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# Measuring the impact of demographic change on relative income poverty in Belgium

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### Abstract

This article investigates the reasons behind stagnating or increasing relative income poverty rates in Belgium until 2018, which occurred at a time of stable income inequality. Previous research has focused on the limitations of Belgian welfare institutions and structural changes. This study shifts the focus to demographic changes and their impact on poverty rates. Analysing data from 1985 to 2021, we find that poverty rates significantly vary by household type and citizenship status. Moreover, there has been an increase in single adult households and non-Belgian nationals among the income poor. Previous literature also highlighted the employment distribution within the household as a key factor in explaining poverty. Using shift-share analysis, we assess the contributions of changes in household structures, household number of earners, and citizenship status to poverty rates. Our findings indicate that shifts in household structures and number of earners within the households, both separately and together, have generally reduced poverty, though with varying regional outcomes in Brussels, Flanders, and Wallonia. Conversely, changes in citizenship status have had a smaller but poverty-increasing impact, particularly in Brussels. The study also highlights the importance of accounting for demographic composition changes affecting the poverty threshold, with different effects observed on a cumulative versus year-to-year basis. Overall, the results suggest that socio-demographic trends alone do not fully explain the persistent poverty rates, indicating the need for further investigation into alternative explanations.

**Keywords:** poverty, demography, employment

*This version includes corrections to the poverty estimates for 1985, 1988, 1992 and 1997, which also affected the results of the shift-share analysis, but not their overall interpretation. It also includes a new overview of the poverty estimates for Flanders in 1976. The reference list remains the same as in the original version published on 10/9/24.*

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## 1. Introduction

Belgium displays exceptional outcomes in terms of income and wealth inequality (Jenkins et al. 2013; Assal et al. 2022), which distinguish it from the other Western European countries. Belgian income equalising institutions displayed strong resilience in the aftermath of the multiple economic shocks endured during the last decades, including the Great Recession and the consequences of the Coronavirus pandemic (Christl et al. 2022; Béland et al. 2021). The Belgian middle class has remained one of the world's largest, continuing to enjoy relatively high living standards (Nolan & Weisstanner 2021).

However, when it comes to poverty outcomes among the working age population, Belgium, like other European countries, has shown mostly disappointing trends over the last few decades (Cantillon 2022). Relative income poverty in Belgium either slightly increased or remained stable during the years preceding the Great Recession. Successively, the Belgian poverty rate largely followed an upward trend for most of the next decade, a trend which may be reversing in the last few years, despite the Coronavirus pandemic shock (Delclite 2020, De Schrijver 2024). Overall, a grim picture at the bottom of the Belgian income distribution, which was also noticeable in many other rich welfare states (Cantillon 2022), contrasts with a relatively stable picture at its middle (Assal et al. 2022). The fact that such disappointing outcomes in terms of poverty reduction go on a par with relatively satisfactory outcomes in terms of inequality, warrants further investigation on the origins and depth of relative income poverty in Belgium.

The descriptive trends presented in this article support earlier findings highlighting differences in the poverty risk born by distinct segments of the population in Belgium, particularly in relation to the educational or skill level, the very low work intensity status, the region of residence, the migration status and the household's size and employment characteristics (Hermans et al. 2020, Cantillon 2022; Marx & Verbist 2008). Our long trends show a deepening of these social cleavages in terms of poverty risk, particularly in the decade following the Great Recession, with an improvement in the income poverty indicator taking place only after 2018, and despite the shock provoked by the 2020 Covid-19 pandemic. If the "Belgian model" was quite successful at preventing increases in income inequality after the Great Recession, one is left to wonder which factors, specific to the Belgian society or institutions, may explain the resulting upward working age poverty trends, especially among certain socio-demographic groups.

Prior research attempted to explain these outcomes by focusing mostly on the nature of the Belgian welfare institutions. The strong corporatist nature of the Belgian welfare state, which, in the words of Esping-Andersen, is an archetypal Conservative welfare regime, has been deemed particularly successful at protecting middle class individuals, but less successful at shielding the so-called "outsiders" from the effects of the economic recession (Esping-Andersen 1990, Korpi & Palme 1998). Other "structural" or "functional" explanations for such disappointing trends pointed toward the inadequacy of current welfare states, including the Belgian one, in lifting people out of poverty. Given the low wages at the bottom of the income scale and the risk of generating "poverty traps", further increasing welfare benefits to the minimum adequacy levels has become less and less viable (Cantillon & Van Mechelen 2014, Cantillon et al. 2019). Other similar explanations, instead, put the blame for the increasing poverty rates on the successive institutional reforms which weakened pro-poor welfare instruments, like unemployment benefits, and strengthened less pro-poor ones, such as childcare services (Vandenbroucke & Vleminckx 2011, Van Lancker & Ghysels 2012, Van Vliet & Wang 2015).

In this article, we shift the focus to another less explored set of arguments, those which investigate the effects of the demographic change on the poverty rate. In this sense, the current article follows earlier studies which have tried to assess the contribution of distinct demographic shifts to the income poverty indicator. In particular, the migration background (de Smalen et al. 2024), the employment status (Marx et al. 2012; Corluy & Vandenbroucke 2017; Tóth et al. 2024; Akarçesme et al. 2023), and the household structure, measured in terms of size, presence of children, and number of earners (Vandenbroucke & Vinck 2015, Azollini et al. 2023) have been identified as key variables affecting the poverty rate in both

a positive and negative direction. The migration background and the type of household, in particular, have emerged from our descriptive analysis as two potentially key variables in understanding variations in the poverty rates over a long period of time. Our long trends reveal, indeed, that single adult households and non-Belgian nationals are particularly exposed to income poverty, like other groups such as low educated and people living in very low work intensity households. Nevertheless, if the share of low educated individuals among the poor has been decreasing, and that of people in very low work intensity households has remained mostly stable, the share of single adult households among the income poor population has strongly increased over time, and the same is true for the share of individuals with a non-EU nationality (and, to a smaller extent, for those with other EU nationalities). Moreover, the three Belgian regions displayed radically different outcomes in terms of income poverty, with the Brussels' population, and to a smaller extent the Wallonia's one, growing significantly poorer over time.

Due to the particular relevance of the household and nationality characteristics in explaining poverty rates, and considering the related demographic shifts observed within the income poor group, the current article will focus on the different incidence of income poverty based on the household structure and number of earners within the household, as well as based on the individuals' migration background. We will look at variations in the poverty rate also according to the region of residence, thus including this extra layer in our analysis. Compared to earlier studies on income poverty in Belgium, we will consider a broader time frame, making use of the latest available harmonised household data for the period between 1985 and 2021 (BE-PARADIS, Assal et al. 2023). We will also separately present non-harmonised data for Flanders for 1976, drawing from an earlier survey. This broader time frame will allow to assess the effect of the demographic changes occurred over a long period of time during which the Belgian society has dramatically evolved. Due to the multiple breaks in the series, particularly in the 1990s, we will pay specific attention the trend after 2004, for which we dispose of continuous estimates.

We find that shifts in household structures, and changing earners' distributions in the households, have had a relatively significant poverty-reducing contribution in Belgium, albeit with important and sometimes opposite regional differences between Brussels, Flanders and Wallonia. More specifically, changes in household structures and earning profiles, have been strongly poverty-reducing in Brussels, and to a smaller extent in Flanders, but they have been slightly poverty-inducing in Wallonia. Changes in the migration background, on the opposite, have had a smaller impact on the poverty rate, although when these occurred, they have been poverty-inducing. The year-to-year analysis reveals that, depending on whether the effect of the demographic shift on the poverty line is accounted for or not, the yearly impact of the population change on poverty may be diminished, zeroed out, or even reversed. Moreover, at the country level, the impact of the evolution in household structures and earning profiles, appears to be more constant than the one of migration. Overall, socio-demographic trends cannot explain the disappointing poverty trends over the past four decades. These findings further fuel the question of why the Belgian welfare state has not succeeded in reducing poverty during a period of significant increase in employment, income, and social spending.

We will start by revisiting the different mechanisms related to population change, which the previous literature has identified as likely to affect the relative income poverty rate. In doing so, we will see how previous research on Belgium has tried to make sense of the disappointing poverty trends observed in the years before and after the Great Recession, by investigating the impact of each of these mechanisms on the income poverty rates. Successively, we will analyse the trends in relative income poverty for the working age Belgian population and by socio-demographic groups over the period 1985-2021. We will also briefly look at the socio-demographic changes occurred within the poor population in order to contextualise the subsequent shift-share analysis. Through a shift-share analysis, we will ascertain to what extent changes in household structures and employment patterns, as well as migration background, over a long period of time (1988-2021, and 2004-2021 for the year-to-year analysis), may be responsible for the unequal and disappointing working age poverty outcomes observed in Belgium.

## 2. Literature review

Previous research gave evidence of deep social cleavages in the distribution of the poverty risk in Belgium. Most research focusing on the working age population, highlighted important regional differences in the presence of poverty. Income poverty, in particular, is more prevalent among certain groups, like the jobless and quasi-jobless population, but also, amidst the others, in the group of Belgian residents of non-Belgian origin, and one-earner households with children (Cantillon 2022; Jenkins, 2020; Van Vliet & Wang 2015; Vandembroucke & Vleminckx 2011; Gabos et al. 2024; Hermans et al. 2020; Corluy & Vandembroucke 2017; Marx & Verbist 2008). The evolving demography of Belgian society is thus a key area of focus for research aimed at understanding the factors behind poverty change.

Prior research has identified various mechanisms which might affect a country's relative poverty rate and which take into account, in one way or the other, the changing composition of Belgian society (Gabos et al. 2024). This research has attempted to explain the relation between socio-demographic and employment change, and income poverty variations, by resorting to four different types of explanations:

1) Some studies assessed the specific impact of socio-demographic change (i.e. changing household size and structure, migration patterns) on the poverty rate (Vandembroucke & Corluy 2014; De Smalen et al. 2024);

2) Others looked at the changing distribution of employment across household types (i.e. earners' profiles, polarized employment growth) and its effect on the poverty rate (Vandembroucke & Corluy 2014; Gabos et al. 2024);

3) In a similar way, some research considered the varying presence and distribution of non-standard and low paid employment in the labour market, including the impact of low wages on median incomes and, in turn, on poverty thresholds (Marchal & Marx 2018; Marx et al. 2013, Cantillon et al. 2019);

4) Finally, a strand of research more oriented toward structural change and functional mechanisms, measured the evolution of the poverty-reducing capacity and continued adequacy of social protection by taking into consideration also the changes occurring at the societal level and not just at the institutional level (Cantillon & Van Mechelen 2014; Hermans et al. 2020; Akarçesme et al. 2023).

The study pursued in this article, falls between the first and the second strands of research, as we attempt to isolate the impact of the changing socio-demographic composition of the Belgian society, looking in particular at household structures and migration backgrounds. We do so, however, without discounting the changing employment patterns within the different household profiles. The analysis, indeed, also considers the impact of the increase in employment and its distribution across households. We do so by including the household's earning profile, meaning the number of earners, in our household variable.

The inclusion of the earnings' profiles within our household variable, is motivated by the key role which employment plays in determining poverty outcomes, a role which is mediated by the interrelation between employment and household demographic structures. If job creation is often considered as an effective way to lift individuals out of poverty, previous evidence indicates that the success of employment growth in reducing poverty, highly depends on the way in which such growth occurs (Gabos et al. 2024). Since poverty is typically measured at the household level, scholars have focused on the relation between individual employment creation and the household distribution, including how the mechanisms at play there might ultimately affect relative poverty rates. In their study from 2014, Vandembroucke and Corluy assessed whether high job polarisation, even in a context of expanding job market, might still increase joblessness and, in turn, poverty levels. After finding evidence of a polarisation of jobless households in Belgium, they assessed the individual contribution of joblessness polarisation against the contribution of changing household size and structures. Their study reveals that the contribution of job polarisation to the overall variation in poverty is larger than that of household

size and structures. If variation in individual employment rates and changes in household size and structure contribute to diminishing the poverty rate, joblessness polarisation, but especially higher poverty among the jobless, offset it, possibly explaining, at least in part, the higher poverty rate observed in the period under analysis (2005-2012).

While the effect of changing household structures and earning profiles on the poverty rate may be harder to discern due to the peculiar allocation of jobs across the distinct households, the specific contribution of changing population structures, and migration in particular, to the poverty rate, appears to be more straightforward. In their 2024 study, De Smalen et al. find evidence of a positive effect of the proportion of foreign-born people on the poverty rate. Based on their findings, the increase in the number of foreign-born individuals in Belgium cumulatively contributed to increasing the poverty rate by 1,6 percentage points between 2005 and 2019, although such effect was offset by other factors and the actual poverty rate was eventually unchanged. Even after controlling for macro-level determinants, like social spending, the share of low work intensity households, and socio-demographic variables like the level of education, age, and household size, the contribution of migration to poverty in Belgium remained the fourth highest among the different countries analysed, only behind Sweden, Spain, and Luxembourg.

Similarly to what has been done in the two studies by Vandenbroucke and Corluy and De Smalen et al., in this article we will employ a shift-share method to decompose the change in the poverty rate between the distinct contributions of household structures, household earning profiles (separate and together), and migration background (measured in terms of country of main citizenship).

### **3. Methods**

#### **3.1 Definitions**

The poverty analysis carried out in this paper adopts a statistical definition of poverty. This means that poverty is defined as a function of the overall income distribution. In our calculation of disposable household income, we include earnings from all sources, including capital, minus taxes and social insurance contributions. In this paper, poverty is defined as a percentage of the median disposable household income, and more specifically, 60% of the median equivalised disposable household income. This threshold, which is defined as the poverty line, varies depending on changes in the income distribution, meaning that the poverty line is both relative on the underlying income distribution and floating over time (for an overview of the different poverty measures and the debates surrounding them, see Decanq et al. 2004). This indicator is also defined as the At-risk-of-poverty rate (AROP) by Eurostat. In this article, we use the terms “poverty rate” / “risk of poverty” interchangeably.

We will first present the evolution the relative income poverty indicator over time, taking into consideration the period between 1985 and 2021. We present these evolutions separately for the following categories:

- People of working age, defined as individuals aged 18-64, excluding students aged 18-24 and people who are retired according to their economic status or who receive any pension (except survivors pension), as well as inactive people in the age bracket 60-64 living in a household where the main income is pensions (this definition was taken from the official definition on the Eurostat [website](#));
- Pensioners, defined as individuals older than 59, perceiving pensions (except survivor pensions), or inactive but living in a household where the main income is pension;
- People with a low educational level – according to the International Standard Classification of Education (ISCED). This corresponds to individuals with ISCED level 1 or 2, namely primary and lower secondary education;

- People of working age living in households with very low work intensity. A household is defined as in very low work intensity if its working age members (where working age is defined according to the aforementioned definition) worked a time equal or less than 20% of their total combined work-time potential during the previous year (this corresponds to the current definition of “Persons living in households with low work intensity” employed by Eurostat, see also the Eurostat [website](#)).

We will also present these trends by region of residence, (country of) main citizenship, and household type. The citizenship variable employed in the descriptive trends is the same as the one used in the following shift-share analysis, and considers the individuals’ country of main citizenship, but the household type variable differs between the two analyses. Building on the definition employed by Azollini et al. 2023, we defined the household variable employed in the shift-share analysis, by taking into consideration only households whose heads are of working age (here defined as aged between 20 and 60). Moreover, we excluded from such typology households with more than 2 earners, thus disregarding a small minority of large families with multiple earners.

The choice of this definition, which was made for comparative purposes with the Azollini et al. 2023 paper, justifies the small difference between the poverty rates presented in the descriptive trends, and the poverty rates presented in the first shift-share analysis, which were calculated on the second household variable population. Similarly for comparative purposes, we decided to first construct our household structures / earning profiles variable as a single variable. Only successively, we separated the two and ran distinct analyses.

### 3.2 Data

The analysis presented in this paper relies on data issued from the BE-PARADIS dataset. BE-PARADIS is a harmonised dataset of key socioeconomic and demographic indicators for Belgium spanning from 1985 to 2021. The dataset brings together the results of the three following surveys, carried out at successive periods in time, with some temporal breaks between them, and with substantial differences in the individual survey designs, implementation, and data processing choices:

- Socio-Economic Panel (SEP): (1976)<sup>1</sup>, 1985, 1988, 1992, 1997
- European Community Household Panel (ECHP): 1994, 1995, 1996, 1998, 1999, 2000, 2001
- Belgian Statistics on Income and Living Conditions (BE-SILC): 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021

Although the harmonisation operated in BE-PARADIS has improved the comparability of the results between the distinct surveys, the trends which this dataset allows to reconstitute are neither continuous nor fully rid of inconsistencies (for more detailed information on the procedures operated to assure the harmonisation of the distinct waves in BE-PARADIS, see Assal et al. 2023). In particular, data is missing for the years 1993, 2002, and 2003. Moreover, samples sizes display important differences across waves. This motivates the decision of focusing on the years after 2004 for the year-to-year shift-share analysis as for this period we dispose of continuous trends. For the same reason, we chose 1988 as the reference year for the shift-share analysis (the 1985 estimates for the citizenship variable showed little reliability, and for the same reason we excluded 2001, 1992, and 1996 from the descriptive trends for this variable). Worth noticing, the switch from survey data to administrative tax records operated in 2018 by BE-SILC for a majority of its income variables (De Schrijver 2020; Delclite 2020), led to the inclusion of smaller earnings in the income definition which had previously been excluded from survey responses (Assal et al. 2022). This has been shown to affect the final estimates (De Schrijver 2020; Delclite 2020). Therefore, the trend immediately after 2018 should be interpreted with caution and is not discussed further in this article.

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<sup>1</sup> The 1976 SEP survey was only conducted in Flanders. Due to the large differences between this survey and the following ones included in BE-PARADIS, these results are presented separately (see Box 1 and Box 2).

### 3.3 Shift-share analysis

Previous studies have employed shift-share analysis to assess the impact of demographic change on poverty rates (Azollini et al. 2023). More frequently, and also in the Belgian case, shift-share analysis has been employed to assess the impact of employment shifts on income poverty (Marx et al. 2012, Tóth et al. 2024). Drawing on the 2023 study by Azollini et al., in this article, we first employ a shift-share method in order to assess, both simultaneously and separately, how changes in household structures and earning compositions might have affected income poverty rates in Belgium between 1988 and 2021. Successively, similarly to the 2024 study by De Smalen et al., we employ the same method to estimate how changes in the population composition, and migration backgrounds in particular, may have impacted on poverty rates. While being a purely descriptive approach, based on the calculation of artificial counterfactuals, obtained from reweighting samples, this approach may still yield useful insights on the broad effects of demographic change on the poverty rates. This is even more the case when the focus of the analysis is on broad time periods, allowing to better grasp evolutions in household composition (Tóth et al. 2024).

In this article, we assess the changes occurred between 1988 and 2021, focusing exclusively on the working age population. The poverty rate of the retired population is indeed quite different from the poverty rate of the working age population, and it is dependent on its own dynamics, whose understanding does not fall within the scope of this analysis. The working age population is defined identically in the descriptive and shift-share analysis, based on the definition provided in this same section. In the first analysis, we re-weight the 2021 poverty rates on a 1988 household size and earners' distribution, while in the second we do the same by employing the respondents' country of main citizenship distribution. The first variable is calculated by taking into consideration both the household size and the household's number of earners. We define this variable by using information on the household members' age and relationship to the household reference person (i.e. child, partner). Data on the country of main citizenship is taken from the BE-PARADIS citizenship variable. The outputs of these re-weighting exercises are two distinct counterfactual poverty rates which we will employ to assess the hypothetical impact of the changing household / earners' distribution and migration background distribution on the 2021 poverty rates. The counterfactuals allow us to estimate what the 2021 poverty rate would have been, had the household / earners' distribution and the migration background distribution remained the same as in 1988. By comparing the counterfactual changes in poverty to the actual changes in poverty between 1988 and 2021, we estimate the hypothetical contribution of the varying household structure / earners and citizenship status distributions on the 2021 poverty rate.

$$\text{contribution}(p) = \Delta (pov_{1988} - pov_{2021}) - \Delta (pov_{1988} - pov_{2021(p)}), \text{ where:}$$

$pov_{1988}$  = At-risk-of-poverty rate in 1988;  $pov_{2021}$  = At-risk-of-poverty rate in 2021

$pov_{2021(p)}$  = At-risk-of-poverty rate in 2021, reweighted on the 1988 demographic composition  $p$

The weighting variables used in the computation of the counterfactual poverty rates, are calculated through a probabilistic logit regression method. This estimates the individual probability of being in 1988, given each household type. We create a new weighting variable conditional on those probabilities, and such weighting variable is applied to our 2021 poverty rates in order to calculate the counterfactual 2021 poverty rates given the 1988 household types distribution. One of the advantages of using a logit regression method instead of other decomposition methods is its simplicity, despite its limitations when it comes to detailed decompositions with multiple covariates (Fortin, Lemieux et Firpo 2010).

In all the analyses, we compute the 2021 counterfactual poverty rates twice, obtaining two distinct counterfactual poverty rates. In the first type of counterfactual, we allow the poverty line to change based on the 1988 distribution, namely we weigh the 2021 median incomes on the 1988 population distributions, and we then calculate the poverty rates using the reweighted poverty line. We then weigh

this poverty rates against the 1988 population distribution to obtain the first type of counterfactual (1). In the second type of counterfactual (2), instead, we keep the 2021 poverty line fixed, simply reweighting the 2021 poverty rates on the 1988 population distribution. These can be described as:

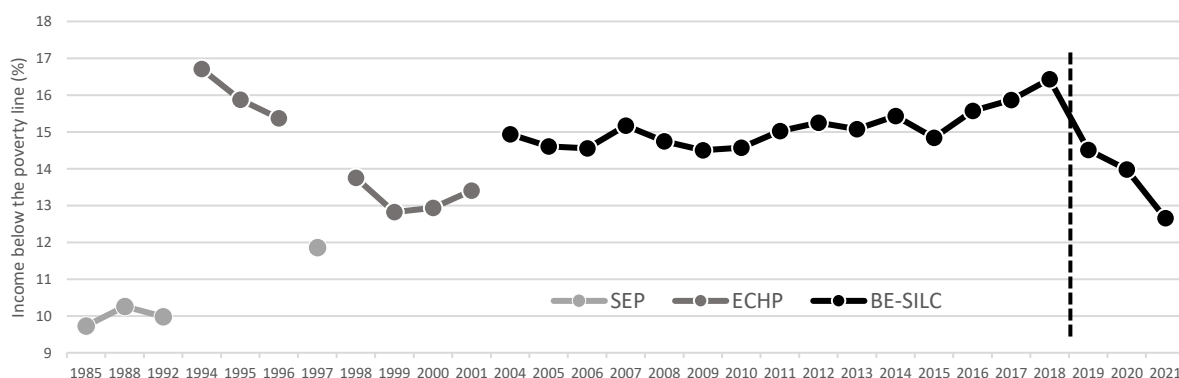
$$(1) r\{21, 88, 88\} \qquad (2) r\{21, 21, 88\}$$

We choose to build the first counterfactual type in order to consider the impact of the changing household / earners and citizenship status distribution also on the poverty line, and we compare this to the second counterfactual in order to observe the distinct impact of the changing population distributions on the poverty rates, with and without its effect on the poverty thresholds.

#### 4. The evolution of relative income poverty by sociodemographic groups

Although 13% of the total population was still at-risk-of-poverty<sup>2</sup> in 2021, the overall poverty rate (measured using a threshold set at 60% of the median equivalised household income) has been declining in Belgium since 2018 (Figure 1). This moved from 16.4% to 12.6% between 2018 and 2021. Such decline follows a rather stable and slightly increasing trend between 2009 (14.5%) and 2018 (16.4%). The picture is similar, at a significantly lower rate, when income poverty is calculated using the more restrictive 40% threshold (Figure 2). In this case, the increase over the 2008-2018 period is minimal, and the most marked change occurred after, with a decrease from 4% to 2.6% between 2018 and 2021.

*Figure 1. Share of income poor (60% cutoff point), total population (%)*



Source: Analysis of BE-PARADIS database

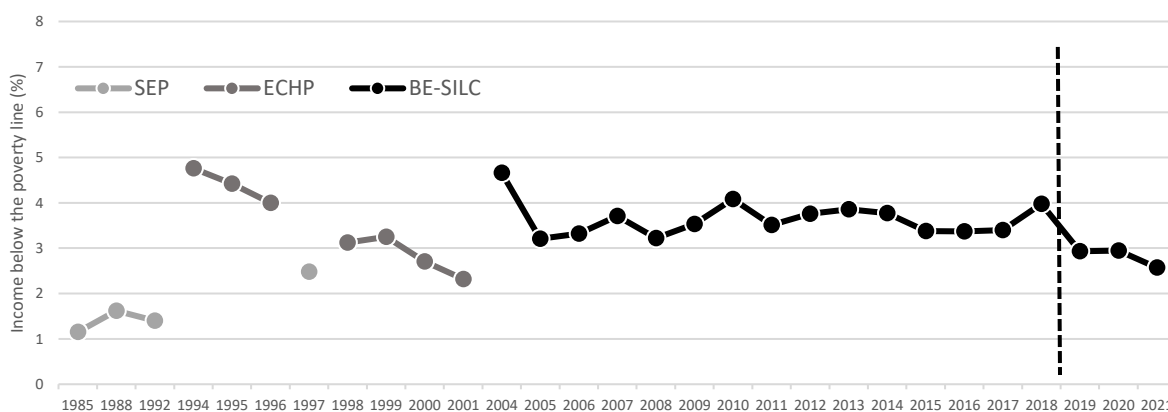
##### **Box 1. General results from the 1976 Flemish Socio-Economic Panel (SEP)**

A first wave of the Belgian SEP was conducted in 1976 only in the Flanders regions. This data presents multiple limitations, but has nevertheless been analysed in order to reconstitute a complete picture of the evolution of relative income poverty in Belgium since the mid-1970s. Among the various limitations presented by this dataset, the fact that only detailed information on the household head's characteristics was collected represents a major one. Keeping in mind that data is based on household head's characteristics, here we present the results based on a poverty rate calculated at 60% of the median equivalised household income, unweighted, and with individuals household members as units (instead of the number of households). The poverty rate for the total population in 1976 stands at 10.2%, almost double that of the population with a household head of working age (5.5%), but way lower than that of individuals living in households with a retired household head (39.3%). Households with a single household head and no children (32.4%), as well as couples without children (25.1%), are relatively more exposed to poverty than couples with children (<5%).

<sup>2</sup> Here At-risk-of-poverty (AROP) is defined according to the standard definition adopted by the European Union, namely people with an income below 60% of the median equivalised disposable household income.

Households with a Belgian national as household head are slightly less likely than households with a non-Belgian head to be in poverty (10.1% vs. 11.9%). Finally, those living in households with a head having a primary (16.5%) school degree or lower (36.5%) are much more exposed to poverty.

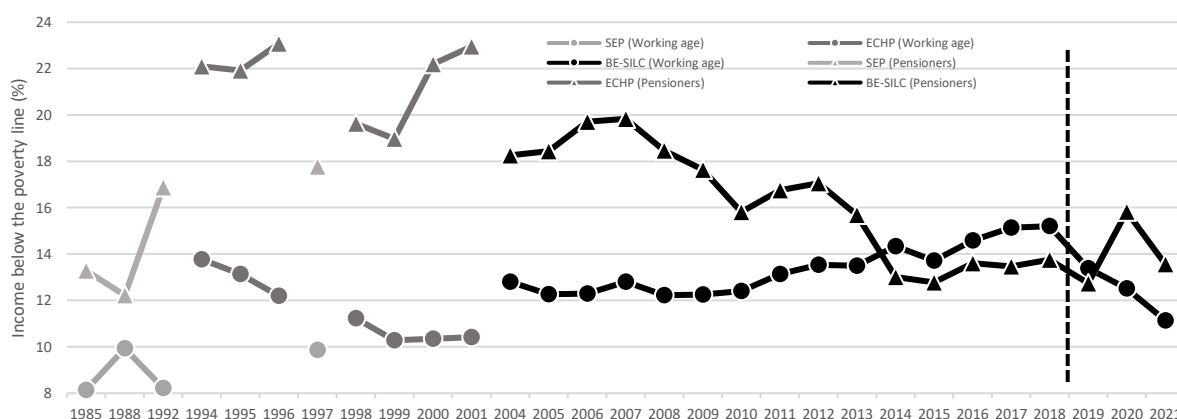
**Figure 2. Share of income poor (40% cutoff point), total population (%)**



Source: Analysis of BE-PARADIS database

Not every segment of the income poor population, however, has equally benefited from the recent decline. If the poverty rate (calculated using a 60% threshold) among the working age population<sup>3</sup> saw a marked decline, income poverty declined less among pensioners<sup>4</sup>, even temporarily increasing among this group in 2020, the pandemic year (Figure 3). This contrasts with the trends observed during the decade between the Great Recession and 2018, when poverty increased almost constantly among the working age, while declining among the retired group. In 2014, the working age group became relatively poorer than the pensioners' group, reversing the trend observed until that moment. Their relative positions reversed again in 2020, when income poverty became again more prevalent among pensioners. Given the long disappointing trends observed among the working age population before 2018, in this article, we chose to focus exclusively on this group.

**Figure 3. Share of income poor people, working age vs. pensioners (%)**



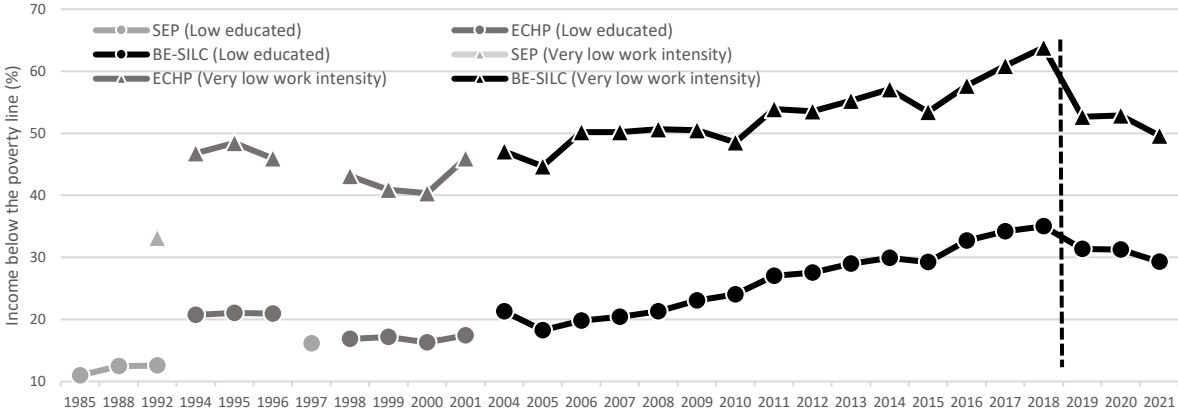
Source: Analysis of BE-PARADIS database

<sup>3</sup> The standard definition of working age used in this paper (see section 3.1) could not be applied to the years 1985 to 1992, due to missing information for some variables (i.e. sources of revenues) for those years. In this case, a wider definition (people aged 18-64) was adopted.

<sup>4</sup> The standard definition of pensioners used in this paper (see section 3.1) could not be applied to the years 1985 to 1992, due to missing information in some variables (i.e. sources of revenues) for those years. A wider definition (people aged 64 or older) was adopted, instead.

Two groups which are particularly exposed to income poverty are the low educated groups (ISCED level 1-2) and individuals living in very low work intensity households<sup>5</sup> (Figure 4). Almost half of working age individuals in very low work intensity and 30% of those with a low educational level were income poor in 2021. Both groups saw their income poverty rate increase between 2005 and 2018, at a greater pace after 2010. These two groups, however, have not seen an equal decline in poverty since 2018. While income poverty has decreased quite strongly among the working age population living in very low work intensity (by over 10%), the decline has been less strong among low educated individuals (around 5%).

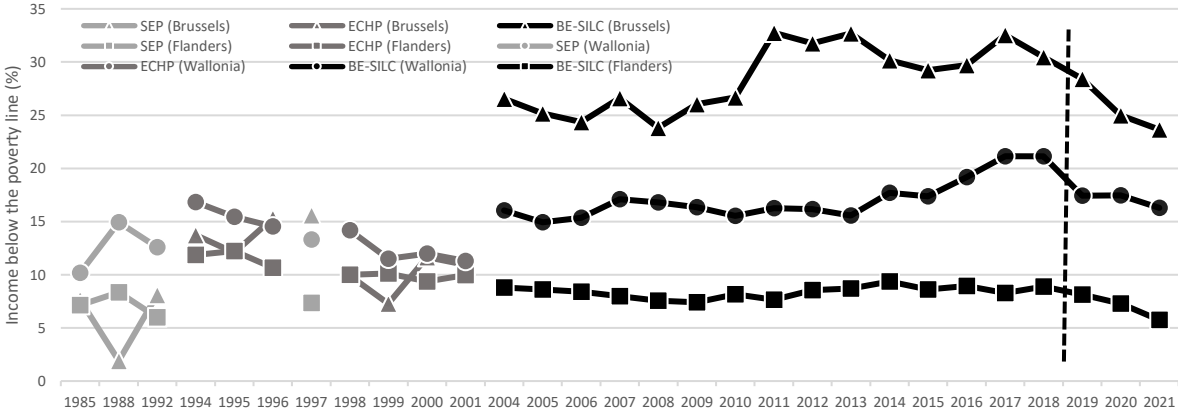
**Figure 4. Share of income poor, low educated vs. living in a very low work intensity household, working-age population (%)**



Source: Analysis of BE-PARADIS database

Poverty outcomes differ importantly also based on the individuals’ region of residence in Belgium (Figure 5). Brussels residents of working age are significantly more at risk of poverty. Such risk has increased particularly between 2008 and 2011, remaining relatively stable at around 30% until 2017, and successively declining. Relative income poverty was relatively higher in Wallonia than in Brussels during the 1990s, and it remains higher in Wallonia and Brussels than in Flanders also nowadays, having increased in Wallonia between 2013 and 2017, while remaining roughly stable in Flanders in that period.

**Figure 5. Share of income poor, region of residence, working-age population (%)**

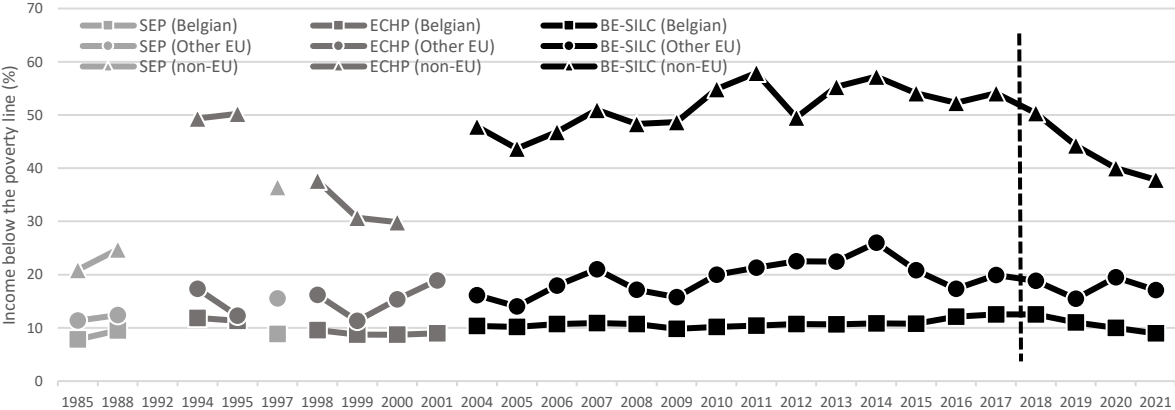


Source: Analysis of BE-PARADIS database

<sup>5</sup> The very low work intensity indicator (see section 3.1) could not be calculated for the years 1985, 1988, 1992, and 1997, due to missing information on the number of months in work in income reference year in the first three SEP waves, and unreliable estimates for 1997.

Another sociodemographic characteristic which appears to determine the distribution of the poverty risk in Belgium, is the individuals' migration background, here measured by the country of main citizenship<sup>6</sup> (Figure 6). Non-EU citizens residing in Belgium, in particular, are historically highly exposed to income poverty. Their poverty risk has constantly been higher than the average poverty risk of the Belgian population, with almost 38% of non-EU migrants of working age being income poor in 2021. Their poverty risk reached its highest during the decade 2007-2017, a time during which EU migrants also saw their poverty rate increase. In 2014, a quarter of EU migrants and over 57% non-EU migrants were in relative income poverty. Although only 17% of EU migrants were still poor in 2021, this was still way more than Belgian nationals (9%).

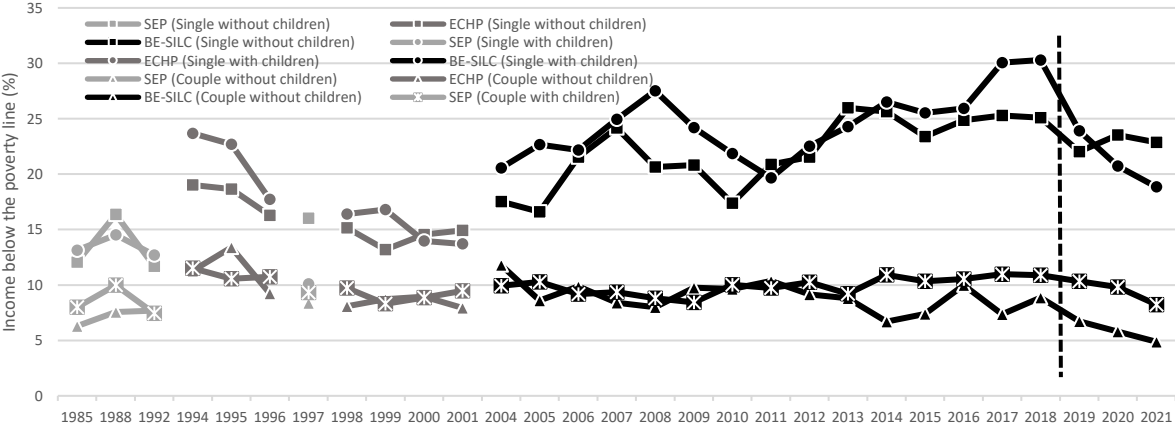
Figure 6. Share of income poor, citizenship, working-age population (%)



Source: Analysis of BE-PARADIS database

The type of household to which respondents belong is also a key factor explaining the prevalence of relative income poverty among determinate groups (Figure 7). Single households, either with children or without, are significantly more exposed to income poverty than households formed by couples. Income poverty increased importantly among these two groups between 2009 and 2017, declining afterwards. Poverty, instead, remained more stable among households formed by couples, either with children or without.

Figure 7. Share of income poor, household structure, working-age population (%)

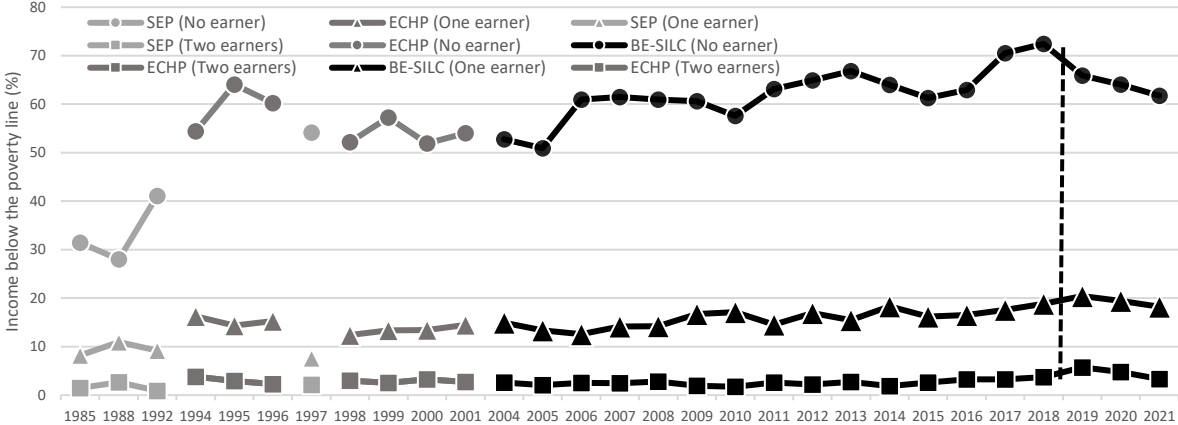


Source: Analysis of BE-PARADIS database

<sup>6</sup> The breakdown by citizenship status could not be plotted for the years 1992, 1996, and 2001, due to missing or non-representative estimates, particularly for non-EU citizens.

The number of earners within the household is another variable which explains different poverty outcomes within distinct household groups (Figure 8). Households without earners are much more exposed to relative income poverty. This category has grown increasingly poor between 2005 and 2018, although their poverty rate is the one which declined the most afterwards. Households with only one earner are relatively exposed to income poverty and the long trend in this case shows a low but almost constant increase over time. Two earners' households, instead, are less exposed to income poverty, although they appear to slightly grow poorer in the last few years.

**Figure 8. Share of income poor, household earning profile, working-age population (%)**



Source: Analysis of BE-PARADIS database

Looking at the sociodemographic evolution of the working age population in income poverty (Table 1), one notices multiple trends which are worth describing.

Despite having become increasingly exposed to income poverty and representing a majority of the income poor, the group composed by individuals living in very low work intensity households, has not substantially increased its share among the income poor group over the last two decades, regardless of a slight increase in the aftermath of the Great Recession. Similarly, low educated individuals have seen their component within the income poor group progressively decline, despite becoming more vulnerable to income poverty, as we have previously seen. People with an intermediate (ISCED 3-4) and high (ISCED 5-8) educational level have become, instead, more numerous among the population in poverty.

Moving our focus to the migration background, we can observe a decline in the share of Belgian citizens and a concurrent increase in the share of non-EU citizens in income poverty. If the share of Belgian residents with a citizenship from other EU countries remained mostly stable in the last decade, following a slight increase in the 2000s, the share of non-EU citizens doubled, moving from less than 10% in the 1980s and 1990s to roughly 20% in the second half of the 2010s. The income poor population is also increasingly likely to live in Brussels. While less than 10% of the income poor were Brussels residents in the 1990s, they now represent a quarter of the income poor<sup>7</sup>. Single adult households, both with and without children, have also increased their share among the income poor population, while couples, both with and without children, occupy a relatively smaller share nowadays than in the past. The trend is less clearcut regarding poor households' earning profiles. While zero earners' households increased during the 2000s and early 2010s, they have significantly decreased after 2018, becoming the second largest category after one-earner households. If these have declined compared to the earliest estimates for the 1980s, one-earner households appear to have increased after 2018. Similarly, the share of two earners' households has doubled after 2018, although this had remained roughly stable around 10% until then.

<sup>7</sup> Underrepresentation of Brussels' residents in the SEP and ECHP data may partly explain such a large increase.

**Table 1. Sociodemographic composition, by educational level, very low work intensity status, citizenship, region, household structure, earning profiles, income poor population, working-age population (%)**

	1985	1988	1992	1994	1995	1996	1997	1998	1999	2000	2001	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Educational level</b>																													
ISCED 1-2	68	63	73	53	56	59	62	45	49	46	49	51	43	41	38	47	56	54	48	48	47	46	41	45	46	47	45	43	40
ISCED 3-4	23	22	23	33	30	27	24	39	36	40	37	35	41	38	43	36	28	30	34	30	31	34	39	37	37	37	37	36	39
ISCED 5-8	8	14	5	14	14	14	14	16	15	15	14	15	16	20	20	17	15	15	18	22	22	20	20	18	17	17	18	21	21
<b>Very low work intensity</b>																													
Yes				47	43	48		42	45	46	41	60	61	64	61	55	57	56	62	60	61	61	60	62	60	56	55	55	58
No				53	57	52		58	55	54	59	40	39	36	39	45	43	44	38	40	39	39	40	38	40	44	45	45	42
<b>Region of residence</b>																													
Brussels	8	1	7	9	9	12	12	8	7	10	10	20	20	21	22	21	23	23	27	26	26	24	24	24	25	23	24	23	25
Flanders	53	52	45	53	56	53	45	54	58	53	56	40	41	39	36	36	35	38	33	36	37	37	36	35	31	33	35	33	29
Wallonia	39	47	48	38	35	36	42	38	35	37	34	40	39	40	42	44	42	40	40	38	37	39	40	42	44	43	41	44	46
<b>Citizenship</b>																													
Belgian	90	89		86	84		83	88	89	88		80	80	80	78	81	72	74	71	70	70	67	68	72	72	72	71	69	70
Other EU	8	6		6	5		8	7	5	6		7	7	9	11	9	9	11	11	13	12	13	13	10	10	9	9	12	11
non-EU	3	5		8	11		9	5	7	5		13	13	11	11	10	20	15	18	17	18	20	19	18	17	19	19	19	19
<b>Household structure</b>																													
Single without children	7	6	9	13	13	12	16	11	10	11	11	19	21	26	28	27	27	22	26	26	31	29	28	27	26	25	23	26	29
Single with children	8	8	10	15	15	14	8	18	22	20	21	15	17	16	18	21	18	18	18	20	20	21	20	21	24	23	21	19	21
Couple without children	16	14	22	15	18	14	19	13	14	14	12	22	16	18	15	15	19	17	16	14	13	9	11	14	10	12	10	9	9
Couple with children	67	72	57	50	49	53	56	49	47	49	50	40	43	39	37	37	35	40	36	38	35	39	38	37	37	37	40	41	38
Other	2	0	2	7	4	8	2	9	7	6	5	4	3	1	1	2	2	4	3	1	2	2	1	3	4	6	4	4	3
<b>Household earning profile</b>																													
No earners	48	24	52	40	48	43	61	45	42	38	39	50	53	55	54	49	48	46	55	52	56	54	53	53	52	51	35	35	39
One earner	45	57	43	46	41	48	29	41	46	46	46	41	39	35	36	39	44	47	36	40	34	40	37	35	37	37	44	45	46
Two earners	7	18	5	14	11	9	10	14	12	16	14	10	8	10	10	12	8	7	10	8	10	7	10	11	11	12	21	20	15

Source: Analysis of BE-PARADIS database

Note: (1) The standard definition of working age used in this paper (see section 3.1) could not be applied to the years 1985 to 1992, due to missing information for some variables (i.e. sources of revenues) for those years. In this case, a wider definition (people aged 18-64) was adopted; (2) ISCED 1-2: Low education, ISCED 3-4: Medium education, ISCED 5-8: High education; (3) The very low work intensity indicator (see section 3.1) could not be calculated for the years 1985, 1988, 1992, and 1997, due to missing information on the number of months in work in income reference year in the first three SEP waves, and unreliable estimates for 1997; (4) The breakdown by citizenship status could not be plotted for the years 1992, 1996, and 2001, due to missing or non-representative estimates, particularly for non-EU citizens.

Because of the concurrent increase observed both in the individual poverty rates, and in the prevalence of these groups among the income poor, in the following section, we will investigate to what extent changes in the household structure and number of earners, as well as in the individuals' migration background, measured in terms of (main) citizenship status, contribute to the most recent poverty rates. We will do so by employing a shift-share analysis, which assesses the relative contribution of each factor to the poverty rate. We repeat such analysis for each Belgian region, in order to assess the different poverty dynamics at the regional level, as the data shows that Belgian regions have followed radically different poverty patterns over time.

### **Box 2. Sociodemographic composition of the poor population in Flanders in 1976**

The analysis of the data from the 1976 SEP survey, allows us to segment the income poor population by sociodemographic characteristics. Again, as mentioned earlier (Box 1), it is important to keep in mind that the demographic information collected in this survey refers exclusively to the household head and not to all the members of the households. Over half of the income poor population (53%) in 1976 is constituted by individuals in households having a retired person as household head. A minority (27%) of individuals lives in a household with a household head of working age. Individuals in households composed by a single person (with or without children) constitute less than 20% of the income poor population, while those living in households composed by a couple represent almost 60% of the poor population. Over a quarter the total poor population, however, lives in composite households, meaning households with multiple adult members (excluding couple households). Over 70% of the income poor lives in households with a household head having only a primary education degree. Finally, almost the totality of poor households are households with a Belgian household head (97%).

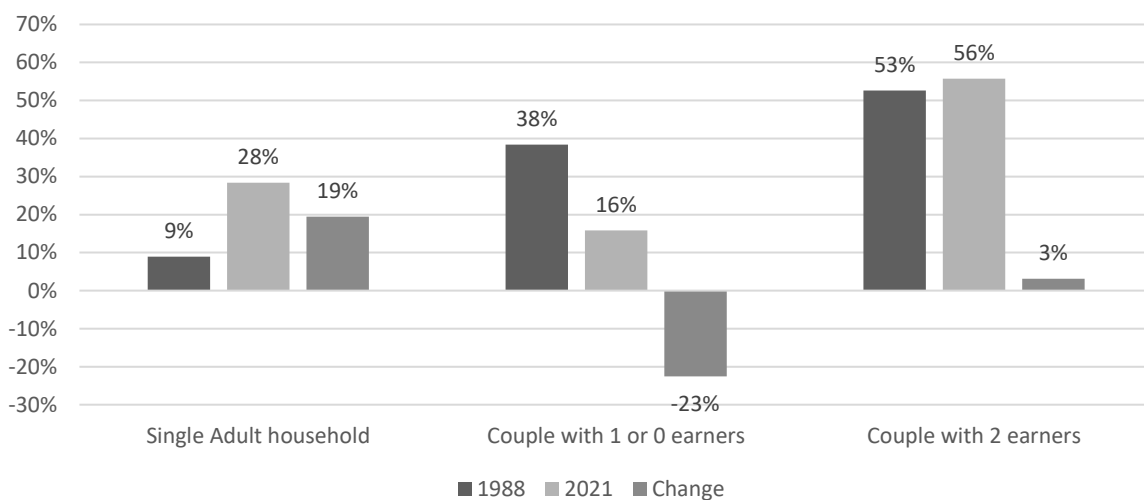
## 5. The contribution of household structure, earning profiles and migration background to relative income poverty

### 5.1 Household structure and earning profiles

#### 5.1.1 Patterns of change in household structure and earning profiles

Comparing the frequency of each household structure and earning profiles between 1988 and 2021 (Figure 9), one observes a strong decline in the share of households formed by couples with 1 or 0 earners (-23%). On the opposite, there has been an increase in the share of single adult households (+19%), while the share of households composed of couples with 2 earners has had a smaller increase (+3%).

**Figure 9: Prevalence of single adult, couple (0-1 earners), and couple (2 earners) households, Change between 1988 and 2021**

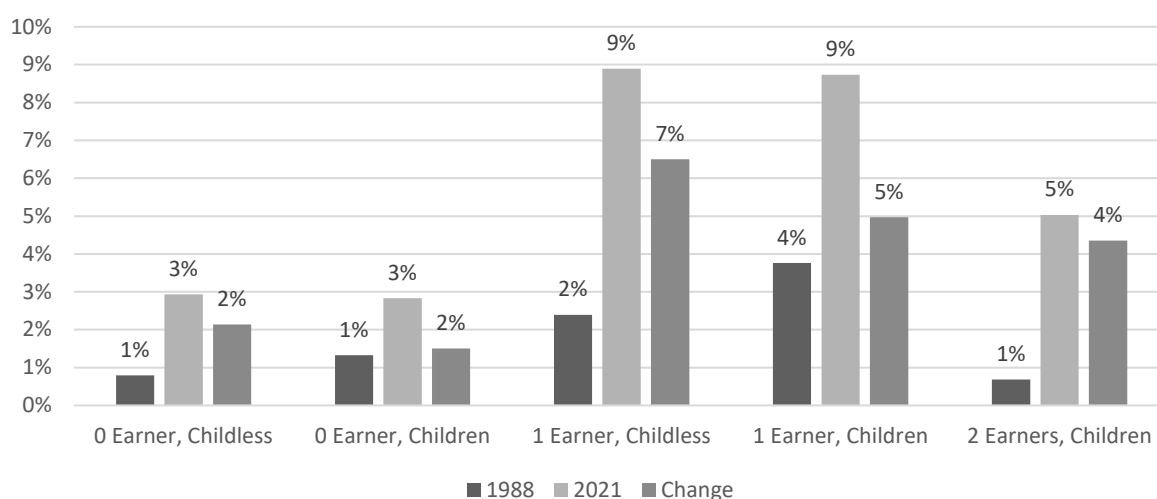


Source: Analysis of BE-PARADIS database

Focusing on single adult households and on the composition of this household type in terms of number of earners and presence of children (Figure 10), one observes an increase both in the share of childless single adult households with one earner (+7%), and single adult households with children and either one (+5%) or two earners (+4%)<sup>8</sup>. Single adult households without earners have also increased, but to a smaller extent – this is true both for childless single adult households and for those with children (+2%).

<sup>8</sup> This group of households is presumably composed by single adult households with one young adult child in work.

**Figure 10: Change in single adult (0-2 earners) households, with and without children, 1988-2021**



Source: Analysis of BE-PARADIS database

Note: '2 Earners, Children', presumably single adult households with one young adult child in work.

## 5.2 Poverty rates based on the household structure and earning profiles

We first assessed changes in the relative income poverty rate among working age individuals living in households where the household head is of working age, between 1988 and 2021 (Table 2). Relative income poverty, calculated using a threshold set at 60% of the median equivalised household income, increased by 5,8% over this period, moving from 7,2% in 1988 to 13% in 2021.<sup>9</sup>

**Table 2: Relative income poverty rates and respective change, Belgium, 1988-2021**

	% below relative income threshold		
	1988	2021	Change 1988-2021 (pp)
Brussels	2.8	25.8	+23
Flanders	5.1	6.7	+1.6
Wallonia	12.7	18.6	+5.9
<b>All</b>	<b>7.2</b>	<b>13</b>	<b>+5.8</b>

Source: Analysis of BE-PARADIS database

At the regional level, income poverty increased importantly in Brussels (+16,8%), and declined in Flanders (-4,5%), while remaining roughly stable in Wallonia (+0,1%).

<sup>9</sup> For comparison purposes, the base here considered is the one employed in the construction of the household variable, which includes working age individuals, based on the definition already provided, and excludes households with more than 2 earners, as well as households whose head is ages less than 20 or more than 60.

Comparing the relative income poverty rates of each household type for 2021, one can observe that some household types are more exposed to relative income poverty than others (Table 3). Couples with one or multiple children, and no earners in the households, are most likely to be income poor. Over 80% of them are income poor, with those with 2 children being the most exposed to income poverty (95,8%). Non-earner singles with children are also highly exposed to income poverty, albeit relatively less than couples (around 65% of them are in relatively income poverty). Being a non-earner single without children appears to be a particularly vulnerable profile; 57,4% are income poor in this category, more than childless couples without any earner (33,1%). For couples with children, having only one earner seems to be a determinant factor in explaining poverty outcomes – between 21% and 53% of couples with only one earner and up to three children are income poor, increasing with the number of children. Single households with only one earner, and one or two children, are relatively exposed to income poverty, but not significantly more than the average, respectively 12% to 22% of them are in poverty. Single household with only one earner and more than three children are significantly poorer, instead (47%), indicating that also in the case of single households, poverty increases with the number of children.

**Table 3: Poverty by household structure and earning profiles, Belgium, 2021** (Red indicates poverty rate > 1.33 population poverty rate, Green < 0.66 population poverty rate)

Household type	Poverty rate (%)
Single no child no earner	57.4
Single no child 1 earner	11.2
Single 1 child no earner	65.8
Single 1 child 1 earner	12.1
Single 1 child 2 earners	10.9
Single 2 child no earner	70.9
Single 2 child 1 earner	22.2
Single 2 child 2 earners	7.8
Single 3 child no earner	64.3
Single 3 child 1 earner	46.9
Single 3 child 2 earners	15.5
Couple no child no earner	33.1
Couple no child 1 earner	11.6
Couple no child 2 earners	1.1
Couple 1 child no earner	83.0
Couple 1 child 1 earner	21.4
Couple 1 child 2 earners	2.4
Couple 2 child no earner	95.8
Couple 2 child 1 earner	31.2
Couple 2 child 2 earners	3.1
Couple 3 child no earner	82.9
Couple 3 child 1 earner	53.3
Couple 3 child 2 earners	6.7
<b>All population</b>	<b>13</b>

Source: Analysis of BE-PARADIS database

If some household types are especially more likely to be in income poverty than the average, others are significantly less likely to be income poor. This is the case for all households with 2 earners, particularly couples with 2 earners and no children, or just one child – only 1 or 2 percent of them is income poor. Among 2 earner households, the relative income poverty rate appears to increase depending on the number of children, but remaining well below the average, at least for households made by couples. Singles appear to be relatively more exposed to income poverty than couples, even when there are multiple earners in the household. Between 8% and 15% of 2-earner households composed by singles are income poor, unlike 1% to 6% among the same type of earning profile, but composed by a couple.

### 5.2.1 Contribution of changing household structure and earning profiles to poverty

In the first counterfactual analysis, the poverty threshold employed for the calculation of the 2021 poverty rates, was weighted on the 1988 household distribution (Table 4: A). In this case, therefore, we considered the impact of the demographic change on the poverty line, before weighting our 2021 poverty rates, computed with the newly-weighted poverty line, on the same 1988 household distribution. The results of this first counterfactual analysis show that the 2021 poverty rate would have been higher than the actual one, had the household distribution remained the same as in 1988, and accounting for the impact of the distinct household / earners' distribution on the poverty threshold. Our counterfactual 2021 poverty rate is equal to 16,3%, while the actual 2021 poverty rate is 13%. The difference between the counterfactual 2021 poverty rate and the 1988 poverty rate (+8,5%) is positive, meaning that, in the counterfactual situation, we would have observed a greater share of income poor in 2021 than in 1988. In this sense, by subtracting the difference between the counterfactual change and the actual change in income poverty, occurred between 1988 and 2021, one can isolate the impact of the demographic composition shift on the poverty rate. Considering that the actual poverty rate increased by 5,8% between 1988 and 2021, we can say that, had the household composition remained the same, we would have observed a higher poverty rate, and that the demographic shift decreased income poverty by 2,7%.

**Table 4: Relative income poverty, actual versus counterfactual changes, Belgium, 1988-2021, pp**

(1) Actual change	(2) Counterfactual change with 1988 composition imposed in 2021	Impact of composition shifts on poverty (1) - (2)
(A)	Imposing 1988 composition in 2021 and recalculating threshold*	
+5.8	+8.5	-2.7
(B)	Imposing 1988 composition in 2021 but leaving 2021 threshold unchanged**	
+5.8	+9.1	-3.3

Source: Analysis of BE-PARADIS database

Note: \* Derived from counterfactual change in poverty imposing 1988 composition in 2021 and recalculating threshold; \*\* Derived from counterfactual change in poverty imposing 1988 composition in 2021 but leaving 2021 threshold unchanged

We did the same analysis by keeping the 2021 poverty thresholds unchanged, that is to say without weighting the 2021 median incomes for each household category on the 1988 household composition (Table 4: B). The results are similar to ones obtained through the first type of analysis, although the impact of the demographic change on the poverty rate in this case is slightly smaller. Had the demographic composition of the population remained the same as in 1988, but abstracting from the impact of the demographic composition on the poverty threshold, we would have observed a higher share of income poor in 2021 than in 1988, which is not the case if we compare the actual poverty rates. In the counterfactual situation, the 2021 poverty rate is equal to 15,7%, up by 9,1 percentage points compared to 1988. In the non-counterfactual situation, the poverty rate increased between the two years by 5,8%. This means that, subtracting the difference between the counterfactual change and the actual change, the impact of the composition change on the poverty rate is negative, namely the composition shift contributed to a 3,3% decline in poverty between 1988 and 2021. When abstracting from the impact of the demographic composition on the poverty thresholds, the composition effect is greater than in the counterfactual situation in which the poverty threshold has been reweighted on the 1988 distribution.

**Table 5: Relative income poverty, actual versus counterfactual changes, by region, Belgium, 1988-2021, pp**

	(1) Actual change	(2) Counterfactual change with 1988 composition imposed in 2021	Impact of composition shifts on poverty (1) - (2)
	(A)	Imposing 1988 composition in 2021 and recalculating threshold*	
Brussels	+23	+31	-8.1
Flanders	+1.6	+5.4	-3.8
Wallonia	+5.9	+4	+1.9
	(B)	Imposing 1988 composition in 2021 but leaving 2021 threshold unchanged**	
Brussels	+23	+31.2	-8.2
Flanders	+1.6	+5.4	-3.8
Wallonia	+5.9	+5.6	+0.3

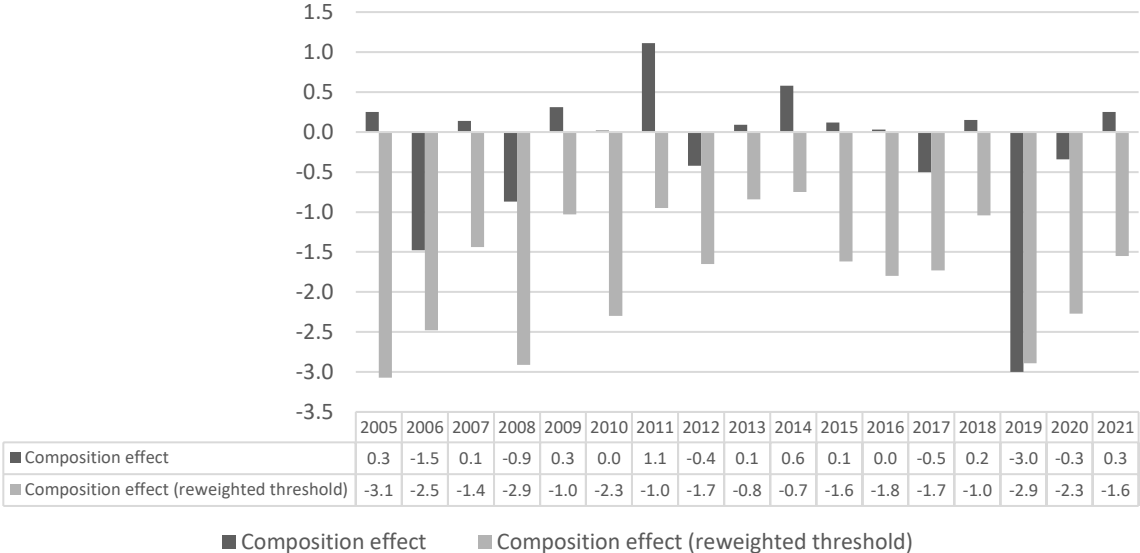
Source: Analysis of BE-PARADIS database

Note: \* Derived from counterfactual change in poverty imposing 1988 composition in 2021 and recalculating threshold; \*\* Derived from counterfactual change in poverty imposing 1988 composition in 2021 but leaving 2021 threshold unchanged

We repeated the same analysis at the regional level (Table 5). The results indicate that the composition shift in household structures and earning profiles, has contributed to decreasing the poverty rate in Brussels and Flanders, but not in Wallonia. In Brussels, the demographic shift contributed to decreasing the poverty rate by 8,1% in the scenario in which the poverty threshold is also reweighted (Table 5: A). This occurred in a context of strongly increasing poverty in Brussels (see Table 2), meaning poverty would have been even higher if such demographic change had not occurred. Had the demographic composition remained the same in Brussels in terms of household composition, we would have observed a poverty rate +31 percentage points higher than in 1988, while the actual poverty rate increased by 23 percentage points. In the scenario in which the poverty line is not reweighted against the new distribution (Table 5: B), the counterfactual poverty rate for 2021 would have been 31,2% higher than the 1988 one, meaning the impact of the composition shift on poverty in Brussels would have been even larger (-8,2%). Flanders show a negative but smaller impact of household composition on poverty (-3,8% in both the scenarios). For Wallonia, instead, the impact is positive, meaning that in this region the change in the demographic composition of households and their earning profiles, contributed to increasing the

poverty rate, albeit by a relatively small extent in the first scenario (+1,9%), and only marginally in the second scenario (+0,3%).

**Figure 11: Year-to-year contribution of changing household structure and earning profiles to poverty, Belgium, 2004-2021, pp**



Source: Analysis of BE-PARADIS database

We have assessed the year-to-year impact of the demographic composition change in terms of household structure and earning profiles on the poverty rate, taking into consideration the years for which we disposed of a continuous trend (2004-2021, Figure 11). If one considers the scenario in which also the poverty threshold is reweighted, the contribution of the compositional change, namely the composition effect, on the poverty rate has been constantly negative over time, although to quite different degrees depending on the year. The reweighting of the poverty threshold, however, appears to be determinant in defining whether the yearly compositional effect has been positive or negative. In 10 out of 16 instances, indeed, the composition effect is positive if one leaves the poverty threshold unchanged, thus discounting the impact of the demographic change on the poverty line. In most cases, however, such positive effect is small, and eventually reversed by the shifting of the poverty threshold. The strongest yearly positive effect occurred in the year 2011, while the largest yearly negative effects took place in 2005, 2008 and 2019.

### 5.2.2 Contribution of changing only household structure to poverty

We calculated the contribution of changing household structure and earning profiles separately. The results of the first counterfactual analysis, based on household structure, show that the 2021 poverty rate would have been higher than the actual one, had the household structure remained the same as in 1988, and accounting for the impact of the distinct household structure distribution on the threshold (Table 6: A). Our counterfactual 2021 poverty rate is equal to 8,8%, while the actual 2021 poverty rate is 10,9%. The difference between the counterfactual 2021 poverty rate and the 1988 poverty rate (+2,5%) is positive, meaning that, in the counterfactual situation, we would have observed a greater share of income poor in 2021 than in 1988. Considering that the actual poverty rate increased by 1,4% between 1988 and 2021, we can say that, had the household composition remained the same, we would have observed a higher poverty rate, and that the demographic shift decreased income poverty by 1,1%.

**Table 6: Relative income poverty, actual versus counterfactual changes, Belgium, 1988-2021, pp**

(1) Actual change	(2) Counterfactual change with 1988 composition imposed in 2021	Impact of composition shifts on poverty (1) - (2)
(A)	Imposing 1988 composition in 2021 and recalculating threshold*	
+1.4	+2.5	-1.1
(B)	Imposing 1988 composition in 2021 but leaving 2021 threshold unchanged**	
+1.4	-0.7	2.1

Source: Analysis of BE-PARADIS database

Note: \* Derived from counterfactual change in poverty imposing 1988 composition in 2021 and recalculating threshold; \*\* Derived from counterfactual change in poverty imposing 1988 composition in 2021 but leaving 2021 threshold unchanged

The contribution of the change in household structures is of the opposite sign if we discount the effect of the demographic change on the poverty threshold (Table 6: B). In this case, we would have observed an even lower share of income poor in 2021 than in 1988, compared to actual decline between the two years. In the counterfactual situation, the 2021 poverty rate is equal to 8,8%, down by 0,7 percentage points compared to 1988. In the non-counterfactual situation, instead, the poverty rate increased between the two years by 1,4%. This means that, the impact of the composition change on the poverty rate is positive, namely the composition shift contributed to a 2,1% poverty increase between 1988 and 2021.

*Table 7: Relative income poverty, actual versus counterfactual changes, by region, Belgium, 1988-2021, pp*

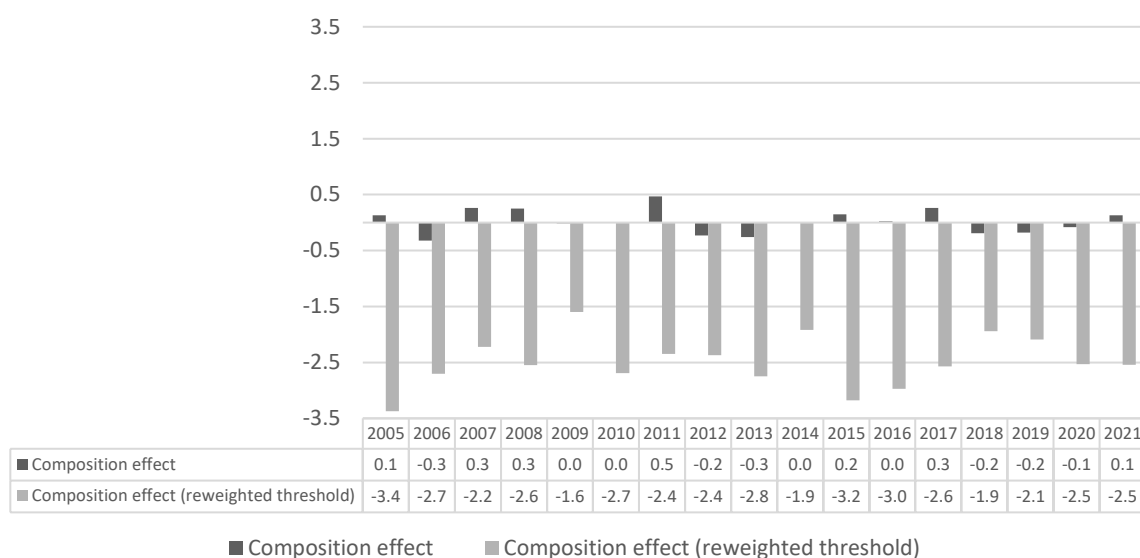
	(1) Actual change	(2) Counterfactual change with 1988 composition imposed in 2021	Impact of composition shifts on poverty (1) - (2)
	(A)	Imposing 1988 composition in 2021 and recalculating threshold*	
Brussels	+21.8	+28	-6.2
Flanders	-2.3	-1.3	-0.9
Wallonia	+1	+1.8	-0.7
	(B)	Imposing 1988 composition in 2021 but leaving 2021 threshold unchanged**	
Brussels	+21.8	+21.8	0.0
Flanders	-2.3	-3.4	+1.2
Wallonia	+1	-2.4	+3.4

Source: Analysis of BE-PARADIS database

Note: \* Derived from counterfactual change in poverty imposing 1988 composition in 2021 and recalculating threshold; \*\* Derived from counterfactual change in poverty imposing 1988 composition in 2021 but leaving 2021 threshold unchanged

When replicating the same analysis at the regional level, the results indicate that the composition shift in household structures, has contributed to decreasing the poverty rate in all the three regions, at least when the effect on the poverty threshold is accounted for (Table 7: A). In Brussels, the demographic shift in household structures contributed to decreasing the poverty rate by 6,2%. In Flanders and Wallonia, the poverty-decreasing effect is smaller but present as well (-0,9pp and -0,7pp, respectively). In the scenario in which the poverty line is not reweighted against the new distribution (Table 7: B), instead, the change in household structures has had a relatively important poverty increasing contribution, both in Flanders (+1,2pp) and Wallonia (+3,4pp), while it had a neutral effect in Brussels.

**Figure 12: Year-to-year contribution of changing household structures to poverty, Belgium, 2004-2021, pp**



Source: Analysis of BE-PARADIS database

We have assessed the year-to-year impact of the demographic composition change in terms of household structures on the poverty rate, taking into consideration the years for which we disposed of a continuous trend (2004-2021, Figure 12). Considering the scenario in which the poverty threshold is reweighted, the composition effect on the poverty rate has been always negative, namely poverty-reducing, and relatively strong over time (between 1.5pp and 2.5pp). The strongest negative effects can be observed for 2005 and 2015. When the poverty threshold is not allowed to change based on the 1988 earning profile distributions, the negative composition effect is reduced or zeroed-out. In some years (2007, 2008, 2011, 2015, 2017 and 2021), such effect even turns slightly positive, meaning poverty-increasing.

### 5.2.3 Contribution of changing only earning profiles to poverty

The results of the second counterfactual analysis, based on earning profiles, show that the 2021 poverty rate would have been higher than the actual one, had the households' earning distribution remained the same as in 1988, and accounting for the impact of the distinct earnings' distribution on the poverty threshold (Table 8: A). Our counterfactual 2021 poverty rate is equal to 13,7%, while the actual 2021 poverty rate is 12,9%. The difference between the counterfactual 2021 poverty rate and the 1988 poverty rate (+6,6%) is positive, meaning that, in the counterfactual situation, we would have observed a greater share of income poor in 2021 than in 1988. Considering that the actual poverty rate increased by 5,7% between 1988 and 2021, we can say that, had the household composition remained the same, we would have observed a higher poverty rate, and that the demographic shift decreased income poverty by 0,8%.

**Table 8: Relative income poverty, actual versus counterfactual changes, Belgium, 1988-2021, pp**

(1) Actual change	(2) Counterfactual change with 1988 composition imposed in 2021	Impact of composition shifts on poverty (1) - (2)
(A)	Imposing 1988 composition in 2021 and recalculating threshold*	
+5.7	+6.6	-0.8
(B)	Imposing 1988 composition in 2021 but leaving 2021 threshold unchanged**	
+5.7	+6.0	-0.3

Source: Analysis of BE-PARADIS database

Note: \* Derived from counterfactual change in poverty imposing 1988 composition in 2021 and recalculating threshold; \*\* Derived from counterfactual change in poverty imposing 1988 composition in 2021 but leaving 2021 threshold unchanged

The contribution of the change in earning profiles is still positive when the discount the effect of the demographic change on the poverty threshold (Table 8: B). In this case, when comparing the actual and the counterfactual situations, we observe a higher share of income poor in 2021 than in 1988 (13,1%). Since poverty actually increased between these two years (+5,7pp), the impact of the composition change in earning profiles within the households on the poverty rate is negative, namely the composition shift contributed to a 0,3% poverty decrease between 1988 and 2021.

*Table 9: Relative income poverty, actual versus counterfactual changes, by region, Belgium, 1988-2021, pp*

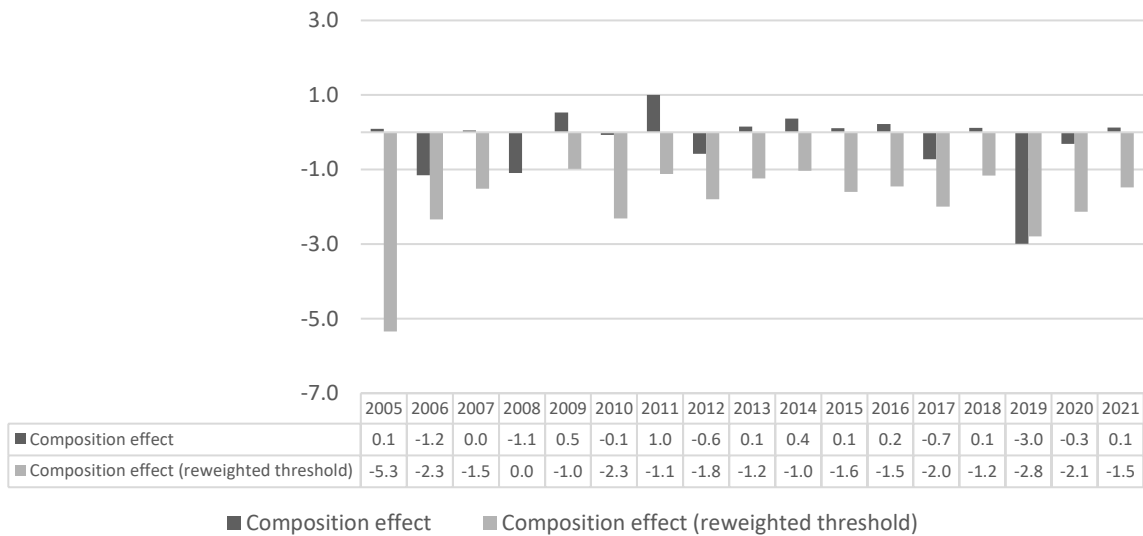
	(1) Actual change	(2) Counterfactual change with 1988 composition imposed in 2021	Impact of composition shifts on poverty (1) - (2)
	(A)	Imposing 1988 composition in 2021 and recalculating threshold*	
Brussels	+22.7	+23.2	-0.5
Flanders	+1.6	+3.0	-1.4
Wallonia	+5.9	+5.5	+0.4
	(B)	Imposing 1988 composition in 2021 but leaving 2021 threshold unchanged**	
Brussels	+22.7	+22.8	0.0
Flanders	+1.6	+2.2	-0.7
Wallonia	+5.9	+5.2	+0.7

Source: Analysis of BE-PARADIS database

Note: \* Derived from counterfactual change in poverty imposing 1988 composition in 2021 and recalculating threshold; \*\* Derived from counterfactual change in poverty imposing 1988 composition in 2021 but leaving 2021 threshold unchanged

When replicating the shift-share analysis at the regional level, the results indicate that the composition shift in household earning profiles, has contributed to decreasing the poverty rate in Brussels and Flanders, while contributing to increasing it in Wallonia (Table 9). In Brussels, such demographic change contributed to decreasing the poverty rate by 0,5%, but only when the impact on the poverty threshold is considered (Table 9: A). In the other scenario, instead, the composition effect is neutral in this region. In Flanders, the poverty-decreasing effect of changing earning profiles is more marked, particularly when the threshold effect is accounted for (-1,4pp), while less so when it is not (-0,7pp, Table 9: B). When it comes to Wallonia, the shift in earning profiles within the households is always poverty-increasing and similar between the two scenarios (+0,4pp in the first scenario and +0,7pp in the second).

**Figure 13: Year-to-year contribution of changing earning profiles to poverty, Belgium, 2004-2021, pp**



Source: Analysis of BE-PARADIS database

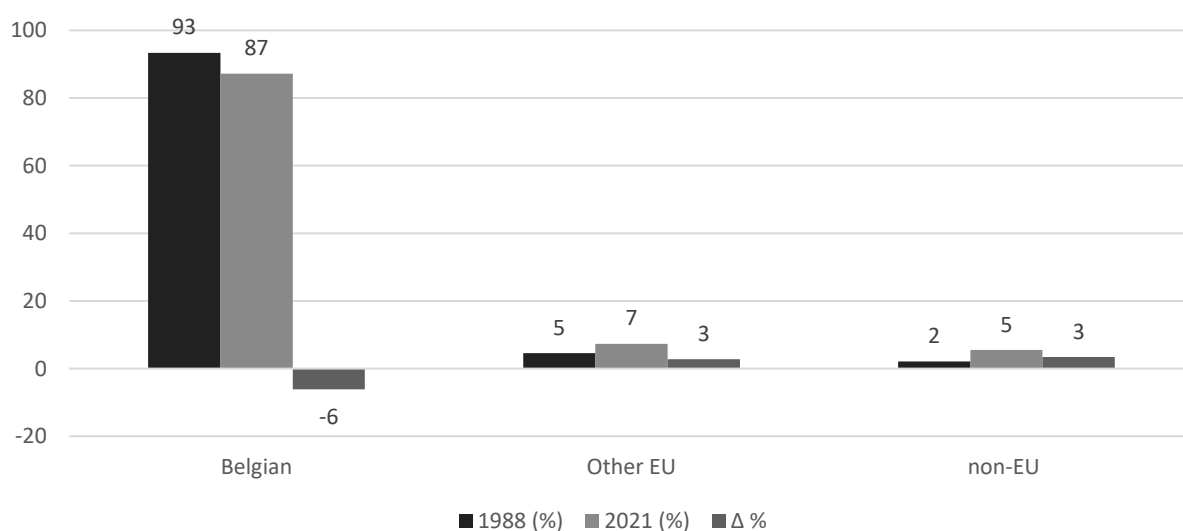
We have assessed the year-to-year impact of the demographic composition change in terms of earning profiles on the poverty rate, taking into consideration the years for which we disposed of a continuous trend (2004-2021, Figure 13). Considering the scenario in which the poverty threshold is reweighted, the composition effect on the poverty rate has been mostly negative over time, although to different degrees depending on the year. The strongest negative effects can be observed for 2005 and 2019. When the poverty threshold is not allowed to change based on the 1988 earning profile distributions, the negative composition effect is generally reduced. In some instances, such effect even turns positive, meaning poverty-increasing. Such positive effect, however, is small. The strongest yearly positive effect occurred in 2011. In 2019, the effect remains strongly negative, even when the threshold remains fixed.

## 5.3 Migration background

### 5.3.1 Patterns of change in citizenship status

Comparing the prevalence of distinct migrant groups in Belgium by (main) citizenship status (Figure 14), and their respective change between 1988 and 2021, one observes an increase in the share of non-Belgian nationals, with non-EU nationals growing by 3% and nationals from other EU countries increasing by 2%. The latter are the second most-represented group by migration background, with 7% of Belgian residents belonging to this group, and 5% Belgian residents belonging to the non-EU nationals group. Belgian nationals remain by far the largest group, with 88% of Belgian residents having a Belgian one as their main nationality.

**Figure 14: Prevalence of Belgian, EU and non-EU nationals, Change between 1988 and 2021, Belgium**



Source: Analysis of BE-PARADIS database

## 5.4 Poverty rates based on migration background

We first assessed changes in the relative income poverty rate among working age<sup>10</sup> individuals between 1988 and 2021 (Table 10). Relative income poverty, calculated using a threshold set at 60% of the median equivalised household income, increased by 1,4% over this period, moving from 9,7% in 1988 to 11,1% in 2021.

**Table 10: Relative income poverty rates and respective change, Belgium, 1988-2021**

	% below relative income threshold		
	1988	2021	Change 1988-2021
Brussels	2,3	23,7	+21,2
Flanders	7,9	5,8	-1,9
Wallonia	15,5	16,3	+1,1
<b>All</b>	<b>9,7</b>	<b>11,1</b>	<b>+1,4</b>

Source: Analysis of BE-PARADIS database

<sup>10</sup> Working age is defined based on [a specific Eurostat definition](#), as individuals aged 18-64, excluding students aged 18-24 and people who are retired according to their economic status or who receive any pension (except survivors pension), and inactive people aged 60-64 living in a household where the main income is pensions.

At the regional level, income poverty increased importantly in Brussels (+21,2%), and declined in Flanders (-1,9%), while remaining roughly stable in Wallonia (+1,1%).

Comparing the relative poverty rates of the different nationality groups (Table 11), one observes that non-EU nationals are significantly more likely to be in poverty than either Belgian or other EU nationals. Among non-EU nationals, the poverty rate is as high as 37,9%, while among other EU national this is 17,1%, and this is only 9% among Belgian nationals. Both EU and non-EU nationals' poverty rates are above the national average (11,1%).

*Table 11: Poverty by (main) citizenship status, Belgium, 2021 (Red indicates poverty rate > 1.33 population poverty rate, Green < 0.66 population poverty rate)*

Main citizenship	Poverty rate (%)
Belgian	9
Other EU	17.1
non-EU	37.9
<b>All population</b>	<b>11.1</b>

Source: Analysis of BE-PARADIS database

#### **5.4.1 Contribution of changing citizenship status to poverty**

In the first counterfactual analysis, the poverty threshold employed for the calculation of the 2021 poverty rates, was weighted on the 1988 distribution for the citizenship variable. Therefore, in this first analysis, we considered the impact of the demographic change on the poverty line, before weighting our 2021 poverty rates, computed with the newly-weighted poverty line, on the same 1988 household distribution (Table 12: A). The results of this first counterfactual analysis show that the 2021 poverty rate would have been lower than the actual one, had the household distribution remained the same as in 1988, and accounting for the impact of the distinct migration background distribution on the threshold. Our counterfactual 2021 poverty rate is equal to 10,6%, while the actual 2021 poverty rate is 11,1%. The difference between the counterfactual 2021 poverty rate and the 1988 poverty rate (9,7%) is positive (+0,9%), meaning that, in the counterfactual situation, we would have observed a higher share of income poor in 2021 than in 1988. In this sense, by subtracting the difference between the counterfactual change and the actual change in income poverty, between 1988 and 2021, we can calculate the impact of the citizenship composition shift on the poverty rate. Considering that the actual poverty rate increased by 1,4% between 1988 and 2021, one can say that, had the household composition remained the same in terms of nationality backgrounds, we would have observed a smaller poverty rate, and that the demographic shift increased poverty by 0,6%.

*Table 12: Relative income poverty, actual versus counterfactual changes, Belgium, 1988-2021, pp*

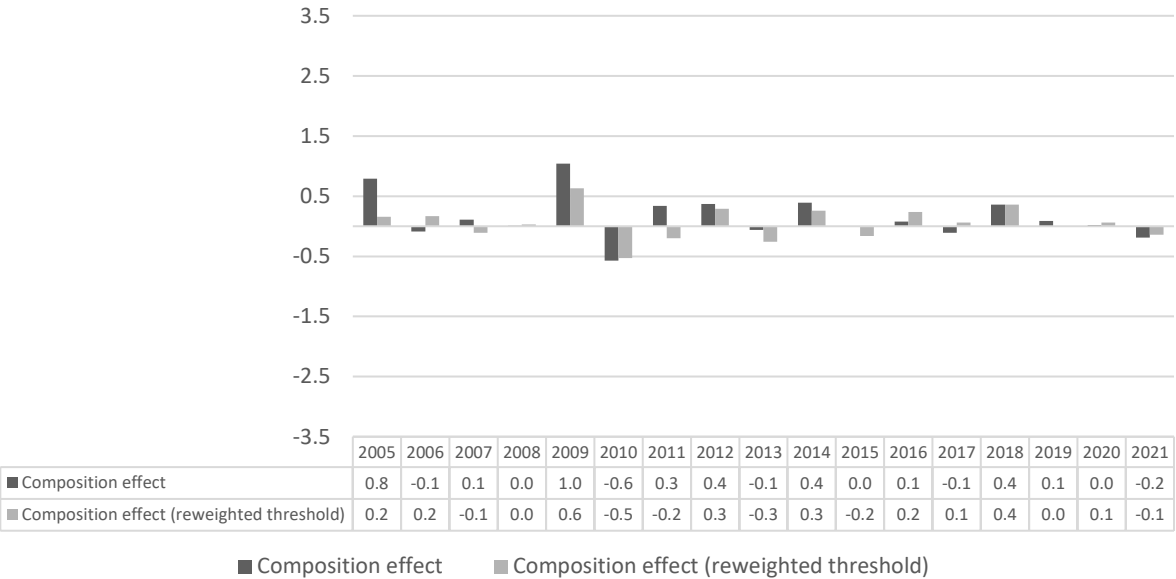
(1) Actual change	(2) Counterfactual change with 1988 composition imposed in 2021	Impact of composition shifts on poverty (1) - (2)
(A)	Imposing 1988 composition in 2021 and recalculating threshold*	
+1.4	+0.9	+0.6
(B)	Imposing 1988 composition in 2021 but leaving 2021 threshold unchanged**	
+1.4	+0.5	+0.9

Source: Analysis of BE-PARADIS database

Note: \* Derived from counterfactual change in poverty imposing 1988 composition in 2021 and recalculating threshold; \*\* Derived from counterfactual change in poverty imposing 1988 composition in 2021 but leaving 2021 threshold unchanged

We did the same analysis by keeping the 2021 poverty thresholds unchanged, that is to say without weighting the 2021 median incomes for each household category on the 1988 household composition (Table 12: B). The results are similar to the ones obtained through the first type of analysis, although the impact of the demographic change on the poverty rate in this case is slightly larger. Had the demographic composition of the population remained the same as in 1988 in terms of citizenship status, and abstracting from the impact of the demographic composition on the poverty threshold, we would have observed a higher share of income poor in 2021 than in 1988, which is not the case if we compare the actual poverty rates. In the counterfactual situation, the 2021 poverty rate is equal to 10,3%, up by 0,5 percentage points compared to 1988. In the non-counterfactual situation, the poverty rate increased between the two years by 1,4%. This means that, subtracting the difference between the counterfactual change and the actual change, the impact of the composition change on the poverty rate is positive, namely the composition shift in nationality contributed to a 0,9% increase in poverty between 1988 and 2021, abstracting from the impact of the demographic composition on the poverty thresholds. This is slightly more than the counterfactual situation in which the poverty threshold has been reweighted on the 1988 distribution.

Figure 16: Year-to-year contribution of changing (main) citizenship status to poverty, Belgium, 2004-2021, pp



Source: Analysis of BE-PARADIS database

We have assessed the year-to-year impact of the demographic composition change in terms of citizenship status on the poverty rate, taking into consideration the years for which we disposed of a continuous trend (2004-2021, Figure 16). One immediately notices that the contribution of the composition change, namely the composition effect, on the poverty rate has not been constant over time. Whether the composition shift in citizenship contributed positively or negatively to the poverty rate, also depended on the eventual reweighting of the poverty threshold. In the first scenario, where the poverty threshold is reweighted, in 10 out of 16 years taken into consideration in our analysis, the composition shift contributed to increasing the poverty rate from one year to the other, with the strongest increase occurring between the years 2008 and 2009. In the same scenario, in 6 occasions, the composition shift in citizenship status contributed to decreasing the poverty rate, with the biggest decrease occurring between 2009 and 2010. In the second scenario, where the poverty thresholds are not reweighted on the new distribution, the composition effect is also positive in 10 years out of 16, but this negative (i.e., poverty-decreasing) in only 5 occasions. Regardless of the scenario considered, the yearly composition effects on the poverty rate appear to be very small, especially if compared to the yearly composition effects of changing household structures / earning profiles.

## 6. Discussion and conclusion

The analysis presented in this article provides multiple insights in the nature of relative income poverty in Belgium, particularly in relation to the distribution of the poverty risk among distinct sociodemographic groups, and on the impact which demographic change among those groups might have had on the poverty rates.

The picture which we have drawn in the first part of the article, employing a long series of harmonised income data, is one of stable or increasing poverty rates among the working age population until 2018, and particularly in the years after the Great Recession. Unlike in the following period, during this phase, the increase in poverty was concentrated, in particular, among the working age population, which is therefore the object of the analysis carried out in this paper. We observed a particular increase among the very low work intensity group, the low educated group, single adult households (with and without children), as well as among individuals with a non-EU and, to a less extent, other EU citizens. These trends reveal that, at least in the poverty-increasing phase during and after the Great Recession, income poverty risk became more concentrated among determinate categories, while it remained mostly stable elsewhere. Moreover, the poverty risk increased particularly among Brussels' residents and, to a smaller extent, Wallonian residents, while remaining largely stable among people residing in Flanders.

On top of this, certain sociodemographic groups have also seen their share among the income poor population increase, either because the poverty risk has become particularly more concentrated among these groups, or because they have become larger in society. This is the case for single adult households (with and without children), non-EU nationals and, to a smaller extent, nationals from other EU states. Also the share of Brussels residents among the income poor saw a significant increase over time.

These trends warranted a further investigation on the potential impact of the demographic changes related to these categories on the poverty rates. Therefore, through a shift-share analysis, we re-calculated the 2021 poverty rates by weighting them on the 1988 demographic composition, thus obtaining counterfactual 2021 poverty rates. These are illustrative of the hypothetical poverty rate we would have observed, had the population composition remained the same as in 1988. In this way, we were able to measure the contribution of the changes in each socio-demographic variable to the poverty rate between 1988 and 2021. We repeated the analysis twice, first shifting the composition based on the household structures / earnings distribution, and then based on the (main) citizenship status distribution.

Such analysis revealed that the shift in household structures and earning profiles had a negative impact on the poverty rate at the country level, contributing to diminishing the poverty rate. This is in line with earlier findings indicating that in most countries such changes diminished poverty (Azollini et al. 2023). When analysed at the regional level, however, such contribution remains strongly negative only in Brussels (and to a smaller extent in Flanders), while turning slightly positive in Wallonia. If the impacts of changing household structure and earning profiles on poverty are analysed separately, one observes a weak poverty-increasing effect only in Wallonia and exclusively for the change in household earning profiles. Overall, the poverty reducing effect is generally stronger for the change in household structures.

The contribution of the changing citizenship distribution to the poverty rate, instead, was mostly positive, meaning that it contributed to increasing the poverty rate. Its effect on the poverty rate, however, was relatively small. These findings support what had already been highlighted by the previous literature, namely that the increasing share of foreign-born people in Belgium has likely increased poverty, but only to a marginal extent, and that this increase was eventually compensated by other mechanisms (de Smalen et al 2024).

Because our long series was characterised by multiple breaks, due to the lack of data for certain years, we have looked at the year-to-year contribution of the population shift in both household structures, earning profiles, and nationality backgrounds between 2004 and 2021. This allowed us to look not exclusively at the total effects of such changes, but also at the yearly ones. Both the general and year-to-year analyses indicate that, whether one considers the effect of the population shift on the poverty thresholds or not, is determinant to define the impact of the demographic shift on poverty rates. Like in Azollini et al. 2023, we find that when considering the effect on the poverty threshold, the impact of the composition shift in household structures / earning profiles on poverty is smaller than when such effect is not accounted for. This, however, is not corroborated by the findings year-to-year analysis. In this sense, like prior research employing similar methods, we would privilege a comparative interpretation of the counterfactual poverty rates and of the resulting composition effects which takes into account the impact on the poverty line but without discounting the alternative scenario (Azollini et al. 2023).

The role of the poverty threshold in the calculation of the counterfactual poverty rates is not the only methodological point which should be carefully examined when interpreting the results of the shift-share analysis. The findings we have presented in this article, indeed, must also be interpreted in light of the multiple limitations characterising the specific type of analysis we have employed. First, despite using a logistic regression technique in constructing the population weights used in the calculation of the counterfactuals, this analysis employs a purely descriptive method for the calculation of the composition effects, something which could have been avoided if we had employed a regression-based method (i.e., Kitagawa–Oaxaca–Blinder decomposition), such as in de Smalen et al 2024. This method would have allowed us to also employ some control variables in order to gauge the effect of endogenous factors on our poverty rates and better isolate the compositional effects from these effects.

Despite its multiple limitations, and its primarily descriptive nature, this article provides a first attempt at measuring the impact of socio-demographic change, both in terms of household structures / earning profiles, and migration background, on the poverty rates in Belgium. Moreover, this is also the first time that such exercise is done by employing a harmonised data series over such a long period. In this sense, the BE-PARADIS dataset, regardless of its various limits which we have partly highlighted in the Methods section, represents a useful resource to analyse the impact of population change on Belgian incomes over a long time. This allows to grasp the full extent of changes occurring rather slowly over time, like evolutions related to the household composition or the long-term impact of migration.

Ultimately, our analysis reveals that the socio-demographic shift in households structures and number of earners, did not contribute to the increasing poverty rates among the working age population. On the contrary, the growth in the group of work-rich households observed in the data, probably explains the downward effect on poverty trends reported by the shift-share analysis. Regarding the changing population structure in terms of migration background, it is unlikely that the increase in non-EU and EU nationals observed in the data had a significant impact on the poverty rate since its impact on the income distribution, albeit poverty-increasing, is very limited at the country level. If socio-demographic change cannot explain the disappointing poverty trends observed over the past four decades, the question remains open for future research on why the Belgian welfare state has not succeeded in reducing poverty during a period of significant increase in employment, income, and social spending.

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