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Migrant wealth in Germany

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Abstract

Migrant households in Germany hold significantly less wealth than native households, with disparities varying by origin and generation. Using SOEP data (2012, 2017), this study quantifies gaps across the wealth distribution and examines income, saving rates, and portfolio composition. Migrants from low- and middle-income countries exhibit the largest gaps, with persistent disadvantages in the upper distribution. Second-generation high-income country migrants show signs of convergence. Disparities are mainly due to portfolio composition and differences in earnings and savings behavior. The findings underscore the heterogeneity of migrant wealth accumulation and contribute to research on wealth inequality and migration economics.

Keywords Wealth gap · Migrants · RIF decomposition · Germany · Socio-Economic Panel (SOEP)

1 Introduction

The accumulation of wealth is a significant indicator of economic prosperity for individuals and households. Research indicates that higher levels of wealth within families correlate with increased access to quality education, educational outcomes, and superior healthcare services for subsequent generations (Semyonov and Lewin-Epstein 2011; Cesarini et al. 2016; Hällsten and Pfeffer 2017; Boen et al. 2020). Possessing greater resources also serves as a financial buffer during periods of economic instability and facilitates the maintenance of desired living standards during retirement (Rodems and Pfeffer 2021; Poterba et al. 2011). However, wealth ownership is not evenly distributed across society: empirical studies document the pervasive

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inequality in wealth distribution within contemporary societies (e.g. Zucman 2019; Albers et al. 2022; Blanchet and Martínez-Toledano 2023; Garbinti et al. 2021; Kuhn et al. 2020) and tend to find considerable wealth gaps for disadvantaged or marginalized groups (e.g. Schneebaum et al. 2018; Muckenhuber et al. 2022; Kukk et al. 2023; Deroncourt et al. 2024).

In this paper, we provide new estimates of the migrant wealth gap in Germany and analyse differences in wealth accumulation between households with and without a migration history. We distinguish between migrants from high-income (HIC) and low- and middle-income countries (LMIC) on the one hand, and between the first and second generation of migrants on the other hand. For the four resulting sub-groups of households, we assess the magnitude of wealth gaps at the mean and across the wealth distribution. Additionally, we investigate the contributions of various household characteristics, including income, saving rates, portfolio composition, to the observed wealth differentials. Our empirical approach employs the Recentered Influence Function (RIF) decomposition (Firpo et al. 2018) applied to data from the German Socio-Economic Panel (SOEP) of 2012 and 2017. This two-stage decomposition procedure enables us to estimate the role of the various observed characteristics not only in determining the mean wealth differences but also along the wealth distribution. The SOEP dataset encompasses more than 9,000 households with relevant information from the waves of 2012 and 2017, providing comprehensive information on asset ownership and relevant household attributes, and facilitating the nuanced analysis of wealth differentials across the four migrant sub-groups in static and dynamic perspectives.

We confirm the existence of an overall migrant wealth gap in line with prior research concerning Germany (Bauer et al. 2011; Sinning 2007; Mathä et al. 2011). Native households, defined as those without a history of migration in the current and past generation, possess greater net wealth on average as compared to all sub-groups under consideration. The mean wealth gap is considerably larger for first-generation migrants from LMIC. The mean wealth gaps amount to 39,600 € (migrants own 80 percent of natives' average net wealth) and 36,700 € (81 percent) in the first and second generation of HIC migrant households, respectively, and to 132,600 € (33 percent) and 97,200 € (51 percent) in LMIC households.

Analysing the wealth gap across the wealth distribution, we observe that native households outpace all migrant households as they begin to accumulate positive net wealth earlier in the distribution. This results in considerable wealth gaps in the middle of the distribution. While migrant households from HIC backgrounds catch up towards the upper part of the distribution, and second-generation HIC households even own more net wealth in the richest decile, the gap remains large for migrants from LMIC backgrounds. The disparities between the first and second generations of migrants within origin-based groups remain rather small throughout the distribution. Wealth is accumulated over a person's lifetime, and hence wealth gaps among subgroups of the German population might partly stem from structural differences in the age profiles of these groups. All migrant subgroups except first-generation HIC migrants are considerably younger than natives. However, age differences statistically account for only a fraction of the wealth gap of migrants from LMIC (between 12 and 20 percent). This suggests that these groups do not catch up with natives' wealth as they grow older. In contrast, second-generation HIC migrants catch up with natives' wealth in the upper part of the distribution despite their younger age. This suggests that they would experience a positive wealth gap, if they were of the same age as natives.

We further document considerable differences in households' asset portfolios. Native households tend to have higher (bottom 50, top 10) or comparable (middle 40) shares of real estate in their portfolio as compared to migrants from the first generation, but less than second-generation migrants most of the time. Migrants from HIC origins tend to own larger shares of business assets, while those from LMIC own nearly no business assets in the bottom half of the distribution but considerably higher shares especially on the top.

Comparing wealth accumulation from 2012 to 2017, we observe stark differences across groups and along the distribution in both absolute and relative terms. First-generation migrants from HIC experienced largely similar absolute wealth growth as natives, except at the upper middle part of the distribution, where they fell behind native households. We identify differential portfolio composition as a partial explanation. Differences in wealth accumulation are considerably larger, but positive, for second-generation HIC migrants: natives increased their net wealth more on the bottom and gained less on the top of the distribution. Portfolio composition accounts for fractions of these gaps, while differences in saving rates and income seem hardly important. First-generation migrants from LMIC increased their wealth considerably less than natives in the upper part of the distribution, but they also increased their net debt less. In the upper half of the distribution, differences in portfolio composition can explain up to nearly 35 percent of the gap, while lower saving rates of migrants are also important. Due to a small sample size of second-generation migrants from LMIC with all required information, we cannot decompose differential wealth accumulation for this group.

Finally, to shed light on the mechanisms through which portfolio compositions are associated with differential wealth accumulation, we exploit the accounting framework developed by Saez and Zucman (2016); Kuhn et al. (2020) to approximate capital gain effects at the level of aggregate subgroups of our demographic groups along the distribution. We show that asset price effects were particularly important for wealth accumulation of all migrant subgroups in the upper part of the distribution, whereas native household experienced rather stable and even slightly decreasing asset price effects over the distribution. We also show that the contribution of savings to wealth accumulation remained rather stable for native households but decreased along the distribution for all migrant subgroups, to varying degrees. Based on this accounting exercise and on SOEP data, we find that rates of return are stable or even decreasing over the distribution in all demographic groups.

This paper contributes to three different streams of the literature on migration economics and wealth distribution. First, we contribute to a literature that has estimated magnitudes and origins of migrant wealth gaps across several industrialized economies. Previous studies have estimated partially or entirely positive migrant wealth gaps in Canada, New Zealand and Australia (Doiron and Guttman 2009; Zhang 2003; Gibson et al. 2007; Bauer et al. 2011) and negative migrant wealth gaps in the United States (Cobb-Clark and Hildebrand 2006c; Bauer et al. 2011; Campbell and Kaufman 2006) and several European countries, including Germany (Mathä et al. 2011; Muckenhuber et al. 2022; Karagiannaki 2023; Bauer et al. 2011; Sinning 2007). We provide an advanced update of the quantification of the migrant wealth gap in Germany using SOEP data from 2017, and differentiate migrants from the first and second generation of migration as well as from low-income and high-income countries of origin. To our knowledge, Muckenhuber et al. (2022) are the only ones who have considered these groups separately for Austria. We show for Germany that some migrant subgroups experience a positive wealth gap in a society where the average migrant wealth gap is negative. Given the diversity of migration backgrounds of people living in Germany, grouping all together masks important heterogeneities (see also Ferrari 2020). Furthermore, we investigate determinants of the migrant wealth gap of the various demographic groups not only at the mean, but along the distribution, which to our best knowledge has not been done for Germany before.

Second, this work also relates to a literature on the economics of wealth inequality dynamics (Saez and Zucman 2016; Garbinti et al. 2021; Kuhn et al. 2020; Martínez-Toledano 2023, and many others), at the intersection with migration economics. Focussing on various subgroups of the German population, we investigate various potential drivers of differential wealth accumulation. One of these is portfolio composition, which may give rise to differential rates of return and asset price effects (see in particular Martínez-Toledano 2023; Fagereng et al. 2020; Kuhn et al. 2020). Previous research for Germany found considerable differences in the composition of wealth and portfolio allocations between German natives and migrants, the main part of which was accounted for by lower home ownership rates and generally lower portfolio diversification among migrants (Sinning 2007). Differences in portfolio allocations between natives and migrants have also been found in New Zealand (Gibson et al. 2007), the US (Osili and Paulson 2009; Cobb-Clark and Hildebrand 2006b, a; Chatterjee and Zahirovic-Herbert 2014; Wolff 2022), and Italy (Bertocchi et al. 2023), for example. In our research, we find that portfolio composition is heterogeneous across various migrant subgroups and along the distribution, and is associated with positive and negative differences in wealth accumulation. Differences in income and saving rates seem important for migrants from lower- and middle-income countries only, although all migrant subgroups report lower saving rates than natives.

Third, there is a literature on differences in migration histories, historical wealth shocks, and the repercussion in terms of wealth distribution (see e.g. Ager et al. 2021; Derenoncourt et al. 2024; Painter and Qian 2016). Europe's migration history has been characterized by post-colonial migration and guest-workers, whereby predominantly formally unskilled workers were attracted in the post-WWII period. Migrant wealth gaps in countries with such immigration patterns are typically negative. In contrast, average migrant wealth gaps in countries such as Canada, New Zealand, and Australia – with immigration regulations that have sought to promote the immigration of highly-skilled migrants – are typically positive (Doiron and Guttmann 2009). We document that differential patterns of economic integration seem to co-exist in German society, depending on migrants' backgrounds. While first-generation migrants from LMIC experience the largest net wealth gaps and differ substantially in their wealth accumulation process, economic disadvantages of LMIC migrants from previous decades seem to have translated into the wealth accumulation process of the second generation of migration. At the same time, migrants from HIC backgrounds are able to keep pace or even outcompete natives in terms of wealth levels and wealth growth. While our analysis sheds some light on dynamics behind these developments, large parts of these heterogeneous wealth gaps remain unexplained, raising further questions about apparently heterogeneous processes of wealth accumulation.

The remainder of this paper is organized as follows. Section 2 provides some historical background about immigration to Germany. Section 3 presents a basic accounting framework of wealth accumulation, before Section 4 presents our dataset and our empirical decomposition approach. Section 5 discusses static wealth gaps between migrants and natives in 2017, and Section 6 investigates the process of wealth accumulation. Section 7 concludes.

2 Historical background: Immigration to Germany after WWII

Two main trends have characterized migration into Germany after the Second World War: migration by so-called guest-workers from Southern to Northern Europe and refugee inflows. Facing strong demand for low-skilled workers for post-war recovery, the Federal Republic

of Germany concluded bilateral recruitment agreements with Italy (1955), Spain and Greece (1960), and Turkey (1961) (Rass 2010; Hunn 2005). Migrant workers mainly came from poor, rural regions and were primarily young men, but also young women, with low or no formal qualifications (Bade et al. 2010). By 1973, when this phase of immigration came to a halt with the recruitment stop, there were about 3.3 million foreign workers in Western Germany (Bundesministerium des Innern 2014). At the same time, asylum-seeking and irregular migration gained importance. Against the backdrop of Glasnost and Perestroika in the *USSR* and the opening of the Iron Curtain, Germany was confronted with migration movements from East to West, mainly of asylum seekers, ethnic German repatriates (about 4.5 million in total), and Jewish migrants from the *USSR* and its successor states. Net migration peaked in 1992 at just under 800,000 (Panagiotidis 2016; Bertelsmann Stiftung 2016). Subsequently, refugees from conflict-torn areas such as the Balkan region, Syria and most recently Ukraine have sought protection in Germany (Oltmer 2018). Net migration reached a new peak in 2022 with over 1.4 million people in 2022 (Statistisches Bundesamt 2024b). Besides, about 1.5 million Europeans relocated to Germany between 2004 and 2015 (Bertelsmann Stiftung 2016). Figure 1 illustrates the gross and net inflows of migrants into Germany over the period from 1954 to 2023.

Germany's immigration history is reflected in the composition of its population. In 2023, about 30 percent of the 84 million residents had a direct or indirect migration history in their families. In the following, we speak of first-generation and second-generation migrants, respectively, to refer to people who immigrated themselves or who were born to at least one parent who immigrated to Germany after 1950. In 2023, there were about 16.2 million first-generation migrants (two thirds of all people with a migration history) and about 9 million second-generation migrants (about one third of all people with a migration history since 1950) (Statistisches Bundesamt 2024a).

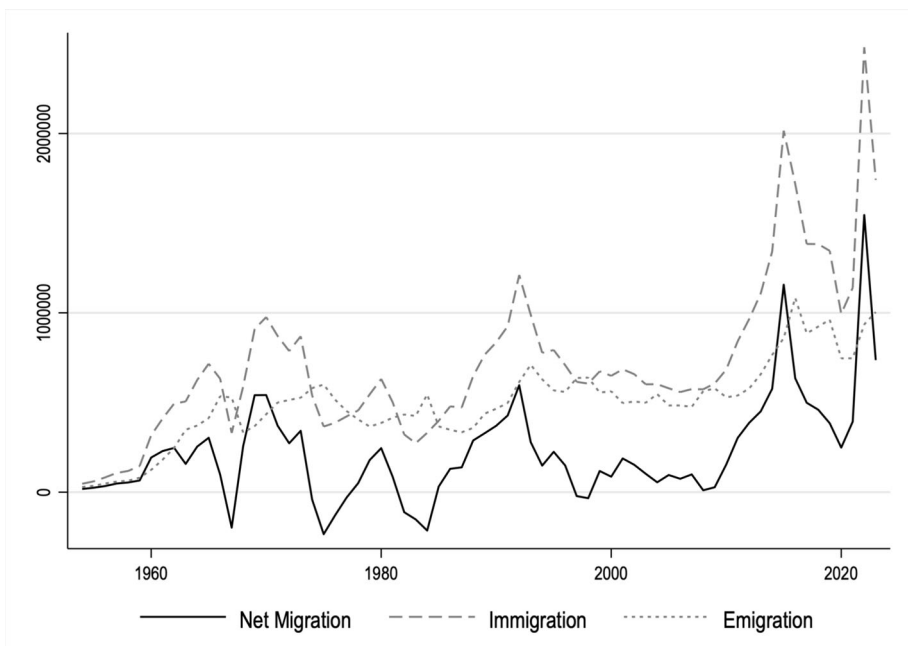


Fig. 1 Migration of foreigners into Germany, 1954-2023. **Notes:** Own graph. Data Source: Statistisches Bundesamt (2024b). The figure includes immigration and emigration of people without German citizenship

Figure 2 shows the most important countries of origin of German residents with a migration history. The single-most important countries of origin are Turkey and Poland, followed by the Russian Federation, Kazakhstan and Syria (Statistisches Bundesamt 2024a). Note that Turkey is exceptional in that first- and second-generation migrants are relatively balanced, whereas first-generation migrants usually trump second-generation migrants by far, in line with overall proportions.

Against the background of the very heterogeneous motives, contexts, and backgrounds that brought different groups of people to Germany, we consider it relevant to distinguish different groups in analysing the migrant wealth gap. First, we differentiate people who immigrated themselves from those who have a second-generation migration background, to consider potential differences in familiarity with the language, school system, labour market and society in general. Second, we differentiate migrants from high-income countries and low- or middle-income countries to proxy for potential differences as diverse as (the formal recognition of) educational degrees and labour market qualifications, ease of labour market entry, socio-cultural proximity, pre-migration wealth, cost of migration, and access to economic buffers.

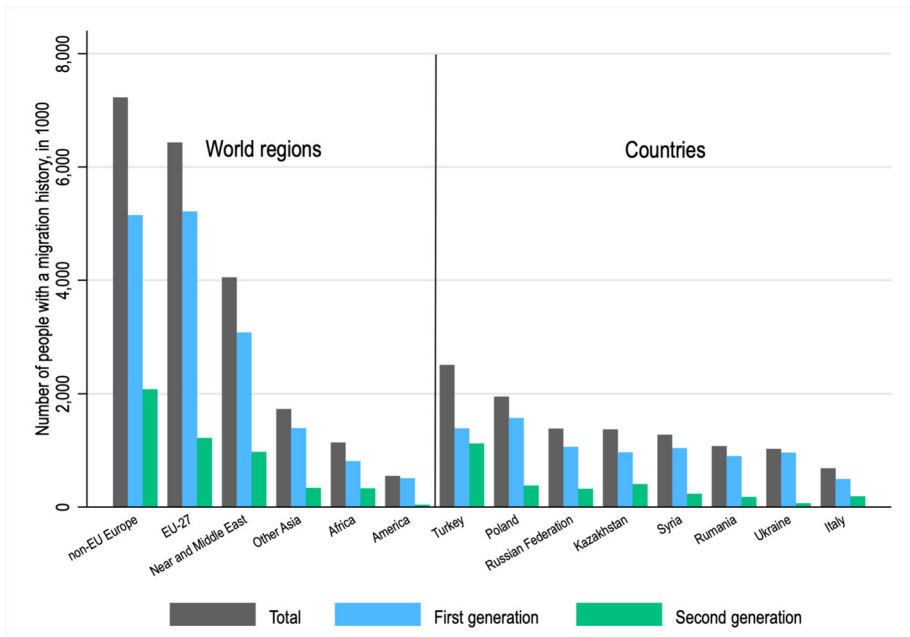


Fig. 2 Countries of Origin of German Residents with a Migration History. **Notes:** Own figure. Data Source: Statistisches Bundesamt (2024a). The figure shows migrants’ origins by world region (left panel) and by country (right panel). This data source only counts as second-generation migrants those with two parents who migrated to Germany after 1950. People with one foreign-born parent – about 4 million people – are not included and no information about the parent’s country of origin is available. Because official statistics provide information on the quantitatively most relevant countries of origin, we cannot exactly map these statistics to the groups that we will use in our analysis (high-income and low- and middle-income countries). In 2023, the included countries were classified by the World Bank as follows. Among non-EU countries, leading countries were Turkey (middle-income), the Russian Federation (high-income) and Ukraine (middle-income); EU-27: Poland (2023: high-income), Rumania (high-income), Bulgaria (high-income); Near and Middle East: Kazakhstan (middle-income) and Syria (low-income); Other Asian countries: Afghanistan (low-income), India (middle-income), China (middle-income), Vietnam (middle-income); Africa: Morocco (middle-income), Egypt (middle-income), Algeria (middle-income), Libya (middle-income), Tunisia (middle-income); America: United States (high-income), Brazil (middle-income)

3 Analytical framework

According to the accounting framework of wealth accumulation proposed by Saez and Zucman (2016) and adapted in many recent applications (see e.g. Kuhn et al. 2020; Martínez-Toledano 2023; Garbinti et al. 2021; Derenoncourt et al. 2024), wealth accumulation can be described as a simplified process driven by three forces: labour income, saving rates, and returns to wealth. Differences in any of these may occasion wealth gaps between natives and migrants.¹ We can define an individual i 's wealth in period $t + 1$ as the individual's wealth in period t plus savings S_t^i and wealth growth through the asset price effect q_t^i :

$$W_{t+1}^i = (1 + q_t^i) * (W_t^i + S_t^i) \quad (1)$$

Individual savings S_t^i comprise the net increase in wealth W_t^i due to any dynamics other than asset prices, and hence comprise savings out of all sources of income including retained flow returns of wealth such as dividends, interests or rental incomes. The framework originally abstracts from bequests and other life-cycle events that influence wealth accumulation. We slightly adjust the framework with a view on the role of windfall wealth gains such as bequests or gifts because they are potentially very important to build up wealth, and may differ substantially across our demographic groups. The process of wealth accumulation can then be written as

$$W_{t+1}^i = (1 + q_t^i) * [W_t^i + s_t^i * (Y_t^i + WG_t^i + r_t^i * W_t^i)], \quad (2)$$

where Y_t^i denotes the individual's income, WG_t^i comprises transfers and windfall gains such as bequests or gifts, and r_t^i denotes the flow rate of return. In this perspective, differences in wealth accumulation across individuals or groups could stem from differences in initial wealth, income, saving rates, windfall gains, capital gains (asset price effects), and flow rates of return. In appendix A, we briefly review empirical evidence on the differences between natives and migrants in terms of these variables and show descriptive statistics from official statistics as well as from our SOEP dataset.

4 Data and decomposition method

4.1 SOEP data sample

Many important insights into wealth distribution and the dynamics of wealth accumulation in recent years have come from efforts to combine survey data with official tax data and national wealth estimates to construct (long-run) series of wealth distribution (see e.g. Saez and Zucman 2016; Derenoncourt et al. 2024; Garbinti et al. 2021; Martínez-Toledano 2023). For Germany, Albers et al. (2022) constructed such a long-run series along with historical and contemporaneous analyses of processes of wealth accumulation in Germany. These combined datasets attempt to address many problems of survey data, including the under-representation of wealth data especially at the top of the distribution. In this paper, we are considerably more constrained in terms of data availability because we are unable to match data from National Accounts or tax files to households' migration histories. We rely instead on survey data alone because these data give us detailed information about households' migration history.

¹ In our empirical analysis, we distinguish people with a first- and second-generation migration background, as explained above. For the sake of a short notation, we only distinguish natives and migrants in this section.

We use data from the German Socio-economic panel (SOEP), a yearly representative multi-cohort survey (Goebel et al. 2019). The SOEP questionnaire administers questions on wealth ownership and assets every five years, the latest wave available coming from 2017.² The SOEP questionnaire features information on respondents' own migration history as well as on that of their parents. We distinguish natives, first-generation and second-generation migrants. Native households are defined as those without a history of migration within the last two generations. We categorise as first-generation migrants those who reside in Germany and were born abroad, and as second-generation migrants those who reside in Germany and were born in Germany to at least one foreign-born parent. We re-classify respondents who were born abroad and moved to Germany before the age of six as second-generation migrants, arguing that they were predominantly socialized in Germany. In households with more than one generation, we refer to the household head.

Our analysis investigates the wealth gap at the household level and hence we must classify households, not individuals. This is trivial in single households or when all household members fall into the same sub-group, but less clear when they do not. In such cases, we rely on the individual classification of the household member with the highest personal wealth and, if further distinction is necessary, the household member with the highest personal gross income and, finally, higher age. For our analysis of wealth differences between 2012 and 2017, where we hence require full information from two survey waves, we are left with 7,930 native households, 351 households from the first generation from HIC origins, 483 from first generation LMIC origins, 424 from second generation HIC origins, and 73 from second-generation LMIC origins.³ While the latter group is certainly too small to conduct meaningful analysis, we fortunately have larger numbers of observations for the analyses of data from 2017 alone. While second generation migrants account for a smaller share of the German population overall (see Table A.3 in the appendix), this strong under-representation of second-generation migrants from LMIC is a major shortcoming of our dataset. The dataset suffers no such under-representation when it comes to second-generation migrants from HIC, raising questions about patterns of survey participation and non-response among LMIC migrants in particular. Another reason to be cautious with our data is also related with sample size. Inaccurate reporting of complex data such as asset incomes or wealth by asset categories is an inherent problem of survey data, as well as intentional under-reporting of income or wealth. Our small sample sizes for the migrant subgroups sometimes leave us with rather volatile estimates of saving rates or flow rates of return, for example (see below). These variables should hence be considered with caution. In particular, the accounting exercise in Section 6.3 should be understood as an approximation only because it crucially relies on group-based estimates of saving rates elicited from survey data only.

Our main variables of interest concerns household wealth, both net and gross (decomposed by asset categories, including debt). The SOEP differentiates own real estate (owner-occupied estates), other real estates, business assets, financial assets (including private insurance and building loan contracts) and tangible assets, as well as real estate and consumer debt. In Section 5, we present detailed descriptive information.

In terms of explanatory variables, we need information about household income. We use households' post-government income, a measure of disposable income after taxes and

² The SOEP has been used before to analyze wealth distribution in the context of migration by Sinning (2007) and Bauer et al. (2011) (using data from 2002) and Mathä et al. (2011) (using data from 2007).

³ The classification of countries of origin into low-, middle- and high-income countries pertains to the year 2017 and not to the year of migration. We use the World Bank's country classification.

government transfers of all individuals in the household. Descriptive information can be found in Fig. A.2 in the appendix.

The SOEP also contains information about household income from asset flows, which, in principle, allows us to calculate flow rates of return (r_i in Eq. 2). The variable represents the household asset income reported by the head of the household and comprises income from interest, dividends, and rent.⁴ Figure 6 in the appendix shows the distribution of reported asset flow incomes and the flow rates of return that we calculate using households' reported net wealth. Asset flows in absolute terms are highest among the richest 10 percent of households and considerably lower in the remainder of the distribution. Rates of return also show some tendency to increase, but figures especially for the bottom 50% of the distribution might seem extraordinarily large. It seems plausible that survey respondents misreport annual income from interests, dividends, and rents more often than, for example, labour income, because they are less frequently exposed to information about these income flows. Because different groups along the distribution typically own different portfolios and different types of assets yield different rates of return (Fagereng et al. 2020; Kuhn et al. 2020; Ederer et al. 2021; Smith et al. 2023), we would expect that rates of return are lowest in the bottom half of the distribution. On the other hand, Saez and Zucman (2016) and Martínez-Toledano (2023) found rather uniform within asset-class rates of return along the distribution in their analyses of the US and Spain. This is roughly compatible with our data in the upper part of the distribution. As said, data for the bottom half might be relatively over-reported in surveys.

Information on saving rates can be calculated from a variable that enquires about households' active savings.⁵ We relate reported savings to disposable household income. Our saving rates look similar to those reported in Albers et al. (2022), who complement information from the SOEP with data from another survey and from aggregate decomposition using the law of motion. Even though reported savings should certainly be considered with caution, we consider our data a fairly good approximation of actual saving rates after unplausible cases (for instance saving rates larger than 1) have been cleaned.

4.1.1 RIF decomposition

Researchers have used different econometric approaches for the investigation of migrant wealth gaps. In earlier analyses, ordinary least squares (OLS) (Shamsuddin and DeVoretz 1998; Gittleman and Wolff 2004; Semyonov and Lewin-Epstein 2013) and Tobit regression (Hao 2004; McKernan et al. 2014) allowed for an analysis of the average gap. For investigations beyond the mean, many scholars have used methods based on the Oaxaca-Blinder (OB) decomposition (Oaxaca 1973; Blinder 1973), before DiNardo et al. (1996) introduced a semi-parametric approach and Machado and Mata (2005) suggested a counterfactual decomposition. These decomposition methods, employed in a large number of studies (Cobb-Clark and Hildebrand 2006c; Zhang 2003; Gibson et al. 2007; Sinning 2007; Bauer et al. 2011; Mathä et al. 2011; Doiron and Guttmann 2009), allow the investigation of the conditional distribution of wealth. However, they cannot yet decompose the contributions of

⁴ Rental income is the amount of income from rent minus any operation and maintenance costs. Negative rental incomes that result from operating costs in excess of income from rental and leasing are not considered here but set to zero.

⁵ The question varies slightly over the years but always enquires something like: "Do you usually have money left over at the end of the month that you can put aside for larger purchases, emergencies, or to build savings? If so, how much?"

different explanatory variables along the wealth distribution.⁶ A parametric alternative to the OB decomposition is the propensity score matching approach by Frölich (2007) and Nopo (2008). However, this approach comes with its own limitations, as it groups all migrants together and cannot accommodate the distinction of sub-groups (Ferrari 2020).

In this paper, like Muckenhuber et al. (2022) investigating the case of Austria and Karagiannaki (2023) investigating the ethnic wealth gap in the UK, we use the RIF decomposition approach, a two-stage procedure proposed by Firpo et al. (2018). In the first stage, distributional changes are divided into a structure effect and a composition effect using a semi-parametric reweighting approximation proposed by DiNardo et al. (1996). In the second stage, these effects are divided into the contribution of each independent variable using the recentered influence function technique introduced by Firpo et al. (2009).

The RIF regression method builds upon the IF approach, a tool used for the robust estimation of statistical models. The influence function $IF(Y; \nu, F_Y)$ of a distributional statistic $\nu(F_Y)$ represents the relative influence of an individual observation on that distributional statistic. Adding back the distributional statistic $\nu(F_Y)$ to the influence function results in the following RIF:

$$RIF(Y; \nu(F_Y)) = \nu(F_Y) + IF(Y; \nu(F_Y)). \quad (3)$$

In the case that the distributional statistic is the τ -th quantile⁷, the influence function $IF(Y; q_\tau, F_Y)$ is equal to $(\tau - \mathbb{1}\{Y \leq q_\tau\})/f_Y(q_\tau)$. The denominator $f_Y(q_\tau)$ is the density of Y at the quantile q_τ , and the dummy variable $\mathbb{1}\{Y \leq q_\tau\}$ in the numerator indicates if the dependent variable Y is below q_τ . Inserted in Eq. 3, the RIF results in

$$RIF(Y; q_\tau, F_Y) = q_\tau + \frac{\tau - \mathbb{1}\{Y \leq q_\tau\}}{f_Y(q_\tau)} \quad (4)$$

A characteristic of the IF is that its expected value equals zero. From this, it follows that the expected value of the RIF is equal to the quantile itself.

RIF regressions are an excellent tool to analyse how small changes in the distribution of independent variables affect the distributional statistic ν . However, when the aim is to analyse differences in the distribution between groups, taking into account changes in the joint distribution across groups, RIF regressions alone are not appropriate. Following Firpo et al. (2018), we use the RIF decomposition, that is, RIF regressions in combination with a reweighted strategy proposed by DiNardo et al. (1996), to decompose differences in distributional statistics beyond the mean.

The RIF decomposition by Firpo et al. (2018) builds upon the OB decomposition. The OB approach allows dividing the difference of the mean of an outcome variable Y between two groups into a composition effect and a structure effect. The composition effect results from the differences in independent variables between the two groups, and the structure effect results from differences in the returns to the independent variables between the two groups. The OB decomposition is done by estimating separate regressions for each of the groups, accounting for possible interactions between the grouping variables and the relationships between the outcome variable Y and the independent variables X .

The following exposition of our decomposition method closely follows Rios Avila (2020). Given a joint distribution function with a dependent variable Y , a set of independent variables

⁶ For a detailed discussion of the advantages and limitations of the single decomposition methods, see Fortin et al. (2011).

⁷ In our analyses, we calculate the RIF for the 10th, 25th, 50th, 75th, and 90th percentile.

X, and a categorical variable T, the cumulative distribution of Y conditional on T can be written as:

$$F_Y^k(y) = \int F_{Y|X}^k(Y|X) dF_X^k(X) \tag{5}$$

where k is conditional on $T = k$ with $k \in [0, 1]$. The cumulative conditional distribution of Y can be used to calculate the difference of the distributional statistic ν between the groups 0 and 1:

$$\Delta\nu = \nu_1 - \nu_0 = \nu(F_Y^1) - \nu(F_Y^0) \tag{6a}$$

$$= \nu\left(\int F_{Y|X}^1(Y|X) dF_X^1(X)\right) - \nu\left(\int F_{Y|X}^0(Y|X) dF_X^0(X)\right) \tag{6b}$$

$$= \bar{X}^1 \hat{\beta}_1 - \bar{X}^0 \hat{\beta}_0 \tag{6c}$$

Equation 6b suggests that differences in statistics of interest $\Delta\nu$ arise for two reasons. On the one hand, differences in the distribution of the independent variables X ($dF_X^1(X) \neq dF_X^0(X)$), and on the other hand, differences in the relationship between the dependent variable Y and the independent variables X ($F_{Y|X}^1(Y|X) \neq F_{Y|X}^0(Y|X)$). Equation 6c is the shorthand notation.

To quantify the importance of differences in characteristics (composition effect) and differences in coefficients (structure effect) for the explanation of the overall gap in the distributional statistic $\Delta\nu$, a counterfactual statistic $\Delta\nu_c$ is defined:

$$\nu_c = \nu(F_Y^c) = \nu\left(\int F_{Y|X}^0(Y|X) dF_X^1(X)\right) \tag{7a}$$

$$= \bar{X}^1 \hat{\beta}_0 \tag{7b}$$

The distributional statistic ν can now be disaggregated into two components:

$$\Delta\nu = \underbrace{(\nu_1 - \nu_c)}_{\Delta\nu_s} + \underbrace{(\nu_c - \nu_0)}_{\Delta\nu_x} \tag{8}$$

where $\Delta\nu_s$ represents the structure effect and $\Delta\nu_x$ represents the composition effect. In this paper, we analyse the migrant wealth gap. Consequently, the composition effect refers to the part of the gap which can be explained by the distributional differences in the socio-demographic factors. The remainder refers to the differences in the returns to these factors and constitutes the unexplained part.

As proposed by DiNardo et al. (1996) and Barsky et al. (2002), we use a semi-parametric reweighting approximation to identify the counterfactual distribution $F_{Y|X}^0(Y|X) dF_X^1(X)$ using observed data. This step is necessary because the counterfactual distribution $\nu(F_Y^c)$ in Eq. 7a is not directly observable in the distribution of the dependent and independent variables. However, the counterfactual distribution can be approximated by multiplying the observed distribution of characteristics $dF_X^0(X)$ with a factor $\omega(X)$, so that it resembles the distribution $dF_X^1(X)$:

$$F_Y^c = \int F_{Y|X}^0(Y|X) dF_X^1(X) \cong \int F_{Y|X}^0(Y|X) dF_X^0(X)\omega(X) \tag{9}$$

Using Bayes' rule, the reweighting factor $\omega(X)$ can be identified as:

$$\begin{aligned} \omega(X) &= \frac{dF_X^1(X)}{dF_X^0(X)} = \frac{dF_{X|T}(X|T=1)}{dF_{X|T}(X|T=0)} = \frac{dF_{T|X}(T=1|X)}{dF_T(T=1)} \frac{dF_T(T=0)}{dF_{T|X}(T=0|X)} \\ &= \frac{1-P}{P} \frac{P(T=1|X)}{1-P(T=1|X)} \end{aligned} \tag{10}$$

where P is the proportion of people in group $T=1$ and $P(T=1|X)$ is the conditional probability of someone with the characteristics X being in group 1.

Estimating Eq. 7b by using weighted least squares and the estimated reweighting factors lead to the following distributional statistic v :

$$v_C = \bar{X}^{C'} \hat{\beta}_C \tag{11}$$

The components of the decomposition are now defined as:

$$\Delta v = \underbrace{\bar{X}^1'(\hat{\beta}_1 - \hat{\beta}_C)}_{\Delta v_s^p} + \underbrace{(\bar{X}^1 - \bar{X}^C)' \hat{\beta}_C}_{\Delta v_s^e} + \underbrace{(\bar{X}^C - \bar{X}^0)' \hat{\beta}_0}_{\Delta v_X^p} + \underbrace{\bar{X}^{C'}(\hat{\beta}_C - \hat{\beta}_0)}_{\Delta v_X^e} \tag{12}$$

Like in Eq. 8, the first half $\Delta v_s^p + \Delta v_s^e$ corresponds to the unexplained part of the migrant wealth gap, the structure effect. The pure structure effect Δv_s^p refers to differences in the returns of the socio-demographic characteristics and Δv_s^e is the reweighting error, which evaluates the quality of the reweighting strategy and is expected to go to zero in large samples. The components of the second half $\Delta v_X^p + \Delta v_X^e$ correspond to the explained part of the migrant wealth gap, the composition effect. Therefore, the pure composition effect Δv_X^p refers to differences in the distribution of the socio-demographic factors, and Δv_X^e is the specification error, which assesses the importance of departures from linearity in the model specification or the RIF approximation.

5 Differences in wealth levels and portfolio composition

5.1 Net overall wealth gaps

We begin with households' overall net wealth, composed of intangible assets, financial assets, and tangible assets, and deducing overall debts. Table 1 displays summary statistics of overall net wealth by demographic group.

Table 1 Households' overall net wealth 2017

		Natives	Migrants			
			1 st Generation		2 nd Generation	
			HIC	LMIC	HIC	LMIC
Overall	μ	196,600	157,000	64,000	159,900	99,400
Net	σ	(642,300)	(388,700)	(231,900)	(572,600)	(399,300)
Wealth	p50	78,000	23,000	2,500	9,700	3,400
N		12,097	929	1,620	838	184

Notes: Own table. Data Source: SOEPv39. Weights are included. μ = average wealth; σ = standard deviation; p50 = median

Native households have the highest overall net wealth, considering both the average (about 196,600 €) and the median (about 78,000 €). The mean wealth gap is considerably larger for first-generation migrants from LMIC. The mean wealth gaps amount to 39,600 € (migrants own 80 percent of natives' average net wealth) and 36,700 € (81 percent) in the first and second generation of HIC migrant households, respectively, and to 132,600 € (33 percent) and 97,200 € (51 percent) in LMIC households. While the first and second generation of HIC migrants have comparable net wealth at the mean, the wealth distribution of first-generation migrants is more strongly skewed to the right, as indicated by a considerably lower median value. Second-generation LMIC migrants possess about 50 percent higher wealth than those from the first generation at the mean, but the median value is strikingly low for both groups: at the 50th percentile, households in these groups hardly own any net wealth (2,500 to 3,400 €). There is considerable variation within all groups, as indicated by large standard deviations.

Figure 3 compares the groups' overall net wealth along each group's wealth distribution. The graph also illustrates that natives begin to accumulate wealth much earlier in the distribution (in the fourth to fifth decile) than all other groups (where wealth accumulation begins around the sixth to seventh decile). This reiterates that households with a migration history hardly own any net wealth in the lower half of the distribution. First-generation households from HIC come closer to natives over the upper half of the distribution, but a gap remains. Second-generation households from HIC also catch up, and this group even trumps the average wealth of natives in the tenth decile. In this sense, within-group wealth distribution is particularly unequal among migrants from the first generation. No such catching-up occurs for migrants from low- or middle-income backgrounds – to the contrary: even though these groups begin to build up wealth in the sixth to seventh decile, too, their average wealth levels

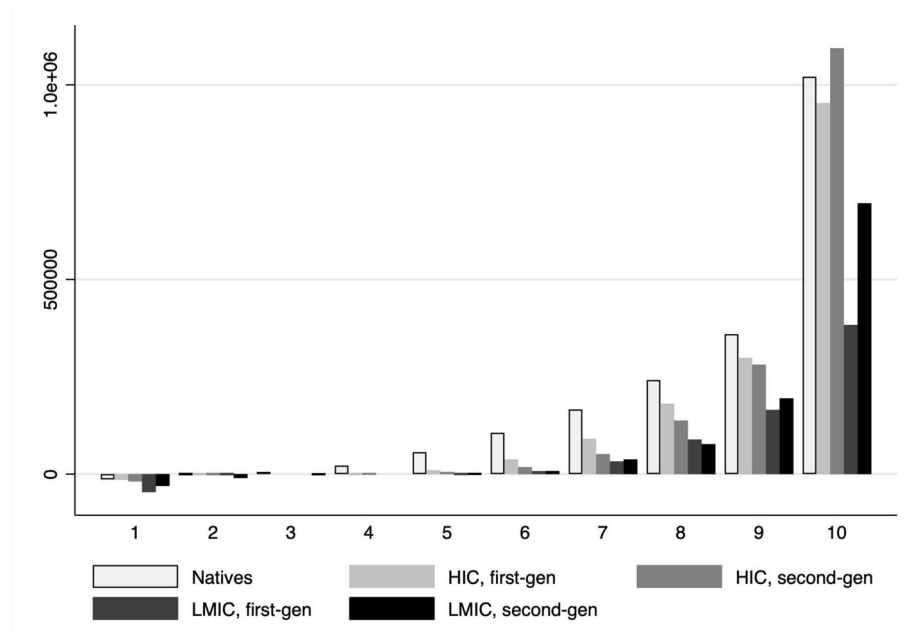


Fig. 3 Overall net wealth in €, 2017, by demographic groups

remain considerably lower and the gap seems to remain relatively stable at about half of the wealth of natives. The wealth-poorest households (bottom 10 to 20 percent of the distribution) with negative net wealth in all demographic groups do own wealth, but this is outweighed by larger debt. This is particularly true for first-generation migrants from LMIC, who face considerable consumer debt.

5.2 Gross wealth gaps and portfolio composition

Figure 4 decomposes gross wealth by asset categories. The patterns that emerge for the whole population are compatible with previous studies (see Albers et al. 2022, in historical perspective for Germany). The most important asset category among native households starting with decile five is own residential property. Other real estate ownership becomes relevant to a small degree in deciles eight and nine but is considerably more prevalent only among the wealthiest ten percent. The same holds true for financial assets. Business assets largely concern the wealthiest ten percent only. Most of households' debt in the upper half of the distribution is real estate debt, in proportions considerably lower than real estate wealth.

Overall, the distribution of wealth among migrants from high-income countries of origin by asset categories closely resembles that of natives in the bottom 90 percent of the distribution. However, as mentioned, wealth ownership begins earlier among natives and hence ownership patterns are less right-skewed (see Table B.2 in the appendix to see the real estate and business asset shares). Differences are also remarkable in terms of the asset portfolios of the wealthiest ten percent of natives and HIC-migrants. First-generation migrants from HIC origins own more other real estate (beyond own residential property) than natives. Among the wealthiest ten percent of the second generation, who own more wealth in absolute terms than the

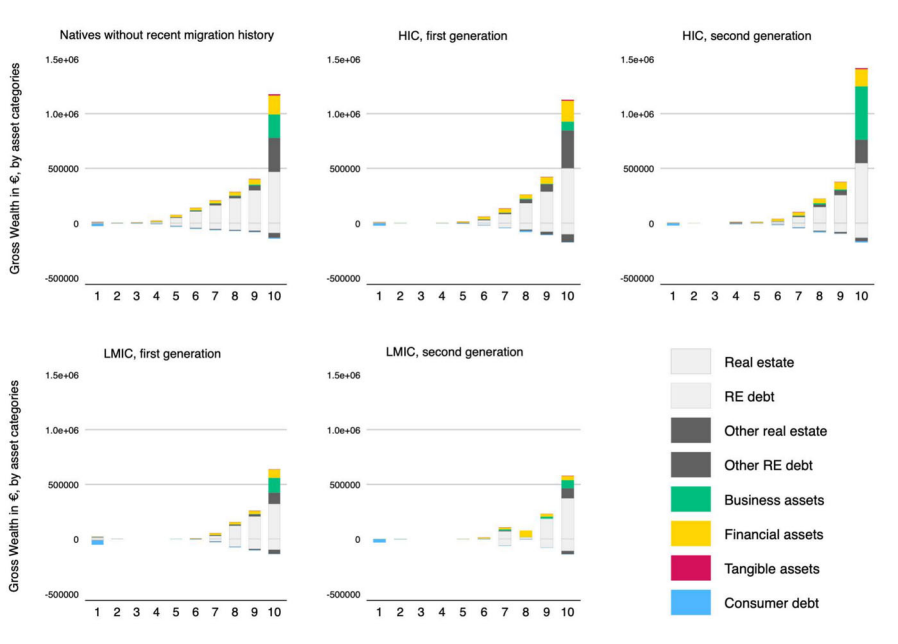


Fig. 4 Gross wealth in €, 2017, by asset categories and demographic groups

corresponding natives, real estate ownership is relatively less important, but this groups owns considerably more business assets.

Among migrants from low- and middle-income countries, patterns of wealth ownership look considerably different. The bottom half hardly holds any net wealth but negative consumer and, in the case of the poorest first-generation migrants, other debt. Wealth ownership only begins in the seventh decile mainly with own residential property. Comparing by decile, the value of real estate assets is lower than for natives, and the simultaneous level of real estate debt is proportionally higher. Other real estate and financial assets are relatively less important as compared to natives.

5.3 Static decomposition: Differences in wealth levels due to age

Wealth is a stock variable that is accumulated over a person's life cycle. According to the life cycle theory by Ando and Modigliani (1963), middle-aged people own more wealth than both younger and older people because wealth is accrued throughout people's working lives and reaches a maximum just before retirement, a phase that is often characterized by a certain degree of out-of-wealth consumption.⁸ In Germany, there are indeed structural age differences between the population without migration history and the various migrant subgroups (see Figs. A.3 and A.4 in the appendix): while in our sample, household heads from first-generation HIC households are slightly older than natives (with 58.6 versus 56.1 years), all other subgroups are clearly younger, with average ages between 42.8 and 48.2 years. Failing to account for the fact that most migrant subgroups in Germany are on average younger than natives could inflate the size of the migrant wealth gap.

We used the Recentered Influence Function (RIF) decomposition presented in Section 4.1.1 to estimate which fraction of the observed migrant wealth gaps in 2017 are due to these structural age differences. Table B.5 in the appendix presents detailed results of this exercise. Among second-generation HIC households, age differences explain about half of the wealth gap at the median, where natives own considerably higher wealth. Towards the top, where this group catches up, the younger age of this group can clearly not explain a (non-existent) negative wealth gap; rather, the statistical decomposition suggests that this subgroup could expand their net wealth more than natives with age. Among first-generation households from LMIC, who are also younger and own less wealth, age differences however explain only smaller fractions of the wealth gaps (between 12 and 20 percent). This suggests that these households do not catch up with wealth, which is consistent with differences in age accumulation that we discuss further below.

6 Differential wealth accumulation

6.1 Wealth growth

Figure 5 shows the wealth growth between 2012 and 2017 of the various demographic groups along the distribution. Native households begin to experience positive changes in overall net

⁸ Dynamic determinants of wealth accumulation may also vary over the life-cycle. The correlation of income with age is an obvious candidate, but the likelihood of having received a bequest rises with age, too. Killewald and Bryan (2018) showed that in the US, wealth gaps between Whites, Blacks, and Hispanics grow over the life course, as an interaction between initial (dis)advantages and life course effects. Hence, in static comparison, wealth gaps can appear inflated if there are structural age differences across natives and migrants.

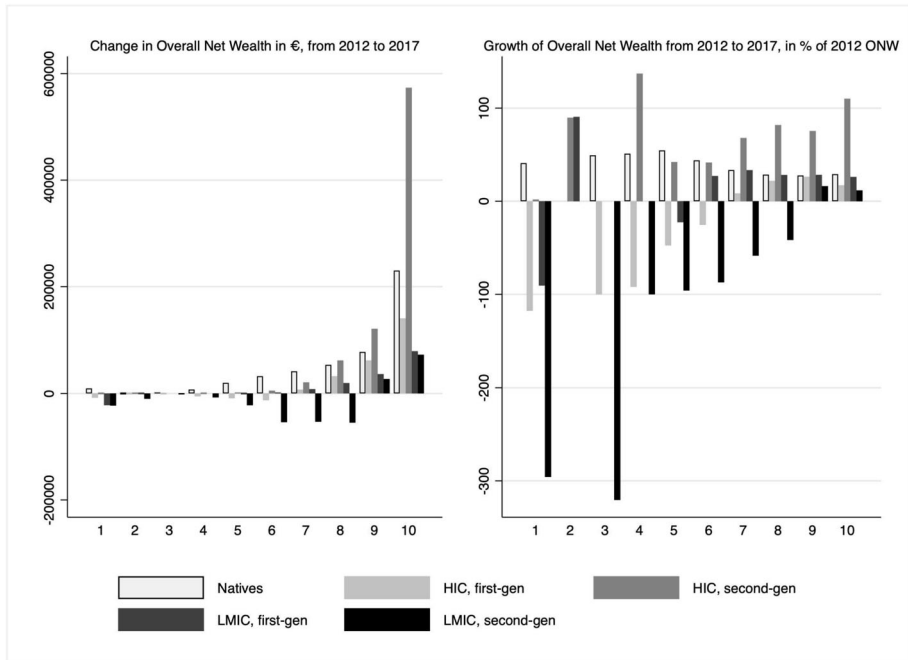


Fig. 5 Changes in Overall Net Wealth from 2012 to 2017, by demographic groups. **Note:** Overall net wealth in 2012 and 2017 is measured in constant 2015 Euros. The panel on the right indicates the worth of the wealth gain or loss of each group and decile as percentage of the value of overall net wealth in 2012. For example, a rate of -300 means that the first decile of second-generation migrants from LMIC lost overall net wealth worth 300% of their overall net wealth in 2012. The tenth decile of this demographic group gained about as much as twelve percent of their 2012 overall net wealth. Two bars were omitted from this graph for better visibility. The second decile of second-generation migrants from LMIC lost 12,000% worth of their 2012 wealth as they went from about -80 to about -10,150 Euros. The second decile of natives lost net wealth equivalent to 6,474% of their 2012 wealth as they went from 0.6 Euros (no wealth) to 40 Euros. Wealth changes were calculated at the household level before weighted means per decile were calculated. Households were assigned to their deciles according to their decile in 2012

wealth (in real terms) earlier on in the distribution than all groups with a migration history, and also experience larger absolute gains overall. One exception are second-generation migrants from high-income backgrounds, who experienced larger gains than natives beginning with the eighth decile. The poorest migrant deciles experienced wealth losses, especially those from LMIC backgrounds. Second-generation migrants from LMIC also lost real wealth in the middle part of the distribution. The right panel of Fig. 5 indicates the worth of the wealth gain or loss of each group and decile as percentage of the value of overall net wealth in 2012. Losses of second-generation migrants from LMIC backgrounds at the bottom of the distribution are relatively huge (around 300%) because of very small bases of wealth ownership. While absolute wealth gains (left panel) clearly increased along the distribution, the relative magnitudes of both losses and gains typically diminish towards the upper half of the distribution, with a few exceptions. One notable exception is that wealth gains of second-generation migrants from HIC are not only huge in absolute terms but also account for 70 to 100 percent of the overall net wealth held in 2012.

Figure B.3 in the appendix shows how the wealth increases were distributed over the different asset categories. Substantial parts of the wealth increases of migrants from HIC were

accounted for by business assets, which played a smaller role in the wealth accumulated by the other groups. Second-generation migrants from HIC also significantly expanded their real estate ownership, both owner-occupied and other real estate. Financial assets were relatively important for natives and second-generation LMIC migrants.

6.2 Decomposition of wealth accumulation using household data

Table 2 presents the estimation results of the RIF decompositions for net wealth growth from 2012 to 2017. In Table 2, we compare the wealth growth in € of 351 first-generation and 424 second-generation migrants from high-income countries, as well as of 483 first-generation migrants from low- and middle-income countries, with the wealth growth experienced by 7,930 natives. The sample of second-generation migrants from LMIC backgrounds is so small, with 73 observations, that we present results in the appendix in Table B.7 but note that a decomposition along a wealth distribution of such a small group is hardly statistically reliable.

For first-generation migrants, differences in wealth growth between migrants and natives are mostly statistically insignificant along the distribution. We still present decomposition results, but only discuss in details the results for the 75th percentile, where the gap in wealth growth is marginally statistically significant. Here, natives increased their net wealth by 26,700 € more than migrants, around 20 percent of which we can statistically explain. Differences in real estate shares (the share of a household's portfolio held in real estate) account statistically for 20.6 percent of the wealth growth gap, and differences in saving rates for another 4.1 percent. If first-generation households from HIC origins at the 75th percentile held as much real estate as natives (relative to the rest of their portfolio - they hold less) and saved relatively as much as natives (they have lower saving rates), the difference in wealth accumulation, which amounts to 26,700 € for this group, would be reduced by about 6,600 €. The real estate share is statistically significant in all percentiles and the decomposition suggests that first-generation migrants, who increased their wealth in almost similar proportions as natives but own significantly less real estate, would have reduced the gap in wealth growth or even reversed it if they owned as much real estate as natives.

The differences in wealth growth between natives and second-generation migrants originating from HIC backgrounds are larger and hence statistically significant at the bottom and top of the distribution, but not in the middle and upper middle (50th and 75th percentiles). At the tenth and 25th percentiles, natives experienced larger wealth losses than migrants. For the tenth decile, we can statistically explain about 40 percent of this positive migrant gap in wealth growth through portfolio composition, especially the share invested in real estate. Note that at the bottom of the distribution, households in our sample have negative net wealth due to debt, but they also own gross wealth. At the 25th percentile, where native households experienced wealth losses, too, whereas migrants' wealth levels remained stable over the period 2012 to 2017, portfolio composition explains about 1,300 € of the (small) gap of about 7,300 €. At the 90th percentile, migrants experienced considerably larger wealth gains than natives, but our variables can hardly provide a statistically reliable explanation. Differential savings rate would account for a small fraction, but are only statistically significant at the 10 percent level. The only variable that seems to play a larger role is, again, the share of real estate in a household's portfolio. Note that second-generation migrants from HIC have considerably larger shares of their portfolio invested in business assets, and that business assets accounted for a large share of the wealth growth that this group experienced

Table 2 Results: RIF Decomposition of wealth growth from 2012 to 2017

	10 th percentile in €	in %	25 th percentile in €	in %	50 th percentile in €	in %	75 th percentile in €	in %	90 th percentile in €	in %	
First-generation migrants originating from high-income countries											
Δ wealth natives	-59,000		-7,200		8,700		68,700		167,300		
Δ wealth HIC 1st	-65,600		-11,700		8,300		42,000		151,700		
Gap	6,600		4,500		400		26,700 ⁺		15,600		
Explained part	-5,100**	-77.3	-300 ⁺	-6.7	1,600**	400.0	5,300**	19.9	3,700	23.8	
Income	100	1.5	0	0.0	-100	-25.0	-800	-3.0	-1,900	-12.2	
Windfall	-200	-3.3	0	0.3	0	0.3	0	0.0	100	0.7	
Savings Rate	-500	-7.6	0	0.0	300**	75.0	1,100**	4.1	1,600*	10.3	
Real estate share	-5,700**	-86.4	-500**	-11.1	1,500**	375.0	5,500**	20.6	4,800**	30.8	
Business asset share	1,200*	18.2	100*	2.2	-100	-25.0	-400 ⁺	-1.5	-900	-5.8	
N	7,930 / 351		7,930 / 351		7,930 / 351		7,930 / 351		7,930 / 351		
Second-generation migrants originating from high-income countries											
Δ wealth natives	-59,200		-7,200		8,700		68,700		167,300		
Δ wealth HIC 2nd	-18,900		100		10,100		60,500		227,300		
Gap	-40,300**		-7,300**		-1,400		8,200		-60,000**		
Explained part	-17,300**	42.9	-1,400*	19.2	4,000**	-285.7	12,700 ⁺	154.9	5,600	-9.3	
Income	1,000	-2.5	-100	1.4	-1,000	71.4	-5,600	-68.3	-12,800	21.3	
Windfall	-400	1.0	-100	1.4	0	0.0	-100	-1.2	300	-0.5	
Saving Rate	-1,300	3.2	100	-1.4	800**	-57.1	2,800**	34.2	4,100**	-6.9	
Real estate share	-15,600**	38.8	-1,300**	17.8	4,200**	-300.0	15,100**	184.2	13,100**	-21.8	
Business asset share	-1,000*	2.5	-100 ⁺	1.4	0	0.0	400	4.9	800	-1.3	
N	7,930 / 424		7,930 / 424		7,930 / 424		7,930 / 424		7,930 / 424		

Table 2 continued

	10 th percentile in €	in %	25 th percentile in €	in %	50 th percentile in €	in %	75 th percentile in €	in %	90 th percentile in €	in %
First-generation migrants originating from low- and middle-income countries										
Δ wealth natives	-59,200		-7,200		8,700		68,700		167,300	
Δ wealth LMIC 1st	-31,200		-4,300		700		49,800		109,000	
Gap	-28,000**		-2,900		8,000**		18,900 [†]		58,300**	
Explained part	-8,300**	29.6	-200	6.9	3,500**	43.8	13,600**	72.0	19,000**	32.6
Income	-600	2.1	100	-3.5	600	7.5	3,400	18.0	7,800	13.4
Windfall	-600	2.1	-100	3.5	0	0.0	-100	-0.5	500	0.9
Savings Rate	-2,100	7.5	200	-6.9	1,200**	15.0	4,500**	23.8	6,500*	11.2
Real estate share	-6,700**	23.9	-500**	17.2	1,800**	22.5	6,500**	34.4	5,600**	9.6
Business asset share	1,700*	-6.1	200 [†]	-6.9	-100	-1.3	-600	-3.2	-1,300	-2.2
N	7,930 / 483		7,930 / 483		7,930 / 483		7,930 / 483		7,930 / 483	

We indicate levels of statistical significance along the variables in €. ** = 1%, * = 5%, † = 10%. Real estate and business assets shares are the shares of real estate and of business and financial assets in a household's portfolio, respectively. Windfall gains are wealth transfers such as bequests, gifts or lottery wins. Income is household disposable income. All explanatory variables refer to 2012, except the saving rate, which is from 2017 due to data gaps in the SOEP

from 2012 to 2017. If portfolio composition of natives and this subgroup was more similar, the wealth growth gap could have been reduced by about 20 percent.

We now turn to the decomposition results for migrants from LMIC backgrounds. As in the case of second-generation HIC migrants, first-generation LMIC migrants experienced smaller net wealth losses at the bottom of the distribution, that is, they accumulated less negative net wealth. We can explain about one third of this difference, again, through portfolio composition. At the 25th and 75th percentiles, natives increased their wealth more than migrants. At the median, migrants hardly increased their wealth, in contrast to natives who experienced a slight increase of about 8,700 €. About 20 percent of this gap is statistically explained by portfolio composition, another 15 percent by differential saving rates, and 7.5 percent by income differences. At the 75th percentile, these variables can statistically explain even larger parts of the difference: portfolio composition explains about 35 percent of the gap in wealth growth, saving rates almost on quarter, and income differences another 18 percent. At the 90th percentile, the same variables are statistically significant but with lower explanatory power (real estate shares: 9.61 percent; saving rates: 11.2 percent; income: 13.4 percent).

Overall, it emerges that first-generation migrants from high-income country backgrounds hardly experienced differences in terms of wealth growth as compared to natives. Where they do, at the upper-middle part of the distribution, we identify differential portfolio composition as a partial explanation. In the second generation of migrants from high-income country backgrounds, we observe that natives own lower wealth, which is again partially accounted for by differences in portfolio composition. In contrast, first-generation migrants from lower- and middle-income backgrounds experienced significantly smaller wealth growth as compared to natives. This is also partially explained by portfolio composition, but saving rates and income differences also play a role. Note that this group reported the lowest saving rates in the whole sample. One possible explanation could be that recently arrived migrants from LMIC backgrounds are particularly inclined to send remittances back home. We do not have information on remittances sent from the SOEP. We can observe that about 15 percent of all first-generation migrants from LMIC included in the estimation have a background of seeking asylum or refuge, but this information alone is not very telling because remittances could also be sent back in other contexts.

Among migrants from high-income countries and natives, portfolio differences seem particularly relevant, and they also play a role in comparison with first-generation migrants from lower- and middle-income countries. Ideally, we would want to distinguish the effects of differential flow rates of return and capital gain effects. The SOEP contains some information about asset incomes, from which we can compute flow rates of return, as reported in Fig. 6. This information would suggest that rates of return vary along the distribution, but also – except at the bottom, where the second generation LMIC migrants might be an outlier due to low numbers of observation – across groups. In the next section, we complement these figures with results obtained using aggregated data.

6.3 Decomposition of wealth accumulation using aggregate data

Three variables potentially influence the differential accumulation of wealth: saving rates, capital gains and flow rates of return. In contrast to previous papers (see for example Martínez-Toledano 2023), we do not directly observe capital gains or flow rates of return in our data. Further, we are unable to use the Income Capitalization Method by Saez and Zucman (2016) with data from National Accounts or tax files to retrieve information about households'

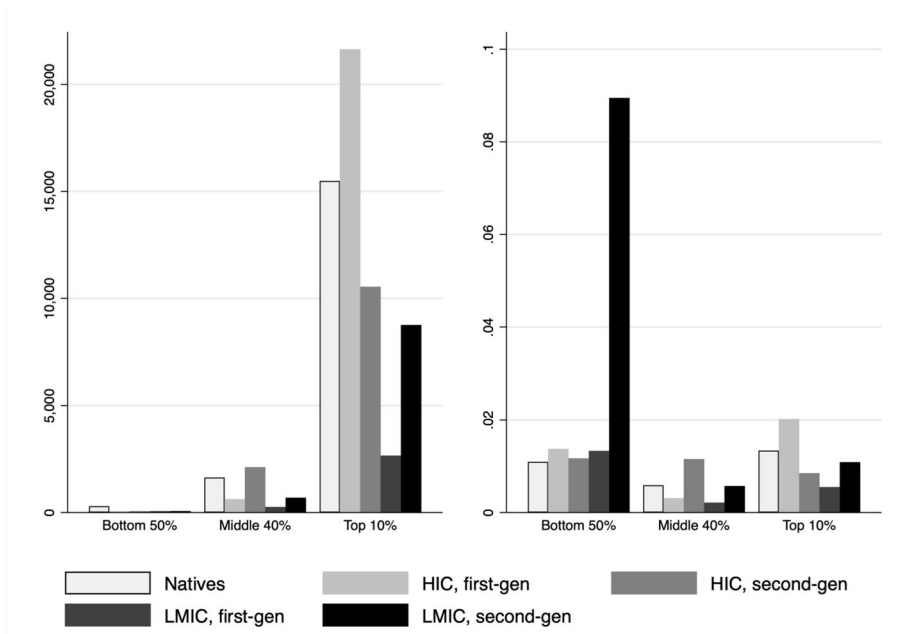


Fig. 6 Households' yearly asset income, in €, and flow rates of return. **Notes:** Own graph. Data Source: SOEP v39. The left panel show weighted group means of households' asset income from interest, dividends, and rent. The right panel shows a rate of return calculated as rate of return = asset income/gross wealth. Weighted group means were computed from rates of return calculated at the household level

return from wealth because we would be unable to match these data to households' migration history. However, the SOEP data set allows us to observe households' active savings. With this information, we follow a calculation by Kuhn et al. (2020) to identify capital gains for our various demographic groups between 2012 and 2017.

The SOEP data set allows us to observe households' active savings. We use information on active savings. While we would expect this information to be imperfect because of under-reporting, especially at the upper part of the wealth distribution, Albers et al. (2022) show that the resulting saving rates are fairly good in line with saving rates estimates from other sources, including Financial Accounts. Figure 7 shows the saving rates that result from the SOEP by demographic groups.

In the following, we closely follow the notation in Kuhn et al. (2020). Recall that the wealth accumulation process can be written as

$$W_{t+1}^i = W_t^i(1 + r_t^i + q_t^i) + Y_t^i - C_t^i. \tag{13}$$

The savings flow corresponds to total income net of consumption: $S_t^i = r_t^i W_t^i + Y_t^i - C_t^i$. The saving rate is defined as $s_t^i = S_t^i / Y_t^i$. The law of motion of wealth then becomes

$$W_{t+1}^i = W_t^i(1 + q_t^i) + S_t^i = W_t^i(1 + q_t^i) + s_t^i Y_t^i = (1 + q_t^i + \sigma_t^i) W_t^i, \tag{14}$$

where $\sigma_t^i = s_t^i Y_t^i / W_t^i$ captures the contribution of savings to wealth growth and q_t^i captures the effect of capital gains to wealth growth. In the next step, Kuhn et al. (2020) propose to focus on the dynamics of wealth shares of different demographic groups rather than on wealth dynamics directly. This allows us to construct saving flows and capital gains for our

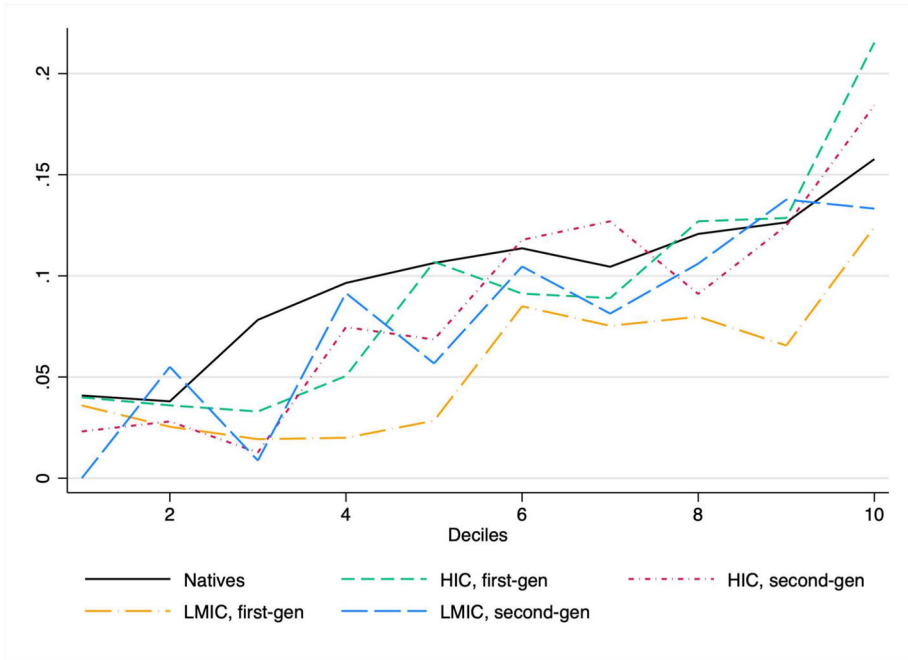


Fig. 7 Households’ saving rates. **Notes:** Own graph. Data Source: SOEP v39. Figures show weighted group means of households’ saving rates, calculated as active savings divided by household disposable income

demographic groups of interest as follows. The wealth share of group g in period t is defined as $\omega_t^g = W_t^g/W_t$, where t refers to aggregate wealth over all groups in society. Equation 14 can be transformed to express the law of motion of wealth shares:

$$\omega_{t+1}^g = \frac{1 + q_t^g + \sigma_t^g}{1 + q_t + \sigma_t} \omega_t^g \Leftrightarrow \frac{\omega_{t+1}^g}{\omega_t^g} = \frac{1 + q_t^g + \sigma_t^g}{1 + q_t + \sigma_t}. \tag{15}$$

This representation shows that the wealth share of group g increases if this group’s wealth grows faster than the average wealth growth rate. This can happen when capital gains are higher than average capital gain rates and/or when saving rates exceed the aggregate saving rate. Note that q_t^g and σ_t^g are independent.

We can calculate group-specific and aggregate wealth shares ω_t and ω_t^g from the SOEP and approximate saving contributions σ_t and σ_t^g as well as aggregate capital gain effects. Following Albers et al. (2022), we use the Bulwiengesa house price index and the CDAX Performance index to calculate a weighted rate of capital gain over the period 2012 to 2017. With this, we can identify group-specific capital gains q_t^g :

$$q_t^g = \frac{\omega_{t+1}^g - \omega_t^g + \omega_{t+1}^g * q_t + \omega_{t+1}^g * \sigma_t - \omega_t^g * \sigma_t^g}{\omega_t^g} \tag{16}$$

Figure 8 shows the values for q_t^g and σ_t^g that we obtained from this exercise. Note that we solved Eq. 16 separately for each demographic group, using deciles as the groups. Using synthetic deciles, changes in wealth shares along the distribution over time mean that a synthetically fixed group of a subgroup increased or decreased their wealth share. This would not be possible if we used natives and the migrant subgroups together, because we would be unable to know if changes in wealth shares of a subgroup result from differences in

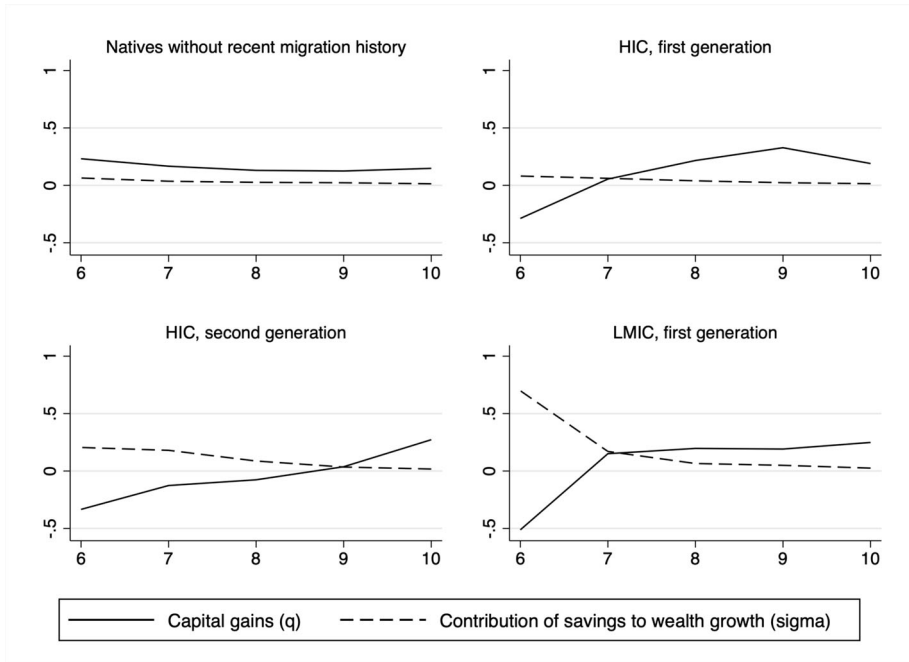


Fig. 8 Capital gains and savings contribution to wealth growth, by deciles and demographic groups. **Notes:** Own graph. Data Source: SOEP v39. The left panel show weighted group means of households’ asset income from interest, dividends, and rent. The right panel shows a rate of return calculated as rate of return = asset income/gross wealth. Weighted group means were computed from rates of return calculated at the household level

the wealth distribution or because this group accounts for a smaller or larger share of the overall population. This also implies that estimates should primarily be compared within demographic groups.

We only show the upper part of the distribution because results for the bottom half are rather volatile.⁹ According to this exercise, capital gain effects play quite a different role in the wealth accumulation process of natives and migrants. Within the migrant subgroups, capital gains have a tendency to increase over the distribution (with the exception of a dip in the tenth decile for first-generation HIC migrants). This is not the case for natives, where capital gains even show a slight decline. Figure B.4 in the appendix shows the net wealth distribution that would have resulted without capital gains, using again the Bulwiengesa house price index and the CDAX Performance index to discount 2017 gross wealth, this time at the household level. This Figure also illustrates considerable gaps between observed and counterfactual net wealth, but does not show visible differences between natives and migrants. A possible explanation could be portfolio reshuffling in response to changing asset prices, as discussed in Martínez-Toledano (2023), because our exercise holds portfolio composition constant, which is clearly not the case (see Fig. B.3). Unfortunately, we have no possibility to investigate portfolio reshuffling with our data.

⁹ This happens, for example, when groups experienced relatively large wealth increases or large reported flow rates of return at a low or zero wealth base. We assume that these figures are rather implausible and likely due to inaccuracies in reported variables.

The contribution of the saving rate to wealth accumulation is relatively minor and declines over the distribution. Recall that saving rates increase over the distributions, as seen in Fig. 7. Nevertheless, the relative importance decreases, which is consistent with increasing wealth-to-income ratios towards the top of the distribution (Kuhn et al. 2020). Decomposition results at the household level had suggested that lower saving rates among first-generation migrants from LMIC accounted for a share of the wealth growth gap as compared to natives, which could be reflected in the high contribution that is still visible in the middle of the distribution.

7 Conclusion

We studied the migrant wealth gap in Germany, differentiating four sub-groups among households with a relatively recent migration history. Assuming that migrants who had arrived at different moments in historical time and from different backgrounds and countries of origin would face quite different situations in terms of income-generating capacity and economic integration, we investigated the wealth gap for migrants from high-income countries and low- and middle-income countries from the first and second generation of migration separately. While German households without a recent migration history possess higher net wealth than all these groups, on average, we found evidence of substantial differences across the groups. Notably, negative migrant wealth gaps across all migrants and at the mean mask important heterogeneities: migrants from high-income country backgrounds are considerably more similar to natives in terms of wealth ownership than second-generation and especially than first-generation migrants from low- and middle-income countries.

Using RIF decomposition, we analysed to what extent observed characteristics of households can statistically explain wealth gaps along the wealth distribution, and found considerable heterogeneities. In static consideration, age differences only account for a small fraction of wealth differences, even though most migrants subgroups are, on average, younger than natives. In terms of wealth accumulation, we found that differences in portfolio composition account for differences in wealth growth in all groups, albeit in heterogeneous ways. In addition, lower income levels and lower saving rates played a role for the wealth gaps of first-generation LMIC migrants. We cannot really distinguish asset price effects from rates of return effects with our data, but findings suggest that rates of return vary in a volatile way among the various groups and along the distribution, whereas capital gain effects were important for migrant subgroups increasingly in the upper part of the distribution. For natives, capital gain effects appeared almost constant over the upper part. Saving rates of all migrant subgroups were lower than those of natives, but only played a role in accounting for differences in wealth accumulation for first-generation LMIC migrants. Finally, it should also be mentioned that remarkably large fractions of the wealth gap remained statistically unexplained. A part of these unexplained parts may be due to data shortcomings and measurement errors in our survey data.

Theory points into various directions for future research. First, the role of different portfolio compositions deserves further scrutiny. For example, it would be desirable to know to what extent natives and migrant subgroups react to asset price changes and reshuffle their wealth portfolio, or whether there are other structural differences related to holding different asset categories. Relatedly, future research could delve into the dynamics of rates of return and asset price effects for native and migrants. Previous research has suggested that rates of return and capital gains vary not only by asset (category), but also by the people who hold the asset (see e.g. Petach and Tavani 2021; Goldsmith-Pinkham and Shue 2023). For the case of Germany, it seems very relevant to know to what extent migrants, especially those from

LMIC, obtain lower returns to their assets or whether the assets they hold are structurally different.

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Author Contributions R.F. prepared the data analysis and wrote the code. S.F. prepared the figures, R.F. prepared results tables. Both authors wrote the original draft. S.F. edited the draft. All authors reviewed the manuscript.

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Data Availability The data that support the findings of this study are available from the German Socio-Economic Panel (SOEP), but restrictions apply to the availability of these data. Information on data access can be found here: https://www.diw.de/en/diw_01.c.601584.en/data_access.html. The authors make available the Stata Code used for the analysis upon request.

Declarations

Competing interests The authors declare no competing interests.

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