

Kolář, Daniel

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## Poverty in the Czech Republic: Unemployment, pensions, and regional differences

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Charles University

# POVERTY IN THE CZECH REPUBLIC: UNEMPLOYMENT, PENSIONS, AND REGIONAL DIFFERENCES

*Daniel Kolář*

IES Working Paper 35/2024

Institute of Economic Studies,  
Faculty of Social Sciences,  
Charles University in Prague

[UK FSV – IES]

Opletalova 26  
CZ-110 00, Prague  
E-mail : [ies@fsv.cuni.cz](mailto:ies@fsv.cuni.cz)  
<http://ies.fsv.cuni.cz>

Institut ekonomických studií  
Fakulta sociálních věd  
Univerzita Karlova v Praze

Opletalova 26  
110 00 Praha 1

E-mail : [ies@fsv.cuni.cz](mailto:ies@fsv.cuni.cz)  
<http://ies.fsv.cuni.cz>

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# Poverty in the Czech Republic: Unemployment, Pensions, and Regional Differences

Daniel Kolář

Institute of Economic Studies, Charles University, Prague, Czech Republic

September 2024

**Abstract:**

The Czech Republic has experienced a remarkable decline in the unemployment rate but not in relative poverty. I address this and other facts by analysing the evolution of absolute and relative poverty over the 2004-2021 period. I first document a remarkable decline in absolute poverty in poorer Czech regions, indicating that the growth experience of the Czech Republic was shared. Nonetheless, the low absolute poverty levels of Western Europe are yet to be reached. I then explain the paradox of stagnating relative poverty, i.e., the at-risk-of-poverty rate, and find that the drop in unemployment was offset by increased old-age poverty. Oaxaca-Blinder decomposition reveals that older retirees living alone are particularly vulnerable. However, the overwhelming majority of the retired poor live in their own housing, and treating imputed rent as part of income would decrease retirees' poverty.

**JEL:** C38 , D31 , I32

**Keywords:** poverty, welfare, decomposition

# 1 Introduction

In this paper, I perform an in-depth analysis of poverty in the Czech Republic. First, I observe the evolution of poverty in Czech regions according to three poverty measures: an absolute poverty rate with a fixed threshold adjusted only for inflation; a relative poverty rate, which corresponds to the EU's headline at-risk-of-poverty rate; and a regional modification of the relative rate. I find a remarkable decrease in absolute poverty since 2005, which is driven by the poorer Czech regions. A comparison with other European countries shows that such decrease is not automatic because it is absent in, for example, Italy or Spain. However, rich Western countries already appear to have reached the viable floor of the absolute poverty rate. The Czech Republic can still improve, mainly in its two poorest regions.

I then turn to the Czech relative poverty rate to explain why it did not decrease despite the substantial decrease in unemployment, which stood at only 2.8% in 2021 (Eurostat, 2024), the lowest in the EU. The answer lies in the population subgroup of retirees, who increased their counts among the at-risk-of-poverty population. A Oaxaca-Blinder decomposition reveals that part of the increase is driven by older pensioners who live alone. However, only 18.4% of poor retirees live in households that have to pay rent for their housing. The remaining 81.6% thus have much larger purchasing power than this group, and perhaps also than some non-poor households living in rentals.

This study was inspired by the pioneering works of Sen (1983); Kanbur (1987); Ravallion (1996), asking the big question "Who are the poor?" While a perfect poverty indicator may never exist, to measure progress and design policies one needs a workable definition. Most indicators of absolute poverty with a fixed threshold, such as the World Bank's \$2.15 per day, have become irrelevant in rich regions such as the EU. Relative poverty indicators, which define (the risk of) poverty relative to an average household, are the common measure in the EU. However, the evolution of these indicators over time may be interpreted misleadingly because in a growing economy, incomes of the poor may be growing as well without affecting the indicator. Goedemé et al. (2022) estimate a new fixed threshold, which is empirically relevant for the EU. While they use it to construct a new indicator combining absolute and relative poverty, I keep the two concepts distinct and report results separately.

Several academic papers analyse the poverty profile in the Czech Republic. Dušek et al. (2015) and Janský et al. (2016) analyse the impact of the Czech tax and benefit system on inequality and poverty, finding that the pre-tax income distribution is quite egalitarian and that the tax and benefit system has little impact on inequality or poverty. Redistribution is mainly aimed toward households with children, which is also an effective anti-poverty policy for this group (Avram & Militaru, 2016). Dvornáková (2012) computes the regional at-risk-of-poverty rates, comparing them to the benchmark national rate: Prague drops from best to worst because of the large variation of incomes in the city. Federičová et al. (2022) analyse poverty in the so-called socially excluded areas using a dedicated survey targeting these areas. I contribute to this literature by taking a long-term perspective, bringing novel findings on the composition of the poor and explaining the counter-intuitive stagnation of relative poverty despite declining unemployment.

My findings can inform ongoing policy debates about the Czech social and pension system. A particularly vulnerable group are older retirees and those living alone. The current pension system leads to lower average pensions of older pensioners due to their lower lifetime earnings. The adequacy, targeting, and coverage of the pension supplement for widows and widowers should also be re-examined. On one hand, this supplement targets 50% of poor pensioners (based on the at-risk-of-poverty rate), on the other hand it excludes the 29% who are divorced.

Section 2 describes the poverty indicators used in this paper, as well as the decomposition methods and survey data. Section 3 presents the results, starting with the evolution of various poverty indicators across Czech regions, continuing with an international comparison, and ending with a detailed decomposition of the Czech at-risk-of-poverty rate. Section 4 discusses the results and concludes.

## 2 Data and methods

### 2.1 Poverty indicators

The starting point for this analysis is the EU benchmark at-risk-of-poverty rate. The limitations of this measure are well documented and I mention them below. However, it is not the aim of this paper to address them. Instead, and for the sake of transparency, I preserve all the main properties of the benchmark rate when constructing the other poverty measures, which differ from the benchmark only in the poverty thresholds. For the sake of brevity, I use the terms 'at-risk-of-poverty' and 'poor' interchangeably, with no intention of making a value judgement.

**The at-risk-of-poverty rate** is one of the most prominent (at-risk-of-)poverty measures in the European Union. It is an income-based headcount ratio, where a household is classified as poor if its equivalised disposable income is below 60% of the national median. As the poverty threshold is derived from the reference population and thus may change over time and across countries, this is a *relative* poverty indicator (Sen, 1983).

In **the regional at-risk-of-poverty rate** the poverty threshold is 60% of the regional median, as opposed to the national median in the first indicator (Ayala et al., 2014; Dvornáková, 2012; Menyhart et al., 2021). All other methodological choices are kept the same. The idea behind this indicator is that the regional standard of living may be a better reference for the perceived poverty status, as it is more directly observable to households. Additionally, relative poverty measures are often associated with social exclusion, and it seems appropriate to estimate it using smaller geographical units than entire countries. Finally, a regional measure can indirectly account for cross-regional differences in price levels and other region-specific characteristics.

**The absolute poverty rate** has a fixed poverty threshold of 5,950 Purchasing Power Standards (PPS) of yearly equivalised disposable income in 2012 prices. In other words, the threshold only varies across countries and in time due to differences in price levels but is unaffected by changing economic conditions of the general population. The value of the threshold is taken from Goedemé et al. (2022), who construct a new indicator combining the at-risk-of-poverty rate with the absolute poverty rate. The absolute threshold is a country-average of the estimated cost of basic goods in the EU plus a 10% allowance. The *absolute* poverty status does not reflect households' social position but merely their ability to purchase a basic basket of goods, corresponding to a different notion of poverty than that measured by the relative indicators.

Existing research has been critically evaluating the at-risk-of-poverty rate. Mysíková et al. (2021) notes that Central and Eastern European countries were not considered when the OECD-modified equivalence scale, used to adjust for larger households' economies of scale, was defined. Similarly, a simple headcount ratio does not reflect the severity of poverty, as opposed to indicators such as the (squared) poverty-gap index (Kanbur, 1987; Decancq et al., 2013; Ravallion, 1994). The narrow focus on disposable income omits other dimensions of poverty (Whelan et al., 2014) or within-country (or within-region in the case of the regional indicator) differences in price levels (Janský & Šedivý, 2018; Ayala et al., 2014). Despite its limitations, the advantage of the at-risk-of-poverty rate is precisely its simplicity: it is straightforward to explain to the general public what exactly it expresses.

An important limitation in the Czech context is that the concept of disposable income does not exclude deductions due to insolvency and execution proceedings. While these payroll deductions are in principle repayments of liabilities, they are arguably not in line with the meaning of the word "disposable." As of February 2024, there were 644 thousand debtors in execution proceedings, which corresponds to 6% of the entire Czech population ([Exekutorská komora České republiky, 2024](#))—although not everybody is affected by deductions since they only apply to incomes above a certain threshold. [Bajgar et al. \(2019\)](#) also highlight that people living outside private households, for example, in retirement homes or lodging houses, are excluded.

All three indicators are decomposable across (mutually exclusive and exhaustive) subgroups ([Kanbur, 1987](#); [Foster et al., 1984](#)). Each poverty rate can be expressed as a weighted sum of subgroup-specific poverty rates, where weights correspond to subgroups' shares in the total population. It follows that the subgroup-specific poverty rate times its population share corresponds to the subgroup's contribution to the overall poverty rate. Such contribution can be large either because the subgroup itself is large, or because the subgroup-specific poverty rate is large (see e.g., [Riskin, 1994](#), for an interesting application in the context of Chinese rural poverty).

## 2.2 The Oaxaca-Blinder decomposition

In addition to the above-described decomposition by sub-groups, I perform a Oaxaca-Blinder decomposition ([Oaxaca, 1973](#); [Blinder, 1973](#)). Change in the variable of interest—in the present case, the poverty rate—can be decomposed into changes in covariates ("the explained part") and changes in the association between these covariates and the variable of interest ("the unexplained part"):

$$\bar{y}_b - \bar{y}_a = \hat{\beta}_a \cdot (\bar{X}_b - \bar{X}_a) + \bar{X}_b \cdot (\hat{\beta}_b - \hat{\beta}_a), \quad (1)$$

where  $\bar{y}_j$  is the poverty rate of group  $j$ , i.e., the average of a dummy variable categorising households as poor or non-poor,  $\hat{\beta}_j$  is a vector of estimated coefficients from the linear regression  $y_{ji} = \beta_j X_{ji} + \mu_{ji}$ , and  $\bar{X}_j$  is a vector of averages of covariates of group  $j$ . Group  $a$  is the reference group. The first dot product on the right-hand side of equation 1 corresponds to the explained part and the second to the unexplained part. Both can be further broken down to evaluate the contribution of each covariate.

## 2.3 EU-SILC data

The European Union Statistics on Income and Living Conditions (EU-SILC) is an annual harmonized survey that first took place in 2003 and now covers all EU member states, as well as some non-members ([Kaminska et al., 2012](#)). It collects information on income and other well-being concepts, and is used by Eurostat to calculate the at-risk-of-poverty rate as well as other indicators. For the Czech Republic, I use the entirety of available years at the time of writing, i.e., surveys with income reference years 2004–2021. For an EU-wide comparison, I only start at 2006 in order to include as many countries as possible: all current EU members except Croatia have data available from 2006.

## 3 Results

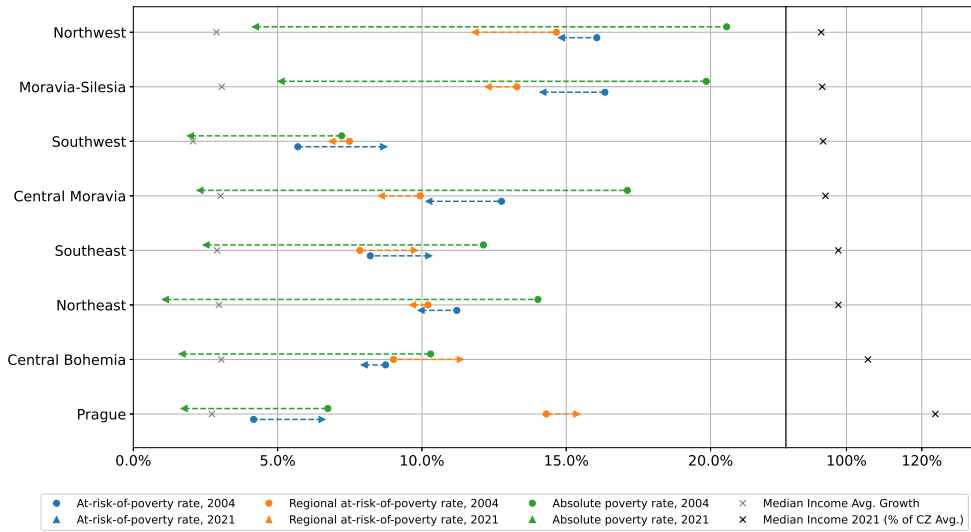
Each poverty rate is a welfare measure, and each of a different kind. Critics of the relative measure may argue that it is a pure inequality indicator since it does not consider at all the overall level of development, while critics of the absolute measure argue that it becomes uninformative at some point. In the following subsection, I display both types of measures simultaneously to provide a comprehensive account of the evolution of poverty. I further add information on the growth and level of the

average household’s income. In the second and third subsections, I decompose the Czech at-risk-of-poverty rate to explain why it has not fallen despite a large drop in unemployment.

### 3.1 Relative vs. absolute poverty

Figure 1 plots the evolution of different poverty indicators in Czech regions from 2004 to 2021. Comparing the regional and the national (standard) at-risk-of-poverty rate, the most striking difference is in the region of Prague. The Czech capital has the lowest at-risk-of-poverty rate, but switching from the national to the regional median makes it the most unequal region. Part of the explanation lies in the large median income in Prague, which is 24% larger than the region-level average. Mechanically, regions whose median income is above the national median will exhibit a higher regional at-risk-of-poverty rate compared to the national measure and vice versa. But in Prague, there is a particularly large group of individuals with income below 60% of the regional median and above 60% of the national median, specifically 8.8% in 2021.

Outside Prague, the difference between the regional and national relative measure is generally less profound. The national at-risk-of-poverty rate increased in only two of these regions: Southwest and Southeast. In the Southwest, the increase appears to be a consequence of relatively low income growth, since the regional poverty rate remains almost the same. In the Southeast, however, median income growth was close to the Czech average and the regional poverty rate increased as well, implying changes within the region’s income distribution towards higher inequality.



**Fig. 1:** Relative and absolute poverty rates in the Czech Republic.

Turning to the absolute poverty rate, the results highlight a marked decrease in the number of people who cannot afford a certain standard of living. The decline is driven by the poorer regions, where the share of absolutely-poor individuals reached 20% in 2004. This finding supports the notion that income growth in the Czech Republic over the past 20 years was *shared*, i.e., that the benefits of development accrued also to poorer regions. A stronger requirement would be *convergence*, where poorer regions grow faster to reach the level of the richer ones. Convergence is among the goals of the European Union Structural and Cohesion Funds (Bachtler et al., 2016), but research evaluating their impact is inconclusive (Darvas et al., 2019). Judging by the average real growth in median equivalised disposable income, convergence among the Czech



regions has not occurred. The two poorest regions, Northwest and Moravia-Silesia, grew on average by 2.88% and 3.07%, respectively, similarly to the richer Northeast and Central Bohemia regions. Median incomes in Prague grew a bit less, by 2.72%, but it still remains by far the richest Czech region, with a median income at 124% of the region-level average.

Figure 2 puts the findings for the Czech Republic into context by comparing the relative and absolute poverty rates at the EU level. Countries are ordered according to their median equivalised disposable income in 2021. In order to include as many EU countries as possible (all except Croatia), the first year in Figure 2 is 2006, as opposed to 2004 in Figure 1. The Czech Republic has experienced a significant drop in absolute poverty between these two periods (-4.5 p.p.), as shown in more detail in Figure A1 in Appendix A.<sup>1</sup> Countries closest to the Czech Republic in terms of median income, Poland and Estonia, had much larger absolute poverty rates in 2006 than the Czech Republic, but have also grown faster since then. As a result, their absolute poverty rates in 2021 are only slightly, but not negligibly, higher in 2021 than in the Czech Republic. Similarly, the Czech Republic’s absolute poverty rate approached that of the best-performers, but there is still room for improvement. As Figure 1 shows, potential for improvement is mainly in the two poorest regions, Northwest and Moravia-Silesia.

Figure A1 in Appendix A documents in more detail the drop in absolute poverty in the Czech Republic, by showing the evolution of this indicator on a yearly basis. The figure also plots the evolution of the official unemployment rate and of the Gini index. Both indicators correlate with the absolute poverty rate, although changes in the Gini index are quite small overall. The Czech Republic records consistently low values of the Gini index, which evolved from 25.3% in 2006 to 24.8% in 2021.

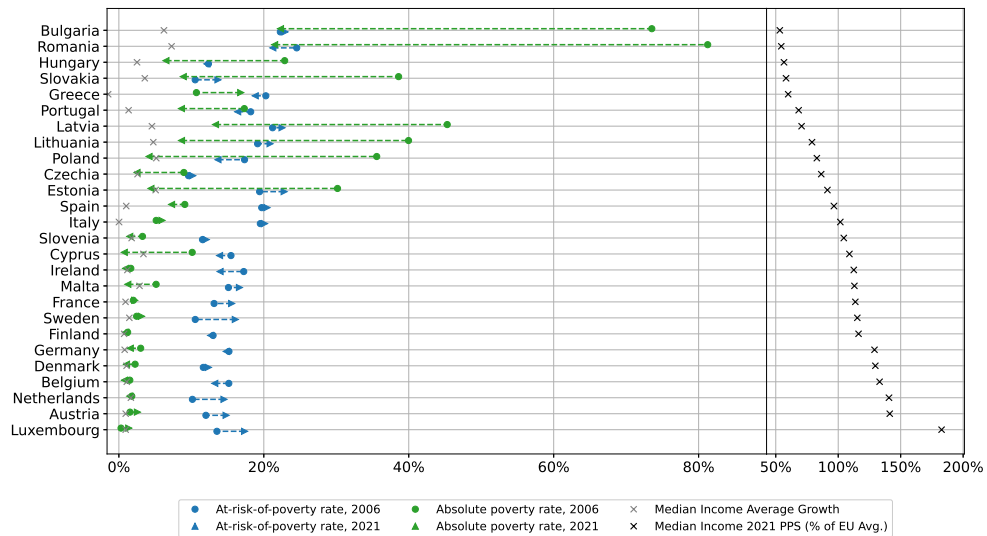


Fig. 2: Relative and absolute poverty rates in the European Union.

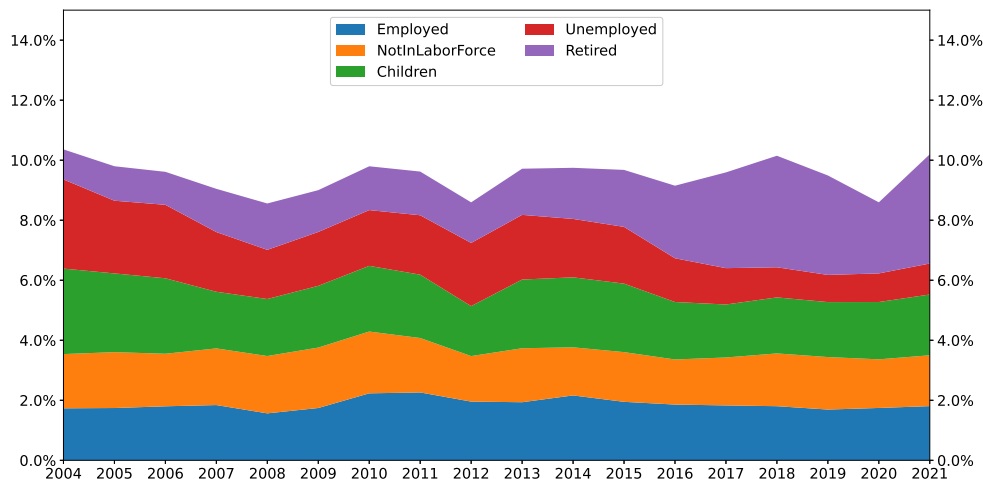
### 3.2 Subgroup decomposition using the current economic status

I now turn to the Czech at-risk-of-poverty rate. Although it is among the lowest in the EU, it has remained stable despite a sharp drop in the unemployment rate from 7% in 2012 and 2013 to 2.8% in 2021. It is not a priori clear why the headline poverty rate would remain stable. For example, it could be because of a rise in low-paying jobs,

<sup>1</sup>Figure A1 in Appendix A also plots the evolution of the unemployment rate and the Gini index. Both indicators correlate with the absolute poverty rate, although changes in the Gini index are quite small.

which would weaken the link between employment and absence of poverty (Brandolini et al., 2002). Or perhaps the unemployed did not constitute a large part of the poor population even in 2012, either due to high unemployment benefits or due to family relatives increasing the disposable income of the household. Alternatively, some other dynamic had offset the positive impact of decreasing unemployment on the poverty rate. As I show in this section, the last hypothesis appears to be the most accurate.

Figure 3 plots the evolution of the Czech at-risk-of-poverty rate from 2004 until 2021, decomposed according to the self-defined individual-level variable Current economic status. The counts of the unemployed among the poor have indeed declined along with the unemployment rate, from around 2% of the population in 2011-2014 to 1.0% in 2021. However, the decrease has coincided with an increase in the poor-retirees share from 1.5% in 2013 to 3.6% in 2021. As a result, the overall at-risk-of-poverty remained stable at around 10%. The slight decrease in the poverty counts of the remaining three categories—employed, not in the labor force, and children—is likely because whenever a newly employed person is lifted out of poverty, so is their entire household. Finally, the drop in relative poverty in 2020 is likely due to stagnating median income as a result of the coronavirus pandemic.



**Fig. 3:** Decomposition of the at-risk-of-poverty rate in the Czech Republic using the current economic status.

In Appendix A, I perform several robustness checks. I first show that trends in the poor-retirees and poor-unemployed shares would be similar if a poverty gap index or a squared poverty gap index would be used instead of a standard headcount ratio (Figures A2 and A3). I also show that the decrease in the unemployed among the poor is due to the overall decrease in their population share, as opposed to a decrease in the unemployed-specific poverty rate (Figure A4). In contrast, the increase in the number of poor retirees is due to the increased retiree-specific poverty rate and not due to an overall increase in the share of retirees. The increase in the poor-retirees share is the topic of the following section.

### 3.3 The retirees: Oaxaca-Blinder decomposition

To learn more about the increase in the at-risk-of-poverty rate among retirees, I perform a Oaxaca-Blinder decomposition. I decompose the difference between the pensioner poverty rate in 2013—the last year with low counts of retirees among the poor—and 2021. Pensioners in 2013 are treated as a reference group.

Descriptive statistics in Table 1 show that the share of pensioners in the total population has been about 22% in both periods, meaning that the increased poverty counts in Figure 3 cannot be explained simply by more retirees. Instead, the retirees' at-risk-of-poverty rate increased from 7% to 16%, which more than doubled the number of pensioners classified as poor. The average age of retirees increased and poor retirees are on average slightly older than the rest. Notable is the high and increasing share of poor retirees living alone. In 2021, only 16.6% of poor retirees lived in households of two or more members. Correlated with living alone is being divorced or widowed, and both these groups are overrepresented among the poor relative to the whole population. The negative association between poverty and education is expected.

**Table 1:** Retirees' at-risk-of-poverty rate 2013 vs. 2021: Descriptive statistics

	2013		2021	
	AROP retired	All retired	AROP retired	All retired
Share in population	0.015	0.221	0.036	0.222
Share in retired	0.070	1.000	0.164	1.000
Age	70.765	70.287	73.696	72.674
Living alone	0.756	0.297	0.834	0.335
In a poor region	0.323	0.258	0.307	0.267
High Education	0.046	0.105	0.044	0.114
Low Education	0.345	0.195	0.272	0.147
Working	0.012	0.049	0.010	0.045
Divorced	0.345	0.107	0.288	0.120
Widowed	0.402	0.280	0.500	0.276

Note: Values rounded to three decimal places.

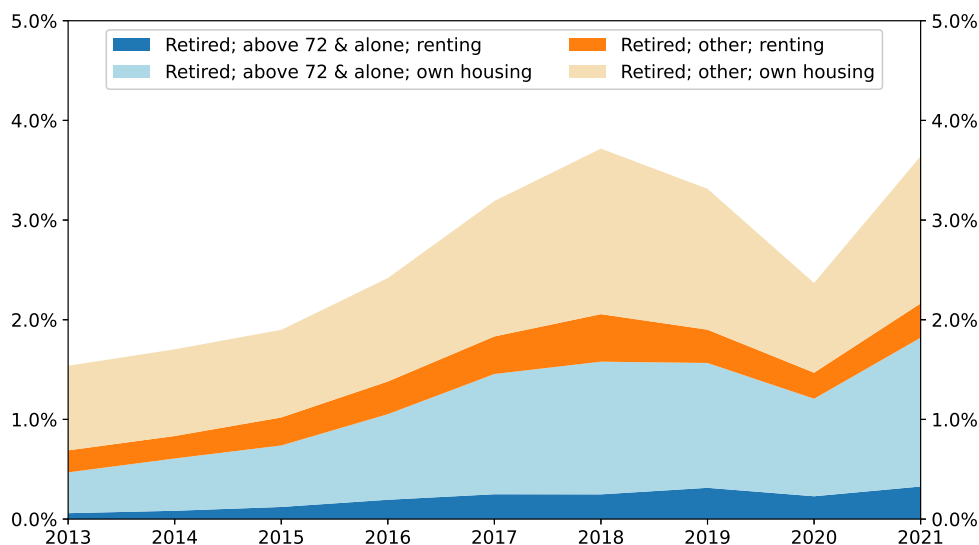
Results of the Oaxaca-Blinder decomposition are shown in Table 2. Changes in covariates cannot explain the difference between the two poverty rates; in fact, the so-called explained part only contributes 1.9% to the total difference. The remaining 98.1% correspond to the unexplained part, which quantifies the impact of differences in regression coefficients. The association with poverty changed the most in the Age variable and in the variable indicating whether the retirees' household is single-membered.

**Table 2:** Retirees' at-risk-of-poverty rate 2013 vs. 2021: Decomposition

	2013	2021
	At-risk-of-poverty rate	0.07
Difference	0.095	
Oaxaca-Blinder Decomposition		
	Explained part	Unexplained part
Intercept	-	-0.098
Age	-0.003	0.123
Living alone	0.005	0.081
In a poor region	0.0	0.0
High Education	-0.0	-0.006
Low Education	-0.002	0.009
Working	-0.0	-0.002
Divorced	0.002	-0.006
Widowed	0.0	-0.009
Total	0.002	0.093
Total (%)	1.9	98.1

Note: Values rounded to three decimal places.

Motivated by the stronger association between age and living alone on one hand, and poverty on the other, in Figure 4 I revisit the decomposition exercise from section 3.2, this time focusing only on retirees and on the period starting 2013. The first division of pensioners is according to variables identified as important in the Oaxaca-Blinder decomposition. I choose the average age of retirees in 2021 as the age threshold. Indeed, this subgroup is now more present among the poor retirees than before. While only 30% of poor retirees were above 72 years old and lived alone in 2013, the share increased to 50% in 2021. However, around half of the increase is attributable to the overall ageing of and increased single-household prevalence in the subgroup of retirees, rather than to increased poverty incidence within this group. Without such changes, the share would only increase to 41%, as I illustrate in Figure A5 in Appendix A.

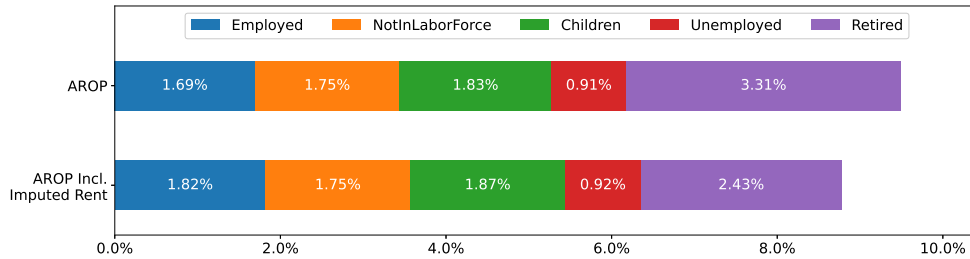


**Fig. 4:** Decomposition of the retirees' at-risk-of-poverty rate in the Czech Republic. Vertical axis denotes the share in total population.

I also divide retirees in Figure 4 by housing status, motivated by the fact that income-based poverty measures ignore savings and accumulated wealth. The income-centered EU-SILC data allow for one proxy of such wealth, which is housing. The results are striking: Only 18.4% of poor retirees live in households that have to pay rent for their housing.<sup>2</sup> Retirees who do not need to pay rent have lower costs of living and, other things being equal, can afford higher levels of consumption.

Would the potential inclusion of imputed rent in the concept of disposable income change the Czech poverty profile? As Figure 5 shows, it would. The at-risk-of-poverty rate of retirees would decrease by around one quarter if imputed rent was included. The overall at-risk-of-poverty rate would decrease from 9.5% to 8.8% in 2019, driven entirely by the retirees subgroup. In contrast, other subgroups, namely the employed, would see their poverty counts increase according to the adjusted indicator. This finding highlights the importance of housing for cost-of-living analysis and poverty evaluation. Figure A6 in Appendix A provides an international context, comparing countries for which imputed rent data was available. The inclusion of imputed rent generally, but not always, leads to a slightly lower poverty rate in comparison with the standard indicator.

<sup>2</sup>I also include households that are tenants but pay zero rent in the "own housing" group in Figure 4. Most likely these will be living in housing formally owned by a relative living outside of that household.



**Fig. 5:** Decomposition of the at-risk-of-poverty rate in the Czech Republic using the current economic status in 2019: With and without including imputed rent in the concept of disposable income. Information on imputed rent is not collected annually; 2019 is the latest year for which this information was available at the time of writing.

## 4 Conclusion

The past 20 years have been a period of successful economic development in the Czech Republic. As this paper shows, the beneficiaries of economic growth were not only the top earners or the middle class, but also households at the bottom of the distribution. The Czech Republic is on a path to curtailing the absolute poverty numbers to the bare minimum. Efforts in this area should be directed at the Northwest and Moravia-Silesia regions, where still around 5% of households have disposable incomes below the fixed poverty threshold.

In terms of relative poverty, i.e., the at-risk-of-poverty rate, the Czech Republic consistently ranks among the best performers in the EU. However, this poverty rate has unintuitively remained constant despite the drop in the unemployment rate. While the unemployed now indeed form a much lower proportion of the indicator, this decrease has been offset by the increase in at-risk-of-poverty pensioners. A particularly vulnerable subgroup are older pensioners living alone, whose risk of poverty has increased disproportionately more.

The large share of homeowners among the at-risk-of-poverty retirees highlights limitations of the poverty indicators, but also hints at potential structural problems. Owning a house signals considerable wealth, reduces the cost of living, and should allow for a higher living standard with the same income. On the other hand, housing wealth is illiquid and many retirees are not reaping the full benefits of this form of savings. The Czech National Bank recently highlighted that the "wealthy hand-to-mouth" phenomenon is indeed present in the Czech Republic (Brůha et al., 2021). Availability of financial instruments, such as home equity loans (Canner et al., 1994), could improve the situation of retirees who do not wish to sell their entire dwelling, although such instruments are not without macroeconomic risks (Mian & Sufi, 2011).

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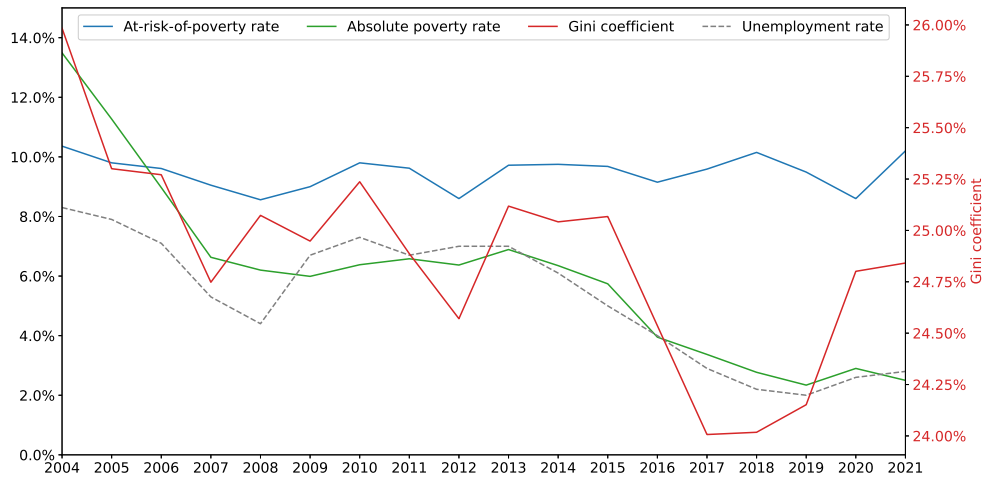
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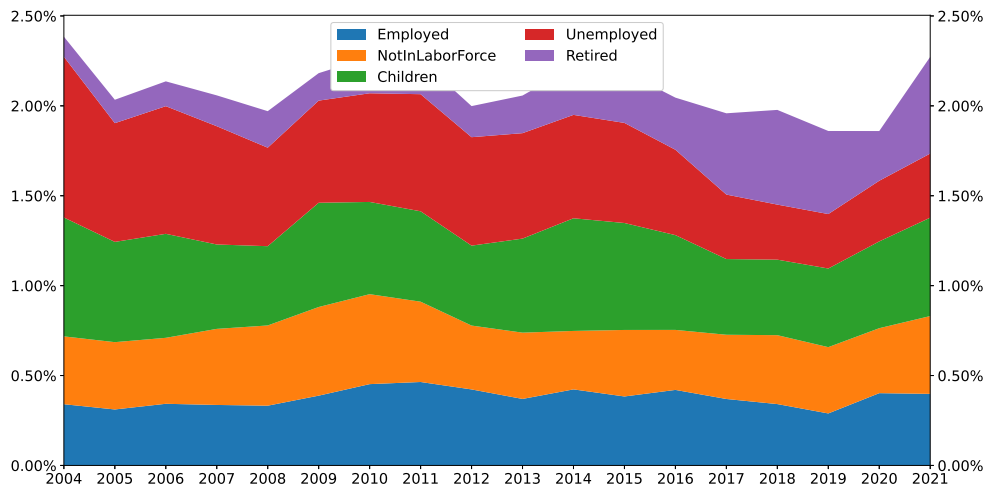
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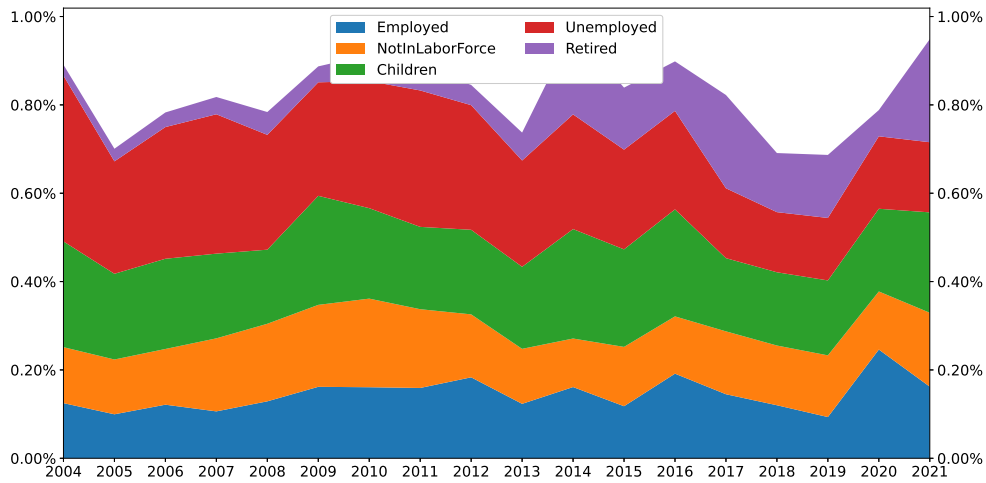
## Appendix A Additional figures and robustness checks



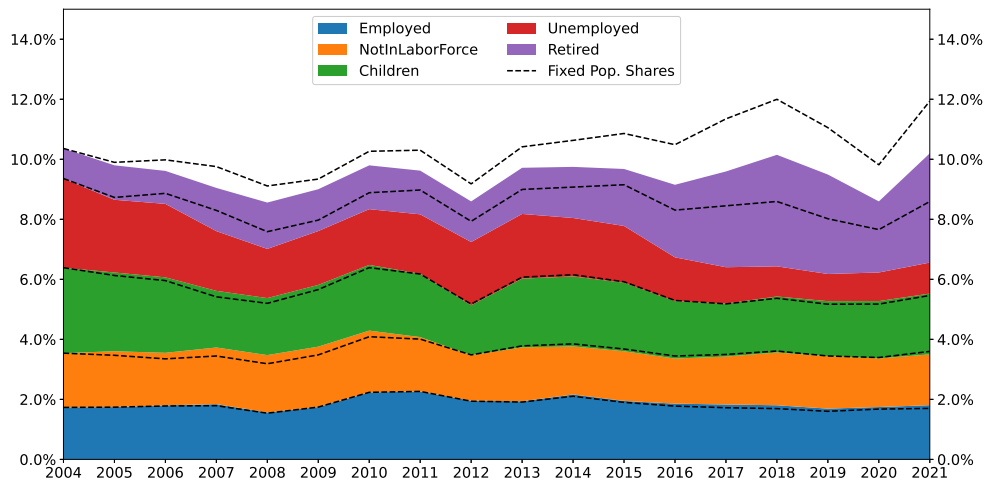
**Fig. A1:** Relative and absolute poverty rates in the Czech Republic, 2004-2021. The figure also shows the evolution of the Gini index and of the official unemployment rate.



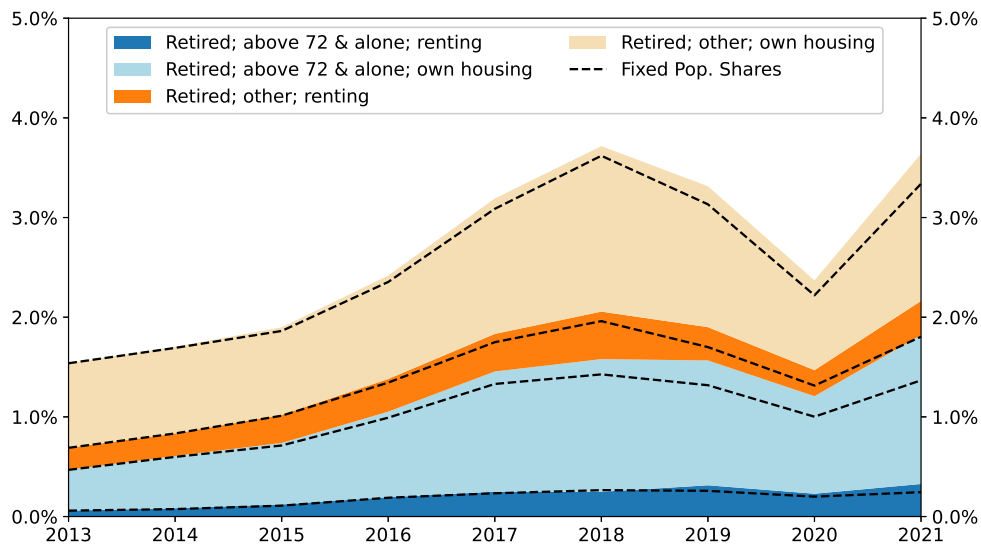
**Fig. A2:** The at-risk-of-poverty rate: Using a poverty gap index ( $\alpha=1$  as in Kanbur, 1987; Foster et al., 1984) instead the headcount ratio ( $\alpha=0$ ).



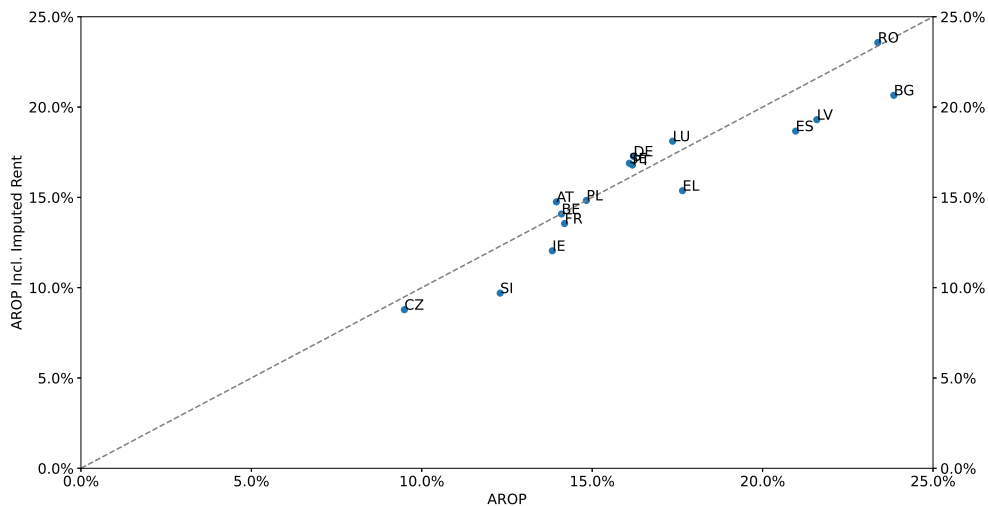
**Fig. A3:** The at-risk-of-poverty rate: Using a squared poverty gap index ( $\alpha=2$  as in Kanbur, 1987; Foster et al., 1984) instead the headcount ratio ( $\alpha=0$ ).



**Fig. A4:** Decomposition of the at-risk-of-poverty rate in the Czech Republic using the current economic status. Dashed lines show a counterfactual decomposition where population shares are fixed at the 2004 level and only the subgroup-specific at-risk-of-poverty rate varies.



**Fig. A5:** Decomposition of the retirees' at-risk-of-poverty rate in the Czech Republic.



**Fig. A6:** The at-risk-of-poverty rate in 2019 with and without including imputed rent in the concept of disposable income. Information on imputed rent is not collected annually; 2019 is the latest year for which this information was available at the time of writing.

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Univerzita Karlova v Praze, Fakulta sociálních věd

Institut ekonomických studií [UK FSV – IES] Praha 1, Opletalova 26

E-mail : [ies@fsv.cuni.cz](mailto:ies@fsv.cuni.cz)

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