Does integration increase life satisfaction?

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Abstract

In recent years there has been a rapidly increasing interest in measuring subjective well-being in economics; most of the literature on immigrants has however continued to focus on 'objective' measures of integration such as employment and education outcomes. This paper aims to complement these studies by looking at the subjective consequences of these objective situations, focusing on the integration of immigrants once settled in the host country. We find that, contrary to the results of most of the existing literature, immigrants are not less satisfied than natives once we control for the details of their employment conditions, such as job insecurity and whether working in the occupation trained for. Immigrants are not hurt more by adverse shocks such as job loss or increasing job insecurity and segregation does not affect life satisfaction per se. While having host country citizenship appears to have a large, significant positive effect in a simple pooled OLS specification, exploiting the natural experiment of changes in citizenship laws in the host country we find that this is driven by a selection effect rather than an increase in life satisfaction due to obtaining citizenship.

1. Introduction

While everyday discourses often associate migration with an increase in well-being – involving narratives of the 'promised land' and a move 'in hope of a better future' – only few papers have looked at subjective well-being or life satisfaction in the context of migration. In recent years there has been a rapidly increasing interest in measuring subjective well-being in economics; it has also featured prominently in public discourse and debates (e.g. the Stiglitz-Sen-Fitoussi Report on social progress and well-being, commissioned by Nicholas Sarkozy; the British National Well-Being Project embraced by David Cameron). Most studies of migrants have however continued to focus on how well integrated immigrants are in terms of education or employment outcomes, the security of their legal or residential status or the degree to which they can achieve citizenship – important questions in their own right – but have rarely looked at the subjective consequences of the objective situations, in particular the question whether integration increases their life satisfaction.

The distinctiveness of work on life satisfaction lies in treating the relationship between objective factors and subjective consequences as an empirical issue, in general asking the question whether increases in objective well-being lead to increases in subjective well-being. This paper is an attempt to apply this to a migration-integration context: we aim to complement existing studies of objective measures of migrant integration by paying attention to subjective evaluations as well, empirically examining the question whether integration (however conceived) increases satisfaction with life. This issue can in fact be linked back to the classical literature on immigration, including the pioneer works on the social psychology of immigration: Park's 'marginal man' (1928) or Handlin's 'uprooted' and 'children of the uprooted' (Handlin 1951, 1966). Concepts like 'acculturative stress' have been used to designate this immigration 'psychopathology' (Berry *et al.* 1987, Berry 2001), highlighting migrants' cultural uprooting and 'their establishing themselves' again in the host society (Bourdieu and Sayad 1964; Sayad 1999). To examine whether integration increases life satisfaction, we will first look at whether (and if so, why) immigrants are less satisfied than natives and will then analyse the determinants of their subjective well-being[1].

The paper is structured as follows: section 2 reviews the empirical literature on the life satisfaction of immigrants, section 3 outlines the theoretical framework that underlies our estimation strategy, section 4 presents the results, including robustness tests and section 5 concludes.

2. Literature review

While most studies on immigrant integration have focused on objective integration parameters such as education, employment and income, in recent years there has been an increasing interest in subjective well-being, primarily linked to the question whether migration increases life satisfaction. Such studies have however encountered the data constraint that to be able to assess the consequences of migration for subjective well-being we would want panel data from before the move as well as after arrival. Bartram's (2010) study is worth noting in this respect as it circumvents the data constraint by contrasting the 'marginal increase in satisfaction from income' among natives and migrants. As the author points out, the finding that increased incomes do not lead to greater life satisfaction is an average (non)effect and migrants might be exceptional in this regard, gaining life satisfaction from increased incomes to a greater extent than most people. Using data from the World Values Survey, Bartram (2010) found that the association between income and subjective well-being is indeed stronger for immigrants in the USA than for natives – but even for immigrants that association is still relatively weak.

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[1] The words subjective well-being and life satisfaction are used here loosely and interchangeably, as measured using the standard life satisfaction question: 'How satisfied are you with your life, all things considered?'.

Graham and Markowitz (2011) took one step back and looked at whether migrants are different from the rest of the population in terms of subjective measures of well-being. They investigated the differences in life satisfaction among people expressing differing intentions regarding migration and found that people who intend to migrate are generally less satisfied than those who do not (as could be expected). However, more broadly, they found that migrants are 'frustrated achievers', people who have relatively high levels of objective well-being, such as income, but who are nonetheless dissatisfied with their situations and seek to improve them e.g. via migration. This leads us back to the question discussed above: even if migration improves their situations in objective terms, there is no guarantee that they will then experience greater levels of satisfaction.

In a similar vein, Knight and Gunatilaka (2007) examined the question why rural-urban migrant households settled in urban China have an average life satisfaction score lower than that of rural households. Three basic hypotheses were considered: migrants had false expectations about their future urban conditions, or about their future urban aspirations, or about their future selves. Using the 2002 national household survey the authors found that this disparity may be driven both by certain features of migrant conditions (in line with the classical literature on the psychology of migration and acculturative stress), and by their high aspirations in relation to achievement, influenced by reference groups (in line with Graham and Markowitz's (2011) notion of 'frustrated achievers').

Very few papers have looked at the well-being of immigrants once settled in the host country; these generally highlighted the relative dissatisfaction of migrants relative to the native population (Bartram 2011, Safi 2010, Amit 2010, Baltatescu 2007). Bartram (2011) found that while the relative dissatisfaction effect holds up with a standard set of control variables, adding an identity variable renders the immigrant variable insignificant and thus concluded that immigrants are less satisfied than natives in part because they are living in a situation where they find it difficult to have a feeling of belonging in the national context. Safi (2010) also investigated the disparities in life satisfaction measures between first and second generation immigrants on the one hand and natives on the other hand in thirteen European countries using data from three rounds of the European Social Survey. Immigrants' relative dissatisfaction was found not to diminish with time and across generations and discrimination was suggested as the primary explanation. An attempt was made to deal with the likely endogeneity of discrimination using instrumental variables. Amit (2010) examined the determinants of life satisfaction among immigrants from Western countries and from the Former Soviet Union in Israel and found that the number of years in Israel does not significantly predict life satisfaction, but the level of Hebrew proficiency and a stronger Israeli identity significantly increase it. Results may however have been affected by the endogeneity of income and social capital as well as omitted variable bias due to unobserved personality traits. Baltatescu (2007) used European Social Survey data from 2002/2003 and 2004/2005 to examine Eastern European immigrants' satisfaction with their lives as a whole and with the social and political environment. Immigrants report lower satisfaction with life as a whole, but higher satisfaction with societal conditions than the natives. This may be driven by different frames of reference: when evaluating their overall satisfaction, immigrants rely on their experiences in their receiving countries, while when evaluating the societal conditions they compare these to those from their home countries.

Some recent papers focused in on particular aspects of the integration process, especially the role of social contacts. Neto and Neto (2011) looked at returned emigrant adolescents in Portugal and found that psycho-social factors (e.g. contact with peers, feelings of mastery/ control) are much more important than demographic factors. Vaquera and Aranda (2011) found that subjective well-being is enhanced by transnationalism (maintaining contact and involvement with communities of origin, returning for visits on a regular basis, etc.), but only if contact and involvement are maintained at a moderate level.

Few papers have linked immigrants' ethnic/ national identities to their life satisfaction. Boski's early study (1989) found that Canadian/American identities were positively related to immigrants' life

satisfaction. Phinney *et al.* (2001) found that it is in fact the combination of a strong association with the country of origin and strong local identification with the host country which is the key to successful integration and adjustment. The results should however be interpreted more as correlations than as causal effects due to the likely endogeneity of identity. Using World Values Survey data from 1995 on thirteen European countries Bartram (2011) noted that a number of identity variables emerge as significant predictors (controlling for age, income, unemployment, religiosity, *etc.*), showing in fact a surprisingly large effect: a standard deviation increase in pride in national identity increases satisfaction with life as much as a standard deviation increase in unemployment reduces it – though again the effect should not be interpreted as causal.

We hope to contribute to the existing literature on subjective well-being and migration by focusing on the life satisfaction of immigrants once settled in the host country. We are motivated by the puzzle that on the one hand most of the existing literature finds that immigrants are less satisfied than natives, even many years after migration, while on the other hand, the 'general' literature on subjective well-being argues that few economic or social conditions have persistent effects. We will examine this issue from several perspectives: looking at the determinants of migrants' life satisfaction we will analyse whether immigrants are hurt more by adverse shocks such as job loss or decreasing job security, whether they are more or less satisfied if they live in more segregated neighbourhoods, and, relying on a natural experiment of changes in citizenship laws in the host country, we will examine whether obtaining citizenship affects their life satisfaction. We will attempt to deal with endogeneity and omitted variable bias by relying on panel data. We will use a fixed effects estimator to account for unobserved individual heterogeneity, will examine changes over time and use lags to deal with reverse causality. We will also examine restricted subsamples to assess robustness.

3. Theoretical framework

While the terms life satisfaction and subjective well-being have been used above quite loosely, this section aims to outline a theoretical framework of thinking about life satisfaction. Several papers (e.g. Fleurbacy, Schokkaert and Decancq 2009; Kahneman and Deaton 2010) have highlighted the distinction between emotional well-being or affect (the emotional quality of an individual's everyday experience, the frequency and intensity of experiences of joy, stress, sadness, anger and affection that make one's life pleasant or unpleasant) and life evaluation or cognition (the thoughts that people have about their life when they think about it). While life evaluation judgement is an active exercise and is thus not a quantity that stands in the brain permanently, this is in contrast with emotions, which flow constantly. However, it appears implausible that individuals would only care about their hedonic subjective states; they may have complex views about the relative importance of various affects and it is not always the case that positive affects are welcome and negative affects are disliked or avoided.

Based on the model suggested by Fleurbacy, Schokkaert and Decancq (2009) we therefore write the life satisfaction of individual i, denoted σ_i as determined by a function

$$\sigma_i = \sigma(f_i, R_i, A_i) \qquad (1)$$

where f_i includes the affects and emotions that characterize the individual's subjective states in his life and R_i represents his relative 'weights', judgements about what makes a life good or bad.

While economics normally assumes that tastes are given, psychologists emphasize the role of status and the importance of relative comparisons. Such context effects have been highlighted by psychologists in several areas: how intelligent, smart, and happy people report themselves to be depends on the context of comparison (see Mussweiler 2003 for a review; Diener 2009 for the importance of context to well-being). Social factors can affect both our ordinal preferences – our indifference curves, and second, they may also affect the cardinal happiness we get from a given consumption bundle, even if they have no effect on our indifference curves. To incorporate the

importance of such a reference point, that the satisfaction judgement involves the evaluation of one's life with respect to a frame of reference, in particular certain aspirations, we will let A_i denote the variables which determine i's frame of reference. These could include the past history of i's life (pointing to the concept of adaptation) and the situation of his group of reference. Satisfaction then depends on the comparison between a level of achievement and a level of aspiration. This raises particularly interesting questions in an immigration context as migrants may choose their fellow migrants, the native population or the situation in their country/ region of origin as the counterfactual against which to measure themselves.

Finally, when individuals answer survey questions on life satisfaction, they may not be given enough time to reflect properly and their judgement may be tainted by the mood of the day or by their feeling a duty to give a rosy (or not too rosy) answer. We can thus write the expressed satisfaction, S_i as a function of their true σ_i but also including a disturbance term d_i:

$$S_i = S(\sigma_i, d_i) \qquad (2)$$

As psychologists emphasize the role of adaptation, that all living organisms respond to external changes in ways that restore their internal balance, we will think of various characteristics as affecting levels rather than changes in life satisfaction. Adaptation does not mean that for given genes there is a set point of life satisfaction that can only be temporarily disturbed – the clear evidence of explainable differences in satisfaction between societies refutes this; as does the clear evidence of long-term changes in the subjective well-being of individuals (Lucas *et al.* 2004). But adaptation does make it harder to secure permanent increases in life satisfaction: e.g. survey evidence shows that a rise in income raises subjective well-being more initially than it does in the long run, in part because income is addictive. Although some features of one's life can have more persistent effects, e.g. there is no evidence that people become habituated to good personal relationships, or, on the negative side, to commuting, we believe it is reasonable to expect that effects will be on levels of life satisfaction rather than its changes. We thus write the life satisfaction of individual i at time t as

$$S_{it} = \alpha_i + \mu_t + \gamma X_i + \theta Z_{it} + d_i \qquad (3)$$

where α_i are unobserved time invariant individual characteristics such as personality traits, μ_t captures aggregate trends using year dummy variables, X_i includes observed time invariant individual characteristics such as gender and (in practice since we're looking at adults) education, parental education and childhood environment. Z_{it} are the time varying individual characteristics such as marital status, whether working in the occupation trained for, the degree of job insecurity or illness. Since we are worried about endogeneity in the case of some current characteristics such as employment and identity we will also examine robustness to using lagged values as proxies for contemporaneous values (explanatory variables are discussed in detail in Table 1 in the following section). The disturbance term d_{it} is meant to capture the mood of the day of the respondent and the effects of short-run random events (measurement errors).

While we want to keep the above noted emotion-cognition distinction in mind during our empirical analysis, due to data constraints we will take a pragmatic approach, relying on the standard life satisfaction survey question as our dependent variable:

'How satisfied are you with your life, all things considered?'

with answer categories ranging from 'completely dissatisfied' (0) to 'completely satisfied' (10).

This Satisfaction with Life Scale (SWLS) was developed to assess satisfaction with the respondent's life as a whole. The scale does not assess satisfaction with life domains such as health or finances separately but allows subjects to integrate and weight these domains in whatever way they

choose. It assesses an individuals' conscious evaluative judgment of his or her life by using the person's own criteria (Pavot and Diener 1993).

The SWLS been shown to be psychometrically sound and well-validated (see e.g. Diener 1984 or Pavot and Diener 2008 for a review); it shows good convergent validity with other scales and with other types of assessments of subjective well-being. Its scores have been shown to correlate with measures of mental health and to be predictive of future behaviours such as suicide attempts (Diener, Emmons, Larsen and Griffin 1985). The question also maps underlying thoughts and emotions well, i.e. shows patterns consistent to those which look at answers to the questions 'Overall, to what extent do you feel the things you do in your life are worthwhile?', 'Overall, how happy did you feel yesterday?' and (inversely) 'Overall, how anxious did you feel yesterday?' (e.g. ONS Report 2012). It has been found that although the positive-and negative affect scales were virtually uncorrelated with each other, they each showed independent correlations with a global well-being item (Beiser 1974; Bradburn 1969; Moriwaki 1974). New evidence from neuroscience also supports the reliability of life satisfaction questions: Davidson (2002, 2004) has identified areas in the prefrontal cortex where the level of electrical activity is highly correlated with self-reported happiness (both across people, and within people over time). Larsen, Emmons, and Diener (1983) also found that such single life satisfaction measures did not seem to be highly contaminated by social desirability. The scales correlate as expected with personality measures, with happiness ratings made about respondents by others and with other non-self-report data, e.g. Weinstein (1982) found that self-reported happiness was strongly related to an unobtrusive measure of smiling and laughing in an interview.

Life satisfaction can to some extent be considered to measure both a trait and a state. There is evidence that momentary mood influences subjects' responses to SWB questions (Schwarz and Clore 1983). This finding is consistent with memory research (e.g. Natale and Hantas 1982), which shows that people tend to recall past events that are consonant with their current affect. However, despite the influence that current mood can have on SWB measures, Kammann (1983) and Kammann *et al.* (1979) presented evidence indicating that this does not substantially distort scores, with both current mood and long-term affect being reflected in life satisfaction measures. Diener and Larsen (1984) found substantial amounts of cross-situational consistency and temporal stability in mean levels of person affect. The long-term reliabilities show values ranging from 0.55 to 0.70, with part of this being explained by personality and part by the stability of conditions in the respondents' lives. Life satisfaction as assessed by the SWLS shows a degree of temporal stability (e.g. 0.54 for 4 years), yet it has sufficient sensitivity to be able to detect changes in life satisfaction (Pavot and Diener 1993).

Overall we can conclude that the SWB measures seem to contain a substantial amount of valid variance, however, of course the limitations of using such self-reported data need to be kept in mind in the following analysis.

4. Data

We use data from the German Socio-Economic panel (GSOEP), a large representative longitudinal survey of private households in Germany. A nucleus of socio-economic and demographic questions is asked annually, while different 'special' topics are sampled in specific waves. Immigrants are oversampled in the GSOEP: our focus here is on the 'B Foreigner West sample', defined as those households where the head of household is Turkish, Italian, Spanish, Greek or from the former Yugoslavia. During the latter half of the 1950s the German government started actively recruiting guest workers in response to a labour shortage prompted by high economic growth rates. In 1973 the government stopped the recruitment of further guest workers as Germany entered a period of economic recession. In the subsequent years, the inflow of immigrants from the former guest worker countries consisted mainly of family members of those guest workers who remained in Germany (family reunification). The GSOEP was first administered in 1984, we use data until (and including) 2010 (the most recent wave currently available).

4.1 Descriptive statistics

Table A.1 reports descriptive statistics for the natives and first generation immigrants in 2010. In terms of simple averages, the natives seem slightly more satisfied than the first generation. The immigrants are somewhat less educated, have less secure jobs, are less likely to work in the occupation they were trained for and are less likely to own the house/ apartment they live in. Their predicted incomes (based on occupational averages, controlling for work experience and years with the current employer) are also significantly lower. Almost a third of the first generation in our sample has German citizenship by 2010.

In terms of life satisfaction there is almost as much variation within individuals over time as there is between them (standard deviations of 1.30 and 1.49 respectively) and there is substantial movement between categories over time, the correlation of this year's life satisfaction with last year's is 0.59, for five years ago it is 0.44 (please see Table A.2).

5. Estimation

While most papers have looked at the determinants of life satisfaction relying on simple OLS, unobserved personal characteristics might lead to biased estimates of the parameters of interest. In fact, the psychological literature has highlighted the crucial importance of personality traits such as extroversion, conscientiousness and emotional stability for the explanation of satisfaction and it is likely that these personality traits are also correlated with some of the variables in X_i and Z_{it}. Not taking into account this unobserved individual heterogeneity will then lead to biased estimates of γ and θ. We will try to deal with this problem by relying on panel data and including individual fixed effects.

Ideally, given the discrete nature of our dependent variable, an ordered logit or probit model should be used to estimate equation (3). However, this raises the issue of how to incorporate individual fixed effects in an ordered logit model; the choice between suggested alternative estimators is not straightforward and raises further difficulties relating to the clustering of standard errors in panel data. Results in the following are thus based on pooled OLS with fixed effects; alternative specifications are examined as a robustness check and are discussed in section 6.3.

5.1 Control variables

The existing literature stresses the importance of individual characteristics such as age, gender, marital status and years of education, the harm done by unemployment or by competitive struggles among individuals, the role of social relations, the negative effects of serious illness. For a comprehensive early review on the determinants of subjective well-being see e.g. Diener (1984). Bonini's (2008) cross-national study found that 81% of the variation in mean life satisfaction is due to individual attributes (such as gender, age, marital status, income and education) whereas 19% is due to country characteristics (GDP, human development and environmental indices). While we follow the existing literature in including basic controls for personal characteristics, we extend this set to include variables which are of special interest in a migration context - years since migration, ethnic/ national identification, language skills, citizenship, contact with the host population, ethnic composition of neighbourhoods and experiences of discrimination.

Table 1: Control variables

Variable	Explanation
age	Individual well-being tends to decrease with age though the relationship is often argued to be U-shaped rather than linear, with a minimum around age 50 (though this varies somewhat across countries, Bruni and Porta 2005).
gender	Women tend to report higher life satisfaction than men though the difference is often small and women's day-to-day emotions tend to fluctuate a lot more than men's.
marital status, children	People with a partner report, on average, higher satisfaction scores than those without. Children have also been shown to increase well-being. We have also included a measure for whether the respondent's children or partner are abroad as this may be relevant for immigrants and we would expect it to have a negative effect on life satisfaction. (Given our focus on first generation immigrants, who got married and had children many years ago, we would not expect these variables to be affected by current happiness.)
education	The existing evidence seems somewhat ambiguous on the relationship between subjective well-being and education (Powdthavee 2010): while most studies find that people with more years of education report higher satisfaction scores than those with fewer years of education (e.g. Helliwell 2003, Bruni and Porta 2005; Stutzer 2004; Graham and Pettinato 2002), there is some evidence that people who have completed at least a university degree report lower levels of job satisfaction and higher levels of mental distress compared to those from a lower educational background (Clark 2003), holding health and income constant. These findings may be explained by the fact that in addition to increasing income, education may also raise aspirations, resulting in a potentially ambiguous overall effect. As we are looking at adults who have completed their education a long time ago, this variable should not be affected by current happiness.
employment	Empirical findings particularly stress the harm done by unemployment, affecting income as well as status/social expectations. Having a job includes many aspects that provide flow experiences and satisfy intrinsic needs, like being in the company of workmates, applying expertise, and experiencing autonomy. Accordingly, being unemployed is repeatedly found to have large negative nonpecuniary effects on people's subjective well-being, with little habituation. We also include a measure of whether the respondent works in the occupation they were trained for and a categorical variable for the degree of job (in)security, which may be of particular relevance to immigrants. To deal with possible reverse causality from life satisfaction to employment we examine the robustness of our results to using lagged values as proxies.
owns house/ apartment	The effect of income on subjective well-being has been shown to be positive but non-linear, both at the macro and at the micro level (Easterlin 1974, 2001). Stutzer (2004) found that the positive effect of higher income can be offset by rising income aspirations. Thus, it is the discrepancy between income and income aspirations that is correlated with individuals' reported subjective well-being. However, as we are worried that income may be endogenous (and may be measured with error) we do not include it in our preferred specification and use whether the respondent owns a house/apartment as a proxy. (Results are very similar if income is included.)
parental characteristics	We control for parents' education in levels and include dummy variables for whether the respondent grew up in a large/medium/small city or in the countryside.
health	It is widely accepted that an adverse change in health reduces life satisfaction. Furthermore, the literature on mental and physical health reports great inequalities in this field among ethnic groups (Vega and Rumbaut 1991; Rumbaut 1994).
years since migration	One of the major aspects in the immigrant integration literature is the economic aspect as the expectation of immigrants to succeed economically in the new country is usually a significant factor in their decisions to migrate and in their willingness to pay the social and economic price involved in leaving their countries of origin. The evaluation of economic success is usually a long-term one which takes into account the number of years in the new country (years since migration). Thus, if the number of years in the destination country improves the economic position of immigrants, this should also increase their life satisfaction. However, this variable may also capture regret or comparisons with the home country, affecting aspirations. Amit (2010) in fact found that the level of satisfaction was negatively correlated with years since migration. This may be of particular interest to our sample of guest workers, who originally arrived as temporary migrants.

identity	To avoid the endogeneity of identity (if respondents are unhappy in Germany they may be less likely to feel German) we use lagged identity measures as a proxy. We believe this may be reasonable given considerable variation in subjective well-being over time as responses are influenced by the mood of the day as well as random events. We use identity from 2003 as a proxy for identity in 2010 (unfortunately the identity question was only asked in these years), life satisfaction in 2003 predicts only around 16% of the variation in satisfaction in 2010.
German language skills	Language plays a central role in the integration of immigrants in the new labour market (Chiswick 1998; 2002), but is also important for social contacts with the host population. Given our focus on first generation immigrants who arrived over 30 years ago we believe that current life satisfaction should not affect German language skills.
discrimination	Although discrimination is often put forward as a possible explanation for the lower life satisfaction of ethnic or racial minorities[2], general life satisfaction is likely to affect subjective perceptions of discrimination making the identification of a causal effect difficult. As instruments are hard to find we will not include discrimination in our preferred specification, but will examine results both with and without this variable and will proxy social exclusion by measures of social and economic integration.
social relationships	Studies dealing with immigrant integration cite the relative deficit of social capital suffered by immigrants in a new country as compared to the native-born – social contacts in the host country may thus be used as a measure of social integration. We will measure social relationships using a dummy variable reflecting whether the respondent visited or was visited by Germans in the past year. We will also control for contact to neighbours – although we cannot identify their ethnicity in the data, we believe that this could control for how 'sociable' individuals are overall. Unfortunately, measures of social relationships always raise worries of endogeneity and instruments are hard to find; we recognise that this is not a truly causal effect and will examine the robustness of our results both with and without these variables, as well as using their lags.
aspirations/ reference group	As highlighted in the model in section 3, aspirations may be affected by reference frames and may in turn influence life satisfaction. There is, however, no consensus in the literature about how to define social reference groups. Frijters *et al.* (2006) used a geographical definition, calculating real average income separately for about 100 areas in Russia. In a similar vein Stutzer (2002) calculated average log household income by Swiss communities and also considered the percentage of 'rich' people in the population of the respondent's community. Country-based reference groups were used in Hagenaars' (1985) early international study of eight European countries. Ferrer-i-Carbonell (2003) used the GSOEP to calculate average log income for fifty subgroups (defined on the basis of five education categories, five age brackets, and two regions: West and East) and found evidence for the role of relative standing. Senik (2004) used the income predicted for each individual based on education, years of experience, region, branch, age, sex and primary occupation code and found that these predicted values have a significantly positive effect on satisfaction, concluding that the positive cognitive (or information) effect dominates the (negative) social comparison effect. The advantage of such *a priori* defined reference groups is that since they are not explicitly modelled as a choice they are thus arguably exogenous. In line with Senik's (2004) approach we will predict income on the basis of occupational averages, work experience and years with the firm.
ethnic composition of neighbourhood	Residential location is often portrayed as a key element of immigrant integration. In a study among adolescents from immigrant families, those living in ethnically homogeneous neighbourhoods reported a higher level of satisfaction with their lives than those living in heterogeneous neighbourhoods (Neto 2001), contradicting the assumption that immigrants who are in social contact with local natives and live in heterogeneous neighbourhoods should be more socially integrated and thus more satisfied. To avoid endogeneity of the location decision we examine robustness by restricting the sample to those who have not moved recently. We also examine results separately for those who want to/do not want to move.
German citizenship	Having German citizenship may affect the respondent's economic opportunities as well as subjective perceptions of security or uncertainty and may also carry a more 'symbolic' value on the perception of immigrants in the host country. Variation due to changes in the German citizenship law will also be explored.

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[2] Social psychologists and sociologists have demonstrated a direct link between perceived discrimination and mental health, social stress and even depression, especially for young members of ethnic and racial minorities (Vega and Rumbaut 1991; Rumbaut 1994; Finch, Kolody and Vega 2000; Taylor and Turner 2002; Sellers *et al.* 2003). Ethnic differences in depression symptoms are argued to be accounted for by the role discrimination plays in producing feelings of helplessness and despair (Hughes and Demo 1989).

6. Results

6.1 Are immigrants less satisfied?[3]

Table A.3 reports the fixed effects results as well as pooled OLS for comparison. The first two columns show a simple specification, looking at a combined sample of natives and first generation immigrants. In line with much of the earlier literature we find a negative effect of age, a positive effect of having a partner and a positive effect of being female. Years of education has a positive effect, but this is no longer significant with fixed effects, perhaps pointing to the double role of education (increasing income, but also aspirations) – once we control for unobserved individual effects, which could affect education as well as life satisfaction (such as aspirations or personality traits) the effect disappears. As expected, employment has a positive effect (it is lagged here to avoid reverse causality, similar positive effects are found for contemporaneous values or longer lags). As was discussed above in terms of simple averages, the first generation still seems less satisfied than the natives, even controlling for the above characteristics, especially employment.

Columns 3 and 4 introduce further control variables[4]. Education no longer has a significant effect and the effect of employment also disappears once we control for individual fixed effects. Our main finding is that the first generation is no longer less satisfied than the natives, probably explained by the fact that we are now controlling for the degree of job (in)security (if we do not control for this then the effect is driven by whether the respondent works in the occupation they were trained for). Our finding is in contrast with the results of Bartram (2011), Safi (2010) and Baltatescu (2007) - they only included measures of education and employment, but did not control for the nature of the job and may thus have been affected by omitted variable bias. As could be expected owning a house/ apartment (a proxy for income or socio-economic status) has a significant positive effect, as does mother's education. Serious illness has the expected large negative and highly significant effect on life satisfaction in both OLS and fixed effects specifications. The Hausman test favours the fixed effects specification, pointing to the role of unobserved individual heterogeneity, in particular personality traits.

Motivated by the large, significant, negative effect of job insecurity (or, if this is not controlled for, working in occupation trained for), we examined whether these might be more important concerns for migrants. Introducing interaction effects between job insecurity and the first generation dummy (or working in occupation trained for and the first generation dummy), these were not significant, suggesting that although a larger proportion of immigrants have insecure jobs than natives, immigrants are not hurt more by these conditions.

As most of the existing literature finds that immigrants are less satisfied than natives, but our results so far do not provide evidence for this, we examine whether immigrants may be hurt more by adverse shocks such as losing a job or facing decreasing job security. Looking at the effects of job loss (constructed as 1 for those who were unemployed at time t but employed at time $t-1$, 0 for those employed at time t and at time $t-1$) and increasing job insecurity (job insecurity at t higher than at $t-1$), these have highly significant effects of the expected signs. Their interactions with the first generation dummy variable are however not significant, suggesting that, again, while becoming unemployed decreases life satisfaction significantly for natives as well as migrants, immigrants are not hurt more. While this may seem surprising at first sight, it can be explained by the fact that guest workers in Germany have by now full access to the German welfare system and having resided in Germany for 30-40 years have most probably also built up their informal security nets. The question whether immigrant social networks fill this role as well as less segregated networks will be examined in a later section.

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[3] For full tables please see the Appendix. All other results are available from the author upon request. All standard errors are clustered at the individual level.

[4] Note that the large fall in the number of observations between the two specifications is mainly driven by the fact that the health question was not asked each year and the question on job insecurity was only asked for a random subsample of the population.

6.2 What determines the life satisfaction of immigrants?

Table A.4 restricts the sample to first generation immigrants and examines the effects of variables related to integration. The first two columns confirm the results discussed above on age, having a partner, employment, job insecurity and illness. Turning to integration related variables, neither majority nor minority identity had a significant effect in either of the specifications – such loyalties/ feelings of belonging thus do not seem to play a role *per se*. This finding is in contrast with the early results of Boski (1989) or more recently Bartram (2011). We believe that this difference can be explained by the fact that we used a have lagged measure of identity to avoid reverse causality and have dealt with unobserved individual heterogeneity using fixed effects, suggesting that the positive link found in previous studies was indeed just a correlation and not a causal effect running from identity to life satisfaction. We also examined alternative identity measures such as 'feelings of not belonging in Germany/ feeling stateless' or 'not feeling at home in the country of origin either' – neither of these had significant effects once we controlled for individual fixed effects.

Better German language skills have the expected positive effect – they may bring benefits in the labour market as well as facilitating social contacts with Germans. However they are no longer significant once we include fixed effects, pointing to the role of selection in terms of unobserved individual heterogeneity.

The last two columns further extend the specification to control for social capital, measured here by a binary variable reflecting whether the respondent visited or was visited by Germans in the past year. Its effect is positive and highly significant in both the pooled OLS and the fixed effects specifications, thus highlighting the importance of social contacts for life satisfaction in general, as well as immigrants' need to feel included/ integrated in the host society. As this measure of social contacts may be affected by years in the host country and may thus have different effects for more recent migrants, we explored interactions between years since migration and visits to/by Germans. Those migrants who arrived in the last up to 30 years (but not the most recent migrants who have been in Germany 10 years or less) were less satisfied relative to migrants who arrived earlier, even controlling for age effects. The significant positive effect of contact to Germans seems to have been driven by the same group (those who have been in Germany between 11 and 30 years) – we believe that this may be due to recent immigrants still being 'patient', understanding and accepting that social contacts take time to develop, while if they have been in Germany for decades they are more hurt or frustrated if such contacts are still lacking. Unfortunately, measures of social capital are always fraught with endogeneity problems and instruments are hard to find. While results hold up to controlling for contact to neighbours (which may measure general 'sociability') and are robust to lagging the measure of social contacts to avoid reverse causality (though the contemporaneous value also refers to 'in the past year'), we acknowledge that this is not a causal effect and that further research is required in this area.

Discrimination was not included in the above preferred specification as we are worried that such subjective perceptions may be affected by reverse causality from general life satisfaction. If we include it as a control variable its effect is negative and highly significant as expected, while results on other variables are similar to those discussed above (please see Table A.5[5]).

As discussed in previous sections, there is a large literature on the role of reference groups for subjective well-being. Unfortunately, reference groups are often endogenously chosen, making it difficult to estimate a causal effect – to overcome this problem we took a two stage approach, predicting income using occupational averages, work experience and years with the current firm,

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[5] Note the large drop in observations in Table A.5 relative to earlier results. This is explained by the fact that questions on discrimination, ethnic composition of the neighbourhood and conditions of the house were only included in the questionnaire for subsamples of the population, and these subsamples only overlap in part. We have examined summary statistics of all other variables for the cases where one or more of these variables were missing and found that differences do not seem to be systematic. Thus although our sample size decreased, we are confident that this is a representative sample of the population of interest.

plugging the predicted values back into the above regressions and correcting the standard errors using bootstrapping. This did not have a significant effect at conventional significance levels, possibly explained by the fact that this may not be the relevant reference group to which the respondents compare themselves. Further work could examine the robustness of this result to other reference groups.

Motivated by the above finding that immigrants are not hurt more by adverse shocks, we examine whether this is the case for segregated social networks as well as those with more contact to the host society. Unfortunately our dataset does not allow us to construct social networks, we will thus proxy for this by looking at the ethnic composition of neighbourhoods, measured at various levels of aggregation. Looking first at a self-reported measure of ethnic composition, we find that while a more 'immigrant' neighbourhood seemed to have a negative and significant effect on the life satisfaction of immigrants in the OLS results, this effect disappeared once we controlled for fixed effects and was no longer significant in either specification once we controlled for housing quality (please see Table A.5)[6]. The result also holds up when restricting the sample to those who have not moved recently to avoid reverse causality due to life satisfaction affecting residential choices. As we may be worried about potential biases in such a self-reported measure of the fraction of foreigners in the neighbourhood in which the respondent lives, we now turn to an analysis of the effects of segregation using a unique dataset, which provides information on the ethnic composition of neighbourhoods at various levels of aggregation.

We have combined information on the ethnic composition of neighbourhoods at different levels of aggregation from the Microm indicators with personal information from the GSOEP (due to privacy regulations this is only accessible on site at DiW Berlin). We use two measures of the ethnic composition of neighbourhoods: (1) a 1 to 9 scale, which was constructed so that roughly 10% of the population falls into each category, this is measured at the 'house' level, so includes at least five households, or more if located within the same building and (2) the fraction of foreigners in the population measured at the 'pl8' level – German postcodes consist of five digits, this subdivision adds a further three digits creating areas of roughly equal sizes.

In terms of raw means, as expected, immigrants live in neighbourhoods with a higher proportion of foreigners (6.7 versus 4.4 on the 1-9 scale, 10% versus 5% using the percentage of immigrants measure; please see Table A.6). Those living in more immigrant neighbourhoods are younger, less educated (this is especially true for parental education) and are much less likely to own the house/ apartment (all these differences are significant at the 5% level, please see Table A.7). However, they are not more likely to be unemployed; differences in terms of job insecurity and working in occupation trained for are not significant either at conventional levels. Looking at the ethnic composition of neighbourhoods over time, both immigrants and natives seem to be living in less immigrant neighbourhoods, suggesting decreasing segregation (data was available for the years 2000-2010).

Examining OLS and fixed effects regressions using the same control variables as above, ethnic composition of the neighbourhood does not have a significant effect in any of the specifications, at either level of aggregation (please see Table A.8). This result holds up when looking at immigrants and natives separately, when looking separately at employed and unemployed and at different education levels. As we may be worried that current life satisfaction could affect residential choice, we have repeated the above analysis restricting the sample to those who have not moved recently (varying the cutoff points between 2000 and 2008) and looking separately at those who do/ do not express a wish to move. Results were very much in line with those above, thus increasing our confidence in our findings.

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[6] A more 'immigrant' neighbourhood seemed to have a negative and significant effect on the life satisfaction of natives even in the fixed effects model, however this effect disappeared once we controlled for housing quality.

Including 'years since move' as a control variable does not affect results and is not significant, in line with the psychological evidence that such effects should die out quickly. We have also examined whether for those who moved in the years for which we have data on ethnic composition (2000-2010) there is a different effect before and after the move: we find that the ethnic composition of the neighbourhood is still not significant in either period. Results also hold up when looking at cross-sections for the years 2000-2010 instead of a pooled sample. Including percentages of Turkish or ex-Yugoslav immigrants instead of the general percentage of foreigners measure does not change results either[7].

Motivated by the above finding that immigrants are not hurt more by adverse shocks such as becoming unemployed or facing increasing job insecurity, we examine whether this is true independent of the ethnic composition of the immigrant's neighbourhood. Looking at interaction terms between ethnic composition of neighbourhoods and these adverse shocks we find some evidence that immigrants living in neighbourhoods with a larger proportion of foreigners are hurt more by job loss (this holds for the pooled OLS as well as the fixed effects specifications), but we do not find this effect for increasing job insecurity or for natives. Thus, while segregation does not have a direct effect on life satisfaction, it may have indirect effects by influencing individuals' ability to deal with adverse shocks. While a detailed analysis of such indirect effects is outside the scope of our paper, we find that living in a more immigrant neighbourhood increases job insecurity (or at least its perception), though it does not increase the probability of being unemployed once we control for other personal characteristics.

Returning to the results above (please see Table A.4), we found a large positive and highly significant effect of having German citizenship. In this specification it unfortunately drops out when using fixed effects due to collinearity with German language skills – unsurprising since this is a requirement for citizenship. Examining fixed effects results without controlling for German language skills (which are unlikely to change much in such a short time frame for first generation immigrants and are thus mopped up by individual fixed effects anyway) German citizenship is no longer significant. This suggests that we may be picking up a selection effect in the pooled OLS results (those with German citizenship are better integrated, with better language skills) rather than a positive effect of *obtaining* citizenship (this also seems more likely given the size of the effect, a coefficient of 3.2, and that German citizenship brings few additional benefits relative to permanent rights of residence). We will further examine the source of this effect by exploiting the variation coming from changes in the German citizenship law. We will rely on two natural experiments: the 2000 change, introducing elements of *jus soli* into the previously *jus sanguinis* based framework and the earlier 1991/1993 changes to naturalization requirements.

In May 1999, the German parliament amended the Citizenship and Nationality Law of 1913. Under the original law, a child born in Germany was granted German citizenship only if at least one parent had German citizenship at the time of its birth. The new reform introduced elements of the birthright citizenship system: a child born to foreign parents on the 1st of January 2000 or after was eligible for citizenship at birth if at least one parent had been ordinarily resident in Germany for 8 years when the child was born and had been granted a permanent right of residence. The law also introduced a transitional provision for the children of foreign residents under the age of 10 on the 1st of January 2000. These children would be naturalized upon application (to be completed before the 31st of December 2000) if at least one parent had been ordinarily resident in Germany for 8 years at the time of the child's birth. In order to avoid potential problems of endogeneity related to the child bearing decisions of immigrants, and variations over time in the composition of immigrants' inflows, we identify the effect of the regulatory framework of child citizenship by exploiting the retrospective component of the 2000 reform. We thus compare households composed of foreign parents whose youngest child was born in Germany between 1990 and 1999 who had resided in Germany for more than 8 years at the

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[7] We noted above that the existing literature highlights the role of reference groups in affecting life satisfaction – we have thus calculated mean life satisfaction at a 'pl8' level. If included as a control, it has a highly significant positive effect, while the ethnic composition of neighbourhood variable is still insignificant – however, please note that given sample sizes these results should be interpreted with caution.

time of the child's birth (the treatment group), with those who have children in the same age group, but who did not satisfy the residence requirement (the control group). This approach is in line with the work of Avitabile, Clots-Figueras and Masella (2010), who examined the effects of the change in the citizenship law on parental integration. We depart from their approach by using a narrower control group (they also used those parents with children born between 1980 and 1989) as we believe that this makes the treatment and control groups more comparable (our results are robust to using either control group). We examine the effect of eligibility (intention to treat) using the following regression:

$$Y_{ijt} = \beta_0 + \beta_1 T_j + \beta_2 D_t + \beta_3 T_j D_t + \gamma' X_{ijt} + \mu_t + u_{ijt} \qquad (4)$$

where Y_{ijt} is the subjective well-being of parent i living in household j at time t, T_j is the treatment dummy, differentiating the treatment and control groups defined above, D_t takes the value 1 for surveys after the reform was passed in parliament (May 1999) and is 0 otherwise. X_{ijt} are personal and household characteristics including age, gender, marital status, years of education and employment status. A full set of year dummies, μ_t, controls for time specific shocks affecting all individuals. Our parameter of interest is thus β_3, measuring the average effect of the introduction of *jus soli* citizenship on parental life satisfaction. We believe that such a change in the citizenship law could potentially affect parental well-being as parents' preferences and attitudes towards the host country might change when their descendants get their 'new' status, thus improving their economic opportunities as well as possibly sending a more symbolic message of acceptance.

Estimating the above specification using OLS, clustering standard errors at the individual level we find that the change in the citizenship law did not affect parents' life satisfaction (please see Table A.9). This may be partly explained by the fact that this is an intention to treat effect, looking only at eligibility, not whether the children actually received citizenship. The parents may thus care more about the direct economic benefits for their children, rather than the overall 'symbolic' message – unfortunately we are unable to examine this as the GSOEP does not provide data on children's citizenship. Alternatively, the significant positive effect of citizenship that we found above may point only to direct benefits accruing to the individual, thus only own (rather than children's) citizenship may play a role in subjective well-being.

Motivated by this concern, we also examined the changes in naturalization requirements in the early 1990s. Unlike the citizenship at birth provision, the naturalization policy for adults had been subject to a series of changes in the early 1990s. Laws affecting naturalization applications were passed in 1990/1991 and 1992/1993, limiting the discretion of officials to deny naturalization, making it easier for young immigrants to claim naturalization and eventually providing foreigners with a legal right to claim entitlement to naturalization. The 1990 law (enacted in April 1990, effective from the 1st of January 1991) made numerous changes to residence permits (intended to give foreigners greater security in their residence rights) and eased restrictions on the acquisition of citizenship. It made it easier for young immigrants between the ages of 16 and 23 from second and third generation resident families to obtain citizenship. This change did not amount to an automatic right to acquire citizenship, and set several conditions for eligibility. To be eligible applicants must (1) have lost or renounced their former citizenship; (2) have legally resided in Germany for eight years; (3) have never been convicted of a serious criminal act; and (4) have attended school for six years in Germany, of which at least four years must have been in a school of general education. Immigrants had to apply between their 16th and 23rd birthdays to be eligible according to these criteria. The new law also liberalized naturalization requirements for those over 23 years, who had resided legally in Germany for fifteen years and applied for citizenship before the 31st of December 1995. To be eligible for citizenship under this rule, applicants were required to (1) have lost or renounced their former citizenship; (2) have never been convicted of a serious criminal act; and (3) have the ability to support themselves and dependent family members.

Further amendments to these laws were passed in 1992/1993 when as part of the 'asylum compromise', the federal government made permanent the provisional naturalization rule that had

been adopted in the 1990 Aliens Law (which had been scheduled to expire in December 1995). The federal government also amended the 1990 law to confer for the first time an individual *right* of naturalization on foreigners who satisfied the necessary requirements.

As we believe that the largest changes were made in the 1990/1991 reform (and these were then only reinforced in 1992/1993) we focus on the effects of these amendments, looking both at the effects for those aged 16-23 and those over 23. Our first specification compares those aged 16-23 at some point in the years 1990-1995 (i.e. those born 1967-1979, a broad treatment group) with those born after 1979 and those born 1960-67, who had not resided in Germany for 15 years yet so were not affected by other changes (so immigrated after 1976). As it is unclear *ex ante* how near-/far-sighted individuals are with respect to such changes, we also examine a narrower treatment group, looking only at those who were immediately affected, i.e. 16-23 in the years 1990-1991 (born 1967-75), comparing them with the same control group as above. Furthermore we examined the effect on those who were in Germany for more than 15 years in 1991, comparing them with those who had been there less than 15 years. We compared those who arrived 1970-76 with those who arrived 1976-80 to restrict the difference in age between treatment and control groups. Our key finding is that none of the differences was significant. We believe that this may on the one hand be explained by the fact that these changes were not as clear cut, making it difficult to identify treatment and control groups with no spillovers, especially due to changes in residence permit regulations. Changes could also be seen more as a process than an abrupt jump, as reflected by the gradual increase in naturalizations in the early 1990s. There was also considerable variation due to discretionary decisions of officials. However, combined with our earlier finding that citizenship did not have an effect once we controlled for individual fixed effects, we believe that the pooled OLS specification was most likely picking up a selection effect, that even after controlling for observables those immigrants with citizenship are systematically different from those without it.

6.3 Robustness checks[8]

Although the above results controlled for a number of personal and family characteristics, we may be worried that we are still not 'comparing like with like' when contrasting the results for the first generation immigrants with those for the natives. This may be for instance because although we are controlling for age or employment status, there may be unobserved variables correlated with these, which may bias results if natives and immigrants are systematically different along these lines. To overcome the extrapolation problem of linear regressions we have thus also examined the robustness of our results when explicitly enforcing common support on all of the control variables discussed above, which were applicable to natives as well. Relying on this restricted 'comparable' subset[9] we repeated the above analysis and obtained very similar results in terms of signs and significance, thus increasing confidence in our findings.

Although our dependent variable, life satisfaction, is an ordered categorical variable with response categories ranging from 0 to 10, the above pooled OLS and fixed effects models treated it as continuous and assumed linearity. Unfortunately, as noted earlier, there is no straightforward generalisation of the simple logit with fixed effects framework to ordinal variables. Suggested solutions include the Chamberlain estimator, which collapses the outcome to a binary variable and picks a single cutoff point, the Das and van Soest two-step estimator, which estimates the model for all cutoffs and combines the estimates in a second step, Baetschmann *et al.*'s (2011) blow-up and cluster estimator, which creates a dataset where each individual is repeated *K-1* times (where the dependent variable is coded *1...K*) each time using a different cutoff to collapse the dependent variable and Ferrer-i-Carbonell and Frijters' (2004) estimator where an optimal cutoff is defined for each individual, but this is in general inconsistent (Baetschmann *et al.* 2011). In a simulation experiment Baetschmann *et al.* (2011) found

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[8] Results for all robustness checks are available from the author upon request.

[9] 2695 observations for the pooled model including natives and immigrants and 984 observations for the first generation

that the Das and van Soest and Baetschmann estimators generally perform well; Dickerson, Hole and Munford (2011) found that the difference between the estimators in fairly minor. As there is no clear best choice among the above estimators and relying on these would raise difficulties concerning the clustering of standard errors we choose to rely on the above linear models as our preferred specification. We compared the pooled OLS and fixed effects results obtained above with a simple ordered logit without fixed effects as well as an ordered logit ran on differenced variables and found very similar results in terms of signs and significance of coefficients.

We also examined the robustness of our results by looking at different subsamples, repeating the above analysis for the Turkish and ex-Yugoslavian immigrants, employed/ unemployed, different education levels and men and women separately. Our results for all subsamples were very much in line with those above.

7. Conclusion

This paper examined the life satisfaction of immigrants once settled in the host country, looking at the question whether integration increases life satisfaction from different angles. Contrary to the existing literature we found that immigrants are not less satisfied than natives once we control for a number of characteristics such as the degree of job insecurity, and they are not hurt more by adverse shocks such as becoming unemployed or facing increasing job insecurity. Relying on a unique dataset including measures of the ethnic composition of neighbourhoods at various levels of disaggregation, we found that segregation *per se* does not affect life satisfaction, though there may be some indirect effects through immigrants' ability to adjust to adverse shocks. We found a highly significant positive effect of having German citizenship in the pooled OLS specification, however, looking at the specification including individual fixed effects as well as examining the effects of changes in the German citizenship law we believe that this is a selection effect rather than an increase in life satisfaction due to *obtaining* citizenship.

Overall, we believe that our findings are very encouraging in that although in the short run migration involves 'acculturative stress', in the long run, (in contrast to the findings of the earlier literature), once immigrants have settled and integrated, they are not less satisfied on average than the native population. Furthermore, their life satisfaction seems to be affected by economic integration rather than 'cultural factors', with details of employment conditions such as job insecurity playing a particularly important role. We find no evidence supporting the concern that feelings of not belonging or loyalties to immigrants' countries of origin may have negative effects on their life satisfaction.

Appendix

Table A.1: Descriptive statistics

	natives		first generation immigrants	
Variable	Mean	Std. Dev.	Mean	Std. Dev.
life satisfaction	7.112	1.749	6.678	1.805
age	44.203	22.261	51.392	14.135
male	0.485	0.500	0.515	0.500
married	0.583	0.493	0.781	0.414
years of education	12.465	2.708	9.996	2.130
employed	0.510	0.500	0.447	0.498
working in occupation trained for	0.680	0.466	0.642	0.480
owns house/ apartment	0.589	0.492	0.362	0.481
father's education level	2.616	1.064	1.498	0.981
mother's education level	2.465	0.869	1.210	0.868
from a large city	0.218	0.413	0.197	0.398
from a medium size city	0.173	0.378	0.166	0.373
from a small city	0.224	0.417	0.295	0.456
from the countryside	0.384	0.486	0.342	0.475
has insecure job	1.636	0.708	1.879	0.732
serious illness	0.407	0.491	0.365	0.482
children under the age of 16 in the household	0.344	0.475	0.398	0.490
has children living abroad	0.769	0.439	0.057	0.232
partner lives abroad			0.005	0.070
years since migration			33.934	10.621
minority identity			3.635	1.003
majority identity			2.791	1.156
German citizenship			0.245	0.430
speaks German			3.516	1.040
writes German			2.789	1.248
visits to/by Germans			0.785	0.411
ethnic composition of neighbourhood			1.528	0.500
condition of house	3.684	0.514	3.592	0.608

Note: All data are from 2010, except ethnic composition of neighbourhood (2009), German language skills and visits to/ by Germans (2005). All differences between groups are significant at the 1% level.

Table A.2: Life satisfaction – descriptive statistics

Life satisfaction	Mean	Std. Dev.	Min	Max	Observations
overall	7.00	1.83	0	10	N = 438912
between		1.49	0	10	n = 51678
within		1.30	-2.15	14.68	T-bar = 8.49

Table A.3: Pooled OLS and fixed effects results – are immigrants less satisfied?

Variable	POLS	FE	POLS	FE
age	-0.009***	-0.043***	-0.003	-0.030***
	-0.001	-0.002	-0.003	-0.006
male	-0.071*		0.119*	
	-0.035		-0.058	
married	0.079	0.197***	0.077	0.056
	-0.046	-0.049	-0.091	-0.145
separated/divorced	-0.642***	-0.156	-0.472***	-0.031
	-0.077	-0.081	-0.139	-0.231
widowed	-0.166	-0.183	-0.948**	-1.681*
	-0.112	-0.145	-0.299	-0.686
years of education	0.043***	0.002	-0.014	0.014
	-0.006	-0.011	-0.013	-0.06
employed (lagged)	0.281***	0.126***	0.178*	0.065
	-0.029	-0.024	-0.077	-0.096
first generation immigrant	-0.150***		0.116	
	-0.043		-0.094	
working in occupation trained for			0.006	0.023
			-0.051	-0.068
owns house/apartment			0.206***	0.105
			-0.062	-0.126
father's education level			-0.022	
			-0.034	
mother's education level			0.078*	
			-0.035	
from a large city			0.061	
			-0.081	
from a medium sized city			0.195*	
			-0.079	
from a small city			0.146*	
			-0.068	
has insecure job			-0.447***	-0.252***
			-0.032	-0.035
children under 16 in the household			0.001	-0.074
			-0.058	-0.084
ill			-0.816***	-0.353***
			-0.061	-0.061
Number of obs.	71779	71779	8561	8561
Number of indiv.	8256	8256	3888	3888
R2	0.03	0.026	0.096	0.03
adjusted R2	0.03	0.026	0.095	0.029
Hausman test				
chi2		752.93		157.66
Prob>chi2		0		0

*Note for all tables: Standard errors in parentheses, * p<0.05, ** p<0.01, *** p<0.001*

Table A.4: Pooled OLS and fixed effects results – what determines the life satisfaction of immigrants?

Variable	POLS	FE	POLS	FE
age	0.005	-0.115*	0.006	-0.122**
	-0.006	-0.044	-0.006	-0.045
male	0.146		0.154	
	-0.101		-0.1	
married	-0.077	0.457	-0.078	0.48
	-0.164	-0.5	-0.164	-0.497
separated/ divorced	-0.739**	-0.221	-0.740**	-0.158
	-0.283	-0.716	-0.285	-0.721
widowed	-1.786***	-2.396	-1.772***	-2.341
	-0.447	-2.584	-0.446	-2.565
years of education	-0.065*	0.578	-0.063*	0.584
	-0.026	-0.5	-0.026	-0.502
employed (lagged)	0.521**	0.618**	0.522**	0.632**
	-0.187	-0.223	-0.187	-0.225
working in occupation trained for	0.009	0.265	0.004	0.212
	-0.086	-0.439	-0.086	-0.441
owns house/ apartment	0.114	-0.251	0.116	-0.26
	-0.148	-0.336	-0.148	-0.326
father's education level	0.001		-0.014	
	-0.055		-0.055	
mother's education level	0.113		0.119	
	-0.062		-0.061	
from a large city	0.114		0.123	
	-0.124		-0.124	
from a medium sized city	-0.014		-0.012	
	-0.14		-0.139	
from a small city	0.197		0.199	
	-0.11		-0.109	
has insecure job	-0.413***	-0.262***	-0.420***	-0.254***
	-0.053	-0.061	-0.054	-0.061
ill	-0.912***	-0.302**	-0.923***	-0.284*
	-0.107	-0.111	-0.107	-0.111
children under the age of 16 in the household	-0.006	-0.02	0.006	-0.03
	-0.104	-0.192	-0.104	-0.194
children abroad	-0.197	-0.255	-0.199	-0.252
	-0.137	-0.186	-0.136	-0.184
partner abroad	-0.42	0.105	-0.399	0.148
	-0.315	-0.747	-0.31	-0.744
years since migration	-0.016		-0.015	
	-0.01		-0.01	
minority identity (lagged)	-0.001	0.039	-0.002	0.042
	-0.021	-0.027	-0.021	-0.027
majority identity (lagged)	0.017	0.041	0.005	0.036
	-0.038	-0.044	-0.038	-0.043

	POLS	FE	POLS	FE
German citizenship	3.295***		3.240***	
	-0.511		-0.508	
speaks German	0.149*	0.109	0.133*	0.107
	-0.061	-0.07	-0.061	-0.069
writes German	0.003	-0.003	-0.011	-0.01
	-0.05	-0.061	-0.05	-0.061
visits to/ by Germans			0.348***	0.282*
			-0.104	-0.119
Number of obs.	2843	2843	2836	2836
Number of indiv.	1170	1170	1170	1170
R2	0.113	0.036	0.118	0.038
adjusted R2	0.105	0.03	0.11	0.032
Hausman test				
chi2		47.33		52.9
Prob>chi2		0.0001		0

Table A.5: Pooled OLS and fixed effects results – discrimination, ethnic composition of neighbourhoods

Variable	POLS	FE	POLS	FE	POLS	FE
age	-0.017*	-0.055***	-0.01	-0.042***	-0.007	-0.075***
	-0.007	-0.016	-0.007	-0.012	-0.009	-0.017
male	0.177		0.134		0.174	
	-0.108		-0.102		-0.133	
married	-0.247	0.207	-0.02	-0.177	-0.347	-0.324
	-0.189	-0.632	-0.21	-0.47	-0.278	-0.823
separated/ divorced	-0.702*	-0.018	-0.833**	-0.406	-1.050**	0.066
	-0.281	-0.765	-0.313	-0.79	-0.361	-0.962
widowed	-0.893**	-0.585	-1.572**	0.996	-1.623	0.468
	-0.304	-0.791	-0.574	-0.62	-0.855	-1.035
years of education	-0.038	0.079	-0.043	-0.054	-0.023	0.044
	-0.031	-0.051	-0.027	-0.096	-0.036	-0.104
employed (lagged)	0.018	-0.096	0.439*	0.562	0.379	0.563
	-0.145	-0.163	-0.222	-0.452	-0.298	-0.523
working in occupation trained for	-0.017	0.13	-0.055	0.261	-0.168	0.118
	-0.087	-0.092	-0.091	-0.148	-0.12	-0.237
owns house/ apartment	0.246*	0.129	0.194	0.063	0.360*	0.322
	-0.109	-0.167	-0.134	-0.264	-0.162	-0.331
father's education level	-0.045		-0.126*		-0.097	
	-0.058		-0.06		-0.075	
mother's education level	0.024		0.171**		0.061	
	-0.064		-0.066		-0.09	
from a large city	0.158		0.084		0.147	
	-0.17		-0.144		-0.191	
from a medium sized city	0.349*		0.023		0.3	
	-0.143		-0.144		-0.186	
from a small city	0.259*		0.037		0.151	

	-0.123		-0.118		-0.153	
has insecure job	-0.306***	-0.248***	-0.426***	-0.149	-0.382***	-0.012
	-0.059	-0.064	-0.064	-0.102	-0.086	-0.173
children under the age of 16 in the household	-0.006	-0.168	-0.068	0.067	0.016	-0.193
	-0.11	-0.155	-0.112	-0.174	-0.14	-0.244
children abroad	0.009	-0.176	-0.347	0.326	-0.234	1.056**
	-0.19	-0.165	-0.191	-0.275	-0.266	-0.404
partner abroad	-0.225	-0.128	-0.134	-0.658	-0.13	
	-0.683	-0.76	-0.462	-0.968	-0.712	
years since migration	0		-0.014		-0.014	
	-0.008		-0.008		-0.011	
minority identity (lagged)	0.081	-0.01	0.129*	0.141	0.101	0.146
	-0.053	-0.049	-0.055	-0.078	-0.069	-0.107
majority identity (lagged)	0.178***	0.056	0.165**	0.238**	0.204**	0.341**
	-0.052	-0.056	-0.057	-0.084	-0.077	-0.132
German citizenship	-0.277	-0.107	0.139	0.489	-0.039	0.381
	-0.26	-0.244	-0.321	-0.434	-0.341	-0.585
discrimination	-0.286***	-0.027				
	-0.085	-0.09				
ethnic composition of neighbourhood (subjective measure)			-0.284**	0.011	-0.18	-0.122
			-0.091	-0.152	-0.119	-0.193
condition of house					0.04	0.272
					-0.1	-0.155
Number of obs.	1672	1672	1552	1552	771	771
Number of indiv.		617		1117		622
R2	0.093	0.041	0.086	0.075	0.095	0.195
adjusted R2	0.081	0.032	0.072	0.065	0.066	0.178
Hausman test						
chi2		41.8		34.93		20.31
Prob>chi2		0.0004		0.0041		0.2067

Table A.6: Ethnic composition of neighbourhoods

		natives		first generation immigrants	
		Mean	Std. Dev.	Mean	Std. Dev.
fraction of foreigners (1-9 scale)		4.441	2.472	6.776	2.349
fraction of foreigners (percentage)		5.201	4.572	9.763	7.623
by ethnic origin	*Balkans*	0.637	0.866	1.263	1.304
	Greece	0.404	0.491	0.672	0.717
	Italy	0.702	0.747	1.171	1.166
	Spain-Portugal	0.185	0.251	0.290	0.348
	Turkey	1.492	2.615	3.876	5.415

Table A.7: Descriptive statistics by ethnic composition of the neighbourhood

	neighbourhood with low proportion of foreigners (1 on 1-9 scale)		neighbourhood with high proportion of foreigners (9 on 1-9 scale)	
	Mean	Std. Dev.	Mean	Std. Dev.
age	42.479	21.935	36.735	21.414
male	0.489	0.500	0.497	0.500
married	0.634	0.482	0.562	0.496
years of education	12.274	2.584	11.231	2.696
employed	0.516	0.500	0.505	0.500
working in occupation trained for	0.661	0.473	0.676	0.468
owns house/ apartment	0.656	0.475	0.279	0.448
father's education level	2.583	1.020	2.223	1.166
mother's education level	2.446	0.843	2.026	1.060
from a large city	0.174	0.379	0.272	0.445
from a medium size city	0.167	0.373	0.196	0.397
from a small city	0.222	0.416	0.247	0.431
has insecure job	1.755	0.726	1.751	0.734
children under the age of 16 in the hh	0.374	0.484	0.483	0.500
serious illness	0.397	0.489	0.342	0.474
first generation immigrants	0.458	0.498	0.589	0.492

Table A.8: Pooled OLS and fixed effects results – ethnic composition of neighbourhoods

	natives		first generation immigrants	
	POLS	FE	POLS	FE
age	-0.011***	0.139***	-0.019***	0.018
	0	0	0.004	0.804
male	-0.014		0.096	
	0.668		0.41	
married	0.235***	-0.088	0.121	-0.394
	0	0.652	0.546	0.36
separated/ divorced	0.045	0.028	-0.446	
	0.505	0.92	0.074	
widowed	0.025	-1.041*	-1.694*	
	0.84	0.05	0.05	
years of education	0.035***	-0.032	-0.006	0.028
	0	0.713	0.808	0.703
employed (lagged)	-0.02	-0.056	0.007	-0.069
	0.673	0.512	0.966	0.821
ethnic composition of neighbourhood (1-9 scale)	-0.002	0.019	-0.025	0.06
	0.756	0.479	0.274	0.477
working in occupation trained for	0.091*	0.004	-0.086	-0.863
	0.012	0.984	0.476	0.207
owns house/ apartment	0.121**	0.037	0.285*	0.465

	0.001	0.764	0.017	0.151
father's education level	0.02		-0.016	
	0.277		0.834	
mother's education level	-0.004		0.016	
	0.851		0.815	
from a large city	0.063		-0.155	
	0.164		0.355	
from a medium sized city	0.122**		0.141	
	0.009		0.383	
from a small city	0.063		0.019	
	0.137		0.901	
has insecure job	-0.611***	-0.165***	-0.576***	-0.249*
	0	0	0	0.034
children under the age of 16 in the household	-0.045	0.047	-0.123	0.11
	0.249	0.691	0.386	0.755
ill	-0.472***	-0.107*	-0.51***	-0.135
	0	0.024	0	0.538
Number of obs.	12862	12862	1052	1052
R2	0.113	0.015	0.141	0.027
adjusted R2	0.112	0.014	0.126	0.018

Note: p-values reported

Table A.9: Effects of changes in the German citizenship law

	Coef. (Std. Error)	*Number of obs.*	*Number of indiv.s*
2000 change	-0.143 0.104	6787	1015
1991 change - 16-23 year olds, broad treatment group	-0.159 0.135	6427	2149
1991 change - 16-23 year olds, narrow treatment group	-0.166 0.133	6001	1971
1991 change - over 23 years old	0.027 0.120	7341	1277