Road Testing Child Benefit and Social Assistance Reforms

Critically analysing the trilemma between poverty reduction, public expenditure and work incentives

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Authors:

Toon Van Havere

Max Thaning

Wim Van Lancker

Rense Nieuwenhuis

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Risks, Resources and Inequalities:

Increasing Resilience in European Families

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Author(s): Toon Van Havere, Max Thaning, Wim Van Lancker, Rense Nieuwenhuis

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Abstract

In this deliverable, we critically analyse the trilemma between poverty reduction, social expenditure and work incentives, based on a set of simulated policy reforms designed to reduce poverty among families with children. We find that the simulated reforms demonstrated that poverty reduction is possible through increasing child benefits and social assistance. The reforms were typically associated with an increase between 1% and 3-4% of social expenditure. We found that most reforms were associated with reduced work incentives, but that the changes in the participation tax rates tended to be small: the child benefit reforms usually resulted in an increase of around a few percent. For a set of reforms, we have demonstrated the relevance of attempting to quantify this trilemma. While indeed the results indicate the existence of such trilemma, in particular the aspect of work (dis)incentives may not be an unequivocal barrier to poverty reduction.

Note on Deliverable 7.2

This deliverable follows up on Deliverable 7.1 of the rEUsilience project (Van Havere et al., 2024) that showed that social protection did not always adequately protect families in all situations against poverty. Moreover, during the stakeholder meetings (WP6), various issues related to inadequate benefit levels, to cost effectiveness, and to work (dis)incentives were brought up. Therefore, rather focusing on a policy brief for a specific policy recommendation but instead to improve integration of this deliverable with the evidence produced in other deliverables, this deliverable examines the broader issue of the social trilemma: the potential trade-off between poverty reduction, social expenditure, and work (dis)incentives.

Introduction

Over the past decades, European welfare states failed to make progress in reducing poverty. Despite economic and employment growth and high levels of social spending both before and after the 2008 Great Recession, poverty either rose or remained stable in the vast majority of European countries (Cantillon, 2011; Jenkins, 2020; Michálek & Výbošťok, 2019). While during the COVID-19 pandemic, the majority of European countries expanded welfare programs and social insurance schemes to cushion its socioeconomic effects, poverty rates remained stable throughout (Filauro & Parolin, 2025).

While commitments to further reduce poverty at the EU level have been expressed and EU headline targets for 2030 have been set, the strategies to achieve these targets strongly focus on increasing employment rates whilst providing adequate social protection through modernised social protection systems. The relationship between employment and poverty reduction is however complicated (Nieuwenhuis et al., 2020), and higher employment rates do not in itself translate into lower poverty. This suggests a pertinent role of social protection in poverty reduction.

At the same time, it has been argued that adequate social protection that sufficiently protects against poverty cannot be easily achieved because of a so-called trilemma. Iversen and Wren (1998) argued that as a result of deindustrialization, governments faced a three-way choice between employment creation, equality and budgetary restraint. Such a trilemma has been identified in different fields of inquiry, and basically boils down to a set of trade-offs between policy goals.

In another example, Cantillon, Parolin and Collado (2020) identified a three-way trade-off or 'social trilemma' in terms of poverty reduction between the adequacy of incomes of non-working households, social expenditures, and financial incentives for an individual to enter employment. Given already high levels of social expenditures across most European welfare states, increasing budgetary pressures limit the capacity of government to reduce poverty by redistributing, and thus spending, more. At the same time, raising employment rates remains a key policy objective. As such it remains a question of both academic and political importance of how to reduce poverty while maintaining work incentives in a context of high levels of welfare spending.

In this deliverable, we critically analyse the universal presence of a social trilemma in both conceptual as well as empirical terms, and we explore how we can design social policy reforms that reduce the monetary poverty risks of families with children. We focus on child benefits and social assistance benefits as two important pillars of minimum income packages across European countries. Previous research has demonstrated the importance of child benefits to reduce child poverty (Van Lancker & Van Mechelen, 2015), and the role of social assistance benefit in shielding households with insufficient resources from poverty (Nelson, 2013; Almeida

et al., 2023; Aerts et al., 2022). Nearly all advanced welfare states have implemented child benefit programs, which have become more generous over time (Ferrarini et al., 2013). These programs, although strongly varying across counties, are generally perceived as important vehicles to alleviate monetary poverty among families with children (Van Lancker & Van Mechelen, 2015; Ferrarini et al., 2013). Designed to exclusively target families with dependent children, child benefit schemes are a natural choice to reform in our analysis. Nevertheless, it was also shown that child benefit policies not always fully compensate for the costs of having children, nor always adequately protect all families with children from poverty risks (Van Havere et al., 2024). Additionally, we will introduce a social assistance reform. In contrast to child benefits, social assistance schemes are not exclusively targeted to families with dependent children, but to the least well-off. This strongly income-targeted benefit, regarded by the European Union as a key instrument to achieve their ambitious goal of eradicating poverty, could be a more cost-effective policy measure to reduce monetary poverty on a population level, including among families with children. Nevertheless, despite significant cross-country differences, all European welfare states fail to provide adequate minimum income protection for both families with and without children (Marchal & Siöland, 2019; Cantillon et al., 2020).

Although our focus is only on the two policy domains of child benefits and social assistance, the scope of potential reforms remains extensive. Empirically, we will simulate hypothetical tax-benefit reforms, with the aim to assess their distributional impact across the three dimensions of the social trilemma: the poverty risk, the financial incentive to work and the social expenditure.

Reforming child benefits and social assistance

A longstanding debate persists on whether targeting benefits to the most needy yields better redistributive outcomes than universal social benefits (Van Lancker & Van Mechelen, 2015; Marx et al., 2013; Korpi & Palme, 1998). In an influential paper, Korpi and Palme (1998) empirically demonstrated that stronger pro-poor selectiveness may be less effective in alleviating poverty than universal benefits, a concept they called the 'Paradox of Redistribution'. Recent studies, however, nuance this paradox, illustrating that countries with more selective social benefits, targeting lower-income families, attain better redistributive outcomes (Van Lancker & Van Mechelen, 2015; Marx et al., 2013). In particular, countries deploying targeting within universalism perform particularly well (Van Lancker & Van Mechelen, 2015; Marx et al., 2013). Striking the right balance between universalism and selectivity to achieve strong distributive outcomes inevitably requires carefully designed systems characteristics and sufficient overall public spending on social benefits (Van Lancker & Van Mechelen, 2015; Marx et al., 2013; Gugushvili & Laenen, 2021).

To address this complex policy reality, we start with formulating two different approaches to child benefit reform – a *nominal* amount framework and a relative *modifier* of the existing system(s) approach. Within each approach, we simulate three stylized reforms – one universal and three low-income targeted. Additionally, we simulate one reform based on modifying the benefits received through social assistance.

Nominal approach to child benefit reform

Firstly, we introduce a nominal child benefit granted to all households with at least one dependent child. The maximum benefit amount per month is adjusted using purchasing power parities (PPP[1]) to ensure cross-country comparability. Belgium, where we grant a maximum benefit of €100 per month, is used as the reference country. Being independent of the original child benefit scheme, the nominal approach enables us to gauge the impact of a specific benefit design on our three policy dimensions. Additionally, it allows us to evaluate the potential impact of a child benefit expansion in countries with minimalistic child benefit schemes, such as Spain and Croatia.

[1] The price level indicators of 2023 by EUROSTAT are used to perform the PPP-adjustments. Source: https://doi.org/10.2908/PRC_PPP_IND

Figure 1 Visual representation of the nominal child benefit reforms

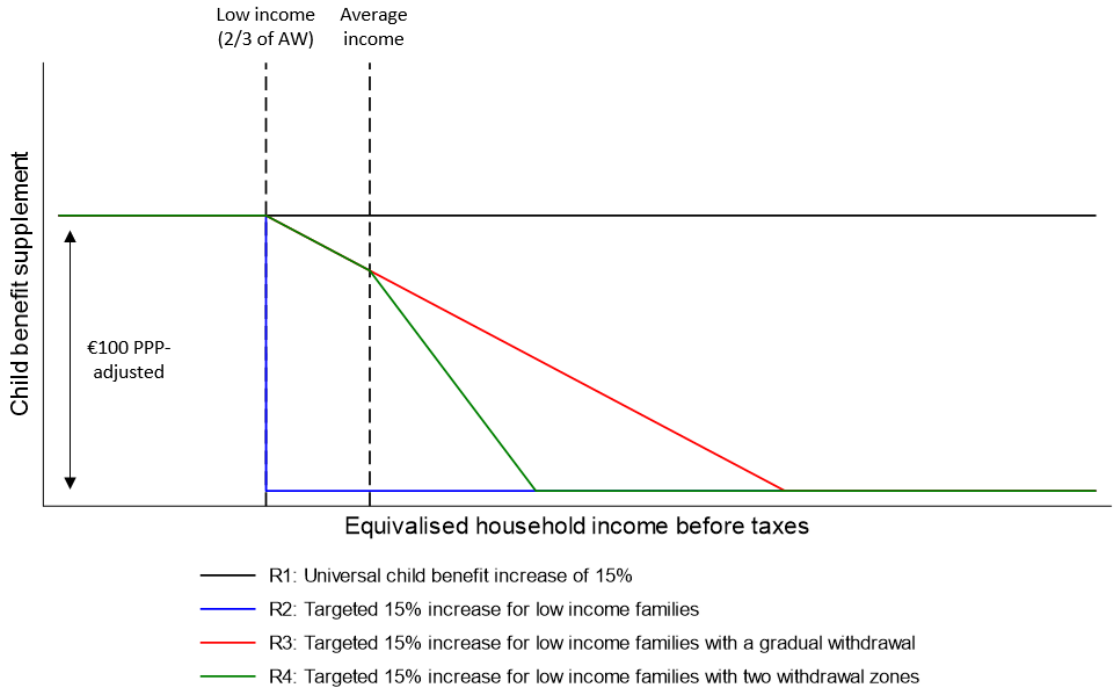


Figure 1 is a visual representation of the nominal child benefit reforms. In the first nominal reform (R1) the nominal benefit is granted universally, meaning that all families with at least one dependent child will receive the maximum amount. The second nominal reform (R2) is targeted towards low-income families using a hard income threshold. All households with at least one dependent child and an equivalised[2] household income before taxes[3] that does not exceed the low-wage threshold[4] receive the maximum benefit. Households exceeding the threshold, will not be eligible for the nominal benefit. The third nominal reform (R3) is low-income targeted, where the benefit is gradually withdrawn at a 2% rate once the household equivalized income before taxes exceeds the low-wage threshold. The fourth nominal reform (R4) is a low-income targeted benefit with two withdrawal zones. For households with an equivalized income before taxes between the low-wage and average wage threshold, the benefit is withdrawn at a rate of 2%. Once the household's equivalized income before taxes exceeds the average wage threshold, the benefit is withdrawn at a rate of 5%. The formulas for the different models are provided in Annex 1.

[2] The household income is equivalised using the OECD-modified equivalence scale.
[3] All income sources, including income from (self-) employment and replacement incomes, of all household members - defined as everyone living in the same dwelling - are taken into consideration.
[4] The low-wage threshold is defined as earning less than two-thirds of the average wage.

Modifier approach to child benefit reform

Secondly, we simulate a supplementary modifier benefit, a percentage increase in benefits, conditional on the amount received under the original benefit scheme. This approach enables us to simultaneously analyse the impact of both the design of the current benefit and of the modifier. The ability to assess the effects of the various benefit characteristics will be particularly interesting, given the significant cross-country variation in child benefit packages among advanced welfare states, particularly in terms of adequacy and targeting (Ferrarini et al., 2013). Furthermore, a modifier approach is closer to the policy reality than completely replacing the current benefit scheme.

Figure 2 Visual representation of the multiplier child benefit reforms

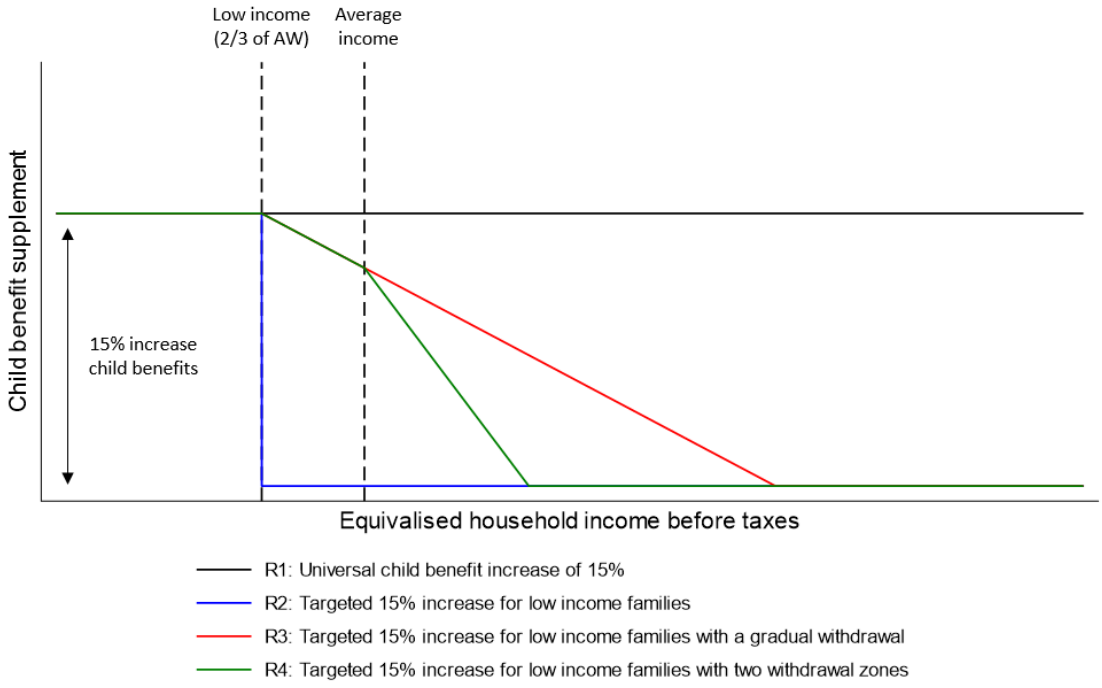


Figure 2 presents a simplified[5] description of the child benefit modifiers. The first modifier (R1) is a universal increase of the existing child benefit, meaning that all recipient of child benefits under the current child benefit scheme are granted a 15% benefit increase. The second reform (R2) is a low-income targeted modifier with a hard income threshold. All households in receipt of child benefits with an equivalised household income before taxes that does not exceed the low-wage threshold receive a 15% increase in their child benefits. Households exceeding the threshold, will not be eligible for the modifier. The third modifier (R3) is a low-income targeted modifier, where the benefit is gradually withdrawn at a 2% rate once the household equivalized income before taxes exceeds the low-wage threshold. The fourth modifier (R4) is a low-income targeted modifier with two withdrawal zones. The modifier is withdrawn at a rate of 2% for households with an equivalized income before taxes between the low-wage and average wage

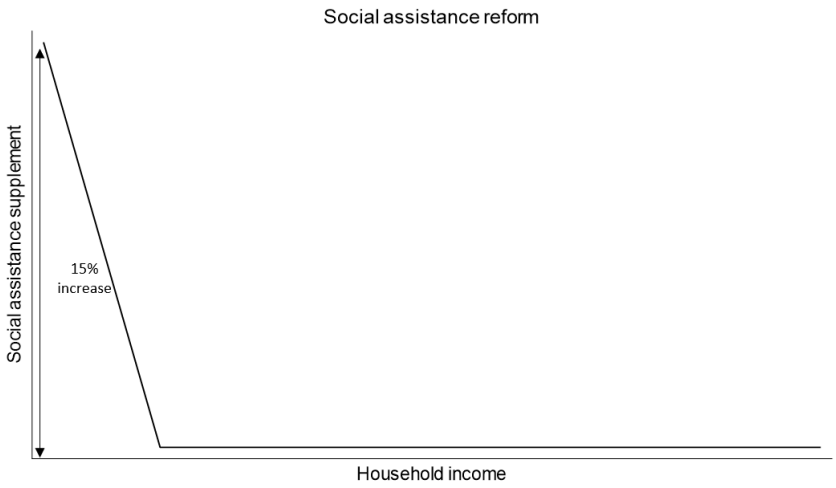
[5] Since the modifier is conditional on the pre-existing benefit, the actual trajectory of the graph is determined by the design of this pre-existing benefit. Therefore, the visual representation may slightly deviate.

threshold, the benefit is withdrawn at a rate of 2%. Once the household's equivalized income before taxes exceeds the average wage threshold, the benefit is withdrawn at a rate of 5%.The formulas for the different models are provided in Annex 2.

Social assistance reform

Figure 3 is a visual representation of the social assistance reform. The social assistance modifier (RSA1) grants a 15% increase of the current social assistance benefit to all social assistance recipients. Since the social assistance benefit is income-tested, the modifier is, by design, withdrawn by income.

Figure 3 Visual representation of the social assistance reform



Taking together the two different approaches (nominal and multiplier) to reform both child benefits and social assistance, and the various forms of targeting regarding the former, produces a substantial set of reforms. These are summarised in Table 1.

Table 1 The universe of simulated reforms

Reform	Description
Child Benefits Multiplier	Universal increase of existing (country and policy system specific) benefit by 15 percent.
Child Benefits Multiplier Targeted A	As Child Benefits Multiplier, but with a hard income threshold, targeted only to households with income less than the low-wage threshold (2/3 of the average full-time equivalent wage).
Child Benefits Multiplier Targeted B	As Child Benefits Multiplier, but with a soft income threshold, targeted gradually less (2 percent withdrawal rate) to households with income above the low-wage threshold (2/3 of the average wage).
Child Benefits Multiplier Targeted C	As Child Benefits Multiplier, but with a soft income threshold, targeted gradually less (2 percent withdrawal rate) to households with income above the average wage.
Child Benefits Nominal	Universal increase by a nominal amount, equivalent to 100 Belgian ppp EUR.
Child Benefits Nominal Targeted A	As Child Benefits Nominal, but with a hard income threshold, targeted only to households with income less than the low-wage threshold (2/3 of the average wage).
Child Benefits Nominal Targeted B	As Child Benefits Nominal, but with a soft income threshold, targeted gradually less (2 percent withdrawal rate) to households with income above the low-wage threshold (2/3 of the average wage).
Child Benefits Nominal Targeted C	As Child Benefits Nominal, but with a soft income threshold, targeted gradually less (2 percent withdrawal rate) to households with income above the average wage.
Social Assistance	A 15 percent increase to social assistance recipients. Given that social assistance is means-tested, the modifier is targeted by design.

Methods: evaluating simulated reforms

Data

For our simulations, we use the most recent waves of the European Union Statistics on Income and Living Conditions survey (EU-SILC) for EUROMOD and the Family Resource Survey (FRS) for UKMOD, two representative micro-level datasets. Since the most recent waves are from 2022 for all countries except Poland (2021), and the income reference year of the EU-SILC is the year prior to the data wave, incomes may still be partially reflected the effect of the Covid-19 pandemic and the support measures implemented to deal with it.

Micro-simulation

We employ tax-benefit microsimulation modelling to examine the effect of our hypothetical reforms on the three dimensions of the social trilemma. These models incorporate comprehensive information on the tax-benefit rules in a specific country (Klevmarken, 2022). By applying these rules to detailed microlevel data on demographic characteristics and household income, they facilitate an in-depth impact analysis of tax-benefit policies on the benefit entitlements and tax liabilities of micro-units (Sutherland & Figari, 2013). In general, these models simulate cash benefits, social insurance contributions and direct taxes (Aerts et al., 2023; Sutherland & Figari, 2013).

In particular, we use the European tax-benefit microsimulation models, EUROMOD and UKMOD. Their standardized design across all European countries makes them an exceptional tool to perform cross-country comparisons of existing tax-benefit policies and tax-benefit reforms (Aerts et al., 2023; Sutherland & Figari, 2013). In this paper, we primarily focus on the comparative evaluation of the hypothetical reforms in the child benefit and the social assistance schemes, using the 2023 tax-benefit rules[6]. Our modifier approach, however, also enables us to simultaneously evaluate the pre-existing benefit design.

The European microsimulation models face some noteworthy constraints. Since we examine the intended effect of the tax-benefit system, we assume the perfect uptake of social rights to evaluate our policy reforms. In reality, however, the non-take-up of social rights and tax evasion are major concerns in nearly all advanced welfare states (Janssens & Van Mechelen, 2022). Consequently, our results might overestimate the actual societal impact of the reforms and the pre-existing benefits (Sutherland & Figari, 2013). Secondly, both models are static

[6] EUROMOD and UKMOD use June 30, 2023 as the reference point for the 2023 policy system.

microsimulation models, meaning that they can only calculate the first-order-effect of the tax-benefit system (i.e. the day-after-effect) (Sutherland & Figari, 2013). Nevertheless, our policy reforms can lead to behavioural responses (i.e. second-order-effects). If our reforms, for instance, alter the financial attractiveness to work, it could lead to labour market responses. Furthermore, EUROMOD only estimates cash benefits and taxes. Consequently, in-kind benefits, which are often provided to household with children and low-income households (such as free school meals, child care services and so forth) are not simulated. In addition, some strongly selective benefits cannot be simulated due to data constraints (e.g. housing benefits, social tariffs for public transport or heating, etc.).

Outcome Indicators

Effectiveness

The effectiveness of the policy reforms will be determined by assessing the poverty reduction associated with the reforms – that is, comparing the poverty rate as observed in the micro-data to the poverty rate based on the simulated post-reform income data. Poverty is defined as the at-risk-of-poverty (AROP) rate, which a measure of relative income poverty. In line with the official Eurostat definition, this measure is defined as the percentage of people living in a household with an equivalised disposable household income that is below 60% of the national median equivalised disposable household income. This poverty rate, and change in poverty rate, is calculated for three groups: all families with children, lone parent families, and large families (defined as having more than 2 dependent children).

Social Expenditure

The costs of the reforms are assessed based on the total value of social benefits that are paid out to families, comparing the values as observed to the post-reform simulated benefit values. The increase in benefits paid out (estimated for the full population) are expressed as a percentage of all social expenditure, that is all benefits are that are paid out in the population (thus, including to families without children).

Work incentives: Participation tax rate (PTR)

Whereas the indicators of effectiveness and social expenditure can be directly aggregated from the (simulated) micro-data, the assessment of work incentives is more complicated. To approximate the impact of our policy reforms on the financial attractiveness to work, we will calculate the participation tax rate (PTR) and the marginal tax rate (MTR).

The participation tax rate (PTR), an indicator of the work incentive at the extensive margin, measures the financial gain of entering the labour market as opposed to remaining out of employment (De Coster et al., 2019: Jara et al., 2020). It calculates the percentage of labour income that is lost through personal income taxes, social insurance contributions and the loss of benefit entitlements when entering the labour market (De Coster et al., 2019). In general, the PTR is calculated (1) as one minus the difference between net disposable income while in work (Y_{IW}) and out of work (Y_{OW}) divided by the gross labour income (L_{IW}) (De Coster et al., 2019: Jara et al., 2020; Collado et al., 2019):

$$PTR = 1 - \frac{Y_{IW} - Y_{OW}}{L_{IW}} \quad (1)$$

To estimate the PTRs, we use a methodology similar to the approach used by Jara and colleagues (2020). Our analysis focusses on individuals who self-identify as employee in the EU-SILC. First, we calculate the net disposable income of these employees while employed. Using EUROMOD, we then estimate the net disposable income of these individuals as if they were out of work by manipulating the microdata. In particular, we change the labour market status to inactive and set the labour income to zero. For households with multiple employees, we perform multiple iterations, transitioning one employee at a time into inactivity and recalculating the net disposable household income in each iteration. Jara et al. (2020) formulate several compelling arguments in favour of a transition into inactivity rather than a transition into work. Firstly, a larger share of the active age population is employed compared to unemployed, resulting in a larger sample size. Secondly, simulating a transition into work requires strong assumption, such as estimating the wage. In contrast, for transitions into inactivity, the wage information is given in the dataset.

Nevertheless, this approach still requires some assumptions. Firstly, we can only calculate the participation tax rate for individuals with strictly positive labour income. Secondly, our analysis exclusively focusses on individuals who self-identify as employees. Moreover, individuals who self-identify as employees but are receiving a replacement income (e.g. pension benefits, health benefits, etc.), are excluded from the analysis. Lastly, to avoid the effect of outliers, we exclude individuals with negative PTRs and excessively high PTRs, above 150%.

Work incentives: Marginal tax rate (MTR)

The marginal tax rate (MTR) is an indicator of the intensive margin of work. It reflects the financial attractiveness of marginally increasing labor income, whether through a pay raise or an increase in work intensity (De Coster et al., 2019; Jara et al., 2020). Comparable to the PTR, it calculates the percentage of the marginal increase in labour income that is lost through taxes, social insurance contributions and the loss of benefit entitlements (De Coster et al., 2019). The general formula (2) is expressed as one minus the ratio of the difference in net disposable income before (Y_B) and after (Y_A) the increase to the difference in gross labour income before (L_B) and after (L_A) the increase (De Coster et al., 2019; Jara et al., 2020):

$$MTR = 1 - \frac{Y_A - Y_B}{L_A - L_B} \quad (2)$$

To calculate the MTRs, we use the Marginal Tax Tool integrated into EUROMOD, which is based on the calculation methodology developed by Jara and Tamino (2013). In this method, EUROMOD first estimates the net disposable household income. Next, the labour income in the microdata is marginally increased – by 3% in EUROMOD. Following this adjustment, the tool recalculates the net disposable household income. Finally, the MTR is calculated in using formula (2).

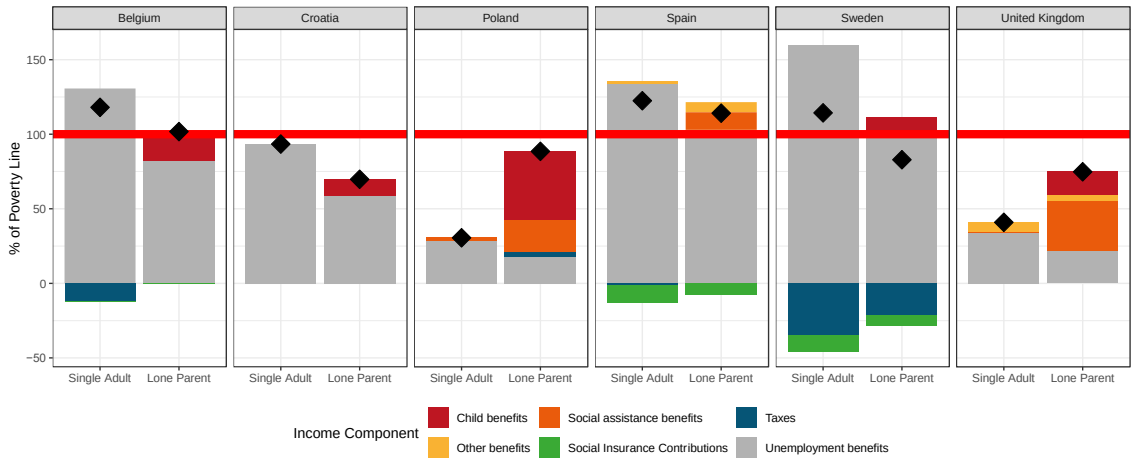
We limit our analysis to the same individuals who transitioned into inactivity for the calculation of the participation tax rate. Additionally, we focus on positive MTRs and exclude those exceeding 150% to minimize the impact of outliers on our results.

Results

Descriptive statistics

In Figure 4, we evaluate how our defined single adult and lone parent households fare in terms of the At-risk of poverty (AROP) threshold across the six countries. The red vertical line indicates the poverty level, and the different colours of the bar represent different kinds of income components. The benefits increase income (child benefits, social assistance benefits, unemployment benefits, and other benefits (such as housing benefits or specific tax credits), whereas the social insurance contributions and taxes are costs to the households. The black diamond shows the net income level when costs are deducted from incomes.

Figure 4 Benefit adequacy for single adults and lone parents



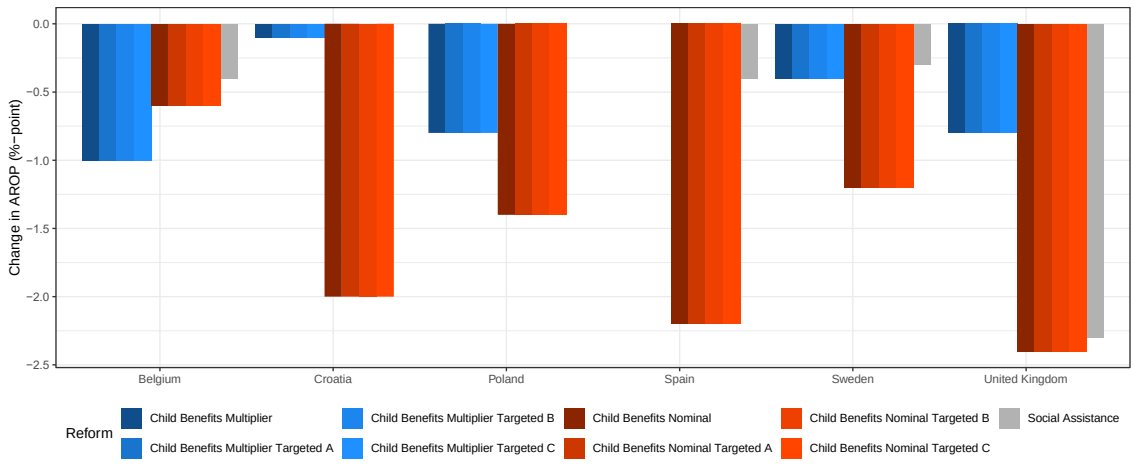
Only two of the countries (Belgium and Spain) have household types above the poverty threshold, whereas in Sweden, lone parents are in relative poverty, although single adults are not. In Croatia, Poland, and the UK, benefits do not exceed costs in relation to the poverty threshold, meaning both unemployed single adults and lone parents are in poverty as a result. By more closely inspecting the lone parents, it is clear that it is only in Spain where unemployment does not lead to or border poverty status (with lone parents estimated to obtain about 14 percent above the poverty threshold).

Effects on Poverty Reduction

The question is, then, to what extent it is possible to reduce poverty by increasing child benefits? As stated in the previous sections, we proceed through three main reforms – child benefit modifier, child benefit nominal, and social assistance – the first two with 4 variations. To recapitulate, see Table 1 above for a brief description of the nine reforms.

Figure 5, which shows the average poverty reduction among families with children, it is evident that poverty reduction is possible – but with variation across reforms and countries. First, in Spain, the multiplier approach is not applicable given that there is no conventional universal child benefit scheme as in the other countries. Second, in the remaining countries, except in Belgium, the nominal approach is substantially more effective in reducing poverty than the multiplier reforms. Third, the social assistance reform, in the countries where it is available, generally decrease poverty to a lower extent that the child benefit reforms. Fourth, there are no gains in the (degree of) universality of the child benefit reforms for poverty reduction. All child benefit reforms, respectively, decrease poverty to the same extent. This suggest that the threshold by which the (increased) benefit is efficient in combating poverty occurs at or below the low-wage threshold (which is 2/3 of the average wage level).

Figure 5 Poverty reduction associated with benefit reforms

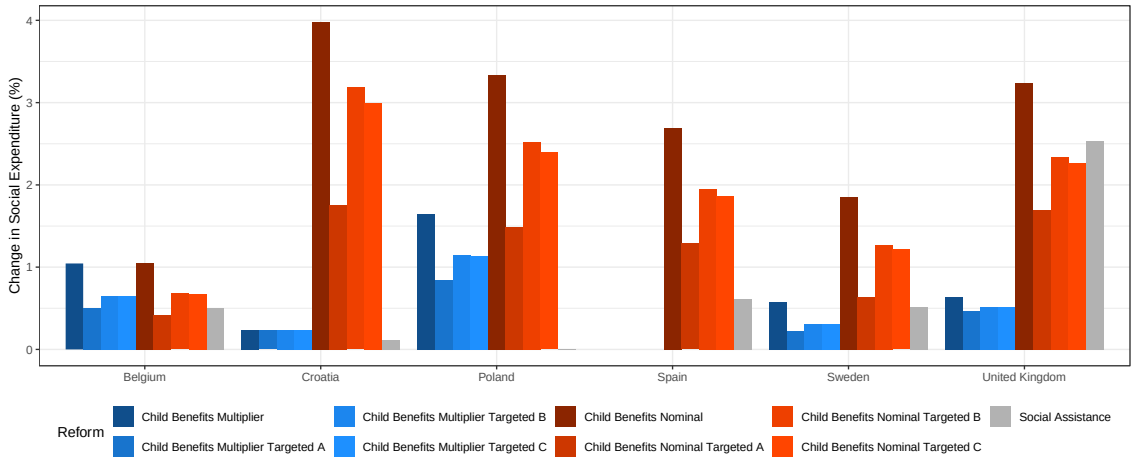


Effects on social expenditure

Given the trilemma perspective on poverty reduction, we will evaluate how the reforms affect the percent change in social expenditure (as defined above). The interpretation of Figure 6 is that the nominal approach to child benefit increases are substantially costlier than the modifier of the existing systems approach. The exception is Belgium where the two approaches are largely comparable to each other. The reason why this is the case in the other five countries is that the addition of a nominal amount of 100 Belgian ppp EUR is generally substantially higher than a 15 percent increase in pre-existing child benefit levels. Furthermore, the reform pattern in regard to expenditure levels is expected: Universal reforms are most costly, whereas higher targeting leads to lower costs. Following that logic, the starkest difference in costs is between the universal and the hard cutoff (Targeted A) child benefit reform. While the social assistance

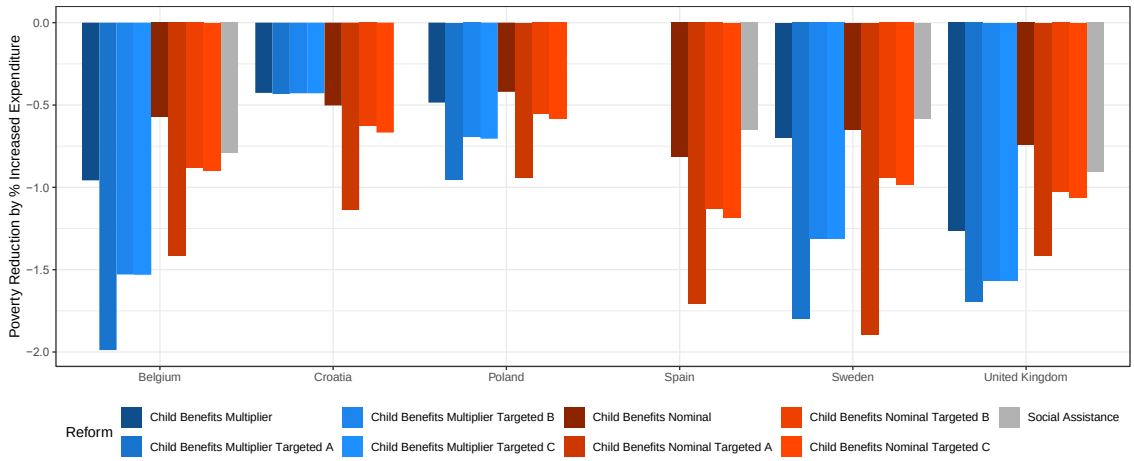
reform generally is quite low in cost compared to the other reforms, this is not the case for the UK, where it instead is the second highest of all the reforms we make.

Figure 6 Social expenditure associated with benefit reforms



Combining the information in the previous exercises, we can, as in Figure 7, calculate how much poverty reduction is achieved by the percent increased expenditure. The interpretation is, for example, for a one percent increase in social expenditure, we decrease poverty by almost 1 percent in Belgium following the Child Benefits Multiplier reform. The cost effectiveness, however, increases to almost two percent poverty reduction by every percent increase in social expenditure for the hard cutoff (Targeted A) child benefit reform in Belgium. The latter is the highest cost effectiveness estimate, however, Spain, Sweden, and the UK have similar levels for the Targeted A reform (both nominal and multiplier approaches).

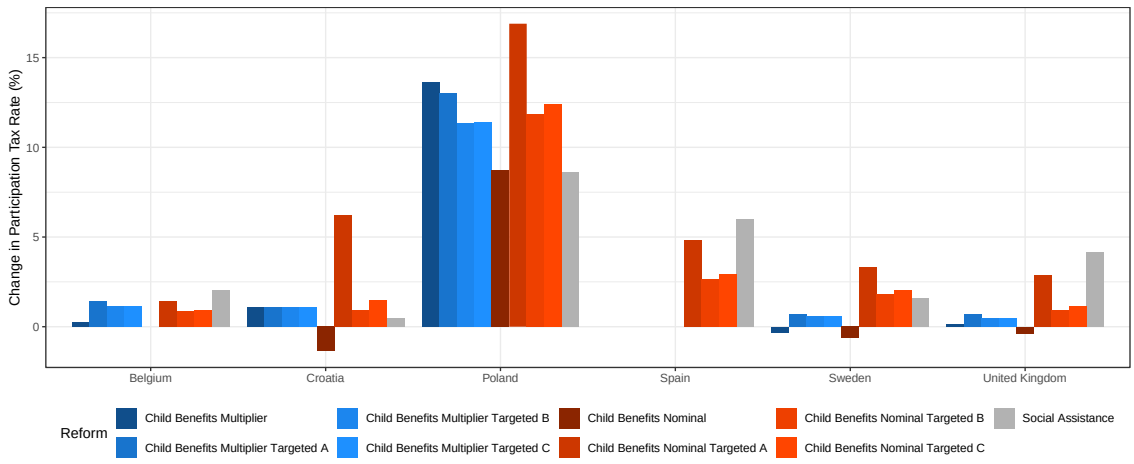
Figure 7 Cost-effectiveness associated with benefit reforms



Effects on work incentives

The third dimension of the trilemma is how reforms affect not only poverty reduction and expenditures but the work incentives – that is the economic difference between taking up a job vs. receiving benefits. Effects on work incentives can be evaluated for the participatory tax rate (PTR or at the extensive margin) or the marginal tax rate (MTR or at the intensive margin). The PTR is the income received out-of-employment expressed as a share of the income received when employed. In Figure 8, the y-axis refers to the relative change (in percent) of the PTR to that particular country's base level of PTR. For example, in Belgium, the child benefits (universal) multiplier reform increases the PTR by .2 percent (the first bar of the graph).[7] All of the Belgian reforms show very little effect on the PTR. One reason is that the baseline PTR in Belgium is quite high (about 50 percent), whereas in other countries, the PTR baselines are around 30 percent. Generally, the multiplier reforms have a low effect on changes in PTR work (dis)incentives – the Belgian case of a 1.4 percent increase is the highest observed across all countries (except Poland). The nominal reforms – and especially the hard cutoff targeted A reforms – and the social assistance reform instead increases the PTR by between 1 to 6 percent. One reason why this is the case is straightforward: The multiplier amount builds on the previous system and adds a relative benefit that is lower than the nominal (reform) amount. In other words, individuals get less with the multiplier reform – meaning work incentives are less affected. However, Poland stands out, where not only PTRs increase more substantially from about 9 to 17 percent, but also that nominal and multiplier effects are more on par with each other. This is because the polish system is quite generous as it is, meaning the modifier addition is higher than in other countries. The maximum increase in PTR for Poland (child benefit nominal targeted A), translates into a change from 23 to 27 percent PTR – or a 4-percentage point in "absolute" change. While this is the largest effect we find, and we note that it is substantial and might affect the economic incentives to take up employment, it also suggests that the findings for the other countries are less consequential. Furthermore, note that the negative changes in the PTR is due to policy interplay with other (means-tested benefits).

Figure 8 Participation Tax Rates (PTR) associated with benefit reforms

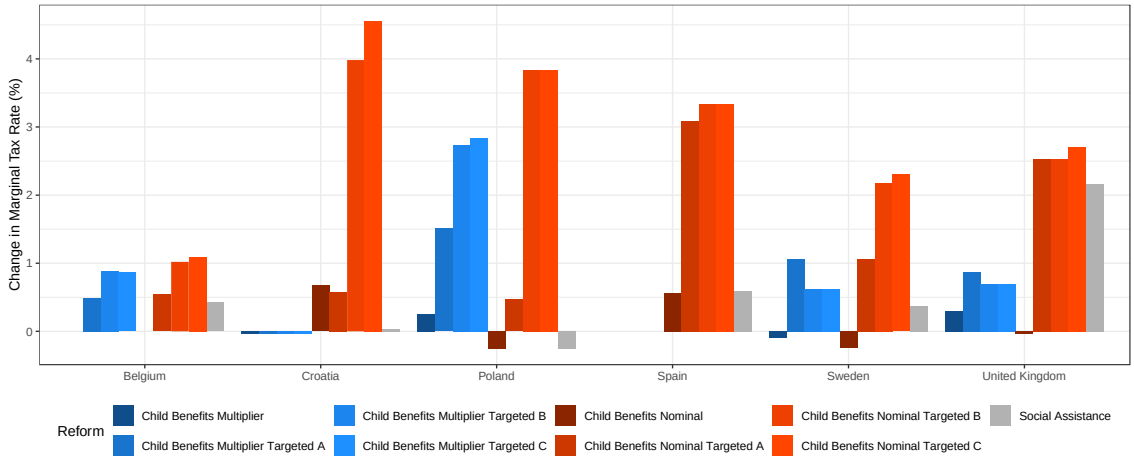


[7] This is calculated as follows: If PTR_R refers to the reform and PTR_B refers to the baseline, we have $[(PTR_R - PTR_B)/PTR_B] * 100$. While it is entierly plausible to calculate "absolute" changes in the work incentives, which corresponds to changes in percentage points, such a measure is insensitive to the prexisting levels of work incentives. This is why we here show the relative (to the baselie) percent increases in work incentives.

In Figure 9, we turn to the changes of the reforms on the marginal tax rates (MTRs). This concept refers to the effect of a reform on the economic appeal of a marginal increase in labor income. As mentioned in previous literature (Jäntti et al 2015) our results also show that MTRs are lower than PTRs. Again, we find that, generally, the multiplier reforms (given same levels of targeting) have lower detrimental impacts on work incentives. The country-reform with the most pronounced impact on the MTR is Croatia and the child benefit nominal targeted C reform. However, while this effect translates into a 4.6 percent increase, it goes from a level of 29.6 to 31 percent corresponding to a 1.4 percentage point increase. Given that this is the highest increase in the MTR, we suggest the effects on the MTR are generally less problematic than for the PTR.

In sum, regarding both the PTR and the MTR, the increase in work (dis)incentives are, all else equal, more critical for the nominal approach than the multiplier approach – again mirroring that a 100 EUR nominal amount increase is higher than a 15 percent increase in terms of pre-existing benefit levels. The reform effects on MTR are less critical than the effects on the PTR. While the changes in PTR work incentives for the social assistance reforms generally are on par with the effects from the other reforms, they are mostly lower for the MTR – with the exception of the UK, where the MTR change is almost 2 percent.

Figure 9 Marginal Tax Rates (MTR) associated with benefit reforms



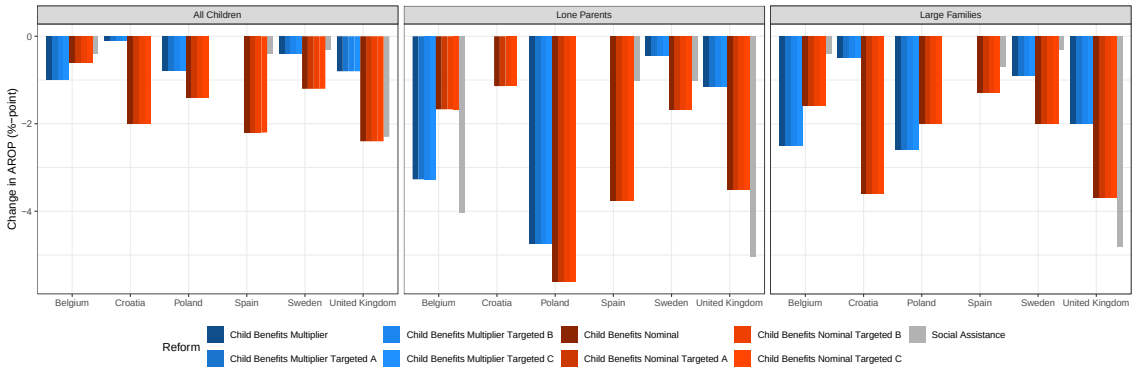
Lone parent and large families' households

Given that the previous evaluations of reforms were all based on sample averages, we now turn to subgroup heterogeneities, in particular to two vulnerable (in terms of poverty) household types: Lone parents and large families (three to maximum number of children). In Figure 10, the reform-induced *changes in relative poverty* are shown for all adults living in households with children, in the left panel, which the same information as in Figure 5 but presented for reference. The centre panel provides the effects of the reform for lone parent families. Generally, the poverty reduction increases when examining the lone parent subgroup. For Belgium, the decrease in AROP levels change from about 0.5 to 1 percentage point (all children) to between almost 2 to 4 percentage points. This is expected given that lone parents are a vulnerable

population, but naturally, it is important to quantify the particular gains. The most pronounced relative change (in Belgium) occurs through the social assistance reform, which goes from being the least efficient reform when evaluated on all children to the most efficient in terms of poverty reduction when examined for the lone parents' subgroup. Nevertheless, this is a feature of the Belgian context, although social assistance reform performs better than the child benefit multiplier reforms for both Sweden and the UK when evaluating the results on the lone parent subgroup. Two other observations that are important to note are that, first, the poverty reduction in Croatia is in fact decreased when inspecting the effects of the reform for lone parents. The multiplier reforms do not reduce any poverty, and the reduction by nominal reforms almost halves. Second, the gains for lone parents in Sweden are also less pronounced. While the nominal and the social assistance reforms do decrease group specific by roughly 0.5 percentage points, the multiplier effects are similar to the consequences for all children. In Spain, Poland, and the UK, the poverty reduction in the lone parent subgroup for the nominal reforms are dramatically higher compared to the overall sample – in the Polish case reduced poverty increase to almost 5-6 percentage points (which applies both to the multiplier and nominal reforms).

When turning to the large families subgroup, the increased efficiency in poverty reduction for this subgroup is still substantial but less so than for lone parents in Belgium. In Croatia, both child benefit approaches yield higher poverty reduction compared to all children and lone parents. However, for Poland, the substantial increase in poverty reduction that applied to lone parents is still not as strong for large families – however, the multiplier approach does reduce poverty more for this group compared to the nominal approach. This is because the existing benefit system is generous and large families will get even more supplements, overshadowing the level of compensation of the nominal reforms. For large families in Spain, the nominal approach, in fact, reduces poverty less in comparison to all children, whereas in Sweden and the UK, there is a further decrease in relative poverty following the reform compared to the overall sample of children.

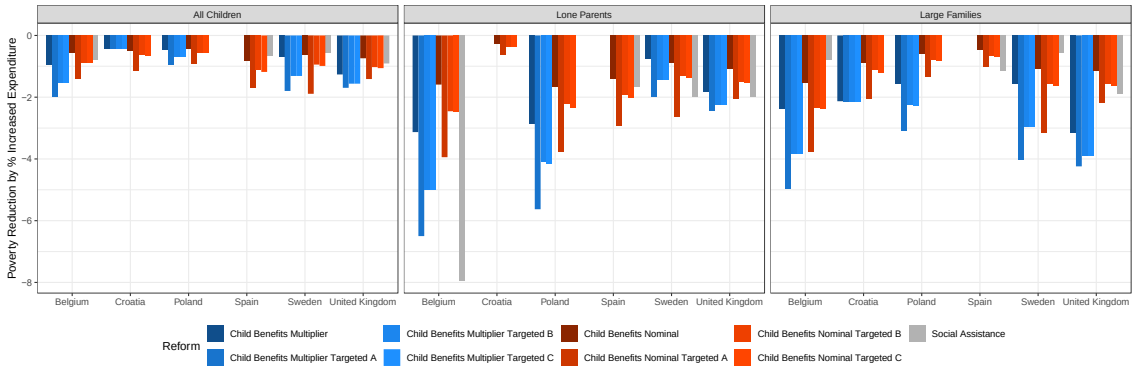
Figure 10 Poverty reduction by family type



In Figure 11, the *cost-effectiveness* (the amount of poverty reduction per percent increase in social expenditure) is plotted for lone parents and large families. Again, the leftmost panel recapitulates the previous figure on cost-effectiveness for the sample containing all children. As before, generally, the cost-effectiveness of one percent higher (social) spending is more substantial when zooming in on vulnerable groups compared to the sample average. To be clear, while the reforms are not targeted towards these subgroups, it is clear that they benefit more from them. Furthermore, there are several interesting observations following Figure 11. First,

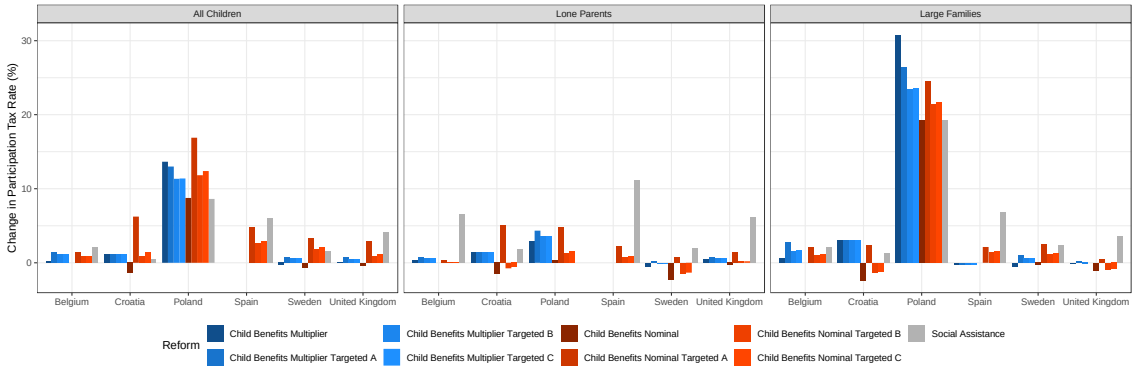
social assistance reform is quite on par with the cost-effectiveness of the other reforms for lone parents (in Belgium, it exceeds both multiplier and nominal reforms in cost-effectiveness). Second, while the nominal approach, in many instances, generally decreases poverty more, the multiplier approach is more cost-effective. However, there are some exceptions to that observation: All children and lone parents in Sweden and Croatia (and Spain of course since only the nominal approach is available). Third, regardless of policy approach, targeting scenario A is the most cost-effective across the board of all the evaluated subpopulations. With the exception of lone parents in Belgium and large families in Spain – where the social assistance reform is more cost-effective.

Figure 11 Cost-effectiveness by family type



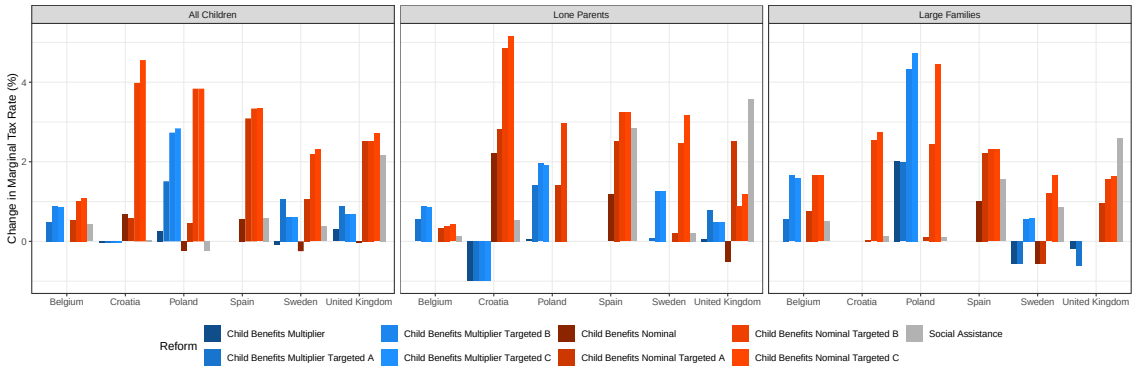
Turning to subgroup heterogeneities in *work incentives* in Figure 12. Again, as before, the PTR work incentives for all children in the left panel are the same as the previously shown (in Figure 8). The perhaps most striking observation from the lone parents' panel is the consequence of social assistance reform on Belgian, Spanish, Swedish, and UK lone parent PTRs. The highest is that of Spain, which is estimated to have an increase in work (dis)incentives to about 11.2 percent. This change corresponds to a change in lone parent PTR from 50.2 to 55.8, that is 5.6 percentage points – which is a substantial increase. Apart from the social assistance discrepancy, however, the PTRs for single parents are not that different, or lower, compared to the overall sample. For large families, we also find that in Spain, Sweden, and the UK the difference compared to the "all children" sample is negligible or lower. While the results go in slightly different directions for Croatian large families (multiplier higher, but nominal reforms lower effects on work incentives), the Belgian large families would experience slightly higher effects on work incentives. Nevertheless, the Polish large families show the highest PTR effects – ranging between 19 to 31 percent. The maximum effect on the PTR is attributed to the multiplier universal reform, which corresponds to going from a PTR of 22 to 28.8 percent – or an "absolute" effect of 6.8 percentage points.

Figure 12 Participation Tax Rates (PTR) by family type



The subgroup-specific MTRs are presented in Figure 13. Note that the y-axis is substantially more constrained in range, implying, again, that MTRs are less affected by reforms than PTRs. For lone parents, there are certainly differences compared to the overall sample – but they are relatively modest. The main pattern holds: Multiplier reforms have lower effects on MTRs than the nominal reforms (except minor differences for Belgium, the UK universal nominal reform, and Spain due to the non-existence of multiplier reforms). Turning large families, the results are more disparate, but multiplier reforms still have generally lower effects on the MTR than the nominal approach. Interestingly, the outlier status of Polish large families is heavily dampened for MTRs compared to PTRs. The highest PTR effect for this group is now about 4.7 percent, which is on par with the maximum obtained in Croatia for the overall sample.

Figure 13 Marginal Tax Rates (MTR) by family type



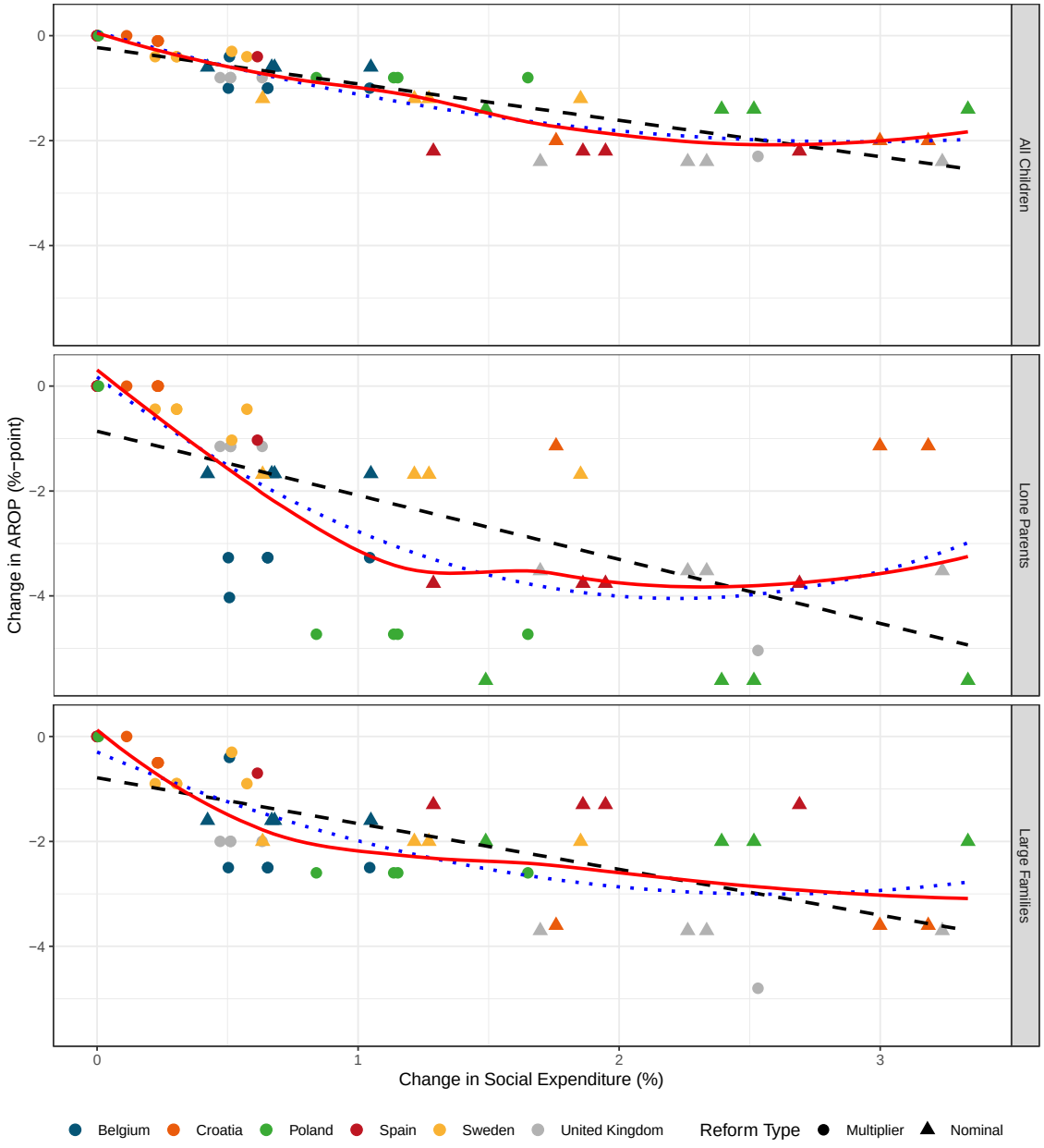
Synthesis findings

To sum up our findings we, first, examine the relationship between change in social expenditure and poverty reduction in Figure 14[8]. The figure has three panels, one for the overall population (adults living households with children), lone parent, and large families households. Moreover, the observations are a given reform (either circle or triangle) for a particular country (color

[8] Note that one reform for Croatia was removed from the data for Figures 14 and 15 as it was an extreme outlier.

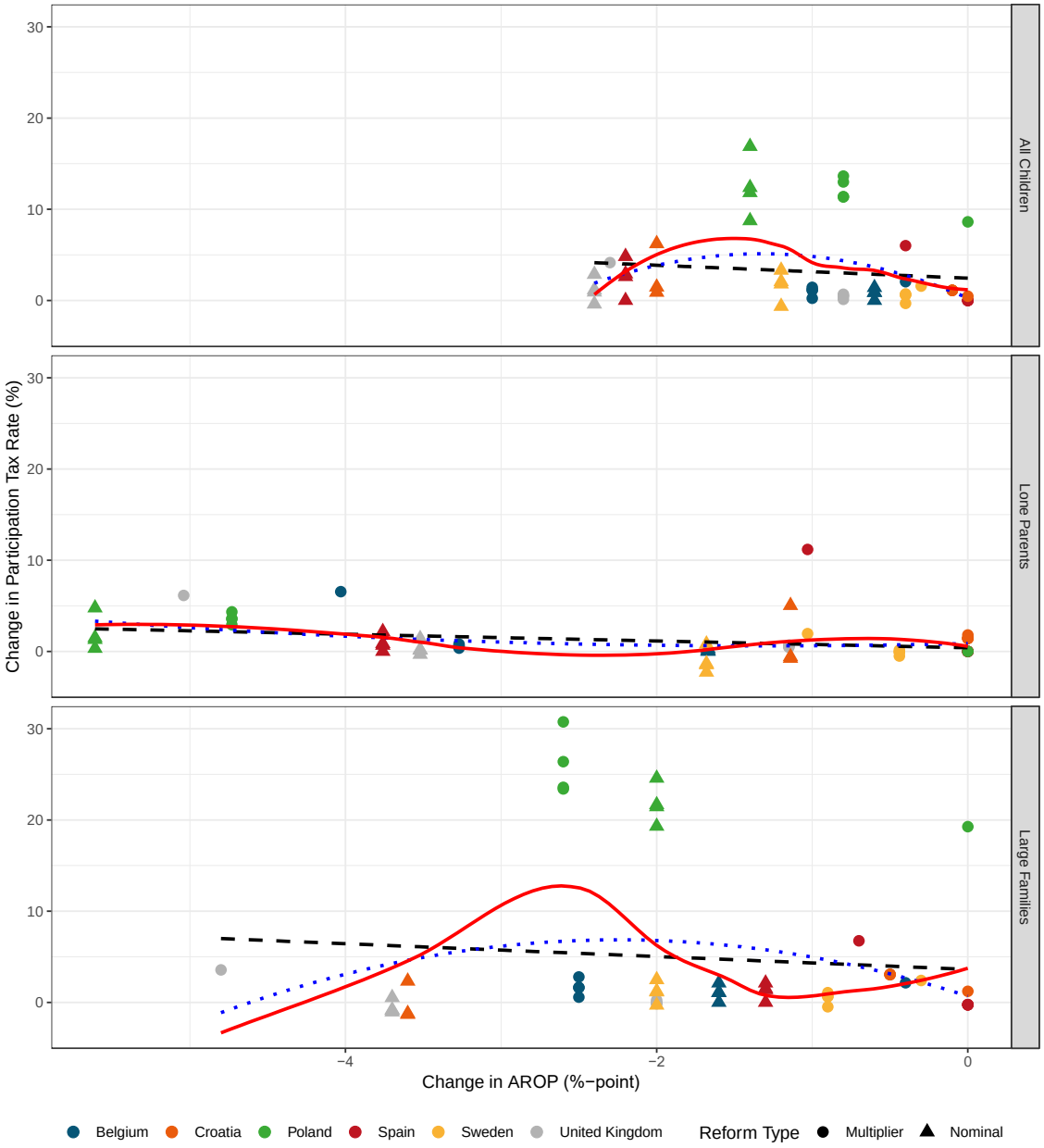
coded). To aid interpretation (although we suggest to interpret with caution), we impose linear (dashed black), quadratic (blue dotted) and lowess (solid red) functions. The linear functions show a negative relationship, whereas the non-linear functions are suggestive of a pattern of diminishing returns (to expenditure in terms of poverty reduction). Regarding reforms, it is generally the case that multiplier reforms are on the left-hand side – suggesting that they are less costly, whereas nominal reforms are more concentrated to the right on the x-axis, implying that they cost relatively more. While the latter tend to reduce poverty slightly more, there are some reforms that occupy the attractive lower-left corner (relatively high poverty reduction and low expenditure) for lone parents. These are multiplier reforms in Belgium and one in Poland. These reforms reduce poverty for lone parents by about 3 to almost 5 percentage points while not exceeding an additional 1 percent in social expenditure.

Figure 14 Association expenditure and poverty reduction, by family type



Second, we plot the relationship between poverty reduction and the change in PTRs in Figure 15. The linear function, which is less sensitive to outliers in the end of the variables ranges (quadratic function) or anywhere in the local bivariate data segments (lowess), shows negligible to low associations in how poverty reduction is related to work incentives. For example, for the all children's sample, a further one-percentage point reduction is associated with roughly a 1 percent increase in PTR – which suggests a considerable gain in poverty reduction for a lower (potentially adverse) increase in PTR. In other words, poverty reduction does not seem to cause too problematic increases in work (dis)incentives.

Figure 15 Association poverty reduction and participation tax rate, by family type



The final analyses thus support two main conclusions: (I) While substantial reductions in poverty are more costlier, there are, in some instances (targeting) solutions that yield more economically effective results, and: (II) ultimately relying on normative qualifications, the poverty reduction, as simulated based on our reforms and assumptions, does not seem to produce work incentive distortions that are unsustainable – apart from, perhaps Poland, which have a relatively unique policy situation.

Discussion

In this deliverable we have examined the potential of policy reform to reduce income poverty among families with children in Belgium, Croatia, Poland, Spain, Sweden and the United Kingdom. Our specific focus was on the so-called trilemma between effectiveness, cost containment and work (dis)incentives.

Regarding effectiveness, the first leg of the trilemma, the simulated reforms demonstrated that poverty reduction is possible through increasing child benefits and social assistance. It should be noted that the degree of targeting was mostly unrelated to the amount of poverty reduction, because of the way the targeting thresholds were implemented above the poverty line. In other words, low-income targeting was intended to reduce the amount of benefits provided to people not in poverty, but was not so stringent that people in poverty would see their benefits reduced. Of further relevance is that the reforms implemented here were not focusing on specific family types (at least, not in addition to the national-level policy provisions were). Nevertheless, the most vulnerable family types examined here (lone parents and large families) saw the largest poverty reduction in association with these reforms. An important caveat to the findings about effectiveness is that these are based on static micro-simulations, that do not take into account possible behavioural changes in response to the reforms.

Secondly, we focused on the increase in social expenditure associated with the reforms. The reforms were typically associated with an increase between 1% and 3-4% of social expenditure. The details of how the reforms were designed mattered here, as more low-income targeted reforms were less costly – and by extension more cost-effective. Two important caveats need to be made here. First, the results in Figure 14 highlighted that whereas increased targeting reduced costs, there were no reforms that were both highly effective and without a substantial increase in social expenditure – with potentially the more targeted reforms in Belgium and one in Poland as the exception for specifically lone parents. Secondly, increased targeting is known to result in policies that are more complex for both the potential beneficiaries and for the administration of the benefits, and therefore is associated with increased non-take-up – which was not considered in the simulations presented here. The problem of non-take-up is larger for benefits for which eligibility depends on more conditions, and when benefits are experienced as more stigmatizing (Janssens & Van Mechelen, 2022). Non-take-up tends to be higher with social assistance – with more strict means-testing and considered more stigmatising – than with child benefits that often are universal to all families with children, with financial top-ups for low-income families (Marc et al., 2022).

As the third and final of the trilemma, we examined changes in work (dis)incentives. Here we found that most reforms were associated with reduced work incentives. The increases in participation tax rates tended to be higher than the increases in marginal tax rates, suggestion that the reforms were more likely to affect the decision between whether to be employed or

not (extensive margin), than the amount of hours people work (intensive margin). However, even the changes in the participation tax rates tended to be small: the child benefit reforms usually resulted in an increase of around a few percent (with the notable exception of the child benefit reforms in Poland). Social assistance reforms tended to be slightly higher, reaching between 5% and 10%. However, as shown in Figure 15, there was only a very weak association between the overall effectiveness of the reform in terms of poverty reduction, and the increase in work dis(incentives). In other words, effective poverty reduction and maintaining financial work incentives need not be mutually exclusive.

Moreover, it should be discussed that financial work incentives are only one of many factors which determine why people are employed or not. Inactive people can face several activation barriers, of which the financial attractiveness of paid employment is only one (Eurofound, 2017). Fernandez et al. (2016) categorize these barriers in three broad groups: work-related capabilities, financial incentives to work, employment opportunities. The first category, work-related capabilities, encompasses the lack of job-related skills, health related limitations and care responsibilities, which continue to disproportionally burden women (Eurofound, 2017; Fernandez et al., 2016). Additionally, Eurofound (2017) and Derboven et al. (2024) highlight that the complexity of policies and the associated informational costs - such as concerns over losing benefit entitlements - further complicate the transition to employment. The second category, the financial incentive to employment, refers to the financial gains associated with entering the labour force. Lacking a sufficiently large financial gain of entering the labour market, as a result of generous out-of-work benefits or a low earning potential, can discourage inactive individual to seek employment (Fernandez et al., 2016). Finally, the third category, employment opportunities, addresses the difficulties inactive individuals face in finding suitable job-opportunities. Jara et al. (2020) and Fernandez et al. (2016) note challenges such as a lack of relevant vacancies and skill mismatches between job seekers and available vacancies, hindering the labour market transition. To this, we add that in particular when it comes to families with children, there are pertinent and gendered barriers to employment, related to case work (Daly, 2020).

Nevertheless, although the financial attractiveness of employment is not the sole factor considered when deciding to enter the workforce or increase work hours, several studies have demonstrated that it does play a role (Jongen et al., 2015; Collado et al., 2018; Bartels and Pestel, 2016). Studies in Germany, Belgium and the Netherlands find a statistically significant negative correlation between the participation tax rate – the extensive margin – and the likelihood of entering the labour force (Jongen et al., 2015; Collado et al., 2018; Bartels and Pestel, 2016). Collado et al. (2018) find, for instance, that a 10% increase in the PTR for long-term unemployed Belgians would lead to a 4% decrease in the likelihood of taking up work. Collado et al. (2018) and Jongen et al. (2015), however, did not find a significant relationship in the intensive margin.

According to a recent review of the literature (Lundberg and Norell, 2020), elasticities of participation at the extensive margin for the population are likely between 0.1 and 0.2, indicating that a 1 percent increase in PRT is associated with a 0.1 percent decrease in employment. However, there is heterogeneity in behavioural responses to changes in financial incentives, with women and mothers typically having higher elasticities than men (see also Ollonqvist et al., 2021). Participation effects also depend on the context. A Swedish housing benefit reform in 1997 which lowered benefits and thus PRTs for low-income single earner families, was associated with an average participation elasticity of 0.13. This indicates that a 1 percentage drop in the PTR was associated with an increase in labour force participation of .13 percent for low-income mothers in a context of already high female labour market participation (Bastani et al., 2020). With respect to EMTR at the intensive margin, elasticities have been

estimated to be between 0.12 and 0.4 (Saez et al. 2012). While it is difficult to gauge how citizens will respond to work incentives, the existing evidence and our estimates of PTRs and MTRs does suggest that labour supply effects will be fairly small overall.

In the context of "disappointing" trends in poverty in Europe (Vandenbrouke & Vleminckx, 2011), discussions about the potential of tax-benefit system to reduce income poverty are often met with concerns about (maintaining) financial incentives and concerns about social expenditure: the so-called trilemma. However, based on our results, we argue that the conditions for benefits to undermine paid work are not necessarily universally applicable, and their relevance might differ under different institutional conditions and depending on the policy design of minimum income packages. For a set of reforms, we have demonstrated the relevance of attempting to quantify this trilemma. While indeed the results indicate the existence of such trilemma, in particular the aspect of work (dis)incentives may not be an unequivocal barrier to poverty reduction.

Technical Annex

Annex 1: nominal reforms

The first nominal child benefit reform (R1) universally grants a 100 euros PPP-adjusted[9] (100PPP) using Belgium as the reference country to all households with at least one dependent child, as shown in formula (1).

$$R1 = (100\text{PPP}) \quad (1)$$

The second nominal reform (R2) grants 100 euros PPP-adjusted to households with at least one dependent child, having an equivalised household income before taxes that does not exceed the low-wage threshold. Formula (2) presents the reform's means-tested nature. Households with a pre-tax equivalized household income (Y_0) below the low-wage threshold (T) receive the PPP-adjusted maximum amount $(100PPP)$. Households with incomes exceeding the threshold will not receive the supplementary benefit.

$$R2 = \begin{cases} 100PPP\,, & Y_0 \leq T \\ 0\,, & Y_0 > T \end{cases} \quad (2)$$

The third nominal reform (R3), a second means-tested benefit, provides households with at least one dependent child with a 100 euros PPP-adjusted, provided that their equivalised household income before taxes does not exceed the low-wage threshold. The benefit is gradually withdrawn at a rate of 2% for households with incomes exceeding this threshold. As outlined in formula (3), the 100 euros PPP-adjusted (100PPP) is reduced by 0.02 times the difference between the equivalised household income before taxes (Y_0) and the low-wage threshold (T) for households with incomes above this threshold. The maximum operator ensures that the nominal benefit cannot become negative.

$$R3 = \begin{cases} 100PPP\,, & Y_0 \leq T \\ \max\left(0, 100PPP - 0.02 * [Y_0 - T]\right), & Y_0 > T \end{cases} \quad (3)$$

The fourth nominal reform (R4), the third low-income targeted benefit, grants a 100 euros PPP-adjusted (100PPP) to households with a least one dependent child, given that the equivalised household income before taxes is lower than the low-wage threshold. For households with an equivalised household between the low-wage threshold (T_1) and the average wage (T_2), the benefit is reduced by 0.02 times the difference between the equivalised household income before taxes (Y_0) and the low-wage threshold (T_1). For households with a pre-tax equivalised household income exceeding the average wage threshold, the benefit is calculated as the maximum amount minus 0.02 times the difference between the average wage threshold and

[9] The PPP adjustment is calculated as $100 * \left(1 - \frac{price\ level\ index\ Belgium - price\ level\ index\ country}{price\ level\ index\ Belgium}\right)$

the low-wage threshold minus 0.05 times the difference between the pre-tax equivalised household income and the average wage threshold. The maximum operator assures that the benefit will never be negative.

$$\begin{cases} 100PPP\,,\ Y_0 \leq T_1 \\ \max\left(0, 100PPP - 0.02 * [Y_0 - T_1]\right),\ T_1 < Y_0 \leq T_2 \\ \max\left(0, 100PPP - 0.02 * [T_2 - T_1] - 0.05 * [Y_0 - T_2]\right),\ Y_0 > T_2 \end{cases} \quad (4)$$

Annex 2: formulas modifiers

The first child benefit reform (R1), the universal modifier, grants a 15% increase in child benefits to all recipients of child benefits. The additional benefit is calculated (1) as 0.15 times the original child benefit amount (B_0). While the calculated value will technically always be positive, a maximum operator is introduced to ensure that, in the unlikely event negative values arise, the benefit amount is set to zero. The modifier benefit reflects the selectiveness embedded in the original child benefit schemes. Hence, the benefit amounts within a country may vary between households.

$$R1 = \max(0, 0.15 * B_0) \quad (1)$$

The second child benefit reform (R2) is a means-tested modifier that grants a 15% increase in the child benefits to households in receipt of child benefits, having an equivalised household income before taxes that does not exceed the low-wage threshold. Formula (2) showcases the reform's conditional nature. Households with a pre-tax equivalized household income (Y_0) below the low-wage threshold (T) receive a modifier benefit equal to 0.15 times their original child benefit (B_0). Households with incomes exceeding the threshold will not receive an additional benefit.

$$R2 = \begin{cases} \max\left(0, 0.15 * B_0\right),\ Y_0 \leq T \\ 0\,,\ Y_0 > T \end{cases} \quad (2)$$

The third child benefit reform (R3) is a second means-tested modifier that grants a 15% increase in the child benefits to households receiving child benefits, provided that their equivalised household income before taxes does not exceed the low-wage threshold. However, for households with incomes exceeding this threshold the benefit is gradually withdrawn at a rate of 2%. As detailed in formula (3), those households with incomes above the threshold receive an additional benefit calculated as 0.15 times the original child benefit amount (B_0) minus 0.02 times the difference between the equivilised household income before taxes (Y_0) and the low-wage threshold (T). The maximum operator assures that no households will receive a negative modifier benefit.

$$R3 = \begin{cases} \max(0, 0.15 * B_0)\,,\ Y_0 \leq T \\ \max\left(0, 0.15 * B_0 - 0.02 * [Y_0 - T]\right),\ Y_0 > T \end{cases} \quad (3)$$

The fourth modifier benefit (R4), a third means-tested benefit, gives a 15% increase in the child benefits to households in receipt of child benefits with a pre-tax equivalised household income beneath the low-wage threshold. The benefit is reduced by 0.02 times the difference between the pre-tax equivalised household income (Y_0) and the low-wage threshold (T_1) for households with an equivalised household between the low-wage threshold (T_1) and the average wage (T_2). When a household's pre-tax equivalised household income exceeds the average wage threshold, the benefit is reduced by 0.02 times the difference between the average wage threshold and the low-wage threshold minus and by 0.05 times the difference between the pre-

tax equivalised household income and the average wage threshold. The maximum operator ensures that the benefit will never be negative.

$$\begin{cases} 100PPP\ ,\ Y_0 \leq T_1 \\ \max\left(0, 0.15 * B_0 - 0.02 * [Y_0 - T_1]\right)\ ,\ T_1 < Y_0 \leq T_2 \\ \max\left(0, 0.15 * B_0 - 0.02 * [T_2 - T_1] - 0.05 * [Y_0 - T_2]\right)\ ,\ Y_0 > T_2 \end{cases} \quad (4)$$

The social assistance reform (RSA1) is a universal modifier providing a 15% increase to all social assistance recipients. Since all social assistance schemes are means-tested, the benefit gradually decreases with household income. The exact income concept used to withdraw the social assistance benefit varies by country. Formula (4) outlines the social assistance modifier. The modifier amount equals 0.15 times the original social assistance benefit (SA_0). As with the other reforms, a maximum operator is used to ensure that no households receive negative benefits.

$$RSA1 = \max(0, 0.15 * SA_0)$$

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Consortium members

Contact

Rense Nieuwenhuis, Stockholm University

rense.nieuwenhuis@sofi.su.se