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ABSTRACT

Wealth and Asset Holdings of Immigrants in Germany*

This paper examines the relative wealth position and the portfolio choices of immigrants in Germany. The empirical findings reveal significant differences in overall wealth and various wealth components between German natives and immigrants. Differences in real estate constitute the major part of different levels of net worth, indicating that disparities in home-ownership rates are responsible for the main part of the overall wealth gap. Moreover, migrants' degree of portfolio diversification is significantly lower than that of comparable natives. The results of a decomposition analysis suggest that differences in wealth and asset holdings may be explained by disparity in educational attainment to a sizable extent, while the effects of income differentials and differences in demographic characteristics are insignificant.

JEL Classification: F22, D31

Keywords: international migration, wealth accumulation, decomposition analysis, multiple imputation

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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 country has become a matter of intense debate among economists and policy makers in many immigration countries worldwide. Following the seminal contribution by Chiswick (1978), the literature on the economic performance of immigrants has largely concentrated on the extent to which labor market outcomes (e.g., earnings and employment status) of immigrants vary over the settlement process (Borjas, 1994; Zimmermann, 2005). Recent studies have started to examine how the relative wealth position of immigrants enhances as their duration of residence in the host country increases (Shamsuddin and DeVoretz, 1998; Zhang, 2002; Cobb-Clark and Hildebrand, 2006a,b; Bauer et al., 2007).

An investigation of the nativity wealth gap allows inferences about the overall economic well-being of immigrants. Studies that focus exclusively on income will underestimate differences in economic well-being between natives and immigrants if wealth disparities are even more pronounced. Moreover, policies that seek to reduce income differences do not necessarily alleviate wealth inequalities, because wealth may be distributed quite differently from income (Blau and Graham, 1990; Gibson et al., 2007). At the same time, wealth represents an important measure of the economic integration of immigrant minorities. Wealthier families have access to better schools and enhanced health facilities and live in neighborhoods characterized by lower levels of crime (Gittleman and Wolff, 2004). Wealth further provides liquidity in times of economic hardship, access to the credit market, and the resources to maintain living standards in retirement (Cobb-Clark and Hildebrand, 2006b; Bauer et al., 2007).

Previous studies provide a quite consistent picture regarding the existence of an overall nativity wealth gap in different countries (Carroll et al., 1994; Cobb-Clark and Hildebrand, 2006b; Bauer et al., 2007). Unfortunately, very little is known about differences in the portfolio decisions of native-born and foreign-born individuals, although it may be expected that both wealth levels and portfolio allocations

depend on nativity (Amuedo-Dorantes and Pozo, 2002; Cobb-Clark and Hildebrand, 2006a,b). This paper aims at filling this gap by investigating differences in the magnitude and composition of wealth between German natives and immigrants and examines the reasons for these differences. Since portfolio allocations may be responsible for a sizeable part of the nativity wealth gap, particular attention will be paid to differences in composition and diversification of asset portfolios between native-born and foreign-born individuals in Germany. In the empirical analysis, which is based on cross-sectional data drawn from the German Socio-Economic Panel (SOEP), two research questions will be addressed: Are there differences in individual wealth and asset holdings between natives and immigrants? Which part of these differences can be attributed to disparities in socioeconomic and demographic characteristics between the two groups?

Germany provides an interesting case study for the analysis of wealth and asset holdings of immigrant minorities. During the 1960s, "temporary" guest workers from Southern Europe were encouraged to migrate to Germany to fill an low-skilled labor shortage. Many of them, however, decided to stay in Germany permanently (Schmidt and Zimmermann, 1992; Bauer et al., 2005). These immigrants were typically very different in education, cultural background and motivation to their higher-skilled European counterparts that migrated to the United States after the Second World War. Further restrictions limiting dual-nationality and complicating application for German citizenship may have restrained potential assimilation, in contrast to the integrative policies of typically immigration countries such as Australia, Canada and the United States (Antecol et al., 2003). The wealth accumulation behavior of this group of immigrants may become an important factor for the German pension system, because because a sizeable part of the immigrant population in Germany will reach retirement age in the coming decades.

The results of the empirical analysis reveal considerable differences in wealth and asset holdings between natives and immigrants, indicating substantial disparity in the economic well-being of the two groups. Moreover, differences in real estate constitute the major part of different levels of net worth, suggesting that disparities in home-ownership rates are responsible for the main part of the overall wealth gap.

Furthermore, migrants' degree of portfolio diversification is significantly lower than that of comparable natives. The results of a decomposition analysis suggest that differences in wealth and asset holdings may be explained by disparity in educational attainment to a sizable extent, while the effects of income differentials and differences in demographic characteristics are insignificant. The estimates of the single components of wealth reveal that educational attainment is highly relevant for the investment in financial and other assets as well as private insurances but relatively less important for the accumulation of real estate. Finally, in most cases, more than half of the gap in wealth and asset holdings remains unexplained by differences in income, education, and demographic characteristics between natives and immigrants.

The paper proceeds as follows. Section 2 provides a short survey of the existing literature on wealth and asset holdings. Section 3 describes the data used for the empirical analysis and provides some descriptive statistics. The empirical strategy and the estimation results are presented in Section 4. Section 5 concludes.

2 Wealth and asset holdings of immigrants

From a theoretical perspective, there are several ways in which wealth levels and portfolio choices may differ between natives and immigrants. Due to self-selection and selective immigration policies of the receiving countries, immigrants are typically non-representative of both the sending and receiving country populations. Consequently, different observable and unobservable characteristics may be responsible for differences in the magnitude and composition of wealth. For instance, wealth disparities may be a result of differences in the economic performance of natives and immigrants that were caused by different skill levels (Chiswick, 1978; Borjas, 1987).

Wealth levels and portfolio choices may differ between similar natives and immigrants for a number of other reasons. First, the nativity wealth gap may be the result of different portfolio compositions. In particular, the higher ability of immigrants to diversify portfolios across countries may allow them to hold different asset portfolios that reduce income risk and lower the need for precautionary savings. Supporting

this hypothesis, Amuedo-Dorantes and Pozo (2002) argue that the apparent lower precautionary savings observed for immigrants in the US may be caused by the fact that they engage in saving by remitting parts of their income to their home countries. Amuedo-Dorantes and Pozo (2006) find that a higher income risk leads to increased remittances of immigrants. Sinning (2007) demonstrates that return intentions have a significant influence on migrants' savings in their home country.

Second, different preferences or risk aversion may explain portfolio choices with different rates of return and consequently variation in overall wealth levels. In particular, both immigrants' preferences and risk aversion may be affected by social norms in the sending country that are likely to influence not only intergenerational transfers and inheritances, but also asset allocation, rates of return and in turn wealth accumulation (Bauer et al., 2007). Empirical evidence suggests that intergenerational transmission processes exist for both portfolio choice decisions (Chiteji and Stafford, 1999) and attitudes towards risk and trust (Dohmen et al., 2006). Moreover, Bonin et al. (2006) find that immigrants to Germany are significantly more risk averse than native-born Germans, indicating that attitudes towards risk may depend on nativity status.

Third, immigrants' portfolio choice decisions and the resulting relative wealth position may depend on expectations regarding retirement and return migration. Cobb-Clark and Stillman (2006), for example, demonstrate that immigrants to Australia are more uncertain about their retirement age than natives. This uncertainty may be explained by migrants' location choices after retirement to a sizeable extent (De Coulon and Wolff, 2006). Theoretical models suggest that interactions between relative economic conditions in home and host countries and expectations regarding return migration may affect the wealth accumulation behavior of immigrants. Galor and Stark (1990), for example, demonstrate that the positive remigration probability of immigrants increases their labor supply in the host country and consequently their saving propensity. Djajic and Milbourne (1988) and Djajic (1989) show that temporary migrants accumulate more wealth than natives and permanent migrants if commodity prices in the host country are higher than in the home country. Finally, Dustmann (1997) demonstrates that immigrants accumulate more wealth than na-

tives if they face greater income risk and argues that the amount of migrants' savings is a function of the correlation in labor-market shocks in home and host countries.

Previous studies provide a quite consistent picture regarding the existence of an overall nativity wealth gap in different countries. Carroll et al. (1994), for example, find differences in the saving patterns of immigrants to Canada across countries of origin. They demonstrate that these patterns do not resemble the national saving patterns in the sending countries because of immigrant selectivity variations across sending regions, indicating that savings disparities within the immigrant population do not reflect cultural differences. Cobb-Clark and Hildebrand (2006b) discover that entry-cohorts do not affect overall wealth levels and demonstrate that the year of arrival is significantly related to the portfolio choices of the foreign-born population in the United States. Bauer et al. (2007) investigate the source of the relative wealth position of immigrants in Australia, Germany and the United States at the household level. Their findings reveal substantial wealth disparities between native and immigrant households in Germany. Moreover, they provide empirical evidence for the relevance of income, educational attainment and demographic characteristics in explaining wealth differentials between native and immigrant households.

3 Data and descriptive analysis

3.1 Data

In the empirical analysis, data from the German Socio-Economic Panel (SOEP) for the year 2002 is utilized.[1] The SOEP is a representative longitudinal study including German and immigrant households that started in 1984. In 2002, about 24,000 persons in nearly 13,000 households were sampled. The SOEP includes information

[1] The data used in this paper were extracted from the GSOEP Database provided by the DIW Berlin (http://www.diw.de/GSOEP) 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). The PanelWhiz generated DO file to retrieve the GSOEP data used here and any Panelwhiz Plugins are available upon request. Any data or computational errors in this paper are my own. Haisken-DeNew and Hahn (2006) describe PanelWhiz in detail.

about socioeconomic and demographic characteristics, household composition, occupational biographies, etc. The empirical analysis is restricted to the year 2002, because information about wealth is only available for this wave. As less than 2% of the foreign-born population lives in East Germany, the analysis focuses on households residing in West Germany. Immigrants are defined as foreign-born individuals who immigrated to Germany after 1948 (including foreign-born persons with German citizenship).

The empirical analysis is performed at the individual level because wealth questions were included in the individual questionnaire of the SOEP, permitting an explicit consideration of the distribution of wealth between spouses within households. The estimation sample is restricted to include only native and foreign-born couple-headed household heads and spouses who are between 25 years and 75 years old. Since a substantial share (25.6%) of the households in the resulting sub-sample of immigrants lives in mixed households (in which one partner is native-born and the other is foreign-born), a separate consideration of spouses within households at the individual level is particularly interesting. After excluding all observations with missing values on one or more of the variables used in the analysis, the data set contains 3,308 native-born and 587 foreign-born individuals.

3.2 Multiple imputation of wealth components and repeated-imputation inference

In 2002, the individual SOEP questionnaire surveys seven components of wealth, including owner-occupied housing (including mortgage debt), other property (including mortgage debt), financial assets, business assets, tangible assets, private pensions (including life insurance) and consumer credits (Frick et al., 2007). Based on the individual share of the net market value of these components, four categories are derived for the empirical analysis: (i) overall net worth, (ii) owner-occupied and other property, (iii) financial and other assets, (iv) private insurances. Appendix-Table A.1 includes a detailed description of the definition of these outcome measures.

Survey data – especially questions on wealth – typically suffer from measurement

error that have to be addressed by editing and imputation of item-non-response. A revised version of the 2002 wealth module of the SOEP that accounts for measurement errors was made available in 2007. Frick et al. (2007) provide an extensive description of editing and imputation procedures that were applied to obtain the revised wealth information. In particular, missing values were imputed by regression-based multiple imputation in the revised data. The advantage of this approach is that it provides information that can be used to estimate the uncertainty that is prevalent due to missing values, providing a basis for more valid inference and tests of significance (Montalto and Sung, 1996).

The main idea of multiple imputation is to replace missing values by estimates derived from a regression of the outcome measure on a set of explanatory variables. To simulate the sampling distribution of the missing values appropriately, each missing value is replaced by five generated values that are imputed by the process of randomly drawing a residual five times to obtain five different imputations, referred to as "implicates". Due to the generation of more imputed values, this procedure improves the approximation to the true sampling distribution. In practice, the average of these values is calculated to produce the best estimate of what the results would have been if the missing data had been observed (Rubin, 1987).

Generally, the best point estimates and estimates of variance for parameters of interest based on the available information is achieved by simply combining the results across the five implicates. This method, which is referred to as "repeated-imputation inference" (Rubin, 1987), is applicable to both linear and nonlinear models. Given the five point estimates of a parameter vector of interest, Q_1, Q_2, Q_3, Q_4, Q_5, and the corresponding variance estimates, U_1, U_2, U_3, U_4, U_5, the best point estimate of the parameter is simply the average of the five separate point estimates:

$$\overline{Q}_m = \frac{\sum_{i=1}^{m} Q_i}{m}, \quad i = 1, ..., m, \tag{1}$$

where m is the number of implicates. The total variance T_m of the point estimate consists of two components. The first component (the "within" imputation variance) may be estimated by the average of the five separate variance estimates,

$$\overline{U}_m = \frac{\sum_{i=1}^{m} U_i}{m}, \quad i = 1, ..., m. \tag{2}$$

The estimate of the second component (the "between" imputation variance) is

$$B_m = \frac{\sum_{i=1}^{m}(Q_i - \overline{Q}_m)^t(Q_i - \overline{Q}_m)}{m-1}. \quad (3)$$

The total variance of the point estimate is the sum of the "within" imputation variance and the "between" imputation variance, whereas the latter is weighted by an adjustment factor for the use of a finite number of implicates:

$$T_m = \overline{U}_m + (1 + \frac{1}{m})B_m. \quad (4)$$

Finally, the standard deviation of the point estimate is defined as the square root of the total variance.

In the following empirical analysis, repeated-imputation inference is applied to obtain the point estimates of the parameters of interest and the corresponding variance estimates by combining the estimation results across the five implicates. The underlying separate point estimates of the different implicates are available from the author upon request.

3.3 Descriptive statistics

Table 1 includes information about the level of wealth held by natives and immigrants. The numbers indicate that the overall net worth of natives is considerably higher than that of immigrants. Specifically, immigrants to Germany hold only about 55% (€ 65,071) of the overall net worth of natives. Immigrants are also much less likely to report positive net worth than natives. However, this lower propensity to hold positive net worth explains the overall nativity wealth gap only partially. Conditional on having positive net worth, immigrants still hold less than 60% (€ 71,133) of the net worth of natives.

The numbers of the different wealth components indicate that the major part of the nativity wealth gap is attributable to differences in real estate. While immigrants hold about 51% (€ 41,766) of the net market value of owner-occupied and other property, the corresponding ratio of financial and other assets and private insurances amounts to 57% (€ 12,212) and 71% (€ 13,894), respectively. Given positive amounts of the respective wealth component, immigrants hold about 69% (€ 83,305)

of the net market value of owner-occupied and other property. Since immigrants are on average much less likely to hold financial and other assets or private insurances than natives, the corresponding shares of the conditional market values of these components are above 80%. These numbers are supported by the number of assets held by natives and immigrants. While natives hold on average about 2.3 different assets, immigrants hold only about 1.7 assets.

Table 1 further describes the relevant socioeconomic and demographic characteristics of natives and immigrants.[2] Immigrants have a lower income, are younger and less educated and have more children than natives. There are also differences in the distribution of the foreign-born population across entry cohorts and regions of origin. The majority of the immigrant population arrived either before 1974 or after 1989. Immigrants to Germany primarily stem from OECD member countries, Central and Eastern Europe or Ex-Yugoslavia.

Figures 1-4 display the unconditional gaps in the overall wealth level and the three wealth components between natives and immigrants and the corresponding 95% confidence interval over the entire distribution. These figures reveal significant differences at most points of the overall wealth distribution and the distribution of the respective wealth components between natives and immigrants. While the overall wealth gap is significantly negative along the entire distribution, differences in the wealth components are insignificant at most points below the median but steadily increasing along the distribution above the median. At the 25^{th} percentile, the overall wealth gap is € 18,313. This gap amounts to € 57,661 at the median and increases to € 76,144 at the 75^{th} percentile (see Figure 1). The differences in real estate and financial and other assets between natives and immigrants are zero at the 25^{th} percentile but positive at the median. While the median gap in real estate amounts to € 59,461, it declines slightly to € 59,318 at the 75^{th} percentile (see Figure 2). Differences in financial and other assets between natives and immigrants are only € 5,000 at the median and add up to € 10,185 at the 75^{th} percentile (see Figure 3). Finally, the gap in private insurances between natives and immigrants is € 2,000 at the 25^{th} percentile and amounts to € 4,624 at the median. This gap increases to € 8,011 at the 75^{th} percentile (see Figure 4).

[2] Appendix-Table A.2 includes a definition of these variables.

3.4 Determinants of net worth components and diversification

To assess the relative importance of the factors affecting the overall net worth and its components, the determinants of the different outcome measures are being investigated. As wealth distributions are usually skewed to the right, the existing literature typically relies on log-linear regression models (Shamsuddin and DeVoretz, 1998). However, a log transformation is inappropriate for individuals with zero or negative net worth. Consequently, a quantile regression model is estimated to analyze the determinants of net worth and its components at the median of the distribution. Specifically, the following cross-sectional quantile regression model is estimated for native and foreign-born individuals (i),

$$\begin{aligned} m_{ik} &= \beta_{0k}^q + \widetilde{\mathbf{X}}_i \beta_{1k}^q \\ &+ I_i\left[\beta_{2k}^q + \beta_{3k}^q Z_i + \beta_{4k}^q M_i H_i + \beta_{5k}^q M_i(1-H_i) + \mathbf{D}_i\beta_{6k}^q + \mathbf{R}_i\beta_{7k}^q\right] + \varepsilon_{ik}^q \\ &= \mathbf{X}_i\beta_k^q + \varepsilon_{ik}^q, \quad i = 1, ..., N, \quad k = 1, ..., K, \end{aligned} \tag{5}$$

where m_{ik} is the net market value of outcome measure k and q reflects a specific percentile of the distribution. Four outcome measures are considered in the empirical analysis: overall net worth, owner-occupied and other property, financial and other assets and private insurances. $\widetilde{\mathbf{X}}_i$ contains information about income (i.e. current net income), education (in years) and demographic characteristics (number of children younger than 18 in the household, age and age squared). To distinguish between immigrants residing in mixed households and those who do not, several indicator variables are considered. Specifically, I_i reflects the immigrant status, including immigrants who reside in a mixed household, while Z_i is an indicator variable for the sample of immigrants with foreign-born partners. M_i is an indicator variable for mixed households and H_i denotes whether the observed person is considered as head of the household. The model is identified by imposing the restriction $\beta_{3k}^q + \beta_{4k}^q + \beta_{5k}^q = 0$. Moreover, $\mathbf{D}_i$ is a vector of indicator variables capturing immigration cohorts, and $\mathbf{R}_i$ is a vector of indicator variables reflecting immigrants' regions of origin. Finally, the vector β^q includes the model parameters

to be estimated and ε_i^q is an error term with the usual properties.

The model contains the full set of immigration cohort and region of origin indicators to facilitate interpretation of the estimation results. Identification of the overall constant is achieved by restricting the estimated coefficients on these variables to sum to zero, i.e. the restrictions $\sum_m \beta_{3km}^q = 0$ and $\sum_n \beta_{4kn}^q = 0$ are imposed, where m and n are the numbers of immigration cohorts and regions of origin respectively. Consequently, β_{2k}^q may be interpreted as the overall difference in the outcome measure between natives and immigrants given a set of characteristics, while β_{6k}^q and β_{7k}^q comprise the deviations of specific immigration cohorts and regions of origin from this outcome measure.

In addition to the analysis of the factors influencing the components of net worth, the determinants of the degree of asset portfolio diversification are being investigated by using the number of assets held by an individual as a dependent variable. To account for the fact that the dependent variable is given by a count data variable, a Poisson regression model is estimated. The Poisson regression model assumes that the dependent variable conditional on the covariates is Poisson distributed with density

$$f(P_i|\mathbf{X}_i) = \frac{\exp(-\mu_i)\mu_i^{P_i}}{P_i!}, \quad P_i = 0, 1, 2, ..., \quad i = 1, ..., N, \tag{6}$$

and conditional expectation

$$E(P_i|\mathbf{X}_i) = \mu_i = \exp(\mathbf{X}_i\gamma), \tag{7}$$

where P_i denotes the number of assets held by individual i, $\mathbf{X}_i$ includes the same set of explanatory variables as in equation (5) and γ is the vector of parameters to be estimated.[3]

[3] Since the Poisson regression model is based on the assumption that the dependent variable has the same mean and variance, the negative binomial regression model is frequently applied (see, e.g., Winkelmann, 2000). This model relaxes the assumption of equality of the conditional mean and the variance of the dependent variable, while it assumes the same form of the conditional mean as the Poisson model. However, in the following empirical analysis, the estimates of the negative binomial regression model do not deviate from those of the Poisson regression model. Consequently, only the estimates of the Poisson regression model will be discussed.

Moreover, following existing studies on asset portfolio diversification (Acharya et al., 2002; Doukas and Lang, 2003; Deng et al., 2007), a Herfindahl-Hirschmann Index (HHI) is employed to measure the degree of portfolio diversification attributable to a certain set of assets. Since this index measures concentration, one minus the index is used as a measure of diversification. Specifically, the diversification index DI is calculated as one minus the sum of the squared wealth components as a fraction of total net worth, i.e.

$$DI_i = 1 - HHI_i = 1 - \sum_k \left[\frac{m_{ik}}{\sum_k m_{ik}}\right]^2, \quad i = 1, ..., N, \quad k = 1, ...K. \tag{8}$$

To assess the relative importance of the determinants of the diversification index, the following linear regression model is estimated:

$$DI_i = \mathbf{X}_i\delta + \eta_i, \quad i = 1, ..., N, \tag{9}$$

where δ represents a vector of model parameters and η_i is an error term. Again, $\mathbf{X}_i$ is defined as in equation (5).

Table 2 includes the estimates of the median quantile regressions ($q = 0.5$) for the overall level of net worth and different wealth components. The results indicate that immigrants hold significantly less net worth than natives, even after controlling for relevant characteristics. Moreover, while the conditional median levels of migrants' real estate and financial and other assets are significantly lower than those of natives, median differences in private insurances between natives and immigrants are insignificant if socioeconomic and demographic characteristics are considered. The estimates also reveal that immigrants hold significantly more wealth if the head of the household is native-born. In most cases, the remaining determinants have the expected signs. The median levels of net worth and asset holdings are increasing in income and educational attainment. In contrast, different patterns emerge for age and the number of children below 18 years. While the age increases the level of private insurances, financial and other assets are being reduced over the life-cycle. Overall, the median effect of age on net worth is insignificant. The coefficients of the immigration cohort indicators suggest that immigrants who arrived between 1965 and 1973 hold more wealth in form of real estate but invest less in private insurances

than both more established and more recent immigration cohorts. Interestingly, the level of owner-occupied and other property of immigrants who arrived before 1965 is significantly lower than the corresponding level of succeeding immigration cohorts. Finally, the estimates indicate that differences between immigrants from various regions of origin are largely insignificant.

The estimates of both the Poisson and the OLS regression models presented in Table 3 reveal that the degree of migrants' asset portfolio diversification is significantly lower than that of natives. Moreover, while the degree of portfolio diversification is lower among immigrants with a foreign-born partner, immigrants with a native-born partner diversify more than immigrants of the overall population. Similar to the quantile regression estimates, the degree of portfolio diversification is increasing in income and educational attainment. However, the number of children does not affect the diversification measures. While there is evidence for an inverted U-shaped age pattern in the Poisson regression model, age does not affect the diversification index significantly. The coefficients of the immigration cohort indicators reveal that asset portfolios of immigrants who arrived in Germany after 1989 are less diversified than those of more established immigrants. Finally, differences between regions of origin appear to be less relevant in explaining the degree of migrants' portfolio diversification.

4 Decomposition analysis

4.1 Empirical strategy

To assess the relative impact of various sets of determinants on differences in the distribution of the respective outcome measure between natives and immigrants, the semi-parametric decomposition method proposed by DiNardo et al. (1996) is applied. Following Cobb-Clark and Hildebrand (2006c) and Bauer et al. (2007), the relevant determinants of the different outcome measures may be partitioned into three main factors: income (y), educational attainment (e), and demographic characteristics (z). Given these factors, the distribution of the net market value m_k

of outcome measure k may be written as:

$$\begin{aligned} f^j(m_k) &\equiv f(m_k|I=j) \\ &= \int_y \int_e \int_z f(m_k, y, e, z|I=j) dz de dy \\ &= \int_y \int_e \int_z f(m_k|y, e, z, I=j) f_{y|e,z}(y|e, z|I=j) \times \\ &\quad f_{e|z}(e|z, I=j) f_z(z|I=j) dz de dy, \end{aligned} \tag{10}$$

where I is an indicator variable of immigrant status and $j = (0, 1)$. Equation (10) comprises four conditional densities: the conditional distribution of the outcome measure f given the full set of determinants and immigrant status I, the conditional income distribution $f_{y|e,z}$ given education, demographic characteristics and immigrant status, the conditional education distribution $f_{e|z}$ given demographic characteristics and immigrant status and finally the distribution f_z of demographic characteristics conditional on immigration status.

A series of counterfactual distributions may be derived from equation (10). In particular, the counterfactual distribution f^A can be defined that would result if natives would possess the same conditional distributions as immigrants but retained their own conditional income distribution $f_{y|e,z}$:

$$\begin{aligned} f^A(m_k) &= \int_y \int_e \int_z f(m_k|y, e, z, I=1) f_{y|e,z}(y|e, z, I=0) \times \\ &\quad f_{e|z}(e|z, I=1) f_z(z|I=1) dz de dy. \end{aligned} \tag{11}$$

The counterfactual distribution f^A may be compared to the distribution f^B that would result if natives retained both their own conditional income and education distributions, but would otherwise possess the same conditional distributions as immigrants. Correspondingly, the counterfactual distribution f^C would result if natives additionally retained their own demographic characteristics.[4] Using these counterfactual distributions, the gap between natives and immigrants can be decomposed

[4] The distributions of the different outcome measures of immigrants considered in the analysis are considerably narrower than those of natives. Therefore, reweighting the immigrant wealth distribution would involve extrapolating the immigrant conditional distribution beyond the income range actually observed in the data. For that reason, the counterfactual distributions have been created by reweighting the distributions of natives (see Barsky et al., 2002).

into four separate components for any statistic $\alpha(\cdot)$:

$$\begin{aligned}\alpha(f^0(m_k)) - \alpha(f^1(m_k)) &= [\alpha(f^0(m_k)) - \alpha(f^A(m_k))] \\ &+ [\alpha(f^A(m_k)) - \alpha(f^B(m_k))] \\ &+ [\alpha(f^B(m_k)) - \alpha(f^C(m_k))] \\ &+ [\alpha(f^C(m_k)) - \alpha(f^1(m_k))].\end{aligned} \tag{12}$$

The first term on the right-hand side of equation (12) captures the effect of disparities in conditional income distributions, while the second and third terms represent the part of the gap attributable to educational attainment and demographic characteristics, respectively. Finally, a fourth "unexplained"component arises from differences in the conditional (on y, e, and z) wealth distributions of immigrants and natives. Since the proportion of the gap attributable to each of the explanatory factors will depend on the sequence in which they are considered (DiNardo et al., 1996), the results in this paper are based on simple averages across all possible sequences (see Cobb-Clark and Hildebrand, 2006c).

4.2 Decomposition results

To investigate the contribution of income, educational attainment and demographic characteristics to differences in the wealth level and its components between natives and immigrants, the full set of determinants is partitioned into three separate vectors. Specifically, the first vector, which reflects income disparities between the two groups, includes a quartic function of net income. The second vector describes the part of the gap that is attributable to the level of education (measured in years) of both partners. The third vector represents demographic characteristics and consists of an indicator variable for children less than 18 years in the household and a cubic function of age of both partners.

In the following, differences in four outcome measures between natives and immigrants are being investigated: (i) overall net worth, (ii) owner-occupied and other property, (iii) financial and other assets, and (iv) private insurances. The application of the decomposition method of DiNardo et al. (1996) allows an assessment of the

relative importance of the determinants of these outcome measures along the entire distribution. In particular, the gap in the outcome measures and the contribution of relevant determinants to this gap may be calculated at various percentiles of the distribution. Moreover, the dispersion of disparities in the outcome measures may be described by the gap between the 90-50, 75-25, and 50-10 percentiles of the distribution.[5] The results are obtained by calculating each of the relevant counterfactuals and then taking the simple average of these statistics over all of the possible decomposition sequences. Bootstrapping methods using a normal approximation with 500 replications are used to calculate standard errors.

Table 4 includes the results for the decomposition analysis of overall net worth. The estimates reveal that natives are wealthier than immigrants along the entire net worth distribution, indicating substantial disparity in the economic well-being of natives and immigrants. At the same time, the nativity wealth gap differs substantially at different points of the distribution. While wealth disparities are about € 4,000 at the 10^{th} percentile, immigrants have approximately € 50,000 less wealth than natives at the median of the distribution. The gap is substantially larger at the top of the distribution, reaching nearly € 90,000 at the 90^{th} percentile.[6]

Only a relatively small part – between 2% and 7% – of the wealth gap may be attributed to income differentials at any point of the wealth distribution. However, the part of the wealth gap between natives and immigrants that may be explained by income differentials is insignificant in all cases. The small contribution of income disparities to the overall wealth gap is surprising, given the large earnings gap and the slow earnings assimilation of immigrants in Germany (Dustmann, 1993; Schmidt, 1997). At the same time, economic theory suggests that wealth accumulation depends on permanent rather than current income (Kotlikoff, 1989). The SOEP unfortunately does not provide a permanent income measure. However, the

[5] In the following, only the dispersion measure of the 90-50 percentiles is presented for single wealth components, because the raw gaps of these variables are zero at most points below the median of their distributions (see Figures 2-4).

[6] Note that these findings differ substantially from those of Bauer et al. (2007), because their analysis is performed at the household rather than the individual level. Therefore, the overall wealth gap presented in Table 4 is much smaller than the gap between native and immigrant households reported by Bauer et al. (2007).

empirical findings are consistent with the theoretically weaker relationship between current income and wealth.[7]

A substantial fraction of the overall wealth gap may be explained by differences in educational attainment. Specifically, the part of the wealth gap attributable to different educational qualifications lies between 12% and 27% and is significant along the entire distribution. This result indicates that investments in the future economic situation are reflected by both decisions to accumulate wealth and investments in human capital.

Although immigrants are on average younger and have more children than natives, the contribution of demographic characteristics to the overall wealth gap is insignificant along the entire wealth distribution, suggesting that differences in demographic factors play a minor role in explaining the wealth gap between natives and immigrants.

The decomposition results of single wealth components are presented in Table 5. Due to the non-linear nature of the decomposition method of DiNardo et al. (1996), a different picture emerges for the estimates of the single components in contrast to those of the overall level of net worth. The estimates in Table 5 reveal that the major part of the overall wealth gap between natives and immigrants is attributable to differences in real estate, indicating that immigrants are much less likely to own a house or apartment than natives. Specifically, while the gap in owner-occupied and other property is not significantly different from zero at the bottom of the distribution, the gap is about € 50,000 at the median and increases to about € 75,000 at the 90^{th} percentile. Although differences in financial and other assets and private insurances appear to be relatively small if compared to these numbers, they are statistically significant at and above the median of their respective distributions but become insignificant at the 90^{th} percentile. Specifically, the gap in financial and other assets between natives and immigrants amounts to € 5,000 at the median and increases to about € 8,000 at the 75^{th} percentile. Differences in the market value of private

[7]As a robustness check, permanent income was proxied by a measure of predicted income following Blau and Graham (1990). However, the use of predicted income did not affect the estimates of the decomposition analysis substantially. Consequently, only the results based on current income are reported.

insurances increase from € 2,000 at the 25^{th} percentile to approximately € 8,400 at the 75^{th} percentile.

The relative income position of immigrants does not seem to affect their relative asset holdings considerably. Specifically, less than 10% of the disparity in the single wealth components may be attributed to a different income between natives and immigrants. Again, the contribution of income differentials is insignificant along the entire distributions, indicating that differences in current income have no relevance in explaining the overall nativity wealth gap or the differences in single wealth components.

Educational attainment is responsible for a part of the differences in asset holdings between natives and immigrants. For example, at the median, about € 4,000 of the gap in owner-occupied and other property (7%) is due to disparity in educational attainment. The share of this factor increases to 12% at the 90^{th} percentile. Moreover, the part of the gap in financial and other assets attributable to different educational qualifications of natives and immigrants amounts to about € 2,000 (38%) at the median and is close to € 7,000 (57%) at the 90^{th} percentile. The fractions of the median gap in private insurances caused by educational attainment are below € 2,000 and insignificant at all percentiles of the distribution.

Finally, the estimates indicate that differences in demographic characteristics do not have a significant influence on differences in the distribution of any wealth component. A reason for this observation may be the fact that existing differences in demographic characteristics are too small to explain the relative wealth and asset holdings of immigrants. The descriptive statistics presented in Table 1 comply with this interpretation.

Overall, the empirical findings indicate that wealth disparities and differences in the components of wealth are the result of disparity in educational attainment of natives and immigrants to a sizeable extent. Moreover, both income differentials and differences in demographic characteristics do not contribute significantly to the nativity gap in wealth and asset holdings. The estimates of the single components of wealth reveal that educational attainment is highly relevant for the investment in financial and other assets as well as private insurances but relatively less important

for the accumulation of real estate. Finally, in most cases, more than half of the gap in wealth and assets holdings remains unexplained by differences in income, education, and demographic characteristics between natives and immigrants.

5 Conclusions

This paper examines wealth and asset holdings of immigrants to Germany using data from the German Socio-Economic Panel (SOEP). The empirical findings indicate that natives are wealthier than immigrants along the entire net worth distribution. Differences in owner-occupied and other property constitute the major component of the net worth differential, suggesting that home-ownership rates of immigrants are much lower than those of natives. Moreover, the degree of migrants' portfolio diversification is significantly lower than that of natives, even after controlling for relevant characteristics. The estimates of a decomposition analysis suggest that a substantial fraction of both the overall wealth gap and differences in wealth components may be explained by disparity in educational attainment to a sizeable extent. At the same time, the contribution of differences in income and demographic characteristics to differences in wealth and asset holdings is insignificant.

On balance, the empirical results point to substantial disparity in the economic well-being between German natives and immigrants. Moreover, the large fraction of the differential in wealth and asset holdings that may be explained by disparity in educational attainment indicates that investments in the future economic situation are reflected by both decisions to accumulate wealth and investments in human capital.

TABLE 1: **Descriptive statistics**

	Natives			Immigrants		
	Mean	**Std.Dev.**	**N**	**Mean**	**Std.Dev.**	**N**
Overall net worth						
Overall net worth	119165.76	156995.24	3308	65071.02	95811.94	587
Net worth if > 0	124725.58	156737.96	3184	71133.65	96102.63	542
Median net worth if > 0	101831.20	71134.20	3184	37002.00	32259.57	542
$\% > 0$	0.962	0.192	3308	0.927	0.260	587
Wealth components						
Owner-occupied and other property	81641.70	112486.70	3308	41766.04	65633.07	587
Net market value if > 0	120147.94	118295.21	2292	83305.89	71658.52	284
Median net market value if > 0	100000.00	50000.00	2292	63347.20	36466.75	284
$\% > 0$	0.677	0.468	3308	0.500	0.500	587
Financial and other assets	21304.03	67724.03	3308	12212.55	46423.84	587
Market value if > 0	33224.15	82207.47	2092	29461.07	68582.02	224
Median market value if > 0	15000.00	10010.52	2092	10072.60	7169.68	224
$\% > 0$	0.641	0.480	3308	0.415	0.493	587
Private insurances	19540.65	34175.62	3308	13894.97	26050.55	587
Market value if > 0	24309.80	36567.32	2639	19849.04	29184.28	423
Median market value if > 0	15000.00	10000.00	2639	9332.60	6480.39	423
$\% > 0$	0.804	0.397	3308	0.700	0.459	587
Number of assets	2.371	1.057	3308	1.739	0.908	587
Explanatory variables						
Net Income	1734.44	1192.46	3308	1620.06	1050.57	587
Age	45.381	9.246	3308	45.027	9.947	587
Kids<18	0.901	0.997	3308	1.132	1.167	587
Education	12.626	2.744	3308	11.399	2.420	587
Mixed (**add to text**)				0.265	0.442	587
Immigration cohort						
<1965				0.078	0.268	587
1965-1973				0.250	0.433	587
1974-1989				0.443	0.497	587
>1989				0.229	0.420	587
Region of origin						
OECD Member Country				0.339	0.474	587
Central and Eastern Europe				0.379	0.486	587
Turkey				0.164	0.371	587
Ex-Yugoslavia				0.071	0.256	587
Other				0.048	0.213	587

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

TABLE 2: **Median quantile regression**

	Overall net worth	Owner-occupied and other property	Financial and other assets	Private insurances
Net income×10^3	14300.53***	5490.35***	2135.67***	4049.64***
	(1762.39)	(1236.73)	(166.152)	(319.38)
Education	3058.97***	1255.63**	921.58***	-239.57
	(785.81)	(558.40)	(78.76)	(149.70)
Kids<18	8339.19***	9940.88***	-294.36*	54.70
	(1923.39)	(1400.03)	(165.97)	(350.52)
Age	1275.18	-416.96	-599.08***	818.59***
	(1885.33)	(1165.58)	(142.15)	(316.50)
$Age^2 \times 10^2$	2978.75	4316.27***	887.46***	-713.21**
	(2135.36)	(1283.41)	(156.79)	(349.58)
Immigrant	-16989.80**	-17694.70***	-1625.98**	-409.55
	(6597.23)	(5459.67)	(639.66)	(1593.99)
Immigrant (excl.	-14951.42*	-10025.55*	-345.60	-3038.56*
Mixed Households)	(8464.94)	(5828.48)	(835.12)	(1766.19)
Mixed household	-2614.18	-3996.81	7.79	3049.70
× Foreign Head	(10548.00)	(7801.50)	(998.95)	(2562.52)
Mixed household	17565.60**	14022.36**	337.80	-11.14
× Native Head	(8865.11)	(6229.71)	(820.35)	(1822.10)
Immigration cohorts				
<1965	-2159.69	-22074.16**	-884.96	3862.85
	(12396.55)	(10195.98)	(1183.73)	(2472.14)
1965-1973	8228.59	19729.74***	-209.60	-3766.40**
	(9850.74)	(6860.13)	(868.71)	(1893.32)
1974-1989	-5155.58	23.06	985.66	-736.96
	(8113.29)	(6109.37)	(719.18)	(1456.06)
>1989	-913.32	2321.36	108.90	640.51
	(7978.14)	(5871.93)	(694.80)	(1547.42)
Regions of origin				
OECD	-6625.38	-7728.36	177.11	-293.14
	(9378.27)	(6839.30)	(848.33)	(1879.30)
CEE	903.77	2051.35	-282.66	286.78
	(7645.47)	(5712.09)	(699.34)	(1528.31)
Ex-Yugoslavia	-13789.26	-13485.32*	-883.82	797.16
	(11355.57)	(7988.04)	(1020.16)	(2171.67)
Turkey	5443.57	2139.60	1059.24	-575.46
	(10371.09)	(7789.91)	(944.20)	(1928.57)
Other	14067.30	17022.73	-69.88	-215.34
	(12829.34)	(10395.96)	(1227.51)	(2706.54)
Constant	-110463.47**	-51374.87*	-668.50	-15979.92**
	(43076.20)	(26997.30)	(3290.17)	(7008.24)
N	3,895	3,895	3,895	3,895

NOTE.–Weighted numbers based on weights provided by the SOEP. Standard errors are reported in parentheses.$^{*}p < .10$; $^{**}p < .05$; $^{***}p < .01$.

TABLE 3: **Asset portfolio diversification – Poisson and OLS estimates**

	Poisson model Number of Assets		**OLS** 1−HHI	
	Mean	S.E.	Mean	S.E.
Net income$\times 10^3$	0.074***	0.008	0.044***	0.003
Education	0.021***	0.003	0.011***	0.001
Kids<18	0.008	0.009	-0.004	0.004
Age	0.034***	0.008	0.005	0.003
Age$^2 \times 10^2$	-0.025***	0.008	-0.003	0.004
Immigrant	-0.165***	0.035	-0.042**	0.018
Immigrant (excl. Mixed HH)	-0.186***	0.046	-0.083***	0.019
Mixed household × Foreign Head	0.098*	0.053	0.071***	0.023
Mixed household × Native Head	0.373***	0.093	0.166***	0.036
Immigration cohorts				
<1965	0.046	0.062	0.019	0.031
1965-1973	0.063	0.052	0.037*	0.020
1974-1989	-0.012	0.043	-0.014	0.018
>1989	-0.097**	0.048	-0.041**	0.021
Regions of origin				
OECD	-0.095*	0.052	-0.041*	0.022
CEE	0.087*	0.046	0.017	0.020
Ex-Yugoslavia	-0.076	0.060	-0.040	0.031
Turkey	0.018	0.056	0.028	0.024
Other	0.065	0.074	0.036	0.039
Constant	-0.559***	0.193	-0.099	0.078
$F_{14,3881}$			46.04	
R^2	0.15			
N	3,895		3,895	

NOTE.–Weighted numbers based on weights provided by the SOEP.
$^*p < .10$; $^{**}p < .05$; $^{***}p < .01$.

TABLE 4: **DFL decomposition: Overall net worth – Natives vs. Immigrants**

	Raw Gap	Income	Education	Demography	Unexplained
10^{th}	3853.20	264.70	1029.70	1083.00	1475.80
	[879.12]	[211.85]	[304.64]	[581.63]	[981.51]
		(7)	(27)	(28)	(38)
25^{th}	15647.40	857.27	3921.87	1522.87	9345.40
	[1920.17]	[660.06]	[1035.96]	[1634.15]	[2098.52]
		(5)	(25)	(10)	(60)
50^{th}	49302.20	819.43	7345.93	-2468.17	43605.00
	[6943.84]	[1557.75]	[2420.25]	[3910.33]	[6637.54]
		(2)	(15)	(-5)	(88)
75^{th}	72211.40	1789.70	8936.10	-4396.00	65881.60
	[12160.25]	[2179.25]	[2935.25]	[3905.77]	[10530.08]
		(2)	(12)	(-6)	(91)
90^{th}	88685.20	4390.03	18034.93	-9177.37	75437.60
	[27209.81]	[5485.15]	[6521.37]	[7104.77]	[24749.32]
		(5)	(21)	(-11)	(85)
P50-P10	45449.00	554.73	6316.23	-3551.17	42129.20
	[6443.14]	[1446.88]	[2181.40]	[3626.06]	[5939.25]
P75-P25	56564.00	932.43	5014.23	-5918.87	56536.20
	[11448.24]	[1865.50]	[2721.13]	[2935.98]	[10313.07]
P90-P50	39383.00	3570.60	10689.00	-6709.20	31832.60
	[23178.66]	[4564.89]	[5628.17]	[4767.17]	[22346.64]

NOTE.–Percentage of total variation explained in parentheses. Standard errors of explained variation are reported in brackets.

TABLE 5: **DFL decomposition: Wealth components – Natives vs. Immigrants**

	Raw Gap	Income	Education	Demography	Unexplained
Owner-occupied and other property					
25^{th}	0.00	0.00	0.00	0.00	0.00
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
		(.)	(.)	(.)	(.)
50^{th}	51618.20	1047.13	3824.13	-1721.27	48468.20
	[8485.01]	[1119.23]	[1897.83]	[3081.16]	[8054.75]
		(2)	(7)	(-3)	(94)
75^{th}	43164.20	1139.10	5526.90	-3286.80	39785.00
	[8742.30]	[1444.04]	[2330.75]	[3241.21]	[7991.29]
		(3)	(13)	(-8)	(92)
90^{th}	75747.00	1320.60	9384.10	-3848.30	68890.60
	[15066.24]	[2926.83]	[4588.83]	[4945.08]	[14429.54]
		(2)	(12)	(-5)	(91)
P90-P50	24128.80	273.47	5559.97	-2127.03	20422.40
	[14418.02]	[2544.63]	[4212.30]	[3462.20]	[14960.06]
Financial and other assets					
25^{th}	0.00	0.00	0.00	0.00	0.00
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
		(.)	(.)	(.)	(.)
50^{th}	5000.00	48.07	1890.77	61.17	3000.00
	[178.23]	[154.89]	[316.35]	[247.78]	[397.74]
		(1)	(38)	(1)	(60)
75^{th}	7739.00	52.10	2552.10	-0.40	5135.20
	[2283.44]	[717.28]	[867.62]	[747.26]	[1956.95]
		(1)	(33)	(0)	(66)
90^{th}	12560.60	896.63	6928.43	-1075.87	5811.40
	[9886.52]	[1592.79]	[2268.83]	[1762.53]	[9090.74]
		(7)	(57)	(-9)	(45)
P90-P50	7560.60	848.57	5037.67	-1137.03	2811.40
	[9693.40]	[1514.95]	[2117.48]	[1643.29]	[8929.86]
Private insurances					
25^{th}	2000.00	35.00	36.40	-71.40	2000.00
	[285.88]	[111.38]	[148.85]	[225.09]	[344.44]
		(2)	(2)	(-4)	(100)
50^{th}	5128.20	347.30	807.00	-443.90	4417.80
	[1377.68]	[367.13]	[427.39]	[535.23]	[1373.79]
		(7)	(16)	(-9)	(86)
75^{th}	8402.20	600.10	1959.40	-1762.70	7605.40
	[3375.76]	[976.50]	[990.30]	[1308.31]	[3572.84]
		(8)	(24)	(-21)	(89)
90^{th}	5306.40	359.27	1624.67	-1983.93	5306.40
	[8996.39]	[1457.66]	[2439.04]	[1835.13]	[8915.82]
		(7)	(31)	(-38)	(100)
P90-P50	178.20	11.97	817.67	-1540.03	888.60
	[7299.63]	[1300.15]	[2172.29]	[1431.04]	[7290.08]

NOTE.–See Note to Table 4.

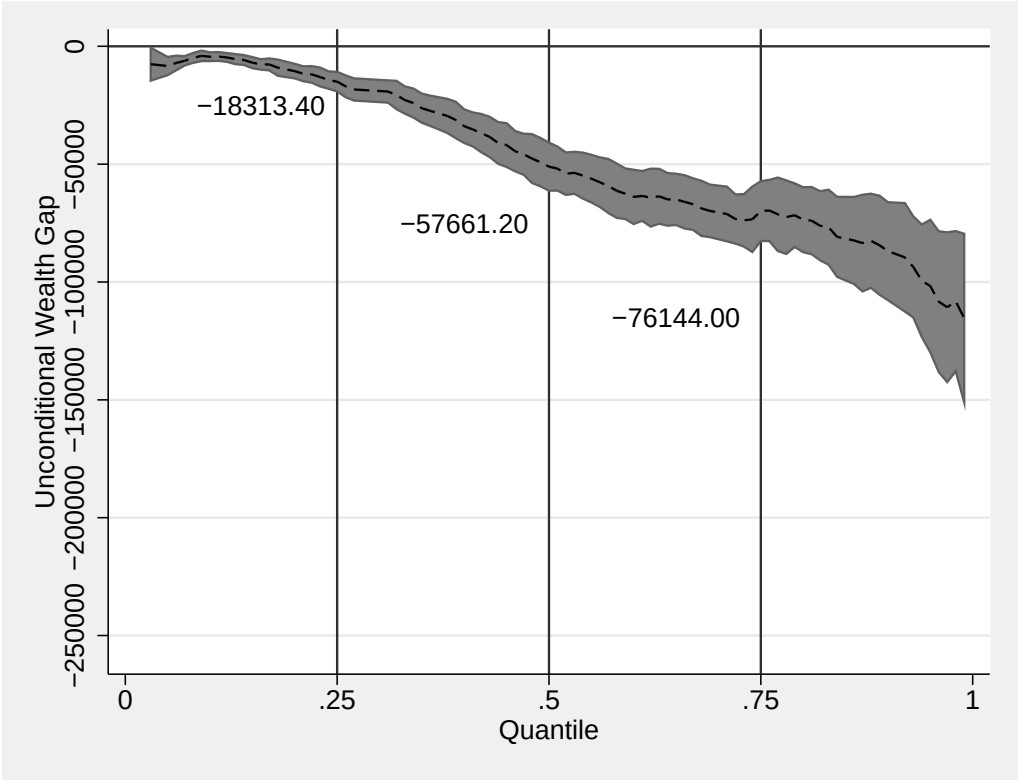

FIGURE 1: **Quantile regression estimates.** Overall wealth gap

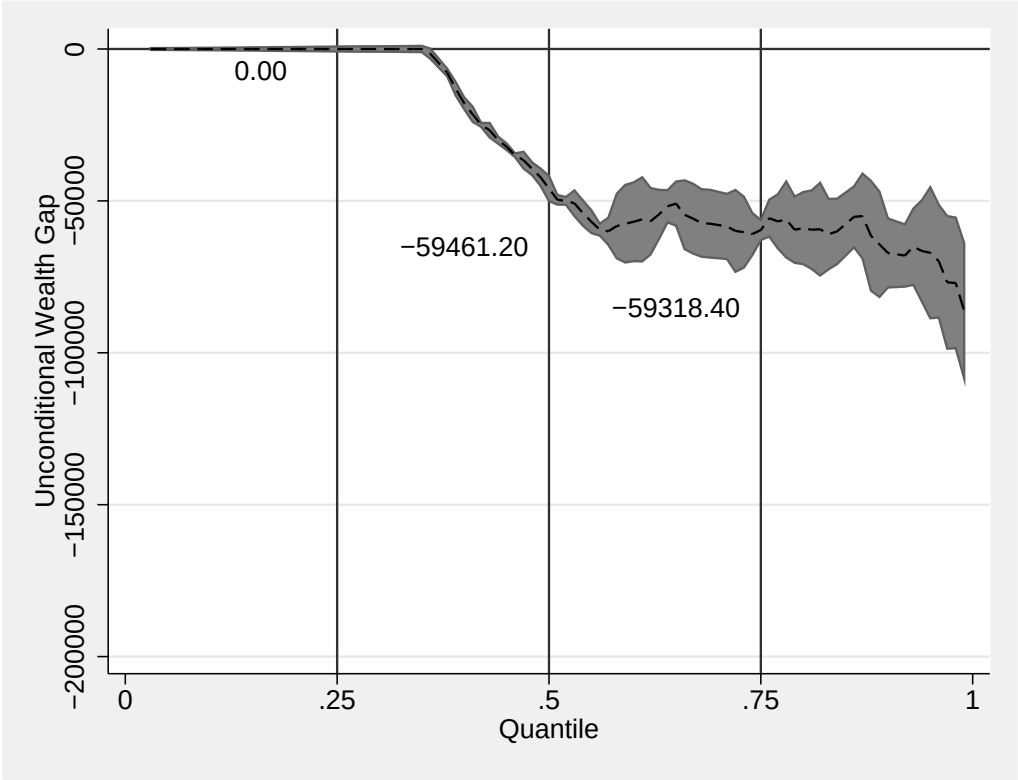

FIGURE 2: **Quantile regression estimates.** Differences in owner-occupied and other property

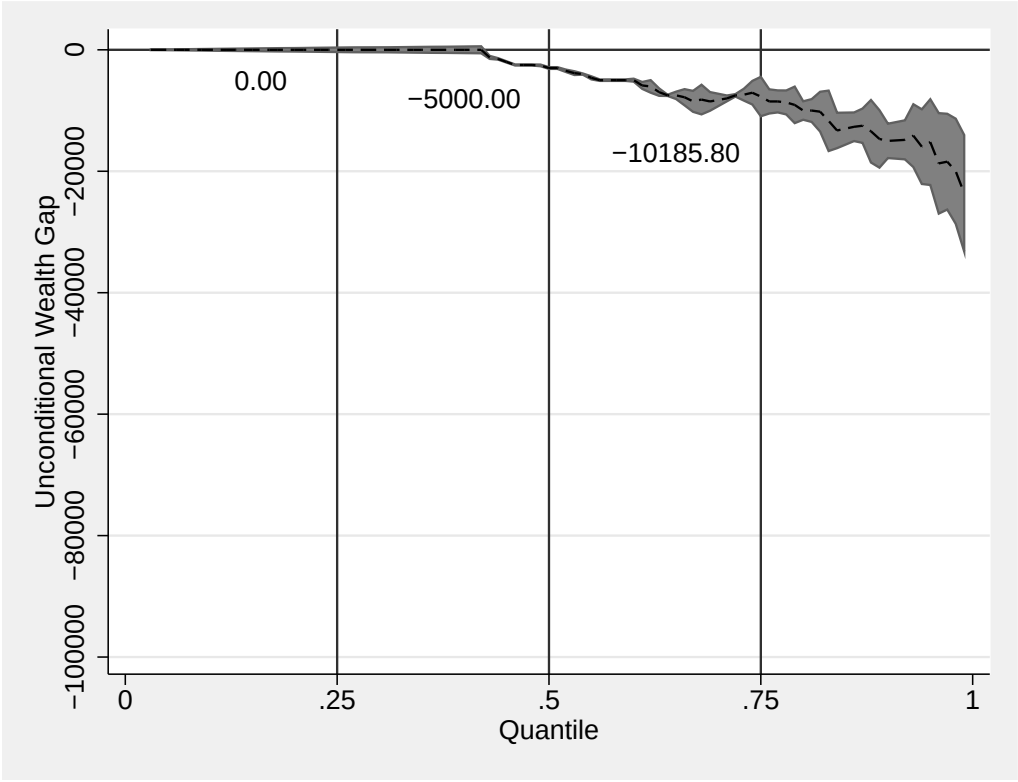

FIGURE 3: **Quantile regression estimates.** Differences in financial and other assets

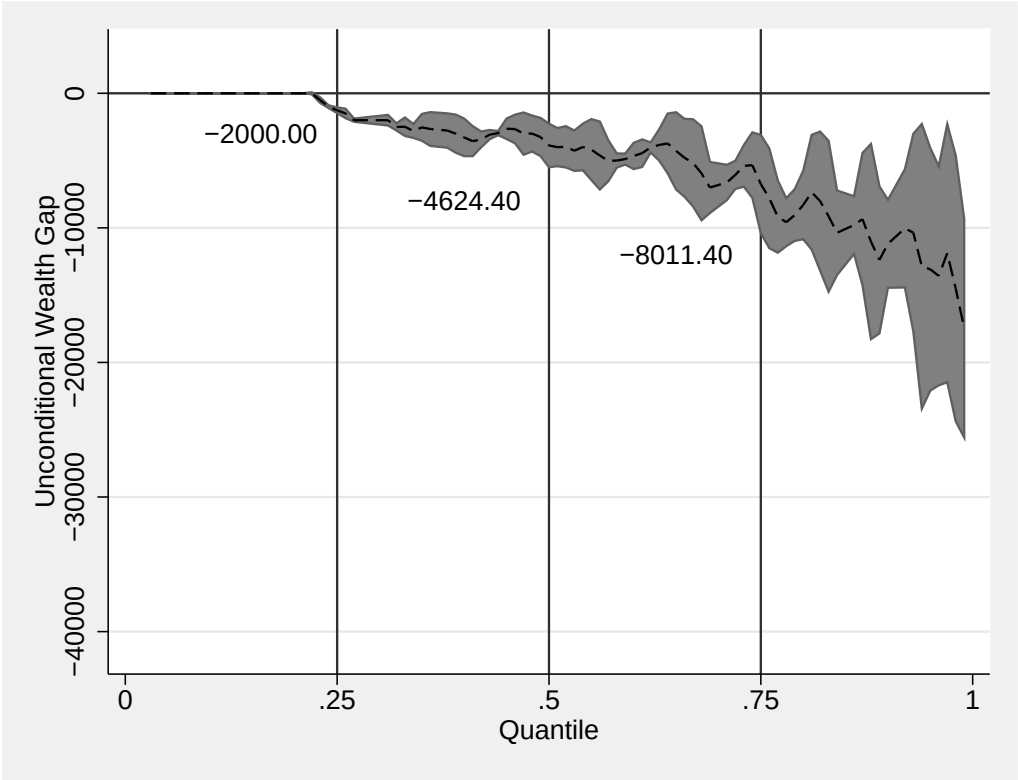

FIGURE 4: **DFL decomposition.** Differences in private insurances

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Appendix

TABLE A.1: **Definition of Wealth Components and Overall Net Worth**

Variable		Description
Wealth Components		
Owner-occupied property	(a.)	Individual share of net market value: (market value − debts) × individual share; imputation alternative 1-5.
Other property	(b.)	Individual share of net market value: (market value − debts) × individual share; imputation alternative 1-5.
Financial assets	(c.)	Individual share of market value: market value × individual share; imputation alternative 1-5.
Business assets	(d.)	Market value; imputation alternative 1-5.
Tangible assets	(e.)	Market value; imputation alternative 1-5.
Private insurances	(f.)	Market value; imputation alternative 1-5.
Owner-occupied and other property		a. + b.
Financial and other assets		c. + d. + e.
Number of assets		Number of assets held by respondent $(0, 1, 2, ..., 6)$.
Overall Net Worth		
Owner-occupied property	(i.)	Individual share of market value: market value × individual share; imputation alternative 1-5.
Other property	(ii.)	Individual share of market value: market value × individual share; imputation alternative 1-5.
Financial assets	(iii.)	Individual share of market value: market value × individual share; imputation alternative 1-5.
Debts: owner-occupied property	(iv.)	Debts × individual share; imputation alternative 1-5.
Debts: other property	(v.)	Debts × individual share; imputation alternative 1-5.
Consumer debts	(vi.)	Market value of consumer debts; imputation alternative 1-5.
Overall net worth		i.+ii.+iii.+d.+e.+f.−iv.−v.−vi.

NOTE.–Frick et al. (2007) provide a detailed description of the definition of wealth components in the SOEP.

TABLE A.2: **Definition of Variables**

Variable	**Description**
Net Income	Current monthly net income in Euro.
Education	Education in years.
Kids<18	Number of children below 18 years in household.
Age	Age in years.
Immigrant	1 if respondent immigrated to Germany since 1948.
Mixed Household	1 if respondent resides in a mixed household in which one partner is native-born and the other is foreign-born; 0 otherwise.
Head	1 if respondent is considered as head of the household; 0 otherwise.
Immigration cohort	
<1965	Year of immigration before 1965.
1965-1973	Year of immigration between 1965 and 1973.
1974-1989	Year of immigration between 1974 and 1989.
>1989	Year of immigration after 1989.
Regions of origin	
OECD	1 if respondent originates from OECD member country; 0 otherwise.
CEE	1 if respondent originates from Central or Eastern European country; 0 otherwise.
Europe	1 if respondent originates from Europe; 0 otherwise.
Turkey	1 if respondent originates from Turkey; 0 otherwise.
Ex-Yugoslavia	1 if respondent originates from former Yugoslavia; 0 otherwise.
Other	1 if respondent originates from country other than OECD member country, Central or Eastern European country, Europe, Turkey or former Yugoslavia; 0 otherwise.