

Home-ownership and Economic Performance of Immigrants in Germany

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February 2006

Preliminary draft

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Abstract. This paper analyzes the home-ownership gap between native and immigrant households in Germany, paying particular attention to the economic performance of immigrant households over time. A double cohort method is applied to investigate the effect of the duration of German residence on the home-ownership probability of immigrant households. The estimates indicate that immigrant households are less likely to own their primary residence than comparable natives. Since duration effects are only significant for immigrant households residing in Germany for at least 30 years, the empirical findings suggest a slow assimilation process in home-ownership between native and immigrant households.

JEL-Classification: F22, I31, R21.

Keywords: Home-ownership, International Migration, Economic Performance.

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1 Introduction

The ability of immigrants to integrate successfully into the economic, social, and political life of their host country depends largely on their economic performance. Starting with the seminal work of Chiswick (1978), numerous studies have investigated the assimilation process of the foreign-born population towards the economic situation of comparable natives. The majority of these studies focuses on the assimilation of labor market related outcomes, such as wages and employment, which do not necessarily reflect the long-term economic and social well-being of individuals.

In the context of home-ownership, only a few studies have generated empirical evidence for an assimilation process between immigrant and native households (Myers and Lee 1996). Home-ownership, however, is an important measure of economic assimilation. In contrast to wages, home-ownership permits inferences about the long-term integration process of immigrant minorities, since it represents an outcome of long-term economic progress and plays a key role in providing long-term financial security. Moreover, housing does not only provide direct services to a family (Wolff 1998) but may also increase life satisfaction and improve physical and psychological health (Rohe, Zandt, and McCarthy 2001). Additionally, even after controlling for income, children of home-owners are more likely to attain higher education levels than children of renters (Green and White 1997). Myers and Lee (1996) identify home-ownership as one of the most important events in the integration process of immigrants.

This paper aims at providing empirical evidence on the home-ownership gap between native and immigrant households and the economic performance of immigrant households over time using data from the German *Socio-Economic Panel* (SOEP). In this endeavor, the relative importance of the determinants of home-ownership and differences in the home-ownership probability between different groups of migrants and natives are being analyzed. Additionally, empirical evidence on the economic performance of immigrant households in Germany is generated by investigating the effect of years of residence on home-ownership, applying the empirical framework of Myers and Lee (1996).

So far, differences in the home-ownership probability between natives and ethnic minorities have been examined mainly for the US (Wachter and Megbolugbe 1992, Painter, Gabriel, and Myers 2001, Gabriel and Rosenthal 2005). Clark, Deurloo, and Dieleman (1997) compare the process of moving to home-ownership of immigrant households in Germany and the US, utilizing data from the SOEP and the *Panel Study of Income Dynamics*. They demonstrate that the marital status and the household composition as well as income and the number of earners represent decisive factors in the process of moving to home-ownership in both countries. Moreover, their results indicate that tax benefits in Germany enabled low-income families to move to home-ownership. However, Clark, Deurloo, and Dieleman (1997) do not investigate differences between native and immigrant households. Using data from the SOEP (1985-1998), Drever and Clark (2002) examine the housing conditions of immigrant households. They consider home-owners and renters to analyze the determinants of rent levels, housing types, and different adequacy of space measures. They demonstrate that the housing conditions of immigrant households remain below the conditions of native households over the sample period. In addition, they find that immigrants are more likely to move into large apartment complexes which are geographically and socially isolated.

In the context of home-ownership, empirical evidence on the economic performance of immigrant minorities in Germany, the major immigrant country in the European Union, does not exist. This is unfortunate because the home-ownership gap between natives and immigrants and the assimilation process of immigrants towards home-ownership levels of natives in Germany may differ substantially from the corresponding patterns in the US. Analyzing data from *US Censuses* and the *Current Population Survey*, Borjas (2002) finds that the home-ownership gap between native-born and immigrant households in the US increased from 14.3 percentage points in 1990 to 19.8 percentage points in 2000. During that period, the home-ownership gap between native and immigrant households in Germany declined from 26.0 to 17.4 percentage points, indicating a strong convergence in home-ownership rates between German-born and foreign-born households which might be attributable to the duration of residence of immigrant households in Germany.

From a theoretical point of view, differences in the housing demand are determined by different preferences, price levels, and income constraints. Due to self-selection and immigration policy, immigrants are not representative for the population in their host country. For that reason, preferences of immigrants may differ substantially from those of the native-born population. Housing prices which partly depend on contextual characteristics – such as the population density of the location – may have a strong influence on home-ownership probabilities. Coulson (1999) and Painter, Yang, and Yu (2003) demonstrate that the home-ownership gap between US-born and foreign-born households is attributable to the concentration of immigrant households in metropolitan areas to a large extent. Finally, since immigrants represent a highly selected group, skill differences may explain differences in the economic performance between immigrant and native households, affecting a number of socio-economic characteristics such as income and the employment status. Dustmann (1993) and Schmidt (1997) demonstrate that differences in labor market skills have a decisive impact on the wage gap between foreign-born and German-born workers. For that reason, immigrants may face higher credit barriers than natives which might lower their propensity to own the primary residence.

In the following, home-ownership disparities between native-born and foreign-born households in Germany are examined, utilizing data from the SOEP for West German households. To provide empirical evidence on the home-ownership gap between native and immigrant households in Germany, the relative importance of the determinants of home-ownership are assessed, using home-ownership as a binary dependent variable in a cross-sectional analysis. Moreover, in the context of economic performance, the cohort model of Myers and Lee (1996) – which is based on a comparison of native and immigrant households at two different points in time – is applied to isolate aging effects from duration effects.

The paper contributes to the existing migration literature in several respects. Firstly, empirical evidence on the economic integration of immigrants in Germany is generated using an indicator of well-being other than earnings and employment. The results derived from such an analysis are important for the design of long-term integration policies. Secondly, the analysis contributes to a better understanding

of the factors which influence home-ownership decisions of immigrant and native households. Thirdly, tax benefits for home-owners in Germany might facilitate low-income households in owning their primary residence (Clark, Deurloo, and Dieleman 1997). For that reason, the law on tax benefits for home-owners which was introduced in 1996 might have enabled a large number of immigrant families to acquire a house or apartment, resulting in a relatively strong residential assimilation between native and immigrant households after 1995. Therefore, particular attention is paid to the effect of the duration of German residence of immigrant households on home-ownership after 1995.

Specifically, the following research questions are addressed in this paper: Are there significant differences in the home-ownership probability between different groups of migrants and natives? Which factors determine the home-ownership probability? Do home-ownership probabilities of immigrant households converge towards home-ownership probabilities of comparable native households over time? The paper proceeds as follows. Section 2 gives a short survey of the existing literature on home-ownership of native and immigrant households. Section 3 describes the data used for the empirical analysis and explains the estimation strategy. The estimation results are presented in Section 4. Section 5 concludes.

The estimates of a binary Probit model reveal that immigrant households are less likely to own their primary residence than comparable native households, while differences in the home-ownership probability between immigrant households from different regions of origin are not significant. Moreover, the results exhibit that the probability of immigrant households to own a house or apartment is 18.1% lower than the corresponding probability of comparable German households. In addition, the estimates of the cohort model suggest that both aging effects and the years of German residence are responsible for an increase in the probability of owning the primary residence between 1984 and 1995. However, the effects of the years of residence on the home-ownership probability are insignificant in the sample period 1995-2004, indicating that tax benefits for home-owners did not contribute significantly to the long-term economic assimilation of immigrant households in Germany. Finally, since the effects of the duration of residence are only significant for im-

migrant households residing in Germany for at least 30 years, the findings suggest that the assimilation process in home-ownership between immigrant and German households is rather slow.

2 The Home-ownership Gap between Native and Immigrant Households

From a theoretical point of view, differences in the housing demand are determined by different preferences, price levels, and income constraints. Since immigrants represent a highly selected group, it seems likely that their preferences differ from those of the native-born population. However, a variety of factors may have positive or negative effects on the preferences of native and immigrant households. While immigrants might have higher preferences towards home-ownership because they are less likely to inherit houses in their host country than natives, temporary migrants who intend to return to their country of origin might prefer to rent their primary residence. For that reason, the consideration of preferences is insufficient while explaining differences in the housing demand between native and immigrant households.

Housing prices which vary across different locations may have strong effects on home-ownership probabilities. Coulson (1999), utilizing data from the *1996 Current Population Survey*, investigates home-ownership rates of Hispanic- and Asian-Americans. He demonstrates that the home-ownership rates are significantly lower for these groups than for comparable natives because they are located in areas where the cost of home-ownership is high. Borjas (2002) demonstrates that the residential location choice plays a decisive role for the home-ownership gap between U.S.-born and foreign-born households. In addition to the home-ownership gap between native and immigrant households, Borjas (2002) finds substantial differences in the housing tenure choice within the immigrant population. He demonstrates that the national origin of immigrants represents an important factor of the propensity to own a house and argues that the changing nationality mix of the immigrant population has been a driving factor of the increasing differences in home-ownership between foreign-

born and U.S.-born households. Using data from the *Public Use Microdata Sample*, Painter, Yang, and Yu (2003) derive similar results by comparing home-ownership rates of Asian-Americans and whites. They find a large variation in home-ownership rates across Asian groups and demonstrate that home-ownership disparities can be explained by the higher mobility of Asian households and their concentration in metropolitan areas to a large extent.

Due to self-selection and selective immigration policy, immigrants are neither representative for the population in the home nor for the population in the host country. For that reason, skill differences may be responsible for differences in the economic performance between immigrant and native households, impinging upon a number of socio-economic characteristics such as income and the employment status. Particularly, the accumulation of human capital represents an important determinant of home-ownership. A variety of studies have provided empirical evidence for a positive effect of the level of education attained by the household head on the home-ownership probability of the household (Alba and Logan 1992, Krivo 1995, Coulson 1999). Moreover, in the context of economic performance of immigrants in Germany, several empirical studies have examined the wage performance of immigrants (Dustmann 1993, Schmidt 1997).¹ These studies demonstrate that differences in labor market skills have a decisive influence on the wage gap between foreign-born and German-born workers.

Immigrants might face higher credit barriers than native-born individuals because of wage disparities, lack of collateral, and increased flight risk.² Gabriel and Rosenthal (2005) analyze the determinants of the home-ownership propensity using data from the *1983 to 2001 Survey of Consumer Finance*. They examine the degree to which racial gaps can be explained by differences in household attributes and the influence of credit barriers and discover that changes in socio-demographic characteristics account for most of the increase in home-ownership in the 1990s, indicating that innovation in mortgage finance and declining interest rates were not

¹Bauer, Dietz, Zimmermann, and Zwintz (2005) summarize the empirical evidence for Germany.

²In addition, Chiteji and Stafford (1999) argue that discrimination by financial institutions may partly explain why immigrants face higher credit barriers.

the primary drivers of the rise in home-ownership during the 1990s.

In addition to economic factors, life cycle theory suggests that the probability of home-ownership increases with the age of the household head. However, a nonlinear relationship between the age and the probability of owning the primary residence might exist (Alba and Logan 1992, Painter, Gabriel, and Myers 2001). Immigrant households might be less likely to own their primary residence than otherwise similar German households, since household heads with migration background are younger than German households heads.³

Finally, the household composition may have strong effects on the home-ownership probability. In particular, cultural differences between immigrant and native households may induce different effects of the marital status on the propensity of owning one's primary residence (Wilson 1979). Additionally, since immigrants tend to have more children than natives, they might have a higher preference towards home-ownership than natives. However, while analyzing home-ownership disparities between immigrant and native households, differences in the household size effects have to be taken into account. Particularly, household size effects of immigrant households may be lower than the corresponding effects of comparable natives even after controlling for income, indicating that relatively large immigrant households are less able to acquire their primary residence than native households (Wilson 1979).

3 Empirical Strategy and Data

3.1 Determinants of Home-ownership

To examine the effects of the explanatory variables on the home-ownership probability, a binary outcome variable is considered which indicates whether the observed household is the owner of the primary residence or not. Due to the binary nature of the dependent variable, a binary Probit framework is applied. To investigate the determinants of home-ownership probabilities of German and immigrant households, individual- and household-level data from the German *Socio-Economic*

³Descriptive statistics of German and immigrant household heads are presented in Appendix-Table 2.

Panel (SOEP) is utilized.⁴ The SOEP is a representative longitudinal survey including German and immigrant households residing in the old and new German states which started in 1984. In 2004, about 22,000 persons in nearly 12,000 households were sampled. In this paper, data for West-Germany is retrieved from the waves 1984 to 2004. In the empirical analysis, immigrants are defined as foreign-born individuals who immigrated to Germany since 1948 (including foreign-born persons who received German citizenship after immigration). This definition does not comprise ethnic migrants (i.e. persons who possess German nationality since birth and immigrated to Germany) or the second generation of immigrants (persons with foreign nationality who were born in Germany).

After restricting the cross-sectional sample of 2004 to household heads and excluding all observations with missing values on one of the variables used in the analysis, the data set of the first model specification contains 3,607 home-owners and 3,937 renters. The following underlying relationship is assumed:

$$H_i^* = \alpha_0 + M_i(\mathbf{C}_i\alpha_1 + \mathbf{D}_i\alpha_2 + \mathbf{X}_i\alpha_3) + \mathbf{X}_i\alpha_4 + \varepsilon_i, \quad i = 1, \dots, N, \quad (1)$$

such that only a binary outcome for home-ownership (H) is observed,

$$H_i = 1, \text{ if } H_i^* > 0, \text{ and}$$

$$H_i = 0, \text{ if } H_i^* \leq 0, \quad i = 1, \dots, N.$$

M represents a dummy-variable for immigrant households, \mathbf{C} is a vector of country of origin dummies, and \mathbf{D} indicates the year of immigration of the respective immigration cohort. The vector α contains the parameters to be estimated. The

⁴The 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 SOEP Menu v2.0 (Jul 2005) for Stata(R). SOEP Menu was written by Dr. John P. Haisken-DeNew (john@soepmenu.de). The following authors supplied SOEP Menu Plugins used to ensure longitudinal consistency, John P. Haisken-DeNew - h2805x h2806x h2817x p2222x p2282x p2291x p2292x p3468x p3469x p3482x, Markus Hahn and John P. Haisken-DeNew (GENERATED) - h2812x h2813x h2814x p3475x p4045x p4057x. The SOEP Menu generated DO file to retrieve the SOEP data used here and any SOEP Menu Plugins are available upon request. Any data or computational errors in this paper are my own. (Haisken-DeNew 2005) describes SOEP Menu in detail.

error term ε is assumed to be distributed normal, $\varepsilon \sim N(0, \sigma_\varepsilon^2)$. The explanatory variables \mathbf{X} comprise the following sets of variables:⁵

- a) *Socio-economic characteristics*: education, employment status and income.
- b) *Demographic characteristics*: indicators for age levels and gender.
- c) *Household composition characteristics*: marital status and household size.
- d) *Contextual factors*: district size dummies, residential area characteristics and housing types.

Socio-economic, demographic, and household composition characteristics represent individual-specific explanatory variables which are usually utilized in empirical investigations on home-ownership (Wilson 1979, Coulson 1999). Indicator variables for different age levels are considered because the relationship between the age of the household head and one of the outcome variables might be nonlinear. In order to investigate possible effects of the household composition, the household size and indicator variables for the marital status are included in the regression equation.

Contextual factors control for regional disparities, neighborhood characteristics and variations in the type of housing which might influence the housing demand. Since the SOEP does not include information about regional market prices of proprietary and since housing prices usually depend on the population density of the location, district size information are used as proxy variables for housing prices. Residential area characteristics comprise information about properties of the place of residence (such as old, new, or commercial residential area) and housing type information exhibit whether the observed household lives in a building with at least three apartment units or in a high rise.

Since a nonlinear relationship between the duration of stay of the immigrant population and the respective dependent variables may be expected, equation (1) includes year of immigration dummies, indicating whether the observed household immigrated before 1964, between 1964 and 1973 or between 1974 and 1983. Native and immigrant households who arrived after 1983 represent the control category.

⁵Appendix-Table 1 contains a description of all variables.

Finally, an interacted model is estimated to investigate differences in the model parameters between natives and immigrants.

3.2 Descriptive Statistics

Figure 1 reports the home-ownership rates of foreign-born households from different periods of immigration and compares them to the home-ownership rates of the native-born population. While home-ownership rates of native households are relatively stable over the sample period, the rates of immigrant households are increasing, indicating a convergence of foreign-born households towards the long-run economic situation of native households over time. In 1984, the home-ownership rate of immigrant households who arrived before 1964 is 16.0 percentage points higher than the rate of the immigration cohorts who arrived after 1964. Although the home-ownership rate of the more established immigration cohort has already reached a relatively high level in 1984 (26.1%), it increases to 40.1% in 1995, indicating that an adaption of average immigrant households to the long-term economic situation of the native-born population takes about 30 years. While the home-ownership rate of more established immigrant households remains on a relatively stable level after 1995, more recent immigrant households enhance their home-ownership rate by 11.3 percentage points between 1995 and 2004.

Figure 2 includes the home-ownership rates of immigrant households by age groups which indicate that aging effects may have a substantial influence on the home-ownership probability, with older immigrant household heads being more likely to own their primary residence than younger immigrant household heads. Moreover, the descriptive statistics exhibit substantial differences in the home-ownership patterns between the sample periods before and after 1995. Particularly, while the home-ownership rate of immigrant household heads between 18 and 45 years rises from 12.5% to 25.3% between 1984 and 1995, it drops again to 20.7% in 2004. In contrast, the home-ownership rate of older immigrants rises moderately by 6.3% over the period 1984-1995 and increases from 25.3% in 1995 to 35.5% in 2004.

In the empirical analysis, the structural change of the home-ownership pattern after 1995 is taken into account for several reasons. Firstly, both Figure 1 and 2

indicate substantial differences in the home-ownership rate of different immigration and age cohorts before and after 1995. Secondly, structural differences might be partly attributable to a change in the sample design, because two different subsamples of immigrant households which started in 1994 and 1995 were appended to the sample of the SOEP (Frick and Haisken-DeNew 2005). Thirdly, the law on tax benefits for home-owners which was introduced in 1996 might have had an effect on the capacity of immigrant households to acquire their primary residence. Consequently, the estimates obtained by cross-sectional data of the years 1984 and 1995 are compared to the estimates of the years 1995 and 2004 to analyze the assimilation process of immigrant households in the two sample periods.

The home-ownership rates by age and period of immigration are presented in Table 1. Similar to Figure 1, the sample means in Table 1 denote that home-ownership rates have increased over the sample period for both natives and immigrants. Dividing the sample into household heads aged below and above 45 years reveals that home-ownership rates of immigrant and native households differ substantially between age groups, with older household heads having higher home-ownership rates than younger household heads. Moreover, comparing different migration cohorts, it turns out that more established immigrants seem to be more likely to own their primary residence than recent immigrants. In addition, dividing the sample of immigrant households into two age groups exhibits substantial differences between young and old household heads at different points in time. These results highlight the necessity to take into account both structural changes in the housing market and changes in the age profile of immigrant and native households over time while analyzing the effect of immigrants' duration of residence in the host country on the home-ownership probability. For that reason, particular attention will be paid to differences between age, period, and duration effects in the empirical part of this paper.

3.3 Economic Performance of Immigrants

A number of studies have investigated the economic performance of immigrants over time, focusing on labor market related outcomes such as wages and employment sta-

tus. Utilizing data from the *1970 Census of Population*, Chiswick (1978) estimates a human capital earnings function in which he includes the years of schooling and quadratic functions of labor market experience and an interaction between a migrant dummy and the number of years since migration. The approach proposed by Chiswick (1978) was applied in numerous studies in the context of home-ownership (Alba and Logan 1992, Coulson 1999, Painter, Yang, and Yu 2003) although the coefficient of the years since migration only represents the difference between immigrants with longer and shorter durations of stay in the host country at a certain point in time rather than a growth in immigrants' home-ownership over time.

In his work on earnings assimilation of immigrants, Borjas (1985) demonstrates that the cross-sectional estimate of the parameter of years since migration proposed by Chiswick (1978) implicitly assumes that the average socio-economic characteristics of successive immigration cohorts are time-invariant. Comparing data from the *1970 and 1980 US censuses*, Borjas (1985) finds that the earnings growth of immigrant workers is smaller than the growth predicted by a cross-sectional analysis. He demonstrates that when comparing more established and recent immigrants in a cross-section regression the duration effect is exaggerated.

However, the model proposed by Borjas (1985) implicitly assumes that an age profile observed at one point in time defines the future path of a cohort as it becomes older (Myers and Lee 1998). Since the age profile in Borjas' model is derived from the cross-sectional age, his model does not permit a variation of age profiles at different points in time. In the context of home-ownership, such an assumption implies, for example, that the average housing demand of 60-year-olds in 1990 equals that of 60-year-olds in 1950 (Myers, Megbolugbe, and Lee 1998). Pitkin and Myers (1994) demonstrate that neglecting these profiles may lead to biased results in the context of housing demand, caused by differences in the productivity or the permanent income of different generations.

In the following, the empirical framework developed by Myers and Lee (1996) is applied to identify age, period, and cohort effects separately. They propose a *dual cohort analysis* of home-ownership rates which permits a comparison of age-adjusted immigrant cohorts in relation to natives who are at the same stage of the

life cycle. Comparing the *1980 and 1990 Public Use Microdata Samples*, Myers and Lee (1996) estimate the change over time for immigrant and native households to interpret differences between the two groups as net of period change. Since aging and period effects are represented by changes over time for native households, differences between immigrant and native households of the same birth cohort may be interpreted as duration effects, net of period and aging effects.

The empirical framework of Myers and Lee (1996) can be extended in two respects. Firstly, Myers and Lee (1996) do not consider the fact that the relative importance of the determinants of home-ownership might differ substantially between immigrant and native households (Wilson 1979). These differences can be taken into account by including interaction terms between the control variables and a migrant dummy into the model. Secondly, panel data may be used to carry out a longitudinal analysis of changes in the home-ownership status of immigrant and native households. Since panel data suffer from attrition that renders the sample less representative, longitudinal weights have to be taken into account to adjust the longitudinal sample for panel attrition. These weights can be generated by the use of staying probabilities provided by the SOEP (Frick and Haisken-DeNew 2005). Consequently, both longitudinal and cross-sectional samples can be considered in the empirical analysis. However, the estimates obtained by the longitudinal analysis do not differ substantially from those of the cross-sectional analysis but turn out to be less reliable over a long sample period. For that reason, the empirical analysis of this paper focuses on the estimates obtained by the comparison of cross-sectional samples.⁶ Consequently, the following empirical model which is based on a comparison of cross-sectional samples of the years $t_1 = \{1984, 1995\}$ and $t_2 = \{1995, 2004\}$ can be derived:

$$\begin{aligned}
 H_{it}^* &= \mu + \beta_0 T_{it} + \beta_1 \tilde{\mathbf{X}}_{it} + \sum_j \beta_{2j} Y_{ij} + \sum_j \beta_{3j} Y_{ij} T_{it} \\
 &+ m_i \left[\gamma_1 \tilde{\mathbf{X}}_{it} + \gamma_2 Z_i + \gamma_3 Z_i T_{it} + \sum_j \gamma_{4j} Y_{ij} Z_i \right] + \eta_{it}, \quad i = 1, \dots, N,
 \end{aligned} \tag{2}$$

where $t = t_1$ or $t = t_2$. Again, only $H = 1$, if $H^* > 0$, and $H = 0$, if $H^* \leq 0$ can be

⁶The estimates of the longitudinal analysis are available upon request.

observed. T represents a year indicator, denoting structural differences between the decades, $T = \{1 \text{ if } t = t_1 \text{ and year} = 1995 \mid t = t_2 \text{ and year} = 2004; 0 \text{ otherwise}\}$. The vector \mathbf{Y} comprises birth cohort dummies of different age groups. The following age categories are used: $j = (20 - 44, 45 - 64)$ in 1984; with each birth cohort eleven years older in 1995. Similarly, the age cohorts in the second sample period are $j = (20 - 44, 45 - 64)$ in 1995 and nine years older in 2004. In both periods, the reference category is defined as the cohort above 64 years. In equation (2), $\tilde{\mathbf{X}}$ represents nearly the same control vector of socio-economic, demographic, and household composition characteristics as defined in equation (1). In contrast to the vector \mathbf{X} given in equation (1), $\tilde{\mathbf{X}}$ does not contain indicator variables for different age levels. The parameter vector β_3 represents the effects of the interaction terms between year and birth cohort dummies. Immigration cohort dummies which exhibit the period of immigration are included in vector Z_k with $k = (\text{pre-1964}, 1964 - 1983)$. γ_3 and γ_4 reflect the effects of immigration cohorts at different points in time and at different stages of their life cycle, respectively. The sample is restricted to foreign-born households who immigrated to Germany before 1984. After excluding all observations with missing values on one of the variables used in the analysis, the sample of the years 1984 and 1995 contains 8,389 household-year observations of 4,306 native and 1,214 immigrant households, while the sample of the cohorts surveyed in 1995 and 2004 include 11,554 household-year observations of 7,793 native and 1,107 immigrant households.

4 Results

This section reports the estimates from different specifications of the binary Probit models (1) and (2). Table 2 reports the marginal effects and its associated standard errors of four different model specifications of equation (1). The marginal effects represent changes of the probability of a household to own a house or apartment given a unit change in the respective regressors, holding all other regressors constant. To derive a marginal effect for categorical variables, a discrete change from 0 to 1 is considered. Differences within the heterogeneous group of immigrants are

considered in specifications (1a) and (1b) by including indicator variables for different source regions. The marginal effects of these indicators denote that immigrant households are significantly less likely to own their primary residence than comparable native households. Since the results of an adjusted Wald test reveal that the effects of different source region indicators are not significantly different from each other, the factors are summarized to a single indicator variable for immigrant households in specifications (2a) and (2b). The marginal effect of the immigrant dummy in specification (2a) indicates that the home-ownership probability of immigrant households is 18.1% lower than that of comparable native households. This effect becomes insignificant after controlling for interaction terms of immigrant households, suggesting that the home-ownership gap may be explained by differences in the marginal effects between native and immigrant households. Additionally, differences between different immigration cohorts are rendered significant after controlling for additional interaction terms of immigrant households. The marginal effects in specification (2b) denote that the home-ownership probability of more established immigration cohorts is higher than that of more recent immigrants.

The first specification of Table 2 includes socioeconomic, demographic and household composition characteristics as well as interaction terms of the region of origin and the immigration cohort of foreign-born households. In specification (1b), district size effects and residential area characteristics are taken into account additionally. The effects of different housing types on the home-ownership probability are considered in specifications (2a) and (2b). Furthermore, specification (2b) contains interaction terms of immigrant households. Independent of the model specification, there is evidence for a positive relationship between the age of the household head and the home-ownership probability. However, the differences between the marginal effects of the cohorts between 55-64 years and above 65 years are relatively small and the oldest cohort comprises more age groups than younger age cohorts, suggesting that home-ownership probabilities are increasing at a declining rate. Additionally, investment into human capital of the household head turns out to have a significantly positive effect on home-ownership, confirming the findings of the received literature (Alba and Logan 1992, Krivo 1995, Coulson 1999). Particularly, the marginal effects

in specifications (2a) and (2b) suggest that an additional year of education *ceteris paribus* increases the home-ownership probability by 1.2%.

While the probability to own a house or apartment increases if the household head is married, single parent households are less likely to own their primary residence than single households without children, indicating that average single households with children do not have the financial capacity to own a house or apartment. A significant difference in the home-ownership probability between male and female household heads cannot be found. However, since the group of single parent households consists predominantly of unmarried women with children (76.8% of the sample), female household heads appear to be less likely to own a house or apartment. Surprisingly, the employment status of the household head does not affect the home-ownership probability, suggesting that home-ownership might not be affected by changes in the employment status in the short run. Furthermore, the monthly gross income of the household turns out to be a strong predictor of home-ownership, indicating that households with relatively high income levels are more likely to own a house or apartment than low-income households. The marginal effects of the indicator variables of the different income levels suggest a non-linear relationship between household income and home-ownership. Moreover, specification (2b) reveals that differences in the household size effects between native and immigrant households do not exist, suggesting that relatively large immigrant households have the same ability to acquire their primary residence as comparable native households.

The estimates of the district size characteristics in specifications (1b)-(2b) reveal significantly negative effects of the population density of the location on the home-ownership probability, reflecting a lower housing demand in areas where the cost of home-ownership is high. Moreover, the significantly positive effects of the interaction terms of district sizes given in specification (2b) reveal that immigrant households residing in urban areas are more likely to own their primary residence than comparable native households, indicating a concentration of immigrant households in areas with more than 100,000 inhabitants. These effects are consistent with the findings of Coulson (1999) and Painter, Yang, and Yu (2003) who argue that the home-ownership gap between native and immigrant households is caused by the

concentration of immigrant households in metropolitan areas.

Given that immigrant households in Germany are more likely to move into large apartment complexes which are geographically and socially isolated in many cases (Drever and Clark 2002), residential area characteristics and housing types represent important determinants of the home-ownership gap between native and immigrant households. In contrast to district size effects, residential area characteristics do not explain the home-ownership probability of native households. However, the marginal effects of the interaction terms suggest that residential area characteristics influence the home-ownership status of immigrant households. Moreover, both native and immigrant households who live in buildings with more than two apartment units have lower home-ownership probabilities than households residing in family houses, family row houses, farm houses, and other buildings.

The estimates presented in Table 2 are based on a sample which comprises inheritors and households who did not inherit their primary residence. Since 21.3% of the native and only 5.1% of the immigrant home-owners in the sample reported that they inherited their primary residence, alternative Probit regressions were estimated, restricting the sample to non-inheritors. However, the estimates resulting from this sample do not change the results qualitatively. For that reason, Table 2 includes only the estimates of the unrestricted sample.⁷

Table 3 contains the estimates of equation (2) for the years $t_1 = (1984, 1995)$ and $t_2 = (1995, 2004)$, respectively. Three different specifications were estimated for each of the two samples. Control variables and interaction terms are not considered in specifications (1a) and (2a). Specifications (1b) and (2b) take control variables (as defined by the vector $\tilde{\mathbf{X}}$ in equation (2)) into account, while both control variables and interaction terms are included in specifications (1c) and (2c). The estimates of the first sample are investigated relative to a reference cohort above 65 years in 1984 and eleven years older in 1995. Similarly, the reference cohort of the second sample is given by the cohort above 65 years in 1995 and nine years older in 2004.

In all cases, relatively young household heads have a significantly lower probability to own a house or apartment than the reference cohort, while home-ownership

⁷The estimates of the restricted sample are available upon request.

disparities between the reference group and household heads between 45 and 64 years are insignificant in most cases. The marginal effects of the interaction terms between year indicators and the respective age cohorts reveal that aging effects have a substantial influence on the home-ownership probability of native and immigrant households. Particularly, the aging effect of the youngest age cohort is higher than that of the cohort between 45 and 64 years in the first sample period and lower between 1995 and 2004, supporting the descriptive statistics presented in Figure 2.

The estimates reveal a significant home-ownership gap between different immigration cohorts and natives. However, the marginal effects of the immigration cohort dummies differ substantially between the three specifications presented in Table 3, indicating the importance of controlling for both additional explanatory variables and interaction terms. Particularly, in contrast to the descriptive statistics given in Figure 1, the estimates indicate that the home-ownership gap between native households and the more established immigration cohort remains on a relatively high level in the second sample period after controlling for interaction terms. The marginal effects of specifications (1c) and (2c) denote that the home-ownership probabilities of the immigration cohorts arriving before and after 1964 are about 40% lower than those of comparable native households.

The duration effect of specification (1c) provides evidence for a convergence in home-ownership probabilities between German-born and foreign-born households which is attributable to the duration of German residence of more established immigrant households. However, since the effect of the duration of residence is only significant for immigrant households residing in Germany for at least 30 years, the findings suggest that the assimilation process in home-ownership between immigrant and German households is rather slow. Moreover, the duration effect of more recent immigrant households in the second sample period is insignificant, indicating that a long-run economic assimilation between more recent immigrants and German natives does not take place. This result implies that the law on tax benefits for home-owners did not contribute significantly to the long-term economic assimilation of immigrant households in Germany between 1996 and 2004. Finally, age-at-arrival effects of immigrant households play a minor role in explaining home-ownership probabili-

ties between 1984 and 1995. However, they denote that more recent immigrant household heads aged between 45 and 64 years upon their arrival in Germany are less likely to own their primary residence than other household heads of the same immigration cohort.

5 Conclusions

This paper examines the economic performance of immigrant households in Germany using home-ownership as an indicator of long-term economic well-being. Empirical evidence on the home-ownership gap between native and immigrant households is generated by examining the determinants of the home-ownership status. In addition, a double cohort method is applied to investigate the extent to which the duration of German residence affects the home-ownership probability of immigrant households.

The estimates of a binary Probit model reveal that immigrant households are less likely to own their primary residence than comparable native households, while differences in the home-ownership probability between immigrant households from different regions of origin are not significant. Moreover, the results exhibit that the probability of immigrant households to own a house or apartment is 18.1% lower than the corresponding probability of comparable German households. This effect becomes insignificant after controlling for interaction terms of immigrant households, suggesting that the home-ownership gap may be explained by differences in the model parameters between native and immigrant households. Additionally, the estimates of district size characteristics reveal significantly negative effects of the population density of the location on the home-ownership probability, reflecting a lower housing demand in areas where the cost of home-ownership is high. Moreover, the findings indicate that the home-ownership gap may partly be attributed to the concentration of immigrant households in metropolitan areas.

The estimates of the cohort model provide evidence for a convergence in home-ownership probabilities between German-born and foreign-born households caused by the duration of German residence of more established immigrant households. However, since the effect of the duration of residence is only significant for immigrant

households residing in Germany for at least 30 years, the findings suggest that the assimilation process in home-ownership between immigrant and German households is rather slow. Moreover, the estimates of the sample period 1995-2004 indicate that a long-run economic assimilation between native and more recent immigrant households does not take place, suggesting that the law on tax benefits for homeowners introduced in 1996 did not contribute significantly to the long-term economic assimilation of immigrant households in Germany.

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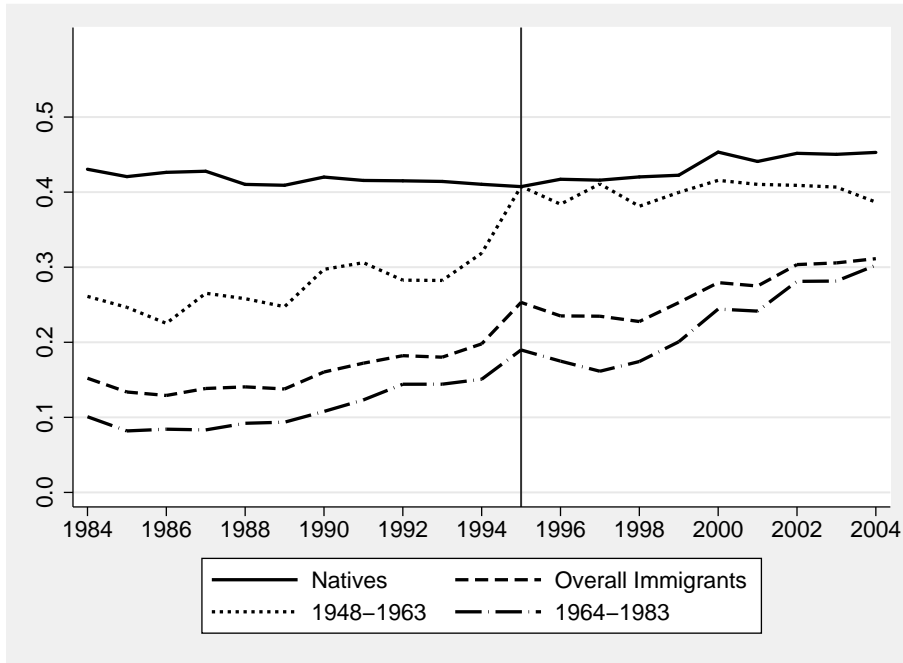


FIGURE 1: Home-ownership Rates by Period of Immigration, 1984-2004

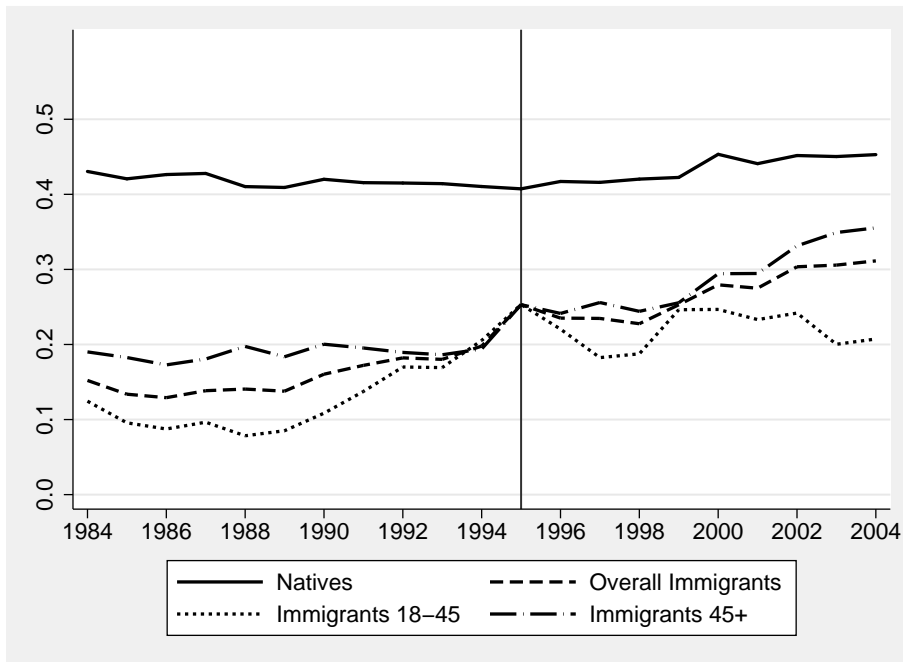


FIGURE 2: Home-ownership Rates by Age, 1984-2004

TABLE 1: Home-ownership Rates by Age and Period of Immigration

	All			Age < 45 yrs.			Age \geq 45 yrs.		
	1984-90	1991-97	1998-04	1984-90	1991-97	1998-04	1984-90	1991-97	1998-04
Natives	0.420 (0.004) [24024]	0.414 (0.004) [27900]	0.442 (0.003) [54319]	0.286 (0.005) [10386]	0.283 (0.006) [13472]	0.285 (0.005) [23482]	0.502 (0.005) [13638]	0.499 (0.006) [14428]	0.542 (0.004) [30837]
Immigrants	0.178 (0.009) [7746]	0.209 (0.009) [9049]	0.243 (0.007) [10769]	0.097 (0.009) [3889]	0.148 (0.013) [4055]	0.164 (0.009) [4814]	0.242 (0.015) [3857]	0.243 (0.013) [4994]	0.296 (0.010) [5955]
Immigrants									
Period of Immigration									
1948 - 1963	0.258 (0.018) [1885]	0.343 (0.024) [1547]	0.400 (0.029) [1068]	0.221 (0.035) [329]	0.563 (0.069) [176]	0.570 (0.135) [62]	0.267 (0.021) [1556]	0.318 (0.025) [1371]	0.388 (0.029) [1006]
1964 - 1973	0.096 (0.009) [4620]	0.138 (0.009) [4397]	0.263 (0.014) [3346]	0.091 (0.011) [2714]	0.139 (0.014) [1684]	0.256 (0.026) [936]	0.103 (0.016) [1906]	0.138 (0.011) [2713]	0.264 (0.016) [2410]
1974 - 1983	0.083 (0.014) [914]	0.190 (0.025) [1336]	0.209 (0.015) [1583]	0.055 (0.015) [720]	0.159 (0.029) [1102]	0.169 (0.019) [1120]	0.137 (0.028) [194]	0.246 (0.048) [234]	0.268 (0.026) [463]
1984 - 1990		0.069 (0.010) [1109]	0.184 (0.012) [2375]		0.064 (0.011) [763]	0.175 (0.014) [1463]		0.078 (0.022) [346]	0.196 (0.021) [912]
1991 - 1997			0.112 (0.015) [1225]			0.097 (0.017) [756]			0.135 (0.028) [469]

Notes: Standard deviations in parenthesis. Number of observations in brackets.

TABLE 2: Determinants of Home-ownership, Probit Estimates (2004)

HOME-OWNERSHIP	(1a)		(1b)		(2a)		(2b)	
	dF/dx	S.E.	dF/dx	S.E.	dF/dx	S.E.	dF/dx	S.E.
Age 35-44	0.166***	0.034	0.181***	0.035	0.159***	0.038	0.174***	0.040
Age 45-54	0.290***	0.034	0.296***	0.034	0.273***	0.038	0.287***	0.039
Age 55-64	0.450***	0.029	0.475***	0.029	0.453***	0.033	0.487***	0.033
Age 65+	0.549***	0.029	0.569***	0.029	0.534***	0.035	0.546***	0.036
Education (Yrs.)	0.007*	0.004	0.014***	0.004	0.012***	0.004	0.012***	0.004
Female	0.005	0.020	0.012	0.021	0.006	0.023	0.006	0.023
Married	0.171***	0.025	0.160***	0.025	0.141***	0.026	0.141***	0.028
Single Parent Household	-0.114***	0.044	-0.099**	0.046	-0.106**	0.046	-0.126***	0.048
Employed	0.026	0.028	0.011	0.029	-0.000	0.031	-0.003	0.034
Household Income 2000-4000 Euro	0.118***	0.028	0.141***	0.028	0.161***	0.030	0.133***	0.032
Household Income > 4000 Euro	0.237***	0.031	0.253***	0.032	0.256***	0.034	0.228***	0.037
Household Size	0.085***	0.011	0.072***	0.011	0.037***	0.011	0.046***	0.013
District Size I			-0.128***	0.029	-0.063**	0.030	-0.058*	0.032
District Size II			-0.164***	0.030	-0.077**	0.034	-0.089**	0.036
District Size III			-0.206***	0.031	-0.078**	0.038	-0.077*	0.041
District Size IV			-0.304***	0.024	-0.118***	0.033	-0.134***	0.034
District Size V			-0.352***	0.023	-0.148***	0.035	-0.170***	0.035
Old Area			-0.064	0.094	-0.142	0.105	-0.028	0.074
New Area			0.020	0.096	-0.041	0.112	0.071	0.075
Mixed Area			-0.104	0.093	-0.109	0.108	-0.001	0.076
Apt. in 3-4 Unit Building					-0.356***	0.017	-0.350***	0.017
Apt. in 5-8 Unit Building					-0.407***	0.016	-0.405***	0.018
Apt. in 9+ Unit Building					-0.355***	0.020	-0.343***	0.022
High Rise					-0.233***	0.057	-0.241***	0.064
Immigrant					-0.181***	0.046	0.317	0.306
Immigrant ×								
Region of Origin: OECD	-0.219***	0.065	-0.229***	0.062				
Region of Origin: CEE	-0.287***	0.033	-0.278***	0.034				
Region of Origin: Turkey	-0.283***	0.065	-0.246***	0.068				
Region of Origin: Ex-Yugoslavia	-0.234**	0.104	-0.208*	0.118				
Region of Origin: Other	-0.263***	0.039	-0.256***	0.039				
YOM < 1964	0.110	0.118	0.158	0.124	0.097	0.095	0.246***	0.093
YOM 1964-1973	0.011	0.098	0.048	0.102	0.066	0.078	0.201***	0.071
YOM 1974-1983	-0.018	0.095	0.005	0.093	-0.000	0.086	-0.009	0.079
Age 35-44							-0.119	0.105
Age 45-54							-0.161*	0.093
Age 55-64							-0.311***	0.052
Age 65+							-0.261***	0.074
Education							-0.001	0.011
Female							-0.019	0.076
Married							-0.089	0.081
Single Parent Household							0.056	0.158
Employed							0.014	0.087
Household Income 2000-4000 Euro							0.173**	0.086
Household Income > 4000 Euro							0.193*	0.099
Household Size							-0.031	0.023
District Size I							-0.008	0.114
District Size II							0.191	0.117
District Size III							0.077	0.129
District Size IV							0.264**	0.109
District Size V							0.313***	0.114
Old Area							-0.325***	0.084
New Area							-0.295***	0.105
Mixed							-0.304***	0.099
Apt. in 3-4 Unit Building							-0.053	0.093
Apt. in 5-8 Unit Building							-0.066	0.070
Apt. in 9+ Unit Building							-0.146*	0.077
High Rise							0.058	0.177
Pseudo R^2	0.1917		0.2439		0.3407		0.3504	
Wald-Statistic (χ^2)	776.80		1036.02		1352.04		1475.35	

Notes: Number of observations: 7,544. * significant at 10%; ** significant at 5%; *** significant at 1%. Weighted Probit estimation using weights provided by the SOEP.

TABLE 3: Home-ownership Gap and Assimilation, Natives and Immigrants – Probit estimates

HOME-OWNERSHIP	1984-1995						1995-2004					
	(1a)		(1b)		(1c)		(2a)		(2b)		(2c)	
	dF/dx	S.E.	dF/dx	S.E.	dF/dx	S.E.	dF/dx	S.E.	dF/dx	S.E.	dF/dx	S.E.
Natives:												
Year = 1995	-0.254***	0.026	-0.246***	0.036	-0.244***	0.036	-0.073***	0.025	-0.035	0.029	-0.032	0.029
Year = 2004												
Birth Cohort 1984/1996												
20-44	-0.132***	0.026	-0.242***	0.032	-0.241***	0.032	-0.151***	0.028	-0.259***	0.035	-0.253***	0.036
45-64	0.154***	0.028	0.028	0.033	0.030	0.033	0.099***	0.030	-0.034	0.038	-0.027	0.038
Aging effect												
1995: 20-44 to 31-55	0.394***	0.029	0.368***	0.041	0.368***	0.041						
1995: 45-64 to 56-75	0.230***	0.032	0.277***	0.048	0.274***	0.048						
2004: 20-44 to 29-53												
2004: 40-64 to 49-73												
Immigration Cohort												
1964-1983	-0.265***	0.069	-0.243***	0.081	-0.414***	0.021	0.188***	0.032	0.120***	0.039	0.119***	0.039
< 1964	-0.117	0.158	-0.025	0.173	-0.366***	0.019	0.163***	0.032	0.171***	0.040	0.166***	0.040
Duration effect												
1995: 1964-1983	0.094	0.074	0.096	0.084	0.038	0.068						
1995: < 1964	0.166**	0.074	0.181**	0.089	0.187**	0.080						
2004: 1964-1983												
2004: < 1964												
Age-at-arrival effect												
20-44, 1964-1983	-0.015	0.104	0.058	0.133	0.123	0.168						
20-44, < 1964	0.068	0.204	-0.010	0.195	0.029	0.204	-0.156	0.129	-0.165	0.110	-0.172	0.091
45-64, 1964-1983	-0.127	0.111	-0.053	0.140	-0.020	0.161	0.391***	0.114	0.281*	0.154	0.157	0.174
45-64, < 1964	-0.174	0.149	-0.200	0.124	-0.192	0.123	-0.318***	0.074	-0.310***	0.059	-0.275***	0.060
Control Variables	No	Yes	Yes	No	Yes	Yes	0.183	0.120	0.281**	0.131	0.210*	0.122
Interaction Terms	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes
Pseudo R ²	0.0660		0.3265		0.3365		0.0424		0.3134		0.3192	
Wald-Statistic (χ^2)	377.80		1183.73		1356.61		284.91		1556.81		1672.81	
N	8389		8389		8389		11554		11554		11554	

TABLE 3 CONTINUED: **Control Variables and Interaction Terms**

HOME-OWNERSHIP	1984-1995				1995-2004			
	(1b)		(1c)		(2b)		(2c)	
	dF/dx	S.E.	dF/dx	S.E.	dF/dx	S.E.	dF/dx	S.E.
Education (Yrs.)	0.008*	0.004	0.005	0.004	0.012***	0.004	0.011***	0.004
Female	-0.020	0.029	-0.042	0.029	-0.019	0.021	-0.032	0.022
Married	0.102***	0.029	0.070**	0.030	0.157***	0.023	0.139***	0.025
Single Parent Household	-0.115***	0.040	-0.127***	0.041	-0.087**	0.038	-0.108***	0.039
Employed	-0.109***	0.029	-0.119***	0.030	-0.133***	0.024	-0.149***	0.025
Household Income 2000-4000 Euro	0.117***	0.026	0.115***	0.027	0.142***	0.025	0.140***	0.026
Household Income > 4000 Euro	0.241***	0.033	0.246***	0.034	0.259***	0.027	0.259***	0.029
Household Size	0.021**	0.009	0.032***	0.010	0.023**	0.009	0.033***	0.010
District Size I	0.022	0.032	0.023	0.033	-0.008	0.028	-0.010	0.029
District Size II	-0.022	0.033	-0.028	0.034	-0.025	0.032	-0.032	0.033
District Size III	-0.032	0.040	-0.032	0.041	-0.049	0.035	-0.049	0.036
District Size IV	-0.082**	0.033	-0.094***	0.034	-0.084***	0.030	-0.102***	0.030
District Size V	-0.108***	0.036	-0.116***	0.037	-0.132***	0.031	-0.142***	0.032
Old Area	-0.104*	0.054	-0.065	0.059	-0.072	0.053	-0.037	0.058
New Area	-0.091	0.056	-0.066	0.059	-0.015	0.054	0.011	0.059
Mixed Area	-0.093*	0.056	-0.058	0.059	-0.034	0.056	-0.005	0.061
Apt. in 3-4 Unit Building	-0.291***	0.018	-0.296***	0.018	-0.322***	0.016	-0.324***	0.017
Apt. in 5-8 Unit Building	-0.423***	0.016	-0.419***	0.017	-0.418***	0.015	-0.412***	0.016
Apt. in 9+ Unit Building	-0.367***	0.018	-0.360***	0.019	-0.361***	0.017	-0.356***	0.018
High Rise	-0.318***	0.027	-0.312***	0.032	-0.285***	0.043	-0.286***	0.049
Immigrant ×								
Education			0.031***	0.012			0.011	0.009
Female			0.452***	0.070			0.305***	0.067
Married			0.404***	0.085			0.228***	0.082
Single Parent Household			0.086	0.184			0.131	0.162
Employed			0.089	0.102			0.211***	0.073
Household Income 2000-4000 Euro			0.082	0.097			0.018	0.073
Household Income > 4000 Euro			0.094	0.115			0.047	0.084
Household Size			-0.076***	0.025			-0.048**	0.023
District Size I			0.263**	0.107			0.280**	0.120
District Size II			0.401***	0.099			0.387***	0.107
District Size III			0.331**	0.138			0.311**	0.128
District Size IV			0.464***	0.093			0.493***	0.076
District Size V			0.465***	0.091			0.459***	0.094
Old Area			-0.221**	0.089			-0.199*	0.103
New Area			-0.062	0.135			-0.076	0.132
Mixed			-0.163	0.111			-0.106	0.129
Apt. in 3-4 Unit Building			0.164*	0.092			0.042	0.080
Apt. in 5-8 Unit Building			-0.055	0.077			-0.111	0.070
Apt. in 9+ Unit Building			-0.168**	0.085			-0.137*	0.079
High Rise			-0.075	0.169			0.016	0.182

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Weighted Probit estimation using longitudinal weights for balanced panel data. Standard errors are adjusted to take repeated observations of households into account.

Appendix

APPENDIX-TABLE 1: Definition of Variables

Variable	Description
Owner of House	1 if respondent is owner of the dwelling he/she lives in; 0 otherwise.
Household Size	Number of persons in household.
Immigrant	1 if respondent immigrated to Germany since 1948; 0 otherwise.
Age 18-34	Age of respondent between 18 and 34 years (control category).
Age 35-44	Age of respondent between 35 and 44 years.
Age 45-54	Age of respondent between 45 and 54 years.
Age 55-64	Age of respondent between 55 and 64 years.
Age 65+	Age of respondent 65 years or older.
Education	Education of respondent in years.
Female	1 if respondent is female; 0 otherwise.
Married	1 if respondent is married; 0 otherwise.
Single Parent Household	1 if respondent is not married and number of children in household > 0; 0 otherwise.
Employed	1 if respondent is currently employed; 0 otherwise.
Household Income	Monthly household gross income (in real 2000 Euro).
District Size I	0/1-variable; $\geq 5,000 < 20,000$ inhabitants in the district of the household.
District Size II	0/1-variable; $\geq 20,000 < 50,000$ inhabitants in the district of the household.
District Size III	0/1-variable; $\geq 50,000 < 100,000$ inhabitants in the district of the household.
District Size IV	0/1-variable; $\geq 100,000 < 500,000$ inhabitants in the district of the household.
District Size V	0/1-variable; $\geq 500,000$ inhabitants in the district of the household.
District Size VI	0/1-variable; $< 5,000$ inhabitants in the district of the household (control category).
Old Residential Area	0/1-variable; area around domicile: old residential area.
New Residential Area	0/1-variable; area around domicile: new residential area.
Mixed Res./Commercial Area	0/1-variable; area around domicile: mixed residential area/commercial area.
Commercial Area	0/1-variable; area around domicile: commercial area (control category).
Industrial Area	0/1-variable; area around domicile: industrial area (control category).
Other Area	0/1-variable; area around domicile: other area (control category).
High Rise	0/1-variable; type of domicile: high rise.
Apt. in 9+ Unit Building	0/1-variable; type of domicile: apartment in 9+ unit building.
Apt. in 5-8 Unit Building	0/1-variable; type of domicile: apartment in 5-8 unit building.
Apt. in 3-4 Unit Building	0/1-variable; type of domicile: apartment in 3-4 unit building.
1-2 Family Row House	0/1-variable; type of domicile: 1-2 family row house (control category).
1-2 Family House	0/1-variable; type of domicile: 1-2 family house (control category).
Farm House	0/1-variable; type of domicile: farm house (control category).
Other Building	0/1-variable; type of domicile: other building (control category).
Region of Origin: OECD	0/1-variable; member states of the OECD, Israel and Singapore; 0 otherwise.
Region of Origin: CEE	0/1-variable; Central and Eastern European (CEE) countries: Romania, Poland, Hungary, Bulgaria, Czech Republic, Ukraine, Belarus, Slovenia, Slovakia, Estonia, Latvia, Lithuania; 0 otherwise.
Region of Origin: Turkey	0/1-variable; country of origin: Turkey; 0 otherwise.
Region of Origin: Ex-Yugoslavia	0/1-variable; country of origin: Ex-Yugoslavia; 0 otherwise.
Country of Origin: Other	1 if other country of origin; 0 otherwise.
Year 1995	1 if year = 1995; 0 otherwise.
Year 2004	1 if year = 2004; 0 otherwise.
Birth cohorts in 1984:	
Age 20-44	0/1-variable; age of respondent in 1984 between 20 and 44 years (11 years older in 1995; control category).
Age 45-64	0/1-variable; age of respondent in 1984 between 45 and 64 years (11 years older in 1995).
Age 65+	0/1-variable; age of respondent in 1984: 65 years or older (11 years older in 1995).
Birth cohorts in 1996:	
Age 20-44	0/1-variable; age of respondent in 1996 between 20 and 4 years (9 years older in 2004; control category).
Age 45-64	0/1-variable; age of respondent in 1996 between 45 and 64 years (9 years older in 2004).
Age 65+	0/1-variable; age of respondent in 1996: 65 years or older (9 years older in 2004).
Immigration cohorts:	
pre-1964	1 if respondent immigrated to Germany before 1964; 0 otherwise.
1964-1983	1 if respondent immigrated to Germany between 1964 and 1983; 0 otherwise.
Aging effect	Birth cohort \times Year.
Duration effect	Immigration cohort \times Year.
Age-at-arrival effect	Birth cohort \times Immigration cohort.

APPENDIX-TABLE 2: Descriptive Statistics (2004)

Variable	Germans		Immigrants	
	Mean	S.E.	Mean	S.E.
Owner of House, Apartment	0.456	0.009	0.269	0.023
Household Size	2.026	0.018	2.866	0.088
Age (Yrs.)	52.889	0.316	49.288	0.752
Education (Yrs.)	12.168	0.050	11.525	0.137
Female	0.433	0.009	0.330	0.024
Married	0.472	0.009	0.682	0.025
Single Parent Household	0.050	0.004	0.052	0.010
Employed	0.609	0.009	0.639	0.023
Gross Income	2518.909	45.928	2313.231	112.225
District Size I	0.230	0.007	0.204	0.020
District Size II	0.165	0.006	0.201	0.021
District Size III	0.100	0.005	0.135	0.019
District Size IV	0.183	0.007	0.229	0.021
District Size V	0.192	0.007	0.177	0.018
Old Area	0.290	0.008	0.309	0.023
New Area	0.423	0.009	0.400	0.025
Apt. in 3-4 Unit Building	0.120	0.006	0.140	0.016
Apt. in 5-8 Unit Building	0.204	0.007	0.285	0.021
Apt. in 9+ Unit Building	0.145	0.007	0.216	0.021
High Rise	0.013	0.002	0.030	0.010
Region of Origin: OECD			0.226	0.021
Region of Origin: CEE			0.230	0.020
Region of Origin: Turkey			0.193	0.021
Region of Origin: Ex-Yugoslavia			0.108	0.014
YOM < 1964			0.111	0.016
YOM 1964-1973			0.239	0.020
YOM 1974-1983			0.176	0.020
YOM 1984+			0.474	0.025
Observations	6498		1046	