

Can Mothers Afford to Work in Poland

Labor Supply Incentives of Social Benefits and Childcare Costs

Ali Bargu

Matteo Morgandi



WORLD BANK GROUP

Social Protection and Labor Global Practice Group

January 2018

Abstract

This paper analyzes the incentives to labor supply faced by families, particularly mothers, with young children in the context of a recently introduced fertility promotion benefit in Poland. The paper is based on an adapted version of the Organisation for Economic Co-operation and Development's Tax-Benefit Model, which estimates households' net earnings after taxes and social transfers at different levels of wages. Since the recent introduction of the 500+ benefit, some households face steep marginal tax rates due to the benefit withdrawal rules. Single parents with two children, and second earners with one child can expect their income to increase by only 30 and 25 percent of the minimum wage, respectively, if they take up a job at minimum

wage. If they must also pay for childcare, having all adults working can cause losses of up to 30 percent compared with if one adult stayed home. Although the 500+ program radically contributed to reducing child poverty, in the absence of complementary reforms, these disincentives could affect more than half a million households, disproportionately in the lowest quintile. Vouchers for private childcare have been adopted by some municipalities in Poland to counter unmet demand for public nurseries. A 75 percent subsidy of typical childcare costs would restore the financial viability of low-paying work for mothers with young children. Alternative remedies include a reform of the eligibility and withdrawal rules of the 500+ program.

This paper is a product of the Social Protection and Labor Global Practice Group. It is part of a larger effort by the World Bank to provide open access to its research and make a contribution to development policy discussions around the world. Policy Research Working Papers are also posted on the Web at <http://econ.worldbank.org>. The authors may be contacted at mmorgandi@worldbank.org.

The Policy Research Working Paper Series disseminates the findings of work in progress to encourage the exchange of ideas about development issues. An objective of the series is to get the findings out quickly, even if the presentations are less than fully polished. The papers carry the names of the authors and should be cited accordingly. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

**Can Mothers Afford to Work in Poland?
Labor Supply Incentives of Social Benefits and Childcare Costs¹**
Ali Bargu* and Matteo Morgandi**

* Oxford University

** World Bank, Social Protection and Jobs GP

JEL: I38, J13, J22.

Keywords: Female Labor Force Participation; Child Care; Social Assistance; Fertility

¹ This study was prepared as part of the Poland Labor Market and Social Policy Technical Assistance, with co-financing of the World Bank Gender Umbrella Trust Fund. We thank for the valuable comments and feedback provided at different stages of this research to the staff in the Ministry of Family, Labor and Social Policy of Poland, peer reviewers Iga Magda (Institute for Structural Research, Warsaw) and Paulo Bastos (World Bank, Development Research Group), as well as Michael Myck (CNEA), Manuel Salazar (World Bank), Karolina Goraus (Warsaw University), Gabriela Inchauste (World Bank) and Wojciech Paczyński (European Commission). We are thankful to Herwig Himmervoll and the team in charge of Tax and Benefit Models at the OECD for sharing the program file of the 2014 Tax and Benefit Model for Poland, which this research built on.

I. Introduction and Main Findings

Among beneficiaries, one of the most discussed aspects of transfers that aim to alleviate poverty in households is their potential disincentives to enter or participate in the formal labor force. In particular, the introduction of a new noncontributory transfer in highly formalized economies can move the household income schedule in a ‘poverty trap’, with high marginal tax rates on any additional earning from formal work (Blundell and Walker, 2003; Blundell et al. 1998; Kell and Wright 1990). While work disincentives from transfers are often an overstated concern, the specific design features (for example, withdrawal rate or income cutoffs) of the programs and the way in which different programs targeting the same families add up are central in the determination of the final set of incentives.

Such issues can be exacerbated in families with young children, where the adult caretaker (usually the mother) has to bear childcare costs if she wishes to work. This paper analyzes the Family 500+ program² in Poland, to explore the labor supply incentive on mothers, resulting from the interaction of a noncontributory transfer with childcare costs and the potential role of childcare subsidies as a tool to make work pay. Such types of transfers are common in Organisation for Economic Co-operation and Development (OECD) countries. The paper explores this question by revisiting and updating the established model developed by the ‘OECD Tax-Benefit Model’, which is meant to reproduce the incentives to formal labor supply faced by households at different levels of earnings, based on a *de jure* analysis of program designs. The model allows decomposing the effects of income taxes, social insurance contributions, and various noncontributory benefits to the overall change in net earnings of households as their gross labor income increases.

Data to examine the effects of the most recent reforms, for instance, the Household Budget Survey (HBS) 2016, will likely only become available in late 2017, making it difficult to capture an immediate behavioral response of families. Coupled with the limited access to administrative data, this exercise in plotting the theoretical levels complements existing analysis with current data to predict the behavioral response of the Polish population (Goraus and Inchauste 2016; Myck 2016).

When the Family 500+ program was introduced by the Government of Poland in 2016, the Polish welfare state underwent a systemic change: with an estimated cost of PLN 22.2 billion per year, or 1.3 percent of gross domestic product (GDP), the 500+ came on top of all existing programs, whose total expenditure was estimated at 0.7 percent of GDP in 2013. Due to the size of the transfer and amount increasing with the number of children, the program is clearly progressive and is recognized for its expected impact on reducing extreme poverty from 8.9 percent to 5.9 percent and for nearly eliminating child poverty (Goraus and Inchauste 2016). At the same time, the incentive compatibility of the 500+ with formal work has been questioned widely, both in the popular press and in the literature (Myck 2016). This is rather new for Poland where social benefits used to be rather ungenerous and they posed limited disincentives to work (World Bank 2014). Moreover, the literature has explored the nexus between the cost of childcare and the withdrawal

² The Family 500+ program targets families with 2 or more children who receive an unconditional and universal payment of PLN 500 monthly for each child (ages 0–17). In addition to the universal payment for the second and each subsequent child, the same benefit can also be received for the first, if the income criterion (<PLN 800 per person per month, PLN 1,200 for families with a disabled child in the household) is met. Distinguishing it from many other benefits, 500+ is not included in calculations for taxes, contributions, or benefits.

rules of cash benefits much less, particularly in contexts where social norms also influence preferences for staying home among mothers.

Against this backdrop, the paper focuses on three questions:

- (a) The financial disincentives to enter formal labor force, for different family types, in light of the current tax and benefit architecture
- (b) The accounting of additional disincentive effects arising from private and public childcare costs (for children ages 0–3) faced by parents with young children
- (c) The possible mitigation of these disincentives through the introduction of subsidies for childcare services

The analysis finds that for certain income levels, the new benefit creates strong disincentives to enter the labor force, especially for (a) single mothers who work above the 500+ benefit withdrawal threshold for their youngest child and (b) second earners, usually mothers, who are disincentivized to enter the labor force for families. The marginal effective tax rates of moving from inactivity into minimum wage (MW) employment reach up to 70 percent and 75 percent of MW for single mothers with 2 children and for second earners in families with 1 child, respectively.³ These results do not include childcare costs, which are incurred by a majority of families when all adults are in full-time employment.

Once we include childcare costs for children ages 0–3 in Poland in the analysis, the disincentive effects become even more drastic: when moving from inactivity to MW employment, income losses could be as high as 30 percent. Table 1 summarizes the main findings of the analysis for different typologies of households and with and without childcare costs taken into account.

Table 1: Projected income gains for moving into MW employment with varying levels of childcare costs

Family type	Income gains (in % of MW)	Income gains (in % of MW) accounting for ^a estimate of childcare costs at public facilities	Income gains (in % of MW) accounting for childcare costs at prevailing market prices ^b
Single Parent with 1 Child	30.9	16.4	-23.9
Single Parent with 2 Children	40.8	26.3	-14.0
Married Couple (2 Earners) with 1 Child ^c	24.9	10.3	-30.0
Married Couple (2 Earners) with 2 Children	45.6	36.0	-4.3

Note: The negative values indicate the scenarios within which moving into employment causes income losses.

a. The definitions of the different forms of childcare and their assumed costs (public or private) are in Box 1.

b. This estimate uses PLN 1,000 per month and assumes that only one child (if there are two) required a nursery spot.

c. Principal earner fixed at approximately MW.

In sum, the reformed noncontributory transfer system in Poland, while successful in lifting many out of extreme poverty, can disincentivize second earners and single parents to enter in a (formal)

³ This assumes that the principal earner in the family is earning at MW. Different points for the principal earner are examined in the paper's subsequent sections.

job, and these effects are further augmented by childcare costs. In addition, disincentives will affect families in the lowest quintile disproportionately because of the withdrawal and general design of the 500+ benefit. Hence, the overall labor market impact of this transfer could be significant, either in terms of a reduction in labor supply or in terms of a shift of preferences toward informal employment.

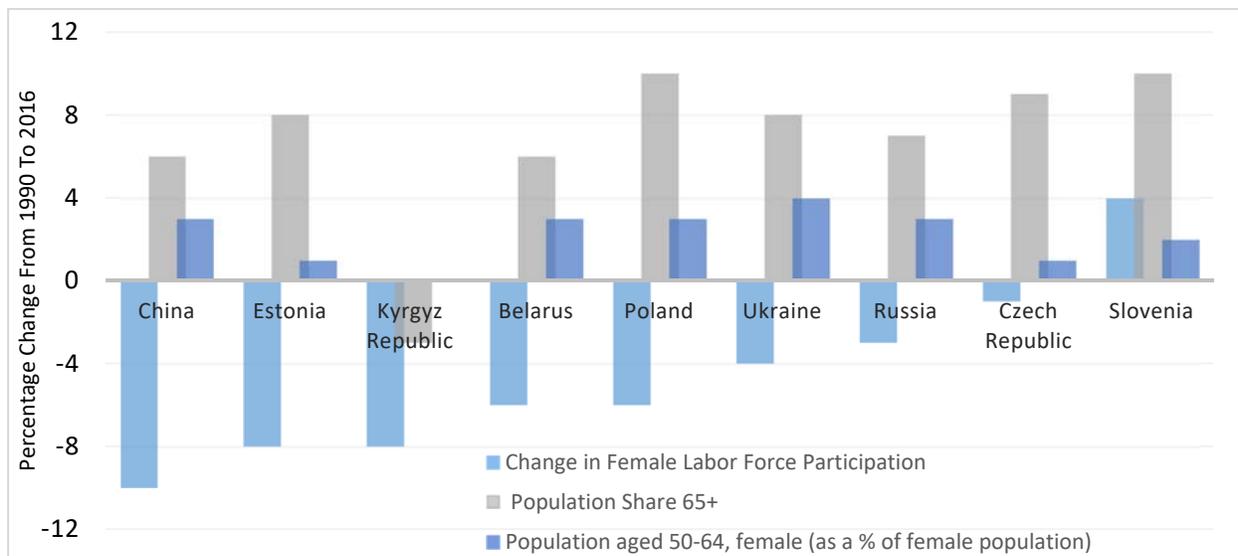
These results are particularly relevant not only because of the magnitude of the disincentive but also because the effects could be widespread. HBS data suggest that about 595,000 families are now facing the risk of falling in a ‘poverty trap’.

It is important to note that this paper is not able to review the potential effects of this program on farmers, as for this large and important group, thresholds are calculated on the basis land size.

II. Women’s Labor Supply, Childcare and Fertility

After the transition from central planning to market economy, the share of women in the labor force in many Eastern European countries declined (Brainerd 2000, Pignatti 2016). Compared to 1990, the labor force participation rate of women in Poland dropped by over 6 percent and the share of those above 65 years increased by about 5 percent. This trend mirrored the one in other countries in Eastern Europe (Figure 1). The fall in participation rates, in combination with lowering fertility rates, outmigration, and demographic aging, has put the problem of shrinking labor force at the forefront of labor market policy across these countries (Pignatti 2016).

Figure 1: Change in female labor force participation rate (1990–2016) and share of population ages 50–64 and 65+ in transition countries



Source: Authors’ calculations based on World Development Indicators 1990–2016 (World Bank).

<http://data.worldbank.org/data-catalog/world-development-indicators>.

Both participation and employment rates of women in Poland remain below that of men and of the European Union (EU) average. The labor force participation rate of women is significantly lower than men, 61.4 percent compared to 74.8 percent (OECD 2015), although the tertiary education rates are higher among women than men in Poland. In addition, full-time employment

of women in Poland (59.4 percent) remains behind the EU-28 average of 63.5 percent (Eurostat 2016).

Barriers to female labor force participation in transition countries have a complex set of causes with a multiplicity of policy realms playing a part. A look into the recent history of female labor force participation in transition countries offers valuable lessons to understand the current problems: generous maternity leave benefits and state contributions to child-rearing were common instruments of socialist policy and part of a larger pro-natalist policy paradigm (Fodor et al. 2002). Although prewar Eastern European policies expected both men and women to be part of the labor force, a gendered division of caretaking duties was already present. Mothers usually raised their children up to the age of 3, with little possibilities to find formalized caregivers. When grandmothers took over, mothers were expected to take part in the paid labor force again, with the availability of some provisions that permitted a better work-life balance for women (for example, leave when children got sick), enabling their participation yet limiting the quality of their employment opportunities (Fodor 2003).

After 1990, many Eastern European countries, including Poland, reduced the generosity of state support to families, thus putting more burdens on women as caretakers. The fast restructuring of the transition economies was accompanied by a sudden increase in unemployment rates (which affected women the most), while both cash and in-kind provisions by the state to families declined (Fodor et al. 2002). Rates of return to the labor market after childbirth decreased, mainly because of the lower availability of jobs and the closure of many childcare services that used to be provided at the municipal level. Not surprisingly, this period was also marked by a fall in fertility rates.

In spite of this drop in actual fertility, families maintained their preferences for number of children. According to opinion polls, between 1996 and 2012, the number of desired children in Polish couples has remained unchanged (CBOS 2012). Nevertheless, the difference between the desired and actual number of children has increased and appears to be larger in Poland than in comparable countries: this points to clear barriers to having children in Poland. CBOS also finds that childbearing and professional plans are closely interlinked.

The relation between labor force participation and fertility is bidirectional and depends on many factors, especially the availability of childcare. On the one hand, one may see high fertility as a cause for lower labor supply. For instance, one-third of women ages 18–45 who have children in Poland “were either forced to give up work or failed to start it due to difficulties in providing care for their children” (CBOS 2013). Women who choose to postpone childbearing exhibit stronger labor market attachment and are more likely to have fewer children (Bratti 2015). On the other hand, the literature points that securing stable employment for women is a driver for couples to decide on having a second child (in light of greater financial security) (Bussolo, Koettl, and Sinnott 2015; Levin et al. 2016). One of the key factors that determines whether women can afford to work relates to those public policies that affect the cost and availability of childcare: these can really weaken or even reverse the relation between childbearing and employment outcomes. Empirical studies from a variety of countries have shown that there are positive effects of affordable childcare on the labor supply of mothers, especially lone mothers (Bauernschuster, Hener, and Rainer 2013; Cascio 2009; Lefebvre and Merrigan 2008) and that generally, when childcare costs are lower, labor force participation of mothers is higher (Anderson and Levine 1999; Blau and Currie 2006).

In addition, the literature on birth grants like the 500+ benefit in Poland suggests that such transfers frequently only have ephemeral effects on fertility rates. Gauthier (2007; 2016) suggests that policies have been linked to change in the timing of childbearing, not to the number of children. This leads to initial increases in numbers of children that slowly fades over time.

Further, a sizable literature has emerged suggesting that enrollment in high-quality formal child care has substantial positive long-term effects on child development, especially among low-income households (Brilli, Del Boca, and Pronzato, 2016; Carneiro, Løken, and Salvanes, 2011; Havnes and Mogstad, 2011). These findings highlight, from a different perspective, the potential benefits of child care subsidies or public provision of institutionalized care.

Considering the demographic structure and the current social policy agenda in Poland, a policy package that enables the combination of greater labor force participation of women with increasing fertility rates could solve long-standing structural problems. Matysiak and Weziak-Białowska (2016) suggest that the conditions for reconciliation of work and childbearing consist of three elements: (a) family policy and possibilities created by this policy to combine work and children, (b) the labor market structure and possibilities to have and keep the job, and (c) perceptions regarding gender roles. Ranking EU countries by these measures reveals that Poland ranks fourth lowest on the overall index for the ability to combine work and children (Matysiak and Weziak-Białowska 2016).

These three elements also represent the potential levers for policy to support women’s work and childbearing. International examples show that packages addressed to tackle this issue by introducing a broad set of policy bundles can succeed in raising the fertility rate and still enable women to participate in the labor force if they choose to. The composition of these packages heavily depends on the primary aims of the country, yet some experiences can help illustrate which combination of policies and circumstances have worked. Nordic countries focused family policies to support working parents of young children through the expansion of childcare facilities and reliance on short, yet generously paid, parental leave.⁴ These include quotas to encourage fathers to share childcare duties (Morgan 2012; Thévenon 2011). Denmark, for example, increased its fertility rate from 1.4 in 1985 to 1.7 in 2012. In Sweden, after a record low of 1.5 births per woman, the fertility rates have seen a resurgence to 1.91 in 2012 (World Bank 2016). These developments have been associated with the emerging focus on ‘new’ social policies, including family policies facilitating work-family reconciliation and female employment participation that shifted family policy in Sweden in the late 1990s (Fleckenstein and Lee 2014). Another example is Singapore, where, in 2007, a comprehensive package of policy to promote female employment was introduced that included flexible work arrangements, targeted active labor programs, and training programs (Teo 2010). Many other countries have attempted to tackle the issue of female labor force participation and declining fertility rates with such policy packages, producing a rich set of evidence that overall shows varying degrees of success (Bick 2015; Cheng 1999).

On some aspects in particular, however, the literature seems to converge. Vuri (2016) summarizes the findings of many studies, that “investing in quality childcare facilities, especially for young children, can help achieve this goal [female labor force participation]. Accessibility, affordability,

⁴ Paid parental leave (mostly maternal, with additional weeks available to share between partners) ranges between 30 weeks and up to about 50 weeks in Nordic countries (depending on additional time granted for shared parental leave).

and quality are all important. Women’s pre-subsidy employment statuses, average wages, childcare arrangements, and other factors not directly associated with childcare costs and availability are also important. These indirect factors include childcare regulations, welfare systems, and social norms. All of these factors might strengthen or reduce the effectiveness of family policies.”

With current substantial changes to the welfare state structure in Poland, the link between female labor market participation and fertility needs to be assessed. With the introduction of the 500+ benefit for the second and every subsequent child, the structure of this system changed considerably and needs to be reexamined for its effects on incentives to enter or remain in the labor market and fertility decisions. This paper will aim to contribute to this intensive debate by examining the externalities caused by the design of the 500+ benefit in Poland. For this, we will focus on the disincentive effects of entering the labor market for women and point to new developments in the childcare provision and its effect on childcare in Poland that need further research to fully comprehend the issue.

III. Method and Approach

a. Tax-Benefit Model and Its Assumptions

The OECD Tax-Benefit Model (TBM) is a tool to simulate how multiple tax and benefit rules and their interplay affect the net income of households. This de jure model seeks to visualize the net returns from employment at different levels of total household income and to let this vary according to different family types. It aims to incorporate all taxes and contributions (for example, income tax, social security contributions, and health insurance payments) and any benefits (social assistance, child benefit, family benefits, and so on) that are in the law of the examined country. Its strength lies in the ability to incorporate the complex social policy system with all the different eligibility criteria and thresholds into a unifying framework and statistical program. The model is particularly useful to synthesize the effect of different benefits in a complex social assistance system, as in Poland. Figure 2 illustrates a summary of the different eligibility thresholds for different noncontributory programs in Poland.

Figure 2: Eligibility thresholds for benefits in Poland (per capita in household)

Any income	<ul style="list-style-type: none"> • Caretaking of disabled: Caregiver allowance • Disabled and age 75+: Attendance allowance • Emergency: Special Need Allowance • 500+ for every child after 1st
PLN 1,922	<ul style="list-style-type: none"> • Child birth: Birth Grant (national)
PLN 800	<ul style="list-style-type: none"> • 500+ means tested for first child
PLN 725	<ul style="list-style-type: none"> • Child in separated family: Alimony fund
Moderate poverty line: PLN 668.7	
PLN 664	<ul style="list-style-type: none"> • Disabled member: Family allowance and up to 7 supplements to family allowance
PLN 623	<ul style="list-style-type: none"> • Caretaking of disabled: Special caregiver allowance
PLN 574	<ul style="list-style-type: none"> • Children 0–18: Family Benefit and up to 6 supplements
PLN 542 (single), PLN 456 (family)	<ul style="list-style-type: none"> • Disabled or Elderly: Permanent Benefit • Difficult life situation: Temporary Benefit
Absolute Poverty Line: PLN 519	

Source: World Bank 2015.

The model also allows for a computation of the marginal effective tax rates and a visualization of the poverty/inactivity traps.⁵ The model has several assumptions: individuals respond to incentives to the extent that they are aware of the eligibility rules of each benefit; net income affects their decisions to work; and households receive all benefits that they are entitled to in full. Even when some of these assumptions are relaxed, the results remain overall insightful for Poland.⁶

For this paper, we have updated the latest published OECD TBM (2014) to represent the 2016 policy realm, and it also has validity for the first semester of 2017 in light of the lack of significant reforms to taxation, labor market, or social benefit parameters. The updates were extensive and included (a) new regulations of existing programs, (b) changes to income thresholds across most programs, (c) inclusion of the newly introduced 500+ program for families, (d) changes to the level of MW, and (e) alignment of contributions on labor contracts. The paper adds to the literature by illustrating the exact level of earnings at which disincentives to work may occur and which

⁵ Poverty traps describe a mechanism where an increase in labor income leads to a stagnation or even loss of net income because of (a) the loss of a benefit/transfer or (b) taxes and other contributions that have to be paid. Marginal effective tax rates are useful in identifying these disincentives created by the interplay of the entire tax-benefit system in a country.

⁶ The take-up rate for housing benefits, for example, may be one of these cases. Housing benefits in Poland have an element that incorporates the different sizes of apartments and an assessment by an inspector to determine the exact amounts of the benefit. This very specific award of benefits cannot be exactly assessed in this model. In addition, HBS 2014 data suggest that the take-up rate for this benefit is the lowest in Poland.

program leads to this outcome. Second, the paper incorporates, in the work incentive calculation, updated and realistic estimates of childcare in Poland, in upper and lower bound estimates.

We summarize here the design of the 500+ program, while the details on all the changes made to the model to update information on all the other taxes and benefits are in the appendix. This flagship project of the incumbent government has an estimated annual cost of PLN 22 billion to PLN 25 billion (1.3 percent of GDP) and implementation started in April 2016. The program's main objective is to promote fertility by reducing the cost of having a large family. The benefits target families with children with the following criteria:

- A payment of PLN 500 monthly for the first child (ages 0–17) in a household if the net income is below PLN 800 per capita or PLN 1,200 per capita if the child has a disability
- A universal payment of PLN 500 monthly for each additional child (ages 0–17) after the first

Distinguishing it from many other benefits, 500+ is not included in calculations for taxes, contributions, or benefits. It is estimated to reach 2.7 million families in Poland and have positive effects on significantly reducing child poverty (Goraus and Inchauste 2016; Myck 2015). However, the generosity and design of the program that withdraws the complete benefit for the first child if the income threshold is exceeded by PLN 1 creates the possibility for strong disincentives to enter the workforce. While labor market disincentives have been studied, this model provides the possibility to disaggregate each part of the tax-benefit system to understand the origin of potential disincentives and offers a basis for policy reforms.

b. Explanation of the Use of Different Family Types

The model allows for specifications of the different types of households. The number of partners, the number of earners, number and age of children, and earning levels can be specified to examine the eligibility for benefits for most of the household types in any given country.

IV. Results

The following section discusses the results of the TBM for Poland 2016, with a particular focus on labor market disincentives after incorporating childcare costs. The results are presented by family type. The analysis showcases that especially in families in the lowest income quintiles, the 500+ program benefit creates strong disincentives to enter the labor force. This is particularly the case for single mothers and potential second earners, usually mothers, in a couple where one parent is already working at a low wage.

a. Single Parent with 1 Child

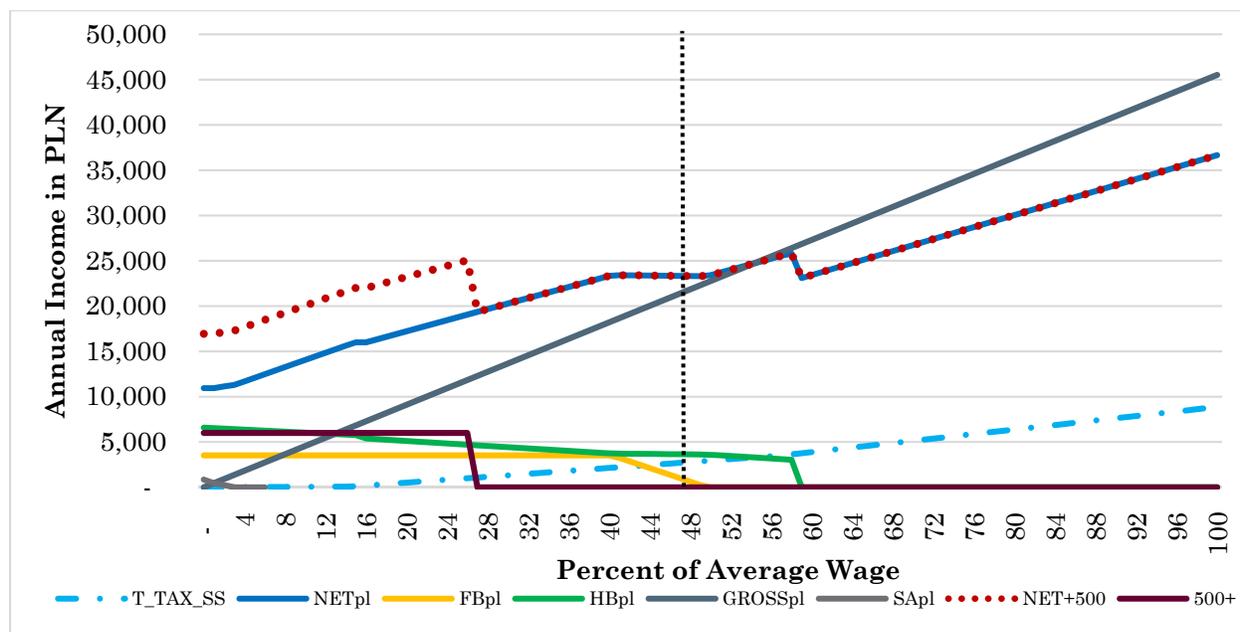
Figure 3 illustrates the earnings schedule of a family with 1 parent and 1 child, with earnings expressed in percentage of the 2016 average wage (AW).⁷ The gray line indicates gross income, the blue line is net income, and the red dotted line is net income including the new 500+ benefit payments. The remaining lines represent all benefits according to eligibility criteria and the dotted blue line is the sum of income tax and social security payments.

⁷ The average gross wage used in the model for Poland is PLN 45,521.41 per year.

If increasing labor income led to higher net earnings, both the blue and dotted red lines should rise. While this was the case up to 2015, after introduction of the 500+ program, earning more than 25 percent of AW (PLN 11,380 per year) creates an income loss for single parents. In particular, when earning is between 27 percent and 59 percent of AW,⁸ every marginal increase in income leads to a reduction of net income (this is a ‘poverty trap’). The second small decrease in net income is caused by the cutoff of the housing benefit, which is considerably lower in generosity.⁹

For a single parent, the difference between inactivity and working at MW full time with 500+ is PLN 6,000.¹⁰ This is an increase by 27 percent of AW, where the difference was 47 percent of AW before 500+. This does not mean, of course, that the family is necessarily worse off but, rather, that the family attains a similar level of welfare without working.

Figure 3: TBM for single parent with 1 child



Source: Authors elaboration based on TMB for Poland 2016

Figure 4 provides a decomposition of the effects at play when a family moves from inactivity to an MW occupation, 0 percent to 48 percent of AW (vertical black dotted line in Figure 3). Foregone social transfers amount to 52.2 percent of MW.¹¹ In particular, the withdrawal of family benefits is equivalent to 11.5 percent of MW, the loss of housing benefits is 13 percent, and the 500+ benefit withdrawal represents 27.5 percent of MW. When working at MW compared to inactivity, the income of a single parent, therefore, only increases by 30.9 percent of MW (or PLN 6,751). Moreover, for a single parent with 1 child, working at an MW job likely requires having to find some form of care for the child. Accounting a conservative estimate of the average costs in

⁸ Once the Housing benefit is also withdrawn, the loss of income persists until 67 percent of AW.

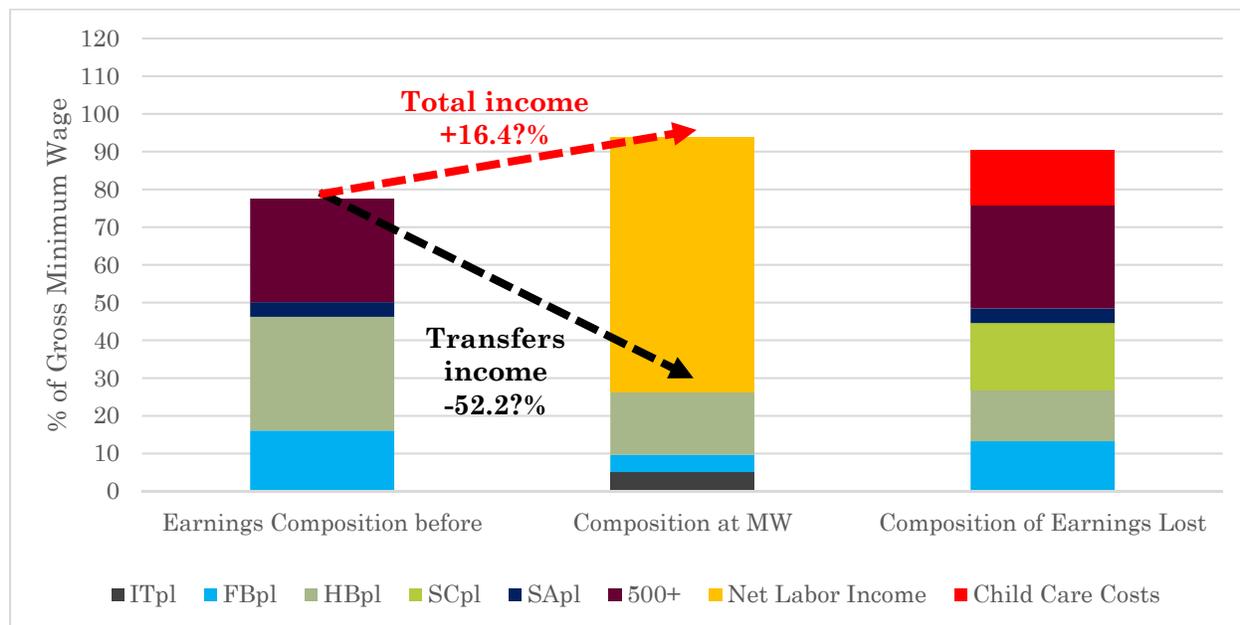
⁹ Technically, the lowest possible amount to receive the housing benefit is 2 percent of the lowest retirement. Because the lowest retirement is fixed around PLN 880 (PLN 10,560 per year) now, this would mean that the lowest possible housing benefit should be PLN 212 per year. However, in practice the payment up to this amount is unlikely.

¹⁰ MW is indicated by the vertical dotted black line in figure 4.

¹¹ All further percentages in this section refer to percentages of MW.

institutionalized care¹² into the model, net income of a single parent increases by only 16.4 percent of MW when working at an MW job compared to inactivity. This estimation does not yet account for other costs of full-time work such as transportation costs. All in all, the incentive to start working is noticeably low and does not encourage joining the labor force.

Figure 4: Change in income accounting for childcare costs



Source: Source: Authors elaboration based on TMB for Poland 2016.

Note: The figure represents earnings' composition before a single parent is working (left) and after taking a job at MW (center). Net labor income represents total labor income minus childcare costs, income tax, and social contributions.

¹² Numbers taken from OECD calculations on the average cost for one child in public nursery. Because many have to resort to private childcare, the actual average price in Poland for childcare is likely to be higher. After talks with local think tanks and academics, the assumed cost for 1 child in urban areas is about PLN 1,000 per month. If these costs are included in the analysis rather than the estimates used by the OECD, the incentive to join the workforce would be completely eliminated. See Box 1 for a detailed explanation.

Box 1: Childcare costs for children between ages 0 and 3 years in Poland

The OECD Tax-Benefit methodology indicates that “Childcare benefits for parents with children in externally provided childcare and the costs of that care have been introduced into the models but are not implemented for standard outputs.” (OECD 2015). This means that the calculated net income of families does not account for the fact that when all adults in the household move into employment, additional care responsibility will most likely be assumed by private institutions. To find out the real cost of care in Poland for children under the age of 3, we conducted interviews with local childcare researchers in Poland. During these interviews and subsequent research, we discovered that public spots in nurseries are hard to reach for most families because of an undersupply. The cost of private nurseries, which have been on the rise in Poland, varies between PLN 1,000 and PLN 1,500, depending on the region. A detailed report on the supply and cost of care can be found in *Raport podsumowujący wyniki badań ogólnopolskich*. For the analysis of childcare costs in this paper, we will assume the lower bound of PLN 1,000 per month, which we term ‘conservative estimate’.

b. Single Parent with 2 Children

Figure 5 shows the case of a single parent with 2 children. The income boost of the 500+ program in this case is very significant: the family receives a net income of PLN 28,416 per year compared to PLN 16,416 if the 500+ program did not exist. This case illustrates what Goraus and Inchauste (2016) have found in their estimation on the effect of the 500+ program: extreme poverty for families with young children in Poland will nearly disappear. However, the additional income with 500+ when the single parent is out of the labor force nearly equals what the family would receive if the single parent worked full time at MW (PLN 28,416 at inactivity with 500+; PLN 29,280 at MW before 500+). After the introduction of 500+, the additional income gain from working at MW is only about 31 percent of MW. The reason is that the additional income from work causes the withdrawal of the means-tested part of the benefit.

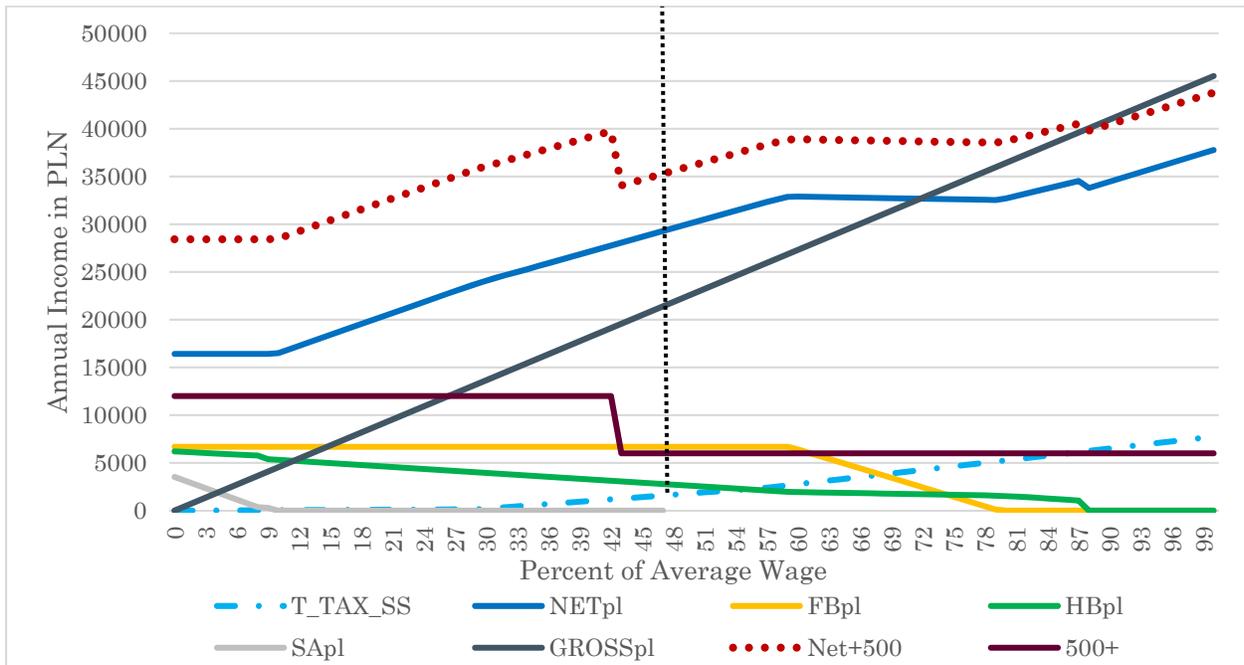
Figure 5 shows that the ‘poverty trap’ spans from 42 percent to 84 percent of AW, meaning that any additional earnings beyond PLN 39,751 per year will leave the single parent with less net income until he/she can enter a job at around the AW.¹³

When accounting for childcare costs (Figure 6), only about a quarter of MW is gained when moving into a full-time MW job for a single parent with 2 children.¹⁴ The computations assume that only 1 child is in a public childcare facility, while the older child is either in a subsidized spot that exists for children over 3 or already in school. However, in some cases where this is not possible, the actual gains would recede to 11.7 percent of MW.

¹³ These results do not take into account childcare costs yet. Considering that transportation costs and childcare costs need to be added, the disincentives become even stronger.

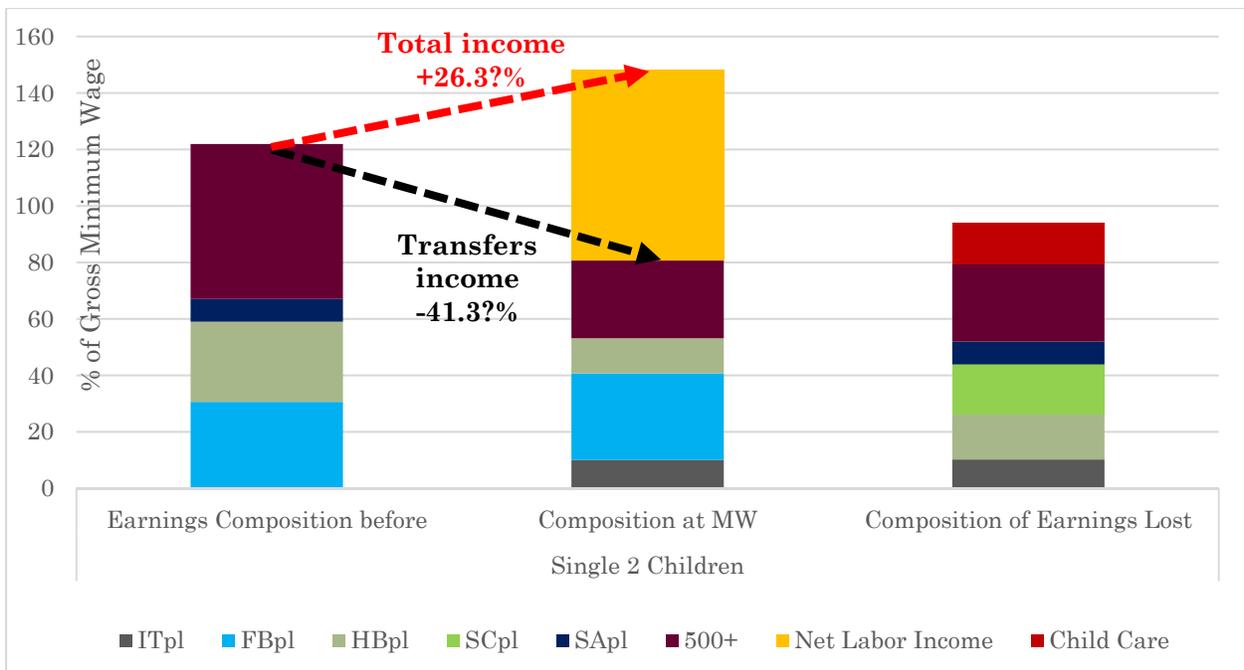
¹⁴ All charts (including pre-accounting for child care) can be found in the appendix.

Figure 5: TBM for single parents with 2 children



Source: Authors elaboration based on TMB for Poland 2016

Figure 6: Change in income accounting for childcare costs



Source: Authors elaboration based on TMB for Poland 2016.

Note: Earnings' composition before the single parent is working (left) and after taking a job at MW(center). Net labor income represents total labor income minus childcare costs, income tax, and social contributions.

c. Married Couple with Second Earner Moving into Employment

A second set of scenarios in the TBM considers earning incentives for second earners in the household when the first is already working. Take a household with 1 child where the principal earner income is set at the MW: in the model, the family net income schedule shifts according to the wage of the second earner, who, in 24 percent of the cases in Poland, tends to be the mother.¹⁵

Table 2: Gender of highest earning member by family type (for families with two earners)

Sex	Overall (%)	Married, with 1 child (%)	Married, with 2 children (%)
Male	74	72	75
Female	26	28	25

Source: Authors' calculations with HBS 2014 data.

This allows representing the trade-offs faced by families when deciding if the second earner should stay home looking after the children or enter the labor force. Under the current set of taxes and benefits, Figure 7 shows that for the second earner, moving into work leads to only minimal welfare gains for the household, even before accounting for childcare and other costs. In the most extreme cases, when the second earner makes between 21 percent and 46 percent of the AW (which is equivalent to a full-time MW job), the household will be actually worse off financially if the mother works rather than if she stays home.¹⁶ If the second earner moves from inactivity to MW employment, there is a moderate surplus in family income (PLN 4,800 per year), yet this does not account for the fact that it is likely that additional costs such as childcare and transportation will be incurred by the family.

Accounting for childcare costs, the moderate surplus from moving into work is almost completely wiped out (Figure 8). This means that most of the time a mother has no financial incentive to return to the labor market. While this concern has long existed, the introduction of the 500+ benefit intensified it. Over half of the lost income in transfers (50.5 percent of MW) when the second earner moves into employment is accounted for by the withdrawal of the 500+ benefit (27 percent of MW).

¹⁵ In Poland, this case is typically characterized by the man working full time with the woman staying home having to assume caretaking duties. This can be confirmed when examining Labor Force Survey (LFS) data on causes of inactivity. Please refer to Figure 8.

¹⁶ At 22 percent of AW earnings for the second earner, the annual household income drops to PLN 28,830. With the secondary earner staying at home, the annual income is PLN 29,660.

Figure 7: TBM for married couple with 2 earners (principal fixed approximately at MW) - 1 child

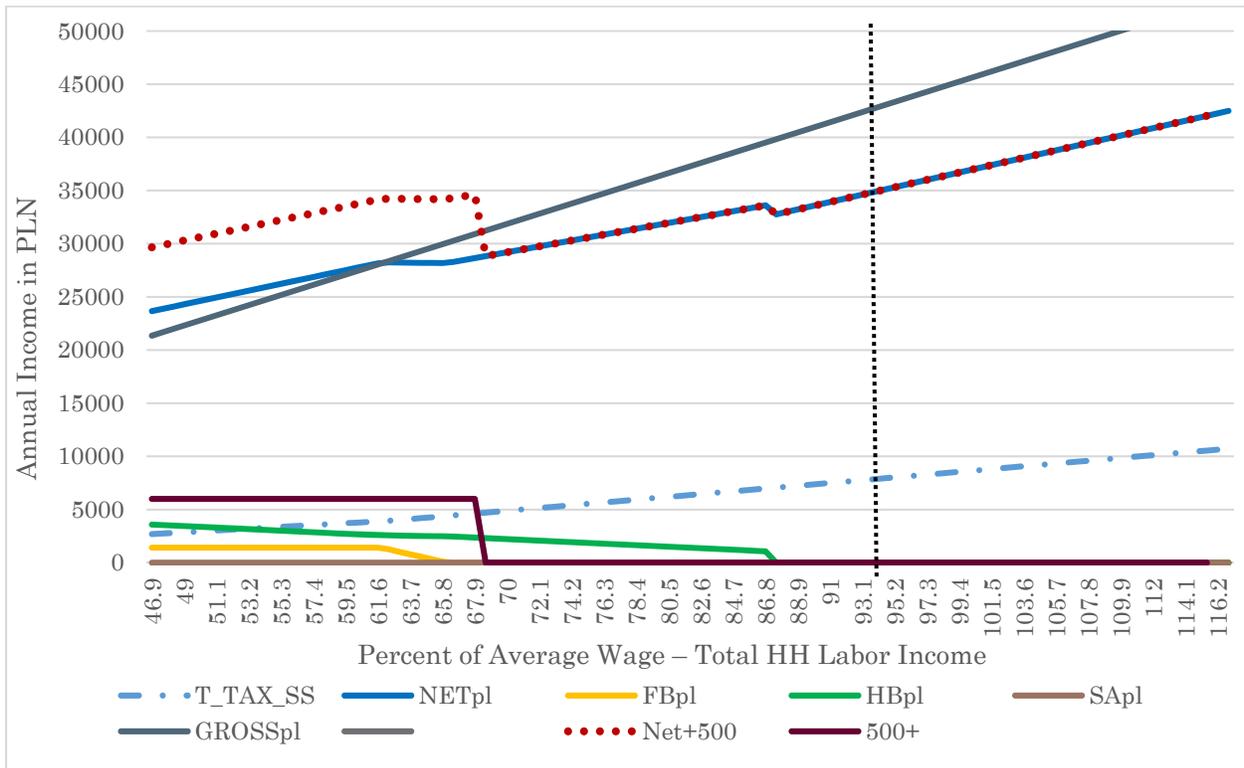
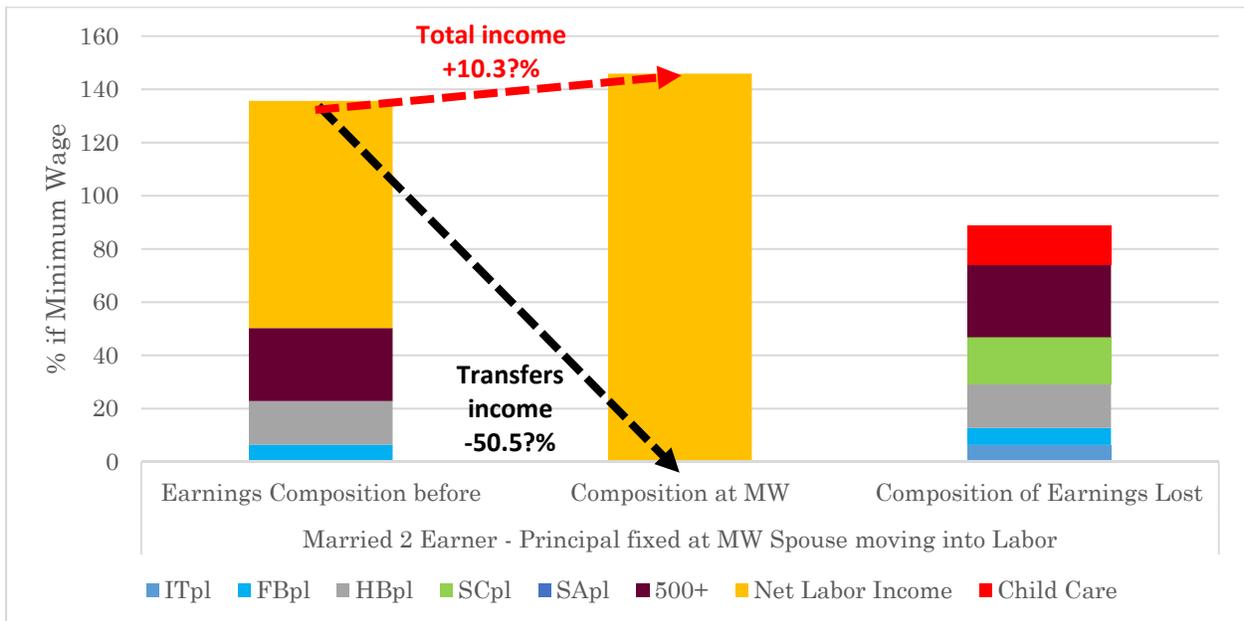


Figure 8: Change in income accounting for childcare costs for married couple with 1 child

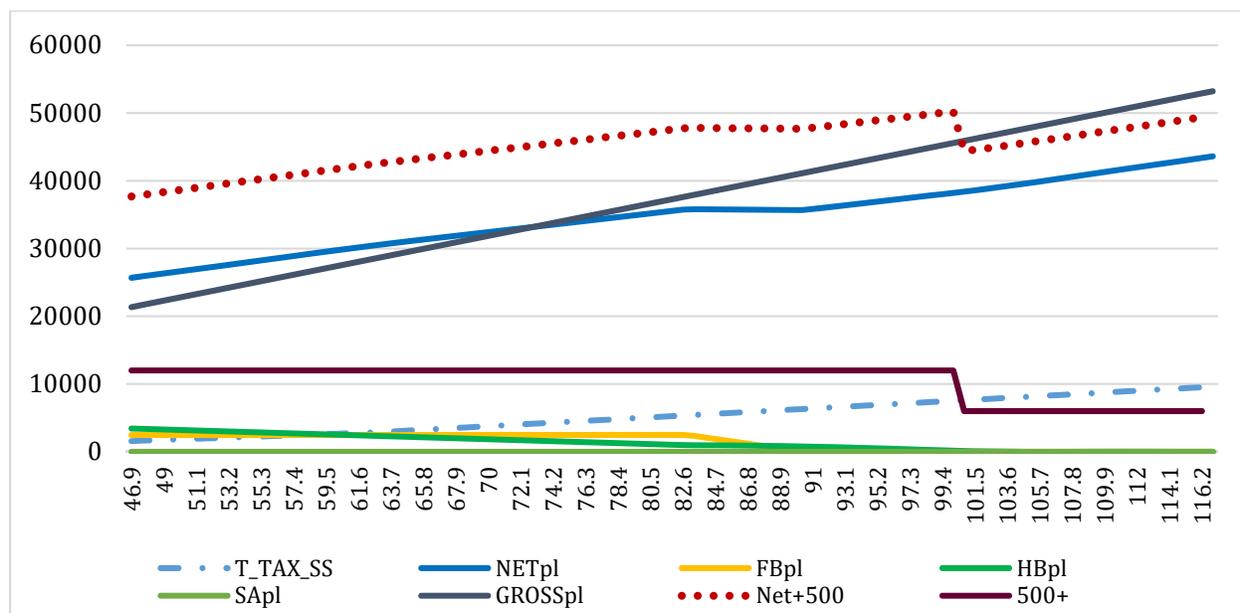


Source: Authors' calculations.

Note: Earnings' composition before the single parent is working (left) and after taking a job at MW (center). Net labor income represents total labor income minus childcare costs, income tax, and social contributions.

Interestingly, in case the couple has two children, rather than one, the disincentive to work for the second earner is much less severe (Figure 9). Although the 500+ is the most generous benefit, it is withdrawn at the highest income level. The ‘poverty trap’ for this family type occurs when the combined gross income of both partners reaches AW levels. This means that the disincentive is shifted upwards considerably to about twice the MW. Therefore, while the family will be financially worse off because of the loss of the 500+ payments when both adults earn at MW, the disincentive does not affect families who are in the lowest two quintiles. Again, when accounting for the fact that if the previously inactive partner decides to enter the labor market, there will be a need for childcare, the incentive to enter further diminishes, and based on the assumption of childcare costs, total earnings from work would increase between 22 percent and 36 percent.¹⁷

Figure 9: TBM for married couple with 2 earners (principal fixed approximately at MW) - 1 child



V. Empirical Relevance of the *de jure* Model

There is, of course, a chance that the level of earnings that could make families susceptible to poverty traps is actually uncommon in reality. To verify this, we exploit the Polish HBS 2014, and map the frequency of families in and around those earning levels where working more does not pay off.

First, the family typologies that the model takes into account are frequent (about 4 million households): the largest are married couples with 1 child (2 million families), followed by married

¹⁷ Bar chart in the appendix only accounts for one child in need of nursery care, with the other one old enough to take advantage of a subsidized spot in care for 0–6-year-olds or in school. If we were to assume that (a) both children are in need of nursery care (0–3 years old) and/or (b) that only the regular, private spots are available for a much higher price, the percentage increase in MW for the second earner moving into work would decrease from 36 percent to 22 percent (for scenario a) or even lead to a loss of 4 percent of net income for the family (scenario b). In the case where both scenarios a and b were to occur at the same time, up to 59 percent of MW could be lost for the family.

couples with 2 children (1.46 million), single parents with 1 child (0.44 million), and single parents with 2 children (157,000). About 15 percent, 595,146¹⁸ families, display earning levels within the critical threshold that would generate poverty traps if the inactive parent was to enter formal employment.¹⁹ However, single parent families are those at greatest risk, as nearly a third fall within these critical thresholds. Appendix A includes earnings' distribution for all family typologies. When restricting the distribution of earnings to families with children of similar age to those in the model, it is still apparent that as many as 29 percent of earners were, in 2014, at the critical levels that would today make employment unattractive.²⁰

This finding is consistent with microsimulations that have been carried out to synthetically estimate the labor supply response of 500+ (Myck 2016).²¹

Further, according to the LFS data, among the inactive 47 percent of the total population who report the reason for inactivity to be 'household matters', only 22 percent are male while 62 percent are female (Appendix C). This, in turn, means that while the TBM model presented in this paper is silent as to whether the principal earner is male or female, it is likely that the second earners affected by work disincentives are women.

However, using this type of model also has drawbacks. It cannot account for potential broader effects that the 500+ program may have in the long run, e.g. on the improved ability for long-term family planning. Further, this analysis only provides a preliminary look at the de jure system and needs to be corroborated with actual data on labor market behavior of women in Poland to create a coherent picture. Once these data (e.g. LFS) become available, a clearer picture on the labor market effects of the 500+ program will emerge. Further, this type of analysis only regards labor market entry incentives on the basis of net income. While income is certainly an important aspect, it is not the only factor that influences labor market choices and therefore might disregard e.g. the motivation to work for increased pension contributions over time as a long-term investment strategy.

VI. The Price of Making Work Affordable for Mothers of Young Children

a. The Rationale for a Childcare Subsidy

Issues of care and family support have risen to the top of the Polish policy agenda with much of the new national government initiatives focusing on these efforts. However, as childcare availability remains low, local governments are increasing their efforts to support families. For example, the municipalities in Szczecin and Nysa have introduced childcare vouchers for children under the age of 3. The care voucher introduced under the 'Family-friendly Szczecin' program has

¹⁸ Breakdown by each family type that falls within the poverty traps: Married 1 Child: 271,297 families; Married 2 Children: 132,446 families; Single Parent 1 Child: 138,964 families; Single Parent 2 Children: 52,440 families.

¹⁹ These estimates drop zero income households from the analysis and include all family types, before accounting for the age of children.

²⁰ This number refers to single parent families. For married couples, restricting the distribution of earnings to families with children of similar age to those in the model leads to a 2 percent increase in families who fall into the poverty trap.

²¹ In his paper, Myck (2016) finds that the 500+ program will reduce labor supply among families with children by about 240,000 individuals, principally mothers in families with one child or two children. This finding is consistent with the results in this paper.

gained wide media attention because of its innovative approach in supporting families with PLN 500 per month for their chosen form of private care, which includes nannies, nurseries, and daycare centers (Kowalewska 2015; Wójcik 2015).

A salient question is to what extent families could be subsidized to make market childcare prices more affordable and restore the incentive to work among second earners. This would have the immediate advantage of restoring choice between caretaking or working among recent mothers, and from a societal point of view, it would be a way to reduce the scarring effects of long-term inactivity on future labor market outcomes.

The optimal design for subsidy, at a given cost of childcare, is assumed to be the one that restores the incentives to work. Therefore, the question is, “how high does the subsidy for care (for example, in the form of vouchers) have to be, until the disincentives to enter employment, created by the 500+ program as shown in the previous sections, are nullified?”

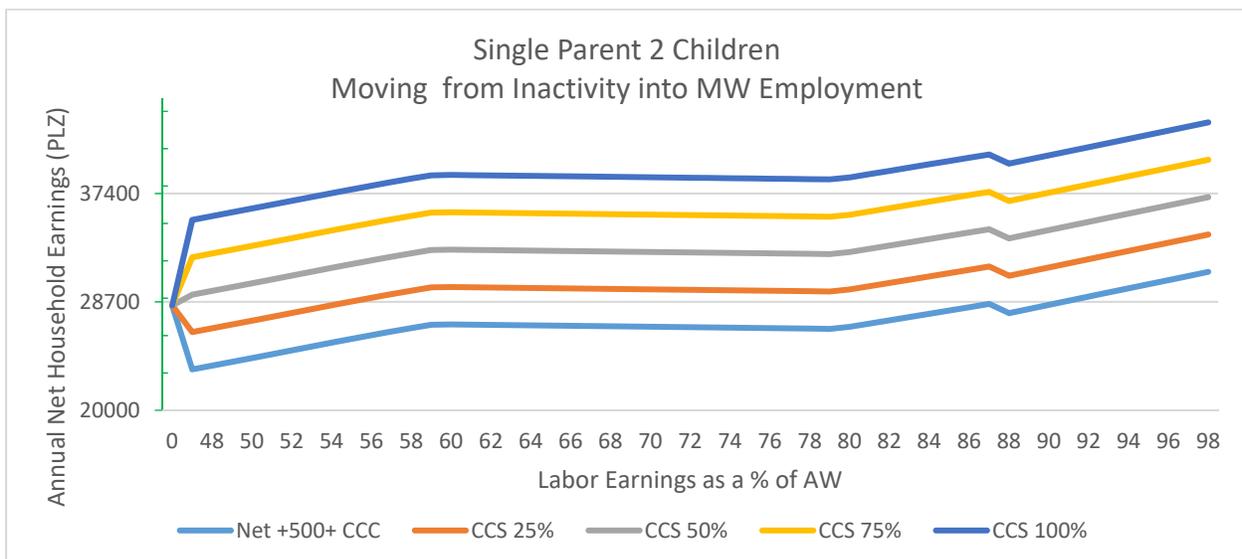
b. Simulating a Childcare Subsidy and Its Impact on the Affordability of Working

The following section models the effect of introducing a subsidy to cover the cost of private childcare on the net income from formal work for mothers with young children. The results are based on the outputs provided by the updated TBM for Poland, yet they provide more realistic childcare cost figures. The basis upon which childcare costs for children below 3 years were calculated is shown in Box 1. Different levels of subsidies are introduced to examine how high the subsidy would have to be to restore the incentives to work for parents. Based on existing small-scale voucher programs, we have chosen to increase the voucher amounts in increments of 25 percent of the total costs of care.

Single Parents

Figure 10 shows the net income for a single parent when moving from inactivity into MW employment, accounting for childcare cost, with varying amounts of care subsidies. When no subsidy is provided (Net+500+childcare cost), single parents with 2 children have a lower income compared to inactivity until they earn 87 percent of the AW. To make it worthwhile, including transportation and other costs that may occur when moving into employment and childcare, the net gain for single parents with 2 children compared to not working occurs much later: even working at AW levels, the added income for single parents is only PLN 3,355 more compared to inactivity. Note that this estimation assumes that the parent only has to pay for one child in private care, while the other can already take advantage of spots in public daycare centers for children above the age of 3, which are highly subsidized and more readily available compared to the provision for children ages 0–3. A loss of net income can still be observed with the 25 percent subsidy, where the same income in inactivity is only achieved when reaching income above 55 percent of the AW. Only with a subsidy of half of the childcare costs there is a net income gain, though only PLN 865 annually, from moving into MW employment. Subsidies that are at 75 percent and 100 percent of childcare costs offset the disincentives to enter the labor force by PLN 3,865 and PLN 6,865 per year, respectively, encouraging labor force entry.

Figure 10: Net household incomes accounting for different levels of childcare subsidies and labor income



Similar results can be observed when examining families of single parents with 1 child. A 50 percent subsidy of childcare costs equalizes the disincentives created by the design of benefits and taxes, a 75 percent subsidy creates a mild incentive, and a 100 percent subsidy creates a strong financial incentive to move from inactivity to MW employment (Appendix F).

Married Couple with 1 Child

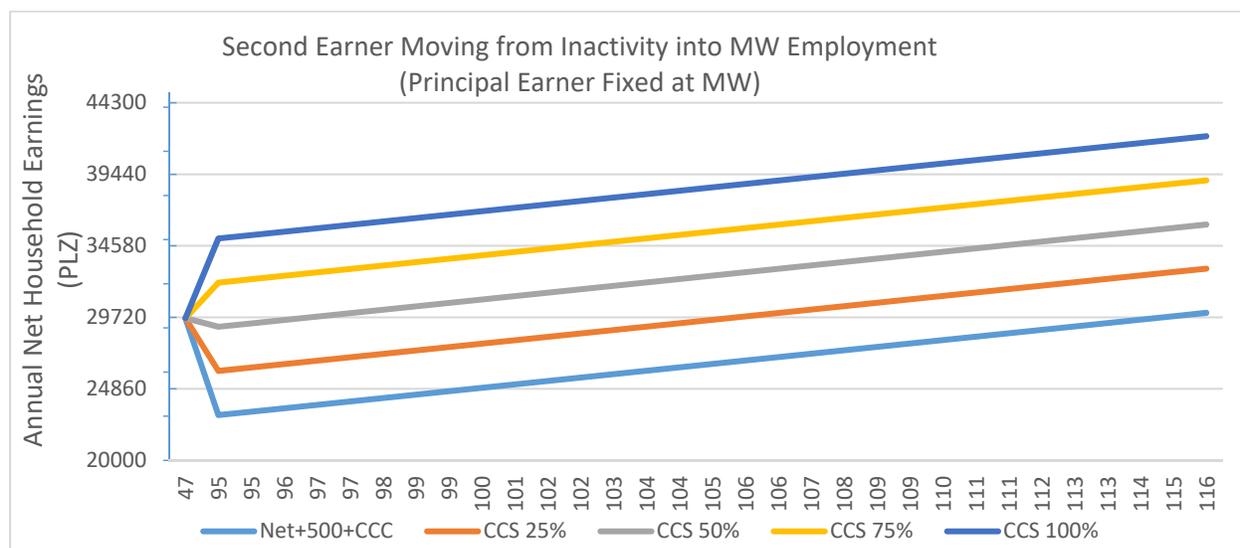
For families with two parents, it is assumed that once the second earner moves into employment, private childcare will become necessary.²² When examining the simulations on labor market entry for the second earner, the first earner's income has to be fixed. We simulate the labor market incentives of the second earner for families with fixed principal earners' income at three levels: (a) MW, (b) median wage for the particular family type, and (c) mean wage for the family type.²³ This allows examining different types of families across the income spectrum and the effect the combination of the 500+ benefit withdrawal and childcare costs may have on their decision to enter or stay out of the labor market.

For a family with 1 child, where the principal earner is fixed at MW, the picture looks similar to the one seen earlier. Because of the design of the tax-benefit system in Poland, the withdrawal of the 500+ benefit, and childcare costs, the net annual income of this family would drop by PLN 6,581 when the second earner moves from inactivity into MW employment. Providing a subsidy of 25 percent of the childcare costs still leaves the family worse off (PLN 3,581) when the second earner moves into employment. Even when half of the childcare costs are covered by a subsidy, a slight disincentive remains (income loss of PLN 581 annually). Only when a subsidy of 75 percent or 100 percent of childcare costs is available to families, there is a net gain (of PLN 2,451 and PLN 5,451 respectively) from moving into employment for secondary earners (Figure 11).

²² At the same time, it is assumed that in the case where only one parent is currently employed, no private childcare will be utilized by the family.

²³ Tables with detailed information of these values can be found in the appendix.

Figure 11: Labor market incentives for second earners for families with 1 child



Examining the income distribution of top earners in families in Poland reveals that the bottom 20 percent make less than MW.²⁴ This means that the aforementioned incentive issues occur mostly in families at the bottom 20 percent of the income distribution, whom programs such as the 500+ benefit were partly designed to support.

When income of the principal earner is fixed at median wage for this family type, in this case 81 percent of AW,²⁵ even without a subsidy for childcare there is a gain in income by PLN 3,851 when the secondary earner moves into MW employment (Appendix F). It is important to note that while there is no disincentive in this case, there is still no large economic incentive for the second earner to enter the labor force because of the additional 100 percent of MW income that the secondary earner gets, only 18 percent is not taxed. Only at a subsidy of 50 percent of the childcare costs the family receives a considerable net income gain (around half of the MW). Therefore, while the disincentive effects are strongest for the poorer deciles of the population, they persist.

Married Couple with 2 Children

While for married couples with 2 children the situation looks similar, it illustrates the underlying system of benefits and their disincentive effects well. Because the calculation of the means-tested aspect of the 500+ benefit for the first child is based on the number of individuals in the family, the withdrawal of the benefit occurs at a much higher point of the income schedule. This allows to separately observe the two aspects of the tax-benefit system under scrutiny. First, we will examine what happens when the principal earner is fixed at MW while the secondary earner is moving from inactivity to an MW job.

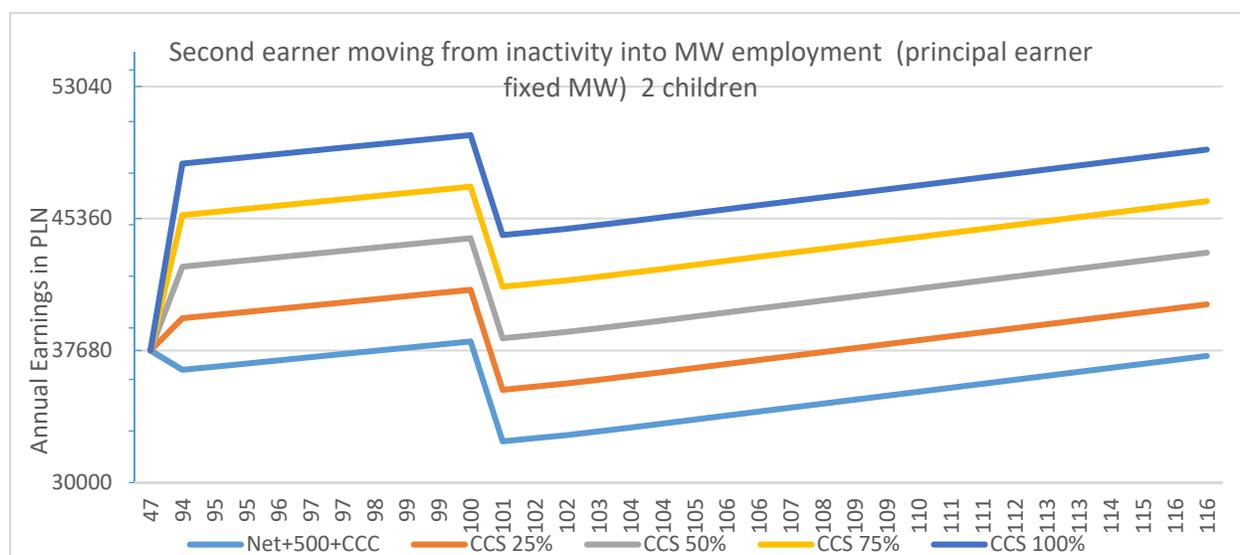
Without subsidies for childcare costs, there is a net income loss (PLN 1,122) for moving into MW employment for the second earner. While providing a 25 percent subsidy for childcare costs leads to a marginal increase in net income, when moving from inactivity to MW employment (PLN

²⁴ This includes all types of incomes that are used to determine eligibility criteria for benefits and taxes in Poland, including farm income.

²⁵ 81 percent of AW = PLN 36,904 annual gross income.

1,878 per year), these gains are lost when the 500+ benefit withdrawal occurs at 100 percent of AW of combined household income. This means that if only one of the partners is earning slightly more than the MW, which is likely when examining the earnings' distribution (see Appendix D), even with a 25 percent childcare subsidy, a disincentive due to income loss (PLN 2,284 per year) compared to inactivity of the second earner persists. As seen earlier, the 50 percent subsidy mostly neutralizes the disincentive for the second earner to enter the labor market once 500+ for the first child is withdrawn.²⁶ While the 75 percent subsidy provides a considerable net income gain when the second earner moves into employment (PLN 7,878 per year), this economic incentive is also weakened once the family jointly earns at 100 percent of AW (PLN 3,716 per year). Therefore, broadly in line with the previous results, a 75 percent childcare subsidy provides moderate incentives, while a 100 percent subsidy to childcare costs can incentivize second earners to move into the labor force.

Figure 12: Labor market incentives for second earners for families with 2 children



It is important to note that when the principal earner's income is fixed at median wage for this family type, the disincentive still exists, but it is less pronounced (Table 3). Again, this leads us to assume that the negative labor market disincentive effects of the combination of the design of the 500+ benefit and the childcare costs for children between the ages of 0 and 3 will affect the poorer sections of the population more strongly.

When examining Table 3, it becomes apparent that not providing a subsidy for childcare costs for children ages 0–3 leads to a strong disincentive effect when the second earner moves from inactivity into MW employment. The exception is married couples with 1 child whose principal earner makes the median wage, while the second earner moves into MW. The negative income effect, caused by a combination of the 500+ withdrawal and childcare costs, is stronger for families in the lowest quintile of the population. In terms of a subsidy to mitigate the labor market disincentives, the 25 percent subsidy for childcare costs is not high enough to counter the effects as seen in Table 1, and the 50 percent subsidy barely neutralizes the negative effects in most cases.

²⁶ Even if the second earner would move to MW employment and the principal earner also does not make more than MW, the annual income gain is relatively low: PLN 4,878.

Starting with the 75 percent subsidy of childcare costs for children ages 0–3, it is observed that an incentive to enter the labor force is restored. Logically, the best incentives for parents and second earners are observable with a full coverage of childcare costs (100 percent subsidy).

Table 3: Summary of childcare subsidy simulations

% of typical child care costs that is subsidized	No subsidy	25%	50%	75%	100%
Net gain from moving from inactivity to MW employment (PLN) <i>including childcare cost</i>					
Single Parent with 1 Child	-5,620	2,620	380	3,380	6,380
<i>as a percentage of MW</i>	-26	-12	2	15	29
Single Parent with 2 Children	-5,135	2,135	865	3,865	6,865
<i>as a percentage of MW</i>	-24	-10	4	18	31
Principal Earner fixed at MW					
Married Couple with 1 Child	-6,581	3,581	-581	2,419	5,419
<i>as a percentage of MW</i>	-30	-16	-3	11	25
Married Couple with 2 Children	-1,122	1,878	4,878	7,878	10,878
<i>as a percentage of MW</i>	-5	9	22	36	50
Principal Earner Fixed at Median					
Married Couple with 1 Child	3,851	6,851	9,851	12,851	15,851
<i>as a percentage of MW</i>	18	31	45	59	73
Married Couple with 2 Children	-3,270	-270	2,730	5,730	8,730
<i>as a percentage of MW</i>	-15	-1	12	26	40
Moving from inactivity to point of 500+ withdrawal (PLN)					
Married Couple with 2 Children at 100 percent of AW	-5,284	2,284	7,16	3,716	6,716
<i>as a percentage of MW</i>	-24	-10	3	17	31

Note: <0 = disincentive; 0–10 = neutral/no gains; 10–25 = moderate gains; +25 = considerable income gains.

VII. Conclusion

This paper modeled the labor supply incentives from noncontributory benefits with sharp eligibility cutoffs, with a particular focus on families with children ages 0–3, taking the case of the 500+ program in Poland. While on the one hand the program has shown to be very effective at reducing extreme child poverty in Poland, unintended consequences on the labor market participation incentives might occur. The analysis revealed that, especially in families in the lowest income quintiles, the 500+ program benefit creates strong disincentives to enter the labor force. This is particularly the case for single mothers and potential second earners, usually mothers, in a couple where one parent is already working at a low wage. When including updated prices for private institutionalized care for young children in Poland, it becomes clear that working for parents, especially mothers, in 595,146 families results in a net loss of salaries that are below the AW.

The consequences of the benefit are at odds with the partial aim of the 500+ benefit to help exactly this demographic with the provision of the means-tested aspect of the benefit for the first child and

may also be counterproductive to the central aim of incentivizing fertility. Further, this could create an incentive for unregistered employment and envelope payments.

We then explore which level of childcare subsidy could cancel out, or reverse, the disincentives created by the current tax and transfer system. This is important given that local governments across Poland are experimenting with this type of instrument. Even a 50 percent subsidy of average childcare costs barely neutralizes the observed work disincentives. A 75 percent subsidy of average private childcare costs for children ages 0–3 would be necessary to restore a significant incentive to enter the labor force.

The results of this paper further support that providing quality, affordable childcare also for children ages 0–3 is indispensable in the Polish context. A subsidy that is higher than 75 percent of the current market costs for childcare in private institutions or public provision of more spots in nurseries and daycare centers could help boost attendance and possibly also supply by the private sector. While the government has recently increased the budget for the Maluch program, which provides financial support for the creation of alternative forms of childcare for children up to the age of 3, more needs to be done to offset the negative labor market incentive effects created by the 500+ program. Finally, reforms to the means-tested element of the benefit could reduce these disincentives. Solutions include a taper that is similar to the one recently introduced to the family benefits in Poland or a transformation of the universal benefit for children in Poland into a childcare benefit altogether.

VIII. References

- Anderson, P. M., and P. B. Levine. 1999. "Child Care and Mothers' Employment Decisions." No. w7058. National Bureau of Economic Research.
- Bauernschuster, S., T. Hener, and H. Rainer. 2013. "Does Expanding Public Child Care Encourage Fertility? County-Level Evidence from Germany." Ifo Working Paper 158.
- Bick, A. 2015. "The Quantitative Role of Child Care for Female Labor Force Participation and Fertility." *Journal of the European Economic Association*.
- Blau, D., and J. Currie. 2006. "Pre-School, Day Care, and After-School Care: Who's Minding the Kids?" In *Handbook of the Economics of Education*, Vol 2, 1163–1278.
- Blundell, R., & Walker, I. (2003). Working Families' Tax Credit A Review of the Evidence, Issues and Prospects for Further Research (No. 11). Institut d'économie publique (IDEP).
- Blundell, R., Duncan, A., & Meghir, C. (1998). . *Econometrica*, 827-861.
- Brainerd, E. (2000). Women in transition: Changes in gender wage differentials in Eastern Europe and the former Soviet Union. *ILR Review*, 54(1), 138-162.
- Bratti, M. 2015. "Fertility Postponement and Labor Market Outcomes." *IZA World of Labor* 2015: 117. doi:10.15185/izawol.117.
- Bratti, M., and L. Cavalli. 2014. "Delayed First Birth and New Mothers' Labor Market Outcomes: Evidence from Biological Fertility Shocks." *European Journal of Population* 30 (1): 35–63.
- Brilli, Y., Del Boca, D., & Pronzato, C. D. (2016). Does child care availability play a role in maternal employment and children's development? Evidence from Italy. *Review of Economics of the Household*, 14(1), 27-51
- Bussolo, Maurizio, Johannes Koettl, and Emily Sinnott. 2015. *Golden Aging: Prospects for Healthy, Active, and Prosperous Aging in Europe and Central Asia*. Washington, DC: World Bank. <https://openknowledge.worldbank.org/handle/10986/22018>. License: CC BY 3.0 IGO.
- Carneiro, P., Løken, K. V., & Salvanes, K. G. (2015). A flying start? Maternity leave benefits and long-run outcomes of children. *Journal of Political Economy*, 123(2), 365-412.
- Cascio, E. U. 2009. "Maternal Labor Supply and the Introduction of Kindergartens into American Public Schools." *Journal of Human Resources* 44 (1): 140–170.
- CBOS. 2012. Zmiany w zakresie wiary i religijności Polaków po śmierci Jana Pawła II. Report no BS/49/2012. Warsaw: Public Opinion Research Center.

- CBOS. 2013. Postawy prokreacyjne Polek. Report no BS/ 29/2013. Warsaw: Public Opinion Research Center.
- Cheng, B. S. 1999. "Cointegration and Causality between Fertility and Female Labor Participation in Taiwan: A Multivariate Approach." *Atlantic Economic Journal* 27 (4): 422–434.
- Fleckenstein, T., and S. C. Lee. 2014. "The Politics of Postindustrial Social Policy: Family Policy Reforms in Britain, Germany, South Korea, and Sweden." *Comparative Political Studies* 47 (4): 601–630.
- Fodor, E. (2003). Working difference: Women's working lives in Hungary and Austria, 1945–1995. Duke University Press.
- Fodor, E., Glass, C., Kawachi, J., & Popescu, L. (2002). Family policies and gender in Hungary, Poland, and Romania. *Communist and post-communist studies*, 35(4), 475-490.
- Gauthier, A. H. (2007). The impact of family policies on fertility in industrialized countries: a review of the literature. *Population research and policy review*, 26(3), 323-346.
- Gauthier, A. H. (2016). Governmental Support for families and obstacles to fertility in East Asia and other industrialized regions. In *Low Fertility, Institutions, and their Policies* (pp. 283-303). Springer International Publishing.
- Goraus, K; Inchauste, G. 2016. The Distributional Impact of Taxes and Transfers in Poland. *Policy Research Working Paper*; No. 7787. World Bank, Washington, DC. World Bank. <https://openknowledge.worldbank.org/handle/10986/24868>
- Havnes, T., & Mogstad, M. (2011). No child left behind: Subsidized child care and children's long-run outcomes. *American Economic Journal: Economic Policy*, 3(2), 97-129
- Kell, M., & Wright, J. (1990). Benefits and the labour supply of women married to unemployed men. *The Economic Journal*, 100(400), 119-126.
- Kowalewska, J. 2015. "Szczecin Will Give 500 zł for a Nanny or a Private Nursery. The Resolution Passed." *szczecin.wyborcza.pl*. Retrieved June 27, 2017. <http://szczecin.wyborcza.pl/szczecin/1,34959,18736631,szczecin-bedzie-dawac-500-zl-na-nianie-lub-prywatny-zlobek.html?disableRedirects=true>.
- Lammi-Taskula, J., B. Brandth, A. Z. Duvander, and I. V. Gíslason. 2011. *Parental Leave, Childcare and Gender Equality in the Nordic Countries*. Copenhagen: Nordic Council of Ministers.
- Lefebvre, P., and P. Merrigan. 2008. "Child-Care Policy and the Labor Supply of Mothers with Young Children: A Natural Experiment from Canada." *Journal of Labor Economics* 26 (3): 519–548.

- Levin, V., Besedina, E., & Aritomi, T. (2016). Going beyond the first child: analysis of Russian mothers' desired and actual fertility Patterns. Mimeo.
- Matysiak, A., & Węziak-Białowolska, D. (2016). Country-specific conditions for work and family reconciliation: an attempt at quantification. *European Journal of Population*, 32(4), 475-510.
- Morgan, K. J. (2012). Promoting social investment through work-family policies: which nations do it and why?. *Towards a social investment welfare state*, 153-80.
- Morgan, K. J. 2012. "Promoting Social Investment through Work-Family Policies: Which Nations Do It and Why?" In *Towards a Social Investment Welfare State*, 153–80.
- Myck, M. (2015). "Reforming support for families with children in Poland – old issues, recent reforms and further policy options" CenEA Centre for Economic Analysis mimeo.
- Myck, M. 2016. Estimating Labour Supply Response to the Introduction of the Family 500 Programme. CenEA Working Paper Series WP01/16. Centre for Economic Analysis. http://www.cenea.org.pl/images/stories/pdf/working_papers/cenea_wp_0116.pdf
- OECD (2015), Labour force participation rate (indicator). doi: 10.1787/8a801325-en (Accessed on 22 May 2017)
- Pignatti, N. 2016. "Encouraging Women's Labor Force Participation in Transition Countries." *IZA World of Labor* 2016: 264. doi:10.15185/izawol.264.
- Teo, Y. 2010. "Shaping the Singapore Family, Producing the State and Society." *Economy and Society* 39 (3): 337–359.
- Thévenon, O. (2011). Family policies in OECD countries: A comparative analysis. *Population and development review*, 37(1), 57-87.
- Vuri, D. 2016. "Do Childcare Policies Increase Maternal Employment?" *IZA World of Labor* 2016: 241 doi:10.15185/izawol.241.
- Wójcik, K. 2015. "In Nysa and Szczecin Parents Can Receive 500 zł for the Second Child." *Rzeczpospolita*. Retrieved June 27, 2017. <http://www.rp.pl/Praca-emerytury-renty/311229960-W-Nysie-i-Szczecinie-rodzice-moga-otrzymac-500-zl-na-drugie-dziecko.html>.
- World Bank. "Fertility Rate, Total (Births per Woman)." <http://data.worldbank.org/indicator/SP.DYN.TFRT.IN?>

IX. Appendix

Appendix A: Definitions, Explanations, and Threshold of Relevant Policy Changes in Poland

Changes to Family Benefit

The Act on Family Benefits of November 28, 2003 (Polish Journal of Laws of 2003, item 114) builds the legal foundation of the Polish family benefit. It was amended in 2014 and 2015. The latest reforms changed the income thresholds of the benefit and slightly increased the amounts of the benefit paid out. Since the last OECD TBM for Poland in 2014, the following changes were not included in the model: (a) changes in the amount of benefits awarded per child, (b) income threshold adjustment, and (c) the new ‘penny-for-penny rule’ that introduces a taper. The following sections will discuss these changes in detail.

Changes in the Benefit Amount Awarded

The new amounts that were used in the model are PLN 89 for children up to the age of 5, PLN 118 for children up to the age of 18, and PLN 129 for children up to the age of 24 (if still studying). Compared to the regulations introduced in November 2012, the family benefit increased by PLN 12 per child in the first two age groups and by PLN 14 in the oldest age group.

Income Threshold Adjustment

While earlier the withdrawal rate for the family benefit was fixed at a net income per family member that is above PLN 574 per month, the newest reforms included a considerable increase in the withdrawal rate by raising it to PLN 674 per family member per month. This had led to an increase in the families that are eligible for the benefit and may change the incentive structure, depending on the policy mix.

Zloti-for-Zloti Rule

While the two previous reforms constitute a first-order change that is incremental in nature, the ‘zloti-for-zloti’ reform signifies a second-order change according to Peter Hall’s classification of policy change (Hall 1993). While earlier the benefit was withdrawn fully when exceeding the threshold, the penny-for-penny rule introduces a taper.

Adjusted Income Thresholds and Amounts in Benefit Awarded

All changes that were made to eligibility thresholds of benefits by Polish lawmakers were included and updated in the model. This contains the aforementioned family benefits, housing benefit, income tax, social security contributions, and other small adjustments to ensure the best possible translation of the laws into the model.

Newly Introduced 500+ Benefit

The Family 500+ program consists of a monthly payment of PLN 500 (€115) for every second and subsequent child until the age of 18. The benefit is also extended to the first child in families with income per capita below PLN 800 or below PLN 1,200 (€274) if there is a disabled child in the family. The program does not include an income threshold for high-income earners, and payments

are to be administered by municipal social assistance units based on the funding from the state budget (Goraus and Inchauste 2016).

Family Income Included in 500+ Means Test for First Child

The family income considered for the 500+ means test for the first child includes the following:

- **Taxable income under the Income Tax Act from individuals** reduced by deductible expenses, taxes, social security contributions, and health
- **Income from leases, subleases,** and so on reduced by a flat-rate income tax and national insurance contributions and health (declared by the taxpayer in the previous fiscal year)
- **Income taxed under tonnage tax** with respect to part of the income earned by shipping companies using commercial vessels
- **Income from farms taxed - agricultural tax**
- **Income earned in other countries** less paid abroad Polish income taxes and social security contributions and compulsory health insurance, income family benefits
- **Income non-taxable or tax exempt** under the provisions of the income tax from individuals (for example, pensions, cash benefits, global energy, additives veterans, sickness benefits, child support, and doctoral scholarships)

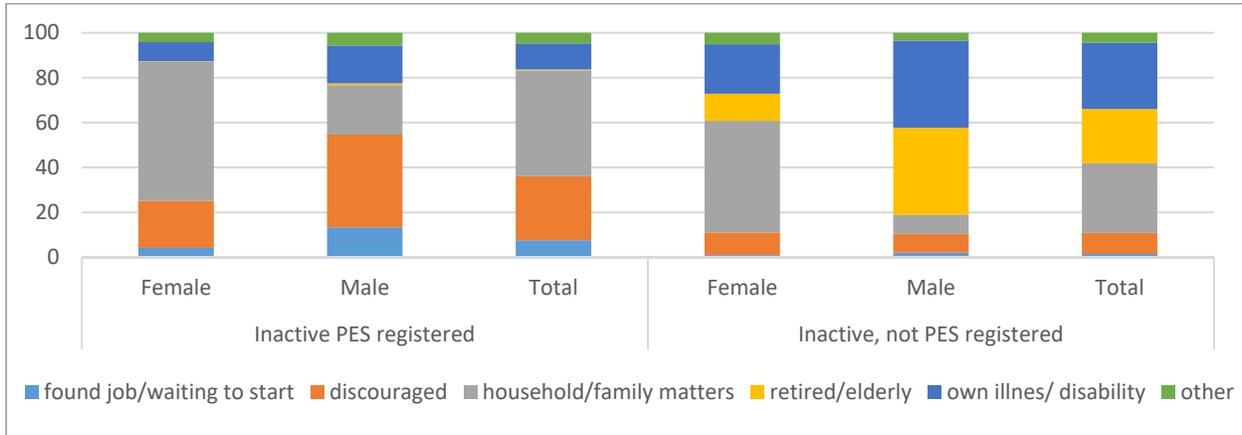
Appendix B: Poland: Households and Families with Children (from Goraus and Inchauste 2016)

Table B1: Poland: Households and families with children

	Households			Families		
	Number of households	Percentage of households	Estimated monthly payment (PLN)	Number of families	Percentage of families	Estimated monthly payment (PLN)
0 kids	9,429,211	68.92	—	10,604,496	71.11	—
1 kid	2,350,037	17.18	412,707,000	2,436,284	16.34	441,130,000
2 kids	1,474,660	10.78	1,069,167,000	1,459,893	9.79	1,065,536,125
3 kids	334,194	2.44	444,781,875	321,418	2.16	428,786,500
4 kids	68,108	0.50	131,400,875	65,993	0.44	127,566,750
5 kids	20,281	0.15	50,002,250	18,847	0.13	46,416,625
6 kids	3,501	0.03	10,503,750	3,042	0.02	9,126,750
7 kids	1,217	0.01	4,198,250	1,217	0.01	4,198,250
8 kids	221	0.00	882,000	221	0.00	882,000
9 kids	268	0.00	1,206,000	268	0.00	1,206,000
10 kids	103	0.00	515,000	103	0.00	515,000
11 kids	106	0.00	580,250	106	0.00	580,250
Total	13,681,906	100.00	2,125,944,250	14,911,886	100.00	2,125,944,250

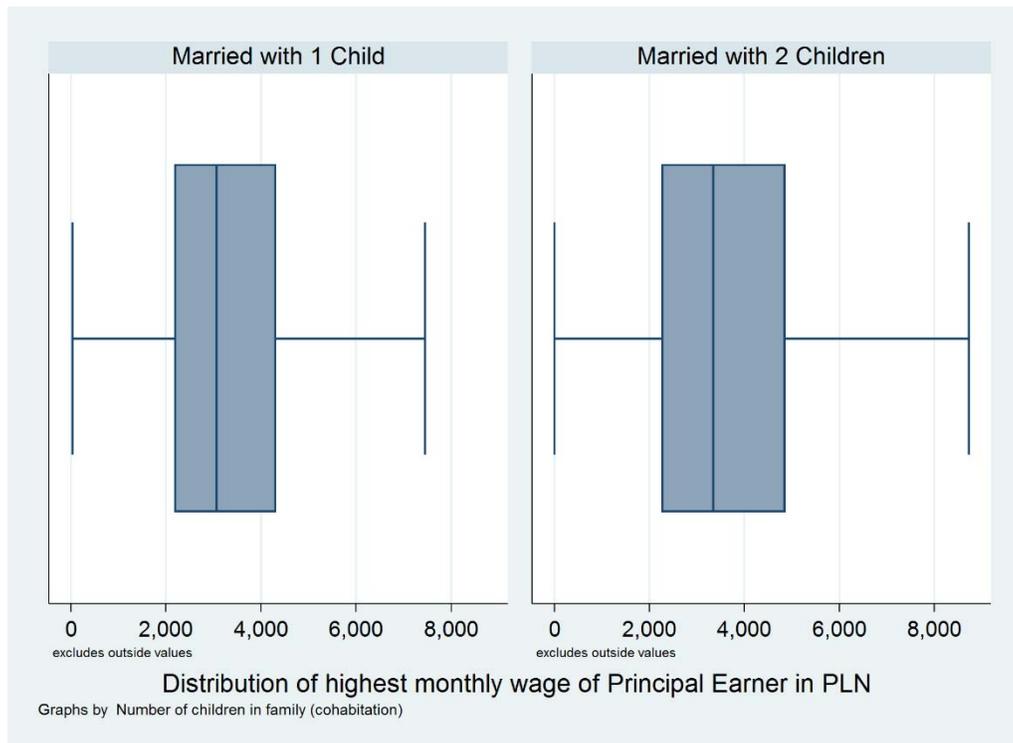
Source: Own estimates using HBS 2014.

Appendix C: Reasons for Inactivity, by Public Employment Services (PES) Registration and Gender for Workable Population



Source: Activation and Public Employment Services in Poland - Enhancing Labor Market Policies for the Out-of-Work Population: LFS Poland, 2013.

Appendix D: Distribution of Highest Monthly Wage (Principal Earner) by Family Type using HBS 2014



Appendix E: Additional Bar Charts for Families Where Earner Moves from Inactivity to MW Earnings

Figure E1: Change in income composition from moving from inactivity to MW for single parent with 1 child

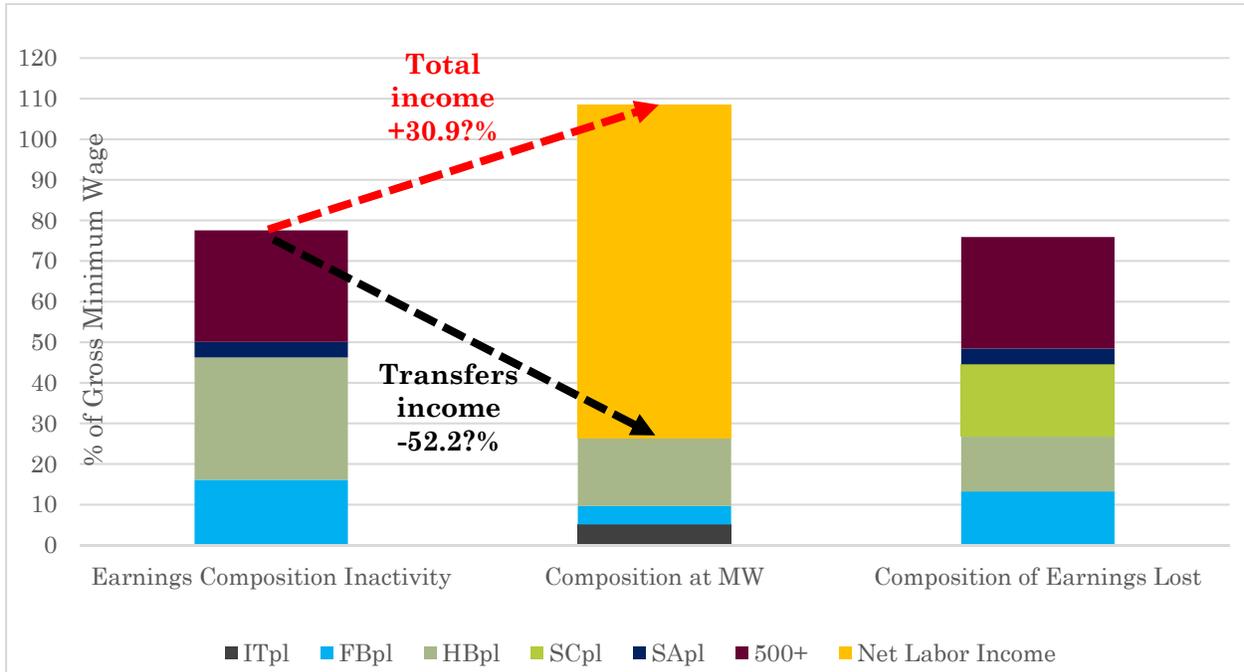
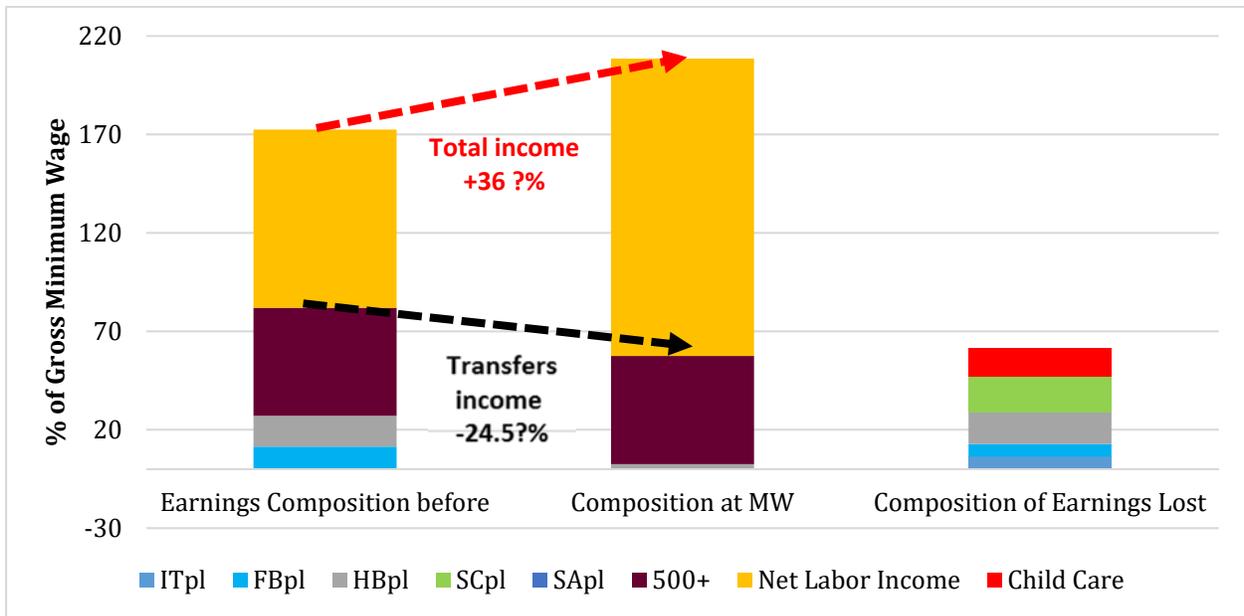


Figure E2: Change in income accounting for childcare costs for married couple with 2 children



Source: Authors' calculations.

Note: Earnings' composition before the single parent is working (left) and after taking a job at MW (center). Net labor income represents total labor income minus childcare costs, income tax, and social contributions.

Appendix F: Additional Figures with Simulations with Varying Levels of Childcare Subsidies

Figure F1: Single parent with 1 child moving into employment

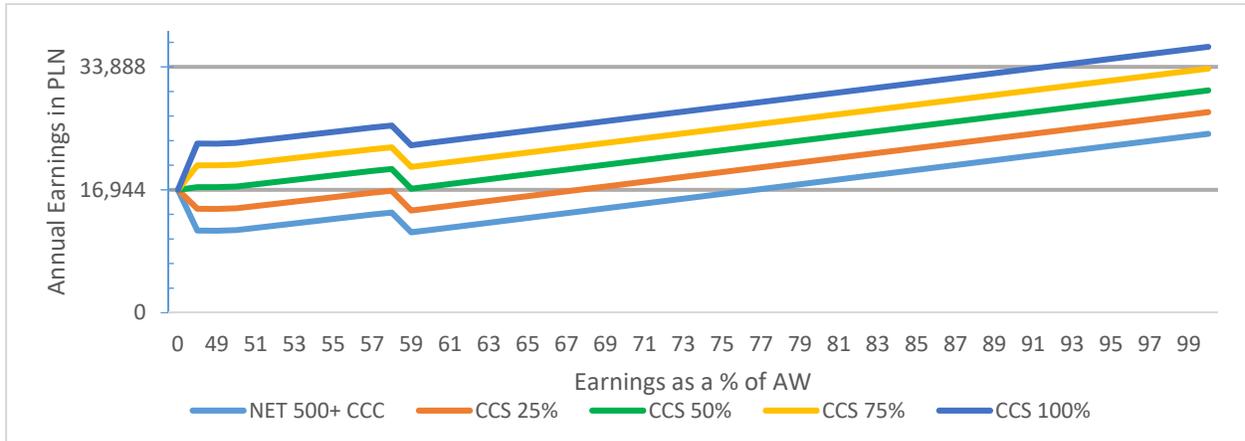


Figure F2: Single parent with 2 children moving into employment

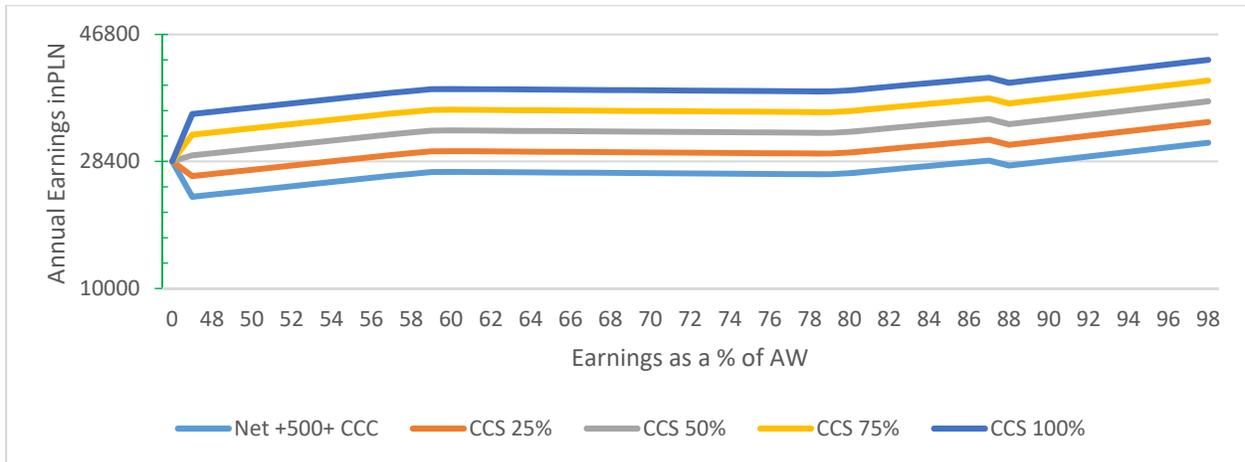


Figure F3: Single earner moving from inactivity to MW employment (principal earner fixed at 81 percent of AW-median)

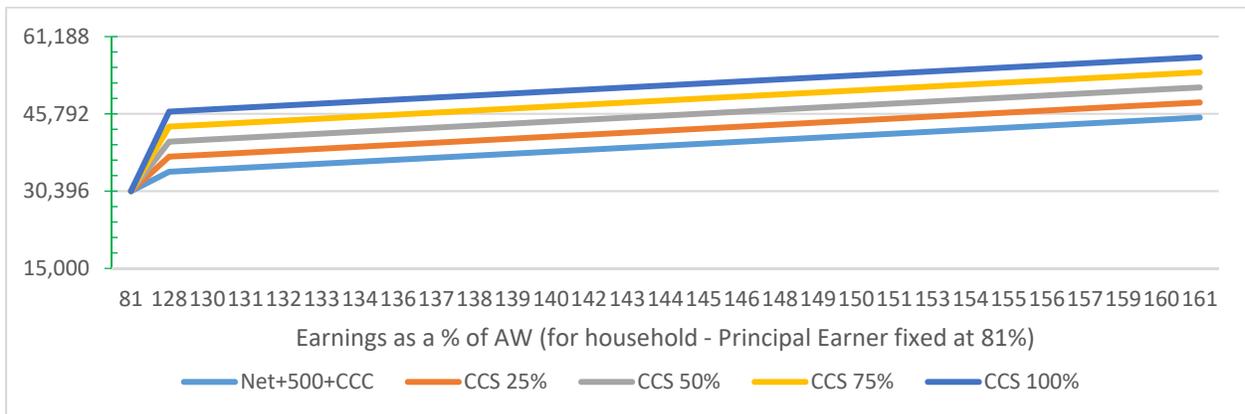


Figure F4: Second earner moving from inactivity to MW employment (principal earner fixed at 96 percent of AW-mean)

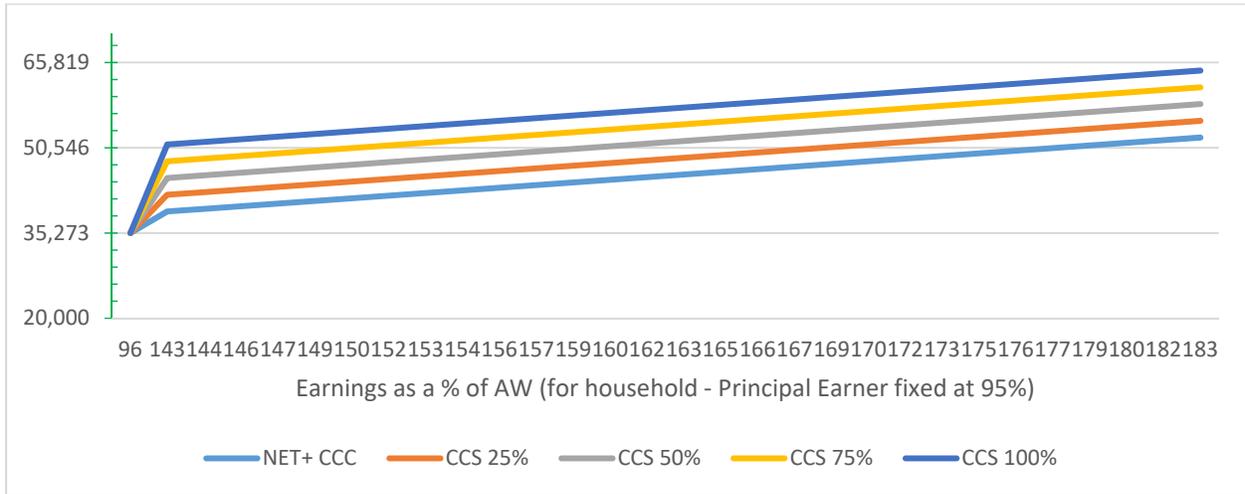


Figure F5: Second earner moving from inactivity to MW employment (principal earner fixed at 88 percent of AW-median) - 2 children

