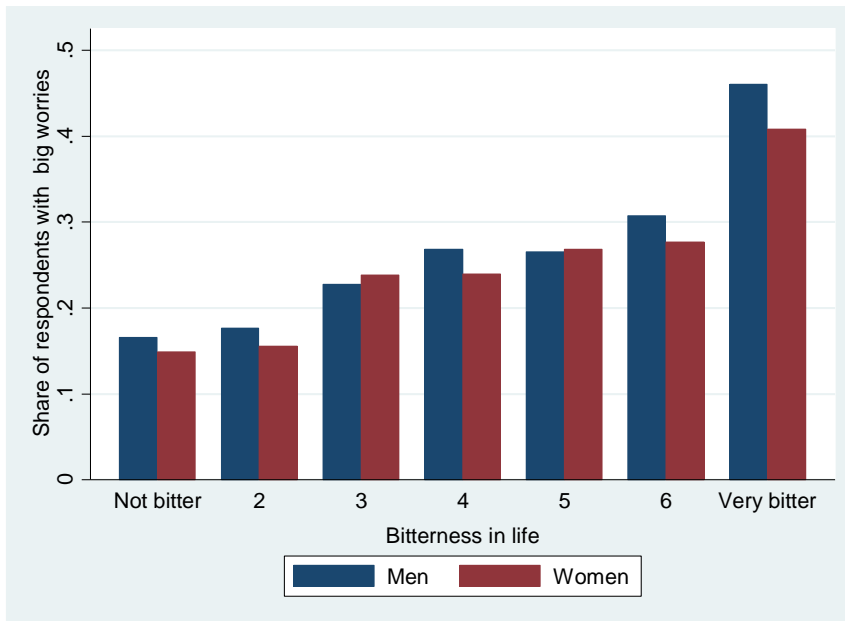


Figure A2: Relationship between bitterness and having big worries about immigration. Germany 2010, Young (≤ 45 , n=5,382) vs. Old (>45 , n=5,462). See Figure 1.

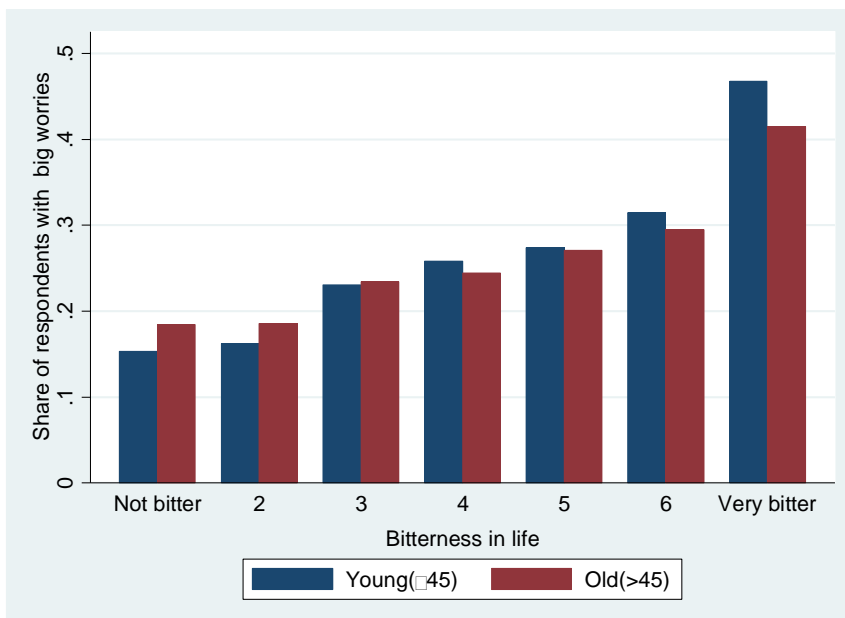


Figure A3: Relationship between bitterness and having big worries about immigration. 2010, Former West Germany (n=7,646) vs. Former East Germany (n=3,198). See Figure 1.

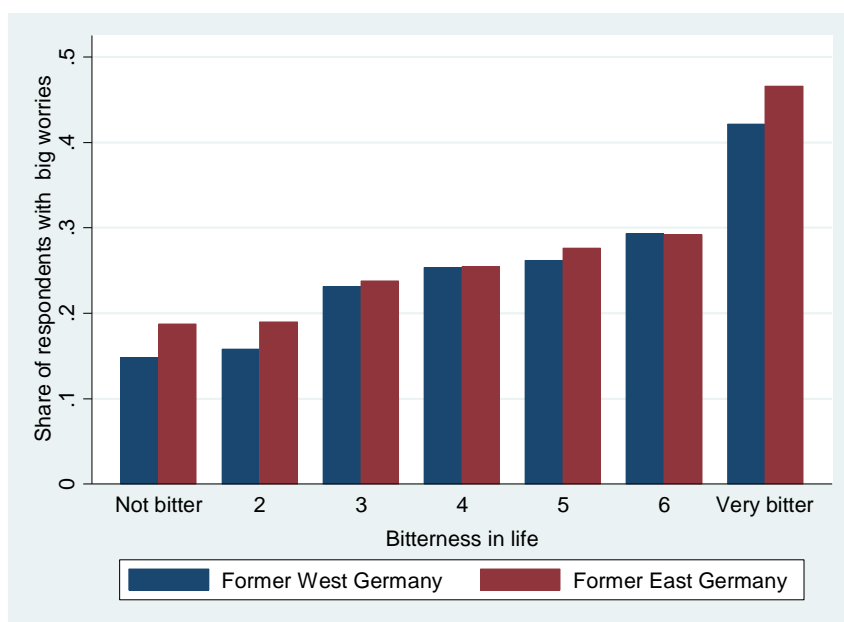


Table A1: Attitudes towards immigration. Surveys were carried out in the following years: Australia 2005, Canada 2006, Finland 2005, Germany 2006, Italy 2005, Spain 2007, Sweden 2006, Switzerland 2007, and the United States 2006.

	(1) “Let anyone come”	(2) “As long as jobs are available”	(3) “Strict limits”	(4) “Prohibit people from coming”
Australia	3.3%	53.7%	40.7%	2.2%
Canada	7.9%	51.3%	38.9%	1.9%
Finland	8.9%	40.1%	48.3%	2.7%
Germany	7.0%	43.2%	45.1%	4.7%
Italy	8.1%	48.8%	36.7%	6.4%
Spain	7.7%	47.6%	41.7%	3.1%
Sweden	18.2%	53.5%	27.2%	1.1%
Switzerland	5.9%	67.2%	25.7%	1.1%
United States	6.8%	36.6%	48.9%	7.6%

The data is from the World Values Survey, see <http://www.worldvaluessurvey.org/> Its question V124 reads as: How about people from other countries coming here to work. Which one of the following do you think the government should do? 1 Let anyone come who wants to?

2 Let people come as long as there are jobs available?

3 Place strict limits on the number of foreigners who can come here?

4 Prohibit people coming here from other countries?