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A photograph of the interior of the Central Bank of Malta's vaults. The space is filled with rows of metal vault doors, illuminated by warm, golden light. A large, curved, illuminated structure is visible in the foreground. The ceiling is high and features a large, colorful mural of a sunset or sunrise over a landscape. The overall atmosphere is one of security and historical significance.

# CENTRAL BANK OF MALTA POLICY NOTE



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## ESTIMATED IMPACTS OF THE RECENT SUPPLEMENTARY INCREASES TO MALTA'S NATIONAL MINIMUM WAGE

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Policy Note

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## Abstract

In each year over the period 2024-2027, Malta's national minimum wage is set to increase by an additional increment over and above the statutory Cost of Living Allowance (COLA), which will cumulatively raise the minimum wage by €18 weekly by 2027. This Policy Note focuses on quantifying the impact of these adjustments to the minimum wage on a range of outcomes over the period 2024-2027, including wages, disposable income, poverty metrics and macroeconomic indicators, using simulations carried out in EUROMOD, a tax-benefit microsimulation model for EU countries, as well as STREAM, the Bank's semi-structural macro-econometric model of the Maltese economy. Households with members earning the minimum wage in 2024 are estimated to benefit from a 1.3% increase in their disposable income compared to a case where the minimum wage is increased by COLA only. This effect progressively increases to 2.7% by 2027. A broader segment of households gain through spillover effects of the minimum wage increases to wages higher up the distribution. A central estimate of the magnitude of such spillover effects suggests that these households stand to experience increases in their disposable income of between 0.4% and 1% over the period, which increase to 0.8%-1.6% under plausibly larger spillover assumptions. Positive impacts on poverty and inequality rates are registered even if no spillover effects materialise, with these effects amplified in the presence of spillovers. At-risk-of-poverty rates fall by up to 1.5 p.p. among individuals in affected households, or about a tenth of the estimated baseline rate. Results derived herein suggest that this policy will improve the relative position of lower-earning employees in the Maltese economy and their households, whilst having minimal negative macroeconomic repercussions.

**JEL classification:** C53, D31, F61, J3.

**Keywords:** Minimum wages, Spillover effects, Wage distribution, Microsimulation, Microeconomic impacts.

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## Executive Summary

In each year over the period 2024-2027, Malta's national minimum wage is set to increase by an additional increment over and above the statutory Cost of Living Allowance (COLA) by which the minimum wage is typically indexed. These additional adjustments, or "top-ups" – set at €8 weekly as of 1 January 2024, €3 weekly as of 1 January 2025 and 1 January 2026, and €4 weekly as of 1 January 2027 – are estimated to result in the minimum wage being approximately 8% higher by 2027. This Policy Note focuses on quantifying the impact of these adjustments to the minimum wage on a range of outcomes over the period 2024-2027, including wages, disposable income, poverty metrics and macroeconomic indicators.

Results are derived through simulations carried out in EUROMOD, a tax-benefit microsimulation model for EU countries, as well as STREAM, the Bank's semi-structural macro-econometric model of the Maltese economy. Since the related literature finds that increases in the minimum wage are typically accompanied by at least modest spillovers to wages higher along the distribution, results are initially derived under a 'central' assumption regarding the magnitude of expected spillovers, together with a set of results assuming no spillovers and another assuming spillovers of a magnitude that approximates the upper end of estimates found in the literature.

Simulating the policy through EUROMOD, households with members earning the minimum wage in 2024 are estimated to benefit from a 1.3% increase in their disposable income in that year, compared to a case where the minimum wage is increased by COLA only. The cumulative nature of the increase in the minimum wage over the period through to 2027 results in progressively larger gains over the no-policy scenario, with the same category of households experiencing a 2.7% increase in disposable income by 2027. Under the central assumption on the extent of spillover effects – whereby individuals higher up the wage distribution also experience some wage increase resulting from the minimum wage adjustment – households affected by such spillovers see their disposable income increase, on average, by 0.4% in 2024. This impact grows by approximately 0.2 percentage points per year and reaches 1.0% in 2027. Beneficiaries are mostly concentrated at the lower end of the household income distribution, which is reflected in reductions in inequality and poverty metrics. At-risk-of-poverty rates fall by up to 1.5 p.p. among individuals in affected households, a tenth of the estimated baseline rate. Such positive impacts on poverty are registered even if no spillover effects materialise. Meanwhile, assuming spillovers which are relatively large, results in households affected by spillovers gaining an average of between 0.8% and 1.6% each year in terms of their disposable income compared to the no-policy case.

To assess the broader macroeconomic impact of the increase in the minimum wage, the Bank's macro-econometric model is then used to conduct simulations that reflect wage increases that are consistent with those that emerge from EUROMOD. The results suggest that the increases in the minimum wage will, firstly, yield real growth in disposable income and consumption with a corresponding positive impact on aggregate output. Nevertheless, the net effect of the measure on real GDP is found to be marginally negative, largely driven by negative effects on export competitiveness which are expected to dampen

aggregate exports. Similarly, any adverse impacts in terms of unemployment and inflation, which might be *a priori* expected given the nature of the policy, result to be of a trivial magnitude. In summary, therefore, the results of this study suggest that the scale of the increase in minimum wages under this policy is sufficient to have a non-negligible impact on the income and poverty status of beneficiary households, improving the relative position of lower earning employees in the Maltese economy, whilst having minimal negative macroeconomic repercussions.

## Introduction

Minimum wages have been in place in Western economies since the late nineteenth century, as efforts to improve the conditions faced by poor workers gained steam with the proliferation of trade union movements (Leonard, 2000). Though conceptually they can be thought to be driven by different social, economic and political forces – including bargaining power between workers and employees, or purely altruistic concerns for the working poor – minimum wages likely also reflect social preferences for fairness (Dube, 2019a; Falk et al., 2006; Fehr et al., 2009; Green & Harrison, 2009). Perceptions of fairness are reference-dependent – what is perceived as a fair wage will depend on the general level of wages – and this can also partly explain the increased policy interest and public support for minimum wages in the context of growing income inequalities in recent decades (Dube, 2019; Green & Harrison, 2009; Kahneman et al., 1986).

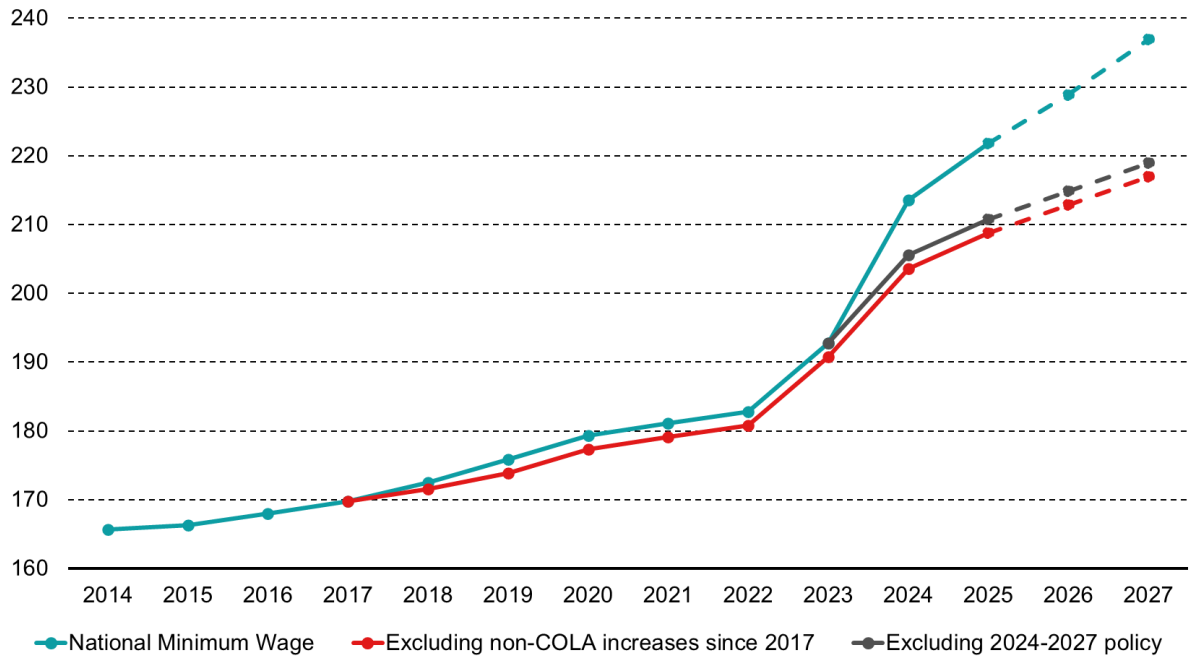
By the 1980s, an academic consensus had largely formed around the idea that minimum wages would lead to job losses, as would be held by standard neoclassical theory (Dickens, 2023; Manning, 2021). However, with the emergence in the 1990s of what is commonly referred to as the ‘new minimum wage research’ – characterised by more granular methods of identifying the effects of this class of policies – it became apparent that results do not unequivocally support this conclusion (Dube, 2019a; Manning, 2021). Theoretical refinements that can account for this ‘ambiguous’ effect on employment have also been developed (Clemens, 2021). These factors have also contributed to the resurgence in popularity of minimum wages as a policy tool.

In Malta, a national minimum wage has been an established labour market institution for the past fifty years (Vella, 2014; Rapa, 2023). Since the early 1990s, the minimum wage has been indexed with an annual cost-of-living adjustment (COLA); the first such increase came into effect on 1 January 1990 (S.L. 452.65). The weekly national minimum wage applicable from that date was of Lm32.88, or €76.59, in nominal terms (L.N. 170 of 1989). However, in recent years, ad-hoc increases to the minimum wage over and above the baseline COLA have been implemented. In 2017, an agreement entered into by the government, the opposition and social partners through the structures of the Malta Council for Economic and Social Development (MCESD) ensured €1 weekly increases to the national minimum wage over and above the COLA for the years 2018 and 2019 (MCESD, 2017). In October 2023, another such agreement was signed, mandating that, in addition to statutory COLA increases applicable each year, the minimum wage was to increase by an additional €8 weekly as of 1 January 2024, €3 weekly as of 1 January 2025 and 1 January 2026, and €4 weekly as of 1 January 2027 (Il-Parlament ta’ Malta, 2023b). Therefore, the policy will raise minimum wages by a total of €18 weekly net of COLA by 2027.

In level terms, the minimum wage increased from €192.73 per week in 2023 to €213.54 per week in 2024, a nominal increase of 10.8%. This is more than four percentage points higher than the 6.7% growth expected under a scenario in which the minimum wage were to increase solely by the statutory COLA allowance. Using internal projections of the COLA and accounting for the supplementary

increases foreseen by the aforementioned agreement, the minimum wage is expected to continue to increase by more than 3% each year, on average, surpassing €235 weekly by 2027 (see Chart 1).<sup>2</sup>

**Chart 1**  
**LEVELS OF THE MALTESE NATIONAL MINIMUM WAGE**  
*(EUR per week)*



Sources: S.L. 452.65, S.L. 452.71, L.N. 333/2022, L.N. 288/2023, Parliament ta' Malta (2023), Author's calculations.  
 Note: Values for 2026-2027 are based on internal COLA projections.

These increases come in the context of growing international attention to the fairness and adequacy of minimum wages, particularly within the European Union (EU). A Directive on adequate minimum wages in the European Union (Directive (EU) 2022/2041) was adopted in October 2022, under which member states with a statutory minimum wage (such as Malta) must commit to ensuring adequacy of their minimum wages.<sup>3, 4</sup> Indicative criteria to measure adequacy in the Directive include benchmark metrics such as that minimum wages meet a threshold of 60% of the national median gross wage or 50% of the national average gross wage. In fact, relativity to the general level of wages is the primary measure of adequacy used in the literature, particularly the ratio of the minimum wage to the national median gross wage, which is commonly referred to as the Kaitz index (Dube, 2019a). Nevertheless, a strong emphasis is placed throughout the Directive on the necessity for the minimum wage to provide for a “decent standard of living”, referring to the need to relate minimum wages to cost of living developments as well as long-term country-specific productivity and economic growth trends. As such, the Directive could be considered to propose not just a ‘relativity’ approach to the assessment of adequacy, but also

<sup>2</sup> Results in this study are based on data available until September 2024.

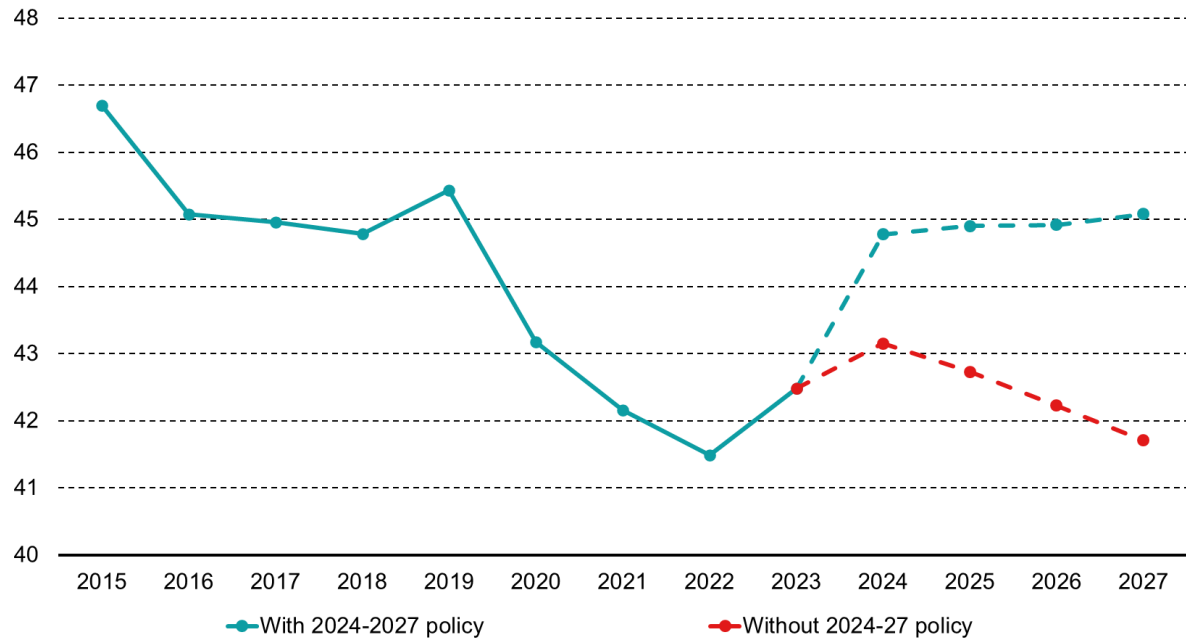
<sup>3</sup> Other commitments include the designation of consultative bodies to provide advice on setting the minimum wage, inclusion of social partners in the decision-making process, and ensuring workers have access to adequate structures to protect their rights.

<sup>4</sup> 22 of the current 27 EU member states had a statutory minimum wage in place as of 1 January 2024 – all but Austria, Denmark, Italy, Finland and Sweden.



a 'living wage' approach which places a focus on the purchasing power and the maintenance of a suitable standard of living (Luebker & Schulten, 2022).

**Chart 2**  
**KAITZ INDEX**  
(percent)



Sources: Labour Force Survey (LFS), EU Survey on Income and Living Conditions (EU-SILC), Author's calculations.
























Note: Values for 2024-2027 are based on internal COLA and wage projections.

As of 2022, Malta's Kaitz index stood at 41.5, ranking 19<sup>th</sup> among EU countries which had enacted a minimum wage at that point. Combining estimates of the minimum wage as shown in Chart 1 with internal forecasts of wage growth for the period 2024-2027, it is estimated that the ratio increased in 2023 and is expected to improve further to nearly 45% in 2024. The sharp increase between 2023 and 2024 comes as the 10.8% increase in the minimum wage is more than double the projected wage growth over the period. In the next three years, the Kaitz index is expected to slightly edge further upward, surpassing the 45% mark. It is noteworthy that the ratio stabilises largely due to the policy to "top up" the minimum wage over the period 2024-2027. Under a hypothetical scenario of no policy change, the Kaitz index would have been projected to decline by 2027, in the absence of the additional increases to the minimum wage. The latter result is driven by the fact that average wage growth is expected to exceed price inflation, to which the minimum wage is typically indexed, over the period considered.

Malta places relatively better among its EU counterparts in terms of the level of its minimum wage. Rescaled to monthly terms, the Maltese minimum wage in 2024 is the 12<sup>th</sup> highest in nominal terms but ranks at a slightly lower 16<sup>th</sup> when adjusted for purchasing power, as seen in Table 1. The 10.8% nominal increase with respect to 2023 levels is meanwhile one of the highest in the EU. In real terms, the increase in the Maltese minimum wage ranks even higher in the bloc, with only six countries raising their minimum wages more in real terms. Another six countries raised their minimum wages only as

much as, or relatively less than, the percentage increase in prices. Without the ad-hoc increase, however, Malta's minimum wage would have risen by 6.7%, from €835 to €891 monthly. Albeit still substantial by historical standards, this increase would have been relatively low by comparison to other EU member states, as shown in Table 2. This provides a further initial indication that the policy to raise minimum wages will play an important role in terms of maintaining adequacy and relative incomes for lower-paid workers in Malta relative to their EU counterparts over the coming few years.



**Table 1**  
**MINIMUM WAGES IN THE EU, 2023-2024**

	2023 Nominal MW €	2024 Nominal MW €	Rank	2023 MW in PPP €	2024 MW in PPP €	Rank	Nominal change percent	2023 HICP inflation percent	Rank: Nominal change	Rank: Change scaled by inflation
	1955	1994	5	2415	2463	4	2.0	2.3	22	17
	399	477	22	972	1162	22	19.5	8.6	4	5
	940	1000	9	1456	1549	13	6.4	3.9	17	9
	717	764	17	1191	1301	18	6.6	12.0	16	22
	1981	2049	4	2588	2677	1	3.4	6.0	20	21
	725	820	16	1058	1197	20	13.1	9.1	5	12
	1260	1323	8	1865	1958	9	5.0	3.4	18	11
	1709	1767	6	2203	2278	5	3.4	5.7	21	19
	832	910	14	1344	1470	15	9.4	4.2	11	6
	700	840	15	1358	1629	11	20.0	8.4	3	3
	579	697	20	1248	1435	17	20.4	17.0	2	14
	1910	2146	3	1913	2149	7	12.4	5.2	7	4
	620	700	19	1038	1172	21	12.9	9.1	6	13
	840	924	13	1518	1670	10	10.0	8.7	9	15
	2387	2571	1	2483	2675	2	7.7	2.9	13	2
	835	925	12	1323	1466	16	10.8	5.6	8	7
	1122	1218	--	1653	1801	--	8.6	7.3	--	
	2042	2183	2	2499	2671	3	6.9	4.1	15	8
	746	978	10	1748	2125	8	31.1	10.9	1	1
	887	957	11	1435	1548	14	7.9	5.3	12	10
	606	663	21	1463	1609	12	9.4	9.7	10	16
	1,304	1,358	7	2087	2173	6	4.1	7.2	19	20
	700	750	18	1155	1238	19	7.1	11.0	14	18

Source: Author's calculations.

Notes: MW stands for minimum wage. Nominal minimum wage levels are as applicable at 1 January of each year, in euro and converted to monthly terms. PPP conversion uses 2022 OECD PPP factors for private consumption and the average 2022 reference USD/EUR exchange rate. 2023 HICP inflation refers to growth in the annual average HICP in 2023. EU figures refer to an unweighted average of figures for the 22 member states with statutory minimum wages in place.

**Table 2****MALTA'S MINIMUM WAGE RELATIVE TO EU: 2024 ACTUAL VS. COUNTERFACTUAL**

	2023 Nominal MW €	2024 Nominal MW €	Rank	2023 MW in PPP €	2024 MW in PPP €	Rank	Nominal change <i>percent</i>	2023 HICP inflation <i>percent</i>	Rank: Nominal change	Rank: Change scaled by inflation
Actual 	835	925	12	1323	1466	16	10.8	5.6	8	7
No top-up 	835	891	14	1323	1412	17	6.7	5.6	15	14

Source: Author's calculations.

Notes: MW stands for minimum wage. Nominal minimum wage levels are as applicable at 1 January of each year, in euro and converted to monthly terms. PPP conversion uses 2022 OECD PPP factors for private consumption and the average 2022 reference USD/EUR exchange rate. 2023 HICP inflation refers to growth in the annual average HICP in 2023.

This policy note focuses on quantifying the impact of this ad-hoc increase, or “top-up”, to the minimum wage on a range of outcomes over the period 2024-2027, including wages, disposable income, poverty metrics and macroeconomic indicators. Results are derived through simulations carried out in EUROMOD, a tax-benefit microsimulation model for EU countries, as well as STREAM, the Bank’s semi-structural macro-econometric model of the Maltese economy. Three questions are proposed to guide this evaluation exercise. First, the note seeks to quantify the impact of the top-up on the incomes of employees and their households, focusing in particular on households with members who are directly affected by the policy. The second section quantifies the impact of the policy under different assumptions on spillover effects to the rest of the wage distribution, whilst the third estimates the broader macroeconomic effects of the increase by introducing the simulated wage increases in the Bank’s semi-structural macroeconomic model, STREAM.

## 1. What are the expected impacts of the recent supplementary increases to the minimum wage on employees and their households?

The expected effects of the supplementary increases in the minimum wage are estimated using simulation exercises carried out using EUROMOD, a tax-benefit microsimulation model for the EU. EUROMOD simulates the individual-level effects of changes in direct tax and/or benefits policies on a representative sample of individuals and households derived from the EU Statistics on Income and Living Conditions (EU-SILC) survey. Input data used for this exercise are derived from the 2021 vintage of EU-SILC. Monetary variables in the input data are updated to reflect nominal values in each policy year simulated. Updating until 2023 uses default factors found in the model, detailed in Vella, Said & Mifsud (2023). For the years 2024-2027, updating factors for incomes are based on wage data from the National Statistics Office's (NSO) Labour Force Survey (LFS) and EU-SILC, combined with internal projections for wage growth as at September 2024 (Central Bank of Malta, 2024). Eligibility rules for social security benefits are updated until 2027, but simulations also incorporate the assumption that individuals previously eligible for means-tested benefits do not lose such eligibility as a result of higher employment income deriving from the simulated minimum wage increases.<sup>5</sup>

Aggregate results from the simulation exercise require that the wage distribution simulated by the model reflects well the actual distribution at the start of the period under study. A key parameter to calibrate for this purpose is the share of employees that are minimum wage earners. Combining data from the LFS with data from EU-SILC, it is estimated that 0.8% of all *full-time occupied individuals* in 2023 were *full-time employees* earning the minimum wage of €4.82 hourly.<sup>6, 7, 8</sup> It is then estimated that following the statutory COLA and supplementary increases, a maximum of 2.4% of all full-timers would have been employees earning the new minimum wage in 2024.<sup>9, 10</sup> This share is, however, only valid under the assumption that the additional increase in minimum wages has no spillover effects across the wage distribution, whereby an increase in the minimum wage also results in an increase in wages for some employees earning above the minimum.

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<sup>5</sup> Other parameters related to benefits, such as benefit amounts, are updated to 2024 values in line with actual data, but are not updated further for simulations for the years 2025-27 due to lack of consistent patterns with which benefit amounts change across years. This does not affect the results presented.

<sup>6</sup> These minimum wage values apply to individuals aged 18 and over. Lower thresholds for employees aged below 18 are simulated accordingly.

<sup>7</sup> External data on the number of full-time employees earning the minimum wage was not available at the time of writing. As a result, the number of full-time employees earning the minimum wage is expressed as a share of all full-time occupied individuals – hereafter occasionally also referred to as “full-timers” – which also include self-employed individuals working full-time hours, and the number of full-time employees earning the minimum wage in the model is calibrated to this share.

<sup>8</sup> These figures reflect official government statements (see Il-Parlament ta' Malta, 2023a).

<sup>9</sup> Since the simulation exercise cannot account for changes to the size or structure of the workforce over time, it is implicitly assumed that any such changes do not impact this share of employees earning the minimum wage.

<sup>10</sup> 31 Wage Regulation Orders (WRO) under Maltese law can specify minimum wages at the occupation-by-sector level that differ from the national minimum. These are not accounted for in the simulations, since sectoral data in the model is much less granular than that specified by the WROs. Moreover, several WROs directly apply the National Minimum Wage.

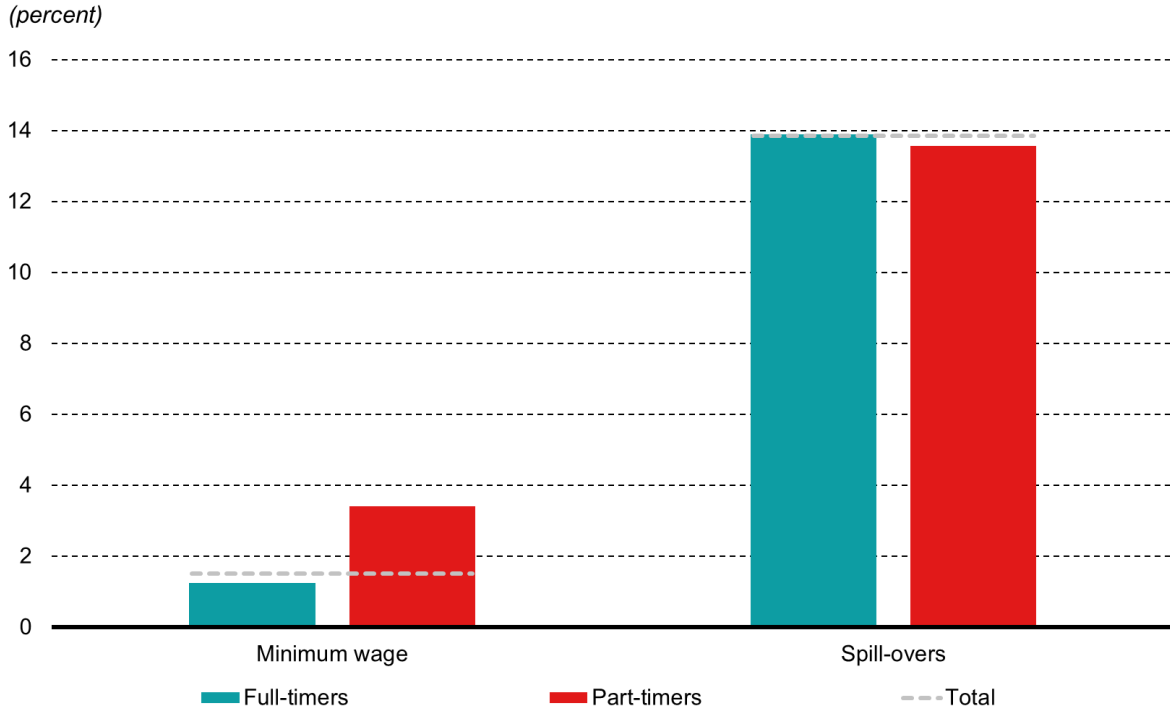
In fact, literature on the effects of changes in the minimum wage commonly finds that increases in the minimum wage are accompanied by at least modest spillovers to wages higher along the distribution. Results are typically expressed in terms of wage elasticity to the minimum wage at different points of the distribution. On the lower end of the range of estimates, Gopalan et al. (2021), studying minimum wage changes in six US states over 2014 and 2015, find spillovers extending up to wages around 30% above the new minimum wage, with an average elasticity of 0.03 for those already earning above the new minimum prior to the change. Cengiz et al. (2019) document similar findings, studying 138 state-level minimum wage adjustments in the US, whilst Ferraro et al. (2018), studying an increase in minimum wages in Estonia, find significantly higher spillovers, extending up to the 40<sup>th</sup> percentile of the wage distribution. The elasticity of wage rates to the minimum wage falls from 0.47 at the 10<sup>th</sup> percentile, to 0.07 at the 40<sup>th</sup>. Neumark et al. (2004) also find evidence of significant spillovers in the US, with an estimated elasticity of around 0.8 for employees that were earning up to 10% above the previous level of the minimum wage, and significant spillovers being detected up to 50% above the pre-change minimum. Dustmann et al. (2022) find that the introduction of the minimum wage in Germany led to statistically significant excess wage growth for individuals who, prior to the reform, earned up to 47% above the *new* minimum wage. Vodopivec (2015) also finds spillovers up to 50% over the new minimum wage after an increase in the Slovenian minimum wage enacted in 2010. Some results in the literature, such as in Garcia-Louzao & Tarasonis (2023), Gregory & Zierahn (2022) and Engbom & Moser (2022), suggest even larger spillovers that extend to and beyond the median of the pre-reform wage distribution.

In line with Rapa (2023), the central estimate of spillover effects for this exercise is based on Neumark et al. (2004). Consistent with the econometric specification of this paper, spillover effects are applied over-and-above baseline wage growth. Between 2023 and 2024, baseline wage growth is simulated for each employee as the higher of COLA or a 5.1% wage increase, which equals the projected aggregate wage growth in 2024 based on internal estimates. Under these assumptions, in 2024, employees that in 2023 earned up to 10% above the minimum wage receive *the higher of* either the 2024 minimum wage or the sum of their baseline 2024 wage and 80% of the €8 weekly top-up, thus applying an elasticity of approximately 0.8 to this segment of the distribution. Those earning between 10% and 30% above the previous minimum wage, see wage increases equal to the baseline increase and 40% of the €8 top-up, whilst those earning between 30% and 50% above the old minimum receive the baseline increase and 25% of the top-up. Unaffected individuals, earning above the threshold of 50% above the 2023 minimum wage, have their wages updated by 5.1%. The effects of different degrees of wage spillovers will be explored in the second part of this study. From 2025 onwards, wages are updated by the projected aggregate wage growth before applying spillovers.

Under this framework, the share of full-time employees estimated to be on the minimum wage over the period 2024-2027 is expected to be 1.2%. The share of *all* employees earning the minimum wage is 1.5% (see Chart 3). A further 13.9% of all employees are affected by spillovers in 2024, with this share increasing over time to 16.4% as spillovers reach further up the wage distribution. Therefore, a total of between 15.4% of employees in 2024 and 17.9% in 2027 are simulated to experience some wage

increase as a result of the policy. The share of households affected, meanwhile, ranges between 15.9% and 18.1%.

**Chart 3**  
**SHARE OF EMPLOYEES EARNING THE MINIMUM WAGE OR AFFECTED BY SPILL-OVERS**  
*(percent)*



Source: Author's calculations.

An increase in employment income for individuals who are either minimum wage earners or affected by spillovers is naturally the primary impact of the policy on individuals and households, and thus the first result presented below. Higher employment income, however, creates secondary effects through its interaction with the tax-benefit system. Firstly, higher gross wages may result in higher income tax liabilities, curtailing some of the net benefit of the policy for beneficiaries.<sup>11</sup> Meanwhile, certain policies in the tax-benefit system – most notably social security contribution floors and ceilings – are indexed to the minimum wage. The increase in the minimum wage associated with the top-up policy will therefore impact such parameters within the tax-benefit system. As a result, the policy will have some impact on a broader swathe of employees, including some whose income is not directly affected by the minimum wage increase.

The impacts of the policy are derived through a typical decomposition framework employed in the microsimulation literature, which extracts the difference between outcomes in a scenario where the policy of interest is implemented and outcomes in a counterfactual wherein it is not. Results presented herein are derived from three scenarios, thus including an additional step used to further decompose the effects of interest. The scenarios involved in this exercise are constructed and labelled as follows.

<sup>11</sup> Provisions in the income tax code ensure that minimum wage earners, under certain conditions, do not pay income tax. However, individuals who are not minimum wage earners but experience wage increases due to spillovers may be liable to pay increased income tax.

The counterfactual scenario which serves as the baseline for extracting the effects of this policy is a **no-policy** scenario, under which the minimum wage for each year is set to the level of the previous year with the applicable COLA increase added on. As such, for instance, under this scenario 2023 minimum wage earners earn the 2024 minimum wage increased by COLA only, whilst all others receive their estimated 2024-level wages. Under the no-policy scenario, no spillover effects are simulated, and policy parameters that are indexed to the minimum wage under Maltese legislation are indexed to the increases brought about by COLA only. Conversely, the **policy** (or **actual**) scenario sets the minimum wage to incorporate the statutory COLA increase and the top-ups foreseen by the policy change. Moreover, relevant policy parameters are indexed to reflect both the increase statutory COLA and top-up increments, and a baseline level of wage spillovers is simulated, based on estimates in Neumark et al. (2004) and used in Rapa (2023).

Additionally, in order to distinguish the effects that are directly driven by the wage increment from those pertaining to policy indexation effects, I design a second policy counterfactual which mirrors the 'actual' scenario except for the way in which policy parameters are indexed. This **intermediate** scenario thus sets the same minimum wage as the actual scenario, but assumes that relevant policy parameters are indexed only by COLA, in line with the no-policy scenario. Therefore, the cumulative effect of the policy – given by the difference between the policy and no-policy scenarios – can be decomposed into the effect of the top-up on wages (given by the difference between the intermediate and the no-policy scenarios) and its' effect through indexed policies (the difference between the policy and intermediate scenarios).

Under all scenarios, wage growth of employees not affected by the policy – that is, those that are neither minimum wage earners nor benefit from spillover effects, where applicable – is simulated in line with internal average wage growth projections. No other changes in the 2024-27 tax-benefit policy system are reflected apart from those to minimum wages and indexed policies as described above.

Calibrating the share of employees earning the minimum wage requires minimal data cleaning.<sup>12</sup> Following this, the 2024 median gross monthly wage of full-time employees in the sample is €2162, which is broadly in line with estimates from external data. Meanwhile, the median monthly wage of part-time employees is €1230. Focusing on employees only, apart from the 1.5% of all employees earning the minimum wage in 2024, a further 4.9% earn an hourly salary up to 10% above the minimum wage in the sample distribution (see Chart 4). The 10<sup>th</sup> percentile value of the distribution is slightly higher than €6.68 hourly, which is 25% above the minimum hourly wage.

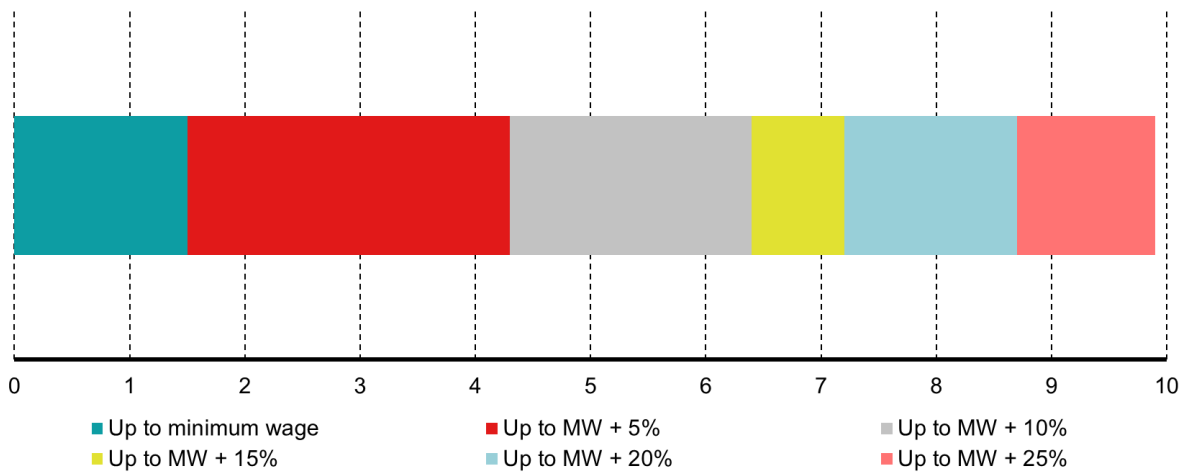
Chart 5 visualises the median wage growth between 2023 and 2024 under the top-up policy (intermediate and policy scenarios), for employees grouped by their hourly wage relative to the 2024 statutory minimum, and compares them with the no-policy scenario. Under the no-policy scenario, some

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<sup>12</sup> Some adjustments are made at the bottom tail of the hourly wage distribution to obtain a sufficient share of minimum wage earners. Following this, full-time earners with implausibly low hourly wage rates are dropped from the samples, as are all their household members, as is necessary for household-level analysis. One severe outlier at the top end of the distribution was removed following the procedure of Belotti et al. (2022), implemented through the Stata package `outdetect`. In total, 236 observations are dropped in this process (2.3% of the sample).

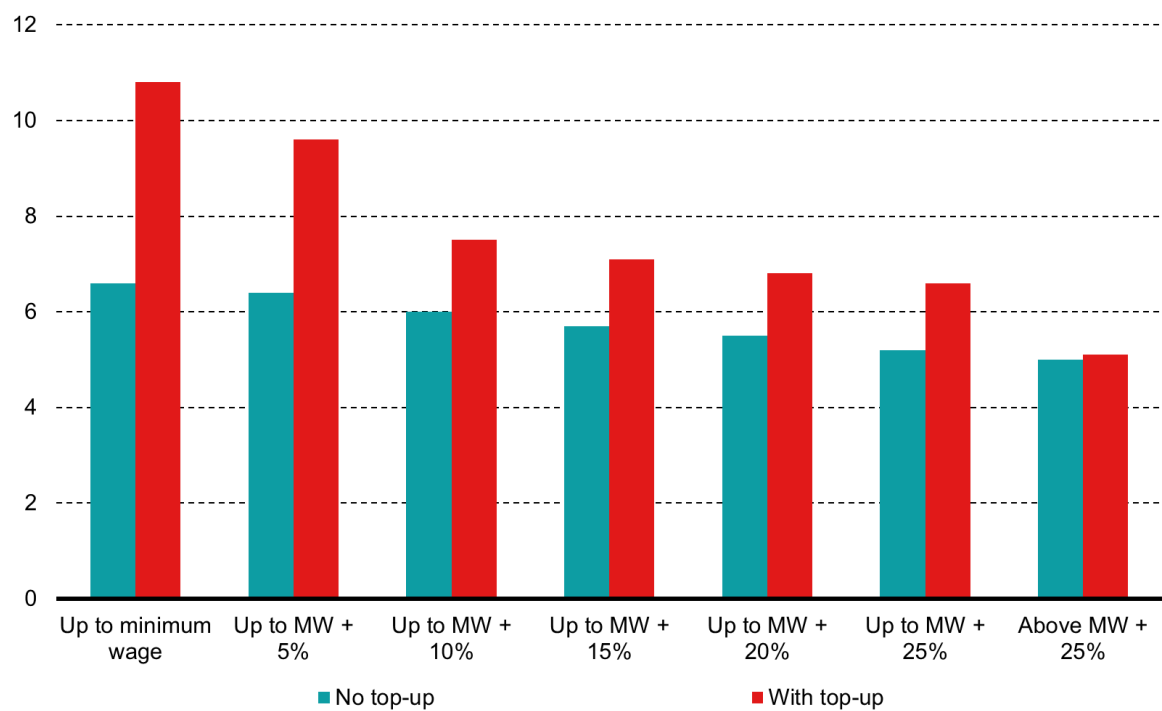
individuals on the lower part of the wage distribution experience wage growth (driven by COLA) exceeding 5.1%, reaching 6.7% for minimum wage earners. When the minimum wage top-up and spillovers therefrom are also taken into account, wages increase in excess of 6% for all individuals in the categories specified above, and by up to 10.8% over 2023 levels for minimum wage earners.

**Chart 4**  
**SHARE OF EMPLOYEES BY HOURLY WAGE RELATIVE TO THE MINIMUM WAGE, 2024**  
*(percent)*



Source: Author's calculations.

**Chart 5**  
**MEDIAN WAGE GROWTH BY HOURLY WAGE CATEGORY, 2024**  
*(percent)*



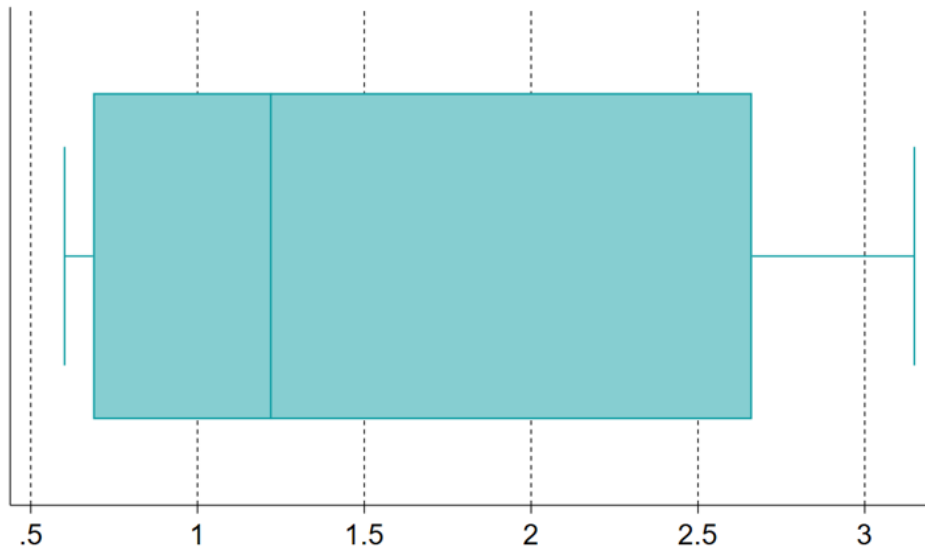
Source: Author's calculations.



To facilitate their interpretation, all results in the remainder of this note are presented as the difference in the *same* year between the scenarios implementing the full minimum wage increase (the intermediate and policy scenarios) and the counterfactual where the minimum wage only increases by COLA (no-policy scenario). Thus, minimum wage earners in 2024 are expected to receive hourly wages that are, on average, 3.8% higher than wages prevailing in the same year without the €8 weekly top-up. The expected impact of the policy increases year-on-year through to 2027, reaching 7% due to the progressively increasing difference between the minimum wage with the top-up policy and the minimum wage under COLA-only increases. These figures equivalently hold for gross monthly employment income. For individuals affected by spillovers, on average, the top-up increases their gross income by 1.4% in 2024, increasing to 3.2% by 2027.

There is considerable heterogeneity in the impacts experienced within each category of employees, however, as the impact depends on the employee's initial wage relative to the minimum. For minimum wage earners, the estimated effects range between 3.1% and 3.9%. Estimates closer to the lower-bound derive from a small share of individuals who are either not recorded to be in employment for the full year in the data, or who earned slightly above the minimum wage in 2023 but earn the minimum wage in 2024. Heterogeneity is particularly evident for individuals whose wages increase on the back of spillovers from the top-up granted to minimum wage earners. Individuals who receive spillovers are modelled to receive declining shares of the top-up the further away their initial wage is from the minimum. Since by construction microsimulation models apply changes to individual observations, we can examine the whole distribution of impacts across any category of observations. As seen in Chart 6, in fact, the interquartile range of impacts on the gross income of employees impacted by spillovers is relatively wide; the first quartile of the distribution of impacts across these individuals is of approximately 0.7%, whilst the third quartile is 2.7%. The uppermost values for this category of employees exceed 3%, being individuals who initially earn only slightly more than the threshold below which they would be earning the minimum wage.

**Chart 6**  
**DISTRIBUTION OF POLICY IMPACTS ON EMPLOYMENT INCOME**  
**FOR SPILL-OVER-AFFECTED INDIVIDUALS, 2024**  
*(percent)*



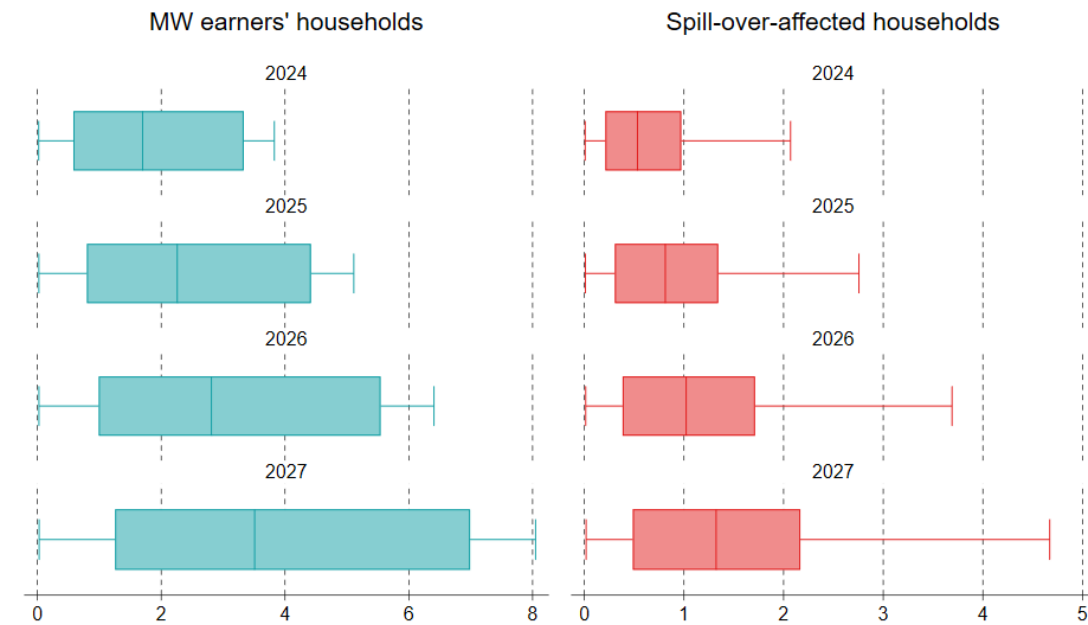
Source: Author's calculations.

The distributions of impacts around the average figure tell a similar story in the years 2025-2027. Given their predetermined hourly wages, the effects on the employment income of minimum wage earners remain confined within a narrow range of estimates. For those affected by spillovers, the interquartile range widens slightly from 2 p.p. in 2024 to around 4.2 p.p. in 2027, where the third quartile value is 5.8% and the first quartile is 1.6%. The economy-wide average impact on employment income is significantly smaller, since affected individuals account for just 15.4% of all employees. As a result, the economy-wide average increase in employment income attributable to the policy is of 0.25% in 2024. This gradually increases to 0.35% in 2025, 0.44% in 2026 and 0.57% in 2027.

At the household level, the impact is generally less pronounced since in most cases, individuals affected by the policy do not account for the entirety of the household's earned income.<sup>13</sup> For a few households with minimum wage earners but where other earners receive very high incomes, the impact of the policy becomes negligible. However, the median impact is still just below 2% at its lowest in 2024 and exceeds 3% by 2027. At the upper end of the distribution in each year, the effect on employment income for some households exceeds twice the median. These are predominantly single-earner households whereby the household-level income gains are of equal magnitude to those of the individual earners.

<sup>13</sup> Households are classified according to their status in 2024 and the classification is maintained across all years analysed to ensure comparability.

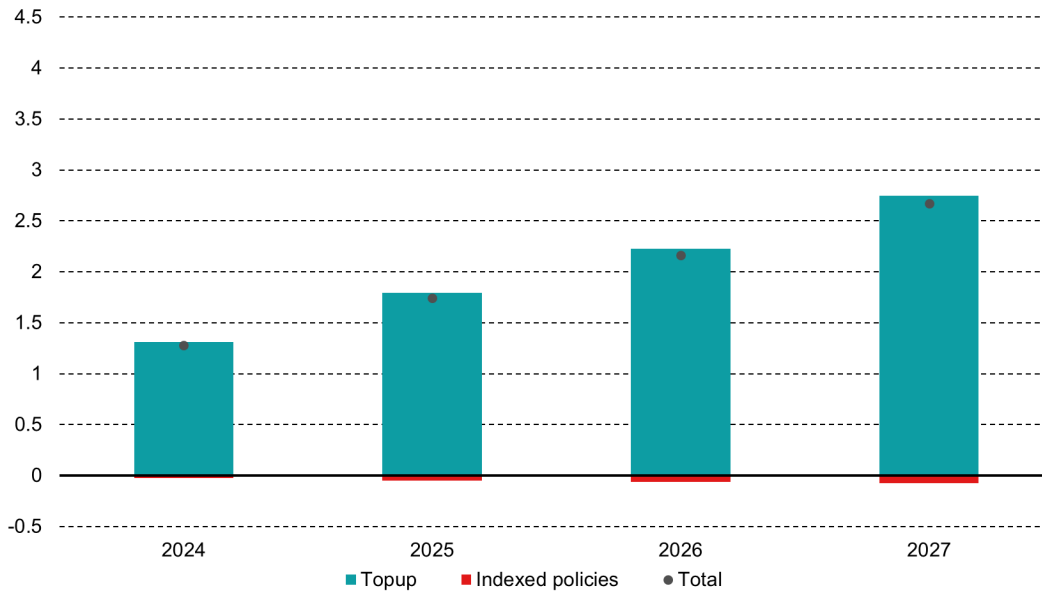
**Chart 7**  
**DISTRIBUTION OF POLICY IMPACTS ON HOUSEHOLD EMPLOYMENT INCOME**  
*(percent)*



Source: Author's calculations.

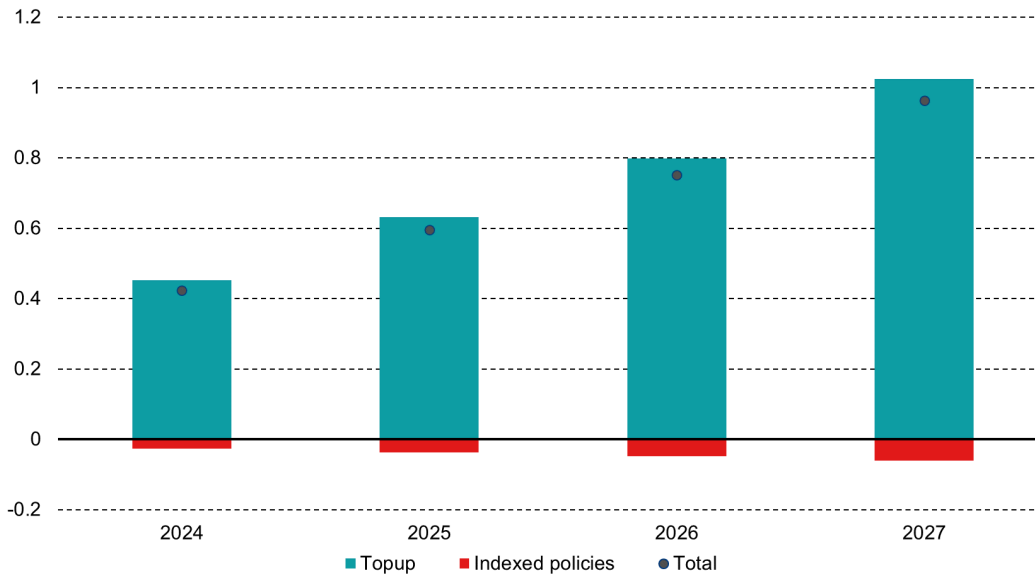
To account for the effects of policies indexed to the minimum wage, changes in household disposable income are decomposed in line with the framework explained above. Central estimates of the impacts suggest that in 2024, households with minimum wage earners experience, on average, a 1.28% increase compared to their disposable income without the top-up policy. The top-up itself results in a 1.31% increase, offset by a negligible 0.03% decrease resulting from indexed policies. Over time, the impact of indexed policies remains comparatively minute in contrast to the direct effect, and by 2027, the policy is expected to raise the average minimum wage earner's household disposable income by 2.7%, all else equal. Disposable income of households affected by spillovers increases by less, corresponding to lower changes in gross earnings. The impact on the disposable income of these households is slightly higher than 0.4% in 2024, increasing by approximately 0.2p.p. per year and reaching 1% in 2027.

**Chart 8**  
**AVERAGE IMPACT ON DISPOSABLE INCOME OF MINIMUM WAGE HOUSEHOLDS**  
*(percent)*



Source: Author's calculations.

**Chart 9**  
**AVERAGE IMPACT ON DISPOSABLE INCOME OF SPILL-OVER-AFFECTED HOUSEHOLDS**  
*(percent)*



Source: Author's calculations.

As in the case of employment income, we can examine the entire distribution of impacts on disposable income across all households of a given category. This is done in Chart 10. In line with results pertaining to employment income, the direct effects of the top-up on households' disposable income are heterogeneous, and depend, amongst other things, on the share of the top-up received by the affected earner within the household and the share of the household's total employment income for which they account. Conversely, the impact of indexed policies is largely contained and on average offsets a very

small share of the direct impact.<sup>14</sup> As a result, the distribution of net gains in household disposable income is very close to that of the distribution of the direct impacts of the policy.<sup>15</sup>

### Chart 10 DECOMPOSED IMPACT ON DISPOSABLE INCOME OF MINIMUM WAGE HOUSEHOLDS

(percent)



Source: Author's calculations.

To provide a broader view of the impacts across the lower segment of the distribution, Chart 11 below shows the same decomposition of the average changes in disposable income for the bottom five deciles of the household income distribution. The largest positive effect of the policy in each of the four years analysed is seen in the first and the third decile of the distribution. The first two deciles' average impact is dampened on account of a significantly lower share of households within each decile that are in employment when compared to the third decile and above. On the other hand the first decile average is pushed upwards by a base effect driven by the low baseline disposable income of these households. Beyond the third decile, the share of households including minimum wage earners or individuals affected by spillovers starts declining, whilst the share of households with at least one employed member continues increasing. The average effect of the policy across the whole decile thus starts declining. Across all four years, households in the bottom four deciles experience increases in their

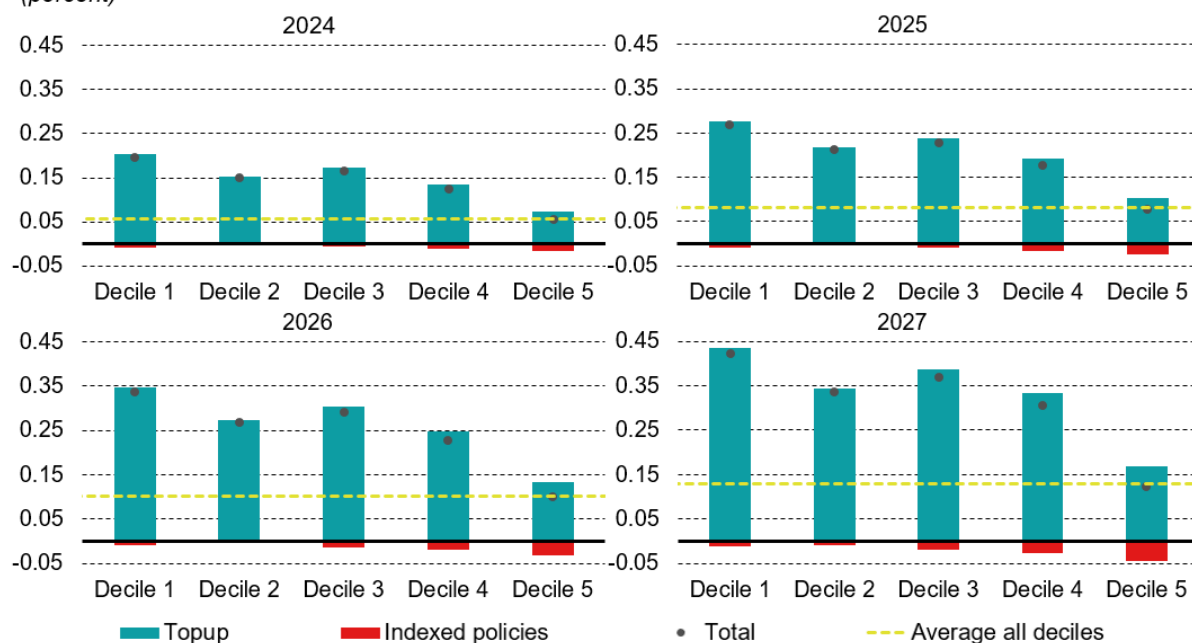
<sup>14</sup> The peak drag effect of indexed policies is also very contained and does not exceed 0.4%. This follows from the fact that social security contributions are capped and therefore account for a limited share of most households' incomes.

<sup>15</sup> It is worth noting that for a small minority of these households, the net impact on household disposable income is negative. These households typically include other earning members whose increased social security contributions offset the impact of the minimum wage earner's higher pay on household income.

average disposable income from this policy which are higher than the average impact across all households.

**Chart 11**  
**AVERAGE IMPACT ON DISPOSABLE INCOME BY HOUSEHOLD EQUIVALISED INCOME DECILE**

(percent)



Source: Author's calculations.

This is in turn reflected in a lower Gini coefficient in each of the four years under analysis (see Chart 12).<sup>16</sup> The coefficient in fact decreases both between the no-policy and the intermediate scenarios, where the increase in employment income from the top-up kicks in, and further between the intermediate and policy scenarios, when the indexed policies reflect the higher minimum wage. The latter change implies higher social security contributions by a segment of higher-earning employees. The magnitude of the changes observed is small in absolute terms, though this is in line with expectations given the nature of the Gini coefficient and the fact that the policy targets one segment of the distribution.

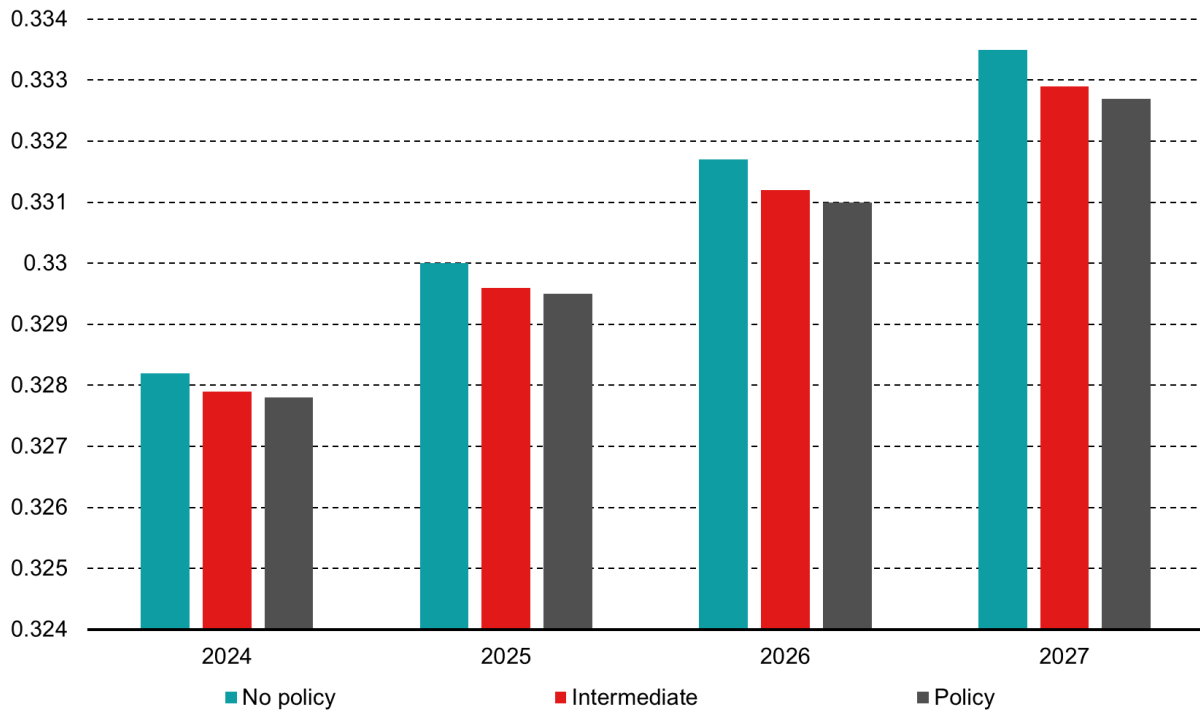
Poverty rates also decline marginally, by 0.1 p.p. in 2024 and by 0.3 p.p. in each year between 2025 and 2027, after the introduction of the top-up and using a fixed poverty line in each year (see Chart 13).<sup>17</sup> Nevertheless, the overall at-risk-of-poverty rate considers individuals that inhabit households with no economically active members. Therefore, poverty figures estimated on the population of individuals inhabiting affected households can be more indicative of this policy's effectiveness in relieving its' beneficiaries from poverty. Indeed, following the enactment of this policy, the share of individuals in

<sup>16</sup> The Gini coefficient measures income inequality within a population. Its values range from 0 to 1. A Gini coefficient of 0 indicates perfect equality and a coefficient of 1 signifies perfect inequality, where one individual or household earns all the income. Thus, a fall in the Gini coefficient signals a decrease in inequality, and vice-versa. The coefficient can be calculated as the area between the line of perfect equality and the Lorenz curve (the cumulative distribution of income or wealth) as a proportion of the total area under the line of perfect equality.

<sup>17</sup> The at-risk-of-poverty rate is defined as the share of individuals whose equivalised household disposable income is below 60% of the median, which threshold is termed the poverty line.

affected households which can be classified as ‘at risk of poverty’ is expected to decrease by 0.7 p.p. in 2024 to 1.5 p.p. in 2027.<sup>18</sup> The policy also reduces the estimated in-work poverty rate for employees – defined as the share of employees at risk of poverty – by 0.1 p.p. in 2024, 0.2 p.p. in 2025, and 0.3 p.p. in 2026 and 2027, as illustrated in Chart 14.

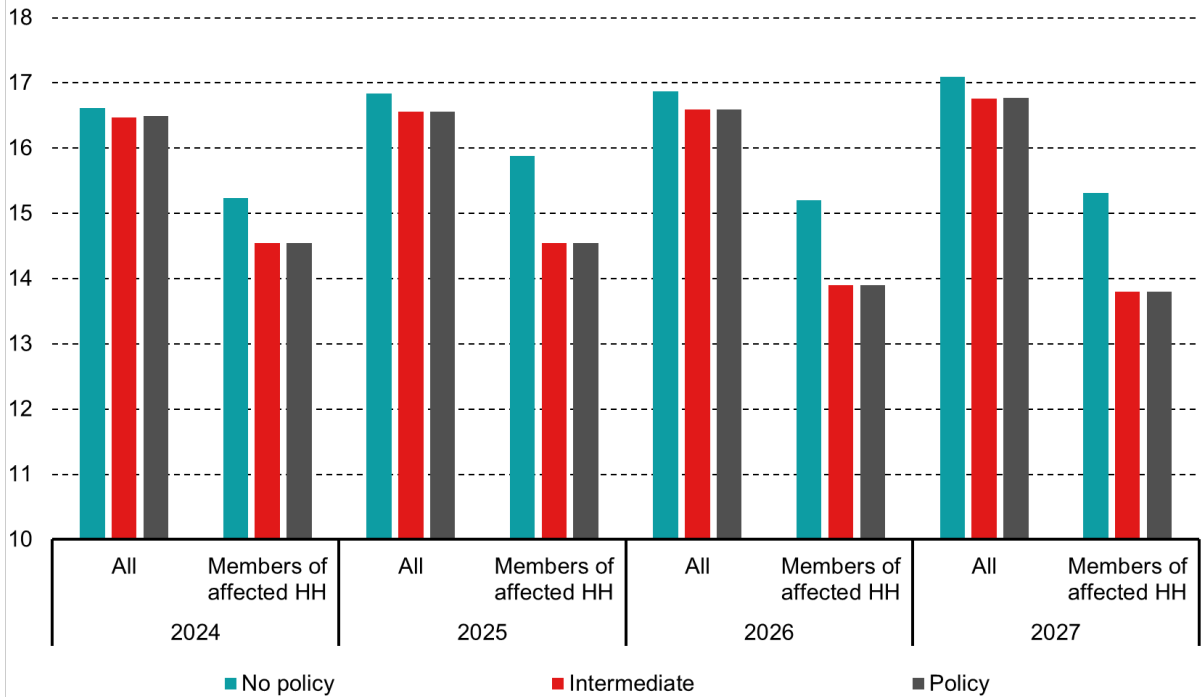
**Chart 12**  
**GINI COEFFICIENT BY SCENARIO**  
*(levels)*



Source: Author's calculations.

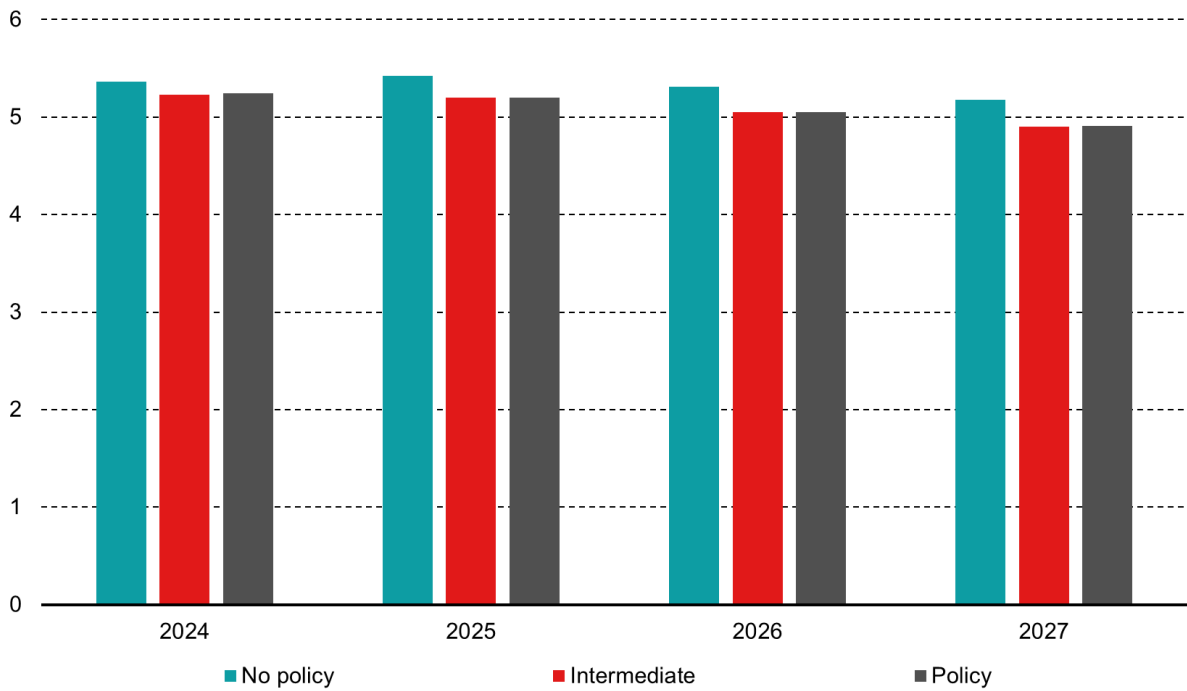
<sup>18</sup> *A priori*, although minimum wage policies are widely considered as measures to avert *in-work* poverty, it is not necessarily the case that minimum wage earners exclusively inhabit households which are in the lowest segments of the income distribution (Karakitsios & Matsaganis, 2018; Dube, 2019b). Households that do not include economically active members, and thus are not affected by this policy, are relatively more likely to be at risk of poverty, explaining the higher poverty rate when considering individuals from all households. 40% of households including minimum wage earners are in the top half of the household equivalised income distribution, and just 7% are in the bottom decile.

**Chart 13**  
**AT-RISK-OF-POVERTY RATE BY SCENARIO**  
*(rate in percent)*



Source: Author's calculations.

**Chart 14**  
**IN-WORK POVERTY RATE FOR EMPLOYEES**  
*(rate in percent)*



Source: Author's calculations.



This section has thus quantified the gains in employment income and disposable income expected to materialise from the policy to implement additional increases to the minimum wage over the period 2024-2027. Households with members earning the minimum wage are expected to have a disposable income which is close to 3% higher, on average, by 2027 than it would have been without this policy. A broader swathe of households are estimated to gain indirectly through spillover effects from the policy. Although not all beneficiaries inhabit households at the lower end of the income distribution, the policy is expected to predominantly benefit households in this segment, with positive implications for income inequality and poverty outcomes.

## 2. How important are spillover effects?

Results in the previous section are constructed around particular assumptions on the magnitude and propagation of spillover effects from the increase in the minimum wage. This section aims to consider alternative assumptions in order to construct a range of possible estimates for the results presented in the previous section. Taking the assumptions used in the previous section as a central estimate of the magnitude of spillover effects, in this section two tail-end scenarios are constructed: a ‘no spillover’ case and a ‘large spillover’ case, to provide a lower-bound and an upper-bound value, respectively, to the estimated effects.

With no spillovers, all employees’ hourly wages increase only by the higher of COLA or wage uprating between any two successive years. Minimum wage earners receive only the portion of the top-up which suffices for them to reach the new minimum wage. This results in a larger share of individuals earning the minimum wage in any given year, since a number of individuals in the initial simulations see their hourly wage exceed the statutory minimum due to spillovers. In the ‘large spillovers’ case, all individuals who earn less than the *new minimum wage* in the year prior to the increase receive the full top-up. Individuals previously earning between the new minimum wage and around 50% above it are assumed to receive shares of the top-up with proportions declining in line with the results of Garcia-Louzao and Tarasonis (2023), whose spillover estimates are close to the upper-bound of results available in the literature.<sup>19</sup> These assumptions yield larger spillovers due to two factors: a more gradual decline in the proportion of the top-up received as a spillover by eligible individuals, and a larger proportion of the wage distribution being affected by spillovers. This is explained in Table 3, using figures from the 2023 wage distribution and the 2024 minimum wage for reference. The table refers to minimum wage levels applicable to individuals aged 18 and over, but simulations apply spillovers to individuals aged less than 18 in relation to their age-specific minimum wage.

In the absence of spillover effects, the share of full-timers that are minimum wage employees in 2024 is 2.4%, up from 1.1% under the baseline spillover assumptions. Moreover, under this scenario, the share of minimum wage earners grows minimally every year, reaching 2.7% in 2027. The corresponding share of affected households ranges between 3.7% and 4.0%. Conversely, under large spillovers, only employees that are initially minimum wage earners in 2023 remain so. However, a larger share of employees – 20.4% – is affected by spillovers, up from a maximum of 16.4% in the central scenario. In presenting the below results, to ensure comparability across the three spillover cases, the classification of individuals as minimum wage earners or affected by spillovers is unchanged, and is set in line with

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<sup>19</sup> Their results show that employees that earned below the new minimum wage in the year prior to the policy change experience wage growth, net of economy-wide increases as well as wage trends specific to that segment of the distribution, of approximately 7%. This excess wage growth falls to 6% in the cohort of workers that earned exactly above and up to 7.5% higher than the new minimum wage, progressively declining to 2% in the cohort whose pre-reform wage was up to 52.5% higher than the new minimum wage. The design used here is consistent with that of the paper under the assumption of no group-specific wage growth trajectory and taking the no-top-up case as the economy-wide wage growth trend.

their status in the simulations under the ‘central’ spillovers assumption. The same applies to their households.

**Table 3**  
**SPILL-OVER ASSUMPTIONS USED**

Baseline (based on Neumark et al., 2004)			Large spill-overs (based on Garcia-Louzao & Tarasonis, 2023)		
Wage level	Hourly wage, 2023 €	Share of top-up received percent	Wage level	Hourly wage, 2023 €	Share of top-up received percent
Up to 10% above previous MW	<= 5.30	80	Between previous and new MW	4.82 - 5.34	100
10%-30% above previous MW	5.31 - 6.27	40	0% - 7.5% above new MW	5.35 - 5.74	93
30%-50% above previous MW	6.28 - 7.23	25	7.5% - 15% above new MW	5.75 - 6.36	86
			15% - 22.5% above new MW	6.37 - 6.76	71
			22.5% - 30% above new MW	6.77 - 7.16	57
			30% - 37.5% above new MW	7.17 - 7.56	48
			37.5% - 45% above new MW	7.57 - 7.97	38
			45% - 52.5% above new MW	7.98 - 8.37	29

Source: Author's calculations.

All individuals who earn the minimum wage in the central scenario equivalently earn the minimum wage in the absence of spillovers, whilst when assuming large spillovers, some of these employees are simulated to earn slightly above the minimum wage. As a result, it is estimated that the impact on minimum wage earners' employment income under larger spillovers could be up to 0.1 p.p. higher in 2024, and up to 1.1 p.p. higher in 2027, than the central estimates. Meanwhile, most individuals affected by spillovers in the central case are not minimum wage earners in the absence of spillovers, and are thus unaffected by the policy if spillovers are not simulated, giving a lower-bound impact of 0.1-0.3% on their employment income in the ‘no spillovers’ instance. In the ‘large’ spillovers scenario, the impact on their employment income is expected to be between 1 p.p. higher in 2024 and 1.9 p.p. higher in 2027. Lastly, the average impact on employment income across all employees, when varying spillover assumptions, is estimated at approximately 0.2 p.p. on either side of the central estimate in 2024, increasing to 0.4 p.p. around the 2027 central estimate of 0.5%. These results are reflected in Chart 15, where ‘low’ estimates refer to the case where no spillover effects are assumed.

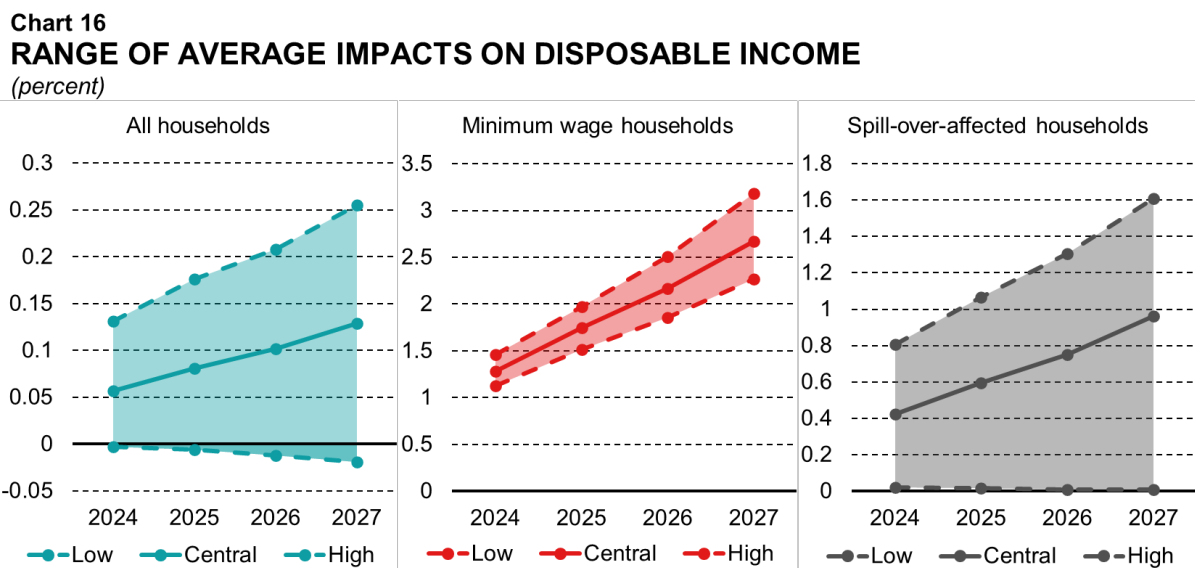
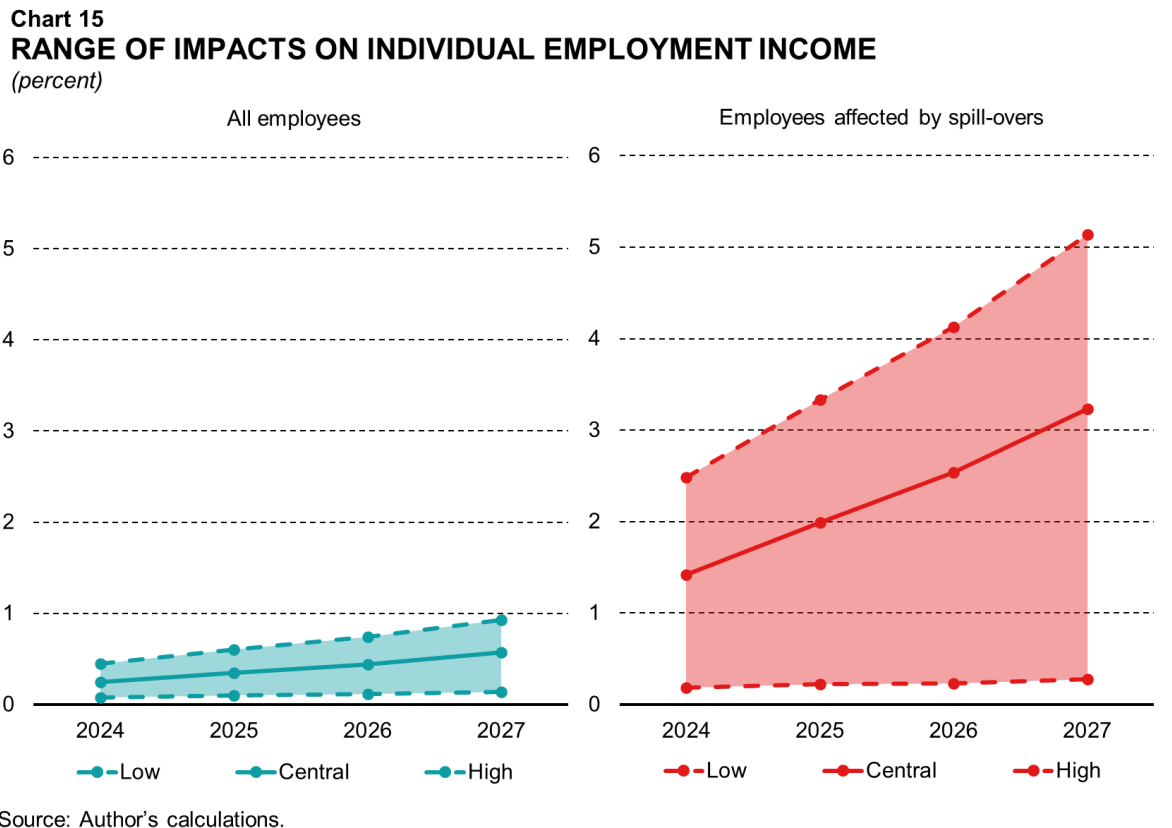


Chart 16 illustrates the equivalent range of results in terms of household disposable income. The impact on the economy-wide average household disposable income across the economy remains small under all spillover magnitude assumptions, as most households remain directly unaffected.<sup>20</sup> The disposable income of the average household with a member earning the minimum wage is 1.3% higher than in the absence of the policy in 2024, increasing to 1.7% in 2025, 2.2% in 2026 and 2.7% in 2027. With large

<sup>20</sup> 16% of households are directly affected by higher employment income under the median spillover case, falling to 4% with no spillovers and rising to 21% with large spillovers.

spillovers, the corresponding effects are estimated at 1.5%, 2.0%, 2.5% and 3.2% respectively. In households affected by spillovers, the estimated impacts of 0.4%-1.0% increase to 0.8%-1.6% under the large spillovers scenario, thus effectively doubling, whilst naturally falling to essentially zero in the absence of spillover effects.

One can analogously derive a range of estimates for inequality and poverty indicators. Larger spillovers are associated with monotonically lower income inequality (in terms of household disposable income), as the households additionally affected are predominantly in the lower segments of the income distribution. In most instances, they are also associated with larger decreases in the poverty rate. The overall at-risk-of poverty rate is expected to fall by up to 0.2 p.p. on account of the top-up policy. If spillovers are larger than expected, this could lead to larger falls in the poverty rate over time, whilst in the absence of spillovers, some decreases in the poverty rate are also expected with the exception of the year 2024. These results are amplified when considering the share of at-risk-of-poverty individuals among those living in households directly affected by the policy, which is estimated to fall by up to 1.5 p.p. in 2026 and 2027 under large spillovers, from initial rates that are lower than under the central spillover assumption. With no spillovers, the share of such individuals classified at risk of poverty is still estimated to fall by 0.8 p.p. in 2027, a non-negligible decline from the initial share of 15.3%. The overall in-work poverty rate for employees, meanwhile, declines by up to 0.1 p.p. under the assumption that no spillovers materialise, but by up to 0.4 p.p. assuming large spillovers.

These results suggest that the extent of spillovers has a potentially substantial bearing on the benefits of the policy for households at the bottom of the distribution. This follows from the fact that the share of individuals and households affected increases at least fourfold from a 'no spillover' case to the central estimates presented. Nevertheless, even if no spillover effects were to materialise, the benefits derived by the primary beneficiaries – minimum wage earners and their households – are sufficient to result in some households falling out of poverty over time. Meanwhile, larger spillovers result in significantly larger income increases and poverty reductions. Literature suggests that further gains in the share of employees affected beyond those assumed herein are not likely. The precise extent of spillovers to materialise in the local context remains a matter for future study.

### 3. What are the broader macroeconomic impacts of the policy?

The results presented so far shed light on the impact the recent increase in the minimum wage, and future planned increases, are likely to have on the incomes of various cohorts under different spillovers scenarios. As a microsimulation model, while EUROMOD is well-equipped to assess the microeconomic effects of changes to a country's tax-benefit system, it cannot provide much information on the broader macroeconomic impact that will result from changes in income. However, a thorough appraisal of the policy necessitates the consideration of its likely effect on the wider economy, particularly in the context of the debate in the literature surrounding the impact of minimum wages on employment. Some studies also suggest that the net benefit of minimum wage policies may be dampened by their effects on prices; whilst the increased costs of higher minimum wages may in the short run be internalised by firms through their profit margins, over time such costs are mostly passed through to consumer prices (Draca et al., 2011; MaCurdy, 2015; Harasztosi & Lindner, 2019). In isolation, non-behavioural microsimulation models such as EUROMOD are unable to endogenously account for such effects.

To gauge the broader macroeconomic impact of the minimum wage policy, we introduce a set of wage shocks in STREAM, the Bank's macro-econometric model of the Maltese economy (Grech & Rapa, 2016). STREAM can be classified as a semi-structural model. This class of models strikes a balance between theory and empirics: many of the underlying relationships are based on economic theory, but the model does not require strict adherence to theory, allowing these relationships to be estimated using historical data. Such models therefore draw from theory but also capture empirical relationships borne by the data. STREAM is built around the neo-classical synthesis. Besides supply, demand and price-wage blocks, the model also contains fully-fledged fiscal and financial blocks. It consists of over 200 equations, 28 of which are estimated behavioural equations. The behavioural equations are estimated in error-correction form on the basis of quarterly data spanning from 2000Q1 to 2019Q4.<sup>21</sup>

The wage shocks introduced in this exercise are based on the increase in the average monthly wage of all employees resulting from the top-up to the minimum wage as estimated in EUROMOD, in each year from 2024 through to 2027 and for each of the three spillover assumptions considered, as shown in Table 4.<sup>22</sup>

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<sup>21</sup> See Grech and Rapa (2016) for further details. Note that an updated version of the model presented therein, that captures more recent data, was used for this study.

<sup>22</sup> This metric differs from the average impact on employment income referred to in Sections 1 and 2, wherein the average of all individual impacts is taken. The series used in this section is consistent with the wage series used as an input to STREAM. To be implemented in STREAM, the estimated annual shocks are apportioned over each year in line with the model's quarterly input data frequency.

**Table 4**

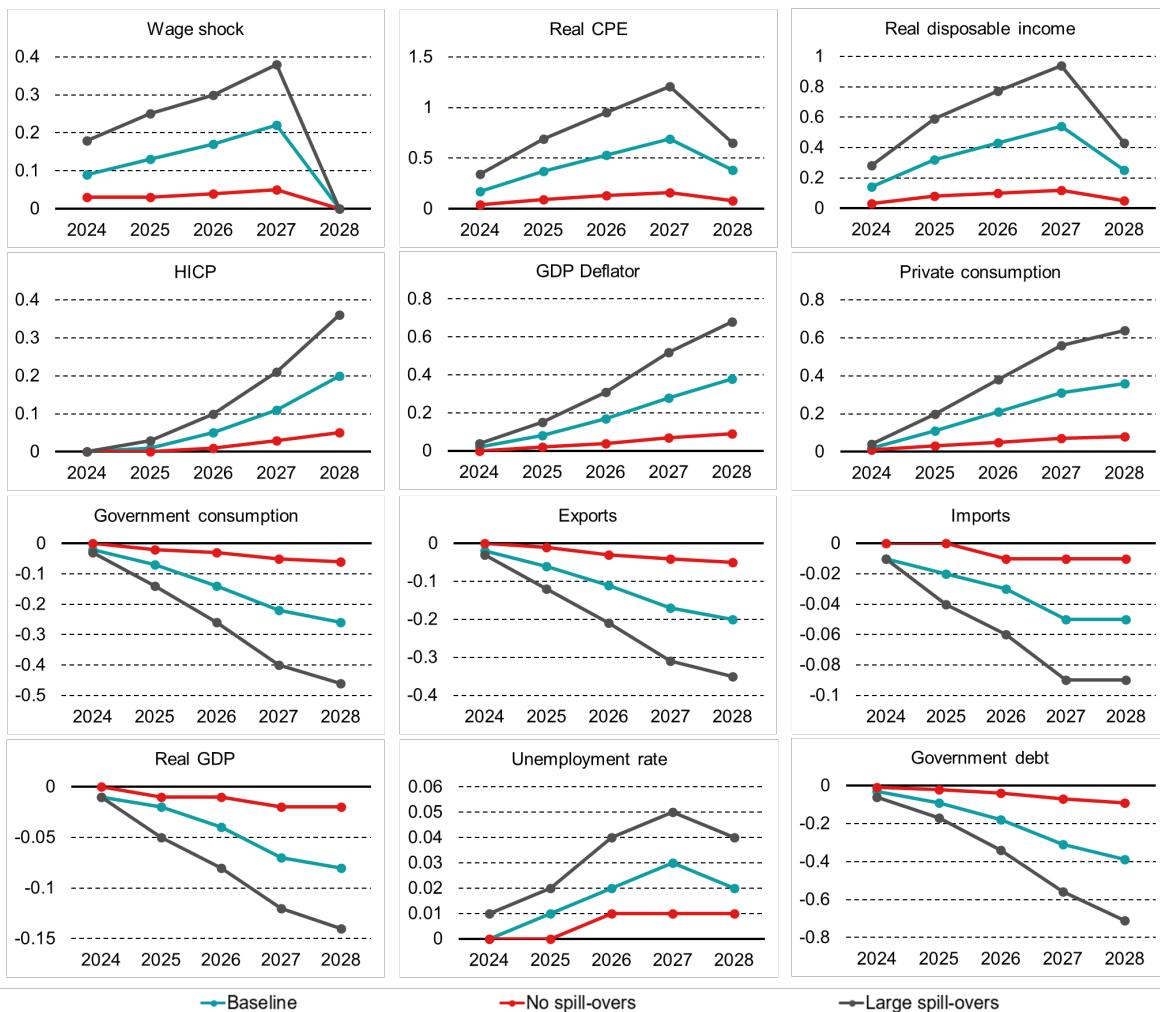
**WAGE SHOCKS APPLIED IN STREAM**

	Baseline	With top-up, no spillovers		With top-up, central spillovers		With top-up, high spillovers	
	Average wage per employee €	Average wage per employee €	Wage shock percent	Average wage per employee €	Wage shock percent	Average wage per employee €	Wage shock percent
2024	2,640	2,641	0.03	2,643	0.09	2,645	0.18
2025	2,742	2,742	0.03	2,745	0.13	2,748	0.25
2026	2,828	2,829	0.04	2,833	0.17	2,836	0.30
2027	2,917	2,918	0.05	2,923	0.22	2,928	0.38

Source: Author's calculations.

Note: Average wage levels as estimated through EUROMOD, expressed in monthly terms.

**Chart 17**  
**ESTIMATED IMPACT OF POLICY ON MACROECONOMIC VARIABLES**  
(changes from baseline)



Source: Author's calculations.

Note: Results are shown in terms of percentage deviations from baseline levels, except for the unemployment rate (absolute deviation in the rate in percentage points) and government debt (absolute deviation in the ratio as % of GDP).

Chart 17 plots impulse response functions pertaining to the wage shocks simulated and several macroeconomic variables of interest. Each chart includes the response to the wage shock under each of the three spillover assumptions considered in the study. The magnitude of the response in the variable varies linearly across the three cases, whilst the channels of propagation are identical; both these features of the results derive directly from the structure of the macro-econometric model. For the purpose of interpretation, it must be noted that whilst charts in sections 1 and 2 show the relevant impacts in each year individually, the impulse responses in Chart 16 reflect the cumulative impact of the shock on the variable in question as at the year shown.

The simulated shocks propagate through the following channels. The increase in wages raises household disposable income which, in turn, leads to higher private consumption. However, higher wages exert upward pressure on inflation, which leads to a loss in competitiveness and thus a decline in exports. The latter slightly outweighs the increase in consumption, resulting in a marginal decline in real GDP. This gives rise to slightly lower imports and a negligible increase in the unemployment rate. On the fiscal side, government consumption remains largely unchanged in nominal terms, but rising prices lead to a decline in real government consumption. The government debt ratio declines, both as a result of a more favourable government balance and higher nominal GDP. The government balance, in turn, largely improves on the back of higher tax revenues (social security contributions and value added tax) and lower interest incurred on debt.

The results thus suggest that the minimum wage increases and their cumulation over the four years covered by the policy yield economy-wide real growth in disposable income and consumption of around 0.2% and 0.4%, respectively, by 2028, assuming baseline spillovers. This measure delivers substantial growth in income to beneficiary households, whilst having minimal negative repercussions on GDP and unemployment. The latter result is of particular note in the context of the debate in the literature surrounding the effects of minimum wages on employment.

One limitation of this exercise is that the magnitude of responses in the outcome variables are linear in the size of the shock. STREAM may therefore not capture possible non-linear effects that larger spillover effects might imply. Moreover, the present exercise utilises a bottom-up link rather than an iterative link between the models. A more detailed study could use output from the macro-econometric model to adjust the calibration of the shock in the microsimulation module, to account for, for instance, inflationary or unemployment effects. That said, the low magnitude of these effects in our exercise provides reassurance that including such iterative linkages is likely to leave the results largely unchanged.



## Conclusion

This note has estimated the impacts of a policy that will increase Malta's national minimum wage beyond statutory indexation over the period 2024-2027. The simulation exercise, carried out using EUROMOD and the bank's macro-econometric model, STREAM, suggests that the policy will have sizeable positive impacts on the disposable income of affected households. Compared to the statutory indexation case, and taking a central assumption on the extent of spillover effects, households with members earning the minimum wage in 2024 are estimated to benefit from a 1.3% increase in their disposable income in 2024. The cumulative nature of the increase in the minimum wage over the period through to 2027, results in progressively larger gains over the no-policy scenario. For households with at least one member earning the minimum wage, the average impact on disposable income increases to 2.7% by 2027. For other affected households, the impact on disposable income is slightly higher than 0.4% in 2024, increasing by approximately 0.2 percentage points per year and reaching 1.0% in 2027. The gains are mostly concentrated at the lower end of the household income distribution, which is reflected in reductions in inequality and poverty metrics. At-risk-of-poverty rates fall by up to 1.5 p.p. among individuals in affected households, a tenth of the estimated baseline rate.

Accounting for different possible outcomes with respect to the extent of spillovers shows that positive impacts on poverty are registered even if no spillover effects materialise. Meanwhile, assuming spillovers which are relatively large, results in a sizeable segment of households gaining an average of between 0.8% and 1.6% each year in terms of their disposable income. To assess the broader macroeconomic impact of the increase in the minimum wage, the Bank's macro-econometric model is then used to conduct simulations that reflect wage increases that are consistent with those that emerge from EUROMOD. The results suggest that the increases in the minimum wage will yield real growth in disposable income and consumption, whilst having minimal negative impacts on GDP, unemployment and inflation.

Some limitations of the present study, in addition to those inherent to the models employed, need to be considered. The microsimulation framework utilised implicitly assumes no changes in employment and/or higher prices resulting from the minimum wage increases. Reassuringly, the macro-econometric simulations in Section 3 show that any such changes induced by the policy are likely to be negligible. In terms of the assumptions taken to simulate spillover effects, it is also likely that institutional and other national features applicable specifically to the settings of the studies used to derive the assumptions differ from those in Malta, and may thus affect the applicability of the effects found in those studies to the Maltese case.

Ensuring adequate and fair pay for workers at the bottom of the earnings distribution is widely held as a central target of minimum wage policies. Adequate minimum wages also serve to incentivise economic participation, to limit the scope of wage under-reporting, and to anchor wage bargaining for low-earning individuals with weak bargaining power (OECD, 2018). Such arguments, also echoed in a recent EU Directive, support the establishment and maintenance of an adequate minimum wage to

ensure the protection and relative income of lower-earning individuals. The results of this study suggest that the scale of the increase in minimum wages under this policy is sufficient to have a non-negligible impact on the income and poverty status of beneficiary households, improving the relative position of lower earning employees in the Maltese economy.

Nevertheless, related literature makes it clear that minimum wages ought to be enacted as part of a broader, robust policy framework. First, other policies may be more efficient at countering poverty than minimum wages, which may not necessarily accrue to individuals in poor families and households (OECD, 2018; Dube, 2019b). Whilst many poorer households do not include economically active members, another relevant category is large single-earner households. Government transfers remain paramount in such cases, and can be made more efficient through means-testing against equivalised household income. The additional COLA mechanism recently introduced in Malta is one such example. Beyond targeted measures to address poverty, in-work support can reduce long-term benefit dependency (Sant, 2024), and a robust minimum wage acts in tandem to incentivise uptake of employment.

Changes in minimum wage legislation can additionally be combined with amendments in tax and social security benefit systems to reduce the possibility of negative repercussions from minimum wage policies. Whilst evidence that higher minimum wages raise unemployment is inconclusive (Clemens, 2021; Manning, 2021), reducing social security contributions for employers in relation to minimum wage employees can partly offset the increased cost of employing such individuals (OECD, 2018).

Future research can endeavour to, firstly, conduct an ex-post evaluation of the effects of this policy. In particular, individual-level wage and employment data would enable researchers to estimate results from frameworks such as differences-in-differences, wherein the income and employment trajectories of affected individuals are contrasted with those of employees that are not affected by the policy, after controlling for pre-policy trends of each respective group. Such research could granularly identify the realised effects of the policy on incomes, employment, and other relevant outcomes, to guide the formulation of similar policies in the Maltese context.

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