**Madalina Ecaterina POPESCU, PhD (corresponding author)**
madalina.andreica@csie.ase.ro
Bucharest University of Economic Studies, Bucharest, Romania
The National Institute for Labour and Social Protection, Bucharest, Romania

**Eva MILITARU, PhD**
eva.militaru@incsmps.ro
The National Institute for Labour and Social Protection, Bucharest, Romania

**Maria Denisa VASILESCU, PhD**
maria.vasilescu@csie.ase.ro
Bucharest University of Economic Studies, Bucharest, Romania
The National Institute for Labour and Social Protection, Bucharest, Romania

**Amalia CRISTESCU, PhD**
amalia.cristescu@economie.ase.ro
Bucharest University of Economic Studies, Bucharest, Romania
The National Institute for Labour and Social Protection, Bucharest, Romania

**Georgiana STANCIULESCU, PhD**
georgiana.stanciulescu96@gmail.com
Bucharest University of Economic Studies, Bucharest, Romania

# Stepping up Into a Future Minimum Wage Setting Mechanism in Romania: General Framework, Set of Indicators and Impact Evaluation

**Abstract.** *Under current European legislation, Romania is required to implement a minimum wage setting mechanism that relies on consultative bodies to advise the competent authorities on the socioeconomic impact of minimum wage adjustments. Comparative analysis of best European practices on minimum wage setting mechanisms does not indicate a universally applicable minimum wage setting mechanism for all member states. Therefore, in this paper, we accept the challenge of designing a mechanism proposal for Romania regarding the legal framework for implementation and operation. We also identify a minimum set of criteria and socioeconomic indicators for monitoring and impact assessments. Next, we propose a scenario for adjusting the annual statutory minimum wage for the Romanian economic context and perform an ex-ante socioeconomic impact assessment to check its applicability. In terms of methodology, we rely both on microsimulations and econometric analysis to test the micro and macroeconomic impact of several alternative minimum wage adjustments. The novelty of the paper consists mainly of the recommendations proposed to support the design of a minimum wage setting mechanism for Romania, where the national literature review is rather scarce.*

**Keywords**: *minimum wage setting mechanism, impact evaluation, legal framework, socioeconomic indicators, European Directive.*

**JEL Classification:** J38, I38, E27.

DOI: 10.24818/18423264/59.2.25.01

| Received: 24 September 2024 | Revised: 7 April 2025 | Accepted: 30 May 2025 |
|---|---|---|

## 1. Introduction

In the post-pandemic period, the minimum wage has become an important objective for both political and economic decision-makers. One reason for the growing interest is the consensus that minimum wages, set at the right level, can help low-paid workers without harming employment prospects. The question that has arisen, particularly at the EU level, has been how countries should set their optimal minimum wage. The processes that countries use to set their minimum wage rate and structure differ greatly, as do the methods for adjusting it.

According to the Directive (EU) 2022/2041 of the European Parliament and the Council on adequate minimum wages in the European Union, Romania is currently required to implement an objective minimum wage setting mechanism that considers the economic and social dynamics and allows social partners' involvement in the consultation/ negotiation process to set the minimum wage.

In order to propose an effective minimum wage setting mechanism for Romania, we first need to evaluate the current national and European minimum wage setting frameworks. The main findings of our comparative analysis of best EU practices of minimum wage setting mechanisms do not indicate an ideal unique minimum wage setting mechanism universally applicable to all member states. In this context, the process of setting the national minimum wage should be adapted to the specificities of each labour market, as it can vary substantially from one country to another in terms of low-wage workers, formal and informal economy, and labour market regulations (European Commission, 2022, 2024).

Although the decision-making process for setting the national minimum wage may considerably vary from one country to another, there is a permanent growing interest in using consultative bodies or groups of experts to advise the competent authorities in terms of statutory minimum wage. Such a trend may be considered a successful approach, especially because the institutions or expert groups may perform ex-ante and ex-post impact assessments providing the Government with a set of minimum wage policy recommendations (Popescu et al., 2017).

The novelty in the paper consists of designing an objective minimum wage setting mechanism tailored for Romania. Compared to previous attempts in the literature (Popescu et al., 2017), the current mechanism proposal is in line with the Directive's guidelines and with the general objective of the reform provided in the National Recovery and Resilience Plan.

We first tackle the legal framework for the implementation and operation of such a mechanism considering the national context. Next, we formulate a set of procedures for setting the statutory minimum wage, based on a set of objective criteria that ensure decent living conditions, reduced in-work poverty rate and gender income inequality, social cohesion, and increased social convergence. The minimum wage setting mechanism should aim to protect, at the same time, the existing jobs and to create new ones to support fair competitiveness between firms, including

small and medium-sized enterprises (SMEs). Taking into consideration the Directive's guidelines, we identify the most relevant objective criteria and socioeconomic indicators for monitoring and ex-ante impact assessments. Next, we propose a scenario for adjusting the annual statutory minimum wage in Romania and perform an ex-ante socioeconomic impact assessment to check its applicability. In terms of methodology, we performed both microsimulations and econometric analysis to test the micro and macroeconomic impact of several alternative minimum wage adjustments. Throughout these steps, several recommendations will be proposed to support the design of a minimum wage setting mechanism for Romania, where the national literature review is rather scarce.

## 2. Fundamental aspects underlying the development of a minimum wage setting mechanism

In recent decades, the minimum wage has become an accepted way to tackle the extremes of low pay in many countries. Numerous methods are used to set minimum wages around the world. In most states, the government has complete control over minimum wages. Models for setting the minimum wage include formulas, government rate setting, union-bargained rates, and rates recommended by a group of experts. Expert groups whose recommendations are informed by socioeconomic analyses have the advantage of being able to respond to changing economic conditions and build consensus between businesses and workers without political interference.

At the European level, there are only six countries with sectoral minimum wage regimes established through collective bargaining (Austria, Cyprus, Denmark, Finland, Italy, and Sweden). Meanwhile, the majority of minimum wage setting mechanisms in the EU do legally provide a single value for the statutory minimum wage. Nevertheless, there are important differences in terms of what role the social partners play in adjusting the minimum wage level. Within the universal scheme, the minimum wage is set by the Government's institutionalised decisions (EUROMOD, 2010-2022, OECD, 2021).

More specifically, there are a few countries where the minimum wage indexation process matches a particular indexation formula, social partners being, however, required to advise on the amount. In this case, several adjustments are being supported prior to the implementation (Belgium, France, Luxembourg, Malta, The Netherlands, Slovenia). In other countries, the perspectives of social partners are considered by a scientific committee, which then provides recommendations on the minimum wage indexation process. This is the case for Germany, Greece, Ireland, France, and the United Kingdom. However, for most countries, including Romania, the minimum wage is decided by the government, following bilateral consultative processes (Bulgaria, Spain, Croatia, Hungary, Latvia, Malta, Portugal, Slovenia, and Romania). There is also the alternative of tripartite consultative processes before the Government's decision on the minimum wage level (Lithuania, Poland, Slovakia) (Schulten, 2014; Schulten et al., 2015).

All differences related to minimum wage setting mechanisms are explained by the specific legal regime of each country. Another very important role is played by the national socioeconomic context. Moreover, using multiple minimum wage levels for different categories of workers is also specific to the overall context. However, most of the arguments seem to be in favour of a relatively simple structure, since setting multiple minimum wage levels in one economy raises the complexity of the system and its difficulties. A more suitable alternative would probably be to differentiate the minimum wage level based on age criteria to better target the poorer population and the employees with low wages. However, a very complex set of rates may, in general, determine a lower level of compliance.

Nowadays, more and more countries have taken over, to some extent, the pattern of the United Kingdom to set the minimum wage. The model involves a consultative body of experts advising the government, although the latter makes the final decision. In this way, a depoliticised process is guaranteed, as it is based on socioeconomic criteria. Also, it is of high importance to correctly pick up the institutions or groups of experts that are taking part in the process, as they shall be able to perform complex ex-ante and ex-post impact assessments. In this way, the minimum wage setting policy responds to economic shocks without generating other imbalances. Although consultative bodies may or may not have the right to vote in the decision-making process, they may be able to provide recommendations regarding minimum wage rates without being influenced by the political field or by any other excessive constraints.

Moreover, the minimum wage setting mechanism shall be exclusively based on objective socioeconomic criteria. Therefore, the mechanism should provide a specific annual minimum wage adjustment process, based on the evolution of certain relevant economic indicators, such as the price level, GDP per capita growth rate, or gross earnings. Hence, a minimum wage increase with the inflation rate maintains the same purchasing power, while a minimum wage rise based on the growth rate of GDP per employed population will consider the general dynamics of productivity. Nevertheless, an indexation of minimum wage based on the gross earnings growth rate keeps the ratio between minimum wage and gross average wage constant.

Finally, considering the current interest in implementing a minimum wage setting mechanism, it is of great importance that social partners are also involved. Therefore, the Government's decision should be made only after consultations/negotiations with them to ensure the representation of all involved parties. As a general conclusion to be deduced from the comparative analysis between different minimum wage setting mechanisms among EU countries, applying an indexation mechanism is limited, and the negotiation process has an essential contribution in setting up the statutory minimum wage.

Considering the Directive (EU) 2022/2041 on adequate minimum wages in the EU, along with the findings of the previous exercise to propose a Romanian minimum wage mechanism by the National Scientific Research Institute for Labour and Social Protection (INCSMPS) funded by the European Commission in 2017 (Popescu et al., 2017), a minimum wage setting mechanism in Romania shall be

based on objective criteria, shall consider the socioeconomic impact and involve the social partners in the consultation/negotiation process. The main aspects which we propose for a minimum wage setting mechanism in Romania are the following:

- Providing a suitable minimum wage level to ensure decent living conditions, reduced in-work poverty, social cohesion and increased social convergence.
- Setting up several objective criteria to adjust the minimum wage, as per international practice, and considering the national socioeconomic context and Directive's provisions.
- Setting a scenario and a set of socioeconomic indicators to monitor and perform ex-ante impact assessments.
- Considering a consultative body, the National Tripartite Council for Social Dialogue (NTCSD), to facilitate consultations/negotiations regarding the minimum wage level adjustment.
- Designation of a research organisation specialised in impact assessment in the labour market field to formulate recommendations on minimum wage levels as a result of the ex-ante impact assessment.
- Better involvement of social partners within NTCSD when setting the minimum wage, to enhance governance through effective socioeconomic policies.
- Annual updates of the statutory minimum wage.
- The use of guiding benchmarks to check the suitability of the minimum wage (for example, one can consider 60% of the gross median wage or 50% of the gross average wage).
- The implementation of a transparent minimum wage setting mechanism based on objective criteria and socioeconomic impact assessment.

## 3. Model specification

The minimum wage setting mechanism that we propose for Romania in this paper considers the following aspects: (1) legal framework for implementing and operating the mechanism; (2) objective criteria and socioeconomic indicators for monitoring and ex-ante impact assessments; (3) scenario for adjusting the annual minimum wage and (4) ex-ante impact assessment based on the proposed scenario.

### *3.1 Legal framework for implementing and operating the mechanism*

According to the Labour Code (art. 164 from Law no 53/2003), the gross national minimum wage, corresponding to a normal working schedule, is decided through a Government Decision (GD) after consultations with social partners. The GD also establishes the minimum wage, differentiated according to certain criteria: for example, the level of studies (higher studies for the period 2019-2022) or in certain fields of activity, depending on certain needs and strategic and investment priorities (for example, differentiated minimum wages in construction starting from

2019, or in the agricultural sector and the food industry starting from 2022), with a series of fiscal facilities for these sectors related to taxation and social contributions.

Considering the Directive (EU) 2022/2041 recommendations, we propose that the Ministry of Labour and Social Solidarity (MLSS) should designate a research organisation with expertise in impact assessment in the labour market field. MLSS, throughout this institution, would be responsible for the technical analysis of the minimum wage adjustments and ex-ante/ex-post socioeconomic impact assessment using a pre-defined set of indicators.

NTCSD would remain the main consultative body in the minimum wage setting consultations process with social partners but would rely on the impact assessment results provided by MLSS.

Currently, the national legislation provides procedural steps in setting the minimum wage after consultations with social partners, as per below:

- within the NTCSD, constituted at the level of the Government, based on the Social Dialogue Law no 367/2022, as amended and supplemented;
- within the Social Dialogue Commission from MLSS, as per Social Dialogue Law no 367/2022;
- within the Economic and Social Council, according to Law no. 248/2013 on the organisation and functioning of the Economic and Social Council, republished, with subsequent amendments and additions.

Finally, after the new minimum wage level is adopted, the research organisation specialised in impact assessment in the labour market will monitor its effects and perform an ex-post impact assessment.

### *3.2 Objective criteria and socioeconomic indicators for monitoring and ex-ante impact assessments*

Regarding the objective criteria to be considered for setting the minimum wage level, we suggest the following set of criteria, in accordance with the Directive (EU) 2022/2041, as presented in Table 1.

**Table 1. Correspondence between the indicators proposed to adjust the minimum wage and the criteria stated in the Directive (EU) 2022/2041**

| Criteria provided by the Directive | Indicators proposed for minimum wage adjustment |
|---|---|
| (1) purchasing power of legal minimum wages, considering the cost of living | Consumer price index (CPI) |
| (2) general level of earnings and their distribution | The ratio between gross minimum wage and gross average wage |
| (3) wage growth rate | Gross average wages |
| (4) long-term productivity | Real GDP growth rate |

*Source*: Authors' processing.

Regarding the minimum set of socioeconomic statistical indicators for monitoring and impact assessments, we suggest the following: (1) social indicators (relative poverty rate and income inequality); and (2) economic indicators (unit

labour cost, real productivity per employed person index, Industry, Services, as well as Hotels and Restaurant turnover indexes, for which data was available).

Based on the particularities of the aforementioned context, we propose a scenario regarding the evolution of the minimum wage in Romania. It can be modified over time, in parallel with the dynamics of the national socioeconomic context, as well as with statistical evidence, by the MLSS through the specialised institution in impact assessment in the labour market field within the minimum wage setting mechanism. We specify that if the minimum wage setting criteria have a forecasted annual evolution of less than 1%, the value of the minimum wage will be kept unchanged.

### *3.3 Scenario for adjusting the annual minimum wage*

We propose a scenario that adjusts the minimum wage with the forecasted inflation rate, provided by the National Commission for Strategy and Prognosis (NCSP). Moreover, if the computed ratio between the gross minimum wage and the gross average wage forecasted for the following year is less than 47%, the gross minimum wage can be supplementary adjusted with [50%-100%] of the forecasted real GDP growth rate, but without overcoming the 50% threshold between the gross minimum wage and gross average wage.

$$\Delta\, Gross\ minimum\ wage_{t+1} = \begin{cases} \Delta\, CPI_{t+1}, if\ \dfrac{Gross\ minimum\ wage_{t+1}}{Gross\ average\ wage_{t+1}} \in [47\% - 50\%] \\ \Delta\, CPI_{t+1} + [50\% - 100\%] * \Delta\, \mathrm{GDP}_{t+1}, if\ \dfrac{Gross\ minimum\ wage_{t+1}}{Gross\ average\ wage_{t+1}} < 47\% \end{cases}$$

Table 2 below describes the evolution of the gross minimum wage (MW), considering the forecasted values for the following year according to NCSP for the gross average wage, GDP, and inflation rate.

**Table 2. Hypothesis for the proposed scenario**

| | **% CPI adjustment** | | | **% CPI adjustment + 50% of % GDP** | | | **% CPI adjustment + 75% of % GDP** | | | **% CPI adjustment + 100% of % GDP** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Gross MW (RON) | ΔGross MW (%) | Ratio MW/average wage | Gross MW (RON) | ΔGross MW (%) | Ratio MW/average wage | Gross MW (RON) | ΔGross MW (%) | Ratio MW/average wage | Gross MW (RON) | ΔGross MW (%) | Ratio MW/average wage |
| 2023 | 3300 | | 44,5% | 3300 | | 44,5% | 3300 | | 44,5% | 3300 | | 44,5% |
| 2024 | 3491 | 5,8% | 46,4% | 3561 | 7,9% | 47,3% | 3595 | 9,0% | 47.8% | 3630 | 10% | 48,3% |

*Source*: Authors' processing based on data available on NCSP and NIS.

Based on this hypothesis, for 2024 we will first study the impact of a 5.8% adjustment of the minimum wage, representing the annual forecasted level of the inflation rate for 2024, provided by NCSP. The new minimum wage over average wage ratio is estimated at 46.4%, as a result of reporting the new minimum wage

level (3491 RON) to the value forecasted by the NCSP for 2024 of the average gross wage (7522 RON).

The cases of increasing the minimum wage by additionally 50%, 75%, and 100% of the growth rate of the real GDP forecast for 2024 by NCSP (4.2%) were also studied. Thus, the cases of increasing the minimum gross wage by 7.9%, 9%, and 10%, respectively, compared to the year 2023 were additionally evaluated.

### *3.4 Ex-ante impact assessment based on the proposed scenario*

The minimum wage setting mechanism should provide annual impact assessments of the socioeconomic effects of minimum wage adjustments. The impact assessment study should include both ex-ante and ex-post analysis based on minimum wage increases. This section presents an ex-ante analysis of the socioeconomic effects of the minimum wage adjustment based on the proposed scenario as an example of how to carry out the impact assessment. The main limitation of the study is related to data availability, as accurate and recent data with wide coverage are needed for evidence-based policy development and evaluation.

#### *3.4.1 Ex-ante social impact assessment*

For the ex-ante social impact assessment, we performed microsimulations on households' income. The minimum wage adjustments were simulated on a representative sample of households/individuals from the European Union Statistics on Income and Living Conditions (EU-SILC), conducted annually by the National Institute of Statistics (NIS), with data provided by Eurostat. The survey is nationally representative for Romanian households, the sample consisting of approximately 7,000 households and 16,000 -17,000 individuals over the age of 16 years. The results obtained were extended to the total population from which the sample was drawn. Our simulations are based on the 2022 survey, which reports income data for 2021. Since the ex-ante simulations of minimum wage changes pertain to 2024, we adjusted the monetary variables from 2021 to 2024 using income-specific uprating factors, while maintaining the original sociodemographic and labour market characteristics unchanged.

Employees earning around the minimum wage were identified based on gross wages, adjusted to account for variations in working hours. To reduce exclusion errors - given several limitations of the EU-SILC sample in representing employees and wage levels - workers with gross earnings between 80% and 110% of the statutory minimum wage were included. However, the number of employees captured by the sample is likely underestimated, as the survey is not specifically designed to ensure the representativity of the employed population. Furthermore, average gross wages are also underestimated, as higher-income earners tend to be underrepresented. Legally, the statutory minimum wage is defined in terms of the base salary rather than total earnings; however, this distinction is not captured in the survey data.

Microsimulations for each of the four minimum wage adjustment scenarios were conducted using the EUROMOD model. The model can simulate social benefit entitlements according to policy rules and eligibility criteria, as well as calculate individual social contributions and taxes based on applicable tax regulations. The integration of the model with survey data is essential, as it allows for a more comprehensive assessment of the distributional effects of minimum wage adjustments. By simulating the resulting changes in social benefits and tax liabilities, the model helps to capture the broader impact of policy changes on household income, insights that cannot be fully derived from survey data alone. It is important to note that full benefit take-up is assumed in the simulations, with the sole exception of the minimum guaranteed income from social assistance. Similarly, full tax compliance is considered, except for self-employed individuals in agricultural activities residing in rural areas with income levels below the average gross wage, for whom specific adjustments are applied.

The ex-ante social impact of the minimum wage adjustment was estimated by analysing the effects on the following indicators:

1. At-risk-of-poverty rate, In-work poverty rate, At-risk-of-poverty rate among employees and among employees paid at the minimum wage level
2. Income and wage distribution, through the Gini coefficient of disposable income, Gini coefficient of wages, and the 90/10 ratio of wages (mean of the highest 10% vs. mean of the lowest 10%).

The at-risk-of-poverty rate was estimated using equivalised disposable household income, calculated by subtracting taxes and social contributions from gross income and adding social transfers. The resulting income was then adjusted using the modified OECD equivalence scale. The poverty rate is relative to the threshold of 60% of median equivalised disposable income (Eurostat standard methodology). The effects captured are static, as they do not consider behavioural responses or potential changes in other wages resulting from a minimum wage increase.

The social effects of the increase in the minimum wage are summarised in Table 3 below. The increase in the minimum wage generally leads to an improvement in the at-risk-of-poverty rate – both among the overall population and among employees, the employed population, and especially those earning the minimum wage. As for the overall total at-risk-of-poverty rate, it decreases with rather small values. In practical terms, a 5.8% increase in the minimum wage would lead to a 0.05 percentage point reduction in the poverty rate. However, it should be noted that when the minimum wage is adjusted both with the CPI and additionally with a percentage of the GDP rate (7.8% to 10% minimum wage increase), the at-risk-of-poverty rate among the total population remains largely unchanged, showing that minimum wage effects on overall poverty are rather limited.

Concerning the at-risk-of-poverty rate among employees, the impact is more important. In the baseline scenario, with a 5.8% increase in the minimum wage, the poverty rate among wage earners would decrease by 0.13 percentage points. A

greater impact is achieved when the minimum wage is increased by both the CPI and the GDP growth rate. In this case, the minimum wage would increase by 9%, and the relative poverty rate among employees would decrease by 0.14 percentage points. In-work poverty would decrease by 0.4 percentage points both when the minimum wage increases by 5.8 % (adjustment only based on the CPI), as well as for minimum wage increases by 9%, respectively, 10% (when the adjustment would take place based on both CPI and GDP growth rate).

The greatest impact on the level of poverty is observed on the poverty rate among wage earners paid with the minimum wage. The most significant impact is seen with a 10% increase in the minimum wage, resulting in a 4.0 percentage point reduction in the poverty rate. This substantial impact highlights that the benefits of increasing the minimum wage are particularly reflected in the improved living standards of families with members earning the statutory minimum wage. Thus, raising the minimum wage plays a key role in supporting employees at the lower end of the income distribution, helping them reach a more decent standard of living and escape economic vulnerability.

**Table 3. Social impact of minimum wage adjustment**

| Impact simulation | CPI | CPI+50% of GDP growth rate | CPI+75% of GDP growth rate | CPI+100% of GDP growth rate |
|---|---|---|---|---|
| Minimum wage adjustment | 5,8% | 7,9% | 9% | 10% |
| At-risk-of-poverty rate – total population | -0.05pp | -0.01pp | -0.03pp | -0.02pp |
| At-risk-of-poverty rate - employees | -0.13pp | -0.12pp | -0.14pp | -0.13pp |
| In-work poverty – At-risk-of-poverty rate for employed population | -0.40pp | -0.38pp | -0.40pp | -0.40pp |
| At-risk-of-poverty rate - Employees paid with minimum wage | -3.25pp | -3.37pp | -3.78pp | -3.99pp |
| Disposable income inequality – GINI coefficient | -0,7% | -0,8% | -0,9% | -1% |
| Inequality of wage distribution – GINI coefficient | -3,1% | -3,6% | -3,8% | -4% |
| Inequality of wage distribution – S90/S10 ratio | -7,6% | -8,6% | -9,2% | -10% |

*Source*: Authors' processing based on EUROMOD 4.0 model + EU SILC data.

Moreover, the impact on disposable income inequalities (Gini coefficient) and on the inequality of wage distribution (Gini coefficient and S90/S10 ratio) have been simulated. The more substantial the increase in the minimum wage, the more pronounced the positive effects tend to be, generally revealing a direct relationship between the growth rate of the gross statutory minimum wage and the magnitude of the estimated impact on inequality. In terms of disposable income inequalities, the greatest impact is recorded as a result of a 10% increase in the minimum wage, which leads to a 1% decline in income inequality. This modest reduction suggests that an

increase in the minimum wage has a limited effect on reducing overall income inequality, given that the minimum wage primarily affects the earnings of a specific category of employees and has a smaller impact on other income sources, such as self-employment income, financial income, property income, or other forms of earnings that contribute to overall income inequality.

The impact of minimum wage on the inequality of the wage distribution, computed based on the Gini coefficient, is important and varies between -3.1% and -4%, with the greatest impact for the same minimum wage increase of 10%. This reflects greater equity in the distribution of wages, as the earnings of low-wage workers move closer to those of middle- and high-income earners. The reduction in disparities is more noticeable within the wage distribution than in the overall income distribution, given that the minimum wage directly affects salaries but has a limited influence on other income sources.

The results for the S90/S10 ratio follow a similar pattern, with even stronger effects, showing up to a 10% reduction in the gap between the top 10% and bottom 10% of wages. This shows that increasing the minimum wage primarily helps reduce the most extreme wage disparities, having the strongest positive impact on the most vulnerable employees, those who are most often paid at the minimum wage level. Our findings are consistent with prior studies indicating that the minimum wage may reduce inequality (Mayilyan and Torosyan, 2023; Nita et al., 2020).

*3.4.2 Ex-ante economic impact assessment*

The models assessing the impact of the minimum wage on the main macroeconomic indicators of the labour market were constructed using quarterly data for the period 2000-2022, with data from official sources such as Eurostat, the Tempo database of the NIS, and the MLSS. Variables expressed in monetary units have been adjusted for comparability using the GDP deflator or the CPI, with 2015 as the reference year. Data were also transformed into logarithmic form to ensure homogeneity in the econometric models.

The methodological approach used to analyse the effects of minimum wages on the economy was multiple linear regression. The performance of the regression model depends on the combination of predictor variables, as the significance of an explanatory variable is influenced by the presence of other predictors in the model (Alexopoulos, 2010).

The general model used can be expressed as follows:

$$y_t = \alpha + \beta \cdot min\_wage_t + \gamma_i \cdot X_{it} + \varepsilon_t$$

where $y$ represents the economic indicator of interest, $X$ contains the other explanatory variables included in the model, along with the *minimum wage*, and $\varepsilon$ is the error term. Five models were constructed to estimate the impact of the minimum wage on various economic indicators: labour cost (measured by the unit labour cost index), labour productivity (represented by the labour productivity index), and turnover in the Services, Industry, and Hotels and Restaurants sectors (expressed in

the models as turnover indices for each of these three sectors). Additional explanatory variables included indicators such as the employment rate, gross fixed capital formation (% of GDP), employees' remuneration (% of GDP), and foreign direct investment (% of GDP). The final models retain only the explanatory variables that are statistically significant.

For the validation of the econometric models, compliance with the classical assumptions of multiple linear regression models was assessed. We started by ensuring the fulfilment of the multicollinearity assumption, which, given the nature of the indicators used, had a high probability of being violated. The normality of the errors was checked with the Jarque-Bera test, which compares the distribution of the residuals with the normal distribution. Autocorrelation of the errors was tested using the Breusch-Godfrey LM test, while the Breusch-Pagan-Godfrey test was used to check for homoscedasticity, which assesses the constancy of the variance of the errors, a necessary condition for efficient estimates. Since diagnostic testing indicated that some of these assumptions were not fully satisfied, a robust estimation method proposed by Newey and West (1987) was applied, which gives consistent results in the presence of heteroscedasticity and/or autocorrelation of the errors. The results for each model are summarised in Table 4.

**Table 4. Econometric estimation results**

| No | Regression models | Normality *(Jarque-Bera Test)* | Autocorrelation *(Breusch-Godfrey Test)* | Homoscedasticity *(Breusch-Pagan-Godfrey Test)* |
|---|---|---|---|---|
| 1 | l_labour_cost = 7.812 + 0.653*l_min_wage - 0.218*l_productivity - 1.703*l_employment_rate | 2.74 | 57.36* | 11.93* |
| 2 | l_productivity = 2.273 +0.436*l_min_wage + 0.311*l_gfcf – 0.484*l_empl_remuneration | 6.85 | 74.18* | 0.48 |
| 3 | l_turnover_industry = 1.989 + 0.828*l_sal_min + 0.396*l_productivity + 0.401*l_gfcf – 1.789*l_empl_remuneration + 0.086*l_fdi | 0.78 | 30.39* | 12.90 |
| 4 | l_turnover_services = -0.575 + 0.886*l_sal_min + 0.379*l_productivity + 0.849*l_gfcf – 1.554*l_empl_remuneration + 0.097*l_fdi | 10.11* | 30.46* | 8.08 |
| 5 | l_turnover_hotels_restaurants = -0.283 + 0.875*l_sal_min + 0.498*l_productivity + 0.607*l_gfcf – 1.557*l_empl_remuneration + 0.152*l_fdi | 4.65 | 21.64* | 15.87* |

*Note:* * statistically significant at 1% level.
*Source*: Authors' estimation.

For performing the ex-ante economic impact simulations for the minimum wage adjustment, the econometric models have been used for the following period: Q1 2000 -Q4 2023. Data series have been amended with NCSP forecasted values, and for the indicators for which forecasts were not available at the moment of the analysis, data series have been extended using the Holt-Winters Exponential

Smoothing Procedure. This method allows the estimation of future values based on trends and seasonality observed in historical data, thus ensuring a coherent projection of the evolution of relevant economic indicators.

The results of the ex-ante simulations are presented in Table 5, highlighting the impact of minimum wage adjustments on key economic indicators. In this context, the following indicators were considered: the unit labour cost index, the real productivity per employed person index, and the turnover index in Industry, Services, and Hotels and restaurants. These indicators were selected based on their relevance in assessing the effects of minimum wage changes on the labour market and economic activity.

**Table 5. Economic impact of minimum wage adjustment**

| Impact simulation | CPI | CPI+50% of GDP growth rate | CPI+75% of GDP growth rate | CPI+100% of GDP growth rate |
|---|---|---|---|---|
| Minimum wage adjustment | 5,8% | 7,9% | 9% | 10% |
| Unit labour cost index | 5,52% | 6,66% | 7,21% | 7,76% |
| Real productivity per employed person index | 8,11% | 8,89% | 9,26% | 9,65% |
| Industry turnover index | 17,59% | 19,11% | 19,84% | 20,58% |
| Services turnover index | 10,00% | 11,60% | 12,40% | 13,20% |
| Hotels and Restaurant turnover index | -9,35% | -7,87% | -7,15% | -6,42% |

*Source*: Authors' processing based on NIS and EUROSTAT data.

Table 5 presents the simulated economic impact of different minimum wage adjustment scenarios, ranging from 5.8% to 10%, depending on the inflation level and GDP growth assumptions. As expected, a higher minimum wage is associated with increases in unit labour cost, real productivity, and turnover in most sectors, although with some sector-specific nuances.

The unit labour cost increases in response to a rise in the minimum wage, rising from 5.52% under a 5.8% wage increase to 7.76% under a 10% increase. This suggests that a substantial share of the minimum wage increase is transmitted into firms' production costs, potentially affecting competitiveness if not accompanied by corresponding gains in productivity. However, the results also indicated that the real productivity per employed person index rises in all scenarios, from 8.11% to 9.65%. This may reflect efficiency improvements due to labour reallocation, improved worker motivation, or investment in labour-saving technologies. The positive association implies that moderate increases in minimum wage can be accompanied by gains in productivity.

Considering the impact on turnover indexes across all three economic activities considered in the analysis, only for two of them, the impact records positive values. Therefore, the Industry turnover index rises by 17.6% when the minimum wage increases by 5.8%. The industry turnover index's largest impact is being reported for a 10% increase in the minimum wage. The services turnover index rises when the

minimum wage is increased with a percentage between 10% and 13.2%, the largest impact being reported for a 10% increase in the minimum wage. These trends may indicate increased economic activity driven by higher consumer demand, as minimum wage growth can enhance household purchasing power. On the other hand, the Hotels and Restaurants turnover index would fall by 9.4% if the minimum wage is increased by 5.8%. However, the percentage by which this index would decrease is not continuously rising as the minimum wage increases; by contrast, it decreases to 6.4%. This negative response may reflect the labour-intensive nature of the sector and its limited capacity to absorb higher wage costs, making it more vulnerable to wage policy changes.

The simulation results suggest that minimum wage increases can have positive effects on productivity and turnover in some sectors, but may also generate cost pressures, especially in labour-intensive industries with lower profit margins.

## 4. Conclusions and recommendations

Throughout this analysis, we aimed to formulate a set of recommendations for a Romanian minimum wage setting mechanism. As a starting point for this initiative, we considered the findings that arose from analysing the current legislative, strategic, and institutional framework in place in Romania and at the European level for setting up the minimum wage.

We also conducted a comparative analysis of the best EU practices for minimum wage setting mechanisms. Our general findings do not indicate an ideal, unique minimum wage setting mechanism that could be universally applicable to all member states. This is because minimum wage policies are very context-dependent. The legal regimes specific to each country, as well as the socioeconomic context, are of particular importance when setting the minimum wage level. However, following the practices of other countries, the mechanism proposed for Romania has two main characteristics: it is documented and transparent, ensuring both the appropriate social dialogue and a solid socioeconomic development.

In line with the Directive on adequate minimum wages in the European Union, which recommends the appointment of one or more consultative bodies to advise the competent authorities on issues related to legal minimum wages, we recommend: (1) the appointment of a specialised research institution in impact analysis in the labour market field and (2) keeping the NTCSD as the main consultative body in the minimum wage setting consultations process with social partners, but based on the impact assessment results provided by MLSS.

The specialised research institution in impact analysis in the labour market field will carry out the annual update of the socioeconomic dataset considered and the ex-ante evaluation of the impact through advanced statistical and econometric methods to provide alternatives for adjusting the minimum wage. The proposals provided will then support the consultations/negotiations between the social partners and government within the consultative body. Finally, after the new level of minimum wage is adopted, the research organisation specialised in impact assessment in the

labour market field will monitor the effects of minimum wage and perform a minimum wage ex-post impact assessment.

This institution should be politically neutral and have relevant prior expertise in minimum wage policy analysis and ex-ante and ex-post impact assessment based on microsimulations and econometric estimations.

In order to provide an impact assessment example, a socioeconomic ex-ante analysis of the effects of minimum wage adjustment is provided throughout this paper. Its results have confirmed the previous findings: in general terms, minimum wage adjustment brings multiple benefits to the population's living standard (especially in the case of minimum wage paid workers and among the employed population) and also on the inequality of the income distribution. In this context, the economic consequences are somehow contradictory. On one hand, minimum wage adjustment generates certain positive effects on the productivity and Industry turnover index. On the other hand, it has generated negative effects on the Hotels and Restaurants turnover index. However, it is clear that a minimum wage increase leads to an increase in the labour cost index and the average wage, consistent with the results of Lazar et al. (2022). It is of high importance to consider also what the minimum wage adjustment potential effects are on the long-term informal economy rather than on the formal one, playing the role of a safety valve at least for certain periods of time and for certain vulnerable categories (teenagers or low-skilled workers) (Davidescu and Schneider, 2017; Armeanu and Pascal, 2017; Popescu et al., 2018; Davidescu and Manta, 2022).

Adopting a predictable, objective, and transparent minimum wage setting mechanism is of major importance for Romania, considering the large number of minimum-wage workers. Moreover, a minimum wage setting mechanism determines decent living conditions for the employees and their families. Nevertheless, other relevant economic aspects of the minimum wage adjustment may not be ignored. Thus, the mechanism, through its application, will ensure support based on scientific evidence for consultations with social partners and political decisions in the area of minimum wage.

***Acknowledgements:*** *Part of this work was supported by Project no. 69/29.12.2022 "Study on the development of an objective mechanism for establishing the gross statutory minimum wage. Proposal for a mechanism for monitoring and evaluating the economic and social effects", and by the NUCLEU Program 2023–2026 funded by the Romanian Ministry of Research, Innovation and Digitization (PN-22100104).*

## References

[1] Alexopoulos, E.C. (2010), *Introduction to multivariate regression analysis*. *Hippokratia.* Dec; 14 (Suppl 1), 23-28.

[2] Armeanu, D., Pascal, C. (2017), *The economic and social impact of minimum wage. Economic Computation & Economic Cybernetics Studies & Research*, 51(3). 57-72.

[3] Davidescu, A.A., Manta, E.M., (2022), *Do Governance Indicators Impact the Shadow Economy? Evidence from CEE Countries. Proceedings of the 5th International Conference on Economics and Social Sciences*, ISSN 2704-6524, 777-787, doi: 10.24789788367405072-076.

[4] Davidescu, A.A., Schneider, F. (2017), *Nature of the relationship between minimum wage and the shadow economy size: An empirical analysis for the case of Romania* (No. 11247), IZA Discussion Papers, https://docs.iza.org/dp11247.pdf.

[5] European Commission (2024), *Adequate minimum wages for workers in the EU*, Retrieved from https://employment-social-affairs.ec.europa.eu/news/adequate-minimum-wages-workers-eu-2024-11-15_en.

[6] European Commission (2010-2022), EUROMOD & Joint Research Center, *Romania Country Report*, Retrieved from https://euromod-web.jrc.ec.europa.eu/resources/ country-reports.

[7] European Commission (2019-2024), *The European Pillar of Social Rights in 20 principles*, Retrieved from https://commission.europa.eu/strategy-and-policy/ priorities-2019-2024/economy-works-people/jobs-growth-and-investment/european-pillar-social-rights/european-pillar-social-rights-20-principles_en.

[8] European Commission (2022), *Directive (EU) 2022/2041 of the European Parliament and of the Council of 19 October 2022 on adequate minimum wages in the European Union*, Retrieved from https://eur-lex.europa.eu/eli/dir/2022/2041/oj.

[9] European Parliament (2022), Legislative Train 12.2022, *An economy that works for people, Fair minimum wages for workers in the European Union, Q3 2020*, Retrieved from https://www.europarl.europa.eu/legislative-train/carriage/fair-minimum-wages/report?sid=6001.

[10] Eurostat Database, https://ec.europa.eu/eurostat/data/database.

[11] Lazar, P., Paunescu, M., Nichita M.E., Fratila (Adam), A. (2022), *The Paradox of Taxation: Capital or Labor Force? Empirical Evidence for the European Union Countries. Proceedings of the 5th International Conference on Economics and Social Sciences*, ISSN 2704-6524, 216-227.

[12] Mayilyan, F.N., Torosyan, A.A. (2023), *The Impact of Minimum Wage on Income Inequality in Developing Countrie*s. In: Popkova, E.G., Sergi, B.S. (eds) ESG *Management of the Development of the Green Economy in Central Asia. Environmental Footprints and Eco-design of Products and Processes. Springer*, https://doi.org/10.1007/978-3-031-46525-3_38.

[13] National Institute of Statistics data, http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table.

[14] Nita, S.C., Radulica, M.I., Gunnarsson, G. (2020), *The Evolution of Inequalities and the Impact of Education on Economic Growth in Romania*, *Proceedings of the 3rd International Conference on Economics and Social Sciences*, ISSN 2704-6524, 470-478.

[15] Newey, W.K., West, K.D. (1987), *A Simple, Positive Semi-Definite, Heteroskedasticity and Autocorrelation Consistent Covariance Matrix. Econometrica,* 55(3), 703-708, https://doi.org/10.2307/1913610.

[16] OECD statistics, https://stats.oecd.org.

[17] OECD (2021), *Detailed methodological note on minimum wage setting mechanisms - OECD/AIAS ICTWSS Database*, Retrieved from https://www.oecd.org/els/emp/DetailedMethodnote-MW-OECD-AIAS_DB.pdf.

[18] Popescu, G.H., Davidescu, A.A.M., Huidumac, C. (2018), *Researching the Main Causes of the Romanian Shadow Economy at the Micro and Macro Levels: Implications for Sustainable Development*. *Sustainability,* 10(10), 3518, https://doi.org/10.3390/su10103518.

[19] Popescu, M.E., Militaru, E., Pele, D., Mazurencu Marinescu M., Vasile, V., Ilie, S., Mihailescu, A., Serban, A. (2017), *Support for establishing a minimum wage-setting mechanism in Romania*, Bucharest: LUMEN Publishing, Romania, ISBN 978-973-166-481-1.

[20] Romanian Government (2010-2023), *Notele de fundamentare la HG pentru stabilirea salariului de bază minim brut pe țară garantat în plată* [The explanatory notes to the Government Decisions for the gross minimum wage establishment].

[21] Schulten, T. (2014), *Contours of a European Minimum Wage Policy*, Retrieved from https://www.epsu.org/sites/default/files/article/files/Contours_of_a_Minimum_Wage_Policy_Schulten.pdf.

[22] Schulten, T., Müller, T., Eldring, L. (2015), Chapter 10. *Prospects and obstacles of a European minimum wage policy, Wage bargaining under the new European Economic Governance - Alternative strategies for inclusive growth*, (pp.327-359), Retrieved from https://www.researchgate.net/publication/281643984_Prospects_and_obstacles_of_a_European_minimum_wage_policy.

[23] The Ministry of Labour and Social Solidarity Database, www.mmuncii.ro.