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The Nativity Wealth Gap in Europe: a Matching Approach

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Abstract:

This paper uses a matching method to provide a first estimate of the nativity wealth gap among older households in Europe. This approach does not require to impose any functional form on wealth and avoids validity-out-of-the-support assumptions; furthermore, it allows not only the estimation of the mean of the wealth gap but also its distribution for the common-support sub-population. The results show that on average there is a positive and significant wealth gap between natives and migrants. However, the average gap may be misleading as the distribution of the gap reveals that immigrant households in the upper part of the wealth distribution are better off, and those in the lower part of the wealth distribution are worse off, than comparable native households. Although intra-European migrant households are better off than non-European ones, a heterogeneity analysis reveals that the former have also suffered most from migrating in terms of wealth, as their wealth gap is sizable and can not be explained by observable characteristics. The same is true for households who migrated as adults, as opposed to those who migrated at younger ages.

Zusammenfassung:

Die vorliegende Untersuchung liefert mithilfe eines Matching-Verfahrens eine Abschätzung der Vermögenslücke zwischen Einheimischen und Migranten (nativity wealth gap) unter älteren Haushalten in Europa. Der Ansatz verlangt dabei keine funktionale Form des Vermögens und vermeidet dadurch falsche Annahmen über deren Gültigkeit. Vielmehr ermöglicht das Verfahren den Mittelwert der Vermögenslücke und dessen Verteilung innerhalb relevanter Bevölkerungsgruppen abzuschätzen. Die Ergebnisse zeigen im Durchschnitt eine signifikant positive Vermögenslücke zwischen Einheimischen und Migranten. Ein differenzierterer Blick auf die durchschnittliche Vermögenlücke bringt jedoch hervor, dass migrierte Haushalte im oberen Teil der Vermögensverteilung wohlhabender sind als vergleichbare Haushalte Einheimischer, während Migranten im unteren Teil der Vermögensverteilung schlechter gestellt sind als ihre einheimischen Gegenüber. Eine weitere Heterogenitätsanalyse lässt zudem Unterschiede zwischen den Herkunftsregionen von Migranten erkennen: Obwohl Migranten aus anderen (inner-)europäischen Ländern durchschnittlich wohlhabender sind als Migranten aus nicht-europäischen Regionen, zeigt sich, dass Erstere durch die Migration erkennbar an Vermögen eingebüßt haben. So ist die Vermögenslücke in der Gruppe innereuropäischer Migranten beträchtlich und kann nicht durch weitere beobachtbare Merkmale erklärt werden. Das gilt auch für Haushalte, die erst im Erwachsenenalter übergesiedelt sind, im Gegensatz zu Haushalten, die in jüngerem Alter ausgewandert sind.

Keywords:
Migrants, natives, wealth, gap, propensity score matching

JEL Classification:
D31, J15, E21

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Abstract

This paper uses a matching method to provide a first estimate of the nativity wealth gap among older households in Europe. This approach does not require to impose any functional form on wealth and avoids validity-out-of-the-support assumptions; furthermore, it allows not only the estimation of the mean of the wealth gap but also its distribution for the common-support sub-population. The results show that on average there is a positive and significant wealth gap between natives and migrants. However, the average gap may be misleading as the distribution of the gap reveals that immigrant households in the upper part of the wealth distribution are better off, and those in the lower part of the wealth distribution are worse off, than comparable native households. Although intra-European migrant households are better off than non-European ones, a heterogeneity analysis reveals that the former have also suffered most from migrating in terms of wealth, as their wealth gap is sizable and can not be explained by observable characteristics. The same is true for households who migrated as adults, as opposed to those who migrated at younger ages.

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1 Introduction

This paper seeks to answer the question of how older migrants fare financially with respect to natives. This is done by measuring the wealth gap between native and immigrant households across the wealth distribution. This is first of all relevant because wealth is generally considered a long-run indicator of well-being, which can be informative on the economic integration process of foreign-born individuals. Second, wealth is fundamental in providing income security for a non-negligible number of older (50+ years) immigrants who are approaching the age of retirement. The most recent wave of the Survey of Health, Ageing and Retirement in Europe (SHARE Wave 6) shows that, in 2015, almost 10% of the 50+ year old interviewees were first generation migrants. Therefore, given the surge of reforms aimed at reducing the generosity of the social security systems all around Europe, knowing if such a large group is potentially at risk of poverty in retirement is fundamental. Finally, appropriate policies depend on whether the wealth gap - if any - is driven by differences in observables characteristics. Despite its relevance, this is a largely understudied question.

While the literature has mainly pointed to the reasons why one should expect a positive gap in favor of natives (e.g. earnings gap, credit constraints, lack of host-country specific information, institutional barriers, differences in social norms, limited access to social welfare programs), there are reasons to believe that some factors could dampen the problematic aspects associated with migration and even lead to a non-positive wealth gap for certain households. Freedom of movement, easier bureaucracy and limited cultural or ethnic differences within Europe could for example foster allocative efficiency through better skill matching. Those who stay longer in the host country may be a selected group of particularly well integrated individuals, and those who migrated earlier may have had more time to integrate and adapt to the new country. However, a non-positive gap may not be apparent if one looks only at the average or median of the gap, as it has been the case in most previous studies. At the same time, the average gap could hide a much larger gap for certain households in the immigrant population. In general, the distribution of the wealth gap along the wealth distribution would be much more informative than a single statistic.

Another common limitation of previous literature is that it did not restrict the wealth comparison

to households with comparable characteristics. Besides, in most cases, the decomposition methods used are based on linear relationships when, in fact, the wealth function is unknown and most likely highly non-linear. A noticeable exception is Barsky et al. (2002), who recognized the limits of the Blinder-Oaxaca decomposition and measured the portion of black-white wealth gap in the U.S. explained by earnings using a non-parametric method, which did not require extrapolation outside the range of observed explanatory variables.

This paper adds to the literature in several respects. Following Ñopo (2008) and Frölich (2007), a matching strategy is used to estimate the gap between natives and migrants households (as well as mixed households) in Europe in the years 2006 to 2015, and to partition the gap into its explained (by observables) and unexplained parts. Second, the data at hand allow for the calculation of pension wealth, in addition to real and financial wealth, which is generally disregarded due to data limitations.[1] This represents a serious omission, given that it will be shown that pension wealth accounts for around half of the total wealth of older Europeans. Third, the decomposition method adopted does not require the specification of a functional form for wealth, thus avoiding misspecification errors. Fourth, this paper goes beyond the average gap by estimating the distribution of the unexplained gap. The average gap may in fact be misleading, given that the wealth distribution is typically highly skewed. More importantly, the average would hide the presence of heterogeneity of the gap across the wealth distribution. Finally, the approach adopted avoids validity-out-of-support assumptions and restricts the comparison to individuals with comparable characteristics in both groups.

Besides the methodological differences, this paper pays particular attention to separately analyzing different types of migrants. In fact, it will be shown that grouping together migrant households with different characteristics may also be misleading. For this reason, first of all households where both spouses are immigrants are separately analyzed from households where only one of the spouses is an immigrant. Second, the nativity wealth gap is also separately measured depending on region of

[1] An exception is Sevak and Schmidt (2014), who use data from the Health and Retirement Study linked with restricted data from the Social Security Administration in order to estimate future Social Security benefits, and use self-reported data on Social Security benefits for those who already receive them.

origin and age at migration.

It is important to underline, however, that this paper does not try to answer whether immigrants are - or are not - better off with migration as compared to stayers in the home country. This is an equally important question, which is left to future research.

The paper finds that the average wealth gap delivers a very partial picture for the gap of the migrant population. Even though it is positive and significant, it hides a very interesting distribution of the gap, where immigrant households in the upper part of the wealth distribution are better off, and those in the lower part of the distribution are worse off, than comparable natives. Although the matching procedure is able to reduce the average gap for migrant households, observable characteristics are not able to uniformly explain the gap over the entire distribution. In the case of mixed households, the average gap found after matching is larger than the unconditional one. Moreover, a heterogeneity analysis reveals that, although intra-European migrants are better off than non-European ones, they are also those who suffered most from migrating in terms of wealth, as the same observable characteristics explain much of the gap for non-European households but not for intra-European ones. This is probably due to the fact that better selected individuals - in terms of skills and education - find it more difficult to find a job that fits their qualification in a foreign country, while this is less of a problem for low-educated and low-skilled individuals. Age at migration is also an important factor in explaining the wealth gap, as individuals who migrated at older ages suffered more from migration in terms of wealth than households who migrated at younger ages.

The structure of the paper is as follows: Section 2 discusses the theoretical background and summarizes previous literature on the measurement of the nativity wealth gap. Section 3 presents the data and some preliminary descriptive statistics. Section 4 discusses the drawbacks of previous methods used to measure outcome differences between two groups and introduces the propensity score matching method and its advantages over the Blinder-Oaxaca method. Section 5 presents the results and proposes a detailed decomposition analysis. Section 6 analyses the heterogeneity of the gap for different groups of migrants and Section 7 concludes.

2 Background and related literature

The migration literature has pointed to a number of reasons why one should expect migrants to be worse off than natives. Older families, in particular, may primarily count on three types of resources: social security income, pensions and private savings and wealth (see Sevak and Schmidt (2014)). For migrants, these resources may differ as a result of differences in inherited wealth, rates of return or savings behavior, which in turn may depend on both the country of origin and host-country characteristics.

In terms of wages, it has been extensively shown that immigrants face at arrival a relative earnings gap. This tends to disappear over time, even if there is no agreement on the extent this reflects a gap in unobserved characteristics and on the speed of convergence (see Borjas (1994)).[2] The lack of host-country-specific information and institutional barriers associated with language skills, ethnicity or legal status could drive a wedge between native and foreign-born wealth (Cobb-Clark and Hildebrand (2006)). Interestingly, Osili and Paulson (2004) show that the likelihood of financial market participation decreases with higher levels of ethnic concentration in the immigrant residence area. Osili and Paulson (2008) also find that immigrants from countries with more effective institutions are more likely to own stock in the U.S.. McKernan et al. (2014) found that African Americans and Hispanics (both immigrant and non-immigrant) receive less private transfers in the form of large gifts and inheritances than whites. As financial literacy starts in the family, as pointed out by Lusardi and Mitchell (2014), by observing parents' saving and investing habits or from directly receiving financial education, it may well be that financial literacy is also related to specific cultural or ethnic differences (see for example Haliassos et al. (2016)).

Countries' regulations covering immigrant welfare eligibility may also contribute to the wealth gap: limited access to social welfare programs could in fact induce immigrants to accumulate more resources to cope with financial difficulties (see Bauer et al. (2011)). Related to this are the rules

[2] Borjas and Bratsberg (1996) explains that people who decide to migrate and stay in the receiving country may be positively or negatively self-selected based on their observable or unobservable characteristics.[3] Return migration accentuates the initial selection: the return migrants are the "worst of the best" in the case of initial positive selection, and the "best of the worst" in case of initial negative selection. Thus, it is possible that permanent foreign-born individuals end up in the upper and lower part of the host-country wealth distribution, depending on the initial selection.

regulating pension coverage. If social security or pension rules require a minimum number of contribution years, some immigrants may not be able to meet eligibility criteria, and even when they do, depending on the pension system, they could reach lower benefits because of lower earnings or fewer contribution years.[4] However, depending on the redistributive nature of the pension system, immigrants could get higher replacement rates than natives (see Favreault and Nichols (2011)).

As the vast majority of current evidence refers to the U.S., and mostly to black-whites or Hispanic-whites differences, theoretical discussions regarding immigrants-migrants differences in Europe are scarce. However - at least with regard to within-Europe migration - there could be some factors that dampen the emergence of a positive nativity wealth gap, or even allow the emergence of a negative gap.

Freedom of movement of workers is one of the four fundamental pillars of economic integration in the European Union (EU) and has been a major goal of European integration since the 1950s. This required the lowering of administrative formalities and called for increased recognition of professional qualifications of other states. In turn, this entailed the abolition of any discrimination based on nationality between workers of the member states in regards to employment, remuneration and other conditions of work and employment.[5] Besides, the risks and costs of migration typically grow with the geographic and cultural distance from the destination country, as information about distant labor markets is more difficult to obtain. For the majority of European countries, these costs should be fairly small.

The literature on the nativity wealth gap is small. In terms of wealth accumulation, Amuedo-Dorantes and Pozo (2002) look at the saving behavior of immigrants and natives in the U.S. using data from the 1979 Youth Cohort of the National Longitudinal Surveys (NLSY79). They find that immigrants on average accumulate less wealth than comparable natives and that natives appear to carry out more precautionary savings than comparable immigrants, even if immigrants may engage in precautionary savings by remitting money to their home countries. With regard to European

[4] Sevak and Schmidt (2014) notice that working "off the books" may be another reason for lower benefits.

[5] As a basic principle, any EU citizen should be able to practice his or her profession freely in any member state. However, the practical implementation of this principle is often hindered by national requirements for access to certain professions in the host country, see http://www.europarl.europa.eu/atyourservice/en/displayFtu.html?ftuId=FTU_3.1.3.html.

countries, Bauer and Sinning (2011) use data from the German Socio-economic Panel (SOEP) and distinguish between permanent and temporary immigrants. They show that if remittances are treated as savings, migrants who intend to return to their home country save significantly more than comparable natives. Additionally, a decomposition analysis shows that most of the differences between permanent immigrants and natives and between permanent and temporary immigrants may be attributed to observable characteristics. De Arcangelis and Joxhe (2015) find similar results for UK by looking at the British Household Panel Survey. They show that temporary migrants have a propensity to save 26% higher than permanent migrants in UK and a decomposition analysis shows that migrants are more affected by observable socio-economic characteristics than natives.

A common finding in the literature is that immigrant households are less likely to be home owners. Borjas (2002) finds that the national origin of immigrants and the residential location choices made by different immigrant groups are key variables in explaining the gap in home ownership. Constant et al. (2009) find that, in Germany, immigrants with a stronger commitment to the host country are more likely to achieve homeownership for a given set of socio-economic and demographic characteristics. Sinning (2010) finds that the assimilation process in homeownership between native and immigrant households did not take place in Germany.

The closest papers to this one are those that study the relative wealth position of the foreign-born population. Cobb-Clark and Hildebrand (2006) analyze the net worth and portfolio choices of foreign-born individuals in the U.S. using Survey of Income and Program Participation (SIPP) data. They estimate a reduced-form model of the determinants of net-worth and find that the median wealth level of U.S.-natives is 2.5 times larger for couples and 3 times larger for singles. Sevak and Schmidt (2014) use Health and Retirement Study data (HRS) linked with restricted data from the Social Security Administration to compare retirement resources of immigrants and natives and find that while immigrants have lower levels of Social Security benefits than natives, when holding demographic characteristics constant, immigrants have higher levels of net worth. They observe heterogeneity in the estimated immigrant differentials which depends on the number of years in the U.S., with the most recent immigrants being the least prepared for retirement. Bauer et al. (2011) find

that in Germany and the U.S. the wealth gap is explained by different educational and demographic characteristics, while in Australia immigrants do not translate their educational advantage into a wealth advantage. To the best of this author's knowledge, there is no similar evidence on the relative wealth position of the foreign-born population in the entirety of Europe.

3 The Survey of Health, Ageing and Retirement in Europe

3.1 Data description

This paper utilizes wave 2, 4, 5 and 6 of SHARE (Survey of Health, Ageing and Retirement in Europe),[6] which cover the 2007-2015 time span.[7] SHARE is a multidisciplinary and cross-national panel database of micro data on health, socio-economic status and social and family networks of individuals from 20 European countries aged 50 or older. The richness of information in SHARE is particularly useful for the purposes of this paper, and will allow both for the construction of a comprehensive measure of wealth and the matching of households over a large set of characteristics. This is particularly useful given the econometric approach that will be used.

A common issue of survey data, however, is the presence of item non-response, which is normally particularly high among monetary variables. This raises a practical and a technical negative consequence. The former is that using only "complete cases" (that is, observations for which there are no missing values in any of the variables the researcher needs) would drastically reduce the sample size. The latter, and most important, is that when missingness is non-random, as is most likely the case for monetary values, any estimate obtained using only complete observations would produce biased results (Little and Rubin (2002)). For this reason, this study resorts to the use of imputations. Appendix A.1 discusses in detail why employing imputations is important, explains how they are used and carefully describes the inference methods utilized in the paper.

[6] Wave 3 of SHARE is called SHARELIFE and includes different information with respect to the regular waves as it focuses on people's life histories. For this reason, it is not used here.

[7] To be more precise, interviews for wave 2 were conducted in 2006 and 2007, for wave 4 in years 2010 to 2012, for wave 5 in 2013 and for wave 6 in 2015.

After merging waves 2, 4, 5 and 6 of SHARE,[8] the initial sample consists of 150,560 households (220,235 interviewee). Some basic demographic variables as well as wealth variables are imputed, so they do not contribute to the reduction of the sample size. Households with missing information on the non-imputed variables used in the matching procedure are dropped. In very few cases, country of birth could not be recovered, which led to the observation being dropped. Besides, only couples in which both partners are interviewed and with no missing information on future pension entitlements[9] or any other non-imputed variables are kept. In fact, in this study information on both spouses is always used, in contrast with previous literature where only variables referring to the head of the household were used. This is done first of all because defining the head of the household always involves a certain degree of subjectivity. Second, and more importantly, matching on the characteristics of both spouses considerably improves the quality of matching. Third, it seems particularly relevant to include the characteristics of both spouses for migrant and mixed households, given the relevance that characteristics such as the country of origin may have. As in more than 50% of the cases single households consist of widowed individuals for whom information on the deceased spouse is not available, single households are excluded from the current analysis. The sample selection leads to a final sample of 44,063 couple households.

Immigrants are defined as respondents who were born in a country different from the one where they reside. Throughout the analysis, couple households will be divided into three groups: those where both spouses are natives, those where one spouse is native and the other is an immigrant (mixed households) and those where both spouses have a migration history (immigrant households). This is done as mixed and migrant households may be different in a non-trivial way, thus it is more reasonable to treat them separately. The sample consists of all couples where both spouses are interviewed, from 19 European countries.[10] The final sample consists of 38,610 native, 1,770 migrant and 3,683 mixed couple households.

[8] And after exclusion of Israel, see above.

[9] Differently from wealth variables, which are asked at the household level, pension entitlements are asked to each interviewed individual.

[10] The included countries are: Austria, Germany, Sweden, Netherlands, Spain, Italy, France, Denmark, Greece, Switzerland, Belgium, Czech Republic, Poland, Ireland, Luxembourg, Hungary, Portugal, Slovenia and Estonia. Israel is excluded as it is not part of Europe.

The dataset contains information on a number of wealth items at the household level, the sum of which amounts to the overall (net) real and financial wealth of households. Specifically, households' real assets are given by the sum of the value of main residence net of the mortgage on main residence, the value of real estate, the value of own businesses and the value of cars. Households' financial assets are given by the sum of the value of bank accounts, bond, stocks and mutual funds, plus savings for long term investments and net of financial liabilities. In turn, savings for long term investments are given by the amounts in individual retirement accounts, the value of contractual savings for housing and the face value of whole life policies.

SHARE also contains information that can be used to obtain a measure of individuals' pension wealth. Specifically, individuals are asked whether they receive any pension and, in the case of an affirmative answer, the after-taxes amount of the monthly benefit is asked. Individuals are also asked whether they are eligible to any pension, and in this case they are asked about the date they expect to collect said pension and their expected replacement rate.[11] Following Alessie et al. (2013), a pension wealth measure is calculated for those who already receive a pension assuming constant real pension benefits. For those who will be eligible for a pension but are not yet receiving it, the expected replacement rate multiplied by current wage and the expected age of retirement are used to obtain the pension wealth measure. When expected retirement age or expected replacement rate are missing, country statutory retirement age and replacement rates for the average worker are used.[12] Pension wealth is defined as the present value of the future flow of pension benefits B_τ and is calculated assuming a 1% annual real interest rate r and a maximum age L=110:

$$\begin{aligned} PW_t &= \sum_{\tau=R+1}^{L} (1+r)^{t-\tau} B_\tau \qquad if \quad t < R \\ PW_t &= \sum_{\tau=t+1}^{L} (1+r)^{t-\tau} B_t \qquad if \quad t \geqslant R \end{aligned} \tag{1}$$

[11] Social security, occupational and early retirement pensions are included, disability pension is not. While it is asked to individuals whether they receive any unemployment or social assistance pension, it is not asked whether they are eligible to any of them. For this reason, unemployment and social assistance pensions are excluded from the computation of pension wealth.

[12] Statutory retirement ages and replacement rates for the average workers, separately for men and women, are obtained from OECD (2016).

Where R is retirement age and all future incomes are weighted by country, year and gender specific survival rates obtained from the Human Mortality Database.[13]

3.2 Descriptive statistics

In the final sample, 8.4% of married couple households are mixed and 4% are immigrant. Figure 1 shows the frequency distribution of immigrants by number of years since migration. It is clear that the vast majority of foreign-born individuals have been living in their host country since they were very young. While the median number of years in the U.S. found in HRS data is 36 (see Sevak and Schmidt (2014)), interestingly the corresponding median in SHARE is 45, meaning either that individuals migrate to European countries at a much younger age, or that individuals who have been living longer in Europe have a lower probability to re-emigrate with respect to immigrants in the U.S. (or both).

It is important at this point to notice that the migration literature tends to distinguish between temporary and permanent migrants. It has in fact been shown that these two categories of migrants display different behaviors, in terms of, for example, savings behavior (see Bauer and Sinning (2011) and De Arcangelis and Joxhe (2015)), working hours (Kahanec and Shields (2013)) and economic assimilation in general (Dustmann (2000)). As migration usually happens at younger ages and re-emigration occurs within the first years in the host country,[14] it can be argued that this paper, by using a sample of individuals older than 50, studies a group of permanent migrants. This actually facilitates the interpretation of wealth comparisons between natives and migrants, as there is no need to correct for the presence of temporary migrants; besides, the relative wealth position of permanent migrants may be considered more relevant for host countries' policies directed to older migrants.

In Figure 2, the proportion of foreign-born individuals by their area of origin and of residency is shown. For the sake of convenience, countries of origin are aggregated into seven main regions

[13] University of California Berkeley (USA) and Max Planck Institute for Demographic Research (Germany) (2016).

[14] Dustmann and Weiss (2007) show for example that in UK migrants return back home mainly during the first half decade of being in the host country, and after five years the migrant survival probability tends to stabilize. They also notice that "for many aspects of analysis of immigrant behavior, it is convenient to define a migration as temporary if the migrant leaves the country before reaching retirement age."

(Africa, Central and Northern Europe, Eastern Europe, Southern Europe, Russia and former USSR countries, Arabic countries and "Rest", a residual category which includes migrants from any other region) and European destination countries are aggregated into four macro-areas (Northern, Central, Southern and Eastern Europe). This picture clearly shows a large variation in terms of diversity of the migrant population in Europe. The vast majority of immigrants in Northern Europe come from other Northern countries or from Central Europe, while almost all immigrants in Eastern Europe come from other eastern countries or from Russia and former-USSR countries.[15] The immigration pattern in Central Europe is instead more equally spread among origin regions, while Southern Europe registers the biggest presence of immigrant from Africa and from the "rest" of the regions (mainly Asia, the U.S., Latin America and Australia).

Figure 3 shows the proportion of households owning the main types of asset by European region and household type. In general, a considerably stable pattern can be noticed, where ownership is lower for immigrants than for natives, with mixed households ranking in between. An exception are savings for long-term investment in Southern Europe, where the ownership proportion is higher for immigrants than for natives or mixed couple-households. Ownership of financial investments show a very different distribution among the four European regions: it exceeds 50% in Northern Europe for all household types (48% for immigrant households), but does not reach even 10% in Eastern Europe, while savings for long-term investment are especially low in Southern Europe.

Table 1 shows the mean and median total net wealth[16] of couples, by European region and household type. As expected, median wealth is always lower than the mean, due to the right-skewed distribution of wealth. Similar to ownership rates, the wealth level is also higher for natives and lower for immigrants, while mixed households rank in between. Eastern countries appear to be an exception, with rather similar wealth levels among the three household types.[17] Wealth levels are

[15] Hunkler et al. (2015) comments on the case of Eastern European transformation states (Czech Republic, Estonia, and Slovenia). Due to the independence of Estonia and the split of Czechoslovakia into the Czech Republic and Slovakia, a number of individuals are coded as immigrants, even if it is debatable to define them as such. In the future, robustness checks could be run where these countries are excluded.

[16] All monetary values are expressed in German 2005 Euro, using exchange rates that adjust for purchasing power parity.

[17] This may in part depend on an imprecise definition of immigrants in some of these countries (see Footnote 15), but the fact that the vast majority of immigrants in this area comes from other Eastern European countries makes it reasonable to expect similar wealth levels.

highest in Northern Europe and lowest in Eastern Europe, for all household types with the exception of immigrant households in Southern Europe, which exhibit the lowest levels of wealth.

Figure 4 displays the proportion of pension, financial and real wealth over the total, by European region and household type. A striking feature is that on average almost half of total wealth consists of pension wealth, confirming the fact that ignoring it is a serious omission. Real wealth amounts on average to 45% of the total and the remaining 8% is composed of financial wealth. The wealth composition pattern of different households is relatively similar in Northern and Central Europe, which are also the regions where the share of financial wealth is bigger and that of real wealth smaller. The share of real wealth is instead the highest in Southern Europe.

Table 2 describes some socio-demographic characteristics of natives and immigrant households. What stands out for immigrant households is the considerably lower probability of having ever received an inheritance[18] and the much higher probability of being in unemployment for immigrant males. In general, however, it is difficult to find a consistent pattern that distinguishes mixed and immigrant households from natives. This is not surprising, since mean characteristics hide the heterogeneity of migrants deriving, for example, from their different regions of origin.

4 Econometric strategy

4.1 Decomposition methods

The standard approach to measure an outcome gap between two groups is the Blinder and Oaxaca (B-O) decomposition.[19] This method requires a linear regression estimation of a variable of interest for both groups and allows the decomposition of the *average* gap into two components: one attributable to differences in the average characteristics of individual, and the other to different returns to these characteristics.[20]

[18]The exact question in the survey states: "have you or your wife/husband ever received a gift or inherited money, goods, or property worth more than 5,000 Euro?"

[19]See Blinder (1973) and Oxaca (1973).

[20]The latter component may be due to unobservables or to actual differences in returns, as would be in the presence of discrimination for example. In general, in the absence of stronger assumptions, it is not possible to interpret the different returns as a causal treatment effect, see Fortin et al. (2011).

Two separate wealth equations are estimated for native and immigrants (or mixed) households:

$$Y_{gh} = \sum_{k=1}^{K} X_{hk}\beta_{gk} + v_{gh}, \quad g = F, N \tag{2}$$

where X_k are factors hypothesized to determine wealth, N stands for native and F for immigrant households. The average wealth gap can then be written as:

$$\begin{aligned} \hat{\Delta}_O^{\mu} &= \bar{Y}_N - \bar{Y}_F \\ &= \underbrace{\sum_{k=1}^{K} (\bar{X}_{Nk} - \bar{X}_{Fk})\hat{\beta}_{Nk}}_{\hat{\Delta}_X^{\mu}} + \underbrace{\sum_{k=1}^{K} \bar{X}_{Fk}(\hat{\beta}_{Nk} - \hat{\beta}_{Fk})}_{\hat{\Delta}_S^{\mu}} \end{aligned} \tag{3}$$

The first term, $\hat{\Delta}_X^{\mu}$, represents differences in average characteristics between natives and immigrants, while the second term, $\hat{\Delta}_S^{\mu}$, represents differences in average returns to the household characteristics. $\beta_N \bar{X}_F$ may be thought as the wealth level immigrant households would have if they had the same returns as natives, or the wealth level native households would have if they had the same characteristics as immigrants.

This approach presents several issues. First, it allows one to estimate only the average gap, which may be misleading given that the wealth distribution is typically highly skewed. More importantly, the average would hide the presence of heterogeneity of the gap across the wealth distribution. Second, the B-O decomposition assumes a linear relationship between explanatory and outcome variables. In the case of wealth, this amounts to imposing the unlikely assumption of additive separability between income and demographic characteristics.[21] Third, the B-O decomposition is potentially subject to misspecification due to differences in the supports of the empirical distributions of individual characteristics for the two groups of individuals analyzed (see Mizala et al. (2011)) and it implicitly assumes validity-out-of-the-support (see Ñopo (2008)). It does not in fact restrict the comparison to individuals with comparable characteristics, and it is also possible that comparable

[21] See Altonji and Doraszelski (2005).

individuals do not exist at all in some parts of the supports.

Following the work of Frölich (2007) and Ñopo (2008), matching can be used as a non-parametric alternative to B-O decomposition. Specifically, Propensity Score Matching (PSM) is a technique used to identify a control group with the same distribution of covariates as a treatment group and, as demonstrated by Frölich (2007), it can be used in applications other than treatment evaluation. It differs from the parametric approach in that it does not require estimation of a conditional expected wealth function, thus avoiding the errors that could arise from misspecification of the functional form.[22] Besides, the (adjusted) mean gap is simulated only for the common support sub-population. Finally, it allows one to estimate what the entire distribution of an outcome variable Y would be in a particular population if its covariates X were distributed as in another population.

In this paper, PSM is thus used to identify native households which display the same characteristics as immigrant or mixed households, and then compare their wealth levels. The PSM estimator is then the mean difference in wealth over the common support, weighted by the propensity score distribution of immigrant or mixed households. If $m_g(x) \equiv E[Y \mid X = x, G = g]$ denotes the mean wealth and $f_g(x)$ the distribution of X among households of type g, and S denotes the common support of f_F and f_N, then the counterfactual wealth can be simulated and the nativity wealth gap can be again decomposed into an explained and an unexplained part:

$$\begin{aligned} E[W \mid g = N] - E[W \mid g = F] = & \int_S m_N(x) \cdot (f_N^S(x) - f_F^S(x))dx \\ & \int_S (m_N(x) - m_F(x)) \cdot f_F^S(x)dx \end{aligned} \tag{4}$$

where the first term represents the part of the gap that can be attributed to differences in the distribution of characteristics between natives and immigrants, while the second part is due to differences in returns to these characteristics. Furthermore, in order to know how the gap evolves in different parts of the wealth distribution, the distribution function of natives, $F_{W|g=N}(a)$, can be

[22] Barsky et al. (2002) also use a non-parametric alternative to B-O in order to avoid imposition of any functional form on the wealth-earnings relationship, showing that misspecification of the conditional expectation function may result in errors in inference regarding the part of the gap explained by differences in the distribution of explanatory variables.

adjusted for differences in covariates between natives and immigrants. The adjusted distribution function for natives can be written as:

$$F^*_{W|g=N} = \int_S F_{W|g=N}(a, x) \cdot f^S_F(x) dx \tag{5}$$

This can be estimated using matching, which can be performed on the propensity score instead of the covariates X as proven by Frölich (2007), and the adjusted quantiles can be obtained by inverting the adjusted distribution function. At any percentile the horizontal distance between the adjusted distribution and the immigrant distribution is a measure of the unexplained nativity wealth gap at that specific percentile.

4.2 Propensity score matching

The implementation of the PSM[23] follows the following steps. First, a probit regression for the probability of being an immigrant (mixed) household is estimated. One advantage of SHARE is the availability of many variables on various aspects of individuals' and households' lives that can be used to perform the matching. Second, the households are matched on the basis of their estimated propensity score.

The choice of variables included in the regression is guided by the economic theory. In particular, wealth depends on savings, inherited wealth and the rate of return on accumulated assets. As savings are not directly observed in SHARE, some standard socio-demographic factors related to saving behavior and assets returns are included.[24] Specifically, age, age squared, education, number of children, labor market status, self-assessed health[25] and long-term health problems[26] of both spouses are included, as well as the European region of residence. Besides, early childhood conditions[27] of

[23] See Caliendo and Kopeinig (2008)

[24] See, among others, Menchik and Jianakoplos (1997), Cobb-Clark and Hildebrand (2006) and Bauer et al. (2011).

[25] Self-assessed health ranks from 1 ("excellent") to 5 ("poor").

[26] The question reads: "Some people suffer from chronic or long-term health problems. By chronic or long-term we mean it has troubled you over a period of time or is likely to affect you over a period of time. Do you have any such health problems, illness, disability or infirmity?".

[27] The early childhood condition variables are the number of rooms in the house where respondent was living at age 10 divided by the number of people living in the house, the number of books present in the house at 10, the school performance at ten compared to the other children in the class and health at ten. School performance at ten is ranked from 1 ("much better") to 5 ("much worse").

both spouses are included as they may proxy both the level of financial transfers received throughout life and the savings behavior, given the intergenerational transmission of financial behavior (see Section 2). As an income measure, total household income is included. Finally, dummies indicating whether the household ever received an inheritance, whether spouses have any sibling or any parent who is still alive are included in order to control both for having already received an inheritance and for the likelihood of receiving it in future.

As matching results are robust to the use of different algorithms, only results obtained through three-nearest neighbor (NN) matching are presented.[28] In order to determine the region of common support, 5% of the observations whose propensity score values have the lowest density are trimmed. The matching quality is finally assessed by performing a number of tests: t-test, standardized mean-bias and pseudo-R^2. Besides, in Figure 5 it is visually shown that the matching procedure does a good job in matching propensity scores in the immigrant-native households comparison.[29]

5 Results

5.1 The nativity wealth gap

In Table 3, results on the nativity wealth gap are reported, for immigrant- and mixed-households. The first column shows the unconditional wealth gap, which simply reflects mean differences in wealth between the two groups. The second column shows the unexplained wealth gap obtained from the Blinder-Oaxaca decomposition. As explained above, this measures differences in the average returns to households' characteristics, which are the same as those included in the matching procedure. The third column presents the average unexplained wealth gap measured on the common support region after matching the two groups. The wealth gap is measured both excluding and including pension wealth to the measure of wealth, in order to gain insights on the role of social security.

[28] Specifically, besides 3-nearest neighbor, also one-to-one matching with replacement and radius matching with caliper 0.01 were implemented.

[29] The graph refers to one of the five imputed samples, but the same graphs for the other four samples show a similarly good match. This is not surprising since the control variables used in the matching procedure present a rather small percentage of missing values.

In all cases considered - with the exception of mixed households when pension wealth is included - the average gap turns out positive and significant. With regards to the natives-immigrant households comparison in the case of no pension wealth, the B-O decomposition reduces the unexplained gap by around 40% and the NN matching by almost 50%. When pension wealth is included, B-O reduces the gap by almost 30%, while the NN matching reduces it by 50%. Surprisingly, with respect to the unconditional case, the unexplained average gap of mixed households (both with and without pension wealth) is larger when using the B-O decomposition, and even more so when using NN matching. It can be argued, however, that the average gap is not a comprehensive measure and may actually hide considerable heterogeneity of the gap along the wealth distribution, which happens to be exactly the case.

In order to show this, the last columns of Table 3 reports the wealth gap for specific percentiles of the wealth distribution. It is clear that the size of the gap varies dramatically over the wealth distribution, and that moving up the distribution even turns it negative. This is better visualized graphically: in Figures 6 and 7 the horizontal distance between immigrants- and native-households cumulative distribution functions at any percentile is shown, both before and after having performed the matching. In contrast to Figure 6, wealth in Figure 7 also includes pension wealth. The gap turns positive around the 81st percentile when pension wealth is excluded, and at the 77th percentile when included. While the unexplained pension gap is increasing with wealth, the wealth gap obtained after matching shows an opposite pattern, where the gap is higher in the lower part of the distribution and then it decreases and becomes big and negative in the upper part of the distribution. If anything, when including pension wealth the gap is even larger at lower wealth percentiles.

In the case of mixed households (Figures 8 and 9) a similar pattern of the wealth gap emerges after matching, with the difference that the gap measured before matching was around zero over the entire distribution. The gap for mixed households turns negative at the 78th percentile when no pension wealth is included, and at the 75th percentile when it is included.

In order to shed some light on the factors that could help explain the pattern of the nativity wealth gap, Table 4 presents the mean value of individual and immigrants households' characteristics

(columns (1) and (2)), separately for households experiencing a positive or negative gap. A t-test analysis of mean differences reveals that immigrant households who are richer than natives have a statistically significant higher probability to live in central Europe (and a corresponding lower probability of living in eastern and southern Europe). Besides, they were originally born with much a higher probability in central, northern or southern Europe, with respect to eastern Europe, Russia or Arab countries. They have two-times higher income on average, and 20pps higher probability of having received an inheritance or big gift. They have on average higher education (two more years of education for the male spouse, 1.3 more years for the female spouse) and lower unemployment rate, and claim to be healthier[30] and less affected by long-term illnesses. Finally, it is interesting to notice the statistically significant differences in early childhood conditions: immigrant households experiencing a negative gap used to live in bigger houses, to have more books available, to have better health and, in the case of males, to perform better than classmates at ten years old.[31] Table 5 delivers a similar picture for mixed households.

In order to try and understand what could explain the negative gap characterizing higher wealth households, in column (5) of Table 4 a t-test of mean differences is conducted between the characteristics of immigrant households with a negative gap (column (2)) and their peers native households (in terms of wealth percentile, column (3)). It turns out that immigrant households in this part of the wealth distribution are more likely to live in Central Europe and less likely to live in Northern Europe; they are also more likely to have received an inheritance or big gift, are older and thus more likely to be retired rather than employed, have better health and had better early childhood conditions. With regards to mixed households, they are less likely to live in Eastern Europe with respect to their native counterpart (Table 5), while the rest of the variables delivers a picture similar to that of immigrant households.

These results highlight the importance of restricting the comparison only to sufficiently similar households, and of being able to measure the gap over all the wealth distribution. In sum, it is found that on average immigrant and mixed households are worse off than comparable natives, but this is

[30] Health is ranked from 1 ("excellent") to 5 ("poor").
[31] School performance is ranked from 1 ("much better") to 5 ("much worse").

not true for households in the upper part of the wealth distribution. Households in the lower part of the wealth distribution, on the other hand, are worse off than what the average gap suggests. Overall, the analysis suggests that worse-off immigrant households migrated with higher probability from countries outside Europe, have lower income, are less healthy and less educated, and are more likely to come from poorer families. Better-off immigrant households, on the contrary, come more likely from other European countries, have higher income, are better educated, healthier and come from richer families. Besides, these households seem to be positively selected even in comparison to their native counterpart.

One may argue, however, that by pooling all immigrant households in a single group a great deal of heterogeneity - that most likely characterizes these households - is hidden. In fact, one may wonder how different is the size of the gap for different migrants in the first place, and to what extent observable characteristics are able to explain the gap for different groups of migrant households. This concern is addressed in Section 6, where a separate analysis on the basis of European or extra-European origin and of age at migration is provided.

5.2 Detailed decomposition analysis

In this paragraph, a strategy for detailed decomposition analysis when matching is used as a decomposition tool is proposed. The aim of a detailed decomposition is to apportion the composition effect (or the structure effect) into components attributable to each explanatory variable. The strategy proposed is very intuitive and similar to the one used in other approaches based on reweighing.[32] The idea is simply to perform a sequential decomposition where the distribution of any covariate X_k (or group of covariates) for one group is replaced by the distribution of that covariate for the second group, and then repeating the procedure adding variables on top of those already replaced, until the whole distribution of X is replaced. In practice, this is done by performing several matchings, each time adding a set of variables on top of those previously used.

In general, detailed decomposition is not an easy task in a non-linear setting where, depending

[32] Fortin et al. (2011) notice for example that "In principle, other popular methods in the program evaluation literature such as matching could be used instead of reweighing."

on the decomposition method used, there may be a trade-off between the "adding-up" and "path-independence" properties. The detailed decomposition of the composition effect is said to add up when $\Delta_X^v = \sum_{k=1}^K \Delta_{X_k}^v$. Fortin et al. (2011) explain that the adding-up property is automatically satisfied in linear settings like the standard B-O decomposition, or the re-centered influence function (RIF-) regression procedure (Fortin et al. (2009)). In a non-linear setting, this property is satisfied in the sequential decomposition described above.

A well-known problem related to this procedure, however, is that of "path-dependence", meaning that the result of the decomposition will depend on the order in which the covariates are introduced.[33] As noticed by Altonji et al. (2012), unless one can come up with economic reasons for the ordering (like a clear causal relation between variables, or their timing), the best approach to follow is to check the sensitivity of the decomposition to alternative orderings. Given the setting of this paper, the latter approach is followed, as it seems difficult to credibly justify an economically meaningful order of variables in most cases. An exception is represented by early childhood conditions, which clearly temporally precede all other variables which may be relevant for wealth accumulation.

Therefore, four groups of variables are defined and sequentially added to the matching procedure: the set of early childhood conditions variables, basic demographics, total household income, and finally, inheritance related variables. Figure 10 depicts the sequential marginal changes in the gap distribution as these variables are added. [34]

A couple of things stand out: first of all, early childhood conditions alone explain much of the upward shift of the wealth gap for households in the lower part of the wealth distribution. Adding all the other variables has a very small impact on the gap in this part of the distribution. Basically, not only are all of these variables not helpful in explaining the gap for poorer households, but - especially in the case of early childhood conditions - they actually lead to the conclusion that the gap after matching is much bigger than what is implied by the unconditional gap distribution.

Early childhood conditions, however, do not explain much of the gap on the right hand side of the

[33] Basically, the path-dependence problem is an omitted variable problem, see Fortin et al. (2011).

[34] See Figure A.1 in the Appendix for a reverse order detailed decomposition which maintains early childhood conditions as the first element of the sequential decomposition

distribution, where adding the other variables to the matching has instead a stronger impact. Demographic characteristics, total household income and transfers help close the gap, and actually lead to the conclusion that - on the basis of these characteristics - some of the richer migrant households are actually better off than their native counterparts. Adding total household income and inheritances on top of early childhood conditions and basic demographics does not contribute to the final gap, most likely because of the high correlations among these variables.

This analysis underlines how much early childhood conditions matter for poorer households: so much that, once they are controlled for, little is added by introducing other observable characteristics. This is probably due to the fact that the distribution of "other" characteristics in the native population is very similar to that of migrant households for people who have a poorer background. On the other hand, adding the other controls to the matching drastically reduces the gap for those households who are on the right hand side of the distribution, meaning that for households with a richer background the distribution of "other" characteristics is quite different among native and migrant populations.

6 Heterogeneity analysis

The analysis performed above pooled all migrant households together, as if they were a single population of individuals. The migrant population, however, is characterized by a high degree of heterogeneity. This raises the question of how large is the gap in the first place for different groups of migrants, and how much of the gap can be explained by the matching procedure for each of them. The most obvious sources of heterogeneity are country of origin and time since migration. Even if, due to data limitations, it is not possible to perform a refined analysis of migrants from each single origin country and for all ages at migration, it is at least possible to distinguish between individuals who migrated from another European country or from a non-European country, and between individuals who migrated before or after the age of 18.

The first distinction is justified by the freedom of movement of workers guaranteed by the countries which are part of the European Union, and in general by the relative geographic and

cultural vicinity of European countries. This should entail lower costs and risks of both migrating and settling, which in turn could determine a different development of the gap. The distinction based on age at migration is instead justified by the fact that younger individuals are more likely to have migrated with their parents and due to their parents' decision, and may have completed some schooling in the host country, while older individuals are more likely to have migrated following their own decision, possibly due to work reasons, and have had less time to settle.[35]

Figure 11 presents the distribution of the gap for European migrant households (top panel), as opposed to non-European migrants (bottom panel).[36] What stands out is that the unconditional gap is much lower for European migrants than for non-European ones, over the entire wealth distribution. However, after matching, it turns out that the gap is bigger than what could be thought by only looking at the raw gap over a vast part of the distribution. The gap can be partially explained only after the 70th percentile. On the contrary, for non-European migrants the matching procedure is able to reduce the unconditional gap over most of the wealth distribution. Only up to around the 30th percentile is the after-matching gap bigger than the unconditional one.

This result may seem surprising, but it should be interpreted in perspective. European migrant households are much better off than non-European ones, with a median wealth amounting to around 327,000 Euro as opposed to 158,000 Euro, respectively.[37] Contrary to what expected, it looks then like the (unobserved) costs of migrating and settling are best absorbed by the relatively worse-selected non-European households than by the better-selected European ones. A likely explanation is that highly-educated individuals moving to a foreign country may have more difficulties in finding a job that fits their education level than lower-educated individuals. The well-documented gap in wages that migrants experience at their arrival may thus be bigger for better-educated migrants, who may consequently suffer a permanent wealth loss.

It should be also noted that the individuals in the SHARE sample migrated mostly in between

[35] The analysis was performed also using different migration-age thresholds (10 years and 16 years) but, as very similar results were obtained, only the case of migration before/after the age of 18 is presented.

[36] Only households where both spouses migrated from European countries (top panel) or where both migrated from non-European countries (bottom panel) are included.

[37] The average amounts to 425,000 Euro for European migrant households and 255,000 Euro for non-European ones.

1950 and 1990. This time span was characterized by two prominent migration flows. The first one consisted of intra-European migration flows from the poorer, Southern countries to the richer North-Western European countries. The second one, which concentrates particularly in the '60s and '70s, consisted of poor people from formerly colonized countries who were encouraged to migrate to former colonizing countries to fill the labour market for low- and un-skilled workers (Bell et al. (2010)). It is possible that settling into the new country was easier for non-European migrants, due to better knowledge of the local labour market and lower language barriers.

Figure 12 presents the distribution of the gap for migrants who migrated before the age of 18 (top panel), as opposed to those who migrated after the age of 18 (bottom panel).[38] It emerges clearly from these graphs that those households who migrated at younger ages perform much better than those who migrated at older ages. This is true both in terms of wealth level and in terms of wealth gap with respect to natives. Households who migrated earlier have a median wealth equal to almost 400,000 Euro, as opposed to 217,000 Euro for those who migrated later.[39] Besides, the gap is relatively small over all the wealth distribution, and the average gap is not statistically significantly different from zero (see Table 6). For those who migrated at older ages, the gap is instead pretty high over all the wealth distribution and is reduced by the matching procedure only after the 60th percentile. It can be argued that for these households the costs of migration due to language barriers and settling, and the difficulties in having recognized any school or university qualification and in finding a qualified job, are most likely particularly high.

7 Conclusion

This paper assesses for the first time the wealth gap between foreign-born and native households in Europe. It is argued that shedding light on such a topic is relevant for a number of reasons, notably to provide information on the economic integration process of the sizable number of older immigrants

[38] The household is considered to have migrated before 18 if at least one of the spouses migrated before 18, and to have migrated after 18 if both spouses migrated after 18.

[39] The average amounts to 473,574 Euro for households where at least one spouse migrated before 18 and 308,345 Euro for households where both spouses migrated after 18.

who have been living in Europe since young ages, and to gauge whether they are a group at risk of poverty in retirement. It is also discussed that the existence and direction of the nativity wealth gap is not trivial, and economic theory does not provide a straightforward answer. Thus, inferring about the nativity wealth gap necessarily boils down to an empirical question.

This paper adds to the literature also with respect to the empirical strategy adopted to measure the gap. The limited literature measuring wealth gaps is based on linear wealth equation estimation or resort to the classical Blinder-Oaxaca decomposition method. These approaches present several issues. First of all, they make use of the undesirable assumption of linearity. Second, they only measure the average gap, which hides heterogeneity of the gap across the wealth distribution. Third, they may be subject to misspecification due to differences in the supports of the empirical distributions of the two analyzed groups. Thus, the paper adopts a non-parametric alternative to the B-O decomposition based on propensity score matching. This approach does not require the specification of any function, simulates the gap only for the common-support sub-population and allows the estimation of the gap over the entire distribution of wealth.

This analysis highlights the importance of restricting the analysis only to comparable households and of being able to go beyond the mean gap. The latter is in fact misleading in that it hides an interesting distribution of the gap, where immigrant households in the upper part of the wealth distribution are better off, and those in the lower part of the distribution are worse off, than comparable natives. The latter group migrated in most cases from other European countries, has higher income, is better educated, healthier and has a richer background; besides, these households seem to be positively selected even in comparison to their native counterparts.

However, a heterogeneity analysis reveals that, although intra-European migrants are better off than non-European ones, they are also those who suffered most from migrating in terms of wealth, as the same observable characteristics explain much of the gap for non-European households but not for intra-European ones. This is probably due to the fact that better selected individuals find it more difficult to find a job that fits their qualification in a foreign country, while this is less of a problem for low-educated and low-skilled individuals. Age at migration is also an important factor in explaining

the wealth gap, as individuals who migrated at older ages suffered more from migration in terms of wealth than households who migrated at younger ages. Further research is needed in order to dig into the components of the ”unexplained” share of the gap and to understand its origin.

Table 1: Wealth descriptives, by household type and host region

	Natives				Mixed				Immigrant			
	Northern Europe	**Central Europe**	**Southern Europe**	**Eastern Europe**	**Northern Europe**	**Central Europe**	**Southern Europe**	**Eastern Europe**	**Northern Europe**	**Central Europe**	**Southern Europe**	**Eastern Europe**
Mean	634920	617729	452159	250847	639883	555133	405632	262454	469188	383614	139171	232720
Standard Error	9714	7854	8102	4726	46581	16661	37785	13699	54068	22827	41333	27497
Median	541624	507537	365531	216819	514481	452279	343952	224275	394349	295020	13186	157592
N	5656	15418	9062	8474	424	2028	257	974	126	898	156	590

Notes: N=44063. Monetary values are expressed in German 2005 Euro. The results are obtained from five imputed datasets. Weighted data. Clustered standard errors.

Table 2: Descriptive statistics, by household type and host region

	Natives				Mixed				Immigrant			
	Northern Europe	**Central Europe**	**Southern Europe**	**Eastern Europe**	**Northern Europe**	**Central Europe**	**Southern Europe**	**Eastern Europe**	**Northern Europe**	**Central Europe**	**Southern Europe**	**Eastern Europe**
Household income	38587	46229	38715	23534	36413	42245	39783	21411	36620	42359	42580	18696
Number of children	2.46	2.23	2.17	2.46	2.32	2.22	2.29	2.58	2.45	2.27	2.28	2.57
Inheritance	46%	32%	19%	15%	46%	28%	15%	10%	28%	14%	1%	1%
						Males						
Age	66.30	65.69	65.76	65.00	64.71	68.15	63.48	66.66	65.67	64.22	59.66	68.47
Educ. years	12.56	12.65	9.04	11.16	13.29	13.07	10.97	11.41	13.47	11.59	11.94	10.35
Siblings	92%	88%	91%	93%	91%	85%	93%	87%	95%	89%	100%	97%
Parents alive	26%	27%	24%	22%	35%	21%	32%	11%	29%	27%	42%	9%
Health	2.52	3.12	3.10	3.50	2.58	3.15	3.04	3.66	2.85	3.27	2.93	3.76
Illnesses	47%	54%	41%	58%	46%	60%	43%	70%	49%	52%	22%	69%
House size at 10	0.87	0.83	0.61	0.47	0.88	0.77	0.65	0.46	0.76	0.61	0.59	0.48
Books at 10	2.81	2.27	1.54	2.12	3.05	2.26	1.93	1.94	2.78	2.03	2.25	1.73
Performance at 10	2.46	2.62	2.78	2.75	2.46	2.61	2.66	2.68	2.42	2.64	2.89	2.73
Health at 10	1.78	2.23	1.95	2.03	1.90	2.36	1.91	2.33	2.11	2.42	2.31	2.10
Employed	43%	34%	29%	27%	49%	21%	37%	15%	43%	36%	41%	16%
Retired	54%	60%	62%	60%	49%	73%	56%	73%	51%	49%	15%	79%
Unemployed	1%	3%	5%	4%	1%	3%	3%	5%	2%	10%	38%	2%
						Females						
Age	63.94	63.09	62.34	62.12	61.91	65.42	58.31	64.72	61.20	61.30	54.03	66.22
Educ. years	12.60	11.90	8.69	10.84	13.29	12.13	11.31	10.86	14.14	10.97	11.33	9.48
Siblings	92%	89%	92%	91%	93%	87%	91%	94%	94%	92%	95%	95%
Parents alive	31%	35%	31%	25%	35%	28%	42%	19%	25%	37%	66%	20%
Health	2.54	3.07	3.17	3.43	2.56	3.19	2.90	3.74	2.85	3.33	3.17	3.62
Illnesses	51%	51%	40%	57%	50%	57%	35%	70%	43%	56%	38%	73%
House size at 10	0.90	0.83	0.63	0.47	0.86	0.82	0.68	0.44	0.75	0.65	0.56	0.47
Books at 10	2.91	2.34	1.63	2.20	2.94	2.31	2.09	2.11	2.86	2.12	1.97	1.80
Performance at 10	2.58	2.83	2.96	2.69	2.45	2.80	2.85	2.72	2.50	2.62	2.68	2.63
Health at 10	1.84	2.33	2.08	2.17	1.85	2.42	1.88	2.41	1.95	2.35	2.27	2.35
Employed	44%	35%	21%	25%	43%	24%	39%	17%	52%	40%	57%	15%
Retired	49%	44%	29%	60%	48%	56%	22%	70%	38%	34%	5%	62%
Unemployed	2%	3%	3%	3%	3%	3%	2%	3%	5%	6%	4%	2%
N	5,656	15,418	9,062	8,474	424	2,028	257	974	126	898	156	590

Notes: N=44063. Monetary values are expressed in German 2005 Euro. The results are obtained from five imputed datasets. Weighted data. Clustered standard errors.

Table 3: Nativity wealth gap

	Unconditional wealth gap	Unexplained wealth gap Blinder-Oaxaca	Unexplained wealth gap NN matching	Wealth gap for different percentiles of the wealth distribution p5	p10	p25	p50	p75	p90	p95
			Migrant Households							
Without PW	113333***	66598***	59479***	107191	127920	156641	102048	32388	-83198	-187885
s.e.	*14147*	*12779*	*13820*							
With PW	169749***	124047***	85263***	252551	272457	216692	133410	2475	-109604	-251701
s.e.	*21558*	*16832*	*20049*							
			Mixed Households							
Without PW	27879***	37622***	43379***	164160	176932	151463	83418	15892	-119421	-263810
s.e.	*10582*	*9724*	*9846*							
With PW	1326	53562***	56221***	274695	253818	203806	128984	-10470	-208799	-358628
s.e.	*15052*	*13147*	*14219*							

Notes: Notes: N=44063 (N=40380 in the migrant-/native-households comparison; N=42293 in the mixed-/native-households comparison). Monetary values are expressed in German 2005 Euro. The results are obtained from five imputed datasets. All data are weighted. Blinder-Oaxaca's estimates and standard errors are obtained using Rubin's rule; standard errors for NN matching are obtained using bootstrap (see Appendix A.1).

Table 4: Characteristics of individuals by gap sign, immigrant couple households

Variable	Mean			t-test of mean differences	
	(1)	(2)	(3)	(1)-(2)	(2)-(3)
	HH with positive gap	HH with negative gap	Native counterparts of HH with negative gap	p-value	
Northern Europe	0.07	0.09	0.11	0.285	0.091
Central Europe	0.40	0.79	0.73	0.000	0.009
Southern Europe	0.10	0.06	0.08	0.016	0.181
Eastern Europe	0.43	0.06	0.08	0.000	0.307
Total HH income	29507	59449	53323	0.000	0.168
Number children	2.27	2.16	2.15	0.141	0.929
Inheritance	0.08	0.28	0.23	0.000	0.042
			Males		
Origin: Africa	0.01	0.03	.	0.000	.
Origin: central&northern Europe	0.11	0.47	.	0.000	.
Origin: eastern Europe	0.32	0.16	.	0.000	.
Origin: Russia	0.32	0.02	.	0.000	.
Origin: southern Europe	0.11	0.21	.	0.000	.
Origin: Arab countries	0.06	0.03	.	0.000	.
Origin: rest	0.07	0.08	.	0.000	.
Age	66.88	66.13	64.11	0.163	0.000
Education years	10.69	12.60	12.62	0.000	0.921
Self rated health	3.48	2.78	2.89	0.000	0.039
Illness	0.56	0.41	0.39	0.000	0.588
Employed	0.27	0.34	0.39	0.010	0.029
Retired	0.62	0.64	0.57	0.468	0.003
Unemployed	0.04	0.01	0.02	0.001	0.086
Siblings	0.91	0.90	0.90	0.323	0.711
Parents alive	0.19	0.25	0.25	0.018	0.773
House size at 10	0.58	0.92	0.83	0.000	0.018
Number books at 10	1.97	2.47	2.36	0.000	0.081
Performance at 10	2.71	2.53	2.48	0.000	0.330
Health at 10	2.32	2.21	2.19	0.058	0.754
			Females		
Origin: Africa	0.02	0.015	.	0.000	.
Origin: central&northern Europe	0.12	0.45	.	0.000	.
Origin: eastern Europe	0.29	0.15	.	0.000	.
Origin: Russia	0.35	0.03	.	0.000	.
Origin: southern Europe	0.10	0.23	.	0.000	.
Origin: arabic countries	0.05	0.02	.	0.000	.
Origin: rest	0.07	0.11	.	0.000	.
Age	63.87	63.31	61.52	0.311	0.000
Education years	10.47	11.77	11.84	0.000	0.868
Self rated health	3.53	2.87	2.98	0.000	0.026
Illness	0.58	0.45	0.46	0.000	0.553
Employed	0.29	0.36	0.41	0.005	0.059
Retired	0.48	0.41	0.39	0.015	0.379
Unemployed	0.04	0.02	0.02	0.029	0.592
Siblings	0.90	0.91	0.90	0.595	0.408
Parents alive	0.27	0.34	0.36	0.002	0.436
House size at 10	0.58	0.84	0.80	0.000	0.026
Number books at 10	2.05	2.55	2.42	0.000	0.043
Performance at 10	2.73	2.81	2.67	0.108	0.001
Health at 10	2.44	2.25	2.25	0.001	0.942

Notes: Notes: N=40380. Monetary values are expressed in German 2005 Euro. The results are obtained from five imputed datasets. Weighted data. Clustered standard errors.

Table 5: Characteristics of individuals by gap sign, mixed couple households

Variable	Mean			t-test of mean differences	
	(1)	(2)	(3)	(1)-(2)	(2)-(3)
	HH with positive gap	HH with negative gap	Native counterparts of HH with negative gap	p-value	
Northern Europe	0.10	0.16	0.15	0.000	0.397
Central Europe	0.45	0.76	0.75	0.000	0.498
Southern Europe	0.08	0.05	0.05	0.000	0.377
Eastern Europe	0.36	0.03	0.05	0.000	0.042
Total HH income	33053	57519	57485.39	0.000	0.991
Number children	2.23	2.19	2.19	0.50	0.930
Inheritance	0.21	0.47	0.44	0.000	0.056
			Males		
Origin: Africa	0.02	0.04	.	0.000	.
Origin: central&northern Europe	0.13	0.22	.	0.000	.
Origin: eastern Europe	0.15	0.06		0.000	
Origin: Russia	0.08	0.00	.	0.000	.
Origin: southern Europe	0.05	0.07	.	0.023	.
Origin: Arab countries	0.02	0.03	.	0.172	.
Origin: rest	0.02	0.03	.	0.037	.
Age	66.97	65.82	65.25	0.001	0.042
Education years	11.65	13.41	13.25	0.000	0.317
Self rated health	3.26	2.62	2.71	0.000	0.013
Illness	0.55	0.40	0.43	0.000	0.144
Employed	0.28	0.31	0.33	0.120	0.107
Retired	0.65	0.66	0.63	0.365	0.075
Unemployed	0.03	0.00	0.01	0.000	0.022
Siblings	0.89	0.89	0.89	0.967	0.918
Parents alive	0.21	0.26	0.26	0.002	0.996
House size at 10	0.69	0.91	0.89	0.000	0.254
Number books at 10	2.21	2.69	2.61	0.000	0.099
Performance at 10	2.65	2.49	2.46	0.000	0.514
Health at 10	2.27	2.04	2.11	0.000	0.064
			Females		
Origin: Africa	0.02	0.04	.	0.000	.
Origin: central&northern Europe	0.16	0.27	.	0.000	.
Origin: eastern Europe	0.16	0.07		0.000	
Origin: Russia	0.09	0.01	.	0.000	.
Origin: southern Europe	0.03	0.05	.	0.074	.
Origin: arabic countries	0.02	0.03	.	0.003	.
Origin: rest	0.05	0.07	.	0.006	.
Age	64.15	63.09	62.53	0.002	0.046
Education years	11.39	12.54	12.55	0.000	0.951
Self rated health	3.26	2.65	2.73	0.000	0.018
Illness	0.56	0.40	0.41	0.000	0.449
Employed	0.27	0.37	0.36	0.000	0.689
Retired	0.52	0.45	0.46	0.001	0.869
Unemployed	0.04	0.02	0.01	0.013	0.179
Siblings	0.89	0.87	0.88	0.078	0.380
Parents alive	0.26	0.31	0.32	0.001	0.611
House size at 10	0.70	0.95	0.92	0.000	0.037
Number books at 10	2.27	2.87	2.70	0.000	0.000
Performance at 10	2.82	2.58	2.65	0.000	0.028
Health at 10	2.33	2.11	2.10	0.000	0.687

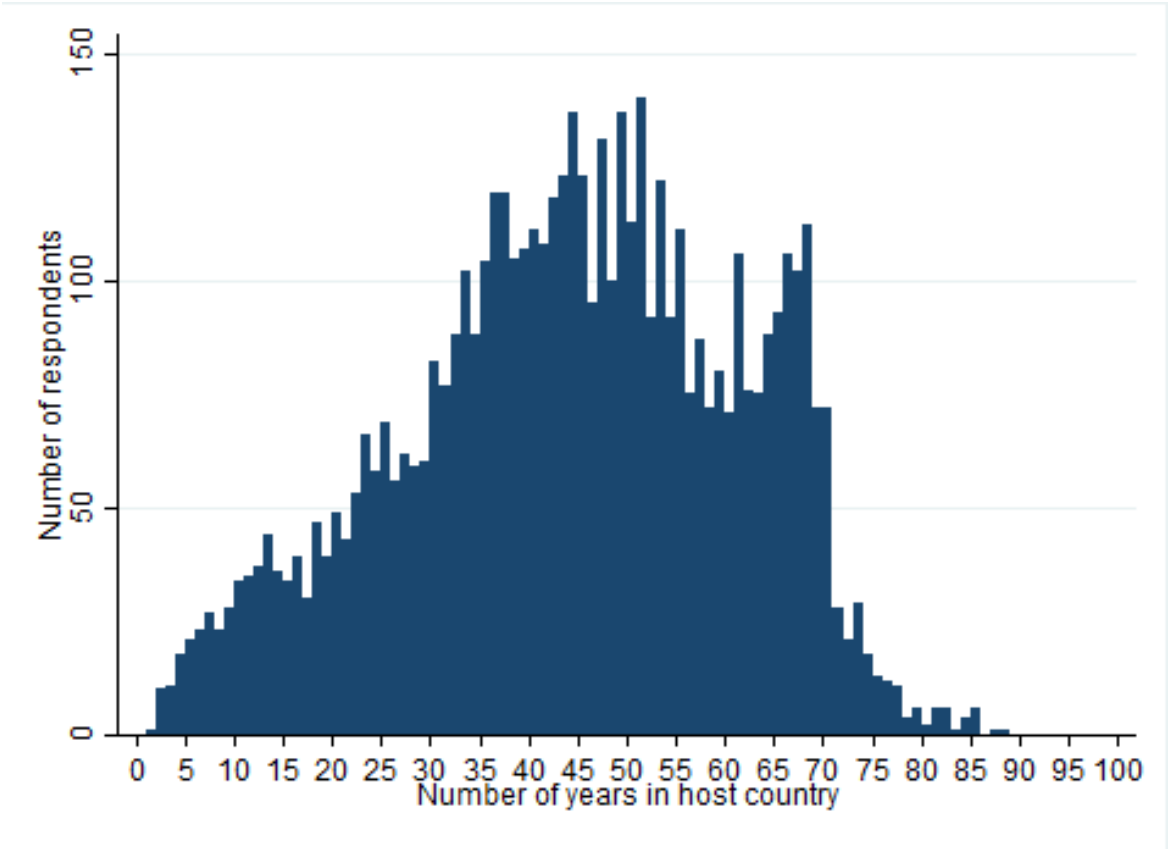
Notes: Notes: N=42293. Monetary values are expressed in German 2005 Euro. The results are obtained from five imputed datasets. Weighted data. Clustered standard errors.

Table 6: Nativity wealth gap, by area of origin and age at migration

	Unconditional wealth gap	Unexplained wealth gap Blinder-Oaxaca	Unexplained wealth gap NN matching	Wealth gap for different percentiles of the wealth distribution p5	p10	p25	p50	p75	p90	p95
Natives Vs. Migrants, by origin country										
European	87981***	112444***	140708***	314443	314969	259045	209743	53977	-107905	-224402
s.e.	*19201*	*20172*	*27984*							
Non-European	157258***	153709***	82407***	189636	219386	211606	194056	42422	-152323	-457750
s.e.	*21775*	*26079*	*30198*							
Natives Vs. Migrants, by migration age										
Before 18	55484	21599	-29642	240897	181563	113835	8122	-131140	-247320	-430996
s.e.	*40793*	*24881*	*33160*							
After 18	217655***	166998***	147522***	284169	305856	289645	206892	103397	-63702	-202749
s.e.	*23832*	*19518*	*24015*							

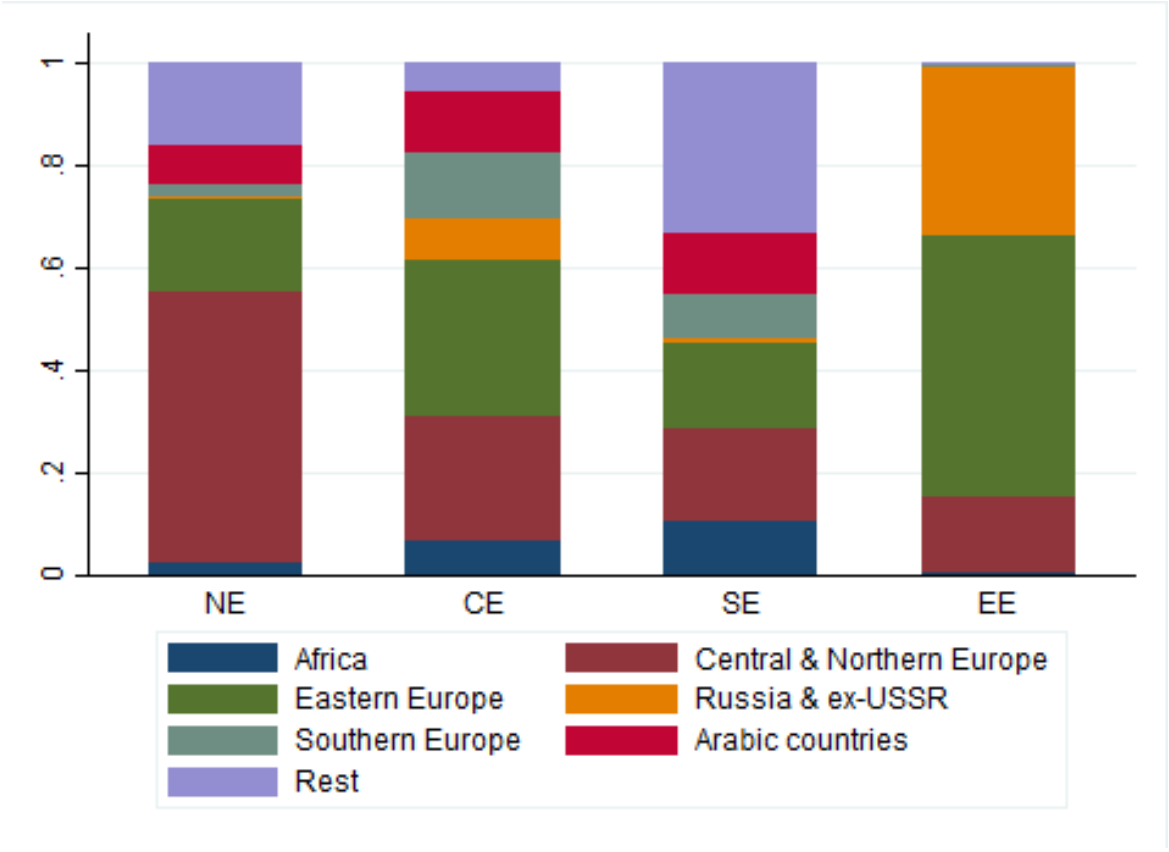
Notes: Notes: N=44063 (N=40380 in the migrant-/native-households comparison; N=42293 in the mixed-/native-households comparison). Monetary values are expressed in German 2005 Euro. The results are obtained from five imputed datasets. All data are weighted. Blinder-Oaxaca's estimates and standard errors are obtained using Rubin's rule; standard errors for NN matching are obtained using bootstrap (see Appendix A.1).

Figure 1: Distribution of immigrants by number of years since migration



Notes: N=5412.

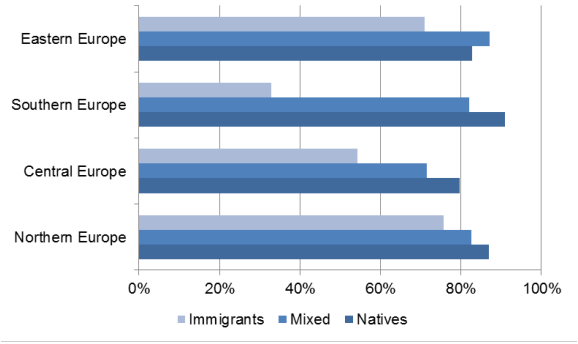
Figure 2: Proportion of immigrants by origin and destination



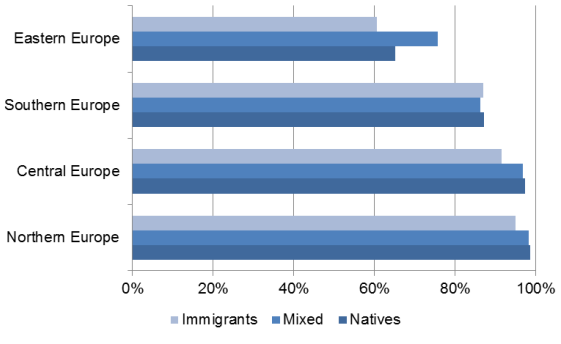
Notes: N=5515. Weighted data.

Figure 3: Assets ownership

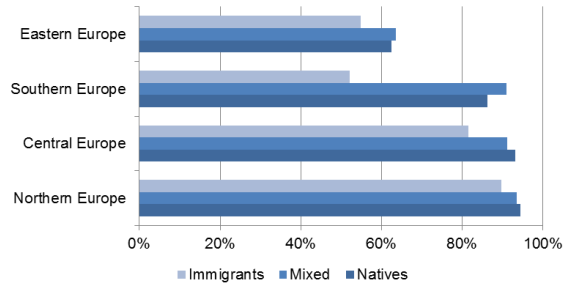
(a) House



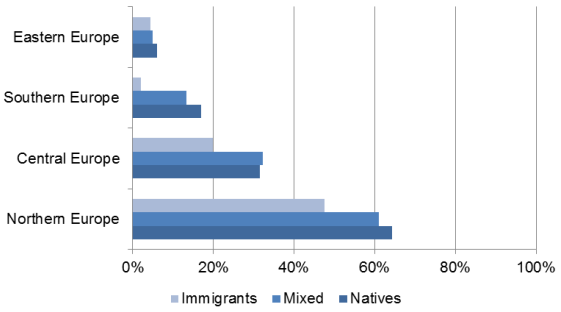
(b) Cars



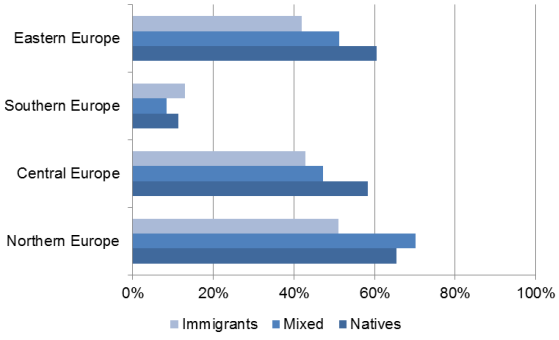
(c) Bank accounts



(d) Bond, stocks, mutual funds

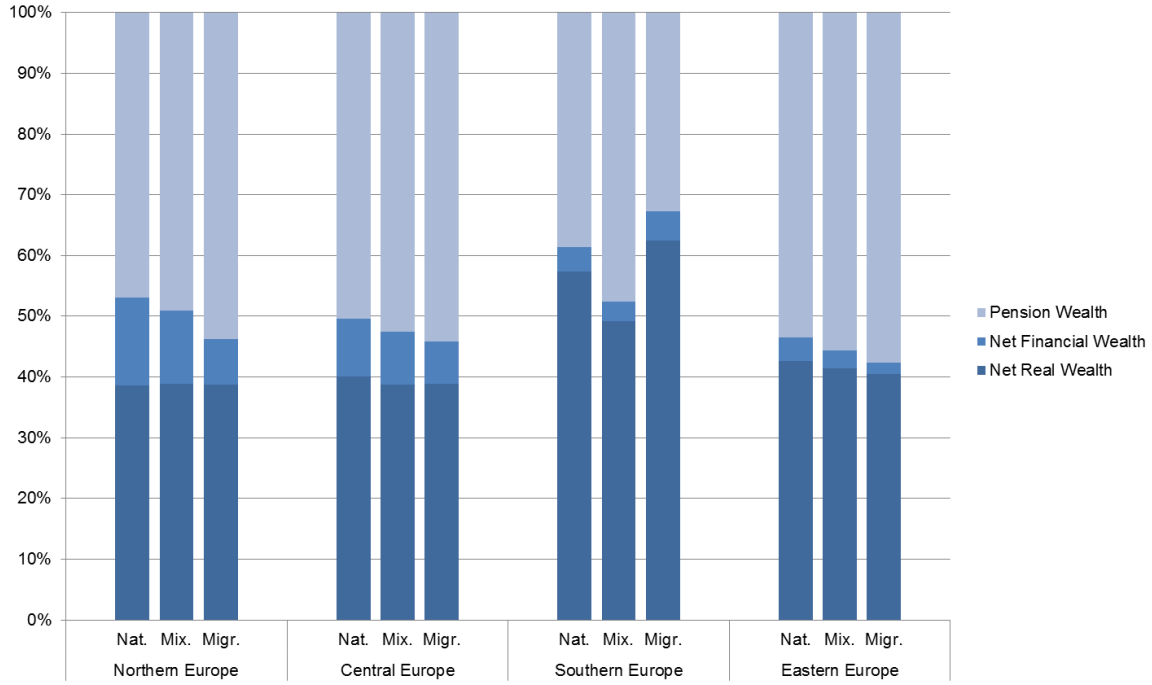


(e) Savings for long-term investments



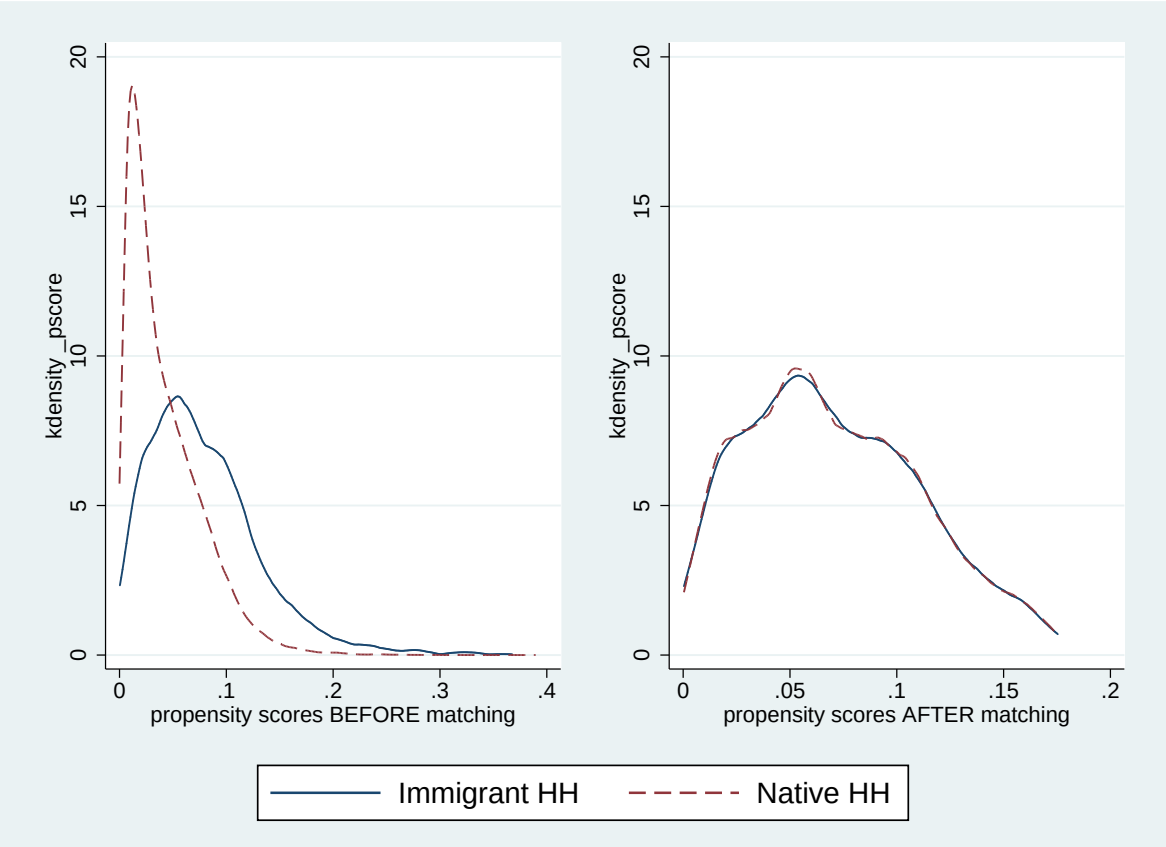
Notes: Native households: N=38582; migrant households: N=1770; mixed households: N=3683. Weighted data. Clustered standard errors.

Figure 4: Proportion of immigrants by origin and destination



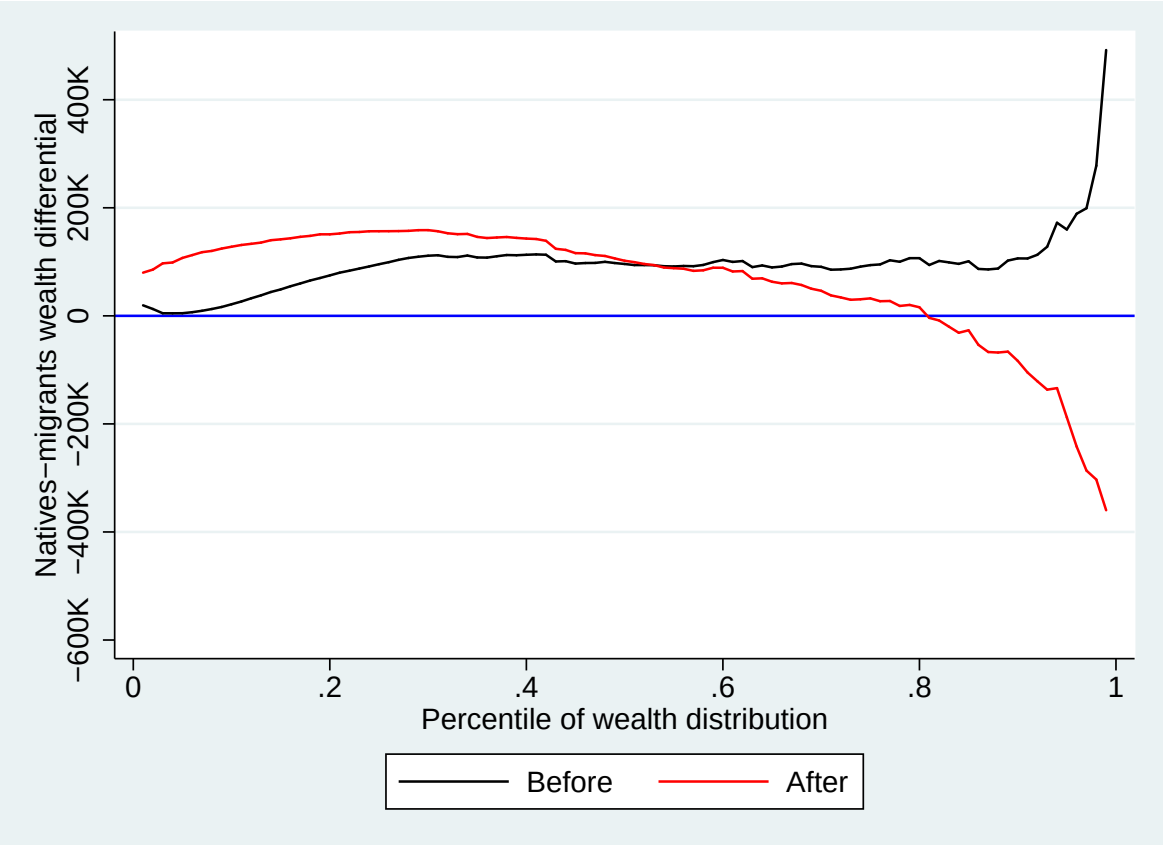
Notes: Native households: N=38582; migrant households: N=1770; mixed households: N=3683. Weighted data. Clustered standard errors.

Figure 5: Propensity score density before and after matching



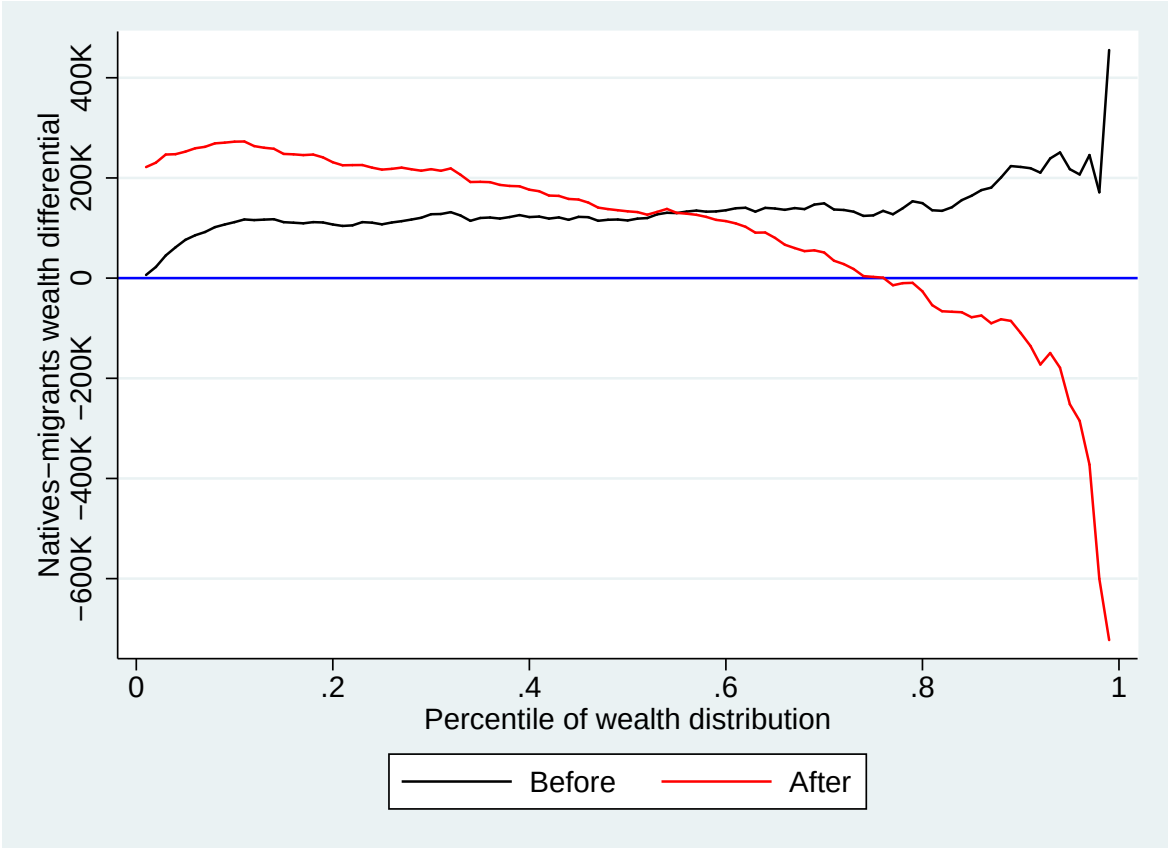
Notes: These graphs show the propensity score density before and after three-nearest-neighbor matching for the first of the five SHARE imputed datasets. Native households: N=38610; migrant households: N=1770. Weighted data. Clustered standard errors.

Figure 6: Nativity wealth (without PW) gap before and after matching of immigrant couple-HH



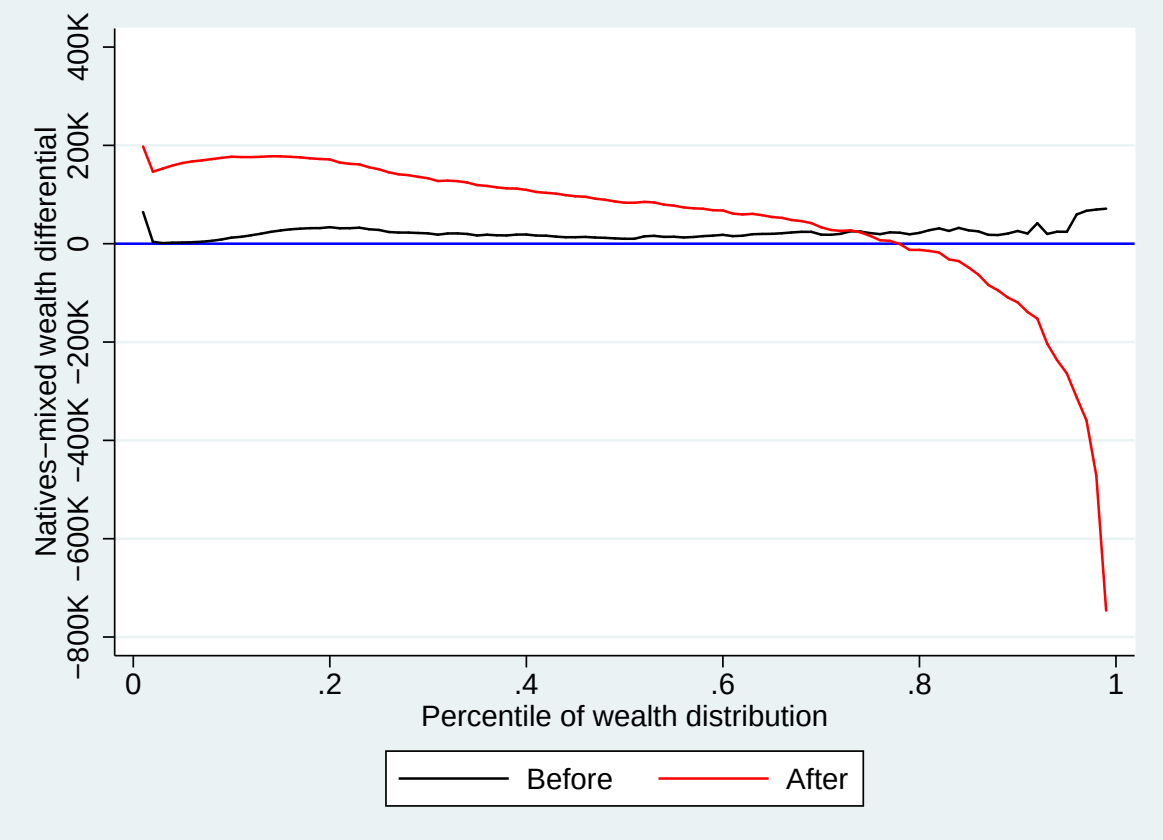
Notes: Native households: N=38582; migrant households: N=1770. Monetary values are expressed in German 2005 Euro. Weighted data. Clustered standard errors.

Figure 7: Nativity wealth (with PW) gap before and after matching of immigrant couple-HH



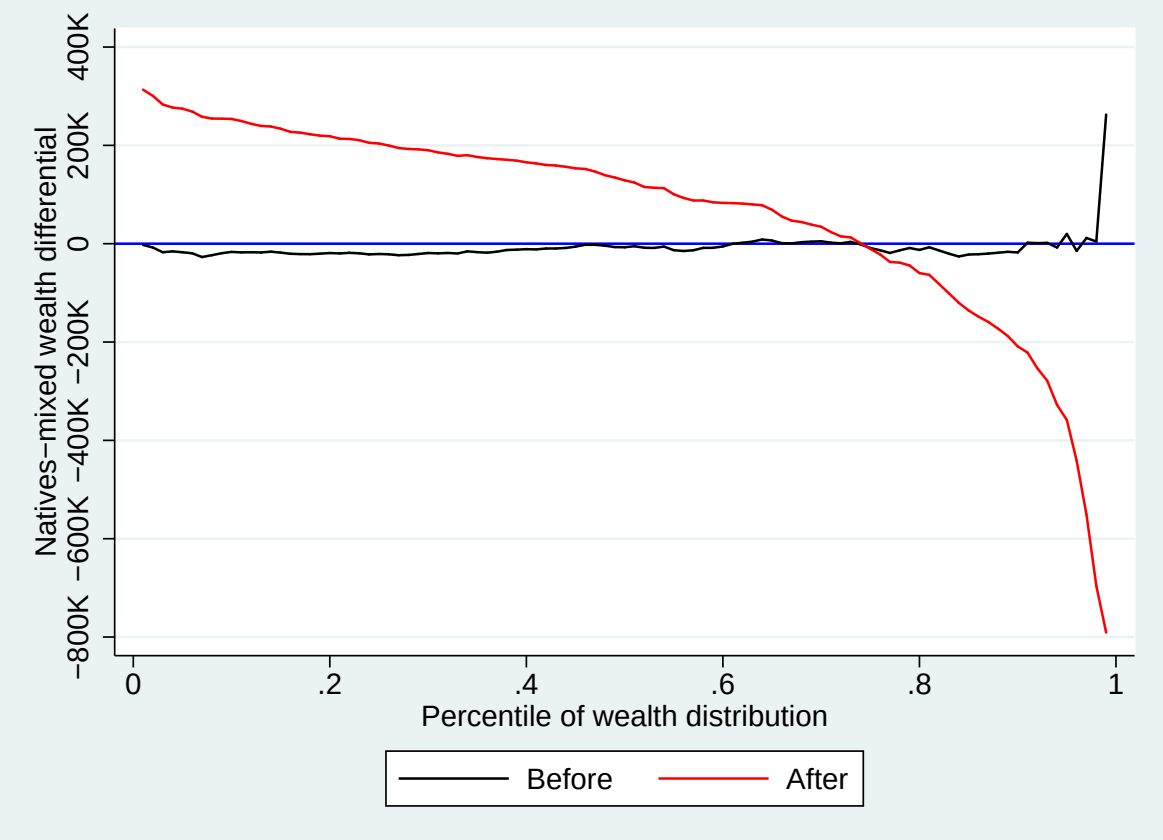
Notes: Native households: N=38582; migrant households: N=1770. Monetary values are expressed in German 2005 Euro. Weighted data. Clustered standard errors.

Figure 8: Nativity wealth (without PW) gap before and after matching of mixed couple-HH



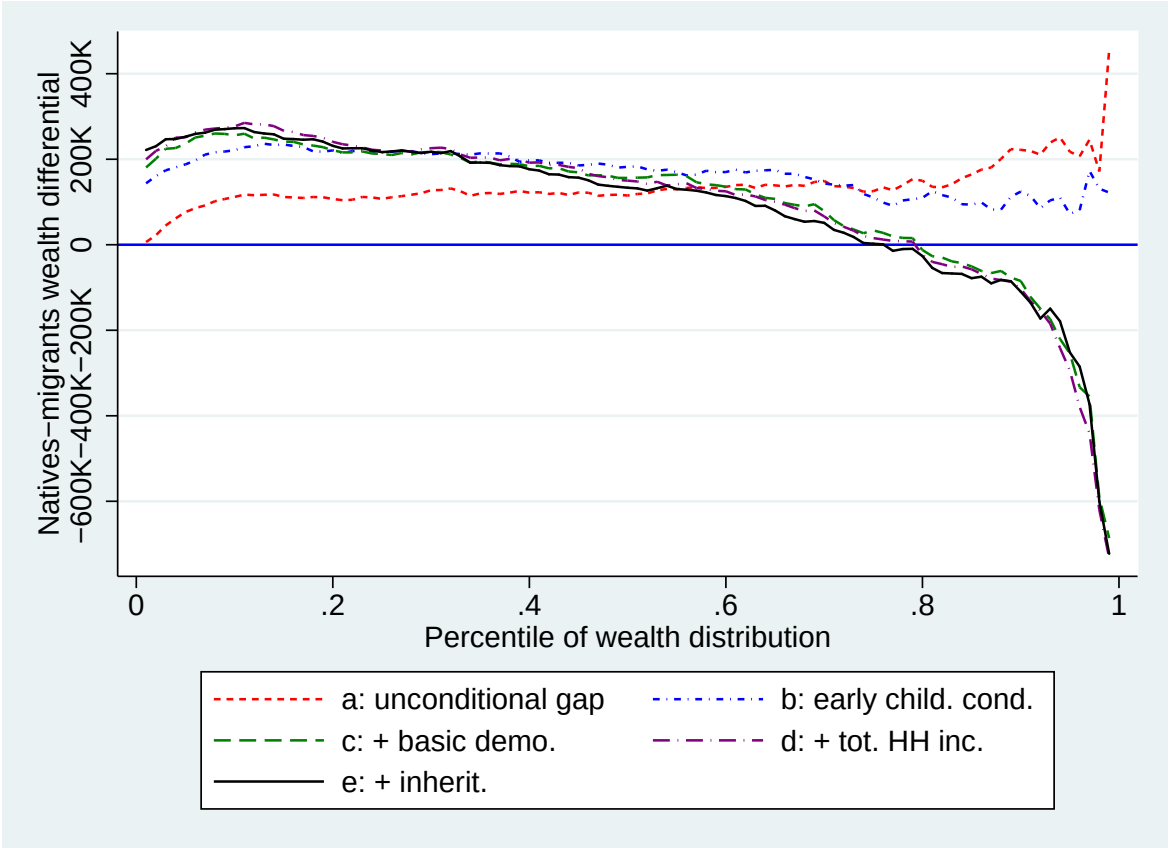
Notes: Native households: N=38582; mixed households: N=3683. Monetary values are expressed in German 2005 Euro. Weighted data. Clustered standard errors.

Figure 9: Nativity wealth (with PW) gap before and after matching of mixed couple-HH



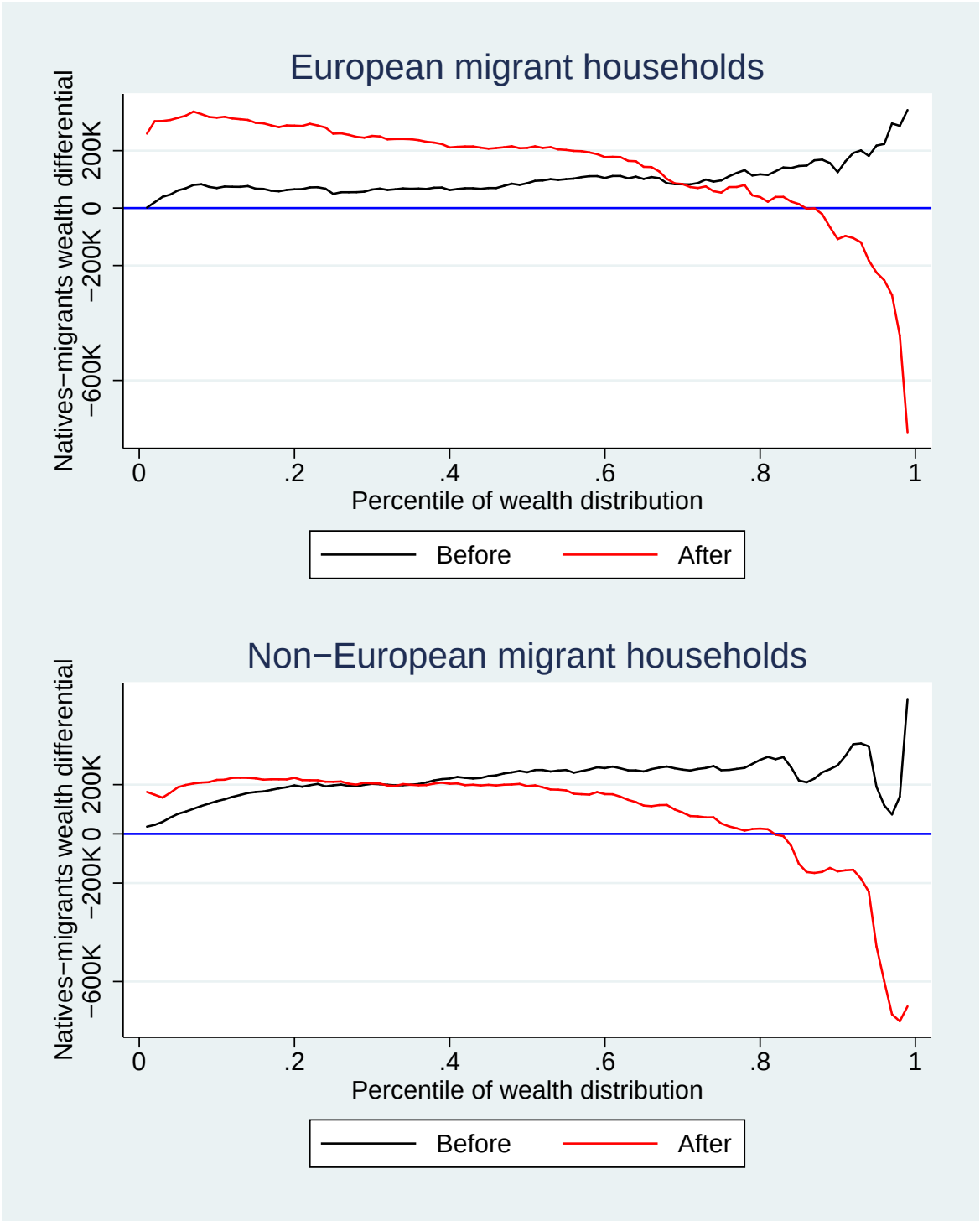
Notes: Native households: N=38582; mixed households: N=3683. Monetary values are expressed in German 2005 Euro. Weighted data. Clustered standard errors.

Figure 10: Detailed decomposition of the wealth gap, immigrant couple-HH



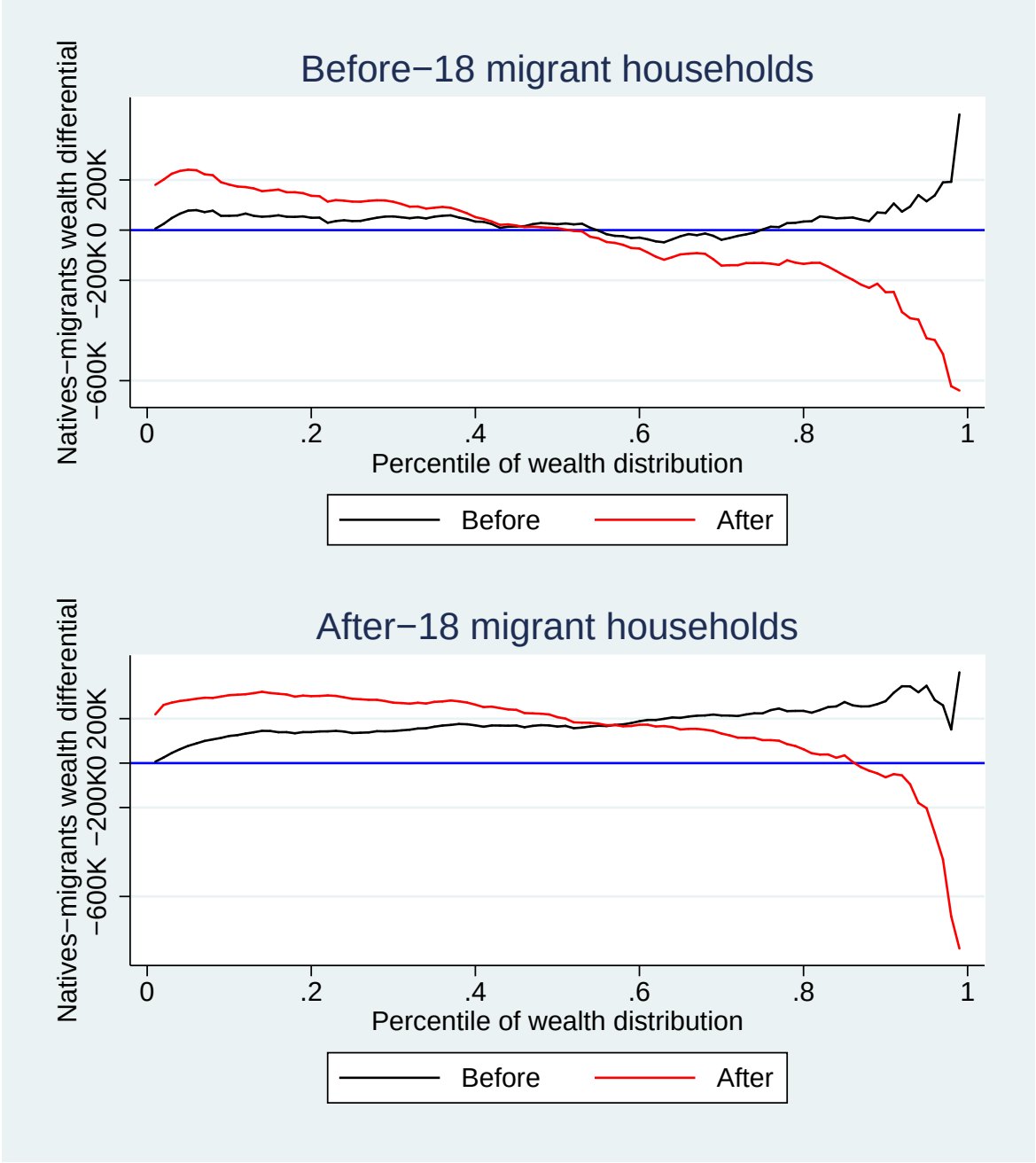
Notes: Native households: N=38582; migrant households: N=1770. Monetary values are expressed in German 2005 Euro. Weighted data. Clustered standard errors.

Figure 11: Nativity wealth gap of immigrant couple-HH, by area of origin



Notes: European households include only households where both spouses migrated from another European country; non-European households include only households where both spouses migrated from a non-European country. Native households: N=38582; European migrant households: N=923; non-European migrant households: N=630. Monetary values are expressed in German 2005 Euro. Weighted data. Clustered standard errors.

Figure 12: Nativity wealth gap of immigrant couple-HH, by age at migration



Notes: Households who migrated before the age of 18 include households where at least one spouse migrated before 18; households who migrated after the age of 18 include households where both spouses migrated after 18. Native households: N=38582; households migrated before the age of 18: N=641; households migrated after the age of 18: N=1129. Monetary values are expressed in German 2005 Euro. Weighted data. Clustered standard errors.

A Appendix

A.1 Inference with multiple imputations

The analysis in this paper uses the imputations provided by SHARE for variables with missing values. As in any other survey, in fact, some variables present a fraction of missing values which may range from very small (f.e. in the case of age and education), to very high, as is typical of monetary variables. De Luca et al. (2015) present some statistics on items non-response for monetary variables in the fifth wave of SHARE, and show that it presents high variability depending on the specific item and country considered. Non-response to questions on the value of house in Slovenia or the amount in bank accounts in Luxembourg, for example, is over 60 percent. This contrasts to other countries, like Denmark and Sweden, where item non-response is generally lower than 10 percent for all variables considered. The cross-country average of item non-response ranges between a minimum of 9 percent for payments from public old age pensions to a maximum of 36 percent for amount hold in bank accounts (De Luca et al. (2015)).

As already said, item non-response has two negative consequences. The former is that using only observations for which there are no missing values in any of the variables the researcher needs would drastically reduce the sample size. The latter, and most important, is that most likely missingness is non-random, which means that any estimate obtained using only complete observations would produce biased results (Little and Rubin (2002)). For these reasons, using imputations seems advisable.

It must be clarified, however, that research on the use of imputations in matching is meagre and it mostly consists of simulations which have the aim of understanding which method delivers the smallest bias (Hill (2004), Qu and Lipkovich (2009), Mitra and Reiter (2016)). Furthermore, to the best of this author's knowledge, analytical derivations of multiple imputation variance estimators for matching do not exist. Nevertheless, existing simulations show that multiple imputations methods outperform in terms of bias reduction the methods which use only complete cases, and thus assume the strongest possible assumption of data "missing completely at random" (MCAR).

The multiple imputation (MI) approach used for SHARE rests instead on the less stringent

assumption of data "missing at random" (MAR). This assumption states that the missingness of each variable depends only on other variables in the system and not on the values of the variable itself. As noticed by Christelis et al. (2011), this is actually unlikely to hold for financial variables, which are more likely subject to a yet different type of missingness mechanism where data are "missing not at random" (MNAR). Nevertheless, Van Buuren et al. (2006) show that MI produces less biased results than using only complete cases even in the presence of MNAR data.

Given this premise, this paper adopted the following strategy: all linear estimates are obtained using Rubin's rule, which delivers the correct coefficients and standard errors (see Little and Rubin (2002)). Formally, the estimate of interest obtained using the M imputed datasets is the average of the M separate estimates:

$$\bar{\beta} = \frac{1}{M} \sum_{m=1}^{M} \hat{\beta}_m \tag{6}$$

and the total variance TV of this estimates is composed by the sum of the within-imputation variance and the between-imputation variance:

$$TV = \frac{1}{M} \sum_{m=1}^{M} \hat{V}_m + \frac{M+1}{M(M-1)} \sum_{m=1}^{M} (\hat{\beta}_m - \bar{\beta})^2 \tag{7}$$

As regards results obtained through PSM, estimates of the gap are derived using the so-called "within-approach" (Mitra and Reiter (2016)), which consists in estimating the propensity scores in each dataset – thus obtaining m values of each unit's propensity score – and then matching treated and control units within each completed dataset. In the final step, the resulting m estimates of the gap are averaged to obtain an estimate of the mean gap.[40,41] As noticed by Qu and Lipkovich (2009), the matching estimator does not account for the uncertainty which derives from using imputations. For this reason, a bootstrap technique - with 1000 replications for each imputed dataset - is used in order to get standard errors for the PSM estimates.

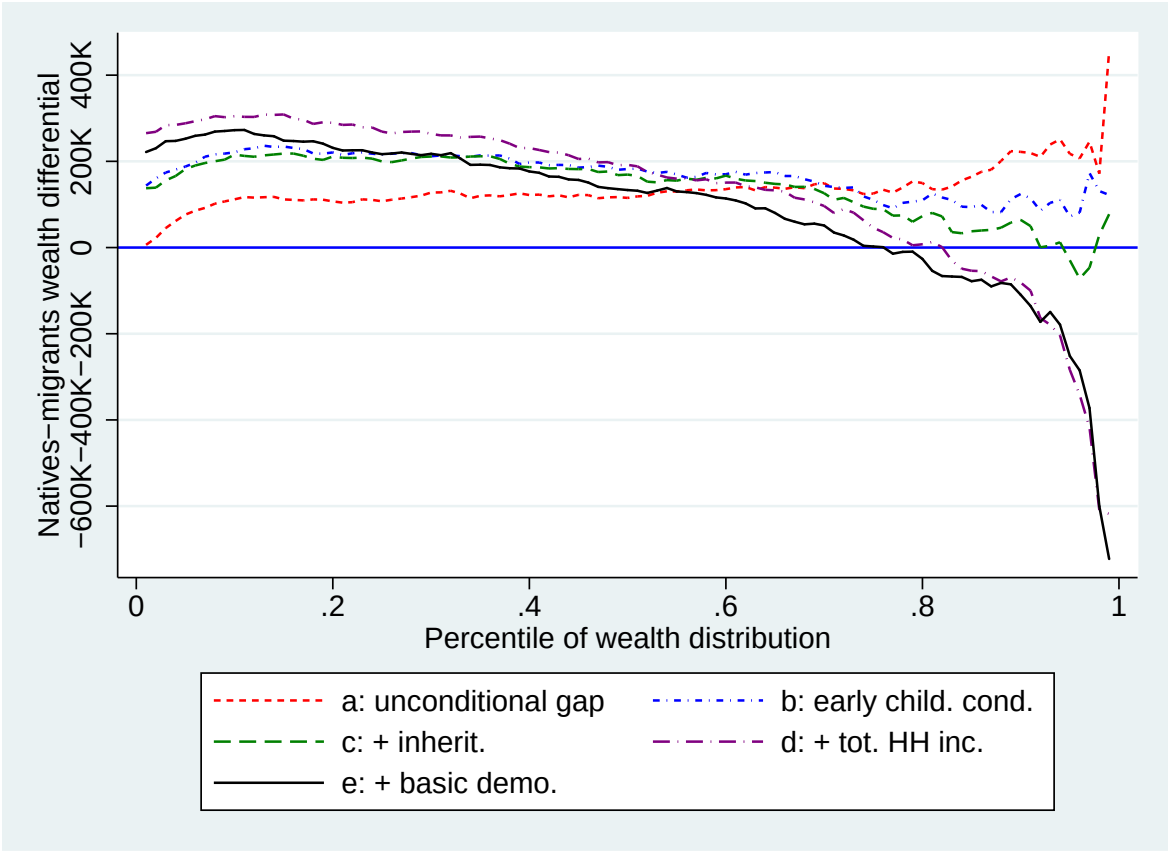
[40] Alternatively, the "across-approach" would consist in averaging each unit's m propensity score, matching units based on their averaged scores and finally estimating the mean gap from this single set of matched controls.

[41] Sample weights are used when estimating the gap.

Finally, the average of individuals' wealth over the m imputations is calculated in order to obtain a single wealth distribution for natives, migrants and matched households, respectively.

A.2 Reverse order decomposition analysis

Figure A.1: Reverse order detailed decomposition of the wealth gap, couple immigrant HH



Notes: Native households: N=38582; migrant households: N=1770. Monetary values are expressed in German 2005 Euro. Weighted data. Clustered standard errors.

References

Ñopo, H. (2008). Matching as a tool to decompose wage gaps. *The review of economics and statistics 90*(2), 290–299.

Alessie, R., V. Angelini, and P. Van Santen (2013). Pension wealth and household savings in europe: Evidence from sharelife. *European Economic Review 63*, 308–328.

Altonji, J. G., P. Bharadwaj, and F. Lange (2012). Changes in the characteristics of american youth: Implications for adult outcomes. *Journal of Labor Economics 30*(4), 783–828.

Altonji, J. G. and U. Doraszelski (2005). The role of permanent income and demographics in black/white differences in wealth. *Journal of Human Resources 40*(1), 1–30.

Amuedo-Dorantes, C. and S. Pozo (2002). Precautionary saving by young immigrants and young natives. *Southern Economic Journal*, 48–71.

Barsky, R., J. Bound, K. K. Charles, and J. P. Lupton (2002). Accounting for the black–white wealth gap: a nonparametric approach. *Journal of the American statistical Association 97*(459), 663–673.

Bauer, T. K., D. A. Cobb-Clark, V. A. Hildebrand, and M. G. Sinning (2011). A comparative analysis of the nativity wealth gap. *Economic Inquiry 49*(4), 989–1007.

Bauer, T. K. and M. G. Sinning (2011). The savings behavior of temporary and permanent migrants in germany. *Journal of Population Economics 24*(2), 421–449.

Bell, S., S. Alves, E. S. de Oliveira, and A. Zuin (2010). Migration and land use change in europe: A review. *Living Reviews in Landscape Research 4*.

Blinder, A. S. (1973). Wage discrimination: reduced form and structural estimates. *Journal of Human resources*, 436–455.

Borjas, G. and B. Bratsberg (1996). Who leaves? the outmigration of the foreign-born. *Review of Economics and Statistics 78*(1), 165–76.

Borjas, G. J. (1994). The economics of immigration. *Journal of economic literature 32*(4), 1667–1717.

Borjas, G. J. (2002). Homeownership in the immigrant population. *Journal of urban economics 52*(3), 448–476.

Caliendo, M. and S. Kopeinig (2008). Some practical guidance for the implementation of propensity score matching. *Journal of economic surveys 22*(1), 31–72.

Christelis, D. et al. (2011). Imputation of missing data in waves 1 and 2 of share. Technical report, Centre for Studies in Economics and Finance (CSEF), University of Naples, Italy.

Cobb-Clark, D. A. and V. A. Hildebrand (2006). The wealth and asset holdings of us-born and foreign-born households: Evidence from sipp data. *Review of Income and Wealth 52*(1), 17–42.

Constant, A. F., R. Roberts, and K. F. Zimmermann (2009). Ethnic identity and immigrant homeownership. *Urban Studies 46*(9), 1879–1898.

De Arcangelis, G. and M. Joxhe (2015). How do migrants save? evidence from the british household panel survey on temporary and permanent migrants versus natives. *IZA Journal of Migration 4*(1), 1.

De Luca, G., M. Celidoni, and E. Trevisan (2015). Item nonresponse and imputation strategies in share wave 5.

Dustmann, C. (2000). Temporary migration and economic assimilation. *Swedish Economic Policy Review 7*(2), 213–244.

Dustmann, C. and Y. Weiss (2007). Return migration: theory and empirical evidence from the uk. *British Journal of Industrial Relations 45*(2), 236–256.

Favreault, M. and A. Nichols (2011). Immigrant diversity and social security: Recent patterns and future prospects. *Boston College Center for Retirement Research Working Paper* (2011-8).

Fortin, N., T. Lemieux, and S. Firpo (2009). Unconditional quantile regression. *Econometrica 77*(3), 953–973.

Fortin, N., T. Lemieux, and S. Firpo (2011). Decomposition methods in economics. *Handbook of labor economics 4*, 1–102.

Frölich, M. (2007). Propensity score matching without conditional independence assumptionwith an application to the gender wage gap in the united kingdom. *The Econometrics Journal 10*(2), 359–407.

Haliassos, M., T. Jansson, and Y. Karabulut (2016). Incompatible european partners? cultural predispositions and household financial behavior. *Management Science*.

Hill, J. (2004). Reducing bias in treatment effect estimation in observational studies suffering from missing data.

Hunkler, C., T. Kneip, G. Sand, and M. Schuth (2015). Growing Old Abroad: Social and Material Deprivation among First- and Second Generation Migrants in Europe. In A. Bõrsch Supan, T. Kneip, H. Litwin, M. Myck, and G. Weber (Eds.), *Ageing in Europe-Supporting Policies for an Inclusive Society*, pp. 199–208. Berlin: De Gruyter.

Kahanec, M. and M. P. Shields (2013). The working hours of immigrants in germany: temporary versus permanent. *IZA Journal of Migration 2*(1), 14.

Little, R. J. and D. B. Rubin (2002). *Statistical analysis with missing data*. John Wiley & Sons.

Lusardi, A. and O. S. Mitchell (2014). The economic importance of financial literacy: Theory and evidence. *Journal of Economic Literature 52*(1), 5–44.

McKernan, S.-M., C. Ratcliffe, M. Simms, and S. Zhang (2014). Do racial disparities in private transfers help explain the racial wealth gap? new evidence from longitudinal data. *Demography 51*(3), 949–974.

Menchik, P. L. and N. A. Jianakoplos (1997). Black-white wealth inequality: Is inheritance the reason? *Economic Inquiry 35*(2), 428–442.

Mitra, R. and J. P. Reiter (2016). A comparison of two methods of estimating propensity scores after multiple imputation. *Statistical methods in medical research 25*(1), 188–204.

Mizala, A., P. Romaguera, and S. Gallegos (2011). Public–private wage gap in latin america (1992–2007): A matching approach. *Labour Economics 18*, S115–S131.

OECD (2016). Pensions at a glance database. https://stats.oecd.org/Index.aspx?DataSetCode=PAG.

Osili, U. O. and A. L. Paulson (2004). Prospects for immigrant-native wealth assimilation: evidence from financial market participation.

Osili, U. O. and A. L. Paulson (2008). Institutions and financial development: Evidence from international migrants in the united states. *The Review of Economics and Statistics 90*(3), 498–517.

Oxaca, R. (1973). Male-female wage differentials in urban labour markets. *International Economic Review 14*(3), 693–709.

Qu, Y. and I. Lipkovich (2009). Propensity score estimation with missing values using a multiple imputation missingness pattern (mimp) approach. *Statistics in medicine 28*(9), 1402–1414.

Sevak, P. and L. Schmidt (2014). Immigrants and retirement resources. *Soc. Sec. Bull. 74*, 27.

Sinning, M. (2010). Homeownership and economic performance of immigrants in germany. *Urban Studies 47*(2), 387–409.

University of California Berkeley (USA) and Max Planck Institute for Demographic Research (Germany) (2016). Human mortality database. http://www.mortality.org.

Van Buuren, S., J. P. Brand, C. Groothuis-Oudshoorn, and D. B. Rubin (2006). Fully conditional specification in multivariate imputation. *Journal of statistical computation and simulation 76*(12), 1049–1064.