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Receiving Assistance in Material Need versus Active Participation in the Labour market: Who Will Win?

Brian König, Gabriela Dováľová, Ján Košta

Brian König (*corresponding author,* email: brian.konig@euba.sk), University of Economics in Bratislava, Faculty of Economic Informatics, Bratislava, Institute of Economic Research SAS, Bratislava, Slovak Republic

Gabriela Dováľová (email: gabriela.dovalova@savba.sk), Institute of Economic Research SAS, Bratislava, Slovak Republic

Ján Košta (email: jan.kosta@savba.sk), Institute of Economic Research SAS, Bratislava, Slovak Republic

Abstract

The paper focuses on identifying the main factors affecting the motivation of labour market participation in connection to the system of assistance in material need and the subsistence minimum. The results of the analysis show that (i) assistance in material need itself lowers the motivation to work, but in Slovakia, the difference between net household income from work after finding a job and the net social income during unemployment is increasing in time; (ii) households with incomes below the subsistence minimum react to these changes most sensitively; and (iii) increases in the assistance in material need negatively affect the motivation to work, especially in those individuals for whom the additional benefit from work is relatively low, *i.e.*, people with a low level of education and mothers with dependent children.

Keywords: Subsistence minimum, assistance in material need, motivation to work, Heckman's selection model

JEL Classification: C13, C51, J33

1. Introduction

The social character of the solidarity-based market economy of each EU member state provides all citizens with the minimum income needed to live regardless of the individual's situation. The minimum income is represented by Principle 14 in the European Pillar of Social Rights, adopted by the three main EU institutions in 2017.

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In Slovakia, the minimum income is guaranteed for all citizens by two fundamental laws: Act No. 601/2003 on the Subsistence Minimum and Act No. 417/2013 on Assistance in material need. The current Act on Assistance in material need ensures a minimum income for an individual through the material need benefit and four allowances (protection allowance, activation allowance, allowance for dependent children and housing allowance). The subsistence minimum is the primary category of the whole system of assistance in material need. If a household's assessed income is below the subsistence minimum, the household is in material need. Then, if the difference between the potential claim for assistance in material need and the relevant household income is positive, the household receives financial compensation. An essential element of the assistance in material need or guaranteed minimum income system is the principle of including a significant part of work (or other) income in the calculations of the specific sum of assistance as an expression of the participation of people able to work on ensuring their living standard and the living standard of those living in the same household within the "workfare" system. Compared to the previous "welfare" system, the workfare system requires a certain minimum amount of work (of people able to work) while getting social benefits.

The Slovak labour market has undergone various periods from a historical perspective. During the communist regime, participation in the labour market was mandatory. After the fall of the communist regime and the transition to a market economy, Slovakia experienced a significant decline in participation and a rise in unemployment, which peaked at around 19% in 2000. Slovakia implemented several reforms in subsequent years and joined the European Union in 2004. Unemployment began to decline, reaching its minimum of around 8% in 2008, when the financial and economic crisis erupted. The post-crisis period was marked by increased unemployment and a short-term decline in labour market participation rates. However, after several years, the economy recovered, and from 2012 onward, participation and employment rates began to rise until the COVID-19 crisis in 2020. A distinctive feature of the Slovak labour market is the high long-term unemployment rate. The overall unemployment rate in Slovakia ranged from approximately 5% to 15% between 2010 and 2023. However, long-term unemployment accounted for roughly 3.5% to 12%. Integrating these individuals into the labour market remains a challenging task.

There are numerous articles that discuss the impact of the welfare system on labour market participation. In our paper, we build on the research of Benczur *et al*. (2014), who introduced a labour market participation model extended by the variable "gains to work ", which considers both the effect of labour taxation and the amount of social benefits to which an individual is entitled. This paper examines the factors affecting labour force participation with respect to households living below the subsistence minimum. We aim to identify the main factors affecting the individual's motivation to be active on the labour market with a focus on social benefits (material need benefit and the relevant allowances) as one of the most important determinants of labour

supply. The results describe which socioeconomic groups of households respond most sensitively to changes in the difference between the net wage and the loss of social benefits due to finding a job from the perspective of people living below the subsistence minimum.

We extend the existing literature in several ways. Firstly, we focus on studying the marginal effect of variables related to labour force participation, specifically for the subsample of individuals living below the subsistence minimum, which, to the best of our knowledge, has so far not been addressed in the case of Slovakia. Economically inactive individuals are often more dependent on material need benefits. As a result, we assume that such individuals respond differently to changes in work and non-work income compared to the overall population. Secondly, despite the existence of estimates of determinants of labour force participation in Slovakia (Senaj *et al*., 2016), these estimates were made for the period 2010–2012, which represented a post-crisis period. These estimates might, therefore, be influenced by a relatively high unemployment rate (over 14%) and poor overall economic conditions in Slovakia during that period. In line with this assumption, our empirical findings, which were obtained for a later period, indicate that the effects of some of the drivers of labour force participation in Slovakia have strengthened over the last decade (*e.g.*, the widening gap between working incomes and non-working incomes), and there has also been a change in the overall labour force participation in Slovakia. Therefore, we argue that the determinants of labour force participation for the year 2018, when Slovakia was experiencing a relatively low unemployment rate (around 6%), will not be determined primarily by the overall macroeconomic conditions but will instead be driven by individual decision-making, enabling us to obtain interesting novel evidence on the factors influencing the decision-making on the participation in the labour force at the micro level. Moreover, estimating participation drivers for a more recent period will allow us to observe the changes of marginal effects over time and thus shed light on the changes in the population's responsiveness to shifts in work and non-work income in relation to their decision-making on labour force participation.

A part of the analysis comprises an examination of the main trends in the field of providing assistance in material need on the basis of the subsistence minimum. The paper is structured as follows: the first section includes a literature review focused on the links between the welfare system and labour market participation, changes in the field of the subsistence minimum, the system of assistance in material need in connection to the labour market, as well as labour supply elasticity and other factors affecting the willingness of individuals to actively participate in the labour market. Section 2 focuses on the development of assistance in material need in the Slovak Republic, SR. The methodology based on Heckman's selection model of wage and the labour supply probability model can be found in Section 3. A description of the data used is presented in Section 4. The results, consisting of the estimates of Heckman's selection model and of the labour supply probability model, are presented in Section 5.

2. Literature Review

In Slovakia, only a limited number of authors have dealt with the subsistence minimum, changes in the system of providing assistance in material need, and their impact on the willingness to work. The fact that this is an important topic from the macroeconomic perspective was pointed out by Woleková (1995), who considered the increasing of the subsistence minimum by indexation above the minimum wage level to be harmful to the labour market. The change in the subsistence minimum, but mainly the development of the system of assistance in material need between 2004 and 2014, was examined by Radičová and Navrátilová (2014), who compared the provision of assistance in material need under Act No. 599/2003 and the new Act No. 417/2013, and identified the main changes brought by the legislative modifications. Gerbery (2007) dealt with the task of activating the unemployed in social policy in more detail and mainly focused on activation aimed at fighting poverty. Gerbery and Miklošovič (2018) built directly on the findings from that study and the results of Kusá and Gerbery (2009) and Gerbery and Miklošovič (2016), arguing that the minimum income system in Slovakia is not sufficient and does not provide adequate protection from extreme poverty or material deprivation. Another negative trend in the provision of social benefits, namely the non-transparency and administrative burden, was pointed out by Bakošová *et al*. (2017).

The field survey of Škobla *et al*. (2016) showed that successfully joining the open labour market is insufficient from the perspective of recipients of assistance in material need, and the obligation to work for the material need benefit does not fulfil the expectations. Opinions of experts on the relation of the subsistence minimum and material need benefits were described by Gerbery *et al*. (2010). Košta *et al*. (2022) dealt with approaches to ensure a minimum income in selected countries of the European Union and their links to a minimum wage.

In international literature, some publications have provided economic and political recommendations for individual countries (OECD, 2007, 2022). These recommendations have often included proposing changes to the tax levy system to increase labour market participation in Slovakia. Studies have identified low labour market participation among women and older individuals and high long-term unemployment rates. The recommendations include reducing the tax burden on the second worker in a household, implementing active labour market policies and highlighting empirical evidence that shows the positive impact of flexible working conditions on mothers' participation in the labour market.

One of the most important determinants significantly affecting the decision of an individual to enter the open labour market is the difference between the net wage when employed and the social transfers obtained by the household during unemployment (the so-called gains

to work – *GTW*). The concept of *GTW* was introduced and examined in more detail by Benczur *et al*. (2014). An essential part of the methodology to calculate gains to work is estimating wages for the unemployed as precisely as possible using structural labour supply models, which were described, for instance, by Breunig and Mercante (2010). In the conditions of Slovakia, there have not been many publications dealing with the impact of income taxation or social transfers on the motivation to work. In this connection, we can mention the paper by Senaj *et al*. (2016), who estimated labour supply elasticity. Abroad, this issue with a focus on changes in the taxation system was examined, *e.g.*, by Meghir and Phillips (2008) or Moffit, R. (2002), who summarized the results of several theoretical and empirical international studies using structural models to identify the effects of welfare programmes on labour supply. Changes in the tax-benefit systems in 17 EU countries and the United States and their impact on labour supply elasticity were studied by Bargain *et al*. (2012), who found that differences in wage elasticities are lower than expected and they are less dependent on the differences in tax-benefit systems, the demographic composition of the population or marital status, but are more dependent on individual and social preferences, as well as family and other policies in the given country. Different results were presented by Galuščák and Kátay (2019), who used data from two countries, namely Hungary and Czechia, and concluded that roughly a third of the differences in the level of economic activity in the age group 15–74 and more than two-thirds of the differences in the level of economic activity in the primary age group (25–54) can be explained by the differing tax-benefit systems in the two countries. A higher level of sensitivity to changes in wages and social systems among the low-skilled labour force and women in Czechia was confirmed by Bičáková *et al*. (2008).

There is a wide range of literature dealing with the effects of the welfare system on the labour supply. The links between welfare programmes and labour supply are well documented in many countries (*e.g.*, Blau and Robins, 1986; Aronsson and Walker, 1997; Keane and Moffitt, 1998; Blundell and Macurdy, 1999; Moffitt, 2002; Alzúa *et al*., 2013; Bartůsková, 2017; Dvouletý and Hora, 2020; OECD, 2023).

A lot of studies have examined the elasticity of participation with respect to the tax-benefit system of particular countries, for example Arrufat and Zabalza (1986), Dikert *et al*. (1995), Eissa and Liebman (1996), Kimmel and Kniesner (1998), Aaberge *et al*. (1999), Meyer and Rosenbaum (2001), Chetty *et al*. (2013), Blundell (2012), Bourguignon and Spadaro (2012), Bencúr *et al*. (2014), Senaj *et al*. (2016), Lundberg and Norell (2020).

A review of guaranteed minimum income schemes in Europe can be found in Coady *et al*. (2021).

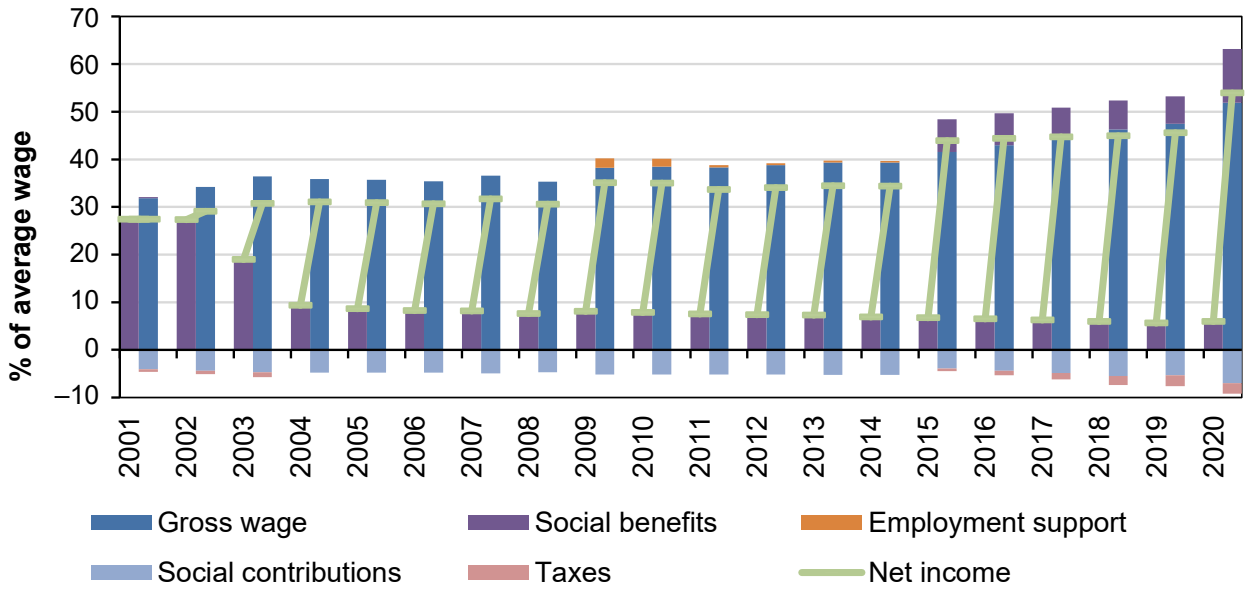
3. Development of Assistance in Material Need and Labour Force Participation in Slovakia

The following section focuses on the evolution of assistance in material need in Slovakia and its potential association with the development of labour force participation. In the past, the social support system in Slovakia was considered exceptionally generous. Its biggest shortcoming was that it was not motivating for some population groups to find a job on the labour market. Thus, around two decades ago, a significant change was adopted: the subsistence minimum was no longer guaranteed and the conditions of providing assistance in material need were made stricter.

When it comes to the motivation to find a job, it is necessary to examine whether there is a positive change over time between the net income when a person is unemployed and the net income after finding a job. Figure 1 illustrates the evolution of the gap between net earnings from employment and social benefits (defined as net income by the green line), which may influence the motivation for labour force participation (based on the listed indicators). We consider an individual who has been unemployed for over 25 months between 2001 and 2020. We assume that this was a low-skilled person who had worked full-time for the minimum wage for 10 years before losing their job. The years 2003 and 2014 became important milestones for increasing the motivation of a long-term unemployed person to look for a job. In 2002, there was virtually no difference between net income from the social security of a long-term unemployed person and the net labour income on the level of the minimum wage after finding a job. The gap between these two incomes increased significantly after amending the Act on Assistance in Material Need (Act No. 599/2003), especially as a result of decreasing the solidarity in times of material need. Another change was made by amending Act No. 417/2013 on Assistance in Material Need, which modified the eligibility criteria for the special allowance. This change contributed to making the long-term unemployed interested in getting out of the trap of dependence on social benefits. This fact can also be documented using an indicator called the net replacement rate in unemployment.[1] According to the OECD tax-benefit model, while the net replacement rate in unemployment in 2002 reached 94% for this type of household, it dropped to 20% in 2014 and only reached 11% in 2021.

1 According to OECD, the net replacement rate in unemployment is calculated as the ratio of household net income during unemployment and household net income before losing employment. In general, this indicator shows the level of an unemployed person's motivation to find work. The lower the indicator, the higher the motivation.

Figure 1: Net income of a childless individual during long-term unemployment and after finding employment for the minimum wage in Slovakia



Note: Social benefits do not include the housing allowance.

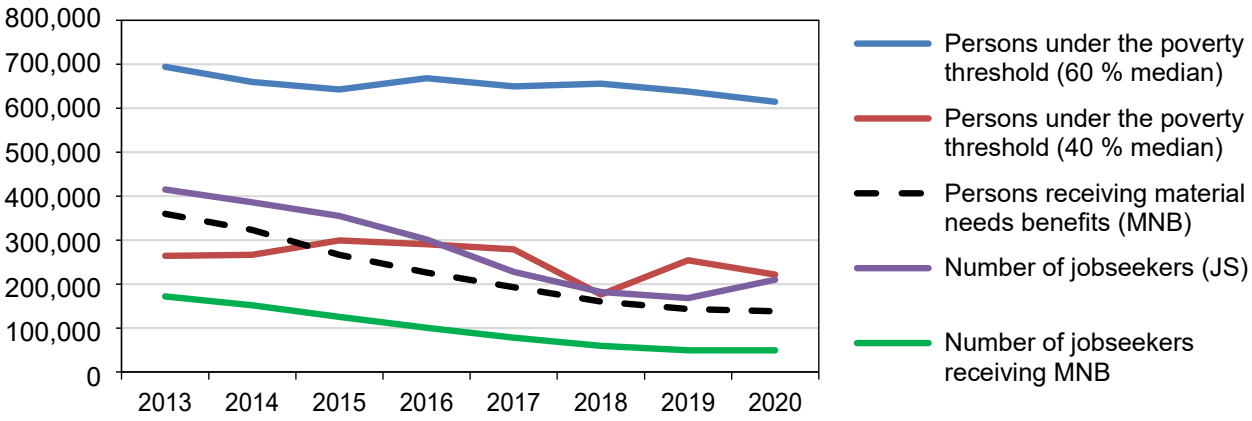
Source: Composed using data from the OECD tax-benefit model (OECD, 2023)

In terms of long-term unemployment, it is necessary to monitor the changes in the development of the minimum wage and the social benefits over time. After 2014, the minimum wage grew faster, increasing the motivation to find work. In addition, since 2015, a special allowance has been provided (as an "in-work benefit") to the long-term unemployed for 18 months after starting a job. This has contributed to an increase in potential differences between income during unemployment and income after finding a job, which also supports employment for the minimum wage. Given the fact that the level of the subsistence minimum and the material need benefit with the four allowances only increased as a result of indexation in response to inflation, the increase in the motivation to work was reinforced. On the other hand, the incomes of people (and households) dependent on assistance in material need started to lag behind households with working members due to increased real income from employment.

The goal of social policy and proof of its correctness should be the trend of decreasing numbers of people facing income poverty and people dependent on assistance in material need. Based on the data from Figure 2, these trends are observable in 2013–2020 to a less pronounced degree. After 2013 (after the global economic and financial crisis), there was a moderate decrease in the number of people under the poverty risk threshold of 60% of the median income. In contrast, the total decrease in people under the poverty risk threshold of 40% of the median income was insignificant over the whole period. At the turn of 2014 and 2015, there was an important breaking

point when the number of people receiving material need benefits dropped below the number of people under the poverty risk threshold of 40% of the median income. This means that likely not everyone deep under the "basic" income poverty threshold (60% of the median income) was eligible for material need benefits. This phenomenon was caused by the fact that the subsistence minimum values were very low even after indexation during the whole analysed period, and they gradually eliminated a large number of people from the material need assistance system. An accompanying positive phenomenon in the analysed period was a relatively significant decrease in the numbers of job seekers. Those who were initially unemployed (and their households) were receiving work incomes and managed to get out of the material need assistance system.

Figure 2: Comparing development in numbers of people in income poverty, receiving material need benefits and unemployed (job seekers), 2013–2020

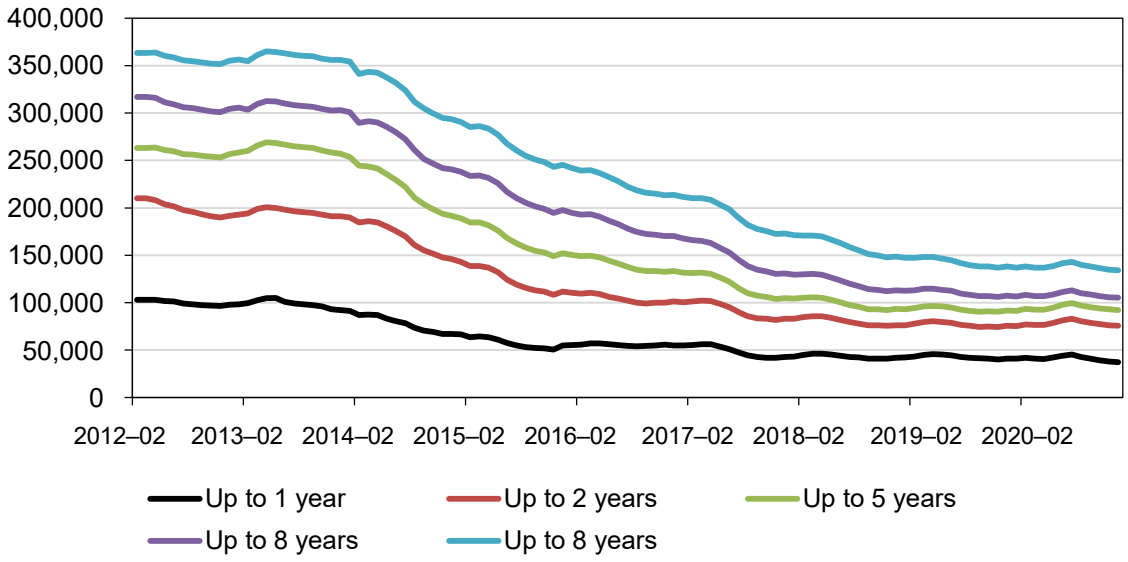


Source: Authors' own calculations based on SOSR and COFSAF data, 2013–2020

The development in 2020 was already affected by the COVID-19 pandemic, and compared to 2019, the number of job seekers increased and, as a paradox, the number of people below the poverty risk threshold of 40% of the median decreased, as the (financial) measures to fight the pandemic were the most significant for people with the lowest incomes. In addition, it is necessary to point out the trend of a more intensive decrease in the number of job seekers compared to the number of job seekers receiving material need benefits. For instance, according to data from the Central Office of Labour, Social Affairs and Family (COFSAF), in 2018 (the year 2020 was affected by COVID-19), the share of job seekers receiving material need benefits in the total number of job seekers reached 32.5%; the share in the case of long-term job seekers (long-term unemployed) was as much as 56.0%, confirming the assumption that the long-term unemployed are more dependent on material need benefits.

Long-term receiving of material need benefits is a negative social phenomenon and proof of the social trap and the poverty trap. The longer the household is receiving material need benefits, the harder it is for it to move out of dependence on social assistance in the future. Figure 3 below presents data on the development of the number of people receiving material need benefits by duration. After 2014, the total number of people dependent on material need benefits started to drop significantly in almost all the analysed durations of receiving the material need benefits. The number of people receiving the benefits for more than eight years decreased less than the number of people in the shorter time intervals. The only exception was the "up to one year" category. At the beginning of 2012, the number of people receiving material need benefits for more than eight years reached 46,263, and by 2020, this had dropped to 28,876. The share of people dependent on material need benefits for over eight years reached 21.5% of the total number of people receiving material need benefits at the end of 2020, while a higher share was only observed in the "up to one year" category, namely 27.7%.

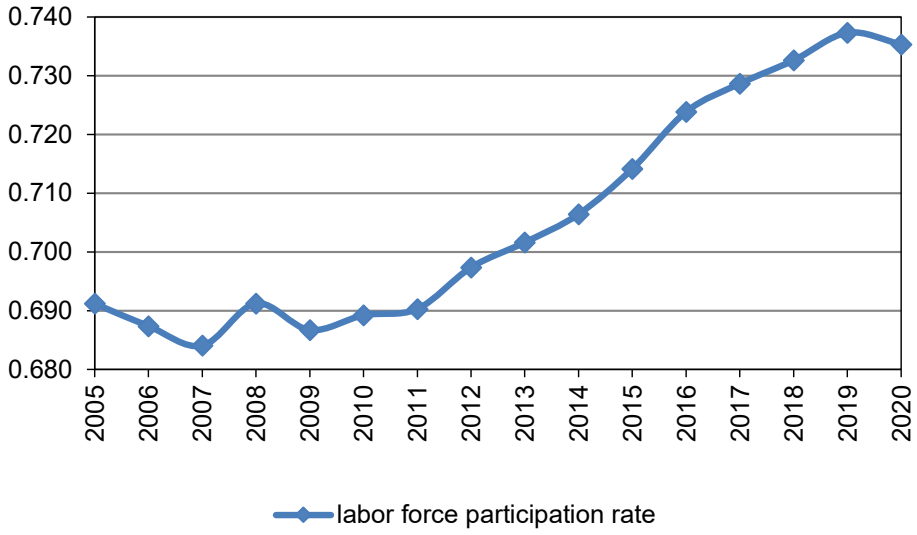
Figure 3: Development of number of people dependent on material need benefits by duration



Source: Authors' calculations based on COFSAF data, 2013–2020

From the preceding analysis, it is evident that over the past decade, there has been an increase in the gap between earnings from employment and social benefits for non-working individuals (Figure 1), as well as a significant decrease in the number of individuals reliant on assistance in material need (Figure 2 and Figure 3). Both these factors have had a positive impact on the economic activity of the population. Based on Figure 4, it can be observed that there was a notable strengthening of labour force participation during the period from 2011 to 2020.

Figure 4: Development of labour force participation rate in Slovakia, 2005–2020



Source: Authors' own calculations based on SOSR data, 2013–2020

We presume that this growth is, to some extent, associated with the reinforcement of the aforementioned factors, such as the low valorisation of social benefits and the rise of the minimum wage. In the subsequent section, we endeavour to quantify this effect by estimating the gains-to-work influence on labour force participation, not only for the general population but also for the subgroup living below the subsistence minimum.

4. Methodology

The following section comprises the econometric background of the labour supply model. A structural probability model was used to identify the elasticities of particular determinants affecting labour market participation probability. We follow the approach introduced by Benczur *et al*. (2014) and adjusted by Senaj *et al*. (2016), who derived a microeconomic model of labour market participation based on the utility maximization framework.[2] An individual maximizes a consumption-leisure trade-off function subject to the budget constraint.[3] An individual decides between

2 Given that Senaj *et al.* (2016) already estimated labour market participation in Slovakia in the past, the use of their methodology allows us to track the dynamics of marginal effects over time by comparing their results with ours.

3 For the methodology of the structural probability model and the gains to work concept, we follow the papers of Benczur *et al*. (2014) and Senaj *et al.* (2016).

working full-time and receiving full social benefits.[4] They came to the conclusion that an individual's probability of labour market participation can be estimated using the probit model, in which participation is related to variables such as gains to work, non-work income and individual's characteristics. We used this form of the model as a starting point for our analysis:

$$P\left(participation_i = 1\right) = \Phi\left(\alpha lnGTW_i + \overline{\boldsymbol{Z}}_{\boldsymbol{i}}\beta + lnNNY_i\right) \tag{1}$$

where $\varphi(\ldots)$ is a cumulative distribution function of normal distribution, GTW_i is the net benefit of employment (difference between the net wage and the loss of social benefits as a result of finding employment), $\overline{\boldsymbol{Z}}_{\boldsymbol{i}}$ is a vector of variables affecting the motivation to offer work[5] and NNY_i represents other net incomes of the household not connected to the individual's work. Formally, the gains to work (GTW_i) for an individual can be expressed as follows:

$$GTW_i = w_i - \left(SB_{nwi} - SB_{wi}\right) \tag{2}$$

where w_i is the net wage of a working individual, SB_{nwi} represents the sum of material need benefits and their supplements if the individual does not work, and SB_{wi} expresses the amount of material need benefits and their supplements if the individual does work. Given the fact that wages are not observable for non-working individuals, estimating their value for inactive people is necessary. Since the wage regression would likely lead to a non-random sample selection, as wage observation is likely to be correlated with employment status, wages are estimated using Heckman's selection model. Heckman's selection model is a regression technique to gain correct estimates of models that suffer from sample selection bias.[6] Heckman's concept of estimating wages has two steps. In the first step, a probability model is constructed, which estimates the probability that the wage is observed/not observed (the individual works/does not work; y_i equals 1/0):

$$P\left(employed_i = 1\right) = \Phi\left(X_i\delta + Z_i\beta + \gamma \ln NNY_i\right) \tag{3}$$

where X_i are variables representing characteristics affecting the wage level. The variables used as factors determining the wage level are as follows: three levels of education attained (primary, secondary, tertiary), number of years of experience and number of years of experience squared[7],

4 This assumption cannot be considered very restrictive in the conditions of the Slovak economy, given that Slovakia is among the EU countries with the lowest share of part-time employment. According to Eurostat data, only 3.4% of workers aged 20–64 worked part-time in 2018.

5 The variables in the vector $\overline{\boldsymbol{Z}}$ were selected according to the model of Senaj *et al.* (2016). The list of variables can be found in Table 1, and their detailed descriptions are located in Appendix 2.

6 For a more detailed description of Heckman's model, see Heckman (1979).

7 The quadratic term for the number of years of experience is designed to capture the decreasing marginal effect of experience on the gross wage.

three urbanisation levels (areas with high, average and low population density) and binary variables capturing the region of the individual's origin. The last two variables are designed to capture differences in the economic environment of areas from which the respondents come. Variables contained in the vector Z_i represent factors affecting the probability of finding employment, while they do not affect the wage level directly: parent of a child up to three years of age, parent of a child over three years of age, whether the respondent has various chronic (lasting) diseases or conditions, whether they have a working partner, whether they are a student or a pensioner, their age and age squared. Besides that, the model also includes the variable NNY_i (household income if the individual did not work). In the second step, a wage equation is estimated, using the estimates from the first step to account for a possible selection bias[8]:

$$\ln w_i = X_i\delta + \lambda\left(X_i\delta + Z_i\beta + \gamma \ln NNY_i\right) + u_i \tag{4}$$

where λ is inverse Mills ratio[9] and u_i is the error term. The dependent variable is the gross monthly wage. The estimated gross wages were converted into net wages by deducting social and health contributions and income tax. The net wages were then used to calculate the *GTW* variable. To construct *GTW* in a consistent way, we used the estimated value of wages for all the observations, which is often used in labour supply literature.[10] Such an approach reduces possible division bias. Subsequently, we calculated the volume of benefits to which the individual is entitled if they work (SB_{wi}) and do not work (SB_{nwi}). In these calculations, the entire household income was considered.[11] The *NNY* variable was calculated as the difference between the net household incomes and net labour incomes of the assessed individual in case they worked. Besides that, we also added simulated material need benefits with the allowances for which the household would be eligible if the individual did not work.

8 The possible existence of systematic differences in individuals' characteristics with observed wages compared to unemployed individuals.

9 The inverse Mills ratio is defined as the ratio of the probability density function to the complementary cumulative distribution function of a distribution.

10 *E.g.,* Breuning and Mercante (2010), Bargain et al. (2014) and Senaj *et al.* (2016).

11 In our estimation of the *GTW* variable, we depart from the methodology used by Benczur *et al*. (2014), who determined *GTW* for the employed through a microsimulation model and for the unemployed using the Heckman model. Instead, we adopt the approach of Senaj *et al*. (2016), who utilized the gross salary estimates gained from the Heckman model to calculate *GTW* through a microsimulation model.

5. Data

To estimate the probability model, data from the 2019 SILC[12] (Statistics of Income and Living Conditions) database provided by the Statistics Office of the Slovak Republic (SOSR) were used. EU-SILC 2019 was chosen because it provides the most recent micro-level data that are not influenced by the consequences of the COVID-19 pandemic.[13] The data for 2019 contain information about roughly 5,600 households and more than 14,600 individuals. Children under 16 years of age, representing population in compulsory education (more than 1,900 observations), were excluded from the estimation of the parameters. In 2018, the retirement age was around 62 years and five months, and because the SILC database did not contain observations of working people who were older than 75, the maximum age was set at 75 (more than 1,100 observations excluded).[14] A description of the individual variables with summary statistics can be found in Appendixes 2 and 3.

The dependent variable in the probability model was the labour market participation status (active/inactive). To define this variable, we used a SILC indicator called "Main activity status during the income reference period", while the respondent was considered active if the value in this category was 1 or 2.[15] In addition, a respondent was treated as unemployed in line with ILO (International Labour Organization) classification.[16] Otherwise, they were considered as being inactive. Observations without a value in this category were excluded from the sample (around 90 observations). If the respondents were unemployed for a period of 12 months or more, from the activity perspective, we consider them inactive.[17]

12 SILC 2019 contains data for the reference year 2018.

13 Data collected from 2020 onwards were collected during the COVID-19 period when face-to-face interviews were no longer possible – leading EU-SILC to change its data collection methodology, rendering the comparison of pre-pandemic EU-SILC data with post-pandemic EU-SILC data difficult. Furthermore, the COVID-19 pandemic had significantly, albeit temporarily, altered the functioning of the labour market because it resulted in an economic recession, numerous lockdowns, and higher unemployment, as well as the implementation of furlough schemes in Slovakia – with the effects of the crisis lasting for several years.

14 The database only includes two observations of working individuals at the age of 75 years. A similar process was also used by Senaj *et al*. (2016).

15 Particular options in the main activity status were as follows: 1 – working, 2 – unemployed, 3 – in retirement or early retirement, 4 – other inactive persons, *e.g.*, students, parents on parental or maternity leave, chronically ill, people with a disability, *etc*.

16 According to ILO classification, an unemployed person is considered unemployed only if they have been actively looking for a job in the last four weeks and are available for work in the next two weeks.

17 These are 346 observations, of which 77% come from regions with the highest share of long-term unemployment (Banská Bystrica, Prešov, Košice). In terms of educational structure, more than 51% of them have only a primary education and 80% without a high school diploma. From the activity perspective, we consider this group to be very difficult to employ, and therefore, they are defined as inactive.

The *GTW* variable was expressed as net income. Since most of the income variables in the SILC database are recorded as gross values (including taxes and contributions), wages were converted to net wages by deducting income tax (19% or 25%)[18] and social and health contributions (13.4%). Besides wages, it was necessary to calculate social benefits that were dependent on income level. Social benefits dependent on household income that we considered included the material need benefit, housing allowance, activation allowance, protection allowance and allowance for dependent children.[19] We simulated the benefit level for which individuals are eligible if they do not work, while the structure and income of the whole household were accounted for in the calculation. Similarly, we calculated the material need benefits for which the household would be eligible if the unemployed individual found a job. The key factor that we accounted for when calculating the eligibility for social benefits was the household net income level after deducting the individual's net labour incomes. To get the household net income that is considered when calculating the eligibility for the material need benefit and its allowances, we deducted those parts of household income which are not included when assessing the eligibility for assistance in material need according to Act No. 417/2013. After obtaining the individual's net income and the assistance in material need for which the household is eligible in case the respondent is at or out of work, we calculated the *GTW* variable. Another variable that we calculated was the individual's non-work income (*NNY*). This included all other incomes of an individual, whether they worked or not (household income) plus the calculated assistance in material need if the respondent was out of work. Thus, the *NNY* variable included the whole net income of the household except the individual's work income.

6. Results and Discussion

This section presents the results of the labour supply probability model, which examines the factors affecting the motivation to participate in the labour force and the extent to which assistance in material need affects this decision-making. The analysis of factors affecting the motivation to employ is composed of two steps. First, the wages of the respondents who are out of work are estimated because these data are unobservable. Hence, Heckman's model is used to estimate the gross wage of people out of work. Predicted wages are used in the calculation of the *GTW* variable. In the second step, the labour market participation probability model is estimated, which also controls the effect of *GTW* elasticity on motivation to work.

18 The 25% tax was paid for tax bases exceeding EUR 35,268.

19 A description of the material need benefit used in the *GTW* calculation can be found in Appendix 4.

In order to get more precise results, models were estimated separately for men and women. The gross wage was constructed as the sum of gross financial incomes from employment and gross profits from business activities. The justification of using Heckman's selection model was statistically verified by the LR test (H_0: $\rho = 0$), which rejected the zero hypothesis even at the 1% significance level. The vast majority of the estimated parameters in the wage equation are in line with both the literature and our expectations.[20]

After estimating the gross wages for the unemployed using Heckman's model and calculating the average *GTW*, it was possible to examine the impact of gains to work on the probability of being active. For this purpose, the probit model was used (Table 1).[21]

Table 1: Probability model (probit) of labour force participation for men and women

main	Men		Women	
lgtw	1.200***	(9.20)	1.211***	(9.66)
lnny	–0.261***	(–5.79)	–0.322***	(–8.34)
1bn.edu	–	–	–	–
2.edu	0.714***	(6.94)	0.694***	(7.93)
3.edu	0.689***	(5.32)	0.634***	(5.74)
parent3b	0.392***	(2.62)	–2.245***	(–22.95)
parent3o	0.306***	(3.71)	–0.216***	(–3.91)
workpartner	0.634***	(9.11)	0.347***	(5.97)
ill	–0.913***	(–14.09)	–0.733***	(–13.99)
stud_	–1.625***	(–17.78)	–1.500***	(–17.56)
pens	–2.450***	(–31.72)	–2.482***	(–34.60)
Constant	–7.861***	(–7.25)	–7.172***	(–7.17)
Observations	5232	–	6058	–
Pseudo R^2	0.583	–	0.514	–

Note: The brackets list the test statistics of Student's distribution; *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively; the reference value for the dummy variable education is primary. For reasons of possible inconsistency, standard deviations were acquired by bootstrap with 1,000 replications. The description of individual variables can be found in Appendix 2.

Source: Authors' own calculations

20 The results of Heckman's selection model can be found in Appendix 1.

21 Similarly to Senaj *et al.* (2016) we calculated the *GTW* using the estimated gross wage level for both the unemployed and the working, with the aim of getting consistent values for the *GTW* variable.

Based on the estimated parameters, all the parameters in the model are statistically significant, even at the 1% significance level, and the results are in line with economic theory. The key variable gains to work (*lgtw*) is statistically significant, and the higher it is, the higher the probability of being active. On the other hand, a statistically significant negative effect of net household income was confirmed (*lnny*) – the higher it is, the lower the probability of labour market participation. A higher education level (*edu*) and a working partner (*workpartner*) increase the respondent's probability of being active, while chronic diseases (*ill*), pensioners (*pens*) and student respondents (*stud*) decrease the examined probability. For mothers of children (*parent3b, parent3o*), the likelihood of being active drops; for men, parenthood positively affects the probability of labour market participation.

The crucial information of the probability model is the marginal effects of the examined variables (especially *GTW* and *NNY*) on the likelihood of being active. Since the estimated parameters in the probit model do not say anything about the marginal effects of the independent variables on the dependent variable, it is necessary to calculate them. As the *GTW* and *NNY* variables are expressed logarithmically, the marginal effects of these variables can be interpreted as semi-elasticities.[22]

Based on the results of the average marginal effects listed in Table 2, it can be stated that increasing the value of gains to work (*GTW*) by 1% raises the probability of being active by 0.18 pp. on average for men and 0.225 pp. for women. As far as the other net household income (*NNY*) variable is concerned, the average marginal effect on the likelihood of labour market participation is negative, and an increase of net household income by 1% is associated with a decrease in the likelihood of being active on average by 0.039 pp. for men and 0.06 pp. for women (Table 2). Considering the result of the marginal effects for persons living below the subsistence minimum, it can be concluded that these persons react more sensitively to the change in *GTW* (the semi-elasticity is 0.268 pp. for men and 0.265 for women) compared to these effects for men and women in the whole population. Similarly, the marginal effect of other net incomes is more pronounced in the case of individuals living below the subsistence minimum (−0.058, −0.07). These conclusions may be due to the fact that a large proportion of households below the subsistence minimum belong to the group of households with low work intensity, low education level and receiving material need benefits.

22 To interpret the effects of the independent variable in percent, it is necessary to divide the marginal effect by 100.

Table 2: Average marginal effects of gains to work (*GTW*) and other net household income (*NNY*) for men and women compared to individuals below subsistence minimum (sm)

	men	***women***	***men_sm***	***women_sm***
lgtw	0.181*** (9.11)	0.225*** (9.58)	0.268*** (13.46)	0.265*** (14.10)
lnny	−0.0394*** (−5.79)	−0.0599*** (−8.37)	−0.0582*** (−5.99)	−0.0706*** (−8.37)

Note: The brackets list the test statistics of Student's distribution; *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively.

Source: Authors' own calculations

Next, we present the marginal effects of the examined variables (*GTW*, *NNY*), structuring the individuals by their level of education. Table 3 presents the calculated marginal effects by gender and education groups. It can be observed that marginal effects for both the *GTW* and *NNY* variables vary significantly with respect to the respondent's level of education. Considerable differences in the marginal effects can be observed, especially between the primary and secondary levels of education. People with a lower level of education tend to react more sensitively to a change in the gains to work or the net household income compared to people with a higher level of education. This conclusion applies to both genders and can also be based on the fact that the variables (*GTW*, *NNY*) also comprise social benefits on which low-income households are dependent, and these are often composed of persons with lower education levels.

Table 3: Average marginal effects of gains to work (GTW) and other net household income (NNY) structured by education (*edu1* – primary, *edu2* – secondary, *edu3* – tertiary) and gender (*m* – men, *w* – women)

	m_edu1	***m_edu2***	***m_edu3***	***w_edu1***	***w_edu2***	***w_edu3***
lgtw	0.248*** (10.93)	0.190*** (9.44)	0.192*** (8.35)	0.272*** (10.59)	0.234*** (10.05)	0.238*** (9.27)
lnny	−0.0539*** (−5.87)	−0.0413*** (−5.80)	−0.0417*** (−5.72)	−0.0725*** (−8.57)	−0.0623*** (−8.43)	−0.0633*** (−8.30)

Note: The brackets list the test statistics of Student's distribution; *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively.

Source: Authors' own calculations

Based on the structure of marginal effects by the age of children (Table 4), it can be observed that a lower marginal effect has been estimated for fathers compared to men who do not have dependent children. This phenomenon may be caused by fathers of dependent children being more motivated to work than men without dependent children. Similarly, fathers of dependent children react less sensitively to a change in the net household income compared to men without dependent children. For women, the situation is somewhat different. Mothers with dependent children older than three years and women without dependent children react more sensitively to changes in *GTW* and *NNY* compared to mothers with dependent children younger than three years. It can be because mothers of children younger than three receive relatively high social benefits (parental allowance) compared to other women.

Table 4: Average marginal effects of gains to work (*GTW*) and other net household income (*NNY*) structured by parents of children in the age <3 years; ≥3 years and without any children (nokid) by gender (*m* – men, *w* – women) and compared to persons below the subsistence minimum (sub. min.)

	***m* < 3**	**m ≥ 3**	***m_nokid***	***w* < 3**	***w* ≥ 3**	***w_nokid***
lgtw	0.163*** (8.66)	0.172*** (9.10)	0.195*** (8.93)	0.168*** (7.26)	0.229*** (9.64)	0.211*** (9.38)
lnny	−0.0354*** (−5.60)	−0.0373*** (−5.71)	−0.0424*** (−5.85)	−0.0448*** (−6.70)	−0.0608*** (−8.38)	−0.0562*** (−8.34)
sub.min.	***m* < 3**	**m ≥ 3**	***m_nokid***	***w* < 3**	***w* ≥ 3**	***w_nokid***
lgtw	0.286*** (12.84)	0.284*** (12.99)	0.269*** (13.62)	0.0844*** (7.23)	0.283*** (14.25)	0.296*** (14.47)
lnny	−0.0622*** (−6.06)	−0.0616*** (−6.07)	−0.0585*** (−5.98)	−0.0225*** (−5.59)	−0.0752*** (−8.54)	−0.0789*** (−8.65)

Note: The brackets list the test statistics of Student's distribution; *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively.

Source: Authors' own calculations

In terms of comparing marginal effects by the age of children of household members below the subsistence minimum, the results vary from the previous situation. Marginal effects for household members below the subsistence minimum by the age of children (bottom part of Table 4) reach much higher intensity than in the case of the same effects for households from the whole population. A remarkable difference can be observed between the marginal effects of *GTW* for male parents calculated for the total population and the same effect calculated for male parents living below the subsistence minimum. In the latter case, the marginal effect is most pronounced

for fathers, and it does not differ much from the effect of childless men. An interesting point is that mothers of dependent children younger than three from households below the subsistence minimum are much less sensitive in reacting to a change in *GTW* and *NNY* compared to mothers of children older than three or women without any dependent children. The reason may also be the receipt of the parental allowance, which represents significant financial help for households below the subsistence minimum, and so the motivation of mothers with a potentially low income is relatively low. Another reason could be a mother's incapability to work due to child care and the lack of state assistance in caring for a child under the age of three.

Table 5 lists the marginal effects of variables by quintiles of the average *GTW*. Based on the results, it can be seen that higher-income groups react less sensitively to changes in gains to work or net household incomes compared to lower-income groups. This can be concluded for both genders.

Table 5: Average marginal effects of gains to work (*GTW*) and other net household income (*NNY*) structured by *lgtw* quintile (20, 40, 60, 80, 100) and gender (*m* – men, *w* – women)

(euros/month) men/quintiles	***m*20 = 617**	***m*40 = 673**	***m*60 = 718**	***m*80 = 794**	***m*100 = 1148**
lgtw	0.199*** (8.31)	0.190*** (8.65)	0.184*** (8.91)	0.176*** (9.27)	0.154*** (9.98)
lnny	−0.0432*** (−5.72)	−0.0413*** (−5.75)	−0.0400*** (−5.76)	−0.0382*** (−5.78)	−0.0335*** (−5.82)
(euros/month) women/quintiles	***w*20 = 521**	***w*40 = 563**	***w*60 = 581**	***w*80 = 693**	***w*100 = 948**
lgtw	0.242*** (8.91)	0.235*** (9.13)	0.233*** (9.23)	0.219*** (9.75)	0.202*** (10.26)
lnny	−0.0643*** (−8.27)	−0.0626*** (−8.30)	−0.0619*** (−8.31)	−0.0584*** (−8.37)	−0.0538*** (−8.42)

Note: The brackets list the test statistics of Student's distribution; *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively.

Source: Authors' own calculations

A comparison of the estimated marginal effects with other studies published for Slovakia and Czechia is presented in Table 6. Our analysis reveals that the magnitude of the marginal effects of *GTW* in Slovakia has increased over time, transitioning from 0.08/0.12 for men/women during the period 2010–2012 to 0.18/0.225 in 2018. This observed progression likely stems from a more

favourable economic situation on the labour market in 2018 compared to the post-crisis period of 2010–2012, coupled with the growing difference between income from work and social benefits for non-working individuals, as illustrated in Figure 1. Compared to Czechia, our estimates of marginal effects are slightly lower (Galuščák and Kátay, 2014), which means that in Czechia, individuals react more sensitively to changes in *GTW* and *NNY*. Conversely, the results documented in Bičáková *et al*. (2011) reveal considerably lower marginal effects. These disparities among estimates across various studies may be attributed to different periods, methodological approaches and specificities inherent to the economies being compared.

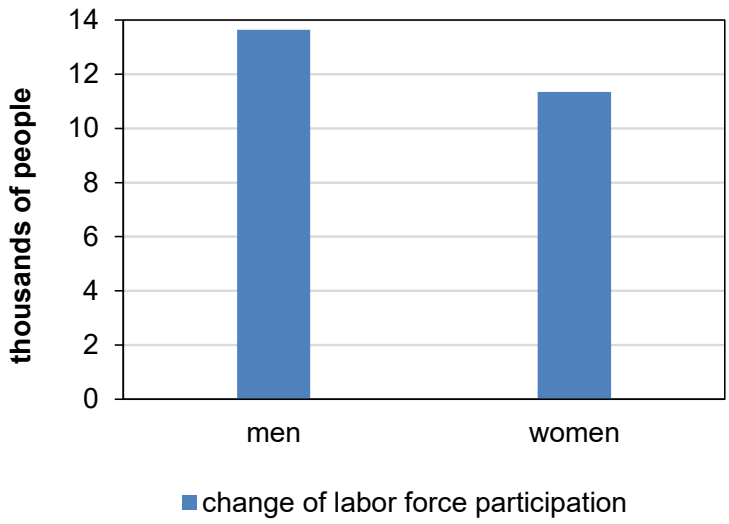
Table 6: Comparison of marginal effects among studies in Slovakia and Czechia

Country	Authors	Variable	Men	Women	Periods
Slovakia	**Senaj *et al.* (2016)**	GTW	0.08	0.12	2010–2012
		NNY	−0.04	−0.04	
	Authors' own calculations	GTW	0.181	0.225	2018
		NNY	−0.039	−0.06	
Czechia	**Bičáková *et al.* (2011)**	Net effective wage	0.0085	0.0055	2002
		Other income	−0.0076	−0.042	
	Galuščák and Kátay (2014)	GTW	0.27 (both groups)		2005–2010
		NNY	−0.1 (both groups)		

Source: Authors' own calculations

Given that material need benefits remained unchanged in Slovakia between 2017 and 2018, we can, with some simplification, approximate the change in gains to work between these years by a change of the net nominal median wage (an increase of 8.965/8.715 percentage points for men/women). Considering that the marginal effect in gains to work turned out to be roughly double compared to Senaj *et al*. (2016), with 1.506/1.240 million economically active men/women, this difference would represent approximately 13.63/11.35 thousand active men/women (Figure 5). These calculations should be considered only rough estimates due to several simplifying assumptions incorporated into the calculations.

Figure 5: Counterfactual scenarios of impact of different values of marginal effects of gains to work, Senaj *et al*. (2016) vs. authors' own estimation, on labour force participation in Slovakia for 2018



Source: Authors' own calculations based on SOSR data, 2013–2020

7. Conclusion

During the last two decades, there have been significant changes in the field of providing assistance in material need in Slovakia, which is used to ensure the minimum guaranteed income in the country. The most important change was the fact that the minimum income is not guaranteed at the level of the subsistence minimum, but this category is only used to assess whether the household is in material need or not. A household in material need will only be provided with financial assistance if its relevant income is lower than the sum for which the household would be eligible as assistance in material need (the relevant income comprises the material need benefit and its four possible supplements). A partial analysis of the difference in the change of net income during unemployment and net income after entering the labour market showed that the motivation for the long-term unemployed to find employment has increased over time. This positive trend has been supported primarily by faster growth of (minimum) wages compared to the growth of social benefits, but also the fact that the assistance in material need has been made stricter. A significant role is also played by the fact that there has been an essential change in the guaranteed minimum income, which does not reach the level of the subsistence minimum.

In the article, we examined the marginal effects of factors influencing the labour market participation of the population falling below the subsistence minimum, a group that, to our knowledge,

has not yet been studied under the conditions of the Slovak economy. Our results confirm that this population reacts more sensitively to changes in working and non-working incomes compared to the total population (Tables 2–5). We assume that our conclusions about the effect of *GTW* on labour market participation would hold in other countries with similar levels of income inequality. Given that Slovakia is among the EU countries with the lowest level of income inequality, it can be expected that the reactions to the change in the *GTW* of the population falling below the minimum subsistence in countries with a higher level of inequality will be more prominent when compared to the effect that we have observed for Slovakia.

In addition, as part of our results, we offer more recent estimates of the determinants of labour market participation in Slovakia, which are methodologically comparable to the estimates obtained for 2010–2012 (Senaj *et al*., 2016). These newer estimates of the marginal effects of the determinants of labour market participation allow us to track their dynamics in different phases of the economic cycle (recession/expansion) and to examine the impact of strengthening the differences between labour income and social benefits in the case of non-work. From the estimates obtained, it can be concluded that with the growth of *GTW* in the period of economic growth (2018), individuals are more motivated to participate in the labour market (the marginal effect for men/women is 0.18/0.23) compared to the period of recession (2010–2012), when the marginal effects were significantly lower (0.08/0.12 for men/women).

Our results also show that an increase in social benefits decreases the motivation to work mostly for those individuals for whom the additional benefit from work is low, *i.e.*, especially for people with a low level of education and mothers with dependent children. The most sensitive reaction to changes in *GTW* and *NNY* can be found among members of households with income below the subsistence minimum. The fact that the marginal effects are relatively low can be associated with a relatively low level of social security compared to other European countries. When creating social policies, it is necessary to consider support of the most vulnerable groups at the highest risk of poverty and, at the same time, account for the motivation of individuals to find a job. Similarly, policies directed at motivating people to work should focus especially on groups with the highest marginal effects of gains to work on the likelihood of being active. Together with the changes in the system of motivating the long-term unemployed to find permanent employment even for low, *i.e.*, minimum wages, it will be necessary to spend more funds on active labour market policies in the future, together with improving their efficiency in order for these policies to not only help maintain work habits and get new experience and skills for the long-term unemployed but also to ensure a sufficient number of jobs for permanent employment of the previously long-term unemployed. Only then will it be possible to decrease the number of people with long-term dependence on social benefits and in the poverty trap more significantly.

Future research could focus on examining how the increase in inflation in the post-COVID period has affected individuals' behaviour in relation to labour market participation. It would also be interesting to analyse these relationships based on the data from several countries (*e.g.*, Slovakia and Czechia) to capture the role of different welfare systems in individual countries in individuals' decision-making process regarding their participation in the labour market in the period of high inflation using a more refined empirical methodology.

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Appendixes

Appendix 1: Heckman's model of estimating gross wage for men and women

lgwame	Men		Women	
1bn. pop_dens	–	–	–	–
2. pop_dens	−0.0792***	(−3.85)	−0.0471**	(−2.43)
3. pop_dens	−0.0909***	(−4.38)	−0.0684***	(−3.57)
1bn. region	–	–	–	–
2. region	−0.0479*	(−1.91)	−0.169***	(−6.57)
3. region	−0.0711***	(−3.03)	−0.170***	(−6.58)
4. region	−0.0490*	(−1.84)	−0.147***	(−5.80)
5. region	−0.0868***	(−3.57)	−0.178***	(−7.12)
6. region	−0.127***	(−5.00)	−0.159***	(−6.55)
7. region	−0.151***	(−6.17)	−0.230***	(−10.17)
8. region	−0.131***	(−5.11)	−0.160***	(−6.66)
exp	0.0135***	(4.53)	0.00606***	(2.79)
exp2	−0.000298***	(−4.50)	−0.000101**	(−2.16)
1bn.ed	–	–	–	–
2.ed	0.164***	(3.90)	0.121***	(3.74)
3.ed	0.420***	(9.76)	0.397***	(11.38)
Constant	6.719***	(121.99)	6.605***	(145.79)
lnny	−0.0827*	(−1.67)	−0.122***	(−2.88)
1bn.edu	–	–	–	–
2.edu	0.566***	(4.54)	0.490***	(4.12)
3.edu	1.086***	(7.51)	0.995***	(7.89)
exp	0.219***	(12.33)	0.174***	(13.08)
exp2	−0.00197***	(−5.33)	−0.00166***	(−5.81)

	Men		Women	
ill	−0.796***	(−10.56)	−0.802***	(−12.90)
parent3b	0.112	(0.71)	−2.065***	(−16.49)
parent3o	0.0312	(0.35)	−0.361***	(−5.15)
workpartner	0.336***	(4.23)	0.0602	(0.91)
stud_	−7.665***	(−51.38)	−10.91***	(−6.31)
pens	−2.439***	(−13.61)	−2.456***	(−15.69)
1 pop_dens	–	–	–	–
2. pop_dens	−0.113	(−1.27)	−0.0526	(−0.65)
3. pop_dens	−0.258***	(−2.80)	−0.0634	(−0.80)
1bn. region	–	–	–	–
2. region	−0.0554	(−0.37)	−0.445***	(−3.78)
3. region	−0.189	(−1.33)	−0.343***	(−3.06)
4. region	−0.211	(−1.52)	−0.557***	(−5.19)
5. region J	−0.154	(−1.15)	−0.446***	(−4.05)
6. region	−0.278**	(−2.20)	−0.352***	(−3.22)
7. region	−0.336***	(−2.65)	−0.336***	(−3.20)
8. region	−0.350***	(−2.79)	−0.459***	(−4.15)
age	−0.0618*	(−1.94)	−0.00563	(−0.22)
age2	−0.0779**	(−2.05)	−0.101***	(−3.36)
Constant	2.481***	(3.28)	1.801***	(2.83)
Observations	5295	–	6118	–
N_cens	2253	–	3297	–
LR ($\rho = 0$)	19.73	Prob > χ^2 = 0.00	9.329	Prob > χ^2 = 0.00

Note: The brackets list the test statistics of Student's distribution; *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively; the reference values for dummy variables are as follows: population density (1. high population density), region (Bratislava), education (primary). For reasons of possible inconsistency, standard deviations were acquired by bootstrap with 1,000 replications. The justification of using Heckman's selection model was statistically verified by the LR test (H_0: $\rho = 0$), which rejected the zero hypothesis at the 1% significance level.

Source: Authors' own calculations

Appendix 2: List of variables used for employment probability model for Slovakia

Variable	Description
lgtw	Natural logarithm of the *GTW* variable representing the net employment effect expressed as the difference between net wage and the loss of social benefits after finding employment
lgwam	Natural logarithm of gross monthly wage expressed as the sum of financial income from employment and gross profit from business activity and self-employment
lnny	Natural logarithm of net incomes of an individual's household calculated as net household income minus the individual's work income plus material need benefits and supplements if the individual did not work
pop_dens	Dummy variable representing urbanisation level (1 – area with a high population density: at least 1,500 inhabitants per km2 and a minimum population of 50,000; 2 – area with an average population density: at least 300 inhabitants per km2 and a minimum population of 5,000; 3 – area with a low population density: grid cells outside urban clusters)
REGION	Dummy variable representing the region (1 Bratislava; 2 Trnava; 3 Trenčín; 4 Nitra; 5 Žilina; 6 Banská Bystrica; 7 Prešov; 8 Košice)
exp	Number of years of experience
exp2	Number of years of experience squared
edu	Dummy variable for education level (1 – primary; 2 – secondary; 3 – tertiary)
ill	Dummy variable for a person suffering from various chronic (permanent) diseases or conditions (1 – yes; 0 – no)
parent3b	Dummy variable for a parent with a child < 3 years of age (1 – yes; 0 – no)
parent3o	Dummy variable for a parent with a dependent child ≥ 3 years of age (1 – yes; 0 – no)
workpartner	Dummy variable for the existence of the individual's working partner (1 – yes; 0 – no)
stud_	Dummy variable for whether the individual is a student (1 – yes; 0 – no)
pens	Dummy variable for whether the individual is a pensioner (1 – yes; 0 – no)
un	Dummy variable for whether the individual's economic activity in the reference period was at work (1 – yes; 0 – no)
age	Respondent's age
age2	Respondent's age squared

Source: Authors' own calculations

Appendix 3: Summary statistics of variables used in models

Variable	Obs	Mean	Std. dev.	Min	Max
gtw	12,001	7592.405	1634.609	1126.9	13,713.5
gwa	14,655	4838.288	6193.318	0	49,690.0
nny	12,719	13668.52	8097.737	1496.0	66,707.1
pop_dens	12,719	2.180439	0.77966	1	3
REGION	12,719	4.588883	2.317353	1	8
exp	14,594	20.89174	16.47381	0	65
edu	14,629	1.910657	0.651465	1	3
ill	14,655	0.316684	0.465199	0	1
parent3b	14,655	0.040328	0.196733	0	1
parent3o	14,655	0.187718	0.3905	0	1
workpartner	14,655	0.27506	0.44656	0	1
stud_	14,655	0.064415	0.245499	0	1
pens	14,655	0.269191	0.443555	0	1
un	14,655	0.43016	0.495115	0	1
age	14,654	44.21373	22.48768	0	101

Source: Authors' own calculations

Appendix 4: Summary of material need benefit used for calculations of gains to work (*GTW*)

Subsistence minimum	Financial need is a state when the income of the household members does not reach the amount of the subsistence minimum and the household members cannot secure income or increase their income by working, exercising property rights or other rights to property and applying claims. Material need is determined by assessing the income, assets and the possibility of applying for the claims of household members. A person in material need is entitled to assistance in material need if they meet the conditions established in Act No. 417/2013 on Aid in Material Need. The amount of assistance in material need is calculated as the difference between the sum of benefits and individual allowances and income.
Material need benefit	The allowance is intended to ensure basic living conditions. The allowance distinguishes among an individual, an individual with a child or at most four children, a couple without children, a couple with a child or at most four children, an individual with more than four children, a couple with more than four children.
Protection allowance	The protection allowance is intended to ensure the personal expenses of a household member who does not have the opportunity to secure an income or increase their income through their own work (*e.g.*, a person who has reached the age required to be entitled to an old-age pension, a person disabled due to a decrease in the ability to perform gainful activity by more than 70%, a person who takes care of a person with a severe disability dependent on care on a daily basis; for more details see Act No. 417/2013).
Activation allowance	The activation allowance is intended to support the acquisition, maintenance, deepening or increase of knowledge, professional skills, practical experience and work habits to increase application on the labour market (belongs to a person who has an income from dependent activity at least in the amount of the monthly minimum wage, or is in the register of job applicants; for more details, see Act No. 417/2013).
Allowance for dependent children	The allowance for dependent children is intended to support the upbringing, education and all-round development of a child in the household who properly fulfils compulsory school attendance. It is provided for every dependent child attending compulsory school.
Housing allowance	Housing allowance applies if any member of the household is the owner or co-owner of an apartment, the owner or co-owner of a family house, which the household uses for living, a tenant of an apartment, a tenant of a family house or a tenant of a living room in a facility intended for permanent residence, which the household uses for living.

Source: COFSAF. For more details, see Act No. 417/2013