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Anna Kurowska
Michal Myck
Katharina Wrohlich

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# Making Work Pay: Increasing Labour Supply of Secondary Earners in Low Income Families with Children

**Anna Kurowska**
*University of Warsaw*

**Michal Myck**
*Centre for Economic Analysis (CenEA), DIW Berlin and IZA*

**Katharina Wrohlich**
*DIW Berlin*

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IZA

P.O. Box 7240
53072 Bonn
Germany

Phone: +49-228-3894-0
Fax: +49-228-3894-180
E-mail: iza@iza.org

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# ABSTRACT

## Making Work Pay: Increasing Labour Supply of Secondary Earners in Low Income Families with Children[1]

In-work support through the tax-benefit system has proved to be an effective way of increasing labour supply of lone mothers and first earners in couples in a number of OECD countries. At the same time these instruments usually create negative employment incentives for secondary earners. This in turn reduces the potential of in-work support to address the joint objectives of higher employment and lower poverty levels. In this paper we present a simulation exercise to examine labour supply implications of a diverse set of possible reforms to the main elements of tax and benefit support of families with children. We set the analysis in the context of the Polish tax and benefit system and show how an adequate combination of increased generosity of support with the introduction of a "double earner" premium may result in increased labour supply of first and second earners in couples. The simulated reactions are concentrated in the lower half of the income distribution thus increasing the potential of in-work support to alleviate poverty.

JEL Classification: J22, J13, J18

Keywords: labour supply, tax-benefit reforms, family policy

Corresponding author:

Michal Myck
Centre for Economic Analysis (CenEA)
ul. Królowej Korony Polskiej 25
70-486 Szczecin
Poland
E-mail: mmyck@cenea.org.pl

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# 1 Introduction

Over the last few decades, in-work support has been introduced in many OECD countries with the objective to jointly address the goals of poverty reduction and increase in employment and it has been shown that these policies have positive effects on the labour supply of lone mothers and primary earners in couples (see, e.g. Blundell, 2000 or Brewer et al., 2006). However, such in-work financial support often goes along with strong negative work incentives for secondary earners (see, e.g. Eissa and Hoynes, 2004, Brewer et al., 2006, or Haan and Myck, 2007). This is due to the fact that 'classic' in-work support such as the Earned Income Tax Credit (EITC) in the US or the Working Families' Tax Credit (WFTC) in the UK are means-tested at family level. As a result, these instruments may generate strong income effects on secondary earners, while high taper rates on their employment income imply high marginal tax rates. These in turn result in disincentive effects at the extensive and intensive margin respectively.

In order to avoid these negative incentives for secondary earners, some countries have introduced individual-based in-work credits (e.g. Belgian 'Employment Bonus', Bargain et al., 2010) or subsidies to social security contributions of low-income employees (e.g. German 'Mini-Jobs', Steiner and Wrohlich, 2005). While these schemes help to avoid high marginal tax rates on secondary earners, they may still discourage them from taking up work due to income effects and are generally less efficient in targeting poverty as some of the low-wage workers live in medium or high income households.

Recent policy focus on families with children in Poland, resulting to a large extent from one of the lowest fertility rates in OECD countries, has led to an introduction of a number of policies which increased in-work incomes of families with children. These include a generous income tax credit for families with children in 2007 and its extension in 2014 with increased generosity for low income families, as well as a recent reform which changed a point withdrawal system in means-tested family benefits into tapered reduction. Until now, however, successive governments have not considered any instruments aimed specifically at two-earner households. As we show in this paper, it is this type of in-work support which can effectively support the combination of financial support and employment. To illustrate this we use the example of the Polish system of support for families with children as it was implemented in 2009 (i.e. before the extended child tax credit and before the withdrawal taper in family benefits) and examine the potential ways to improve its implications for labour

market incentives with a particular focus on the ways to encourage employment of secondary earners. In our analysis we shed new light on the issue highlighting the trade-offs involved. We go beyond the well documented trade-off between equity and labour market objectives (Duncan and Giles, 1996; Blundell et al. 2000; Immervoll and Barber 2006; Immervoll et al. 2007; Adam and Browne 2010; Jara and Tumino 2013), and address the less prominent concerns, namely the need to balance out first and second earner incentives and labour supply effects by the level of household income.

The paper is structured as follows. In Section 2 we provide brief background on the system of financial support for families with children in Poland as it operated in 2009. Section 3 describes the data we use and the modelling approach, while in Section 4 we present results of the simulations. Section 5 offers conclusions and policy implications.

## 2 Background for microsimulations: system of financial support for families in Poland (2009)

The Polish system of financial support for families with children consists of two principal components: the means-tested Family Benefits (FB), and a non-refundable Child Tax Credit (CTC). The first element is composed of the basic Family Allowance (FA) with additional supplements.[2] Eligibility criteria for Family Benefits assess family income with reference to a threshold, which – prior to the reform in 2015 – once exceeded maked the family ineligible to claim the benefits. Such 'point withdrawal' of benefits implies very high effective marginal tax rates and has significant implications for average effective rates of tax (see Myck et al., 2013). The CTC is available to families with children who are subject to progressive income taxation. Eligibility to the credit is conditional on sufficient level of taxable income and starts approximately at the level of annual income corresponding to full time employment at the minimum wage. In 2009 the maximum value of the credit per child was 92,70 PLN (€20,70[3]) per month and it was not withdrawn for high income families. Low-to-middle income families can combine receiving support from both sources. The FB and the CTC are assessed on the basis of joint family income, and as such imply the well-known consequences in the form of discouraging employment of secondary earners in couples (e.g. Duncan and Giles, 1996;

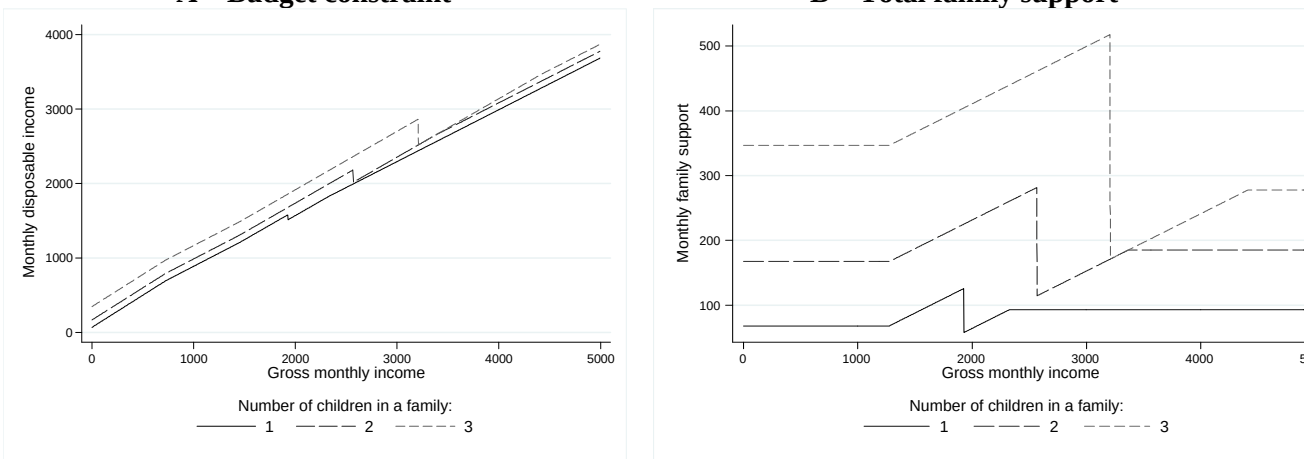
[2] For details of the Polish tax and benefit system see e.g.: Morawski and Myck (2010, 2011), Domitrz et al. (2013) or Kundera et al. (2012).
[3] Throughout the paper we use the exchange rate from 31.06.2009 : €1 = 4.47 PLN.

Blundell et al., 2000; Haan and Myck, 2007; Bargain and Orsini, 2006, Brewer et al., 2006; Immervoll et al., 2011). Research on the consequences of such features using data for other countries suggests that they play an important role in determining the pattern of employment among couples (Dearing et al., 2007; Steiner and Wrohlich, 2004).

The described features of the 2009 system are illustrated in Figure 1A, where we show the budget constraint for a single earner couple with one, two and three children, and in Figure 1B, which for the same families shows the relationship between gross income and monthly total family support – the sum of the FB and the CTC. As we can see the combination of these two elements results in similar levels of support given to low and high income families, while highest amounts are paid to families with incomes just below the FB eligibility threshold where they can claim part of the CTC and still receive the full amounts of Family Benefits (this happens at the level of 1,930 PLN for families with one child, 2,570 PLN for families with two children and 3,210 PLN for families with three children). The general structure of family support in 2009 was retained until 2014 when the CTC was made more generous to lowest income families through the possibility of claiming it not only against income tax but also social insurance contributions. Additionally, the government implemented tapered withdrawal of Family Benefits, which comes into force in 2016. However, neither of these reforms introduces any specific second-earner incentives.

**Figure 1. Gross income and family support – 2009**

**A – Budget constraint** **B – Total family support**




*Source: Authors' calculations using the SIMPL microsimulation model (V4S3_12).*

## 3 Data and Methods

### 3.1 The Polish Household Budget Survey

We base our analysis on the data from the Polish Household Budget Survey (PHBS) for 2009. This survey is conducted annually by the Polish Central Statistical Office and covers detailed information on demographics, incomes and household expenditure. The 2009 PHBS database includes information on a representative sample of 37,412 private households (107,967 individuals).

For the purpose of our analysis we choose couples in labour supply flexible households (men aged 18-59; women 18-54; not self-employed or student; not receiving disability or retirement pensions). The final sample consists of 10,623 couples if which 76% have at least one child and 11% three or more children. In the baseline scenario 62.4% are two-earner couples.

### 3.2 Simulated reform scenarios: employment support through financial incentives

In order to address the research questions outlined in the introduction and to illustrate the implication of changes in financial incentives for families we design four alternative reform scenarios: two implementing changes to the system of Family Benefits and two introducing modifications to the functioning of the CTC. The exercise is constructed in such a way that the policies are easily implementable extensions of existing instruments and for each policy area they include an increase in the generosity of the system or combine increase in generosity with a "double earner" premium. With regard to comparability of the policy effects, the modelled changes have been calibrated in such a way that they are ex post (i.e. after labour supply adjustments) equally costly to the government (approximately 0.5bn PLN, i.e. €110mn).

The following reforms are analysed:

- **System 1:** introduction of tapered withdrawal of FB at the rate of 55% (same as the rate of the UK's WFTC) instead of the current point withdrawal;
- **System 2:** introduction of tapered withdrawal of FB (at 55%) combined with a "double earner" premium in the form of extended withdrawal threshold conditional on the work of

both parents (they need to earn at least 80% of the national minimum wage (NMW, equal to 1276 PLN, €285,50 euro, per month in 2009);

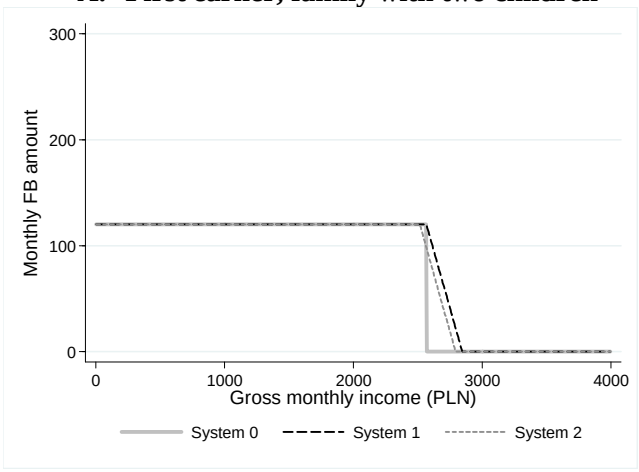
- **System 3:** increase in the maximum value of the CTC from 92.70 PLN per month per child to 107 PLN per month;
- **System 4:** introduction of a "double earner" premium through the CTC in the form of an additional value of the CTC (92.70 PLN per month) for couples where both parents earn at least 175% of the NMW.

The implications of these reforms for the level of support through the two elements of the system for stylised households are presented in Figure 2. In systems 1 and 2 the common feature is that the point withdrawal of benefits at the level of net monthly income of 504 PLN per person is substituted with gradual withdrawal of the benefits. Figure 2B shows how the "double earner" premium of System 2 is designed to operate. With the first earner employed at 2,330 PLN per month, initially the benefits begin to be withdrawn when the second earner's gross salary crosses the threshold of 810 PLN. However, when they reach the required level of 80% of the NMW (about 1020 PLN), the "double earner" premium kicks in, and the withdrawal threshold is increased to 2,400 PLN. This implies that this family continues to receive Family Benefits up to the level of income of the second earner of 3,110 PL per month (to equate the costs of System 2 and System 1 the baseline withdrawal threshold in System 2 is reduced from 504 to 494 PLN per person). Figures 2C and 2D demonstrate the operation of Systems 3 and 4. Under system 3 the one earner family with two children (Figure 2C) begins to see benefits of higher levels of the tax credit once gross earnings exceed 3,380 per month, while the two earner family with three children when the monthly gross earnings of the second earner exceed 1,280 PLN. Under System 4 the two earner couple with three children will see their CTC level jump to 255 PLN per month once the second earner exceeds the required threshold of 175% of NMW (2,230 PLN). As we can see in Figure 2D the "double earner" premium, even in the case of a family with three children, is higher compared to the additional level of the credit for each of the children in the family resulting from the design of System 3.

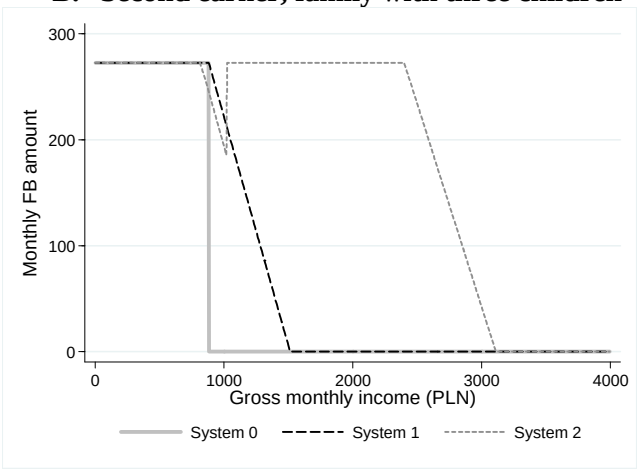
**Figure 2. Level of support under the base and reformed scenarios**

**Family Benefits**

**A. First earner, family with two children**

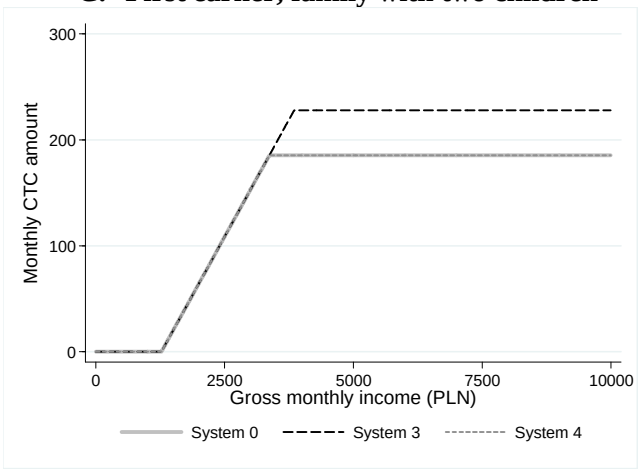



**B. Second earner, family with three children**

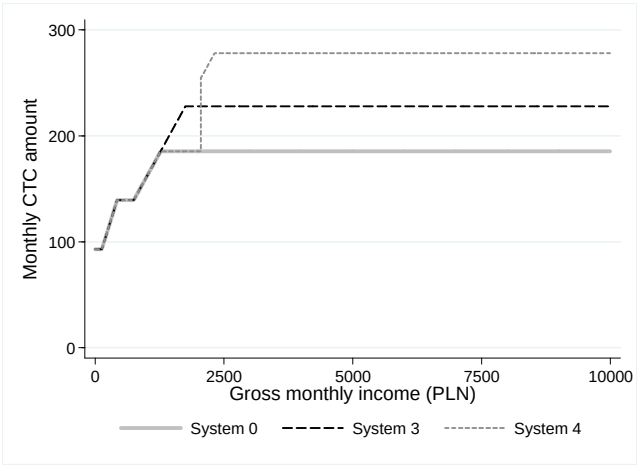



**Child Tax Credit**

**C. First earner, family with two children**




**D. Second earner, family with three children**




*Source: Authors' calculations using the SIMPL microsimulation model (V4S3_12). For second earner's figures earnings of the first earner are fixed at 2,326.31 PLN (equivalent to 75% of gross monthly mean wage in 2009).*

## 3.3 Modelling labour supply response to the simulated reforms

To model the labour supply response to the simulated reforms we apply the standard static discrete choice labour supply model along the lines of van Soest (1995), Blundell et al. (2000), Steiner and Wrohlich (2005) and Haan and Myck (2007). Due to data availability we model the labour supply choice between not working, working part time and working full time. Incomes in the modelled labour market scenarios are computed using the

microsimulation model SIMPL.[4] The utility function is quadratic in household consumption ($c_i$) and includes dummy variables for participation ($w_i^m$ and $w_i^f$ for men and women respectively), part time dummies ($pt_i^m$ and $pt_i^f$) and their interactions. The deterministic part of the utility function takes the following form:

$$U_{ij}(c_{ij}, w_{ij}^m, w_{ij}^f) = \beta_{1i}c_{ij} + \beta_2(c_{ij})^2 + \beta_{3mi}w_{ij}^m + \beta_{3fi}w_{ij}^f + \beta_{4m}pt_{ij}^m + \beta_{4f}pt_{ij}^f$$
$$+\gamma_{1f}c_{ij}w_{ij}^f + \gamma_{1m}c_{ij}w_{ij}^m + \gamma_{2f}c_{ij}pt_{ij}^f + \gamma_{2m}c_{ij}pt_{ij}^m + \gamma_{3m}w_{ij}^m w_{ij}^f \quad (1)$$

and parameters $\beta_{1i}$ , $\beta_{3mi}$ and $\beta_{3fi}$ are allowed to vary witch characteristics (taste shifters). Our estimates account unobserved heterogeneity through estimating a mass point on $\beta_{ci}$ (Hoynes, 1996). Budget constraint is determined by wages ($\omega_i$), work status ($w_{ij}$), out of work incomes ($y_i$), household characteristics ($X_i$) and the tax and benefit function ($\phi$):

$$c_{ij} = \phi[\omega_i^m, \omega_i^f, w_{ij}^m, w_{ij}^f, X_i, y_i]. \quad (2)$$

## 4 Results: labour supply estimates and employment effects

The simulated average labour supply elasticities separately for men and women are presented in Table 2. The own net wage elasticity for women is positive and more than two times higher for women than for man. For both genders the cross net wage elasticity is negative, but small and again stronger for women than for men.

**Table 1. Labour supply participation elasticities**

| | Own net wage | Cross net wage | Total net wage |
|---|---|---|---|
| **Men** | 0.287 | -0.026 | 0.272 |
| **Women** | 0.696 | -0.053 | 0.659 |

*Source:* Authors' calculations based on PHBS-2009 data and SIMPL microsimulation model.

The labour supply effects of the reforms are presented in Figure 3 and Table 2 separately for men and women. In the first reform scenario the tapered withdrawal of Family Benefits, designed to ease the very high effective marginal tax rates, increases labour supply of men (in most cases first earners) but at the same time diminishes labour supply among women with a negative net effect of about 9,000 individuals. This is a classic example of the well documented negative second earner effect of greater generosity of means tested support,

[4] For details concerning the model and for examples of its earlier applications see, e.g. Bargain et al. (2007), Morawski and Myck (2009, 2011), Haan and Myck (2010, 2012).

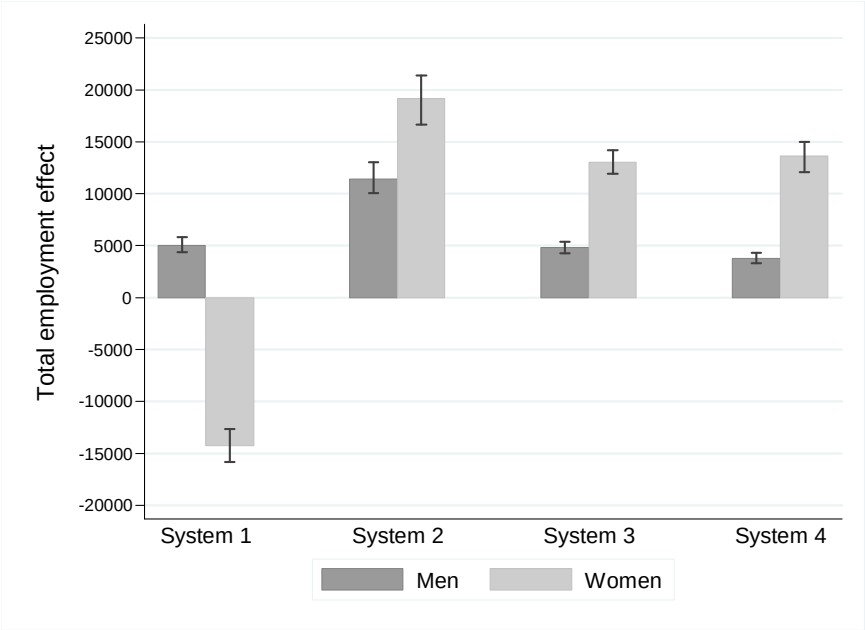
and has the well-known implication of increasing the proportion of one-earner households. The latter effect is due to, on the one hand, increased activity in no-earner couples, and on the other hand, reduced labour supply among two-earner households

However, the negative labour supply effects among women are fully overturned under System 2 reform which combines tapered FB withdrawal with a "double-earner" premium, (see Figure 3). The total labour supply effect is about 31,000 individuals, and labour supply of women increases by about 19,000.

The two reforms of support through the Child Tax Credit (System 3 and 4) have similar total effects on labour supply of about 4000 for men and 13000 for women. The labour supply effects of these reforms, however, affect different sections of the household income distribution. This is depicted in the second panel of Table 2 where for each reform we document labour supply changes by baseline income quintile. In the case of System 3 the effect on the labour market is concentrated in the lower and middle quintiles, while System 4 affects labour supply of households primarily in higher quintiles.

The quintile distribution of labour supply reactions sheds additional light on the effects of Systems 1 and 2. Labour supply reductions in the case of System 1 are concentrated in the second and third quintile, i.e. in the parts of the distribution where low income double earner families are located, while the positive reaction to System 2 comes primarily from the lower end of the distribution, and in particular from the first quintile.

**Figure 3. Employment effects of modelled reforms**




*Source:* own calculations based on PHBS-2009 data and SIMPL microsimulation model.

**Table 2. Labour supply effects of modelled reforms (in thousands)**

| | System 1 | System 2 | System 3 | System4 |
|---|---|---|---|---|
| **Men** | 5.0 | 11.4 | 4.8 | 3.8 |
| **Women** | -14.3 | 19.2 | 13.0 | 13.6 |
| **Total:** | -9.3 | 30.6 | 17.8 | 17.4 |
| **Total by income quintile:** | | | | |
| **Q1** | 0.0 | 16.1 | 4.1 | 0.8 |
| **Q2** | -3.2 | 9.2 | 4.7 | 1.8 |
| **Q3** | -3.8 | 3.1 | 4.7 | 3.3 |
| **Q4** | -1.6 | 1.6 | 3.0 | 5.0 |
| **Q5** | -0.7 | 0.4 | 1.3 | 6.5 |

*Source:* own calculations based on PHBS-2009 data and SIMPL microsimulation model.

## 5 Conclusions

We have presented an exercise in simulating labour supply reactions of a diverse set of hypothetical reforms to the system of financial support for families with children which bring a number of general implications for designing tax-benefit systems. As has been demonstrated earlier (e.g. Eissa and Hoynes, 2004, Brewer et al., 2006, or Haan and Myck, 2007) increases in generosity of means tested support without specific second earner premiums result in the overall reduction of labour supply among couples, although such reforms usually reduce the number of so-called workless households. In this article, we have shown how an adequate combination of the increase in the generosity of the tax-benefit system with the introduction of a "double earner" premium may balance out the employment incentives for first and second earners and concentrate the labour supply effects in the lowest quintile of the income distribution.

The small negative effects of the introduction of a tapered withdrawal of Family Benefits, simulated in the Polish tax and benefit system of 2009, turn strongly positive once a "double-earner" premium is implemented on top of it while holding the cost of the modelled reforms constant. The resulting labour supply effects are in the range of 31000 individuals and could increase employment of men by about 0.3pp and that of women by 0.5pp. The majority of the generated labour supply response is concentrated among households from the bottom quintile of the income distribution. On the contrary, the "double earner" premium implemented in the Child Tax Credit, which benefits the middle and high income families,

has a much lower effect on labour supply and affects employment mainly in the higher part of the income distribution. This is due to the way in which the CTC eligibility is allocated and due to the modelled requirements for the level of incomes among both partners to qualify for the premium.

The presented exercise shows that a redesign of low-income support for families with children with explicit rewards for two-earner couples could be an efficient way to increase labour force participation rates of mothers. Designing "double earner" premiums as elements of low-income means-tested support could be a successful means to reduce child poverty through the combination of direct support and higher labour market activity among parents.

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