

John P. Haisken-DeNew and Mathias Sinning

# Social Deprivation and Exclusion of Immigrants in Germany

#31



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**John P. Haisken-DeNew and Mathias Sinning\***

## **Social Deprivation and Exclusion of Immigrants in Germany**

Abstract

This paper aims at providing empirical evidence on social exclusion of immigrants in Germany. We demonstrate that when using a conventional definition of the social inclusion index typically applied in the literature, immigrants appear to experience a significant degree of social deprivation and exclusion, confirming much of the economic literature examining the economic assimilation of immigrants in Germany. We propose a weighting scheme that weights components of social inclusion by their subjective contribution to an overall measure of life satisfaction. Using this weighting scheme to calculate an index of social inclusion, we find that immigrants are in fact as “included” as Germans. This result is driven strongly by the disproportionately positive socio-demographic characteristics that immigrants possess as measured by the contribution to their life satisfaction.

JEL Classification: F22, I31, Z13

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# 1 Introduction

As a result of the increasing relevance of international migration, the economic and societal integration of immigrant minorities into the society of their host countries has become a matter of intense debate among economists and policy makers. The economic literature, which follows the seminal papers of Chiswick (1978) and Borjas (1985), mainly concentrates on earnings assimilation patterns to draw inferences about the economic and societal integration of immigrants. However, the extent to which immigrants are able to participate in the economic and social life of their host country, is a multi-dimensional phenomenon. To consider the various dimensions that are relevant for a comprehensive investigation of the economic and societal integration of immigrants, the economic assimilation discussion may be expanded into the realm of social inclusion such that earnings are simply considered as one component in a multi-dimensional index.

With the Lisbon summit, the European Commission (EC) has adopted measures to start a new Community programme to establish comparable ways to measure poverty, to help Member States develop coordinated policy to fight poverty and to assist networking of social partners and civil society. Further, the initiative launches an extensive EU economic and social strategy that aims at modernizing the European social model and promoting social inclusion. The EC focusses, as stated policy, on a preventative approach to poverty and social exclusion. Based on Article 137 of the Amsterdam Treaty, the EC intends to promote social inclusion with three main objectives: (a) improve the understanding of social exclusion, (b) organize policy co-operation and (c) support and develop the capacity of NGOs and other relevant organizations to address social exclusion effectively.

Germany, a major immigration country in the European Union, represents an excellent example for the analysis of deprivation and social exclusion of immigrants. During the 1960s, “guest workers” from Turkey, Italy, Spain, Greece and Yugoslavia were recruited by the German government to fill an acute low-skilled labor shortage in Germany during the years of the *Wirtschaftswunder* (DeNew and Zimmermann, 1994; Schmidt and Zimmermann, 1992). The guest workers (by their very name were

considered to be short-term in nature and thus unlikely to be making longer-term investments in their host country) arriving in Germany in the 1960s were typically very different in education, cultural and educational background and motivation to their higher-skilled European counterparts that migrated to the United States after the Second World War. One obvious challenge for the overwhelmingly Muslim Turkish immigrants was to adapt to a decidedly Christian nation such as Germany. Relatively restrictive German citizenship laws set the hurdle reasonably high for guest workers to be naturalized (Joppke, 1999). Even second generation immigrants were not immediately given citizenship, when born of parents living legally in Germany. Further restrictions limiting dual-nationality and essentially forcing an immigrant to become legally stateless as a matter of course before applying for German citizenship, restricted potential assimilation, in contrast to the integrative policies of typically immigration countries such as Australia, Canada and the United States (Antecol et al., 2003).

Recently in order to deal with issues of assimilation in Germany, the Süßmuth Commission made recommendations regarding the entrance criteria of new immigrants in an attempt to alleviate some of the economic and social mismatches between Germans and immigrants. Indeed they focus on a point system similar to that of Canada, stressed the importance of “ability to integrate”, awarding two-third of the points to this domain (Süßmuth, 2001).

This paper aims at examining empirical evidence on the extent to which immigrants in Germany are socially deprived and/or excluded. The components used in our analysis of social inclusion are those from the generally accepted Sen (2000) or similarly the European Union definition to identify this phenomenon.<sup>1</sup> Although the existing literature has focussed typically on economically disadvantaged groups such as the poor or the old, the literature is very sparse with respect to the social inclusion of immigrants in Germany. Using data from the German Socio-Economic Panel (SOEP) 1984–2005, we contribute to this literature, in that we outline the

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<sup>1</sup>Often the terms “deprivation” and “exclusion” are used differentially in the literature, with “deprivation” referring to a temporary negative state, and in contrast “exclusion” to a prolonged negative state. In this paper, the term “inclusion” is used interchangeably for both “non-deprivation” and “non-exclusion”. In the empirical analysis, we shall focus on short-term deprivation and then on long-term social exclusion.

current status of integration of immigrants and further propose a more appropriate weighting scheme of the components compared to Tsakloglu and Papadopoulos (2001). Standard definitions of social inclusion essentially weight all component parts equally. Our method, in contrast, weights components by their *subjective* contribution to an overall measure of life satisfaction, i.e. those components in a multivariate context that contribute most to life satisfaction are weighted higher in the calculation of an overall social inclusion measure.

The life satisfaction literature has matured considerably in recent years, dealing with issues such as the impact of income on utility as known as the Easterlin Paradox (Easterlin, 1995, 2001; Diener and Oishi, 2000; Frijters et al., 2004a,b), the psychological effects of unemployment (Winkelmann and Winkelmann, 1998), aversion to monetary inflation (Di Tella et al., 2001) to name a few areas. Clearly the informational content of admittedly subjective information is high, notwithstanding the critique from Bertrand and Mullainthan (2001). In this paper, we exploit additional subjective valuations of the various components of social inclusion and weight these components in calculating an overall measure of social inclusion with these valuations. We allow for different valuations between Germans and immigrants of the importance (or contribution to overall life satisfaction) of these component parts.

We demonstrate that when using the conventional definition of the social inclusion index, immigrants in Germany appear to experience a significant degree of social deprivation, confirming much of the economic literature examining the economic assimilation of immigrants. However, augmenting the social inclusion model for what we consider to be more appropriate weights of the component parts (as the persons themselves value the components), it is clearly the case that we find compelling evidence to support the hypothesis that immigrants are as included as Germans. This result is driven strongly by the disproportionately positive socio-demographic characteristics that immigrants possess – such as an advantageous age and family structure – and the extent to which these contribute to their life satisfaction.

The paper proceeds as follows: Section 2 provides a brief overview of the concept of social exclusion and explains how this concept can be linked to the life satisfaction literature. In Section 3, the data used for the empirical analysis and the estimation



strategy are described. The estimation results for short-term deprivation and long-term exclusion are presented in Section 4. Section 5 concludes.

## 2 Joining Social Exclusion and Life Satisfaction

The potentially nebulous term “social exclusion” is used often in a blanket manner and can mean many things to researchers from various disciplines. As D’Ambrosio et al. (2002) write, most importantly the concept of social exclusion deals with the “inability of an individual to participate in the basic political, economic and social functionings of the society in which he/she lives”. Of interest here is exactly how this concept can be operationalized into observable indicators available to researchers. An individual is considered to be “excluded” if based on many indicators, he/she cannot participate fully in society. Thus simply to be lacking in one particular area does not constitute “exclusion” and therefore we are interested in a multi-dimensional index which summarizes information from many domains. In the strictest sense of the term, exclusion deals with not having access to something not because one chose not to have it but rather because it was simply beyond the reach of a person, whether due to budget restrictions or institutional restrictions etc.

Mickelwright (2002) provides an overview of the European Union’s definition of social exclusion. Eurostat (1998) states, “Social exclusion is considered a dynamic process, best described as descending levels: some disadvantages lead to some exclusion, which in turn leads to more disadvantages and more social exclusion and ends up with persistent multiple (deprivation) disadvantages. Individuals, households and spatial units can be excluded from access to resources like employment, health, education, social or political life”. Clearly this definition is open to interpretation.

Correspondingly, the same report a paragraph later states, “At the moment, generally accepted definitions of social exclusion for policy purposes are not available. The Task Force decided not to define social exclusion. However, in the long run a statistical definition has to be defined. In the process to this statistical definition the Task Force chose a pragmatic approach in using the following policy description of social exclusion as a hypothesis for the further work”. This is not the only definition

found in the literature. Dekkers (2002) cites many competing definitions, such as those found in Townsend (1979, 1993), Whelan and Whelan (1995), Zajczyk (1995), Percy-Smith (2000), etc. For more information, the reader is directed to D'Ambrosio et al. (2002) and Dekkers (2002), who provide a thorough overview of the existing literature on social exclusion.

Nevertheless, Eurostat (2000) pragmatically outlines various indicators as main components of a multi-dimensional social inclusion index: (a) financial difficulties, (b) basic necessities, (c) housing conditions, (d) consumer durables, (e) health, (f) social contact, (g) dissatisfaction. Tsakloglu and Papadopoulos (2001) and Papadopoulos and Tsakloglu (2002) suggest a method of combining these indicators into a single index. Tsakloglu and Papadopoulos (2001) analyze social exclusion using the European Community Household Panel (ECHP) for 14 countries. They calculate and report head-count ratios (with a threshold of 60% of national median) for four domains of social inclusion: income, living conditions, necessities of life and social relations and find that Germany is towards the mid to lower end of the social exclusion distribution compared to other European countries, i.e. that residents of Germany are indeed better integrated than many of their European neighbors.

Because the social inclusion index is multi-dimensional, one is obviously confronted with conflicting conclusions from the individual component parts creating a particular drawback of the methodology of Tsakloglu and Papadopoulos (2001), worthy of noting. In an attempt to address this problem, Tsakloglu and Papadopoulos (2001) examine also number and types of domains in which a country is below a certain threshold in the distribution, and whether this is persistent over time (see Tsakloglu and Papadopoulos (2001), Tables 1–4). This has the disadvantage, that one is drawn away from a single index to examine now a vector of indices.

To address this issue, we make a straightforward and intuitive contribution to the literature. Using standard procedures, one may have many indicators from various domains and one explicitly weights the importance of each particular indicator by definition equally. Perhaps in reality, not having a dishwasher is objectively not all that important, whereas having inadequate access to health care is much more important. One cannot account for this heterogeneity with this simple measure

and augmenting the simple model with a weighting scheme to reflect better the “true” importance of each component part would shed light on this. The question then remains, which weights to use? This paper uses individual valuations of life satisfaction to evaluate the empirical importance of all component parts of the social inclusion index. Using estimated coefficients from a first stage life satisfaction regression, one weights the various components of social inclusion accordingly in calculating the index.

The empirical literature on life satisfaction has developed rapidly in the last several years. Frey and Stutzer (2000, 2002) provide an overview of the informational value embedded in life satisfaction indicators and demonstrate the robust results that life satisfaction analysis deliver. Specifically for the social inclusion domains identified by Eurostat (2000) we provide an overview of the empirical findings. Frijters et al. (2004a,b) identify a positive income gradient with respect to life satisfaction, albeit small for Germany in contrast to Easterlin (2001, 1995) and Frijters et al. (2006) who find that even in the face of a large macro-economic shock such as German reunification, that dynamic valuation of the future expected life satisfaction is accurately predicted after a very short adjustment and learning period. Winkelmann and Winkelmann (1998), Clark et al. (2001) and Clark (2003) find evidence for the negative impact of unemployment on life satisfaction. Clark et al. (2001) and Clark (2003) find that these effects are mitigated by reference group unemployment, i.e. high local unemployment rates.

As residents of Germany should certainly not be considered homogeneous, we examine two groups who are typically thought of as being very different in many respects, namely Germans and immigrants living in Germany.

### 3 Empirical Strategy and Data

In the following, we calculate a multi-dimensional index of social inclusion for German natives and immigrants that consists of various components measured by different indicators. In particular, we define a dichotomous variable  $X_{ik}$ , indicating whether an individual  $i$  has a particular characteristic  $k$  and if he/she does, then  $X_{ik}$

is equal to one (1) and zero (0) if not. Since some components of our index do a better job in explaining social inclusion than others, we have to assign a certain weight  $\omega_k$  to each item  $k$ , reflecting the relative importance of item  $k$  for the overall index of social inclusion. Assuming there were  $K$  items, the general form of an index measure for individual  $i$  can be calculated as follows:

$$I_i(\omega) = ([X_{i1}\omega_1] + [X_{i2}\omega_2] + \dots + [X_{iK}\omega_K])/K, \quad (1)$$

where  $X_{i1}, X_{i2}, X_{iK}$  are either zero or one and each component of the vector of weights  $\omega = (\omega_1, \omega_2, \dots, \omega_K)$  ranges between zero and one. Clearly, the index is bounded by zero and one, with zero being complete exclusion, and one being complete inclusion. Typically though, the empirical distribution will lie between some number larger than zero and some other number smaller than one.

A particular challenge when calculating the index of social inclusion is the choice of weights. Following Tsakloglu and Papadopoulos (2001) and Papadopoulos and Tsakloglu (2002), we derive our first weight from an overall average of individuals having a particular item, good or characteristic:  $\omega_k^1 = (1/N) \sum_{i=1}^N X_{ik} = \bar{X}_k$ . Multiplying  $X_{ik}$  by the average is an attempt to weight the particular importance of a particular item  $k$ . If all others have an item and a small number do not, then this small number is considered to be relatively not as included. If however, in general very few people do not have a particular item, say an expensive car, then even though many would not have such an item, they would still be considered relatively included. Thus each person either has zero when he/she does not have a particular item, or he/she has  $X_{ik}$ . The list of items is averaged for every individual and then an overall index of inclusion based on all items is available for each individual.

In addition to the weighting scheme of Tsakloglu and Papadopoulos (2001) and Papadopoulos and Tsakloglu (2002), we propose a set of alternative weights that appear more appropriate in reflecting the relative importance of different components of the social inclusion index. To derive these weights, we investigate the extent to which each of the characteristics of the social inclusion index contributes to the individual general life satisfaction. In particular, we apply a linear fixed effects model to estimate the effects of the different components of the social inclusion index on

the general life satisfaction:

$$LS_{it} = \mu_i + \mathbf{X}_{it}\beta + \varepsilon_{it}, \quad i = 1, \dots, N, \quad t = 1, \dots, T, \quad (2)$$

where  $LS_{it}$  denotes the general life satisfaction of individual  $i$  at time  $t$ ,  $\mathbf{X}_{it}$  is a vector of regressors,  $\beta$  is a vector of coefficients,  $\mu_i$  is the individual-specific effect and  $\varepsilon_{it}$  is the error term. Although  $LS_{it}$  is measured on an ordinal scale from zero to ten (where zero means “completely dissatisfied” and ten means “completely satisfied”), we apply a linear fixed effects model instead of a non-linear model for two reasons. Firstly, using information about the general life satisfaction drawn from the SOEP, Frijters and Ferrer-i-Carbonell (2004) demonstrate that the issues of ordinality as opposed to cardinality are not as great as one might think, allowing us to avoid the use of non-linear models such as ordered Probit in favor of straightforward models such as fixed effects OLS. Secondly, since the interpretation of the coefficients derived from a linear model with fixed effects is immediately intuitive as the coefficients are identical to the marginal effects, we are able to use the OLS estimates to generate weights for the calculation of the social inclusion index.

Given the fixed effects estimates, we can derive two alternative social inclusion indices using the following weighting schemes:

$$\omega_k^2 = \widehat{\beta}_k, \quad (3a)$$

$$\omega_k^3 = \widehat{\beta}_k(1 - p_k), \quad (3b)$$

where  $\widehat{\beta}_k$  is an estimate of the  $k$ -th component of the parameter vector  $\beta$  of equation (2) and  $p_k$  is the corresponding p-value ( $k = 1, \dots, K$ ).

While the conventional weights previously used in the literature only reflect the share of the population having a particular characteristic, the weights given by equation (3a) use the contributions of the particular characteristics to overall life satisfaction, i.e. how people themselves value a particular aspect as indicated by the coefficients from the first stage life satisfaction multivariate regression. However, the coefficients from the first stage life satisfaction regression are estimated and hence have standard errors. We augment equation (3a) with equation (3b), such that we calculate “1 minus the p-value” to increase the weight when a particular component’s contribution is significant and conversely reduces the weight when a

component is less significant. Since nearly all coefficients of the following analysis are highly significant, differences between  $\omega_k^2$  and  $\omega_k^3$  will be neglected. As such, we will concentrate our analysis on Index 1 and 2. However, in general, should the estimation error in the first step regression play a substantial role, the role of Index 3 becomes relevant.

Finally, after having calculated an individual-specific index of social inclusion, we would like to investigate the degree to which social deprivation is prevalent within a certain group. For that reason, we use the inequality measure proposed by Foster et al. (1984),

$$FGT(\alpha) = \frac{1}{N} \sum_{i=1}^N ((z - I_i(\omega))/z)^\alpha, \quad (4)$$

which depends on the parameter  $\alpha$ .  $FGT(0)$  corresponds to the “head-count ratio”, i.e. the share below a certain threshold  $z$ .  $FGT(1)$  refers to the intensity below a threshold, i.e. not whether one is below a threshold, but rather the average distance below.  $FGT(2)$  squares the distance and punishes large distances more than shorter distances. The choice of the threshold is arbitrary. In the following, different threshold values and inequality measures will be compared.<sup>2</sup>

In the following empirical analysis, data from the German Socio-Economic Panel (SOEP) is utilized.<sup>3</sup> The SOEP is a representative longitudinal study including German and immigrant households residing in the old and new German states which started in 1984. In 2005, about 22,000 persons in nearly 12,000 households were sampled. The panel contains information on socioeconomic and demographic characteristics, household composition, occupational biographies, etc. Immigrants are defined as foreign-born persons who immigrated to Germany since 1948 (including foreign-born individuals who received German citizenship after immigration). This definition does not comprise ethnic migrants (e.g. persons who possess German nationality since birth and immigrated to Germany) or the second generation of im-

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<sup>2</sup>Thanks to Stephen Jenkins, University of Essex, for the use of his “povdeco” add-on for Stata to calculate the FGT measure.

<sup>3</sup>The data used in this paper was extracted from the SOEP Database provided by the DIW Berlin (<http://www.diw.de/soep>) using the Add-On package PanelWhiz v1.0 (Oct 2006) for Stata(R). PanelWhiz was written by Dr. John P. Haisken-DeNew ([john@panelwhiz.eu](mailto:john@panelwhiz.eu)). The PanelWhiz generated DO file to retrieve the SOEP data used here and any Panelwhiz Plugins are available upon request. Haisken-DeNew and Hahn (2006) describe PanelWhiz in detail.

migrants (persons with foreign nationality who were born in Germany). Since less than two percent of the migrant population in the sample lives in East Germany, the analysis concentrates on immigrants residing in West Germany.

Using the SOEP data set we will be able to describe the dimensions outlined by Eurostat (2000) using the following set of indicator variables  $\mathbf{X}_{it}$  of equation (2): (a) financial difficulties: income, employment status, education, (b) basic necessities: car, telephone, color TV, (c) housing conditions: subjective opinion as to domicile size, balcony/terrace, garden/yard, (d) consumer durables: PC (without modem/ISDN), stereo, dishwasher, (e) health: age, hospital stays, doctor visits, work disability, physically challenged, (f) social contact: children below 16 in household, marital status, attending cultural, sporting or religious events, active participation in sports. The category (g) dissatisfaction is captured by the use of general life satisfaction as dependent variable of equation (2). A description of all variables used in the empirical analysis is given in Appendix-Table A1.

Table 1 describes the relevant socioeconomic and demographic characteristics of natives and immigrants. The descriptive statistics reveal that the financial situation of average natives is substantially better than that of immigrants. In particular, while average immigrants are less likely to have an income above the median, they face a higher risk of being unemployed. Moreover, immigrants are on average less educated than average natives. Due to these differences, we observe that immigrants are less likely to own basic necessities (such as a car or a telephone) than natives. Immigrants also report poorer housing conditions and lower ownership rates of consumer durables than natives. However, immigrants are on average younger and appear to be healthier than natives. Immigrants are also more likely to be married and have more children than natives. Finally, natives are on average more likely to attend cultural and sporting events and less likely to attend religious events than immigrants.

Overall, the descriptive statistics indicate substantial differences in socioeconomic and demographic characteristics between natives and immigrants. While the overall economic situation of average immigrants appears to be noticeably worse than that of average natives, immigrants have other positive compensating charac-

teristics valuable to them. As described above, an appropriate weighting scheme has to be applied that accounts for the relative importance of these factors to investigate the extent to which immigrants are socially deprived.

## 4 Empirical Analysis

### 4.1 Weights: First-Stage Life Satisfaction

Using panel data for the period 1984–2005, we adopt a parsimonious linear fixed effects model to estimate the determinants of life satisfaction for Germans and foreigners separately as displayed as Model A in the top half of Table 2 using 187,936 and 49,397 person-year observations for Germans and foreigners respectively. When comparing Germans and foreigners, many coefficients appear to be very similar, however the  $\chi^2$  Chow test reveals significant statistical difference at the 5%-level. In order to test whether the parameter estimates derived for natives ( $\widehat{\beta}_N$ ) are significantly different from the respective results for immigrants ( $\widehat{\beta}_I$ ), we carried out a t-test, where t-values are approximated by  $|\widehat{\beta}_N - \widehat{\beta}_I| / \sqrt{Var(\widehat{\beta}_N) + Var(\widehat{\beta}_I)}$ . In many cases, the test results reveal that differences in the coefficients between the two groups are not significant. In particular, the findings suggest that both Germans and foreigners value employment, income, education and domicile size about equally. However, immigrants value having children and being younger significantly higher than their German counterparts, while the effect of being married is stronger for German natives than for immigrants.

We expand the spartan Model A to incorporate many other possible components of social exclusion, but which are only available in the data for a limited time period, namely for the years 2000, 2002 and 2004. We define this to be Model B. Correspondingly this reduces the sample size greatly to 30,939 and 6,345 person-year observations for Germans and foreigners respectively. Although the  $\chi^2$  Chow test indicates again significant differences in the parameter estimates between natives and immigrants at a 5%-level, most coefficients appear to be very similar. The results of t-tests for a comparison of single coefficients indicate that only the coefficients of “having a car” and “not having a work disability” differ significantly between the



two groups.

Since the overall test results of the Chow tests reveal significant differences in the parameter estimates between natives and immigrants for both Models A and B, we use the different coefficients to calculate our index of social inclusion for natives and immigrants separately. By taking these differences into account, we violate an original property of the social inclusion index, namely that each component of the vector of weights ranges between zero and one. The reason for the violation of this property is that the coefficients of the two groups are no longer comparable after re-scaling them separately. However, since all parameter estimates in our analysis range between zero and one, this violation does not affect our results. In particular, our index of social inclusion still ranges between zero and one.

## 4.2 Social Inclusion Indices: Natives vs. Foreigners

In Figure 1, the life satisfaction gap (with confidence interval) between Germans and foreigners is reported. This is derived from an ordered Probit model, with no explanatory regressors, other than a foreigner indicator. It is clear that on average for the years 1984–1991, Germans and foreigners were equally satisfied. Starting with 1992, Germans are either more satisfied than foreigners or at least equally satisfied.

In Figure 2, we examine the social inclusion index using the weights from  $\omega_k^1$  for both the parsimonious Model A and the extended Model B. It is clear that the average values for the index are higher for Germans (i.e. they are more *included*) than for foreigners at all time periods and for both Model A and Model B.

Using the weights gained from the coefficients of the life satisfaction analysis ( $\omega_k^2$ ), we can examine the average values of the social inclusion index again for Germans and foreigners and find that the two lines (Figure 3) are much closer together for both Model A and Model B, indicating an almost identical dynamic development for Germans and foreigners alike.

As there appear to be negligible gross differences in social inclusion between German natives and foreigners, the two groups will be viewed as a whole and we shall concentrate on the specific characteristics that persons have or not, and identify

their contribution to social deprivation.

For the parsimonious Model A, we plot the distribution of the social inclusion index separately for Germans and immigrants in Figure 4. The solid bold curve represents the social inclusion index for Germans, which is shifted to the right of the immigrants' distribution (dotted line). For clarity, two vertical lines are also drawn for the overall median and the deprivation "threshold" of  $0.5 \times \text{median}$ , corresponding to the that used to calculate the FGT measures. Those persons having a social inclusion index score less than this threshold are considered to be "socially deprived". This is analogous to the poverty literature in calculating poverty head count ratios for instance. In this graphic, we see that the mass of persons (area under the curve) to the left of the thresholds is greater for immigrants than for Germans, indicating that immigrants are more socially deprived than their German counterparts. In contrast, using the expanded Model B (Figure 5) weighting the components of social inclusion by their contributions to life satisfaction, we find a very different picture. Indeed the distributions of Germans and immigrants look very similar. Both distributions have almost identical medians, with immigrants having somewhat less mass in the middle of the distribution, indicating a strong similarity in the extent of social inclusion between Germans and immigrants.

### 4.3 Decomposition: Identifying the Driving Factors

In Tables 3 and 4 we illustrate the effects that differential weighting of the social inclusion components can have, corresponding to the results for Index 1 and Index 2 respectively. We compare the two indices of social inclusion, by decomposing the indices by population subgroup. We create four broad (positive) characteristics categories: (I) those having at least median equivalent income (E) those employed, (C) those with children in the household and (A) those under 30 years of age. The four groups provide up to 16 ( $4 \times 4$ ) combinations of these characteristics.

For each and every combination, we calculate each group's contribution (%-share) to the overall measure of inequality as defined by the Foster et al. (1984) class of measures FGT(0), FGT(1) and FGT(2). We use these measures as they are standard indicators in the poverty literature and allow analytical decompositions.

Furthermore, these measures rely on an arbitrary “poverty” threshold (social inclusion is implemented as a relative and not absolute concept). We have chosen the thresholds to be  $0.5 \times$  median of the social inclusion index.

One can think of FGT(0) as the bluntest measure of inequality, simply indicating a “head-count ratio”, i.e. share of persons with an index value under an arbitrary threshold. FGT(1) takes into consideration the simple distance below the threshold and FGT(2) squares the distance below the threshold. As the FGT argument increases in size, the more inequality is “punished” in the outcome measure.

In Table 3 for FGT(0), we examine Group 1, those having lower than median equivalent income, not in employment, having no children and being older than 30 years. Using the conventional Index 1, we find that 26% of the inequality (first column) found in the population results from Group 1, although its population share is only 2.6% (last column). Using the index with weights  $\omega_k^2$  derived from the “first-step” life satisfaction regression, we find that this group’s contribution increases significantly to 37% (See Table 4, first column, first row). Furthermore, Group 3, like Group 1, except having indeed children in the household indicates a share of the inequality of 9% using the conventional Index 1. Using Index 2, the contribution of this group increases significantly to 24%, even though its share in the population is only 9%. Group 1 and 3 together comprise 12% of the population but contribute 35% of the inequality using Index 1 and 61% using Index 2 (See Table 4, first column).

As the sensitivity to inequality increases, i.e. FGT(0) is increased to FGT(1) and FGT(2), respectively. With FGT(2), Group 1 and 3 contribute half of all inequality using Index 1 and 86% using Index 2. Thus one can conclude that Index 2 identifies much larger (at times, almost twice the size) contributions to inequality for these two problem groups.

Conversely, when one examines those persons in Group 4, having below median income, not employed, with children in the household and 30 years or younger, one finds the opposite result. Although the group size is 28% of the sample, they contribute only 7% (Index 1) and 5% (Index 2) respectively. With FGT(2), this effect is strengthened, such that Index 1 suggests a contribution of 8% and Index 2

a mere 1%.

Examining Groups 5–8, for those lower income persons in employment, one notices immediately the profound effect of employment on social inclusion. For FGT(0), these groups sum to around 38% using Index 1, whereas using Index 2, these are all very close to zero. As the contribution of employment to life satisfaction is so large, the weight on employment in the social inclusion Index 2 is accordingly large, and thus these groups using Index 2 are considered to be more *included* than otherwise thought. For FGT(2), Index 1 suggests still a 15% contribution, whereas Index 2 is close to zero.

Similarly for Groups 13–16, those persons in employment, but in the higher income range, we see a familiar pattern. With FGT(0), the combined contribution is about 5% using Index 1. Using Index 2, this is close to zero. Only with FGT(2) is the sum for Index 1 similar to Index 2, being close to zero.

#### 4.4 Persistence of Deprivation

To examine the time dimension of social deprivation, we extend the analysis to include potential persistence of deprivation (defined to be “social exclusion”) and compare the two measures of social inclusion, Index 1 and Index 2.

The starting population in 2001 is examined in the following five years. A dummy dependent variable is created, such that each person has a one if he is in 2001 and 2002 “socially deprived” and zero otherwise. We regress this dependent variable on explanatory variables from 2001. This is extended all the way to a 5 year forward looking model, such that the last dependent variable takes on the value one if a person has been “socially deprived” in each and every year 2001–2005 and zero otherwise. Thus in all cases, we use the same explanatory variables from 2001 but vary the dependent variable, depending on the time horizon. This will allow us to answer the question how current status variables will affect each individuals risk of “persistent social deprivation” or in other words, “social exclusion”.

We originally have defined social deprivation in the previous discussion as being below the threshold of 50% of the median social inclusion index. However, seen over a longer time period of say five years, the number of persistent cases dwindles

rapidly. Thus for the dynamic analysis, we allow a slightly looser definition of social deprivation by defining the threshold to be 75% of the median index value. We compare Index 1 to Index 2.

In Table 5 for Index 1, the second column displays the percentage of persons being socially deprived in 2001 and remaining socially deprived until that year. Thus some 12% were socially deprived in 2001 *and* 2002. By 2003, those that had remained socially deprived that had started in 2001, had dropped to 10% followed by 8% up to 2004. By 2005, only 6.5% remained socially deprived over this entire time period. Thus if we define social exclusion as those having remained socially deprived over 5 years, then roughly half of those originally socially deprived in 2001 and 2002 became longer term socially excluded by 2005.

In Table 5 for Index 2, the last column displays the percentage of persons being socially deprived in 2001 and remaining socially until that year. Thus in 2001 and 2002, only 6% (about half of Index 1) were socially deprived. By 2004, those that had remained socially deprived since 2001, had dropped to 3%. By 2005, around 2.6 percentage points of the original 5% remained socially deprived. Thus if we define social exclusion as those having remained socially deprived over 5 years, then half of those originally socially deprived in 2001 and 2002 became socially excluded. In general, Index 2 indicates a much lower level of social deprivation in all years, leading to half as much social exclusion over time, compared to Index 1.

Examining the year-to-year transitions in and out of deprivation, Index 1 displays around 5–6% yearly of transitions into deprivation. This remains fairly constant over all years of the analysis. Around one-fourth to one-third of those already deprived experience transitions out of deprivation year-to-year. Index 2 looks similar, however with lower levels of initial deprivation (8.37% as opposed to 16.04%). Also the year-to-year transitions into deprivation are typically 1–2 percentage points lower than that of Index 1, whilst the transitions out of deprivation are shown to be around 5 percentage points higher per year on average.

In Table 6 for Index 1, using Probit analysis, the marginal effect of being a foreigner increases the prevalence of social deprivation in the first year by 0.5 percentage points. The effect of being a foreigner in 2001 on having been socially deprived for

each and every year until 2005 reduces to 0.2%. By far the largest negative factor reducing social deprivation and social exclusion is employment. Not being unemployed in 2001 reduces the probability by 26 percentage points that a person will be socially deprived in 2001 and 2002. The probability of being socially deprived in all 5 years (2001–2005) due to not being unemployed in 2001 is near zero. The same is true about subjective domicile size. Those who feel they have adequate apartment sizes have strongly reduced social deprivation levels. For 2001–2002, adequate apartment size reduces deprivation by 18 percentage points. The 2001 effect felt on 2005 status is reduced to near zero. Having lower amounts of education in the same time period reduces social exclusion in the current and also strongly in following years. The 2001 effect of having lower education levels is still strong at  $-11\%$  in 2005.

In Table 6 for Index 2, the effect of being a foreigner (reducing social deprivation) in 2001–2002 is given at  $-0.2$  percentage points reducing to about zero for having remained constantly deprived until 2005. The initial effect of employment in 2001–2002 is much higher at  $-0.443$  percentage points but this effects also tapers off, such that the effect of having employment in 2001 on permanent deprived status since 2001 until 2005 is around  $-1$  percentage point. Education does not play nearly as an important role as in Index 1. The dominating effect for Index 2 clearly comes from employment status, which not only has a very large impact in the current year, but in many years to come.

## 5 Conclusions

This paper contributes to the existing literature on social deprivation and exclusion of immigrants in Germany. An innovative weighting scheme was implemented that weights components of social inclusion by their subjective contribution to an overall measure of life satisfaction. Our findings suggest that when using a conventional definition of the social inclusion index typically used in the literature, immigrants appear to experience a significant degree of social deprivation, confirming much of the economic literature examining the economic assimilation of immigrants. However,

augmenting the social inclusion model with more intuitive weights for their respective component parts as defined by their subjective valuation in a life satisfaction regression, we find that immigrants are on the whole as equally as “deprived” (or not) as Germans. This result is driven strongly by the disproportionately positive socio-demographic characteristics that immigrants possess and the extent to which these contribute to their life satisfaction: advantageous age and family structure and how immigrants value these characteristics.

Using the life satisfaction based weights, we find that the highest contributions to social inclusion are found in the following groups: (a) low income, not employed, having no children, and being older than 30, (b) the same as the previous, those having children in the household. Specifically, because of the very large impact on life satisfaction that lack of unemployment has, social inclusion and employment are highly correlated.

For policy makers, these are the groups (Groups 1 and 3) of the population that need to be targeted for potential interventions, amounting to approximately only 11% of the population, however contributing 61% to 87% of the inequality, depending on the FGT inequality measure used. Had one used the conventional index, one might have concluded that the contribution of these groups to inequality were only 35% to 50%.

In contrast, those low-income, not employed persons 30 and under with children in the household (Group 4) under the conventional index are thought to contribute up to 9% using the conventional index, whereas using the life satisfaction weights, this contribution is substantially lower. As this group comprises a substantial 28% of the population, this is an important finding, allowing a better targeting of the groups “in need”.

Having employment (and all the positive associated characteristics) is associated with a dramatically reduced extent of social deprivation as the weight of being employed in the life satisfaction regression is so large. This corroborates several studies’ empirical and theoretical findings on social exclusion such as Atkinson and Hills (1998). The existing life satisfaction literature has clearly demonstrated the high informational content found in subjective life satisfaction indicators. This paper

builds on the existing social deprivation literature and combines this subjective information to arrive at substantially different policy conclusions. As such, we find compelling evidence for the hypothesis that immigrants in Germany, when allowed to evaluate their own situations, find themselves just as deprived (or not) as native Germans.

Examining the dynamics of social deprivation on a year-to-year basis, we find differing policy implications comparing Index 1 and Index 2. In general, we find that defining the threshold to be 50% of the median of the distribution of social inclusion, there is very little persistent deprivation (exclusion) to speak of. Only when this definition is widened to 75% of the median of the social inclusion index, can we interpret the results meaningfully. Index 1 would suggest that there is a pure foreigner effect exacerbating longer term social exclusion, whereas Index 2 would suggest that if anything, the effect of being an immigrant is at least zero, if not positive, in reducing social exclusion. The role of employment is dramatic. Being employed in year  $t$  drastically reduces the probability of social exclusion, even in year  $t + 3$ . For Index 2, employment is the single largest dominating factor reducing social exclusion.



# Tables and Figures

**Table 1**

MEANS OF ALL VARIABLES IN 2004

Variable	GERMANS		IMMIGRANTS	
	Mean	S.D.	Mean	S.D.
General satisfaction with life	6.800	1.851	6.650	1.855
<b>(a) Financial situation</b>				
Income equivalent larger than median	0.619	0.485	0.354	0.478
Currently registered unemployed	0.065	0.246	0.118	0.323
Years of education >10	0.834	0.371	0.622	0.485
<b>(b) Basic necessities</b>				
Car in household	0.848	0.358	0.773	0.418
Telephone	0.944	0.228	0.918	0.273
Color TV in household	0.970	0.169	0.964	0.185
<b>(c) Housing conditions</b>				
Subjective opinion as to domicile size	0.849	0.357	0.777	0.416
Balcony/terrace	0.826	0.378	0.747	0.434
Garden/yard	0.664	0.472	0.421	0.493
<b>(d) Consumer durables</b>				
PC without modem/ISDN	0.647	0.477	0.569	0.495
Stereo in household	0.834	0.371	0.731	0.443
Dishwasher in household	0.693	0.461	0.616	0.486
<b>(e) Health</b>				
Age	48.76	16.19	46.62	14.92
No hospital stay last year	0.871	0.335	0.883	0.321
No doctor visits last year	0.316	0.465	0.374	0.484
No work disability longer than six weeks	0.973	0.159	0.960	0.195
No handicap/not physically challenged	0.850	0.356	0.894	0.307
<b>(f) Social contact</b>				
Children below 16 years in household	0.255	0.436	0.417	0.493
Married	0.577	0.493	0.755	0.430
Attending cultural events	0.120	0.325	0.047	0.213
Attending cinema, dancing, sporting events	0.210	0.407	0.140	0.347
Attending church, religious events	0.188	0.390	0.295	0.456
Participating actively in sports	0.446	0.497	0.262	0.440
N	10,619		2,002	

NOTE.—Weighted numbers based on weights provided by the SOEP.

**Table 2**

DETERMINANTS OF GENERAL LIFE SATISFACTION – OLS WITH FIXED EFFECTS

	NATIVES		IMMIGRANTS	
	Coefficient	S.E.	Coefficient	S.E.
<b>Model A: 1984–2005</b>				
Income equivalent larger than median	0.184***	0.009	0.159***	0.018
Currently <b>NOT</b> registered unemployed	0.791***	0.018	0.789***	0.028
Education ≤ 10 years	0.055***	0.014	0.111***	0.027
Subjective opinion as to domicile size	0.157***	0.011	0.195***	0.018
Age ≤ 30 years	0.301***	0.012	0.388***	0.025
Children below 16 years in household	0.101***	0.010	0.225***	0.020
Married	0.196***	0.012	0.123***	0.029
Constant	5.979***	0.026	5.746***	0.044
N	187,936		49,397	
<b>Model B: 2000, 2002 and 2004</b>				
<b>(a) Financial situation</b>				
Income equivalent larger than median	0.229***	0.022	0.177***	0.047
Currently <b>NOT</b> registered unemployed	0.803***	0.043	0.861***	0.069
Education ≤ 10 years	0.178***	0.033	0.170***	0.054
<b>(b) Basic necessities</b>				
Car in household	0.140***	0.037	0.424***	0.065
Telephone	0.194***	0.051	0.333***	0.089
<b>NO</b> color TV in household	0.097	0.066	0.101	0.125
<b>(c) Housing conditions</b>				
Subjective opinion as to domicile size	0.201***	0.026	0.166***	0.049
Balcony/terrace	0.096***	0.030	0.113**	0.055
Garden/yard	0.097***	0.026	0.158***	0.052
<b>(d) Consumer durables</b>				
<b>NO</b> PC (without modem/ISDN)	0.128***	0.023	0.110**	0.046
Stereo in household	0.213***	0.029	0.235***	0.050
Dishwasher in household	0.028	0.026	0.018	0.048
<b>(e) Health</b>				
Age ≤ 30 years	0.263***	0.032	0.348***	0.066
No hospital stay last year	0.154***	0.027	0.213***	0.060
No doctor visits last year	0.143***	0.019	0.165***	0.042
No work disability longer than six weeks	0.409***	0.050	0.105	0.092
No handicap/not physically challenged	0.644***	0.034	0.613***	0.080
<b>(f) Social contact</b>				
Children below 16 years in household	0.002	0.025	0.082	0.052
Married	0.223***	0.027	0.155**	0.067
Attending cultural events	0.259***	0.026	0.220***	0.081
Attending cinema, dancing, sporting events	0.046*	0.024	0.063	0.063
Attending church, religious events	0.210***	0.026	0.120**	0.047
Participating actively in sports	0.120***	0.020	0.093*	0.054
Constant	3.662***	0.095	3.542***	0.173
N	30,939		6,345	

NOTE.–Some of the reported dummy variables had to be redefined, because the calculation of social exclusion indices is exclusively based on positive parameter estimates.

\*  $p < .10$ .

\*\*  $p < .05$ .

\*\*\*  $p < .01$ .

**Table 3**

DECOMPOSITION OF INDEX DISTRIBUTIONS (MEDIAN  $\times$  0.5) – INDEX 1, 1984–2005

	Groups				FGT(0)	FGT(1)	FGT(2)	N
	I	E	C	A				
1.	–	–	–	–	26.374*** (1.042)	31.665*** (1.370)	38.806*** (1.802)	3,838 [1.6%]
2.	–	–	–	A	9.276*** (0.508)	15.772*** (0.835)	20.280*** (1.032)	1,364 [0.5%]
3.	–	–	C	–	8.695*** (0.588)	11.747*** (0.998)	11.138*** (1.331)	2,778 [1.1%]
4.	–	–	C	A	7.330*** (0.607)	8.320*** (0.883)	8.515*** (1.106)	1,337 [0.5%]
5.	–	E	–	–	12.473*** (0.786)	10.296*** (0.881)	8.963*** (0.794)	41,144 [17.2%]
6.	–	E	–	A	10.919*** (0.328)	11.403*** (0.344)	6.763*** (0.243)	13,084 [5.5%]
7.	–	E	C	–	3.791*** (0.401)	2.835*** (0.327)	1.242*** (0.158)	34,783 [14.6%]
8.	–	E	C	A	11.652*** (0.290)	2.389*** (0.154)	0.353*** (0.030)	13,894 [5.8%]
9.	I	–	–	–	2.098*** (0.239)	2.146*** (0.262)	1.731*** (0.273)	1,771 [0.7%]
10.	I	–	–	A	1.706*** (0.203)	1.337*** (0.144)	1.336*** (0.159)	669 [0.2%]
11.	I	–	C	–	0.215*** (0.063)	0.176*** (0.062)	0.152** (0.065)	594 [0.2%]
12.	I	–	C	A	0.392*** (0.061)	0.403*** (0.101)	0.313*** (0.082)	230 [0.1%]
13.	I	E	–	–	3.450*** (0.328)	1.180*** (0.103)	0.370*** (0.036)	67,855 [28.5%]
14.	I	E	–	A	1.630*** (0.161)	0.331*** (0.035)	0.038*** (0.004)	20,507 [8.6%]
15.	I	E	C	–	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	28,421 [11.9%]
16.	I	E	C	A	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	5,764 [2.4%]

NOTE.–Calculation of indices based on OLS fixed effects estimates. The following categories were considered: income equivalent larger than median (I), Employment (E), children below 16 years in household (C), age  $\leq$  30 years (A). Standard errors in parentheses. Number of person-year observations: 246,817. Share of subgroup in full sample given in brackets.

\*  $p < .10$ .

\*\*  $p < .05$ .

\*\*\*  $p < .01$ .

**Table 4**

DECOMPOSITION OF INDEX DISTRIBUTION (MEDIAN  $\times$  0.5) – INDEX 2, 1984–2005

	Groups				FGT(0)	FGT(1)	FGT(2)	N
	I	E	C	A				
1.	-	-	-	-	37.244*** (0.714)	55.725*** (0.867)	67.641*** (1.082)	3,838 [1.6%]
2.	-	-	-	A	10.869*** (0.392)	7.980*** (0.302)	5.128*** (0.224)	1,364 [0.5%]
3.	-	-	C	-	23.950*** (0.720)	22.197*** (0.695)	18.839*** (0.888)	2,778 [1.1%]
4.	-	-	C	A	5.745*** (0.713)	2.395*** (0.310)	1.140*** (0.160)	1,337 [0.5%]
5.	-	E	-	-	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	41,144 [17.2%]
6.	-	E	-	A	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	13,084 [5.5%]
7.	-	E	C	-	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	34,783 [14.6%]
8.	-	E	C	A	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	13,894 [5.8%]
9.	I	-	-	-	17.186*** (0.413)	10.069*** (0.244)	6.539*** (0.194)	1,771 [0.7%]
10.	I	-	-	A	2.416*** (0.278)	0.529*** (0.053)	0.183*** (0.019)	669 [0.2%]
11.	I	-	C	-	2.213*** (0.207)	1.050*** (0.096)	0.521*** (0.061)	594 [0.2%]
12.	I	-	C	A	0.378*** (0.092)	0.055*** (0.017)	0.009*** (0.003)	230 [0.1%]
13.	I	E	-	-	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	67,855 [28.5%]
14.	I	E	-	A	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	20,507 [8.6%]
15.	I	E	C	-	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	28,421 [11.9%]
16.	I	E	C	A	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	5,764 [2.4%]

NOTE.—See Note to Table 3.

**Table 5**DYNAMICS/PERSISTENCE OF DEPRIVATION: EXCLUSION (MEDIAN  $\times$  0.75), 2001–2005

	Index 1		Index 2		
	0	1	0	1	
<b>Survival Probabilities</b>					
2001:	83.96	16.04	91.63	8.37	
2001 + 02:	88.18	11.72	94.27	5.73	
2001 + 02 + 03:	90.43	9.57	95.65	4.35	
2001 + 02 + 03 + 04:	92.24	7.76	96.67	3.33	
2001 + 02 + 03 + 04 + 05:	93.49	6.51	97.37	2.63	
<b>Transition Probabilities</b>					
2001:	83.96	16.04	91.63	8.37	
2001 + 02:	0	94.96	5.04	96.25	3.75
	1	26.90	73.10	31.58	68.42
2002 + 03:	0	94.10	5.90	95.82	4.18
	1	26.34	73.66	33.46	66.54
2003 + 04:	0	95.34	4.66	96.23	3.77
	1	32.02	67.98	37.65	62.35
2004 + 05:	0	95.45	4.55	96.44	3.56
	1	31.20	68.80	37.03	62.97

NOTE.—Weighted numbers based on weights provided by the SOEP.

**Table 6**

PERSISTENCE OF DEPRIVATION (MEDIAN  $\times$  0.75) – BINARY PROBIT ESTIMATES, 2001

	Marginal Effects			
	2001–2002	2001–2003	2001–2004	2001–2005
<b>Index 1</b>				
Immigrant	0.005** (0.002)	0.003** (0.001)	0.002* (0.001)	0.002* (0.001)
Income equivalent larger than median	-0.014*** (0.003)	-0.008*** (0.002)	-0.005*** (0.001)	-0.003*** (0.001)
Currently <b>NOT</b> registered unemployed	-0.258*** (0.042)	-0.121*** (0.028)	-0.045*** (0.013)	-0.020*** (0.007)
Education $\leq$ 10 years	-0.207*** (0.015)	-0.159*** (0.013)	-0.141*** (0.012)	-0.110*** (0.011)
Subjective opinion as to domicile size	-0.177*** (0.016)	-0.082*** (0.011)	-0.047*** (0.008)	-0.025*** (0.006)
Age $\leq$ 30 years	-0.005*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)
Children below 16 years in household	-0.005*** (0.001)	-0.003*** (0.001)	-0.002*** (0.001)	-0.001*** (0.000)
Married	-0.099*** (0.008)	-0.076*** (0.007)	-0.062*** (0.006)	-0.051*** (0.005)
N	12,660	12,660	12,660	12,660
<b>Index 2</b>				
Immigrant	-0.002*** (0.001)	-0.002*** (0.001)	-0.001*** (0.000)	-0.000* (0.000)
Income equivalent larger than median	-0.012*** (0.002)	-0.010*** (0.002)	-0.006*** (0.002)	-0.003*** (0.001)
Currently <b>NOT</b> registered unemployed	-0.425*** (0.044)	-0.174*** (0.032)	-0.059*** (0.017)	-0.014** (0.007)
Education $\leq$ 10 years	-0.026*** (0.005)	-0.020*** (0.004)	-0.014*** (0.003)	-0.007*** (0.002)
Subjective opinion as to domicile size	-0.012*** (0.003)	-0.008*** (0.002)	-0.003** (0.001)	-0.001* (0.001)
Age $\leq$ 30 years	-0.004*** (0.001)	-0.003*** (0.001)	-0.002*** (0.001)	-0.001** (0.000)
Children below 16 years in household	-0.003*** (0.001)	-0.002*** (0.001)	-0.001*** (0.000)	-0.000* (0.000)
Married	-0.016*** (0.003)	-0.013*** (0.002)	-0.009*** (0.002)	-0.005*** (0.002)
N	12,660	12,660	12,660	12,660

NOTE.—Weighted Probit estimates based on weights provided by the SOEP. Standard errors in parentheses.

- \*  $p < .10$ .
- \*\*  $p < .05$ .
- \*\*\*  $p < .01$ .

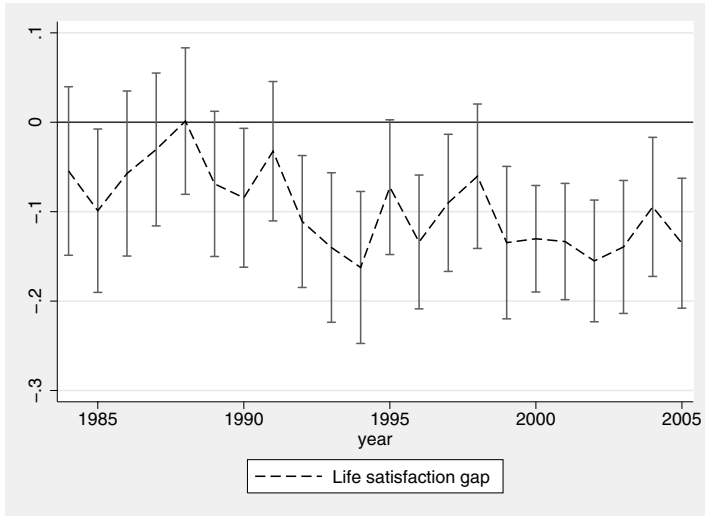


FIGURE 1: Life satisfaction gap 1984–2005

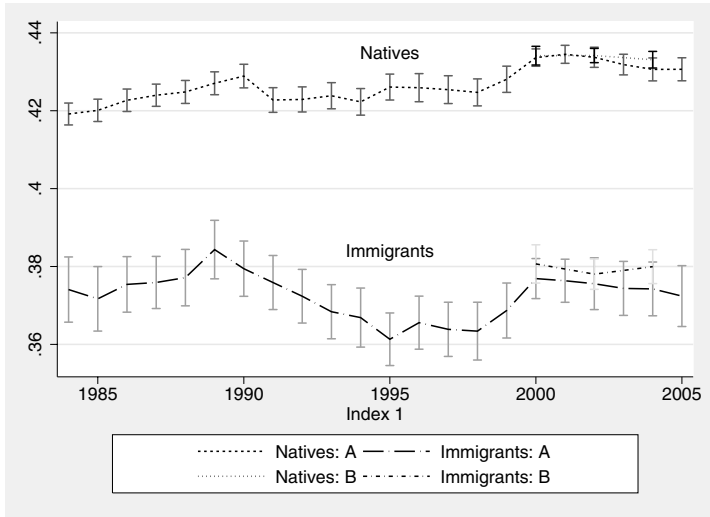


FIGURE 2: Index 1 – Model A: 1984–2005, Model B: 2000, 2002, 2004



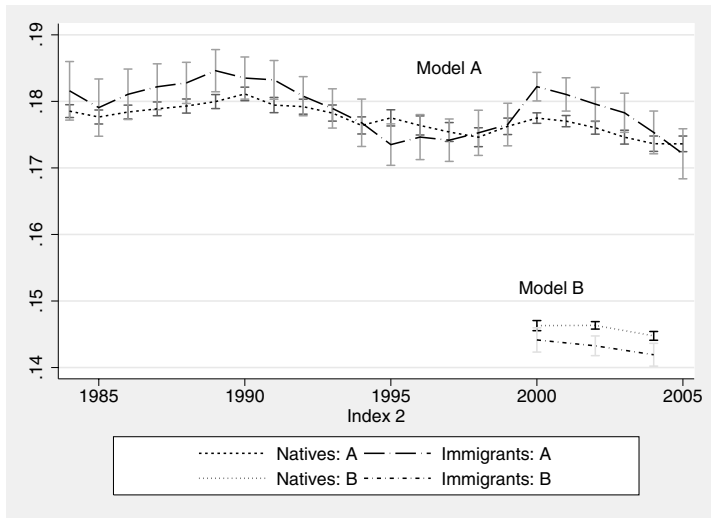


FIGURE 3: Index 2 – Model A: 1984–2005, Model B: 2000, 2002, 2004

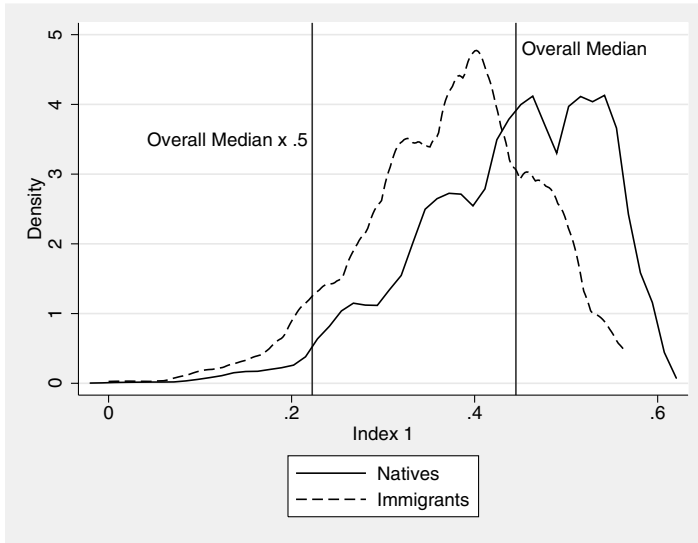


FIGURE 4: Distribution of Index 1 – Model A: 1984–2005

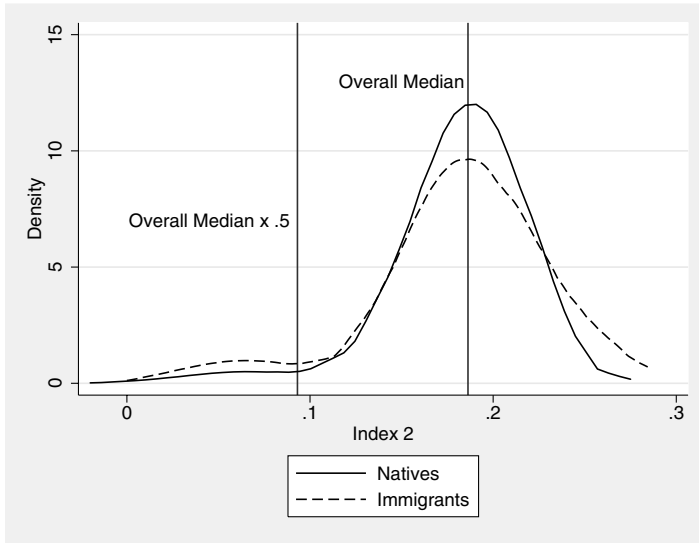


FIGURE 5: Distribution of Index 2 – Model A: 1984–2005

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# Appendix

**Table A1**

DEFINITION OF VARIABLES

<b>Variable</b>	<b>Definition</b>
<b>1984–2005</b>	
General satisfaction with life	Satisfaction with life in general (scale 0 to 10); 0: “completely dissatisfied”, 10: “completely satisfied”.
Income equivalent larger than median	0/1-variable; 1 if income equivalent of current monthly household net income (in real 2000 Euro) is larger than the median; 0 otherwise.
Currently registered unemployed	0/1-variable; 1 if respondent is currently registered unemployed; 0 otherwise.
Years of education >10	0/1-variable; 1 if respondents’ education is above 10 years; 0 otherwise.
Age $\leq$ 30 years	0/1-variable; 1 if age of respondent less or equal to 30 years; 0 otherwise.
Subjective opinion as to domicile size	0/1-variable; 1 if living space is just right or too large; 0 otherwise.
Married	0/1-variable; 1 if respondent is married (not single, widowed or divorced); 0 otherwise.
Children below 16 years in household	0/1-variable; 1 if children below 16 years live in household; 0 otherwise.



**Table A1 Continued**

## DEFINITION OF VARIABLES

<b>Variable</b>	<b>Definition</b>
<b>2000, 2002 and 2004</b>	
Car in household	0/1-variable; 1 if car in household; 0 otherwise.
Telephone	0/1-variable; 1 if telephone in household; 0 otherwise.
Color TV in household	0/1-variable; 1 if color TV in household; 0 otherwise.
Balcony/terrace	0/1-variable; 1 if balcony and/or terrace in household; 0 otherwise.
Garden/yard	0/1-variable; 1 if garden and/or yard in household; 0 otherwise.
PC without modem/ISDN	0/1-variable; 1 if PC (without modem/ISDN) in household; 0 otherwise.
Stereo in household	0/1-variable; 1 if stereo in household; 0 otherwise.
Dishwasher in household	0/1-variable; 1 if dishwasher in household; 0 otherwise.
No hospital stay last year	0/1-variable; 1 if no hospital stay last year; 0 otherwise.
No doctor visits last year	0/1-variable; 1 if no doctor visits last year; 0 otherwise.
No work disability longer than six weeks	0/1-variable; 1 if no work disability longer than six weeks last year; 0 otherwise.
No handicap/not physically challenged	0/1-variable; 1 if not handicapped/not physically challenged; 0 otherwise.
Attending cultural events	0/1-variable; 1 if respondent attends cultural events at least once a month; 0 otherwise.
Attending cinema, dancing, sporting events	0/1-variable; 1 if respondent attends cinema, dancing, sporting events at least once a month; 0 otherwise.
Attending church, religious events	0/1-variable; 1 if respondent attends church, religious events at least once a month; 0 otherwise.
Participating actively in sports	0/1-variable; 1 if respondent participates actively in sports; 0 otherwise.