



ISSN 2443-8030 (online)

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ECONOMIC BRIEF 050 | SEPTEMBER 2019

EUROPEAN ECONOMY

*Economic and
Financial Affairs*



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Luxembourg: Publications Office of the European Union, 2019

PDF ISBN 978-92-79-77379-2 ISSN 2443-8030 doi:10.2765/428061 KC-BE-18-018-EN-N

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Labour Taxation in Romania: Revised, but not changed

By Wojciech Balcerowicz, Anamaria Maffei and Janos Varga

Abstract

In 2018 the structure of labour taxation in Romania changed substantially: the social security contributions' (SSC) burden shifted almost entirely to employees, the flat personal income tax (PIT) rate was cut and the PIT-free allowance increased. These changes followed the Unified Wage Law (UWL) adopted in 2017, which significantly increased the wages in the public sector. The government also increased the gross minimum wage and encouraged the social partners to re-negotiate salaries in the private sector, so that net wages would not decrease following the shift of social contributions to the employee side.

This economic brief analyses the redistributive and macroeconomic impact of all of these reforms using EUROMOD, the microsimulation model for the European Union Member States, with QUEST, the European Commission's dynamic stochastic general equilibrium model.

According to our simulation results, the cumulative impact of the reforms slightly increases both market and disposable income inequality. Low-income employees gain marginally from the higher minimum wage, while the self-employed would be better off only by opting not to pay the social contributions, i.e. renouncing national insurance protection.

In the longer run, the reforms are likely to have a negative effect on GDP and employment due to the wage pressure from higher public sector salaries and increased minimum wages. The general government deficit increases, although by significantly less than the raise that would have happened if the UWL had not been accompanied by the SSC shift.

Acknowledgements: We are grateful to Isabel Grilo, Francisco Barros Castro, Maria Maierean, Silvia De Poli, Jan in 't Veld, Werner Roeger, Savina Princen, Anne Van Bruggen, Isabelle Justo, Athena Kalyva, Daniel Vălcu and Răzvan Stanca for their useful comments.

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Introduction

In 1952, the International Labour Organisation adopted the Social Security (Minimum Standards) Convention (No. 102), which established, among other worldwide agreed minimum standards, that the worker should not finance more than 50% of the total social security contribution (SSC). The aim is to ensure that governments operationalise the principles of social solidarity and “solidarity in financing”, by maintaining a fair balance “between responsibilities and interests of those who finance and benefit from social security schemes”.

Decades later, in a wave of pension privatisation in Latin America, several countries moved away from these principles. Chile eliminated employers' contribution in 1981, followed by Peru in 1993 and Bolivia in 1997. In all cases, the size of the contributions that workers had to pay into the pensions system was increased and employers had to boost wages by a corresponding amount (Madrid, 2003).

From January 2018, the structure of social security contributions in Romania was changed following a pattern similar to the earlier one in Latin America: the employers' burden was shifted almost entirely to the employees. This shift was accompanied by a reduction in the personal income tax (PIT) rate and substantial increase to the minimum wage. These changes followed the adoption of significant increases to public wages. This note analyses the distributional and macroeconomic effects of these measures, using EUROMOD and QUEST models.

Description of the reforms

In summer 2017, the Romanian authorities adopted the Unified Wage Law, which provided for a 25% gross wage increase for most government employees as of January 2018 and additional increases in health and education sectors later in the year.

Subsequently, in November 2017, the Romanian government adopted Emergency Ordinance (EO) No 79/2017 amending and supplementing Law no. 227/2015 governing the Fiscal Code. The ordinance substantially changed the structure of social security contributions by shifting their burden almost entirely to the employees, from 22.75 % for employers and 16.5% for employees to 2.25% and 35% respectively. This was done by shifting the health and pension contributions - until then split between

the employer and employee - entirely to the employee. Moreover, the remaining contributions (solidarity unemployment insurance, sickness insurance, accidents insurance, salary guarantee and work insurance) were merged into a single work insurance contribution on the employer side. The ordinance also reduced the flat PIT rate from 16% to 10% and increased the PIT-free allowance¹.

The government explained the social security shift by the need to improve the collection of social security contributions and to reduce administrative burden on the employers. The government argued that this would be achieved with the reduction in the number of social contributions, while the employer would continue to determine, withhold, declare and pay the amounts owed (Government of Romania, 2017). However, according to many commentators, the shift was aimed at reducing the negative budgetary impact of the increases to gross wages in the public sector mandated by the UWL².

The authorities encouraged the social partners to renegotiate the private sector wages, so that net wages would not bear the cost of the social contributions shift. Data on 2018 wages show that this has indeed largely happened³. Moreover, through Decision no. 846/2017, the government raised the minimum gross wage from RON 1,450 to RON 1,900 (app. EUR 413), a 31% increase. Additionally, in order to avoid a decrease in the net wages of part-time workers, the authorities adopted Emergency Ordinance No 3/2018. Based on this ordinance, the social security contributions of part time workers are calculated on actual earnings, the difference up to the minimum wage being passed on to the employer.

The bases for the calculation of health and pension contributions have also been redefined. According to the ordinance, the employees pay contributions on an income *at least* equal to the minimum gross wage⁴, while the self-employed pay the contributions for both pension⁵ and health⁶ based on the minimum gross wage, regardless of their actual achieved income. Additionally, individuals obtaining income from self-employment below the minimum wage are offered the option of not paying social security contributions. In this case, however, such self-employed would no longer be covered by the national insurance schemes⁷.

Moreover, in a separate government emergency ordinance No 82/2017, from 16 November, the government reduced the proportion of the social

contributions accruing to the second pension pillar starting from 5.1% to 3.75% of gross wages, from January 2018. The proportion of the social contributions accruing to the first pension pillar increased accordingly. As ordinance 82/2017 did not have an impact on the taxation burden (only on the relative distribution of the collected SSC between the first and second pension pillars), it is not part of our simulation.

The social security contributions shift and follow-up measures, enacted with limited public consultation, is an example of unpredictable conduct of fiscal and economic policy as stressed in the 2018 and 2019 Country Reports (European Commission, 2018 and European Commission, 2019). In the 2018 Country Specific Recommendations the Council also advised Romania to increase the predictability of decision-making (Council of the European Union, 2018).

Simulated impact of the reforms on disposable income

We simulate the impact of these reforms on disposable income using the EUROMOD model and 2015 EU-SILC data. Uprating factors are used to update incomes to 2017 values. The baseline scenario is modelled using the tax and benefit system as of June 30th, 2017. In order to disentangle the impact of the manifold changes, we simulate several scenarios, which can be thought of as stages. Annex 1 describes the EUROMOD model, while Annex 2 presents the simulated scenarios in detail.

In the first scenario *UWL*, we look at the impact of the Unified Wage Law alone.

In scenario *UWL and ordinance*, we add the effect of the other reforms, i.e. the social contributions and PIT changes and the minimum wage increase. For the moment, we assume that private sector employers do not upgrade gross wages in reaction to the decrease in net wages driven by the shift of social contributions.

In scenario *Full reform* we adjust the gross wages in the private sector in order to bring net wages to the baseline value. Namely, we simulate an increase of 19.9% for all wages that are initially above the new minimum wage of RON 1,900⁸. For wages below RON 1,900, the necessary increase declines gradually until RON 1,593, since salaries in this interval are already partly compensated by the increase in the minimum wage.

In both scenarios *UWL and ordinance* and *Full reform*, we assume that the self-employed earning less than the minimum gross wage choose to continue paying social contributions, and thus be covered by social protection (healthcare and pension). In the last, alternative scenario *Full reform (b)*, we assume that they opt not to pay the social contributions and are therefore no longer covered by the safety net.

A. Public and private sector employees

Table 1 presents the distribution of the initial (baseline) gross wages in the public and private sector of the sample and how they relate to the income deciles of the total population. Income deciles are groups of individuals with equal population size sorted by the equivalised disposable income⁹. For example, the first decile represents 10% of the population with the lowest income i.e., an income smaller or equal to the first cut-off value, and the tenth decile represents 10% of the population with the highest income. Around 81% of the employees in the sample are in the private sector, with the remaining 19% in the public sector¹⁰.

Table 1: **Average initial gross wage of public and private sector employees, by decile of equivalised disposable income**

| Decile | Private sector | Public sector |
|--------|----------------|---------------|
| 1 | 866* | |
| 2 | 1,538 | 1,330* |
| 3 | 1,707 | 1,525 |
| 4 | 1,769 | 1,594 |
| 5 | 1,697 | 1,690 |
| 6 | 1,795 | 1,789 |
| 7 | 1,868 | 1,980 |
| 8 | 2,101 | 2,188 |
| 9 | 2,496 | 2,678 |
| 10 | 3,682 | 3,716 |

Source: EUROMOD

Notes: * These figures are skewed downwards by part-time workers and people not working the full year.

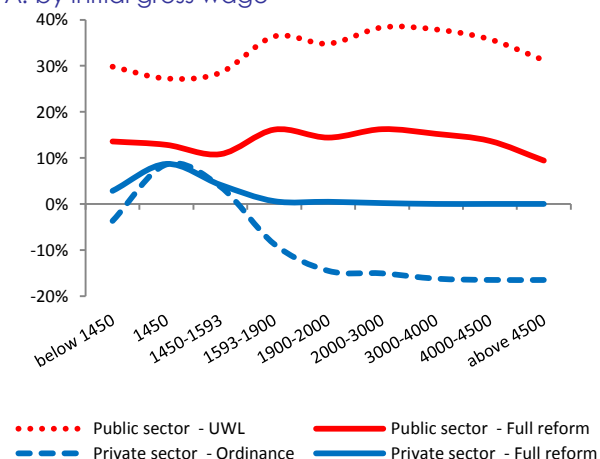
Our simulation results, presented in Graph 1, suggest that the UWL increases disposable income in the public sector for all income deciles (line *Public sector - UWL*), although significantly less than what would have occurred without the social security contributions shift (line *Public sector - Full reform*).

For the private sector (assuming no wage adjustment), those earning less than RON 1,593 in the baseline benefit slightly from the increase in the minimum gross wage¹¹, while those earning more than RON 1,593 would lose up to 16.6% of their net wages (line *Ordinance*). This is because the increased burden of the social contributions outweighs the higher minimum gross wage, the higher PIT allowance (which is gradually withdrawn until 3,600 RON) and the reduced PIT rate. This decline in net wages mainly affects the top deciles of the income distribution.

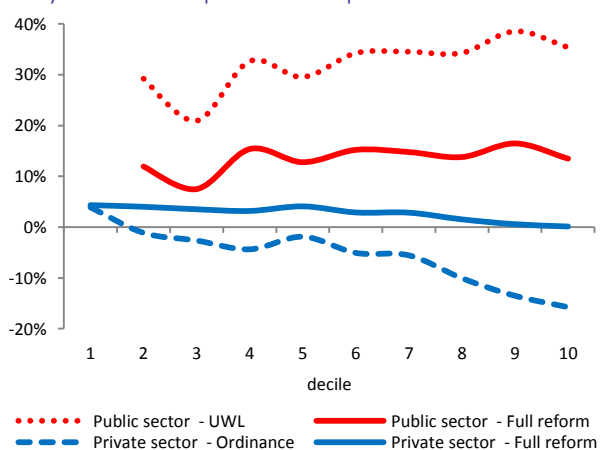
Adjusting gross wages in the private sector in order to offset the impact of the SSC shift (line *Full reform*) yields no losses in net wages for the private sector employees.

Graph 1: Impact on mean disposable income of public and private sector employees

A: by initial gross wage



B: by decile of equivalised disposable income



Source: EUROMOD

Notes: (i) The intervals on the horizontal axis in Graph 1A were chosen in order to highlight the critical gross wage levels at which the impact of the reforms changes; (ii) For clarity, the individuals who earn both employment and self-employment income are excluded from these graphs.

B. Self-employed

Table 2 presents the sample distribution of the income of the self-employed and how they relate to the income deciles. Most of the self-employed, i.e. up to the eight decile, earn less than the initial minimum wage (1,450 RON).

Table 2: Average gross self-employment income, by decile of equivalised disposable income

| Decile | Self-employed |
|--------|---------------|
| 1 | 234 |
| 2 | 384 |
| 3 | 524 |
| 4 | 631 |
| 5 | 783 |
| 6 | 1,129 |
| 7 | 1,054 |
| 8 | 1,599 |
| 9 | 2,121 |
| 10 | 4,724 |

Source: EUROMOD

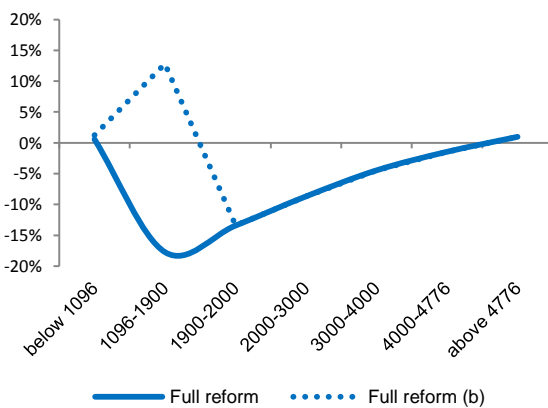
We simulate two scenarios for the self-employed workers (see Graph 2). In scenario *Full reform*, we assume that all individuals with earnings below the minimum wage continue to pay social contributions, while, in scenario *Full reform (b)*, we assume that they choose not to be covered by the national insurance schemes. We also assume that the self-employed previously exempted from the payment of the pension SSC, i.e. earning below 35% of the gross average salary (RON 1,096), do not start to contribute to the reformed pension insurance.

In the first case, almost all self-employed workers would experience a significant decline in their disposable income, with the exception of the top decile. The self-employed with income between RON 1,900 and 4,776 see their disposable income fall because of the higher pension and health contributions, following the redefined basis for their calculation. The self-employed earning above RON 4,776 would see their disposable income increase compared to the baseline, as the gain obtained from lower health contributions and lower PIT outweighs the higher burden of pension contributions.

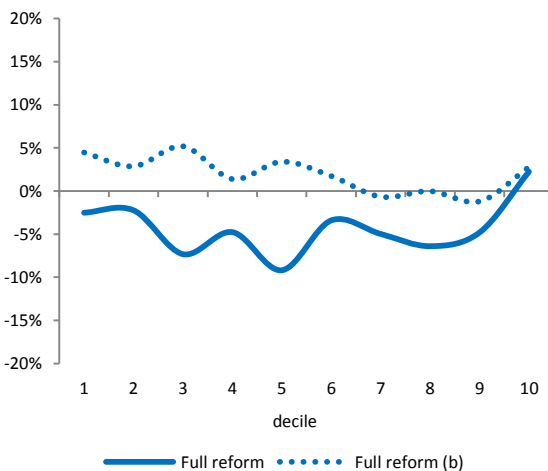
In the second case (i.e. opting out of national insurance schemes), the self-employed earning below the minimum wage, i.e. up to RON 1,900 (the bottom and middle of the income distribution) would also benefit from a higher disposable income. However, this is at the cost of falling out of social protection, which would entail a significant financial risk.

Graph 2: Impact on mean disposable income of self-employed

A: by gross self-employment income



B: by decile of equivalised disposable income



Source: EUROMOD

Notes: (i) The intervals on the horizontal axis in Graph 2A were chosen in order to highlight the critical gross income levels at which the impact of the reforms changes; (ii) Individuals who earn both employment and self-employment income are excluded from these graphs.

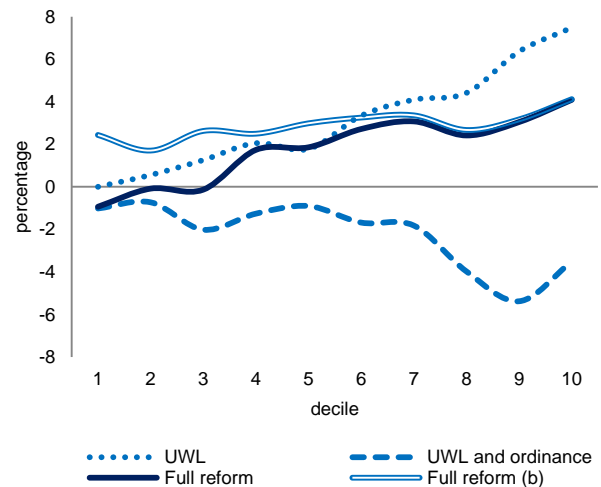
C. Overall impact

Graph 3 summarises the impact of the reforms on the mean equivalised household disposable income of the entire population.

The Unified Wage Law has a positive impact on disposable income, with the benefit increasing along the income distribution (line *UWL* in the graph). The SSC shift and the accompanying policy changes have a negative impact on the poorest households (1st decile), largely because of the increased burden of social contributions on the self-employed earning below the minimum wage (lines *UWL and ordinance* and *Full reform*). Without an adjustment of gross wages in the private sector to compensate for the SSC shift (line *UWL and ordinance*), the remaining deciles would also see their income decrease. When the gross wages are adjusted (line "Full reform"), the middle and high income deciles obtain marginal gains in their income.

Alternatively, if the self-employed gaining less than the minimum wage choose not to pay the social contributions (scenario *Full reform b*), then the bottom and middle deciles would also be better off in terms of disposable income, but at the price of not being covered by social insurance.

Graph 3: Impact on mean equivalised household disposable income



Source: EUROMOD

Note: Individuals who earn both employment and self-employment income are included in this graph.

Impact on inequality and redistribution

Income inequality in Romania is among the highest in the EU. The disposable income – i.e. the income after taxes and benefits - of the top 20 % of the population exceeded by 6.5 times the incomes of the bottom 20% in 2017 (compared to the EU average of 5.1). The working age population experiences particularly large income inequality levels. The

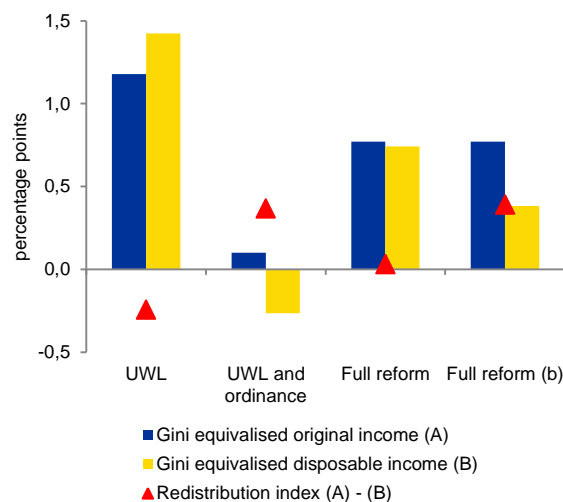
urban-rural divide is also significant, with the median rural household income around half of the urban one - the highest difference in the EU. High disposable income inequality is due both to high original (market) income inequality as well as low redistributive power of the tax and benefit system (European Commission, 2019).

Graph 4 below summarises the impact of the reforms on original (market) and disposable income inequality as measured by the Gini coefficient. The Redistribution index is the difference between the market income inequality and disposable income inequality. The graph shows changes to those variables compared to the baseline.

On its own, the Unified Wage Law increases market income inequality, as the public sector employees are mostly situated in the upper part of the income distribution (*UWL* in the graph). This impact on market income inequality is, however, largely offset by the increase in the minimum wage. Without the adjustment of gross wages in the private sector (and the self-employed earning less than RON 1,900 continuing to pay pension and health contributions), the Ordinance would have a slight positive effect on disposable income inequality, because the largest losses are experienced by the richest households (*UWL and ordinance*)¹². In turn, the renegotiation of gross wages in the private sector causes both market and the disposable income inequality to increase, as top income deciles would benefit the most (*Full reform*). Since both market and disposable income inequality increase in an equivalent manner, the degree of redistribution remains at its baseline value.

Alternatively, if the self-employed gaining less than RON 1,900 choose not to pay their pension and health contributions (and thus to reduce their tax burden), the reforms seem to have a positive impact on the degree of income redistribution (*Full reform (b)*). However, these self-employed would cease to be covered by state social insurance and would thus take up a substantial financial risk. For these reasons, the purely monetary impact shown in Graph 4 is misleading. Since the market value of the foregone social protection for these persons is likely to be at least equal to the “saved” social contributions (as indicated by the subsidisation of social protection), redistribution is likely to *de facto* decrease (as opposed to the increase in monetary terms seen in the graph).

Graph 4: **Impact on inequality**



Source: EUROMOD

Notes: (i) The graph shows changes to the variables as compared to the baseline; (ii) A Gini coefficient of zero means perfect equality, (everyone has the same income), while a Gini coefficient of 100% means maximal inequality (one person has all the income); (iii) Individuals who earn both employment and self-employment income are included in this graph.

Impact of reforms on public finances

In this section, we focus our analysis on the direction of the first-round fiscal impact rather than on the precise estimates, due to data limitations of the model¹³. As expected, the Unified Wage Law significantly increases the public wage bill, but the SSC shift moderates the impact of this expenditure hike on the public deficit. This is thanks to the fact that the public wage increases from the UWL are defined in terms of gross wages, while the higher employee contributions following the SSC shift cause the net wages in the public sector to increase by a smaller amount. Overall, budgetary revenues from social security contributions increase, the size of the impact depending on whether the self-employed earning less than the minimum wage choose to be exempted from social contributions. The PIT rate cut and the increase of the PIT-free allowance reduce personal income tax revenues significantly in all scenarios. Taken together, these changes cause the general government deficit to increase, although by significantly less than the increase that would have happened if the Unified Wage Law had not been accompanied by the changes in SSC, PIT and the adjustment of private wages to the SSC shift¹⁴.

Second-round effects

So far, we have looked into the distributional effects of the reforms based on the static EUROMOD simulations. In this section, we focus on the macroeconomic effects of the three main reforms: the Emergency Ordinance No 79/2017, the Unified Wage Law, and the minimum wage increase. We use the QUEST global dynamic macroeconomic model, which can account for the second-round behavioural impacts of these measures. Annex 1 gives a short overview of the model while Annex 3 presents more detailed results.

OECD (1990) analysed a prediction of economic theory (called the Invariance of Incidence Proposition) according to which a switch in taxation from employer to employee has no long-run effect on the economy. The study concluded that this simple theoretical prediction was not likely to hold exactly in practice and that product wages, prices and output would be affected for several years.

Using a variant of the QUEST model for minimum wage simulations, Pfeiffer et al. (2018) shows that in a monopsony labour market, firms internalise the impact of their hiring on wages in an attempt to lower wage costs and increase profits by keeping the wage level low. However, due to the tight labour market conditions in Romania, we use a competitive labour market setting where firms take wages as given when deciding about labour demand in the private sector while the government can set public sector salaries unilaterally. We use EUROMOD to quantify the effect of the reforms on the corresponding input (shock) variables in the QUEST model, particularly, on public sector wages, on the average labour tax rates and on the average wage mark-ups by skill-groups. We simulate the reforms as (i) an increase of government spending by about 0.8% of GDP due to the increased public wage expenditure enacted by the unified wage law (ii) a change to the tax rates on labour for employers and employees (+15.3 pp. on the employee side and -20 pp. on the employer side) and (iii) a rise in wage mark-ups by 10% to account for the increase in minimum wage¹⁵.

As we do not have enough information about the extent to which the minimum wage increases are binding for firms in Romania, we assume that employers have to raise their labour costs by the full amount of the minimum wage hike for each affected employee. However, note that according to the

Factsheet on Undeclared Work (2016), envelope payments¹⁶ were still the most frequent type of undeclared work in Romania. Arguably, many firms can mitigate the increase in employee compensation through a reduction in envelope wages. For this reason, the reform package may have less negative effect on GDP as many firms can eventually reduce the amount of envelope wages and raise the officially declared wages thereafter. On the other hand, the upward trend in the wage dynamics over 2018 points to an even larger net wage increase compared to what the minimum wage law would justify. This suggests that due to the labour market tensions, Romanian firms were ready to pay their workers even higher wages, beyond the new legislative conditions.

The model-based simulation indicates a strong increase of real gross wages in the private sector via two main channels. First, the shift in social security contributions from employers to employees allows firms to increase gross wages without further increasing the total compensation of employees and, hence, their costs. At the same time, workers in the private sector demand higher gross wages to compensate for the higher social security contributions they have to pay in order to protect their net wages. The second channel is due to the increased public sector wages and to the higher minimum wage, as these measures further feed the upward pressure on gross wages. The reforms we consider in this analysis explain most of the close to 30% actual increase in real gross wages over 2018: in the simulation, the immediate impact on real gross and net wages is high, 26 % and 7% respectively above the baseline (see Annex 3).

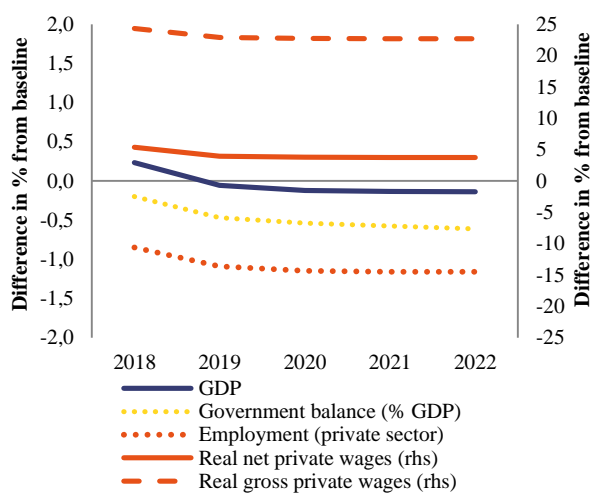
In the first year, GDP increases by 0.2% thanks to higher total employment. However, the upward pressure on private sector wages gradually increases the employment loss in the private sector in the subsequent years and the gain in GDP would dissipate over time. After 5 years, GDP and private sector employment are 0.15% and 1.15% below the baseline respectively due to the higher labour compensation costs (see Graph 5). Although the shift of social security contributions from employers to employees alleviated the burden of taxation on the employers, private firms still operate in tight labour market conditions¹⁷. Average labour compensation per employee in the private sector is about 5 to 6% higher after 5 years as firms face the wage pressure from higher salaries in the public sector and from the higher minimum wages they have to pay (Annex 3).

The combined effect of the reforms worsens the government balance by up to 0.6% of GDP after 5

years due to two counteracting channels. While the permanently higher expenditures on public wages deteriorate the balance, this effect is somewhat tampered by positive second round impact on total labour tax revenues. Due to the strong increase in real gross wages, the tax base expands, which in turn contributes to higher overall labour tax revenues from personal income taxes and social security contributions combined¹⁸.

package on GDP may be smaller than predicted in our simulation. General government deficit increases due to higher expenditures on public wages, although by significantly less than the increase that would have happened if the Unified Wage Law had not been accompanied by the SSC shift.

Graph 5: **Macroeconomic impact of the reforms**



Source: European Commission, calculations based on the QUEST model.

Conclusions

Our simulation results suggest that the cumulative impact of all the reforms slightly increases both market and disposable income inequality, benefitting slightly the middle and the top of the income distribution. In the bottom income deciles employees gain marginally from the higher minimum wage. However, the self-employed would be better off only by opting to not pay the social contributions and, thus, by renouncing national insurance protection.

In the longer run, the reforms are likely to have a negative effect on GDP and employment levels because of the permanent raise in gross wages. Although the shift of social security contributions alleviates the burden for employers, private firms face tighter labour market conditions due to the wage pressure from higher salaries in the public sector and because of higher minimum wages. At the same time, many firms can mitigate the increase in employee compensation by reducing envelope wages; therefore, the negative effect of the reform

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Annex 1: EUROMOD AND QUEST MODELS

EUROMOD is a tax-benefit modelling tool for the EU-28 countries. It allows the simulation of reforms of personal taxes and benefits and provides their fiscal/macro impact – through the use of statistical weights, defined by EUROSTAT – as well as indicators on their distributional impact, by household/individual groups according to socio-economic variables of interest. EUROMOD can be used to analyse the first-round fiscal impact of tax and benefit reforms on government budgets and on disposable income, as well as the effect of contributions and social insurance regulations. The model generates disposable individual and household incomes, applying countries' tax codes and calculating theoretical benefit entitlements and tax liabilities. Importantly, the EUROMOD model directly embeds the interactions between the tax code and benefit system, which are generally absent from other models. The micro-data behind EUROMOD comes from the EU Statistics on Income and Living Conditions survey (EU-SILC) which is harmonised by Eurostat. EUROMOD takes some variables directly from the underlying EU-SILC data, such as demographic and labour market characteristics, gross market income and other incomes (pensions, incomes from other households, etc.), and some expenditures (housing costs including mortgage, life insurance payments, etc.). While demographic and labour market characteristics remain the same, uprating factors are used to bring the income values from the survey reference period up to the level of the year in which the tax and benefit system is coded. These uprating factors are typically index variables taken from Eurostat or national statistical offices such as the consumer price index, earnings increase or other legal variations in benefit amounts. Social insurance contributions are simulated based on the number of months in employment during the income reference period. Adjustments for tax compliance (social insurance, health insurance, income tax) are implemented in the case of self-employed in agriculture, living in rural areas with income level below the average gross wage (3,131 RON). The EUROMOD simulations are static and do not incorporate second-round and behavioural effects that may also affect tax receipts.

QUEST is the global macroeconomic model of the Directorate General for Economic and Financial Affairs (DG ECFIN). It is a micro-founded, structural macro-model in the New-Keynesian tradition with frictions in goods, labour and financial markets. It is the main macroeconomic model used by DG ECFIN to analyse the impact of fiscal and monetary policy scenarios, and structural reforms in the EU Member States (see, for instance, in 't Veld et al., 2018; Burgert and Roeger, 2014; Vogel, 2012). We use a version of the QUEST model which distinguishes private and public employment. We calibrate the model to match the observed empirical ratios from EUROSTAT in terms of the main macroeconomic variables (e.g. investment, consumption to GDP ratios, wage share). In order to account for the behavioural responses and macroeconomic feedback effects of the fiscal reform, we follow the dynamic scoring approach developed by Barrios et al. (2019) and combine the two models. More precisely, we use information from the EUROMOD microsimulation database to pin down the baseline employment rates, tax wedges and skill-premiums. When introducing the relevant shocks into the QUEST model, we only rely on the first round effects on the implicit tax rates and minimum wages from EUROMOD – i.e. without any additional assumptions on wages or employment – because the model endogenously generates the behavioural impact of the measures on the main macroeconomic variables based on the agents' optimising conditions. For further descriptions and applications of the different QUEST model variants, see https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/economic-research/macroeconomic-models_en.

Annex 2: Baseline and simulated reform scenarios in EUROMOD

| | Baseline | UWL | UWL and Ordinance | Full reform | Full reform (b) |
|--|---------------|----------------|-------------------|-------------------------------------|-------------------------------------|
| Gross wage (public and private) | - | +25% (public)* | +25% (public)* | +25% (public)* +19.9% (private)† | +25% (public)* +19.9% (private)† |
| Minimum gross wage | 1,450 | 1,450 | 1,900 | 1,900 | 1,900 |
| PIT | 16% | 16% | 10% | 10% | 10% |
| Standard deduction on employment income | 300 | 300 | 510 | 510 | 510 |
| Deduction for dependents on employment income | 100 | 100 | 160 | 160 | 160 |
| Maximum amount of deductions on employment income | 800 | 800 | 1,310 | 1,310 | 1,310 |
| Earnings limit up to which deduction on employment income received in full | 1,500 | 1,500 | 1,950 | 1,950 | 1,950 |
| Earnings limit above which deduction on employment income withdrawn completely | 3,000 | 3,000 | 3,600 | 3,600 | 3,600 |
| Pension insurance (CAS) | 10.50% | 10.50% | 25% | 25% | 25% |
| Health insurance (CASS) | 5.50% | 5.50% | 10% | 10% | 10% |
| Unemployment insurance | 0.50% | 0.50% | - | - | - |
| Employee Social Insurance Contributions | 16.50% | 16.50% | 35% | 35% | 35% |
| Pension insurance (CAS) | 15.80% | 15.80% | ‡ | - | - |
| Health insurance (CASS) | 5.20% | 5.20% | ‡ | - | - |
| Unemployment insurance | 0.50% | 0.50% | - | - | - |
| Sickness insurance | 0.85% | 0.85% | - | - | - |
| Accidents insurance | 0.15% | 0.15% | - | - | - |
| Salary guarantee fund | 0.25% | 0.25% | - | - | - |
| Work insurance contribution | - | - | 2.25% | 2.25% | 2.25% |
| Employer Social Insurance Contributions | 22.75% | 22.75% | 2.25% | 2.25% | 2.25% |
| Total Social Insurance Contributions | 39.25% | 39.25% | 37.25% | 37.25% | 37.25% |
| Pension insurance (CAS) | 10.50% | 10.50% | 25% | 25% | 25%§ |
| Health insurance (CASS) | 5.50% | 5.50% | 10% | 10% | 10%§ |
| Self-employed Social Insurance Contributions | 16.00% | 16.00% | 35.00% | 35.00% | 35.00%§ |

* Since EU-SILC does not identify civil servants, we impute them based on two statistical classifications of economic activities and occupations: NACE Rev. 2 and ISCO-08.

Additional increases in the health and education sectors:

- a 70.625% increase in the wages of the health (and health associate) professionals. First, we weight the 25% increase from January and the 100% increase from March by the number of months to which they are applied. We obtain a 87.5% overall annual raise, i.e. $(25 \cdot 2 + 100 \cdot 10)/12$. Furthermore, we make the assumption that bonuses are 1/3 of total wages for this sector. Since, according to the UWL, bonuses are kept to 30% of the base salary, we increase the total gross wage by 70.625%, i.e. $x \cdot 7/10 \cdot 1.875 \cdot 0.3 + x \cdot 7/10 \cdot 1.875$;
- a 45.83% hike for the teaching professionals. We weight the 25% increase from January and the additional 20% increase from March by the number of months to which they are applied, and obtain a 45.83% overall annual raise, i.e. $(25 \cdot 2 + (25 \cdot 20/10) \cdot 10)/12$;
- a 25% increment for the remaining civil servants. The local administration is exempted from the UWL as their salaries are established based on local decisions, which already led to big increases in mid-2017. However, the one/two-digit disaggregation provided by EU-SILC on the economic activities and occupations is not detailed enough to identify the employees from local administrations. Consequently, they also benefit from the 25% increase.

† Lower increases for gross wages below 1,900 RON.

‡ For part-time workers, employers bear the SSC on the difference between the minimum wage and the actual earnings.

§ Self-employed earning below the minimum wage opt not to pay SSC.

Annex 3: QUEST simulation results (difference in % from baseline)

| Years | 1 | 2 | 3 | 4 | 5 |
|---|----------|----------|----------|----------|----------|
| GDP | 0.23 | -0.05 | -0.12 | -0.13 | -0.14 |
| Employment | 0.58 | 0.54 | 0.50 | 0.49 | 0.49 |
| -private | -0.85 | -1.09 | -1.15 | -1.16 | -1.16 |
| -public | 6.61 | 7.43 | 7.45 | 7.46 | 7.46 |
| Real gross wages | 26.34 | 25.16 | 25.03 | 25.00 | 24.99 |
| -private | 24.34 | 22.89 | 22.73 | 22.69 | 22.68 |
| -public | 34.94 | 34.93 | 34.93 | 34.93 | 34.93 |
| Real net wages | 7.34 | 6.19 | 6.06 | 6.03 | 6.02 |
| -private | 5.38 | 3.96 | 3.80 | 3.76 | 3.75 |
| -public | 15.79 | 15.78 | 15.78 | 15.78 | 15.78 |
| Real wage paid by employers (compensation incl. SSC) | 11.44 | 10.21 | 10.07 | 10.04 | 10.03 |
| -private | 7.23 | 5.80 | 5.64 | 5.60 | 5.59 |
| -public | 34.94 | 34.93 | 34.93 | 34.93 | 34.93 |
| Government balance (% GDP) | -0.20 | -0.47 | -0.54 | -0.57 | -0.61 |
| Shock to average labour tax-rate on employees | 15.33 | 15.33 | 15.33 | 15.33 | 15.33 |
| Shock to average labour tax-rate on employers | -20.50 | -20.50 | -20.50 | -20.50 | -20.50 |

¹ Before the reform, the PIT-free allowance amounted to RON 300-800, depending on the number of taxpayer's dependent persons. It was given in full to employees with gross wages of up to RON 1,500 and it was decreasing with income for gross wages between RON 1,501 and RON 3,000. The ordinance increased the amount of the allowance to RON 510-1,310 and increased the thresholds to RON 1,950 and RON 3,600 respectively. See also Annex 1.

² According to Stoiciu (2017), programme coordinator at the Friedrich Ebert Foundation Romania, the SSC shift is driven "not by an ideological motivation, as it seems at a first glance, but by a strict accounting calculation designed to avoid the excessive budget deficit, all the while fulfilling the promise of increasing the wages in the public sector" (para. 7).

³ Average gross wage in total economy was 34.8% higher in December 2018 compared to December 2017, while the average net wage was 12.5% higher.

⁴ Beforehand, the SSC were due on the gross employment income.

⁵ For the pension SSC, the basis of calculation is an income chosen by the self-employed, *at least* equal to the country's minimum gross wage (compared to the previous situation where the minimum level was 35% of the gross average salary). For simplification reasons, we limit the basis to the minimum gross wage.

⁶ Previously, the base for the calculation of self-employed health insurance contributions was the achieved income, with an exception for income from intellectual property rights.

⁷ To benefit from public health services, they have to pay contributions based on seven times the gross minimum wage.

⁸ The calculation ignores the cases in which the employee is operating in a tax-exempted sector (such as IT or R&D).

⁹ According to Eurostat, the equivalised disposable income is the "total income of a household, after tax and other deductions, that is available for spending or saving, divided by the number of household members converted into equalised adults; household members are equalised or made equivalent by weighting each according to their age, using the so-called modified OECD equivalence scale". This scale assigns a weight of 1 to the household head, 0.5 to other adults (14

year-old or older) and 0.3 to children (younger than 14). The result of the calculation is attributed equally to every member of the household.

¹⁰ Namely, 1,173,328 civil servants and 4,920,419 private sector employees. This public/private ratio is representative of the Romanian economy as a whole.

¹¹ Graph 1A shows a slight disposable income loss of those who initially earn less than minimum wage, i.e. below 1450 RON. This is due to the fact that the minimum wage increase is applied to the hourly rate. Consequently, the part-time workers with hourly earnings above the minimum wage are not affected by the increase and thus see losses in their disposable income.

¹² The redistributive effect of the Ordinance is, however, diminished by the reduced PIT flat rate.

¹³ The public sector scope seems to be underestimated by EUROMOD, with a resulting underestimation of the public expenditure on public wages. Moreover, household surveys are likely to under-represent the top wealth because of under-reporting or non-response, as shown by Korinek et al. (2006), with resulting risk of underestimation of PIT and SSC revenues.

¹⁴ See Romania Fiscal Council (2017) for a detailed analysis of the fiscal impact of the ordinance 79/2017.

¹⁵ This methodology avoids any double-counting of the second round effects because EUROMOD is a static microsimulation model without any behavioural response from the economic agents. The QUEST model endogenously generates the behavioural impact of the measures on the main macroeconomic variables based on the agents' optimising conditions.

¹⁶ Envelope wages represent undeclared, cash-in-hand payments that are added to the formal wage based on an unwritten verbal contract between employers and employees.

¹⁷ The shift of social security contributions on its own would stimulate growth and employment in the short-run.

¹⁸ These results do not take into account the budgetary impact of the ordinance No 82/2017, which reduced the proportion of the social contributions accruing to the second pension pillar from 5.1% to 3.75% of gross wages, and increased the proportion of the social contributions accruing to the first pension pillar accordingly. As the ordinance 82/2017 did not change the labour taxation burden (it only changed the relative attribution of the collected SSC between first and second pension pillars), it is not part of our simulation. The first pension pillar is classified within the general government sector while the second pension pillar is classified outside of it. Therefore, the ordinance No 82/2017 had a positive impact on social contribution revenues of the general government of around 0.2% of GDP in 2018.

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