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Possible changes over time: poverty among migrants in the European Union

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ABSTRACT

Over the past decade, the countries of the European Union have faced an increase in immigration flows from less developed and politically stable countries. The movement of migrants created new socio-economic challenges that affected their well-being. Thus, it is fair to ask: what influences the income level of migrants? The aim of the article is to study the influence of the selected determinants on the probability of poverty among migrants in the European Union. Using EU-SILC data for 2014 and 2018, we also explore possible changes in the strength of the determinants of poverty, depending on the pre-crisis and post-crisis periods associated with an increase in immigration. We report that immigrant status expressed by the birth outside the EU or holding other than EU citizenship increases the likelihood of being poor. The applied logistic model show that migrant poverty is associated with the level of education achieved, marital status, occupation, and housing ownership. Using macroeconomic variables, we find that the ratio of migrants to population, population size, and social-democratic welfare regime reduce the likelihood of poverty among migrants.

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1. Introduction

Human society is differentiated by personal income cross-nationally and within individual countries. Classical economic tradition holds that people are ultimately to blame for their level of income. On the other hand, neoclassical economists offer numerous causes for poverty, including market failures that are beyond one's control (Davis & Sanchez-Martinez, 2014). Historically, poverty has been defined in two ways, as either absolute or relative. Absolute poverty was perceived as a minimum level of needs that did not change over time. According to Sen, persons experience

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poverty when they are denied essentials such as food, shelter, clothing, education, and opportunities to engage in social activities (Haslam et al., 2017). The concept of relative poverty which was introduced by Townsend (1979) is a more complete concept and changes over time along with changes in society. According to Townsend, poverty is subjective. It should be noted that the problem of poverty can be measured in different ways. Literature on poverty analysis in the European Union adheres to the commonly accepted European measures of relative poverty, which is defined as 60% of median equivalized household disposable income.

The physical condition of immigrants who suffer from deprivation and are below the relative poverty line is a well-known and intensively researched issue (Bárcena-Martín & Pérez-Moreno, 2017; Caner & Pedersen, 2019; Gustafsson et al., 2022; Kesler, 2015). Discriminatory practices in the host country, inadequate language skills, limited access to education, difficult conditions for integration into the local labor market, limited social networks, and others contribute to these realities of immigrants (Lukasiewicz, 2017). These conditions create an unfavourable situation for some migrants, dragging them into poverty and forcing to work in low-skilled and poorly paid jobs.

The increase in migration flows has proven to be a major challenge for both the EU and the Member States and has had specific consequences in terms of economic growth (Bouoiyour et al., 2019), social inequality and income inequality (Guzi et al., 2021), and social marginalisation in host societies (Phillimore & Goodson, 2006). The issue of integrating new migrants into the economic, cultural, and institutional environment of host countries has become a thorny topic in internal debates on migration policy (Buonnano, 2017). In this context, migrants are perceived as lacking in well-being, which negatively affects the cultural (language, traditions, religion), structural (access to the labor market), social (networks), and emotional (Esser, 1980) dimensions. Numerous studies have examined the poverty risks and deprivation of migrants as a general category as well as those of the native population (Bárcena-Martín & Pérez-Moreno, 2017; Caner & Pedersen, 2019; Gustafsson et al., 2022; Kesler, 2015). Generally, we can distinguish between two major approaches when studying migrant poverty, including household socio-demographic parameters and the macro-level environment. Recent investigations have examined the multilevel concurrent method to assess the micro- and macro-level variables effecting material deprivation (Bárcena-Martín & Pérez-Moreno, 2017). Despite existing literature that controls for household-level and national-level parameters, we have incorporated institutional preconditions as well. Since such a host country environment could create favourable conditions for coping with migrant poverty, we have included welfare regime variables when applying the institutional background.

The history of the European countries is strongly marked by international migration flows (Van Mol & De Valk, 2016), often with a humanitarian background (Borjas & Crisp, 2005). Major contributors to the EU's demography include the long-lasting processes of decolonisation, security tensions near its borders, domestic political turmoil and economic conditions (Kučerová, 2022). The Second World War alone created more than 40 million displaced persons and set the stage for further inflows and outflows. The emergence of authoritarian regimes in southern European

countries and Turkey, as well as the wave of independence movements in Africa, encouraged the influx of migrants to France and Germany in the 1960s and 1970s (Castles & Loughna, 2005). This issue is even more relevant in the context of current events related to the war in Ukraine, which produced nearly 7 million displaced persons across Europe in the first half of 2022 alone (United Nations High Commissioner for Refugees [UNHCR], 2022). These and other political and security events have had a significant impact on migration flows to Europe and can be linked to factors such as geographical proximity, former colonial ties, common language and culture. The European Union, after North America, remains the second largest place of residence for international migrants. According to available Eurostat data, the total number of immigrants to the 28 EU Member States increased by 2.7 times between 1990 and 2019, with the highest growth rates in 2006 and 2015 (Eurostat, 2020). As a result of political and security turmoil in the Middle East and North Africa, there was a significant influx of migrants during this period (Marfleet & Hanieh, 2014).

The main objective of the paper is to examine the key determinants of poverty among migrants in the EU with a view to demonstrate potential practical benefits for European migration and integration governance. Our main questions are the following: what are the parameters that drive poverty among immigrants? and how did the effect of these parameters change after the European migration crisis in 2015–2016? To achieve the main purpose, we use selected macro variables such as income, social benefits, the ratio of migrants to the population, and the type of welfare regime and household-level data from the European Union Statistics on Income and Living Conditions database (EU-SILC). Identifying the macro-economic and household-level determinants of poverty is a crucial concern for poverty reduction measures that will benefit both the integration policy makers and immigrants. We applied a combination of household characteristics and macroeconomic variables that allow an assessment of the detailed mechanism of poverty at the household level together with substantial country-level characteristics. To study the selected determinants of poverty we applied the logistic model that allows us to analyse their correlation with poverty incidence among migrants. Determinants of poverty odds are thoroughly introduced in methodological part of the paper. We utilized 60% of median equivalized household disposable income to define the poverty line. Unlike previous studies, we compared the results in 2014 with those for 2018 to verify possible changes related to the influence of the realities and consequences of the European migration crisis on the likelihood of being poor. The selected years enabled us to include the time factor of the impact of the migration crisis, which could become a critical parameter for the economic performance of the host country and the distribution of income between migrants. The migration realities have had a significant impact on the socio-economic environment of EU host countries (Aiyar et al., 2016; Damoc, 2016; Ruist, 2020), which may have affected the potential weight of poverty determinants. The question of the current impact of determinants on migrant poverty after the crisis in the mid-2010s and the incorporation of changes within functioning welfare regimes is the novelty of the paper and its key contribution to the existing body of literature. The results show that social benefits, marital status, and level of education are robust determinants that reduce the risk of poverty among migrants. In contrast, migrants in low-level jobs face increased

deprivation probability, as in-work poverty remains an inherent case for the major countries under study (Marx & Nolan, 2012). When checking for possible changes from 2014 to 2018 related to the realities and consequences of the migration crisis, we cite the decreasing probabilities of being poor for both natives and immigrants. Last, but not least, the social welfare regime benefits the targeted group of migrants and is associated with reducing the likelihood of becoming poor.

2. Literature review

The literature on migration has long viewed the push-pull framework as an important explanation of the movement of persons between regions usually based on income differences (Harris & Todaro, 1970; Lee, 1966). The level of an individual's income determines not only the decision to relocate but also the degree of integration in the host country. Analyses of migrant income levels have attracted the attention of academics in recent decades as the issue of integration has become a hotbed of discussions in high-income developed regions. Income is a fundamental precondition for immigrant integration and a critical issue for the smooth adjustment to the host social and economic environment (Bárcena-Martín & Pérez-Moreno, 2017; Blume et al., 2007; Muñoz de Bustillo & Antón, 2011). The problem of integration is even more relevant in the developed regions of Europe and North America that have faced a high rate of immigration. Countries such as the US (Robila, 2007), Canada (Kazemipur & Halli, 2001), and the Scandinavian nations (Galloway et al., 2015) have become the subject of research on the poverty of immigrants; however with some exceptions, recent literature has not addressed the situation throughout the European Union and its more or less advanced Member States.

Country-specific papers that report a higher probability of poverty for migrants include those by Muñoz de Bustillo and Antón (2011) for Spain, Galloway et al. (2015) for Denmark, Sweden and Norway, Jakobsen and Pedersen (2017) for Denmark, and Caner and Pedersen (2019) for Germany and Denmark. Blume et al. (2007) applied the probability model based on unique data on immigrants and natives in Sweden and Denmark to examine factors contributing to the incidence of poverty. They controlled for factors such as length of residence, place of origin, social benefits, and certain household characteristics. The authors argue that a migrant's origin and the structure of social benefits for households with children are important factors affecting the likelihood of poverty. Kesler (2015), for instance, examined immigrant-native poverty in Sweden, Germany, and the UK that differ in their institutional preconditions affecting the home social environment. She controlled for household-level parameters including age, education, family structure, and attachment to the labour force, and suggested that the poverty thresholds vary among countries depending on the internal social circumstances expressed through institutional mechanisms for overcoming poverty and promoting employment. Kelser pointed out that Sweden, thanks to its social-democratic welfare regime, has the lowest poverty rate among migrants, although a huge inequality gap exists between migrants and the native population. Hanmer et al. (2020) conducted a rare study on gender issues and the prevalence of poverty among migrants in Jordan, which, in contrast to previous

studies, significantly expands the problem of examining the determinants of poverty among forcibly displaced persons.

Unlike country-specific studies that take into account differences in national migration policies or welfare regimes, the current literature covers the study of poverty of immigrants in the EU Member States (Bárcena-Martín & Pérez-Moreno, 2017; Cimpoeru, 2020; Hooijer & Picot, 2015; Lelkes & Zólyomi, 2011). The study by Bárcena-Martín and Pérez-Moreno (2017), who combined household data and macro variables to examine differences in poverty among natives and immigrants, found a significant effect of country-specific variables. Among the micro-level factors, the authors included factors such as gender, education, age, employment contract and home ownership from the EU-SILC. In addition, macro-level factors such as unemployment, in-work poverty, gross national income per capita and social benefits were included to control for country-specific macro-level variables. The latest available literature addresses the fate of older migrants who do not fully participate in the labor market of the host society and whose social integration is significantly hampered (Gustafsson et al., 2022). The authors applied probit regression to control for education, family structure, age, country of origin, years of migration and residence status of older migrants in Denmark and Sweden and emphasized a higher incidence of poverty associated with the period of immigration and country of origin. Cimpoeru (2020), for example, provided a simple and general examination of macro variables and their influence on poverty among young European citizens and immigrants in 23 countries. Her results suggest that poverty and social exclusion among young migrants and young natives are mainly caused by unemployment and inequality. The author also controlled for income, democracy-specific factors, and education.

The high likelihood of poverty among migrants vis-a-vis natives is a common factor in the above contributions, and the study of poverty determinants underlines the scientific interest of this paper. An in-depth analysis of the academic literature allowed us to identify the most important factors, among others, that are most frequently studied. Education and other components of human capital (Awan et al., 2011), income inequality (Karagiannaki, 2017; Zaman et al., 2020), unemployment rate (Krajewska, 2014; Saunders, 2002), welfare regime (Sainsbury, 2012), and microeconomic factors including household structure (Bárcena-Martín & Pérez-Moreno, 2017; Blume et al., 2007) seem to be crucial factors that affect material deprivation. To achieve this paper's objective, we combined household-level data obtained from the EU-SILC with country-specific macroeconomic variables. To fill the literature gap on poverty incidence among immigrants, this study introduced welfare regime parameters for the 28 EU countries and compares two time periods that reflected socio-economic changes and migration policy development. The type of welfare regime (Fenger, 2007; Ferragina & Seeleib-Kaiser, 2011) plays a crucial role in the distribution of income and social benefits for migrants. We start from the theoretical consideration of Sainsbury (2012) and Hooijer and Picot (2015), according to which, a social democratic welfare regime is best able to prevent the spread of poverty among immigrants and has a significant advantage over the liberal or corporatist regimes described by Esping-Andersen (1990).

3. Data and Methodology

To achieve our goals, we used data from the EU-SILC database which contained target variables to obtain information on the following: income, poverty, living conditions, education, and social exclusion. This dataset includes cross-sectional data for a specific period as well as data on variables regarding household income, housing conditions, education, health, employment, citizenship, and other background information. The database of respondents is structured by the year of observation and by country and is divided into two main fields: (1) personal database; (2) household database. We explored two different documents of variables collected at the household level (household register, household data) containing data on living conditions and income. Two more documents with data at the individual level (personal data, personal register) contain information about people aged 16 and above regarding employment, education, and health. These documents are organized in overlapping panels with a 4-year rotation period of respondents. Every fifth year, all of the households are totally refreshed (the rotational design). The sample selection is based on a number of subsamples that are representative of the entire population and are similar in size and design. Households and their current members who were on the territory of member states at the time of data collection make up the reference population of the EU-SILC (European commission, 2019). We utilized the cross-sectional EU-SILC database for the years 2014 and 2018 to verify potential alterations in the relationship between the likelihood of poverty and the effects of the European migration crisis. The motivation for choosing the periods under study was predetermined by factors such as the culmination of the migration crisis of 2015–2016 and the 4-year rotational nature of the respondents in the EU-SILC database. We converted, concatenated, and merged the observations for the EU Member States by using the free and open-source RStudio program. The period characteristics of the database ensure that the response cycle will occur every 4 years and there will be no duplication of respondents. The comparative analysis allowed us to draw conclusions about changes in the political environment after the onset of the migration crisis. Our working dataset was built by combining country-specific observations. In order to obtain a set of personal data on households below the poverty line or with 60% of the median equivalent disposable income, we combined personal data with household data by household ID and country of observation. This provided us with a database that included observations for the EU and the UK with person and household-level characteristics, totalling 521,778 (2018) and 458,838 (2014) observations. Our primary objective was to investigate the factors that contribute to poverty among people who have migrated to the EU at some point in time. Thus we chose individuals who were born outside of EU Member States from the personal registry. The available literature (Bárcena-Martín & Pérez-Moreno, 2017) prefers to use the place of birth criterion, since citizenship may change over time. People born outside the EU were included in the subsample, including those who already obtained EU citizenship. We address this by taking a second subsample from the personal data file that contains only people without EU citizenship, comprising a dataset of 12,305 (2018) and 10,462 (2014) observations. A subsample of the results is shown in Appendix Figure A1. The grey bars represent the number of observations for each member country and the dark areas represent

the number of observations with below 60% of the equivalent disposable income threshold. Poverty rates were higher among immigrants than the local population. Of the 470,866 observations, 69,917 were below the threshold for citizens, which amounted to 14.85% in 2018. In 2014, there were 421,494 observations for citizens. Of those, 72,284 were below the threshold, which amounted to 17.15%. Here we can note a decrease in poverty across the EU from 2014 to 2018 among the citizens of Member States. The same measurement for immigrants was at 29.25%, or out of the 30,524 observations, 8,928 people had equivalent disposable income below 60% of the threshold for 2018. In the year 2014, the number of migrants was 25,120, with 8,022 people, or 31.93% below the 60% threshold. We were able to conclude that being born outside the EU affects the distribution of poverty. However, there was a certain decline of poverty rates from 2014 to 2018 for local citizens and migrants. Poverty among respondents declined from 2014 to 2018. Unfortunately, the mere fact of not being born in an EU member country may result in a two-fold increase in poverty incidence. In order to account for citizenship, we made another sub-sample that contained only those individuals without EU citizenship. For the year 2014, the number of poor represented 4,160 people out of 10,462 observations, or 39.76%. We also found that the income of 4, 546 out of 12 305 observations or 36.94% was below the poverty threshold in 2018. This means that the decline in poverty rates was consistent across all our subsamples from 2014 to 2018, despite growing migration inflows. This shows us that being born outside the EU and not being a citizen increases the incidence of poverty. At the same time, poverty declined among migrants in 2018 in comparison with 2014. It could be argued that this could be attributed to the impact of programs, policies, and measures adopted in the aftermath of the migration crisis. This qualitative observation may be associated with an overall improvement in the economic situation and an increase in well-being between the years of observation.

Appendix Table A1 contains statistical data, such as the levels of the poverty thresholds for the economies of EU Member States. Due to varying income and cost of living levels in member states, there is a wide range in poverty standards, and in certain cases, the 60% poverty threshold in some Member States is greater than the average income in others. For instance, in Denmark, 60% of the median comparable household income or poverty line is €18,062, while in Bulgaria, half of the population lives with an average income of less than €4,224. The varying cost of living conditions are to blame for these statistical discrepancies. International agencies including the OECD, the World Bank, and the UN provide data on other regressors. As a control variable for varying degrees of social benefits in the Member States, we utilized social spending as a share of GDP. In order to raise household income and combat poverty, social benefits can be directed at low-income households, the elderly, the young, and the unemployed. Private transfers between households are not included in the OECD data on social spending since they are not regarded as 'social' transfers. It also considers how the tax structure affects both direct and indirect taxation, as well as tax incentives for social purposes (OECD, 2022). We gauged the condition of the labor market using the variables on sphere of occupation, labor contract status and employed at risk of poverty. According to the data presented above, people who were born outside of the EU and even more so those who hold non-EU passports have a

Table 1. Dependent variable and parameters to be estimated.

Variable	Description	Source	Measure	Parameter estimate
Poverty	Income below poverty line measured by 60% equivalized disposable household income	EU-SILC	binary	
GNIpc	Gross national income per capita	World Bank	USD	*ß<0*
Education	Attainment of higher education level and above	EU-SILC	binary	*ß<0*
Female	Respondent's gender	EU-SILC	binary	*ß>0*
Married	Marital status of respondent	EU-SILC	binary	*ß<0*
Elementary	Elementary occupation of respondent	EU-SILC	binary	*ß>0*
Owner	Tenure status of respondent	EU-SILC	binary	*ß<0*
Temporary	Temporary type of contract	EU-SILC	binary	*ß>0*
Social benefits	Social benefits to GDP ratio	OECD	%	*ß<0*
Migration	Migrant to population ratio	Authors' calculations	%	*ß>0*
Social-democratic	Social-democratic welfare regime	Set of literature	binary	*ß<0*
Conservative	Conservative welfare regime	Set of literature	binary	*ß<0*
Employed at risk	Employed at risk of poverty	Eurostat	%	*ß>0*
Population	Total population	World Bank	persons	*ß<0*

Source. Processed by authors.

higher incidence of poverty. We employed a logistic regression model to determine which factors are linked to poverty among immigrants. The relevance of factors, including education level, marital status, tenure status, temporary employment, labor contract status, primary occupation, and sex were chosen as determinants of immigrant poverty in our study.

To investigate poverty determinants for migrants we applied a standard logistic regression model that allowed us to control for a comprehensive set of both dummy and continuous variables as independent and binary dependent parameters. The logistics model has been carried out generously and is most often used to scrutinise the relationship between the poverty status of individuals or households and a wide range of explanatory variables (Aisa et al., 2019; Caner & Pedersen, 2019; Galloway et al., 2015; Kesler, 2015). We computed a binary variable to arrive at a definition of the poverty of a household, thus using poverty EU-SILC data. 1 represents an observed household that falls under the national poverty line and 0 represents the other households. Like Kesler (2014, p. 45) we applied the basic form of logistic regression expressed by the following log-likelihood:

$$\mathrm{Ln}\left(\mathrm{p_i}/1 - \mathrm{p_i}\right) = \mathrm{a} + \mathrm{bx} + \mathrm{e} \tag{1}$$

where p_i is the probability of poverty for *i*th individual in the years under study, b is the vector of variables to be estimated, and x is the vector for a set of predictor variables.

To explain the selection of relevant parameters which, according to theoretical concepts and empirical results, are related to the likelihood of poverty, we approximated some basic postulates. As regressors, we controlled for macro-level and household-level variables. According to the relevant literature, economic size and

prosperity matter when dealing with poverty (Adams, 2004). To address this issue, we studied the basic macroeconomic parameter of GNI per capita, assuming the positive outcome of reducing poverty with a higher aggregate production level. Social benefits in proportion to economic output seems to be necessary here as well. Thereby, we controlled for variables measuring the distribution of wealth among different social stratum and introduced social benefits as a share of GDP. The proportion of immigrants to total population was also applied to reflect the migration background in host nations . The huge mass of immigrants in particular countries reflect the supply of labor, which creates pressure on the labor market in specific industries typical for newcomers and thus leads to a disproportionate evaluation of their jobs in comparison to natives. Therefore, we perceived this indicator as directly proportional to the growth of material deprivation. We also introduced total population to control for the size of the labor market. This is based on the assumption that population matters, considering the higher chances for immigrants to be employed in a massive labor market. We chose the variable defining the risk of poverty among the employed as the next macro-level parameter. The higher the number of employed who face the risk of poverty, the greater the likelihood of succumbing to poverty; this number is critically important in relation to immigrants. This population group is frequently cited in scientific literature when studying immigrant-native poverty gaps (Bárcena-Martín & Pérez-Moreno, 2017).

We introduced the gender parameter of head of household to capture household-level variables. Thus, the value of 1 was used to identify female respondents and 0 was used to identify male respondents. This parameter is crucial in addressing gender bias, as female heads of household frequently suffer more from material deprivation (Aisa et al., 2019). To supplement this parameter, we explored marital status, where 1 equals being married and 0 equals being single. Being married may or may not contribute to improving the material security of the family. Among scientific studies mentioned in literature reviews, education seems to be one of the crucial determinants when eliminating poverty (Van der Berg, 2008); therefore we used level of education as a further parameter. Higher education level accounts as a proxy for the social-economic status of the highly skilled labor force, where 1 denotes a respondent who has a tertiary level of education or higher and 0 denotes a respondent with less than a tertiary level of education. Here we consider the tertiary level of education as a contributing factor to obtaining better paid employment. Employment is central determinant of material wellbeing, and to capture this issue we added variables reflecting the specifics of having a job. Firstly, the variable that defines the type of work contract was added, where 1 refers to temporary employment and 0 refers to permanent employment. Short-time contracts are usually not well paid and make employees more economically vulnerable and less shock resistant. Secondly, using 10 groups of occupations available in the EU-SILC database, we defined the dummy for elementary jobs. Simple manual occupations are less frequently evaluated and in combination with other household-level determinants can contribute to falling below the poverty line. This variable is critical, especially for immigrants who are often employed in manual labor jobs. An important component of well-being is ownership of residential property, which indirectly reduces the chances of poverty. To control

for this issue, we computed a dummy where1 refers to a person who owns a dwelling and 0 refers to a person who does not own a dwelling. Unlike other studies, we included the welfare regime variable to control for possible redistribution effects of the EU Member States. Against some considerations that social transfers are less likely to lift immigrants out of poverty (Bárcena-Martín & Pérez-Moreno, 2017; Sainsbury, 2012), we expect that the functioning of a social-democratic regime will have a positive effect on poverty reduction. Thus, we argued that immigrants will be less likely to live under poverty threshold in countries with such a welfare regime in comparison to others. To perform a robustness check, we added the variable of a conservative welfare regime (Table 1).

4. Results

According to the results of the logistic regression, 7,805 observations were missing or incomplete in the subsample for 2014. In contrast, 9,703 observations were missing or incomplete in the subsample for 2018. This is due to the fact that the applied software discards an observation when a value is missing. Due to its statistical significance, this model was shown to be 76.1% accurate in 2014 and 74.9% accurate in 2018. This shows that the model has an appropriate level of accuracy, fits the data adequately, and is statistically significant.

The ratio of social benefits to GDP is statistically insignificant; however, the dummy variable related to social welfare regimes policy is negatively and statistically significant. This indicates that increasing wealth redistribution through welfare regimes reduces the probability of being poor. Although the result is consistent across both databases, it is even stronger in 2018 as the reduction of poverty probabilities was even greater from a socioeconomic standpoint. GNI per capita shows a positive coefficient, but the results prove to be statistically insignificant. This result would indicate that migrants fall below the poverty line more often in countries with higher income per capita, but also with a significantly higher poverty threshold. It seems that the migrants to population ratio suggests that with higher percentages of migrants, the probability of being poor decreases. The *p*value indicates that this is a statistically significant result.

Our model reported that values for social benefits as a percentage of GDP are insignificant from a statistical standpoint, which is in contrast with the dummy responsible for the policy of the welfare regime being social-democratic. The interpretation is that migrants are less likely to fall into poverty in countries with a more generous welfare regime system and is consistent for 2014 and for 2018; this effect is stronger in comparison with the conservative welfare regime in both instances. Being below the poverty threshold in a country where the welfare regime was social in 2018 was 0.498 times, and 0.585 in 2014, times that of being below the poverty threshold in another policy regime, controlling for all other variables being constant. This could also be interpreted to mean that the policy regime became even more important and impactful in 2018 in comparison with 2014. Furthermore, the absolute amount spent on social benefits was less significant for poverty among migrants than the policy of the welfare regime of a state which is significantly related to reducing poverty.

Most of the selected personal-type variables proved statistically significant with the only difference in results for the dummy variable gender. Our expectations were met in the case of tenure status which proved to be a significant factor in reducing the probabilities of falling below the poverty line. This means that being an owner of accommodation significantly reduces the probability of being in poverty (Table 2).

The factors used to adjust for education, elementary occupation, temporary job contract, and marital status all showed statistical significance and were completely consistent with theoretical predictions. One of the most significant discoveries and one of the factors that had the greatest impact was education. It produced a negative value, indicating that migrants with at least secondary education are less likely to fall below the poverty line. It has the greatest impact on lowering the likelihood of financial difficulty. In contrast, from 2014 to 2018, the impact of education even grew. Under the assumption that all other factors remained constant, the probability of having tertiary education or above in 2018 and being below the poverty line at the same time was 0.499 (compared to 0.548 in 2014). To put it another way, it is expected that those with higher levels of education are less likely to be impoverished than others. A comparison of the data between 2018 and 2014 reveals that level of education has become significantly more significant in predicting poverty. The results are as expected when we take marital status (married) into account; being married lowers the risk of being impoverished. The odds of being married in 2018 and below the poverty line were 0.658 (or 0.563 in 2014) times higher than the odds of being single and below the line. The likelihood of being poor lowers with marital status, but the effect is less pronounced than that of education level (an important determinant).

Dummy variables regulate the employment parameters, which means that both the type of occupation and the transitory nature of the employment contract produced statistically significant differences and are strong predictors of the rise in the likelihood of poverty. In 2018, the likelihood of living in poverty rose by 59.9% for those working in primary jobs, compared to 60.39% in 2014. The likelihood of dipping

Table 2. Coefficient estimates for independent variables.

	2014			2018		
	Coefficient	Std. Error	*p*-Value	Coefficient	Std. Error	*p*-Value
const	−0.948084	0.222815	<0.0001	−0.775455	0.203121	0.0001
GNIpc	1.49E-06	1.68E-06	0.3778	3.43E-06	1.42E-06	0.0157
Education	−0.600015	0.0491056	<0.0001	−0.694212	0.0420764	<0.0001
Female	−0.0607462	0.040431	0.133	−0.0148282	0.0339807	0.6626
Married	−0.573075	0.0397441	<0.0001	−0.417590	0.0338186	<0.0001
Elementary	0.472485	0.0461484	<0.0001	0.46952	0.0416717	<0.0001
Owner	−0.499088	0.0495231	<0.0001	−0.261219	0.0413697	<0.0001
Temporary	0.814865	0.0477714	<0.0001	0.692698	0.0401303	<0.0001
Social benefits	0.000366176	0.0008131	0.6525	0.0130838	0.00902281	0.147
Migration	−0.0265556	0.0031886	<0.0001	−0.0255291	0.00255542	<0.0001
Social-democratic	−0.534748	0.134655	<0.0001	−0.695891	0.100842	<0.0001
Conservative	−0.343260	0.109698	0.0018	−0.551194	0.0773514	<0.0001
Employed at risk	0.0087353	0.00128824	<0.0001	0.00507586	0.00079327	<0.0001
Population	−4.65953e-09	1.37E-09	0.0007	−4.16021e-09	1.35E-09	0.0021
Adjusted R-squared	0.079319			0.06122		
Number of observations	15928			20820		
Number of cases correctly predicted	12117 (76.1%)			15591 (74.9%)		

Source. Authors' calculations.

below the federal poverty level rose by 99% if the contract was only temporary in 2018, compared to 125.8% in 2014. The drop in predicted probability from the comparison of the data for the years 2018 and 2014 suggests that conditions have improved, although certain factors continue to be significant predictors of poverty among migrants.

5. Discussion

The determinants of poverty among those who migrated to the EU area should be discussed regarding several issues of high importance. The results can be described as follows:

1. Overall poverty among migrants is more than 200% higher compared to that of local citizens. According to our research, it is still difficult to find a suitable way to develop and introduce measurements which, according to our research, are highly politicized nowadays. Many arguments and counterarguments, including methodological criticism, can be cited, especially regarding the household income measurement of poverty (60% median equivalised disposable household income). Thus, policy-based measurements can provide us, but not just us, with deep insights into how key determinants can be presented to authorities in order to improve the integration process of asylum seekers.
2. Certainly, it can be argued that migrants, especially forcibly displaced persons, are more vulnerable, whereas access to the labor market shows a certain level of restriction or even unavailability regarding the social system. And this may lead to an increased probability of falling into poverty. We can state that the active use of social programs and policies has led to an increased level of material help in the affected households. All-in-all, these steps were followed by decreased levels of poverty in the mentioned households.

In their studies of the migrant-native poverty gap Jakobsen and Pedersen (2017) and Bárcena-Martín and Pérez-Moreno (2017) came to the conclusion that gender was a significant factor in the case of poverty prediction, namely among migrants from 2011 to 2012. According to our dataset from 2014 and 2018, we came to the conclusion that gender may not be relevant when predicting poverty among migrants. This could be the result of the impact of gender policy on reducing the gender gap.

Furthermore, as a final result, including the variable of occupation with the aim of studying the incidence level in the migrant groups is only sporadically published in relevant literature sources. However, we incorporated it in our analyses. The possibility of labour market access could also be named as a relevant factor in reducing the risk of poverty. With emphasis on the practical context of our findings, their relevance is important for policy makers and the type of occupation must also be considered as one of the key factors (critical) when emerging from poverty and attaining satisfactory level of integration of migrants into the host societies.

6. Conclusions

This paper aimed to examine the probability of poverty among immigrants in the 28 EU Member States by applying a logistic regression model. To define the poverty

threshold, we utilized 60% of median equivalised disposable household income using the EU-SILC database. To capture the temporal changes in poverty odds, the two basic periods of 2014 and 2018 were observed. Applying the logistic regression model enabled us to control for a few types of parameters, including macro-level regressors such as GNI per capita and employed at risk of poverty, institutional parameters such as social benefits to GDP and the welfare regime, household structure variables (head of household, marital status, tenure owner or type of job contract), and educational parameters reflecting the impact of educational. We also used the migrants-to-population ratio to incorporate the background of migration policies. This approach allowed us to analyze possible changes in the probability of material deprivation that could be the result of transformations in the socio-economic environment of receiving countries and the application of necessary migration/asylum policies in response to the migration crisis in 2015–2016. Empirical results on the studied economic parameters also allowed us to assess the efficacy of theoretical views on the socioeconomic aspects of poverty in general and among migrants.

The contribution of this paper is its analysis of a comprehensive set of poverty determinants among migrants encompassing welfare regimes and the socio-economic environment of all EU Member States. Thus, the capturing temporal changes in probabilities of poverty at the time of the migration crisis represents the key element of the research. The applied model shows an expected result reflecting available literature to date. Among the most significant determinants that increase the likelihood of being poor is immigrant status expressed by birth outside the EU or holding citizenship of a non-EU country. It is important to note the decreasing probabilities of being poor for both natives and immigrants when comparing the targeted periods of 2014 and 2018. According to this trend, the influx of newcomers during the crisis of 2015–2016 affected the socio-economic environment of the receiving countries and stimulated migration policies aimed at improving the well-being of immigrants. In other words, the probability of falling into poverty for migrants decreased. Social welfare regimes, which are quite widespread in the targeted group of nations, are reducing the likelihood of people falling below the poverty line, at least from a macroeconomic point of view. This supports the theoretical assumptions that the poverty predictions for migrants are much lower in countries with higher rates of income redistribution and generous assistance programs. Social protection programs assist individuals and households, particularly among the poor and vulnerable, in coping with crises and economic shocks by encouraging employment, boosting productivity, providing education, and safeguarding the aging population. The percentage of migrants to the overall population and gross income was shown to be statistically negligible or to have little impact on poverty incidence among the targeted group of the population. The likelihood of poverty was shown to be significantly reduced by education and marital status. Migrants with university education have a lower likelihood of living in poverty. Being married also lowers the likelihood of poverty. Labor characteristics also produced statistically significant findings and demonstrated that migrants with simple jobs and short-term employment contracts were more likely to fall below the poverty line. Most determinants' effects are consistent with current findings in the pertinent literature and theoretical presumptions.

The results can be applied to integration and social policies for migrants within the European Union, including the creation of asylum and migration policies aimed at a smooth adjustment process. Emphasis should be placed on the development of a social-democratic welfare regime and increasing income redistribution. It appears that reuniting migrant families, as well as improving the educational level of the target population groups, are critical in this context. We believe that the results of this research are relevant and essential for managing and overcoming the challenges associated with global migration flows, in particular regarding the intensification of immigration into the European Union during the last decade.

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Appendix

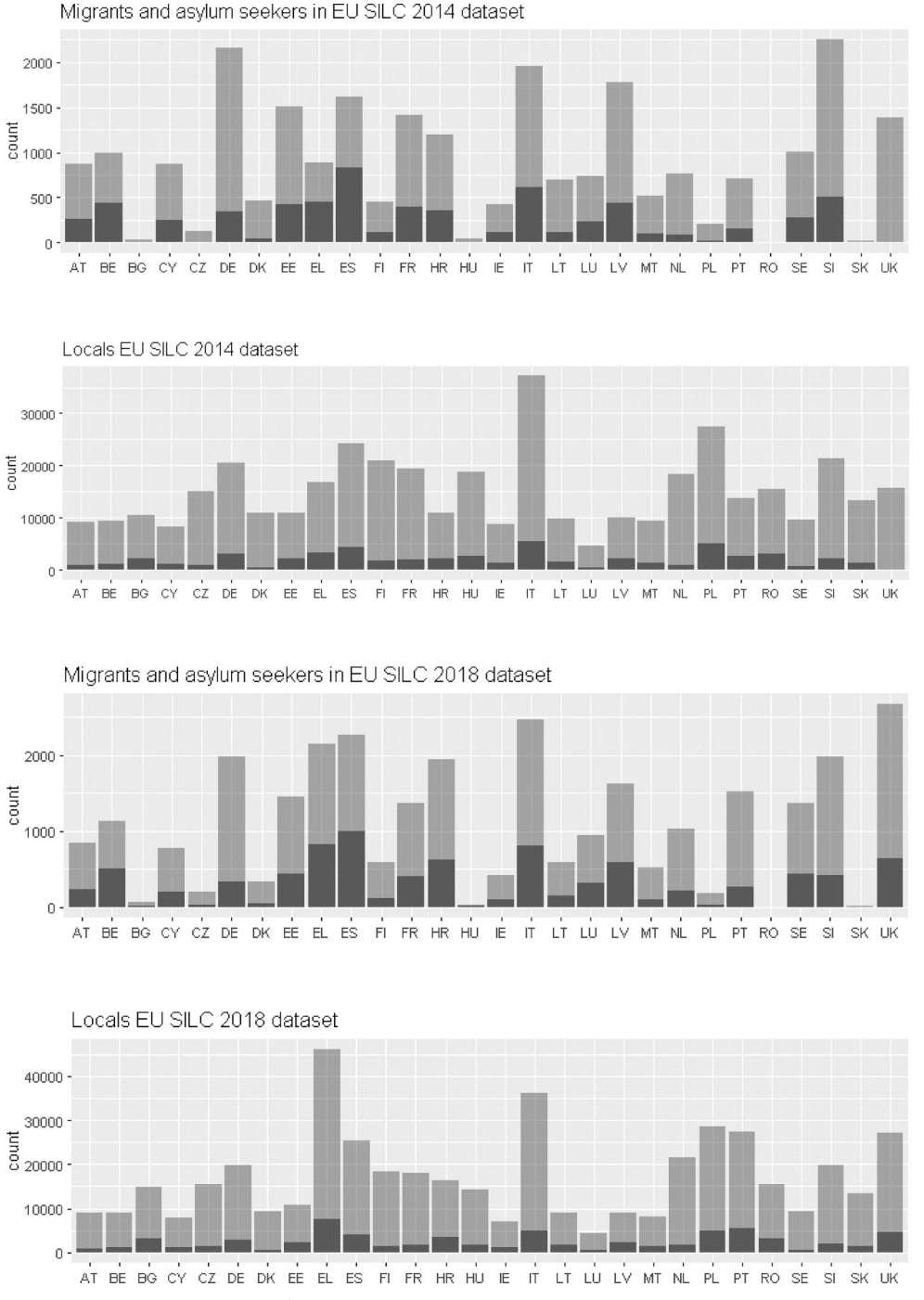

Figure A1. Selected indicators for the EU member states. *Source*. Authors' calculations.

Table A1. Selected indicators of the EU Member States.

	Accumulated immigration		Immigration		Migration to population ratio		GNI per capita, USD		Social benefits. % of GDP		Long term unemployment		Employed at risk of poverty		Poverty threshold. in EUR	
County	2014	2018	2014	2018	2014	2018	2014	2018	2014	2018	2014	2018	2014	2018	2014	2018
Austria	148,3123	159,3399	116262	105633	0.17	0.18	50,390	48,950	29	29	0.31	0.33	8.3	8	13,926	15,105
Belgium	178,3488	187,3511	123158	137860	0.16	0.16	47,820	46,010	29	27	0.45	0.44	4.8	5.1	13,023	14,212
Bulgaria	123,803	153,974	26615	29559	0.02	0.02	7700	8530	18	16	0.60	0.58	11.4	9.9	1987	2154
Cyprus	176, 693	207,591	9212	23442	0.15	0.17	26,530	26,990	20	18	0.48	0.32	8.2	7.4	8640	9202
Czech Republic	416,454	752,773	29897	65910	0.04	0.07	18,900	20,560	19	18	0.44	0.31	3.8	3.4	4573	5453
Germany	10,220,418	12,550,982	884893	893886	0.13	0.15	47,640	47,410	28	29	0.46	0.43	9.5	9.1	11,840	13,628
Denmark	595,876	557,573	68388	64669	0.11	0.10	63,670	61,260	33	30	0.24	0.19	5.3	6	16,717	18,062
Estonia	194,664	134,775	3904	17547	0.15	0.10	18,880	21,300	15	16	0.45	0.25	9.6	9.3	4330	6314
Greece	1,242,924	1,274,288	59013	119489	0.11	0.12	22,010	19,060	26	25	0.66	0.63	14.1	11	4608	4718
Spain	5,891,208	6,256,804	305454	643684	0.13	0.13	29,140	29,280	25	24	0.53	0.42	13.1	12.9	7961	8871
Finland	314,856	267,289	31507	31106	0.06	0.05	49,420	48,160	31	29	0.28	0.27	3.1	3.1	14,221	14,727
France	7,878,338	7,969,646	340383	387158	0.12	0.12	43,340	41,150	32	31	0.30	0.28	7.9	7.1	12,719	13332
Croatia	561,093	636,073	10638	26029	0.13	0.16	13,500	14,280	21	21	0.58	0.40	5.6	5.2	3135	3995
Hungary	475,508	496,368	54581	82937	0.05	0.05	13,560	14,980	19	16	0.48	0.39	9.6	8.4	2707	3254
Ireland	759,256	836,625	73519	97712	0.16	0.17	46,410	59,280	20	13	0.55	0.36	5.1	4.8	12,103	14,952
Italy	5805328	5,906,960	277631	332324	0.10	0.10	34,910	33,810	29	28	0.64	0.61	11.7	12.2	9455	10,106
Lithuania	265,418	259,290	24294	28914	0.09	0.13	16,070	16,530	15	15	0.47	0.46	8.3	8.1	2894	4137
Luxembourg	248,888	264,515	22332	24644	0.45	0.44	86,760	79,440	21	21	0.27	0.25	10.9	11.5	20,592	20,683
Latvia	136,021	223,227	10365	10909	0.07	0.08	15,340	17,450	14	16	0.45	0.32	8.5	8.1	3122	4400
Malta	52,642	46,219	14454	26444	0.12	0.10	24,560	27,090	18	15	0.51	0.48	5.9	6.4	7685	8868
Netherlands	1,996,318	2,041,933	145323	194306	0.12	0.12	52,000	51,250	29	27	0.32	0.25	5.6	6.1	12535	14410
Poland	611,855	667,739	222275	214083	0.02	0.02	13,560	14,150	19	21	0.43	0.27	10.8	9.7	3202	3944
Portugal	864,814	893,945	19516	43170	0.08	0.09	21,200	22,030	26	23	0.60	0.44	10.9	9.7	4937	5607
Romania	281,048	391,142	136035	172578	0.01	0.02	9700	11,430	14	15	0.40	0.42	18.9	15.3	1293	1970
Sweden	2,003,908	174,6117	126966	132602	0.21	0.17	61,870	55,640	29	27	0.28	0.27	6.7	7	15,503	15,324
Slovenia	237,616	380,263	13846	28455	0.12	0.18	23,620	24,610	24	22	0.55	0.43	6.1	6	7146	7946
Slovakia	177,624	182,863	5357	7253	0.03	0.03	18,280	18,320	18	18	0.82	0.72	6.5	6	4086	4477
UK	8,406,996	9,202,494	631991	603953	0.13	0.14	44,670	42,410	27	20	0.30	0.25	8.6	10.3	12,317	12,878

Source. Eurostat (2022). OECD. (2022). World bank (2022).