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Keywords: social assistance, within-household sharing, work incentives, transition
JEL Classification: J21, I38, D13.

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1 Introduction

There is always a difficult trade-off between the objectives of increasing employment through work incentives and reducing the number of households who fall below the poverty line. Finding the right balance between the objectives of efficiency and equity is no easy task for any government. In numerous developed countries, especially in Western Europe, the welfare system has been often criticised for focusing too much on the latter goal at the cost of making work pay little relative to being without a job, in particular for the low skilled. In some other countries, including many so called transition economies, as a result of significant fiscal pressures the safety net tends to provide little means-tested support for poorest families. In this paper we focus on the social assistance provision in Poland, a representative of the second group of countries, and analyse how extending support to poorest households would affect their labour market incentives. We set the analysis in a comparative context with Germany, a country often chosen as an example of the first group with a relatively generous welfare system.

The first striking difference between Germany and Poland from the point of view of policymaking is a seeming paradox observed in Poland which could cast doubts on how strong the efficiency-equity trade-off really is there. While in Germany the low employment rates and high levels of unemployment, at least to some extent, relate to the generosity of the welfare state, in Poland the lack of generous state support out of work at first sight finds little reflection in high levels of employment. On the contrary, Poland has one of the lowest employment rates in Europe. Thus, in Poland low levels of government support out of work seem to go along with low labour market participation. Work incentives provided by the fiscal system could thus be judged to have relatively low effects on labour supply. This paradox will be of central importance to our analysis and the interpretation of our findings.

Our analysis highlights the consequences of the non-generous transfers system on poverty in the Polish society. Although pensions and informal transfers, such as within-household sharing of resources ameliorate the financial circumstances of many individuals, they seem to be insufficient in successful alleviation of poverty. According to the World Bank Country Brief 2003 7mln or more of Poland's population (about 18 percent) falls below the poverty line, and poverty is more widespread in Poland

than in other advanced transition economies of Central Europe such as Hungary and the Czech Republic. In the BBGD 2005 data, which we use in this paper, 18.6% of individuals live in households with equivalised income below 60% of the median and over 21% of all children live in households below this poverty line.[1]

Our paper focuses on one of the principal tools that the government in Poland has at its disposal with respect to reducing poverty, namely the Temporary Social Assistance. In many developed market economies, especially in Europe, social assistance programmes are characterised by relatively generous out-of-work benefits which are withdrawn at high marginal rates (close to and sometimes exceeding 100%) at low earnings levels. They therefore provide only moderate or no financial labour supply incentives in particular for low wage individuals. While a similar scheme is officially in operation in Poland, the majority of social assistance payments is at the discretion of local governments, which quite strictly limit the payments to the proportion guaranteed by the central government. This implies very low levels of social assistance payments and withdrawal rates of much less than 100%. On top of this restriction there is also a strict informal wealth-test which significantly limits the number of eligible households. It is this combination of strict eligibility conditions and low amounts of benefits which on the one hand results in strong labour market incentives among those whom we consider to be "labour market flexible", but on the other implies low incomes of households at the bottom of the income distribution.

In the light of high relative poverty rates in Poland the direction which policy concerning poverty alleviation should take in the next few years is an important issue. The finding that despite such low levels of out-of-work support employment levels are still so low in Poland has potentially very significant implications for policy design. If the current tax and benefit system functions alongside such low employment rates, then pursuing the goal of poverty reduction would risk significant further reduction in the level of employment. Extending the Polish welfare design in the direction of the German (or more broadly Wester European) system by increasing means-tested out-of-work benefits could reduce poverty but only at the cost of worsening work incentives. We provide analysis of three hypothetical scenarios of extending the Temporary Social Assistance in Poland.

[1]These calculations use the Central Statistical Office definition of disposable income. Median monthly equivalised income in 2005 in Poland was 997.4 PLN).

In this context, the contribution of our paper is two-fold. First, we provide evidence about the incentive structure of the tax and benefit system in a post-communist transition country (Poland), in a comparative context with a Western European system well known for the generosity of its welfare design (Germany). While the German system and its implications for the labour market have been analysed in a series of studies (see e.g. Bonin, Kempe, and Schneider (2003) or Haan and Myck (2007)), evidence about work incentives of the Polish tax and benefit system has so far been essentially non-existent. We use this comparative analysis to discuss in detail the above mentioned Polish paradox of high work incentives and low employment rates. As we will show, this paradox is largely due to the informal system of support which generates very different work incentives than the transfer system of the government. On top of that incomes from the shadow economy and more recently incomes from work abroad may further influence incentives on the labour market. Unfortunately due to data limitations we cannot reliably account for these two sources of incomes. It may be that whatever is left of the paradox could still be explained with more detailed information on income sources. For these reasons we omit an econometric estimation of labour supply behaviour, which has been conducted for most of the Western European countries using the method suggested by van Soest (1995). As we will argue, given the high proportion of multi-family households, the assumptions made concerning the sharing of resources between families have a major effect on labour market incentives faced by individuals. This makes a reliable depiction of the budget line impossible without making strong assumptions concerning the sharing process. Thus, especially for single individuals the estimated parameters of the labour supply behaviour using only family-level incentives - the standard approach in most of labour-supply literature - are at best not very informative. As our paper makes clear further research on labour supply behaviour accounting for both governmental and non-governmental transfers will be necessary to derive reliable results concerning labour market behaviour of Polish households.

In the second part, we analyse the potential implications of moving towards Western European social assistance schemes, some form of which will be necessary if the government wants to reduce the extent of poverty in Poland. In this analysis we present the effects of the reforms under several assumptions concerning within-household sharing of resources. We show that especially for single adults (both with and without

children) the assumed degree of resource sharing within households is an important determinant of the estimated effect of reforms on financial incentives to work.

We find that a reform of the social assistance system would significantly reduce poverty yet only at relatively high costs in terms of work incentives. Replacement ratios in a regime with higher out-of work transfers imply a markedly lower relative financial reward of work. This is the case especially for first earners in couples though effects on singles are also relatively strong. The magnitude of the negative work incentive effects changes depending on the assumed degree of resource sharing within households. While higher degree of sharing reduces the effect on single people and female first earners in couples, it increases it for male first earners in couples and for second earners.

We argue that the potential negative labour market consequences of extending support for poorest families could be combined with various forms of increasing the financial attractiveness of employment through subsidies for those taking-up employment or means-tested in-work credits, similar to programmes in the UK or the US.

2 Means-tested support in Poland

In 2005 there were three major elements of the Polish means-tested benefits system: the Family Benefits (FBs), the Housing Benefit (HB) and Social Assistance (SA) and they have been described in detail in Bargain, Morawski, Myck, and Socha (2007).

The first of those is by far the most common with about 22.6% of all households receiving some form of the FBs. The FBs are specific benefits for families with children and include the basic Family Allowance, the Nursing Allowance and the Parental Leave Allowance with additional supplements including the Supplement for Lone Parents (SLP) paid to those lone parents who do not receive any support from the absent parent, and the Supplement for Large Families which provides additional resources to families with three or more children. The FBs are conditional on previous year's income of the family and are paid if the average monthly income does not exceed 504 PLN per capita.[2] The amounts of the basic Family Allowance in 2005 were 44 PLN for a child aged less than 6 years, 56 PLN for a child aged 6-18 and 65 for a child

[2]This is a cut-off threshold, i.e. there is no phasing out of the benefit but it is either paid in the full amount or not at all.

aged 19-25. The average amount of the FA per child was 45.8 PLN, and it was paid to about 5.2mln children. Out of the supplements the SLP was by far the most commonly received (0.7mln families) and the most generous with the average monthly value of about 176 PLN.

The Housing Benefit is received by approximately 0.76m households in 2005, i.e. about 5.7% of all households and as its name suggests provides assistance related to housing expenses. The eligibility criteria include income and flat size which cannot exceed specified limits conditional on the number of people living in the household.[3] The eligible amounts of the HB relate to the cost of rent and other household expenses like electricity water and heating, though in most cases authorities use imputed values for both rent and expenses. In 2005 the average monthly amount of the HB was 135.10 PLN per household.

Social Assistance benefits play the role of the last resort safety net, and they are the least common of the means-tested benefits in Poland. Permanent Social Assistance (PSA) benefits are paid to those who are unable to work due to age or disability and who are not entitled to a social insurance disability or retirement pension. The value of the benefit was computed as a difference between a threshold (461 PLN and 418 PLN per month for single and multi-person families respectively) and the family per capita income. The average monthly value of the PSA was 311.60 PLN per family and the benefits were paid to about 0.14m families. The second element of the SA system, i.e. the Temporary Social Assistance (TSA) scheme is constructed as a top-up benefit, and the TSA is meant to be the last resort safety net for households in Poland. It is conditional on the family having "insufficient resources" and meeting certain social criteria which are however sufficiently broad to include most families in difficult financial circumstances. However, the criteria to be met with respect to "insufficient resources" are very strict and limit the number of recipients of the TSA to only about 0.3m families. Below we present the details of the operation of the Temporary Social Assistance in Poland and discuss the way in which the specific eligibility rules have been modelled in SIMPL, the Polish micro-simulation model.

[3]The income criterion in 2005 was 125% or 175% of the official Minimum Pension, which was 562.58 PLN, per capita for single and multi-person households respectively, and the amounts paid are withdrawn as income rises at rates which depend on household size and per capita income.

2.1 Temporary Social Assistance

The TSA is supposed to assist families in "temporary" difficult financial circumstances. The temporariness of this element, relates however more to the possibility of improvement of family circumstances rather than to some specific rules regarding the period of payment. Eligibility criteria for the TSA relating to "insufficient resources" cover two dimensions, namely wealth and income, and the approach could be considered very similar to the criteria applied in most Western European countries, with two very important exceptions. First of those relates to the type of wealth test applied, and second to the method of computing and payment of eligible amounts.

The wealth related conditions for the Temporary Social Assistance are a crucial feature of the Polish system. The wealth test, on the basis of which a family is judged eligible or not eligible for the TSA takes a form of an informal assessment of family's resources. This is conducted by a representative of the local Social Assistance Centre who gives an overall assessment of the resources of a given family. Subject to this judgment the family is granted the Temporary SA or the application is rejected.

The second peculiarity of the Polish TSA system concerns the computation of amounts of the benefits paid to families. The central SA legislation specifies the minimum income levels below which families' disposable incomes ought not to fall. This amount depends on the demographic structure of the household. In 2005 the monthly value used for the calculation of the household level minimum was 316 PLN per person, regardless of age, with the exception of single adult households in which case the value was 461 PLN for the adult (and 316 PLN for any children). The legislation implies that the actual amount of the TSA paid to families should cover the difference between the actual income and the specified minimum. This is a relatively common feature of Social Assistance schemes in many Western European countries, resulting in most cases in 100% withdrawal rates. The peculiarity of the Polish system is however that the central government guarantees only a proportion of the difference between the legislated minimum and the actual family income. This proportion is 20% for multi-person households or 30% for single person households. The payment of the remaining 80% or 70% is left at the discretion of local governments, which often prefer to spend their resources differently.[4]

[4]According to unpublished government statistics only about 16% of the total spending on the Temporary SA comes form the local governments.

The partial coverage of the minimum income, has two important consequences for the budget constraints. Naturally it significantly reduces the amounts of the benefits paid to families in the out-of-work scenarios. However, because the minimum income with reference to which the amounts get computed exceeds the amounts paid, the withdrawal rate of the TSA is significantly below 100% with respect to changes in net income prior to the SA assessment.[5]

Figures 1A and 1B present budget constraints drawn for two stylised families, a lone parent with one child and a single-earner couple with one child. They have been drafted assuming that the families receive only the part of the TSA which is guaranteed by the central government.[6] As we can see increasing net earnings do not lead to one-for-one withdrawals of benefits, and although the TSA is reduced it continues to be paid up to the level of gross earnings of about 355 PLN/month in the case of the lone parent and 910 PLN/month in the case of the one earner couple. Panels C and D of Figure 1 demonstrate the difference between the legislated and the actually paid amounts of the TSA. The budget lines are drafted in scenarios with no Temporary SA, with only the guaranteed level, and with full legislated amounts of the benefit paid to the families. As we can see the legislated values of the minimum income are relatively high compared to incomes in work. This is especially the case for couples who receive relatively low payments of Family Benefits.

Figure 1: about here.

The budget constraints presented in Figure 1 show the level of support through the TSA which is paid out to families conditional on their income. However, as we mentioned earlier before the income test is applied the families need to be judged eligible with respect to their wealth. As will become clear in the analysis below the wealth restrictions in Poland are extremely restrictive.

An obvious difficulty in terms of the modelling of the Temporary Social Assistance in Poland is the informal nature of the wealth test. Unlike in many developed Western

[5]If the families do not receive any Housing Benefit then these withdrawal TSA rates correspond to the guaranteed rates of TSA payments.

[6]Further assumptions made in drawing the figures were that the earners in the families receive 50th percentile female and male wages, that the lone parent lives in a $30m^2$ flat, the couple in a $40m^2$ flat, and that the house-related bills of the families are at respective 25th percentiles for the given family type.

European countries the test does not limit availability of Social Assistance on the basis of the level of savings or other assets, but relies on the assessment of a representative of the Social Assistance Centre. An informal test of this kind is of course impossible to account for precisely in a micro-simulation model. What we do to proxy this test is to generate an expected probability of receiving the Temporary SA conditional on wealth-related characteristics of the household (like flat area and ownership, household equipment, region, etc.), and then calibrate a threshold level of this expected probability below which households do not qualify for the Temporary SA. The calibration is conducted in such a way so that the number of recipients of the Temporary SA in the micro-simulation model is the same as the number of recipients in the official administrative statistics.[7] The calibrated threshold of the expected wealth test measure for the 2005 data is 0.125. This implies that only about 5.2% of all households in our data will be considered for receipt of the Temporary SA in the base 2005 system. Once the wealth test and the income means-test are combined only about 2% of all households receive the Temporary SA. Grossed-up to the population total this is only about 300,000 households (of the total of about 13.3mln households in Poland). We need to bear these statistics in mind in the analysis and interpretation of replacement ratios below, and in the examination of potential reforms of Social Assistance considered in this paper in Section 5.

The discussion in this section has presented the Polish social assistance design as a highly restrictive system, which pays low amounts of support to a very limited group of the population. Below we present the Polish tax and benefit system in a comparative context with the system in Germany and demonstrate the consequences of both systems for incentives to work. We do this by means of a comparison of replacement ratios (RRs), i.e. ratios of income out of work to income in work.[8] In the first approach we follow the standard in the literature and compute RRs on the level of the family.[9] The advantage of using RRs is that they allow to combine the tax and benefit system with information on the wage distributions and individual or household characteristics. Moreover they reflect work incentives in the relative way

[7]More details of the procedure can be found in Myck (2007).

[8]This definition of replacement ratios is different to the one often used by the OECD, namely the ratio of average unemployment benefit relative to the average gross wage. Our measure is similar to the one used for example by the Bank of England (Nickell (2001)).

[9]Where a family is defined as an adult individual or a couple (married or cohabiting) with or without dependent children.

and so make the comparison between such countries as Poland or Germany, with still high differences in the levels of wages and disposable incomes, much more fruitful than comparisons of absolute values.[10]

3 Taxes, benefits and labour market incentives in Germany and Poland

3.1 Data

Data for the empirical analysis in this paper come from country specific household surveys, the German Socio-Economic Panel (SOEP) for Germany and the Household Budgets Survey (Badanie Budzetów Gospodarstw Domowych, BBGD) for Poland. In both countries we use data for the year 2005. The SOEP is a representative sample of private households living in Germany and includes detailed information about the socio-economic situation of over 11,000 households (representing about 38.8mln households living in Germany) on a yearly basis. The BBGD surveys annually about 35,000 households in Poland (these represent about 13.3mln Polish households). Both surveys contain detailed information on household incomes, employment status and household structure which is necessary for the analysis of work incentives.[11] To limit the degree of influence of the most obvious systemic differences, primarily in the education and pension systems, we restrict the core sample of interest to individuals aged 25-59. Basic descriptive statistics are provided in Table 1. We distinguish between two samples, the first for which we compute employment statistics in Section 3.4, and the second on which we conduct the analysis of replacement ratios and in the Polish case the simulation of hypothetical social assistance reforms on financial incentives to work. The difference between the two samples is that for the computation of replacement ratios we further limit the sample to families in which at least one person is

[10]For example the median full time gross monthly earnings in Germany for men and women in 2005 were respectively 2900 euro and 2488 euro. In Poland these values were 452.1 and 391.5 euro if unadjusted for PPP (i.e. taking the average average exchange rate for 2005 published by the National Bank of Poland of e/PLN = 4.0254). When adjusted for PPP (i.e. taking the exchange rate to be: e/PLN = 1.921) the wages were respectively 947.4 and 820.4 euro. Thus, even if we adjust for differences in price levels in the two countries, wages in Poland were about three times lower than in Germany (mean wages were computed for men and women aged 25-59 using BBGD-2005 and GSOEP-2005.)

[11]A description of the GSOEP can be downloaded from www.diw.de/soep, while a description of the BBGD can be found in Bargain et al. (2007).

"labour supply flexible", i.e. is not a pensioner, a day-time student or self-employed, and fulfills the age criterion. Couple households in which one spouse is not "labour supply flexible" are part of the sample but only the behaviour of the flexible spouse is analysed.

Tables 1 and 2: about here.

Regardless of the sample, two interesting facts emerge from these descriptive statistics. The age distribution in Poland and Germany is quite different. While in Poland the distribution over the age groups is fairly even, the baby boom and the stark drop in birth rates thereafter becomes obvious when comparing the age groups 25 - 34 and 35 - 44 for Germany. The second striking difference between Germany and Poland which will be more crucial for the following analysis is the far higher share of Polish men and women in the age group 25-59 who receive pensions. While the share for both men and women is below 4% in Germany, it amounts to 17% for men and close to 20% for women in Poland.

3.2 Replacement ratios

To present the differences in the social support systems between Germany and Poland we conduct a comparison of replacement ratios simulated with country-specific micro-simulation models, STSM for Germany and SIMPL for Poland. Both models are run on the representative samples of the respective populations which are described in Section 3.1 and account for the details of tax and benefits systems in Germany and Poland.[12] The advantage of micro-simulation is that we can reflect the heterogeneity of households rather than looking only on stylised examples.

Computing replacement ratios

Below we present the method adopted for the computation of replacement ratios (RRs), i.e. the ratios of income out of work to income in work.

We use the sample of "labour market flexible" individuals (see Tables 1 and 2), and compute RRs separately for three types of benefit units:

[12]For detailed descriptions of the micro-simulation models see Bargain et al. (2007) for SIMPL, and Steiner et al. (2005) for STSM.

- single individuals (with and without dependent children);
- couples with both "LS flexible" partners;
- couples with only one "LS flexible" partner.

RRs for single individuals are computed as:

$$RR^{s}_{0,j} = Y_{j(0)}/Y_{j(1)}, \tag{1}$$

where $Y_{j(0)}$ is income out of work and $Y_{j(1)}$ is income in (full-time) work of a single adult family j. The 0 subscript in $RR^{s}_{0,j}$ is to distinguish these RRs from the rates computed below for different assumptions about within-household sharing of resources.

For couples with both "LS flexible" partners we compute four sets of family-level incomes, conditional on employment of either of the partners:

- $Y_{(1,1)}$ for the scenario where both partners are employed (full-time);
- $Y_{(1,0)}$ for the scenario where only the man is employed (full-time);
- $Y_{(0,1)}$ for the scenario where only the woman is employed (full-time);
- $Y_{(0,0)}$ for the scenario where both partners are not employed.

If only one of the partners is "LS flexible" we compute incomes in two scenarios conditional on his/her employment status:

- $Y_{(1X)}$ for the scenario where the "LS flexible" partner is employed (full-time);
- $Y_{(0X)}$ for the scenario where the "LS flexible" partner is not employed.

Both of these incomes are computed conditional on the recorded status of the other partner.

This leads to four sets of replacement ratios computed for couples:

$$RR^{c1}_{0,j} = Y_{j(0,0)}/Y_{j(1,0)}, \tag{2}$$

$$RR^{c2}_{0,j} = Y_{j(0,0)}/Y_{j(0,1)}, \tag{3}$$

$$RR^{c3}_{0,j} = Y_{j(1,0)}/Y_{j(1,1)}, \tag{4}$$

$$RR_{0,j}^{c4} = Y_{j(0,1)}/Y_{j(1,1)}, \tag{5}$$

For families where both partners are "LS flexible" we compute all four of these replacement ratios. For those with only one "LS flexible" partner we compute two RRs, keeping the income of the other partner as fixed. In the latter case if the "LS inflexible" partner is a student or a pensioner we compute RRs for the "LS flexible" partner according to equation 2 or 3, while if he/she is working (i.e. is self-employed or employed and out of the sample age range) according to equation 4 or 5.

3.3 Family-level replacement ratios in Germany and Poland

In Table 3 we show some statistics related to the distribution of replacement ratios for the 2005 tax and benefit systems for Germany and Poland. Full distributions of these replacement ratios are presented in Figure 2. Both Table 3 and Figure 2 show replacement ratios for six groups of individuals:

- single individuals without children (labelled in following tables as: Single NK),
- single individuals with children (Single WK),
- first earner in couple for men (FE - man),
- first earner in couple for women (FE - woman),
- second earner in couple for men (SE - man),
- second earner in couple for women (SE - woman).

Table 3: about here.

Figures 2: about here.

The lower the replacement ratio, the stronger is the financial incentive to take up a job. The relative differences between Germany and Poland in terms of work incentives - calculated at family level - seem to be very clear, especially in the case of single individuals and first earners in couples. Given the very strict wealth test criteria in Poland very many families do not qualify for any Social Assistance, and in cases they are not eligible for housing benefits and family benefits, they receive no social

support from the government. Thus, there is a strong concentration of replacement ratios at zero for single individuals without children and for first earners in couples. RRs for single individuals in Germany have bi-modal distributions which is a result of ineligibility of some of them for housing benefits.

Financial incentives to work are very similar for second earners, which is probably partly due to the system of taxation splitting in both countries and similar wages differentials of man and women. RRs for second earners are computed assuming that the other partner is working full time. Thus in these cases the system of social support is not as important since most families would not qualify for Social Assistance.

Yet, for all categories of individuals we consider, work incentives are weaker in Germany. While the median RR for single people in Poland is 0, the equivalent for Germany is 0.68. In case of lone parents the figures are respectively 0.44 and 0.83. The median ratio of income out of work to income in work for male first earners is 0.17 in Poland and 0.49 in Germany, and the figures for women are 0.27 and 0.61. Further details, including the 10th percentile of the distribution and the means are given in Table 3. With these disparities in mind we now turn to the differences between the two countries in terms of employment levels to examine how strongly the financial incentives to work as presented in this section are reflected in employment statistics.

3.4 Financial incentives and employment - is there a paradox in Poland?

The previous sections, and in particular the comparison of replacement ratios in Section 3 present the Polish tax and benefit system as one which ought to generate high motivation to seek work, and which provides little financial incentives to leave employment among those who have jobs. It is therefore somewhat paradoxical, that the levels of employment in Poland belong to lowest in Europe, and while the level of unemployment has recently been falling, the rates of employment are still low by comparison with other European countries. This combination implies a rather weak role of financial incentives to work or a very powerful role of labour demand in determining work patterns in Poland. On the one hand it means that making working more attractive relative to non-working by increasing the minimum wage, lowering taxes, etc., could have only modest effects on increasing employment, but on the other hand it would also suggest that increasing incomes out of work would have limited negative effects on

labour supply. As we shall argue in this section, once again setting the Polish labour market in the comparative context with Germany, the Polish case is not as different as that of other countries and financial incentives have important implications for labour market outcomes of several groups. The distinguishing features which separate the Polish case out are the very high level of working-age disability pensioners and the higher level of multi-family households. Once these two factors are controlled for the patterns of employment are not much different between Germany and Poland and as we shall see in Section 5, financial incentives matter for decisions on the labour market.

The comparative analysis of employment levels is presented with a detailed breakdown by family status. Presenting the information by family type allows us to some extent to separate out the relative effects of demand for and supply of labour. Labour demand conditions are more or less the same for individuals regardless of their family status (conditional on other characteristics). On the other hand, financial incentives in and out of work differ by family composition and we would expect labour supply behaviour to reflect these differences. The statistics presented below are clearly far from a complete analysis of determinants of employment, but their role is to give us the background for the work incentives analysis that follows. Employment statistics have been computed for both countries using the samples described in Tables 1 and 2 and presented in these in the columns headed "Employment sample". Employment statistics are presented in Tables 4 and 5. In Table 4 we show individual level statistics, while in Table 5 we present a detailed breakdown by the employment status of couples. In the latter case the samples were limited to the couples where both partners met the age criterion.

Tables 4 and 5: about here.

The employment statistics in Table 4 for Germany are presented for the whole country and separately for the former East and West Germany. For Poland, apart from overall employment rates we also show the statistics for urban and rural areas, identified by the urban status of the place of residence. The statistics have also been computed for two subsamples, namely those families which do not include a working age pensioner (i.e. a disability or an early retired individual), and then those who on top of that live in single-family households. In Table 5 we present statistics for the two countries and in the case of Poland for the subssample which excludes couples with

a pensioner. In both cases it is easily noticeable how big a difference the restrictions make to the computed employment statistics. Excluding families with pensioners has a very significant effect especially on the employment rates computed for families without children (both singles and couples), while the rates computed for single family households strongly affects especially the statistics for single adult families.

Looking at the overall employment rates in Table 4, employment rates in Poland are lower in comparison to Germany for almost all groups of individuals. It is also clear that employment rates in the former East Germany are lower that in the former West Germany, reflecting on the one hand the better economic situation in the western part and on the other hand the higher employment of women with children in the East. The differences between urban and rural areas in Poland are especially high for single men (difference of 8.8 percentage points). There are also important differences in the case of singles with children aged over 3 and couples whose youngest child is of school age. In this case the difference for singles is 4.9 percentage points, while for men and women in couples respectively 5.7 and 6.2 percentage points.

Looking at more detailed differences between Germany and Poland the most striking ones are those for individuals without children. While the difference in the employment rate of single individuals with children is 7.8 percentage points, the difference for those without children is 28.5 percentage points. The situation is similar for individuals in couples. The difference in the employment rate between Germany and Poland of men living in couples with children is 5.6 percentage points, while that for couples without children is as high as 20.3 percentage points. The corresponding figures for women are 4.5 and 21.2 percentage points. The level of employment among married women with children below the age of 4 is actually higher in Poland by 8.0 percentage points.

Some of the characteristics of the Polish labour market become even more striking when we look at the breakdown by couple-level employment state. This is shown in Table 5. Again, the most striking point is the difference in employment levels among couples without children. Here, while almost 69% of German couples without kids have both partners in work, in Poland the proportion is only about 41%. Even more striking is the fact that in Poland over 20% of couples without children are couples with neither of the partners in work. Once more the couples with the youngest child aged below 4 have high participation rates in Poland and a higher rate of two-earners

compared to Germany, though at the same time the proportion of no-earner couples in among those with a child aged 0-3 in Poland is 7.6% compared to 3.2% in Germany. It also seems that the proportion of parents returning to work once their children grow older - especially in the case of women - is much higher in Germany. In Poland a lot of couples with children aged over 3 are single earner couples, and only about 56% of couples with children over 3 have both parents in work.

The differences between countries and the relative differences in employment rates between those with and without children become less pronounced once from the Polish sample we exclude families with working age pensioners from the sample, and once we focus only on single-family households. Controlling for the presence of a pensioner in the family increases the rate of employment of those without children from 55.8% to 67.5% in the case of single individuals, from 64.9% to 85.6% among married men and from 52.9% to 73.2% among married women (see second last column in Figure 4. If we limit the sample only to those living in single-family households, then the rates increase further respectively to 74.0%, 87.3% and 74.9% (see last column of Table 4). Similarly, when we look at the subsample of couples which do not include a pensioner, the breakdown of couple-level employment status in Poland looks much more similar to that in Germany (Table 5). In some cases the differences between employment rates in the two countries remain, but they are not as striking as in the case of the unrestricted comparison.

The analysis presented above to a large extent clarifies the seeming paradox of strong work incentives and low employment rates in Poland. Financial incentives do matter for individual labour market decisions and there seems to be no escape from the efficiency-equity trade-off. What significantly complicates the analysis, and what makes the Polish labour market so different from the German one is - apart from the high level of pensioners among the working age population - the high proportion of multi-family households. To correctly assess the labour market incentives which individuals face on the labour market this household structure needs to be taken into account.

The equity-efficiency trade-off looks much stronger when we control for the pre-retirement pensions and for complex household structures, though in some sense it may still be surprising that controlling for these two factors employment rates in Poland are not much higher than in Germany, given the limited support from the state the

individuals can count on. Some further explanation of this fact may be related to between household transfers which we do not control here, and to potential shadow-economy employment. Unfortunately we cannot identify illegal sources of income in the data. It is also very likely that these do not get reported in the BBGD household surveys. It is reassuring though that accounting for pre-retirement pensions and for multi-family households goes a long way in explaining the seeming paradox of low government support and low employment rates in Poland.

Below we present how important the within-household sharing of resources is for replacement ratios in Poland. We then turn to the analysis of three hypothetical reforms of the Temporary Social Assistance and analyse their influence on labour market incentives effects under different within-household sharing assumptions.

4 Within-household sharing and labour market incentives in Poland

The formulations concerning replacement ratios presented in Section 3.2 have been used to compute replacement ratios for a particular family disregarding the incomes of other families in the household. However, as we mentioned earlier a very high number of households in Poland consist of more than a single family, and although we do not know the degree of sharing of resources among them, such sharing almost certainly exists in most of such households. In the BBGD 2005 data 74% of single adults without children live in multi-family households, while the proportions for lone parents and for working age couples are respectively 54% and 37%.

This implies that the replacement rates computed in line with equations 1-5 most likely give a wrong impression of the true financial incentives to work in Poland. We thus propose two different assumptions concerning the type of sharing of resources within households so that this complex household structure can be reflected in the computed financial incentives to work.

4.1 Replacement ratios and within-household sharing

The two most natural assumptions are that either the family in question benefits (proportionally to the relative size of the family) from the disposable income of other families without at the same time contributing to the household resources (referred to

below as "type-1" sharing), or that the disposable incomes of the household are shared within the household in proportion to the size of each family ("type-2" sharing). The latter solution allows for the family we focus on to be a net beneficiary of living together with other families but also to be a net contributor to the family budget. This could have important consequences for labour market incentives, since while out-of-work individuals may benefit from income of other families, the consequence of finding a job would be to share some of the earnings with other families in the household. Taking the example of a single adult family the two assumptions imply the following for the computation of replacement ratios.

Assuming the "type-1" sharing of resources the RR can be computed as:

$$RR^{s}_{1,j} = (Y_j^{h_j=0} + W_j^{h_j=0})/(Y_j^{h_j=1} + W_j^{h_j=1}), \tag{6}$$

where $W_j^{h_j} = k$ is the equivalised sum of incomes of other families in the household (conditional on the labour market status (k) of family (j)) computed as:

$$W_j^{h_j=k} = (\Phi_j/\Theta_J) * \sum (Y_i|h_j = k)), i \neq j \tag{7}$$

where Φ_j is the equivalence scale of family j, Θ_J is the equivalence scale of the whole household, and $\sum (Y_i|j(h = k))$ is the sum of incomes of families other than j conditional on the labour market status of family j. Similarly we can compute the replacement ratios for couples under this sharing assumption ($RR^{c1}_{1,j}$, $RR^{c2}_{1,j}$, $RR^{c3}_{1,j}$, $RR^{c4}_{1,j}$). The 1 subscript in the expressions refers to the "type-1" sharing of resources.

On the other hand, if all families are assumed to contribute to the family budget in proportion to their family size, i.e. if we assume "type-2" sharing, then income of family (j) in a specific labour market scenario ($h = k$) would be:

$$Z_j^{h_j=k} = (\Phi_j/\Theta_J) * \sum_{i=1}^{I} (Y_i|h_j = k), j \in I \tag{8}$$

Since in the computation of the replacement ratios in which we use the last definition of family income the ratio of equivalence scales cancels out, the RRs under this assumption are computed simply as ratios of overall household incomes:

$$RR^{s}_{2,j} = \frac{\sum_{i=1}^{I} (Y_i|h_j = 0)}{\sum_{i=1}^{I} (Y_i|h_j = 1)}, j \in I \tag{9}$$

Corresponding RRs can also be calculated under this assumption for couples ($RR^{c1}_{2,j}$, $RR^{c2}_{2,j}$, $RR^{c3}_{2,j}$, $RR^{c4}_{2,j}$). The 2 subscript refers to the "type-2" sharing of resources.

Below we use these different specifications of replacement ratios in order to demonstrate how important within-household sharing may be in the case of Polish households.

4.2 Sharing assumptions and replacement ratios

In Table 6 we show the effect of the different sharing assumptions on the calculated financial incentives to work. The table includes the 10th percentile, the median and the mean of the RRs distribution generated under the assumption of no within-household sharing of resources ($RR_{0,j}$), "type-1" sharing ($RR_{1,j}$) and "type-2" sharing ($RR_{2,j}$). Full distributions of the replacement ratios computed under the three assumptions are shown in Figure 3.

Table 6 about here.

Figure 3 about here.

As we can see there are substantial differences in the distributions of replacement ratios between those computed assuming no sharing of resources and those in which we allow the possibility of within-household sharing. As we would expect the effect of allowing "type-1" and "type-2" sharing of resources is highest in the case of single individuals without children, 74% of which live in multi-family households. Financial incentives to work in the cases of all six sub-groups we consider in Table 6 and Figure 3 are significantly weaker, and as we would expect, they are weakest under "type-2" sharing assumption, since in this case the family an individual belongs to is assumed to share the in-work incomes with other families in the household.

While the 10th percentile of the distribution of RRs for single people without children is 0 under all sharing assumptions, the median increases from 0 under no sharing to 0.42 under "type-1" sharing and to 0.559 under "type-2" sharing. This value is not much lower than the respective median in Germany (0.68, see Table 3). For lone parents it seems that the type of assumed sharing is not as important as for singles without children, but also here the differences in the computed RRs are substantial. Median replacement ratios grow from 0.44 under no sharing to 0.59 under

"type-2" sharing. Naturally the magnitude of the sharing effect falls with the increase in the equivalised size of the family and the proportion of families for a given family type which live in multi-family households. The effect is also lower the lower is the additional income which an individual we consider brings into the household in the in-work scenario proportional to the household income in the out of work scenario. It is thus not surprising that the effect is lower for first earners in couples compared to single individuals, and is lower still for second earners. Moving from no sharing to "type-2" sharing of resources increases the replacement ratio from 0.51 to 0.55 for second male earners in couples and from 0.66 to 0.68 for second female earners in couples. Assuming the sharing assumptions for first earners in Poland the calculated replacement ratios are still much lower compared to Germany. Under "type-2" sharing the median RRs in Poland are 0.26 for men and 0.41 for women, while the respective values for Germany are 0.49 and 0.61. However, the replacement rates for second earners are almost exactly the same in Poland and in Germany once we allow for "type-2" sharing of resources in Poland. This seems to apply not only to the median but to the entire distributions.

This section has demonstrated that within-household resource sharing may be of crucial importance to the understanding of labour market behaviour in Poland. This applies especially strongly to the case of single adult families, who are very likely to share households with others, and whose financial incentives are very strongly determined by the type of within-household sharing we assume. This multi-family household structure is something that we should bear in mind also in the analysis of labour market consequences of tax and benefit effects. Three such hypothetical reforms are presented below and in Section 5.1 we examine whether the assumed type of resource sharing would have any significant influence on changes in financial incentives to work following the introduction of these three reforms.

5 Reforming Social Assistance in Poland

In this section we present an analysis of the likely effects of three hypothetical reforms of the Temporary SA in Poland by first looking at how they would affect household incomes and poverty, and secondly how these changes would affect incentives on the labour market, taking into account the different within-household sharing assumptions

presented in Section 4.2. The reforms we model consist of two elements. First we make the Temporary SA available to a greater proportion of households by relaxing the very strict wealth test criteria operating in Poland, and secondly we increase the amounts of the TSA to the legislated minimum income.

As we pointed out in Section 2 in the micro-simulation of the baseline scenario for 2005 the wealth criteria imply that only about 5.2% of households are eligible to claim the Temporary SA provided they pass the income means test.[13] Moreover, the amounts being paid to families which are guaranteed by the central government cover only 20% or 30% of the difference between actual income and the legislated minimum. The reforms we model consist of the following changes:

- Reform I - the proportion of those eligible to the TSA on the basis of the wealth test increases to 25%; however only the guaranteed amounts of the TSA are paid to families.
- Reform II - the proportion of those eligible to the TSA on the basis of the wealth test increases to 25%; the amounts paid are the "full" amounts up to the legislated family specific minimum incomes.
- Reform III- the proportion of those eligible to the TSA on the basis of the wealth test increases to 75%; the amounts paid are the "full" amounts up to the legislated family specific minimum incomes.

Thus while all reforms extend the eligibility to the TSA to a larger number of families Reforms II and III increase the amounts paid to families along the lines presented in Figures 1C and 1D making the "full" Temporary SA available. Reform I is the least generous and Reform III the most generous, and this gets clearly reflected in their cost and distributional consequences. In Table 7 we present some results of non-behavioural micro-simulation of the three reforms. The annual cost of the reforms is estimated to be 250mln PLN, 5,300mln PLN and 8,050mln PLN respectively,[14] and the reforms reduce the poverty rate from 18.6% in the baseline system to 18.5%, 14.8% and 13.8% under the reformed scenarios. The distributional consequences of the

[13]For comparison - in Germany wealth criteria for Social Assistance imply that about 75% of households would qualify provided they pass the income-means test (computations using the STSM model using GSOEP 2005 data)).

[14]These values represent respectively 0.03%, 0.54% and 0.83% of the Polish GDP in 2005.

reforms are presented in Figure 4 in the Appendix. The redistributive consequences of the three reforms and their degree of generosity can be clearly seen from the average proportional effects on household incomes the reforms induce.

Table 7 about here

5.1 Temporary SA reforms and replacement ratios

We now turn to the potential labour market consequences of extending Social Assistance in Poland. In this section we present some details of the effects of the three reforms on replacement ratios. Table 8 shows the changes in the median replacement ratio brought about by the three reforms by family type. The results are presented separately for the different assumption concerning resource sharing in the household. The resulting changes in the distribution of RRs are shown in the Appendix in Figure 5 for single adult families and for first earners in couples. The results go in the expected direction with Reform I having a very modest effect on work incentives and Reform 3 changing incentives most significantly. It is noteworthy that the change in the replacement ratios, especially in the case of single adult families, depends very significantly on the assumption we make concerning within-household sharing of resources.

Concerning the calculated effects of the three reforms two broad categories of conclusions seem to be important. First of all how effects of the reforms differ by the type of individuals we distinguish under a given sharing assumption. Secondly, whether changes in the sharing assumption lead to increases or reductions in the effect of the reforms, and how strong the effect of different sharing assumptions is on the implications of reforms.

Table 8: about here.

Unsurprisingly the more generous the reform is the greater is its effect on replacement ratios. However, the magnitude of the effect differs substantially by the type of individual we consider, as well as on the sharing assumption we make. For example, assuming no sharing of resources between families, the effects of Reform I on the median RRs range from 0.1pp for female second earner to 2.0pp for single adults without children (see Table 8). The effects grow with the generosity of the reform, and for

Reform III median RRs for female second earners grow by 0.8pp relative to the baseline, while median RRs for singles without children by 9.6pp. The effects of Reform III are highest for first earners in couples, 15.3pp for men and 16.8 for women. It is notable which elements of the reforms seem to be the determining factors of increases in generosity. For example for singles without children there is very little difference between effects of Reform I and II, and the highest effect comes as a result of reform III. For lone parents on the other hand the shift from Reform I to Reform III seems much more important. This is presumably the effect of the different position of the households which the individuals are members of in the wealth distribution, and thus different effects following changes in the generosity of payments vs. extension of TSA to wealthier households. The high effects on the RRs of first earners in couples can be explained by the high level of the legislated minimum income in the case of couples.

Sharing assumptions concerning household resources not only have an effect on the baseline distribution of replacement ratios but also on how strongly the simulated reforms affect incentives to work. For single adults with and without children, and for female first earners in all but one case higher level of resource sharing dampens the effect of reforms on incentives as represented by the median RRs. On the other hand for male first earners and for both male and female second earners, the higher the degree of sharing the higher is the effect of each of the reforms. For example the effects of Reform III for single adults without children, as reflected in the median RRs, fall from 9.6pp under no sharing to 5.9pp under "type-1" sharing. On the other hand the effect of this reform on male first earners grows from 15.3pp to 15.9pp. These differences in incentives effects demonstrate how important the assumed sharing mechanism is for appropriate identification of financial incentives on the labour market.

It is also important to note that the effect on the median RRs of single adults without children is almost in all cases higher than for lone parents. This may be surprising but it is a consequence of the design of the benefit system of Social Assistance in Poland. Because lone parents are eligible to receive Family Benefits, and because these reduce the amount of the TSA they can obtain the effect of making the TSA more generous would in general be smaller for them than for those without children.

6 Conclusion

The paper discussed the current safety net system in Poland in a comparative context with Germany. We presented an analysis of work incentives in Poland and Germany and analysed labour market effects of hypothetical reforms extending the availability and levels of social assistance in Poland. The reforms we examined would move the current Social Assistance arrangements towards that of Germany and many other Western European countries. Comparing employment statistics by family type and work incentives for Germany and Poland we have shown that despite a lower public social security network, overall employment is lower in Poland than in Germany. While this is partly demand side driven, strong differences by family types can be only explained by labour supply incentives. Controlling for private social networks in the form of multi-family households and for the extensive use of disability and early retirement pensions, we showed that employment rates in Poland and in Germany are in effect very similar.

Our findings concerning the hypothetical reforms of the Social Assistance in Poland underline the above mentioned trade-off between fighting poverty and making work pay. A more generous social assistance which is necessary to prevent poverty, would increase the replacement ratios between out of-work and in-work incomes. This would lead to lower financial attractiveness of employment relative to remaining out of the labour market and as a result to lower levels of employment levels. We have argued that a reliable estimation of the efficiency-equity trade-off may prove difficult in Poland, given the high proportion of multi-family households. As we demonstrated different assumptions concerning the within-household sharing imply significantly different labour market incentives, especially for singles and for first earners in couples. The sharing assumptions also have very significant implications for the effects of simulated reforms on financial incentives to work.

Although the standard approach of looking at family-level financial incentives in the case of the Polish labour market produced a seeming paradox of a combination of high labour market incentives and low levels of employment, we showed that once we account for disability and early retirement and look at employment rates of those living in single-family households the employment rates are much more similar to those in Germany. Secondly, once we account for sharing of resources within multi-family

households, financial incentives to work are much weaker than those computed with disregard for the complex household composition. One thus cannot hope for an easy way out as far as the equity-efficiency trade-off is concerned with relation to the Polish labour market.

A solution of this trade off could be a careful combination of out-of-work and in-work transfers. As the experience of several countries and many simulation studies have shown, a well-designed and targeted in-work credits system can lead to a significant increase in employment without reducing a guaranteed minimum support for the poor.[15] Before embarking on the extension of Social Assistance Polish governments would be well advised to step cautiously and consider providing additional incentives to low-paid employment if the goals of reducing poverty and increasing employment are to be achieved simultaneously.

It also seems that any comprehensive labour supply analysis in Poland, and presumably in other transition and developing countries, should in the future explicitly account for the complex nature of households. Such analysis should also be cautious about using the established labour supply approaches which have been developed and applied mainly on data with very low proportions of multi-family households. In any future analysis of the labour market in Poland the multi-family household structures will have to be explicitly accounted for to correctly identify the effects of financial incentives to work.

[15]See for example the studies on the Working Families' Tax Credit in the UK (Blundell, Duncan, McCrae, and Meghir (2000), Brewer, Duncan, and Shephard (2007)) and simulation studies for other countries (e.g. Haan and Myck (2007), Bargain and Orsini (2004)).

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Tables

Table 1: Descriptive statistics for Poland

	RRs sample		Employment sample	
	Men	Women	Men	Women
Number of observations	20,809	22,008	24,547	26,963
Number of singles	3,132	4,331	4,592	6,186
- with children 0-16	93	1,412	143	1,692
Number in couples	17,677	17,677	19,955	20,777
- with children 0-16	10,797	10,797	11,511	11,245
Proportion by age group				
below 25	0.39%	2.32%	-	-
25-34	28.82%	30.15%	26.85%	25.84%
35-44	27.52%	28.19%	25.86%	24.97%
45-59	41.97%	39.15%	47.29%	49.18%
over 59	1.30%	0.19%	-	-
Proportion receiving a pension	10.10%	5.43%	17.06%	19.52%

Source: BBGD, 2005.

Table 2: Descriptive statistics for Germany

	RRs sample		Employment sample	
	Men	Women	Men	Women
Number of observations	4,767	4,954	5,744	6,101
Number of singles	697	884	1,035	1,171
singles with children 0-16	20	291	28	329
Number in couples	4,070	4,070	4,709	4,930
Number in couples with children	2,100	2,100	2,223	2,213
Proportion by age group				
below 25	0.1%	0.47%	-	-
25-34	17.43%	24.55%	22.59%	25.07%
35-44	36.85%	38.19%	34.55%	34.31%
45-59	45.72%	37.26%	42.63%	40.62%
over 59	3.91%	0.35%	-	-
Proportion receiving a pension	1.76%	1.26%	3.68%	3.14%

Source: SOEP, 2005.

Table 3: Replacement ratios for Germany and Poland, 2005

	Germany			Poland		
	10th perc.	Median	Mean	10th perc.	Median	Mean
Single no children	0.510	0.680	0.664	0.000	0.000	0.113
Single with children	0.612	0.833	0.803	0.185	0.435	0.442
Couple - first earner, man	0.101	0.494	0.475	0.002	0.168	0.221
Couple - first earner, woman	0.140	0.609	0.561	0.026	0.273	0.332
Couple - second earner, man	0.413	0.557	0.556	0.353	0.511	0.517
Couple - second earner, man	0.535	0.684	0.678	0.503	0.655	0.649

Source: STSM and SIMPL micro-simulation models, on GSOEP and BBGD 2005.

Table 4: Employment rates, Germany and Poland.

	Germany			Poland			Poland, excluding:	
	All	West	East	All	Urban	Rural	pensioner families	and multi-family HHs
Singles:								
all	77.72	80.15	67.17	55.76	53.81	60.06	65.89	70.54
men	81.37	83.77	71.75	58.55	55.01	63.85	66.15	75.04
women	74.29	76.86	62.26	53.80	53.14	55.79	65.69	68.62
without children	84.40	82.26	71.91	55.88	53.72	60.45	67.49	74.04
with children	62.85	67.76	45.93	55.10	54.29	57.37	58.29	59.85
- youngest child: 0-3	42.70	43.44	41.15	37.32	39.11	32.70	37.78	36.11
- youngest child: 4-16	64.93	74.90	47.40	57.82	56.55	61.46	61.70	63.26
Men in couples:								
all	87.60	88.66	82.66	76.06	73.74	80.00	87.87	88.88
without children	85.21	86.43	80.16	64.93	63.54	68.06	85.57	87.30
with children	89.99	90.78	85.76	84.40	82.83	86.58	88.92	89.45
- youngest child: 0-3	92.32	93.64	84.69	88.75	88.59	88.97	90.11	90.75
- youngest child: 4-6	90.90	91.05	90.09	86.35	85.17	87.94	88.84	89.54
- youngest child: 7-16	88.62	89.39	84.59	82.01	79.60	85.29	88.72	89.23
Women in couples:								
all	70.03	69.25	73.71	57.18	54.65	61.47	65.92	65.43
without children	74.11	74.53	72.32	52.93	50.88	57.33	73.17	74.89
with children	65.22	63.26	75.65	60.70	58.30	64.10	62.57	62.14
- youngest child: 0-3	37.94	37.15	42.76	45.94	43.91	49.06	46.21	44.50
- youngest child: 4-6	74.68	72.55	85.40	64.18	63.37	65.27	65.13	64.73
- youngest child: 7-16	74.07	71.96	84.83	66.23	63.60	69.82	70.03	70.44

Notes: Based on populations aged 25-59.

Source: For Germany: SOEP, wave 2005. For Poland: BBGD, 2005.

Table 5: Employment status of couple households, Germany and Poland

	All	Without children	With children	Youngest child: 0-3	Youngest child: 4-6	Youngest child: 7-16
Germany:						
Two-earner	64.52	68.78	60.17	36.91	67.33	67.50
Single earner - man	23.86	17.78	30.06	56.02	22.94	21.56
Single earner - woman	7.44	9.03	5.82	3.86	5.62	6.75
No-earner	4.18	4.41	3.94	3.22	4.11	4.19
Poland:						
Two-earner	47.28	41.08	51.93	40.02	56.16	56.52
Single earner - man	28.77	23.85	32.46	48.72	30.19	25.49
Single earner - woman	10.69	14.50	7.84	3.66	7.16	9.93
No-earner	13.25	20.57	7.76	7.59	6.49	8.06
Poland, excl. pensioner families						
Two-earner	58.06	63.61	55.51	40.70	58.42	62.87
Single earner - man	29.81	21.96	33.41	49.41	30.43	25.86
Single earner - woman	6.81	8.89	5.86	3.28	5.78	7.14
No-earner	5.32	5.53	5.22	6.61	5.38	4.14

Notes: Based on populations aged 25-59.

Source: For Germany: SOEP, wave 2005. For Poland: BBGD, 2005.

Table 6: Replacement ratios for Poland under different within household sharing assumptions.

	Single NK	Single WK	FE - man	FE - woman	SE - Man	SE - Woman
10th perc.						
- RR_0	0.000	0.185	0.002	0.026	0.353	0.503
- RR_1	0.000	0.276	0.026	0.048	0.366	0.524
- RR_2	0.000	0.280	0.026	0.048	0.368	0.525
Median						
- RR_0	0.000	0.435	0.168	0.273	0.511	0.655
- RR_1	0.421	0.558	0.247	0.386	0.544	0.679
- RR_2	0.559	0.593	0.255	0.409	0.550	0.684
Mean						
- RR_0	0.113	0.442	0.221	0.332	0.517	0.649
- RR_1	0.368	0.535	0.289	0.398	0.546	0.670
- RR_2	0.466	0.563	0.306	0.413	0.554	0.677

Source: SIMPL micro-simulation model, on BBGD 2005.

Notes: RR_0 - replacement rates computed assuming no sharing of resources; RR_1 - computed assuming "type-1" sharing, RR_2 - computed assuming "type-2" sharing.

Table 7: Hypothetical TSA reforms - cost and effects on poverty

	Reform cost (mln PLN per year)	Poverty rate
Baseline system (2005)	-	18.60%
Reform I	250	18.46%
Reform II	5,300	14.84%
Reform III	8,050	13.80%

Source: SIMPL micro-simulation model, on BBGD 2005.

Table 8: Sharing and the effect of hypothetical TSA reforms on median replacement ratios in Poland

	Single NK	Single WK	FE - man	FE - woman	SE - Man	SE - Woman
RR_0 (equation 1)						
Baseline median RR	0.000	0.435	0.168	0.273	0.511	0.655
Effect of Ref.I (in pp)	0.020	0.008	0.009	0.013	0.002	0.001
Effect of Ref.II (in pp)	0.025	0.049	0.069	0.102	0.010	0.005
Effect of Ref.III (in pp)	0.096	0.063	0.153	0.168	0.017	0.008
RR_1 (equation 6)						
Baseline median RR	0.421	0.558	0.247	0.386	0.544	0.679
Effect of Ref.I (in pp)	0.003	0.003	0.013	0.010	0.001	0.001
Effect of Ref.II (in pp)	0.046	0.033	0.089	0.085	0.013	0.006
Effect of Ref.III (in pp)	0.066	0.040	0.154	0.132	0.020	0.009
RR_2 (equation 9)						
Baseline median RR	0.559	0.593	0.255	0.409	0.550	0.684
Effect of Ref.I (in pp)	0.003	0.001	0.015	0.010	0.002	0.001
Effect of Ref.II (in pp)	0.042	0.028	0.094	0.082	0.013	0.007
Effect of Ref.III (in pp)	0.059	0.033	0.159	0.125	0.022	0.010

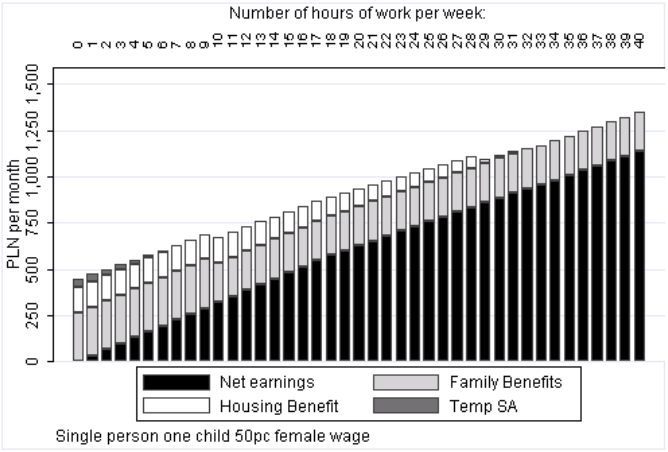
Source: SIMPL micro-simulation model, on BBGD 2005.

Figures

Figure 1: Components of disposable income in Poland - various SA scenarios, 2005

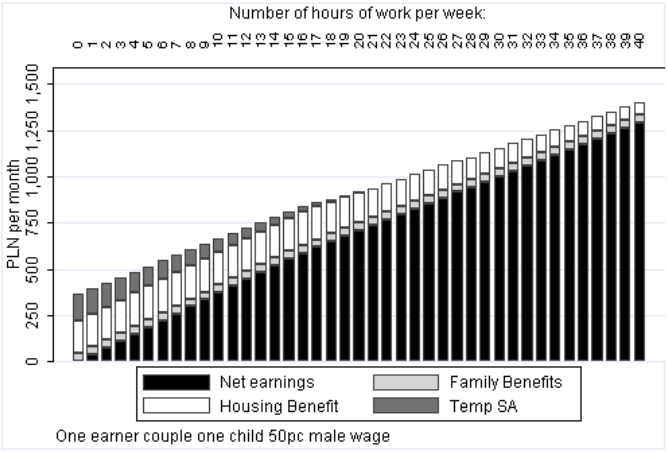
Single person with one child

1A



One earner couple with one child

1B



1C

1D

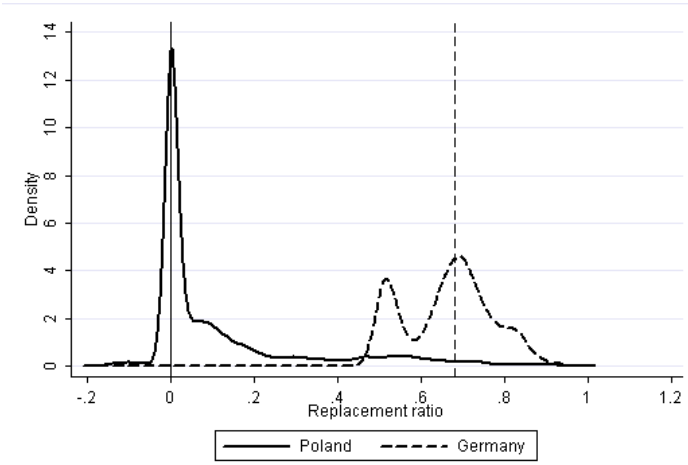
Note: Values presented in PLN (Polish zloty). Assumed wages are the median female and male wage, which in full-time monthly terms are respectively: 1536.60 PLN and 1774.50 PLN.

Source: Authors' calculations using the SIMPL micro-simulation model.

Figure 2: Replacement ratios by family type and partner's employment status, 2005

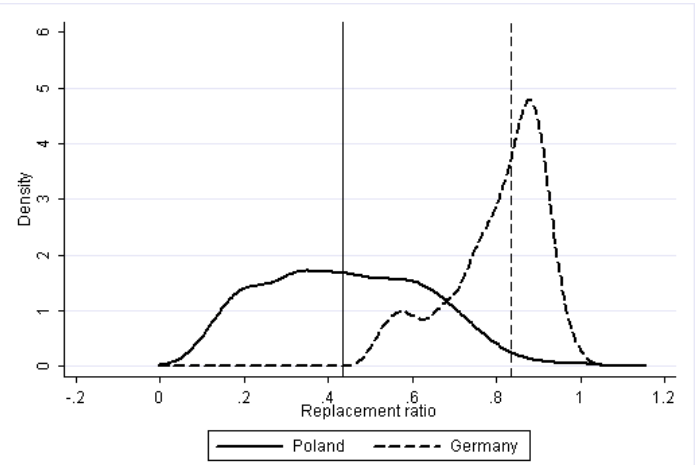
Single person no children, (RR_s)

2A



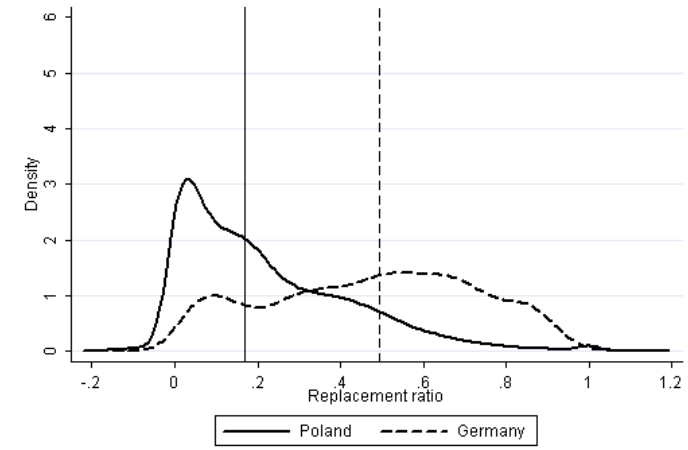
Single person with children, (RR_s)

2B



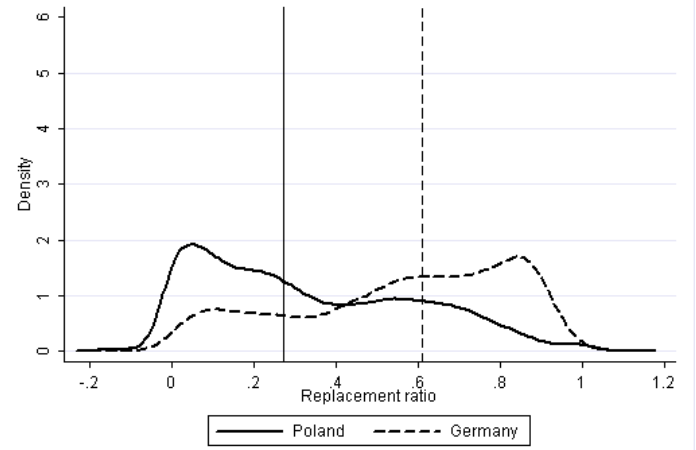
First earner man, (RR_{c1})

2C



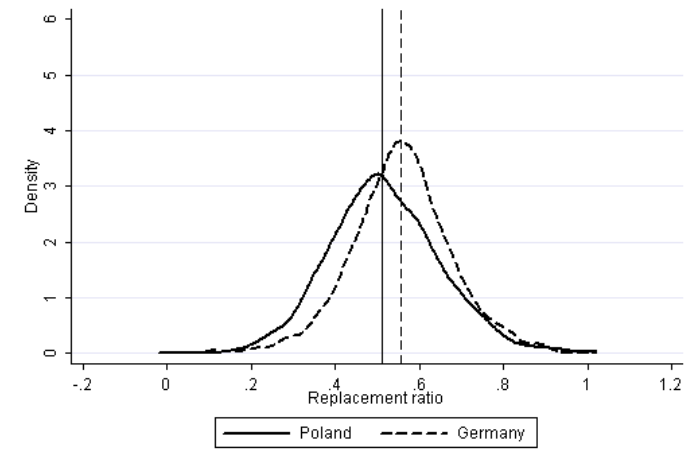
First earner woman, (RR_{c2})

2D



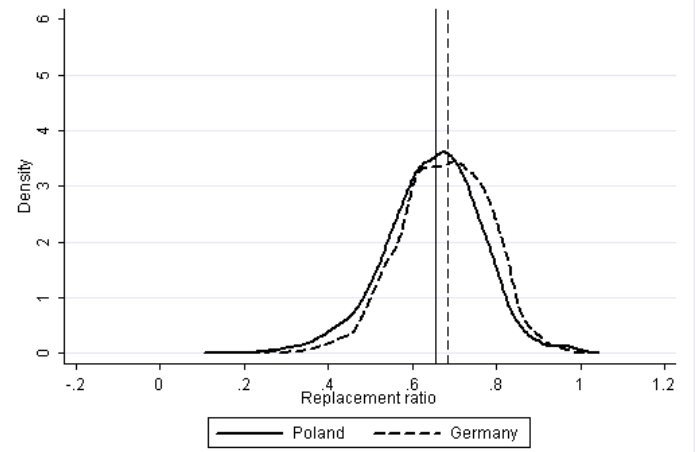
Second earner man, (RR_{c3})

2E



Second earner woman, (RR_{c4})

2F

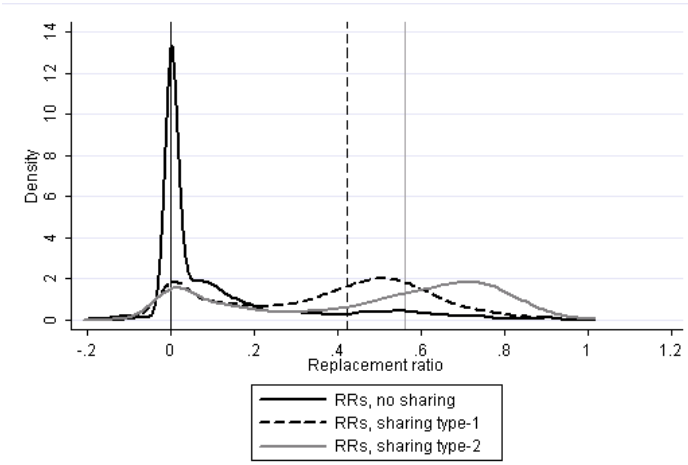


Note: Replacement ratios computed according to formulas 1-5. Vertical lines represent respective median RRs.
Source: Authors' calculations using the SIMPL and STSM micro-simulation models.

Figure 3: Replacement ratios by family type including household income, 2005

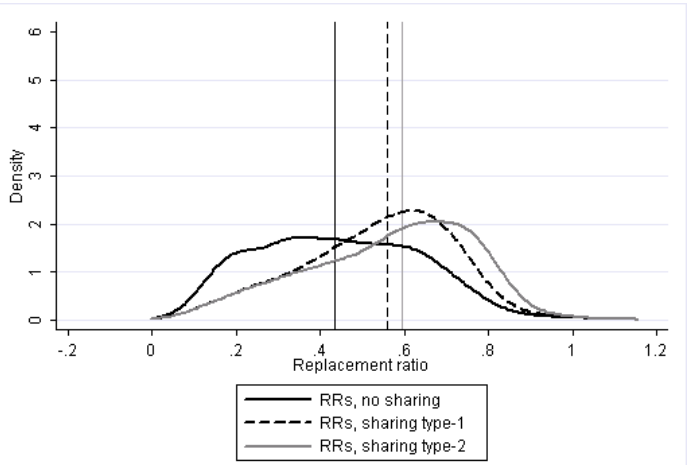
Single person no children, (RR_0^s)

3A



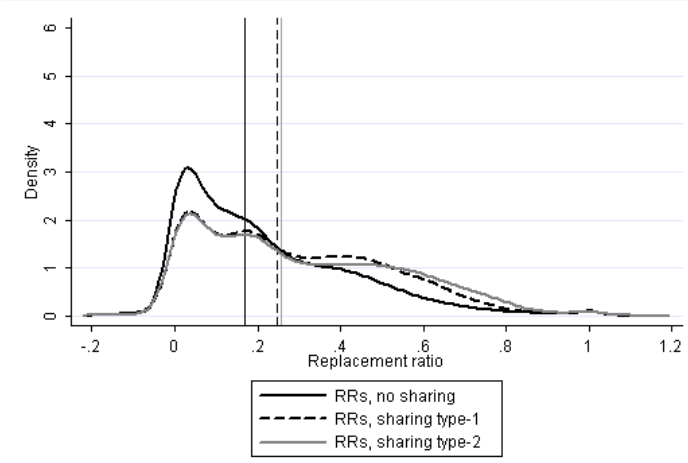
Single person with children, (RR_0^s)

3B



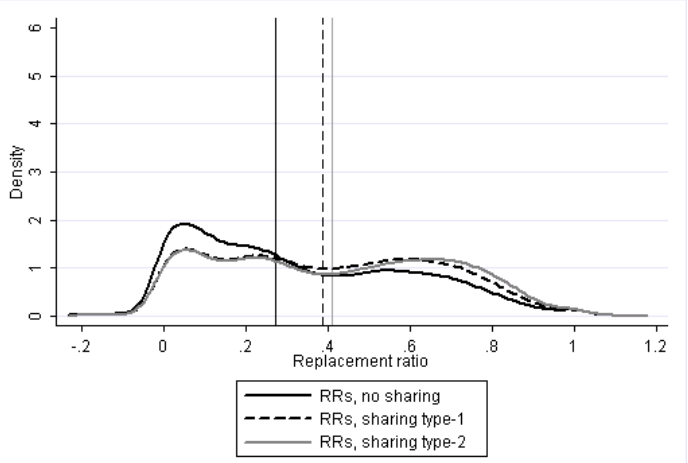
First earner man, (RR_0^{c1})

3C



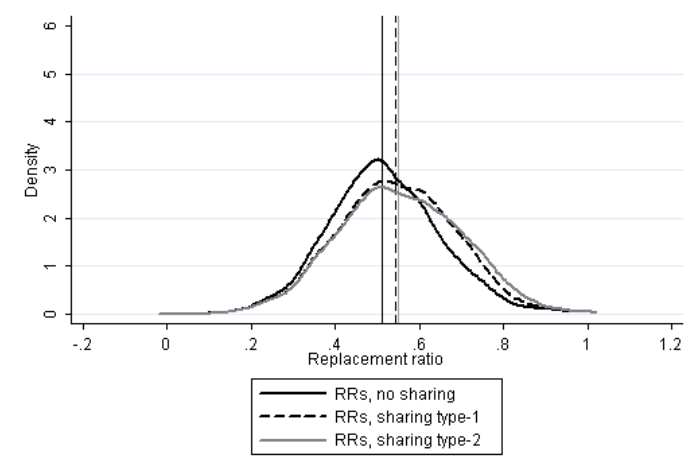
First earner woman, (RR_0^{c2})

3D



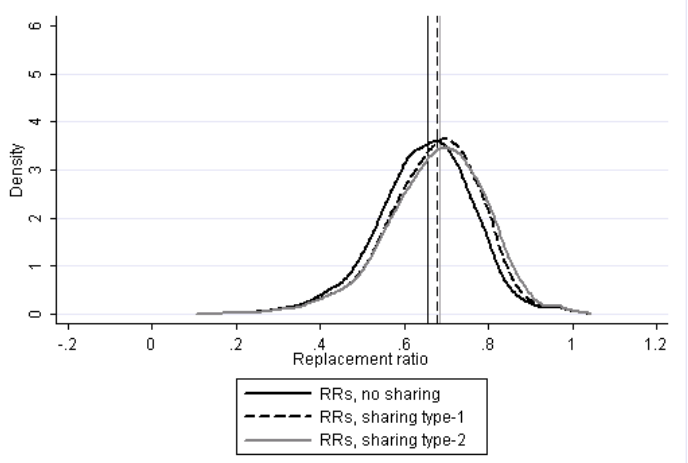
Second earner man, (RR_0^{c3})

3E



Second earner woman, (RR_0^{c4})

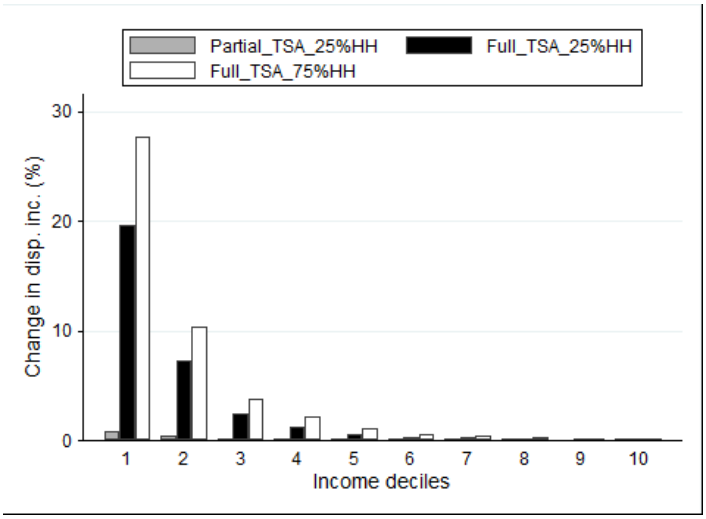
3F



Note: Replacement ratios computed according to formulas 1-5. Vertical lines represent respective median RRs.
Source: Authors' calculations using the SIMPL micro-simulation model.

Appendix - additional figures

Figure 4: Distributional effects of hypothetical TSA reforms



Note: Deciles generated using equivalised household income. See text for details of reforms.
Source: Authors' calculations using the SIMPL micro-simulation model.

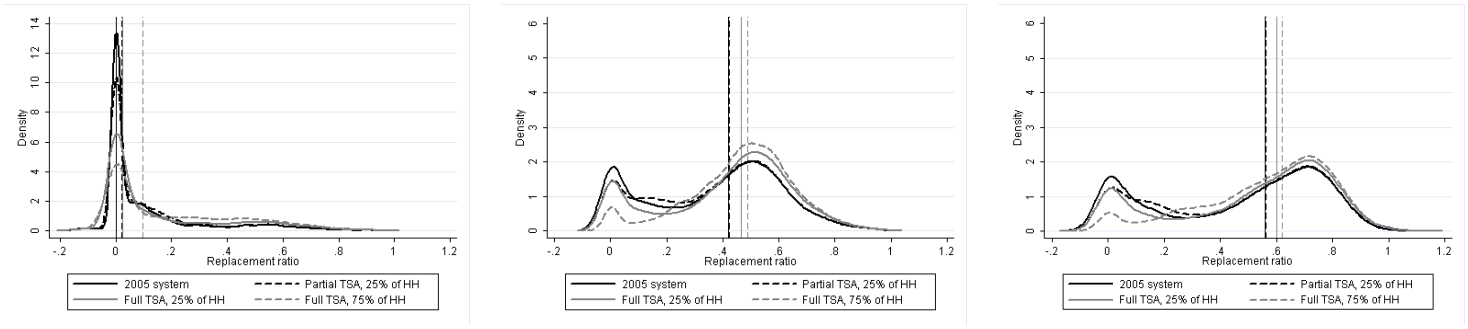
Figure 5: Within household sharing and effects of SA reforms on replacement ratios

Single person no children

No sharing, (RR_2^s) 5A

Sharing "type-1", (RR_2^s) 5B

Sharing "type-2", (RR_2^s) 5C

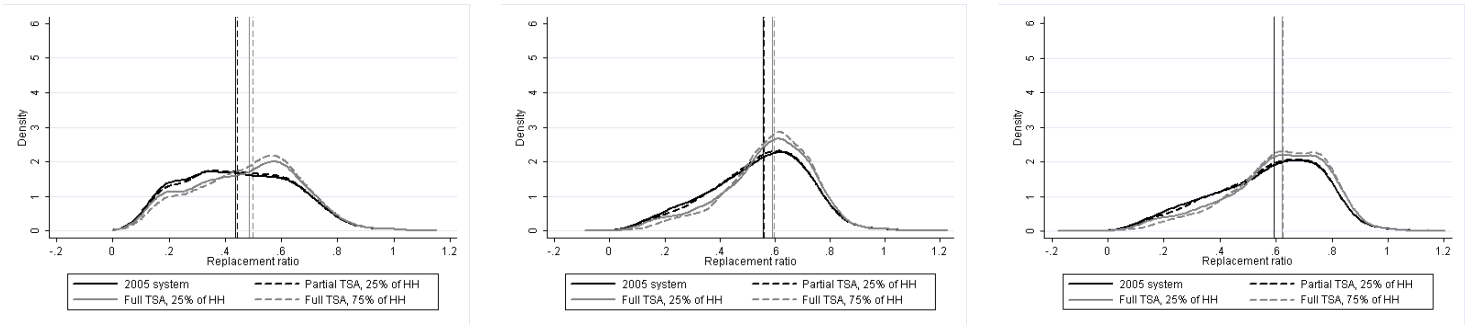


Single person with children

No sharing, (RR_2^s) 5D

Sharing "type-1", (RR_2^s) 5E

Sharing "type-2", (RR_2^s) 5F

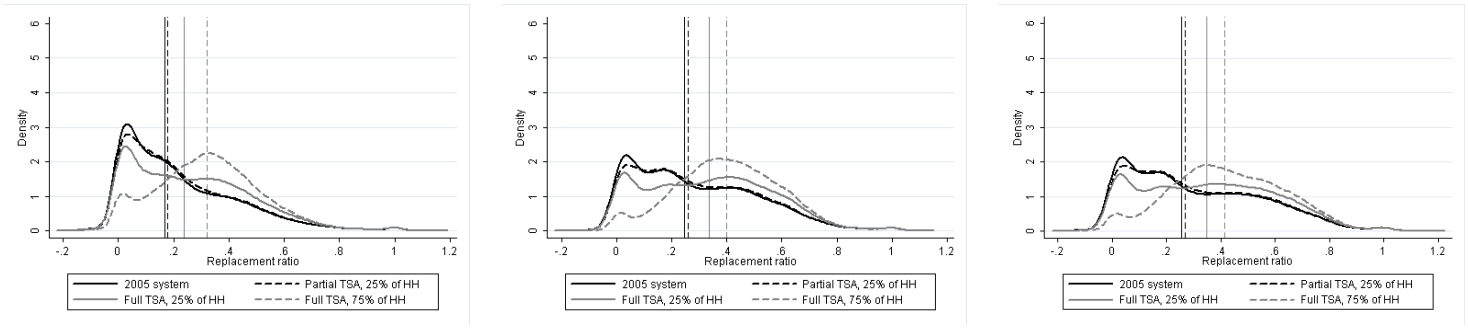


First earner man

No sharing, (RR_2^s) 5G

Sharing "type-1", (RR_2^s) 5H

Sharing "type-2", (RR_2^s) 5I

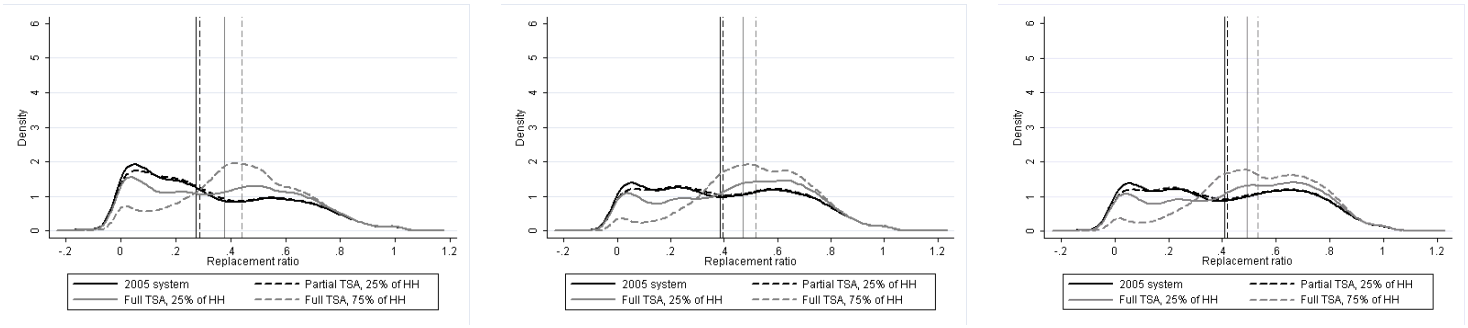


First earner woman

No sharing, (RR_2^s) 5J

Sharing "type-1", (RR_2^s) 5K

Sharing "type-2", (RR_2^s) 5L



Note: Replacement ratios computed according to equations 1-3 for panels A, D, G, J, and these equations adjusted according to equation 6 for panels B, E, H, K and equation 9 for panels C, F, I and L. Vertical lines represent respective median RRs. See text for details of reforms.

Source: Authors' calculations using the SIMPL micro-simulation model.