Single parents - single outcomes?

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The economic welfare of single parent households in eleven European countries

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Abstract

This master thesis seeks to evaluate the social economic wellbeing of single parent households across eleven European countries. Starting with market income, taxes and transfers are incorporated to arrive at a disposable income figure. Effort is further made to include the value of in kind transfers, more specifically education and health care services. This results in an extended income concept, where redistribution both in cash and in kind is accounted for.

Income figures for market income and disposable income are retrieved from the Luxembourg Income Study (LIS). The data is based on national surveys from 2004/2005, and include on average 593 single parent households per country. Data on education expenditures are taken from the Euro stat database and include primary and secondary education. In line with previous literature on public services, tertiary education is excluded from the analysis. Data on health care expenditures are found in the OECD Health database, and include all *public* expenses related to health care. Health care income is allocated to the households based on the so called insurance principle, in which expected health care usage is dependent on age and sex. All income figures, both in cash an in kind, are adjusted according to the square root equivalence scale.

Borrowing from an extensive literature on welfare state typology, the eleven sample countries are classified into five different welfare regimes; Scandinavian, Anglo-Saxon, Bismarckian, Southern and Post-communist. The hypothesis of this thesis is that single parents gain more in welfare regimes with universal, rather than targeted, social benefits, implying that the level of redistribution should be particularly high in the Scandinavian countries. The underlying reasoning is that popular support for public redistribution is higher with universal coverage, thereby resulting in more generous social services. This is in line with the findings of Moene and Wallerstein (2001), Brady and Burroway (2012), Mitchell et al (1994) and Korpi and Palme (1998).

Single parents are found to obtain an equalized market income only 60% as high as other parents. This figure increases to 72% once the tax-transfer system is accounted for, implying an increase in relative income of around 20%. Adding education and health care benefits to the analysis further increases relative single parent income by 10%, resulting in a total equalized income 79% as high as other parents. Cash redistribution is thus found to account for two thirds of the redistributive effect, while the remaining impact is caused by in kind income. Including more publicly provided goods in the analysis should increase the relative importance of in kind redistribution further. Total redistribution is found to be high in the Nordic countries, at above 50%. In accordance with the hypothesis, it thus seems as though single parents are important beneficiaries of universal welfare regimes, even though these do not specifically target low income households. The results further suggest that type of welfare regime is an important indicator in assessing the re-distributional gain directed at single parent households.

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1 Introduction

This master thesis seeks to evaluate the social economic wellbeing of single parent households across eleven European countries. Starting with market income, taxes and transfers are incorporated to arrive at disposable income. Effort is further made to include the value of public services in order to establish an extended income concept. It is thus possible to address the level of redistribution achieved in a given country – both in cash and in kind. Precisely because single parent households are one of the household types that consistently perform below average economically, their relative outcomes are of great interest in assessing the degree to which social welfare systems succeed in ensuring the economic wellbeing of vulnerable groups.

Borrowing from an extensive literature on welfare state typology, the eleven sample countries are classified into five different welfare regimes; Scandinavian, Anglo-Saxon, Bismarckian, Southern and Post-communist. The hypothesis of this thesis is that single parents gain more in welfare regimes with universal, rather than targeted, social benefits, implying that the level of redistribution should be particularly high in the Scandinavian countries. The underlying reasoning is that popular support for public redistribution is higher with universal coverage, thereby resulting in more generous social services. This is in line with the findings of Moene and Wallerstein (2001), Brady and Burroway (2012), Mitchell et al (1994) and Korpi and Palme (1998).

Consider the stylized example of a targeted and a universal welfare system in a context of majority voting among non-altruistic voters. The targeted system relies on a tax t to finance benefits b, directed at single parents only. This is captured by equation (1), where n stands for number of individuals, w stands for wage, SP stands for single parents, MC stands for the middle class, and R stands for the rich. In the universal welfare regime a tax T is levied to finance benefits B, directed at all types of individuals, as illustrated in equation (2).

$$t(n_{SP}w_{SP} + n_{MC}w_{MC} + n_{MC}w_{MC}) = b\, n_{SP} \tag{1}$$

$$T(n_{SP}w_{SP} + n_{MC}w_{MC} + n_{MC}w_{MC}) = B(n_{SP} + n_{MC} + n_R) \tag{2}$$

$$\frac{n_{SP}}{n_{SP} + n_{MC} + n_R} < 1/2 \tag{3}$$

$$\frac{n_{SP} + n_{MC}}{n_{SP} + n_{MC} + n_R} > 1/2 \tag{4}$$

Assuming that neither single parents nor the rich make up the majority of the population, so that (3) and (4) holds, some simplistic, but interesting conclusions emerge. With a targeted welfare system it will not be possible to sustain a level of positive redistribution by majority voting, so that $t = 0$. This is due to the fact that only single parents benefit from the system, making it politically attractive to cut taxes and decrease spending. With a universal system on the other hand, all individuals receive some gains. Because contributions are paid in proportion with income, while benefits are shared equally, it is assumed that single parents and the middle class are net beneficiaries in a universal welfare scheme. As a result, it will be possible to obtain a positive amount of redistribution, so that $T > 0$. The assumption that single parents and the middle class benefit from the universal welfare regime is similar to the condition found in Moene and Wallerstein (2000, p.11) that the median of the earnings distribution is less than (or equal to) the mean.

This simple example illustrates the case for relying on universal, rather than targeted, benefits, in order to help vulnerable groups. While the assumption of purely self-interested voters is clearly too strict, the positive correlation between universal benefits and welfare state generosity is supported by empirical findings (see for example Mitchell et al. 1994 and Brady and Burroway 2012).

Income figures for market income and disposable income are retrieved from the Luxembourg Income Study (LIS). The data is based on national surveys from 2004/2005, and include on average 593 single parent households per country. Data on education expenditures are taken from the Euro stat database and include primary and secondary education. In line with previous literature on public goods, tertiary education is excluded from the analysis. Data on health care expenditures are found in the OECD Health database, and include all *public* expenses related to health care. Health care income is allocated to the households based on the so called insurance principle, in which expected health care usage is dependent on age and sex. All income figures, both in cash an in kind, are adjusted according to the square root equivalence scale.

Single parents are found to obtain an equalized market income 60% as high

as other parents. This figure increases to 72% once the tax-transfer system is accounted for, implying an increase in relative income of around 20%. Adding education and health care benefits to the analysis further increases relative single parent income with 10%, resulting in a total income 79% as high as other parents. Cash redistribution is thus found to account for two thirds of the re-distributional effect, while the remaining impact is caused by in kind transfers. Including more publicly provided goods in the analysis should increase the relative importance of in kind income further.

The low standard of living among single parent households is by itself enough to merit an interest in their relative economic wellbeing across countries and welfare regimes. However, single parent families are of especial interest due to their steadily increasing size. Single parent households have come to account for almost 10% of all households, and are expected to increase further in magnitude during the coming years (OECD 2008 p.29). Combining this with their low standard of living should make them one of the most interesting household groups seen from a policy perspective.

Total redistribution is found to be high in the Nordic countries, at above 50%. In accordance with the hypothesis, it thus seems as though single parents are important beneficiaries of universal welfare regimes, even though these do not specifically target low income households. The results further suggest that type of welfare regime is an important indicator in assessing the re-distributional gain directed at single parent households.

The following section elaborates on the economic situation of single parent households in Europe. Section 3 introduces the five welfare regimes, and provides a brief introduction to some previous findings. Education and health care services are discussed in section 4, before a description of the technique used to assign in kind income is offered in section 5. The calculations for cash income are outlined in section 6, followed by the calculations for in kind income in section 7. Finally, a discussion of the results is offered in section 8.

2 Single parent families in Europe

The demographic changes taking place in Western countries are not limited to declining fertility rates and aging populations. The structure of the typical household unit is also changing. According to the OECD (2008, ch.2) families are shrinking in size, and an increasing share of the adult population is now living alone.

Table 1 illustrates the number of single parent households as a share of all household types. Single parent families make up on average 9% of all households, varying from 5% in Switzerland to 13% in Poland. Considering single parent households as a share of all households *with children* would obviously produce larger figures. Although the share of male single parents has increased in recent years, the magnitude is still relatively limited. Women make up on average 84% of all single parents, and account for less than 80% only in Luxembourg. Considering the two variables simultaneously reveals a weak positive correlation, suggesting that women account for a larger share of single parents in countries where single parenting is more common.

OECD projections from 2011 indicate that the prevalence of single parent households will increase over the next 20 years. For those countries with projections available, the largest expected increases are found in the United Kingdom and Norway, where single parent households are expected to increase with 22 and 27% respectively[1].

Table 1: Share of single parent households.

Country	Single parent households	Share of which are single mothers
Switzerland	5.2	85.1
Sweden	7.0	85.0
Finland	7.6	84.9
Luxembourg	8.4	77.7
Norway	8.6	82.0
Italy	8.9	82.5
Austria	9.7	85.3
United Kingdom	9.8	86.7
Spain	9.9	81.1
Hungary	10.7	87.4
Poland	12.6	87.9

Single parent households as a share of all households (%), and share of which are single mothers (%), year 2000. Data: OECD.

2.1 Single parent economic outcomes

Single parent households face higher poverty risks for several reasons. Living without a partner means not being able to access the economic gains connected

[1]Projections are available for Switzerland (8% increase), Austria (10% increase), United Kingdom (22% increase), Norway (27% increase), and other European countries not in the sample (OECD 2011, p.29).

to cohabitation, which are believed to be substantial (see for example Sørensen 1994). Couples living together should be able to save expenses on budget posts such as fuel, rent, heating etc., thereby giving them an economic advantage compared to those living alone. By pooling their resources they also succeed in mitigating the economic risks of (unplanned) unemployment (OECD 2008, p.59). Second, single parent families have an unfavorable demographic profile, as the child-to-adult ratio is high. The average single parent family has more children than adults, thereby increasing the need for a high income of the only potential earner in the household. An additional reason why poverty risks are high among single parents is the gender composition of the household heads. As women earn less than men in all sample countries, the high share of single mothers is found to substantially reduce the expected income of single parent households (see for example Nielsen 2004).

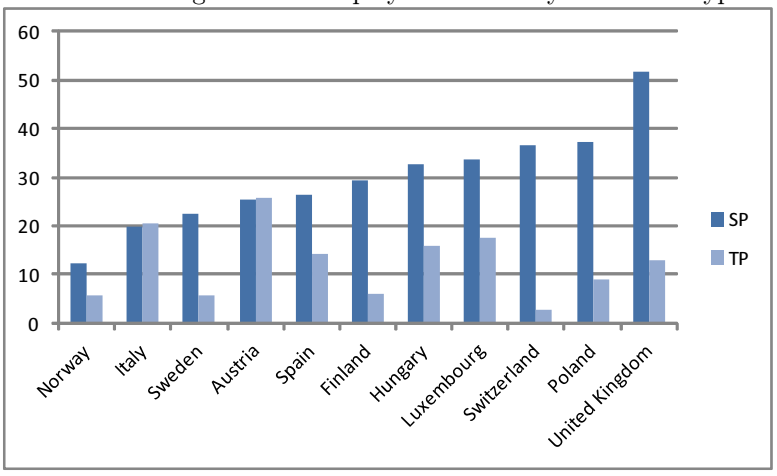
Other personal characteristics of the single parent besides gender may also help in explaining their elevated poverty risks. Rector and Kim (2007), Norton and Glick (1986) and Western et al. (2008) find that single mothers in the United States are younger and less educated than other mothers, characteristics which correlate with lower income levels. The socioeconomic background of single parents, as well as the average number of children, may be other relevant factors. Wong et al (1993) find that American single mothers are younger than single mothers in other Western countries, and also have more children. The authors thus argue that the personal characteristics of single mothers are less favorable in the United States than in Europe.

An important factor in addressing the economic welfare of single parent households is labor market participation. Data from LIS indicate that on average 56% of two parent families have two earners in the household, and only 4% of these families report having no earners in the household. In Norway and Sweden both parents are employed in more than 60% of the cases, while almost no two parent households are without any earners. As could be expected the picture changes dramatically when considering single parent families. This household group has less flexibility with regards to child care and work, and may face more limited opportunities in the labor market. This could be the result of the personal characteristics of the household head, such as education and experience, or may be related to a higher need for flexible work hours, less opportunities to work nights/weekends etc. On average, 20% of single parent families report having no earners in the household. The figure is especially high for Poland and the United Kingdom, where respectively 36 and 46% of single

parent families have no earners in the household. In no sample country is the figure below 10%.

LIS also provides data on the employment status of the household head. Turning from number of earners to employment status yields a similar impression. Unemployment rates by household type are illustrated in figure 1, and highlight the large cross country variations. While only 12% of single parents are unemployed in Norway, the figure for the United Kingdom exceeds 50%. The United Kingdom, Switzerland and Poland are the three countries in which single parent unemployment is the highest, but two parent unemployment is found to be modest in all three cases. Similarly, Italy and Austria have the two highest unemployment rates for two parent families, but report low relative unemployment rates for single parent households. It is thus clear that the correlation between single parent unemployment and two parent unemployment is relatively weak. These findings indicate that the employment status of single parent households is affected not only be macroeconomic conditions, but also rely on country specific factors such as culture, norms, institutions etc.

Figure 1: Unemployment rates by household type



Unemployment rates for single parent households (SP) and two parent households (TP) (%), year 2004. Data: LIS.

In explaining the low economic outcomes of single parent households both structural and individual causes must be considered. Lack of adequate child care services and a rigid labor market will make it harder for single parents to cope economically, but may prove manageable challenges for the well educated, high-

earning single parent. An extensive welfare state with generous social services will likewise make the personal characteristics of the single parent less crucial in avoiding long-lasting poverty spells.

Table 2 illustrates the poverty rates for children residing in single parent and two parent households by the work status of the parent(s). A child residing in a two parent household where both parents are employed faces an average poverty risk of 3% across the sample. The figure varies from 0-1% in Norway, the United Kingdom, Finland and Sweden, to 5-6% in Luxembourg and Poland. If however, the child lives with an unemployed single parent, the poverty risk skyrockets to an average of 54%, exceeding 70% in Poland, Spain and Italy. As is easily seen from the table, the employment status of the single parent is important in deciding the poverty risk. In going from unemployed to employed the poverty risk of children living in single parent households falls with 36 percentage-points, from 54% to 18%.

The OECD (2008, p.70) finds that youths and single parents have lost ground economically in most Western countries. The winners are those at the end of their working life and elderly people, who have experienced a substantial decline in poverty rates over the past decades. Combining this with the fact that single parent households are becoming increasingly more common, suggests that ensuring their economic wellbeing should be a high priority in shaping social policy in the future.

Table 2: Child poverty risk by household type

	SP		TP	
Country	Not working	Working	One working	Both working
Switzerland	22	-	-	-
Hungary	31	21	6	3
United Kingdom	39	7	9	1
Norway	42	6	7	0
Finland	46	6	9	1
Austria	51	11	4	3
Sweden	55	11	18	1
Luxembourg	69	38	16	5
Poland	75	26	28	6
Spain	78	32	23	5
Italy	88	23	23	3
Average	54	18	14	3

Poverty risk for children in single parent households (SP) and two parent households (TP) by work status (%), year 2008. Data: OECD.

3 Welfare state regimes

In 1990 Esping-Andersen published his *Three Worlds of Welfare Capitalism*, thereby sparking a long lasting debate on welfare state typology. In the original version only three welfare state categories were included – liberal, corporatist and social democratic. The classification technique has been discussed and elaborated on in a now substantial academic literature, resulting in a number of different, but similar, proposed categories. This thesis relies mainly on the classification system of Ferrera (1996)[2], but also draws on the efforts of Fenger (2007) to include the Eastern European countries in the welfare regime typology. The result is summarized in table 3. The United Kingdom is described as the only Anglo-Saxon or liberal country in the sample, while the Bismarckian or corporatist regimes include Luxembourg, Austria and Switzerland. Sweden, Norway and Finland make up the Scandinavian or social democratic group, while Italy and Spain are the only two Southern countries in the sample. In line with Fenger (2007), Poland and Hungary are named Post-communist European type regimes, and accordingly grouped together.

Table 3: Welfare state regimes

Anglo-Saxon	Bismarckian	Scandinavian	Southern	Post-communist
United Kingdom	Luxembourg	Sweden	Italy	Poland
	Austria	Norway	Spain	Hungary
	Switzerland	Finland		

Welfare state regimes (Arts and Gelissen 2002, Ferrara 1996, Fenger 2007)

The Anglo-Saxon countries, in this case only Britain, are characterized by fairly high welfare state coverage, in which social assistance is often found to be means tested or targeted. At the other end of the scale one finds the Scandinavian countries, where *universal* coverage appears to be the norm. In addition to their universal welfare coverage, the social democratic countries are further characterized by generous social benefits (Arts and Gelissen 2002, p.177). The Bismarckian and the southern countries are not as easy to categorize with respect to targeting and universalism. The Bismarckian countries do however have more generous welfare arrangements, while the southern countries fall behind in the level of *minimum* social assistance in particular (Arts and Gelissen 2002). It is therefore hypothesized that single parents will benefit more from the Bismarckian welfare regimes than the Southern ones. Poland and Hungary fall

[2] As presented in Arts and Gelissen (2002, p.43-44).

into the category of Post-communist European type welfare regimes, as named by Fenger (2007, p.24-25). According to the author these countries resemble the Bismarckian countries, but are characterized by lower levels of social economic well-being. However, the group performs better than the so called former-USSR type of countries, a group consisting of Belarus, Estonia, Latvia, Lithuania, Russia and Ukraine (none of which are included in the sample). This is made visible in the higher levels of economic growth, inflation and egalitarianism found in the European type countries (Fenger 2007, p.25). Because of the relatively low level of social spending found in these countries it is expected that single parents will gain less than in other regimes.

There exists a substantial literature on the efficiency and success of targeted versus universal welfare benefits. The advocates of means testing argue it is more efficient in reaching the poor, while at the same time adhering to the public budget constraint (Smolensky et al. 1995). In other words, for a given sum of public expenditure, means tested transfers would have a larger impact on those most in need. However, proponents of universal welfare regimes argue that the size of the redistributive budget is not fixed, but is in fact endogenous to the regime chosen. In a system where public transfers adhere to a politically weak group, popular support for the re-distributional scheme will be less, thereby making it easier for governments to cut social spending over time. This can lead to the so called paradox of redistribution, in which increased targeting of the poor results in less poverty reduction (Korpi and Palme 1998). Moene and Wallerstein (2001) explore this proposition in a political economy model, and conclude that the only way to ensure popular support for welfare benefits with self-interested voters is to target the benefits sufficiently broadly. In a paper on targeting and universalism Brady and Burroway (2012) look at single mother poverty, and conclude that universal social policy is more efficient in reducing poverty among single mothers.

Based on the empirical and theoretical findings of Moene and Wallerstein (2001), Brady and Burroway (2012), Mitchell et al. (1994) and Korpi and Palme (1998) the hypothesis of this thesis is that single parents will benefit more from a universal then a targeted welfare regime. Even though single parents often have low income, and thereby should be among the main beneficiaries of targeted welfare benefits, this effect is thought to be outweighed by the higher levels of welfare generosity found in more universal regimes.

4 Public provision of private goods

The government redistributes economic resources not only through the tax-transfer system, but also through the provision of goods and services. The public economics literature provides sound arguments for the provision of public goods, as these tend to be underprovided in a private market solution. Although there are few good examples of pure public goods there are many interesting cases of mixed public goods. These include police, defense, roads etc. Such goods tend to be universally provided, as restriction is often difficult or unwanted. The provision of public goods does have re-distributional effects, and should optimally be included in the analysis. However, as this would require vast amounts of data no such attempt is made.

The literature is less clear on the case for public provision of private goods, as conventional economic theory suggests that the provision of such goods should be left to the market. According to Christiansen (2002, p.150) private goods that face public provision have at least three factors in common. First, they are services, and thus difficult to resell. Second, they have a particular and direct impact on human resources, and thus an important effect on people's ability to function in society. Finally, the production of these goods is typically labor intensive. As a result, most publicly provided private goods come under the labels "health", "education" and "care" (Christiansen 2002, p.150). Accordingly, this paper will focus on education and health care services.

4.1 Education services

According to Christiansen (2002, p.158) the main argument for public provision of education services is that credit markets are an inadequate source of funding for these expenditures. As future earnings cannot be pledged as collateral, access to education in a private market solution would be granted not to the most promising, but to those with sufficiently affluent parents.

Single parent households are expected to benefit especially from education services because of the relatively high number of children per adult. Also, because single parent families have income levels below average, access to education may be dependent on public provision. Any differences in the subjective valuation across households will however not be captured in the analysis.

Public provision of education services is found throughout Europe and make

up an important share of the public budget. On average, 6% of GDP is used on public education services, implying that education stands for about 12% of total public expenditures. As Table 4 illustrates, the figures vary across the sample countries, with education services standing for 9-17% of all public expenses.

Table 4: Public education expenditures

Country	Education exp. (% GDP)	Education exp. (% total exp.)
Italy	5	9
Austria	5	11
Hungary	6	11
Spain	5	11
Luxembourg	5	12
Finland	6	12
Sweden	7	13
Norway	6	13
Poland	6	13
United Kingdom	6	14
Switzerland	6	17

Public education expenditures as a share of GDP (%) and as a share of total public expences (%), avg. year 2005-2009. Data: SILC.

4.2 Health care services

Health care services are according to Christiansen (2002, p.156) the most important publicly provided good. It's funding is based on an insurance principle, in which inclusion is universal. This ensures that the adverse selection problem of insurance is minimized, thus providing a convincing argument for public provision.

Health care expenditures stand for on average 6% of GDP, ranging from 2% in Switzerland to 8% in Norway and the United Kingdom. This implies that health care services account for on average 14% of all public expenditures. Public spending on health care exceeds 15% of total spending in about half the sample, and accounts for less than 10% only in Switzerland.

Although access to health care services is probably of great importance to single parent households, it is not expected that these services should provide any particular economic benefit to single parent families within the current framework. The reason for this is the low average age of single parent house-

holds, which is linked to health care needs below average. Only after turning 60 do health care usage rates exceed the average value. Any difference in health care needs between single parent families and other families, besides those captured by age or gender, are not accounted for in the analysis.

Table 5: Public health care expenditures

Country	Health exp. (% GDP)	Health exp. (% total exp.)
Switzerland	2	6
Hungary	5	10
Poland	5	12
Luxembourg	5	13
Sweden	7	14
Italy	8	16
Finland	8	16
Austria	8	17
Spain	7	17
United Kingdom	8	18
Norway	8	18

Public health care expenditures as a share of GDP (%) and as a share of total public expences (%), avg. year 2005-2009. Data: SILC.

5 Assignment technique for in kind income

5.1 Valuation of public services

Public transfers which come in kind rather than in cash restrict the choice set of the receiver. It therefore seems plausible that such income should have a lower value than its cash equivalent. This effect may differ across households, as especially low income families may have preferred to spend the in kind transfer in other ways (Smeeding et al. 1993, p.237). However, one could also make the case that public services are of particular high value to low income households, as these services might otherwise have been inaccessible. An example is higher education, which might have been unobtainable for certain groups without public provision. Observing what individuals would spend on such services in a private market or undertaking surveys on willingness to pay would give an indication of the actual valuation (Aaberge et al. 2010b, p.332).

This paper follows the literature in assuming that the value of public services

equals the cost of production. See for example Smeeding et al. (1993), Paulus et al (2009), Garfinkel et al. (2006) and Aaberge et al. (2010a,b). While this may lead to an overstatement of the benefits received, it is not given that it should bias the cross country comparisons. Also, as society is directing a certain amount of public expenditures at services such as education and health care, this may reflect the value placed on these goods by society. A paternalistic approach would then indicate that even if households would spend less on education and health care in a private market, the actual benefit is equal to the level society sees fit.

Another concern connected to valuation at cost of production is variations in price (Aaberge et al. 2006, p.62, 2010a, p.19). If some countries face higher unit costs of production this will lead to an overstatement of the value of these services. For example, Anderson et al. (2006) argue that the reason why US health expenditures are much higher than the European average is due to price differences. As it appears likely that costs may differ across countries this caveat should be kept in mind.

It is further assumed that only the household receiving the public transfer benefits, thereby ignoring any external effects. As the public services considered are likely to have an impact on the aggregate level of human capital in the country there may very well be positive externalities connected to these services, but they will not be included in the analysis. Further, it is assumed that a transfer directed at a specific household member benefits the household as a common unit.

5.2 Allocation of public services

Education expenditures are assumed to benefit all households with children in the relevant age group, thereby implying a take up rate of 100%. A possible concern is the relative importance of private education services, but this is, according to Aaberge et al. (2010b, p.333), modest. Tertiary education is excluded from the analysis, in line with most literature on the subject. See for example Smeeding et al. (1993), Garfinkel et al. (2006) an Aaberge et al. (2010a,b).

To allocate the education transfers, per student expenditure levels are calculated based on Euro stat data. The average household then receives the per student transfer times the expected number of children in the relevant age group

residing in the household.

The allocation of health care services differs from education services, in being independent of actual usage. In stead, the so called insurance principle is followed. This is in line with previous papers such as Aaberge et al. (2010), Smeeding et al. (1993) and Paulus et al. (2010). In a private market people will pay different premiums on their health insurance based on certain demographic characteristics. The *expected* health care usage is thus what is assumed to matter for the benefit received. Accordingly, health care transfers will be allocated based on the demographic profile of the average household, in which data on health care usage by age and sex is provided by the European commission (2012). The average household thus receives an in kind health income equal to the health care expenditure per person multiplied with the expected usage of the different household members.

5.3 Equivalence scales

Households differ in size and composition, which leads to differences in needs. A family of two needs more income than a family of one to obtain the same standard of living, but probably not twice the amount. This is due to economics of scale connected to cohabitation. It seems plausible that the two-person household will be able to spend less per person on expenditure posts such as housing, heating, transport etc., than the single person household. It is therefore necessary to correct for household size when undertaking household comparisons.

While the concept of equivalence scales is intuitively appealing, the actual calculation is somewhat arbitrary. Most scales control for both size and age composition by assigning different weights to different people, while other scales account only for the total household size. There seems to be little agreement in the literature on which scale that best captures household needs. Smeeding et al. (1993) assign a weight of 1.0 to the first adult, a weight of 0.4 to the second adult, and a weight of 0.3 to each child. Garfinkel et al. (2004) account only for total size and divide by the square root of the household size. The Euro stat database makes use of the modified OECD scale, which assigns a weight of 1.0 to the first person above 14, a weight of 0.5 to the second person above 14, and a weight of 0.3 to children aged 14 or below. Several studies indicate that the choice of equivalence scale may have an impact on poverty and inequality measures, highlighting the need for a common framework (Buhmann et al. 1988,

de Vos and Zaidi 1997).

Adding in kind transfers to the picture complicates the analysis further, as it is not obvious that cash and non-cash income should be equalized according to the same principles. Smeeding et al. (1993) suggest not equalizing in kind income at all, as they argue that there are no economics of scale in non-cash income. Garfinkel et al. (2004) utilize the same equivalence scale for cash and non-cash income, and divide all income by the square root of the household size. An alternative approach is put forward in Aaberge et al. (2010a) as an attempt to control for differences in needs across households. The authors develop a theoretical framework to identify the minimum needs of different target groups, and estimate these needs with the use of Norwegian municipality data. This allows the authors to create a need based equivalence scale, where different household types need different amounts of public services in order to reach the same standard of living. For example, elderly people tend to need more health care benefits, and families with children need more education benefits. Aaberge et al. (2010a,b) argue that not allowing for differences in needs may lead to the incomes of groups with high needs for public services being overestimated.

This paper's focus is exclusively on single parent families. It is assumed that their needs are identical across countries once the average number of children is accounted for. Two parent households are used as a reference group, but no attempt is made to compare single parent income to two parent income. Instead, single parent income *relative* to two parent income is compared across countries. As long as the assumption is made that the differences in need between single parent and two parent households are the same for all countries, needs adjustment as outlined by Aaberge et al. (2010a,b) should not be needed.

The household income figures used in this paper are taken from the Luxembourg Income Study (LIS), and are already equalized according to the square root scale. To ensure consistency both cash and non cash income will be equalized according to this scale.

6 Cash income calculations

The Luxembourg Income Study (LIS) provides data on disposable income and market income for different household types. Market income is defined as total income, before taxes and transfers. The difference between market and dispos-

able income is thus the result of the tax-transfer system, reflecting the degree of cash redistribution in a given country.

The two income measures are provided for single parent and two parent households, by the gender of the household head. To arrive at the total income figures the gender distribution of the household heads are accounted for. This information is retrieved from the LIS database for all countries except Switzerland and Spain, in which OECD data are utilized. All income figures are adjusted for household size by the square root scale.

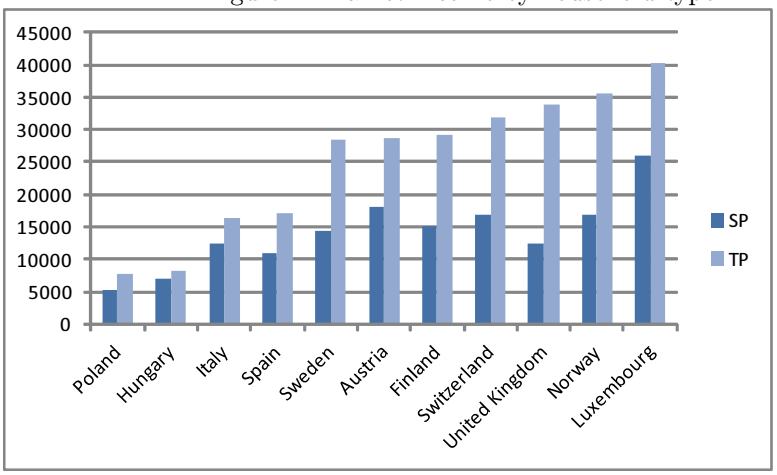
Eleven European countries are included in the analysis. These are Austria, Finland, Hungary, Italy, Luxembourg, Norway, Poland, Spain, Sweden, Switzerland and the United Kingdom. Country income figures are for 2004, with the exception of Sweden and Hungary, in which figures from 2005 are utilized. All income measures are expressed in purchasing power parity (PPP) adjusted dollars (Int$), and should therefore be comparable across the sample.

Some countries have certain gender specific data missing, in which case estimates are used to fill in the blanks. Income figures for single fathers are missing for Switzerland, Hungary and Italy. By combining single mother income with the average gender wage gap, single father incomes are estimated. The same procedure is used to estimate the income of two parent households headed by women in Hungary and Norway.

6.1 Market income

As illustrated in figure 2, single parent market income is well below that of other parents in all sample countries. While single parent income ranges from Int$ 5,154 in Poland to 25,974 in Luxembourg, two parent income ranges from Int$ 7,711 in Poland to 40,235 in Luxembourg. The relative country ranking is quite similar with respect to which household type is being considered, but especially two countries are affected. The United Kingdom moves down four places when going from two parent income to single parent income, reflecting the relative weak outcomes of British single parent families. Austria on the other hand, moves up four places, indicating that Austrian single parent families perform relatively well. Other countries move with a maximum of one place in the relative country ranking.

Figure 2: Market income by household type

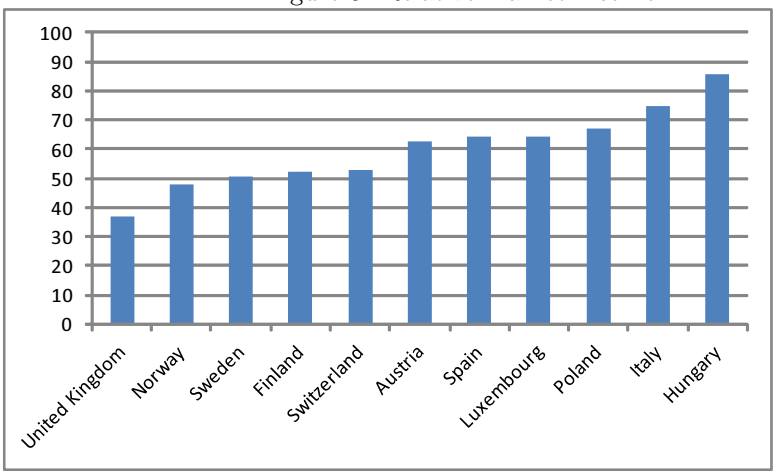


Market income for single parent households (SP) and two-parent households (TP) (Int$), year 2004. Data: LIS.

Figure 3 illustrates single parent market income relative to the income of two parent households. This is calculated according to formula (5). As can be seen, single parent families earn less than 50% of two parent families in the United Kingdom and Norway, and more than 70% of two parent families in Italy and Hungary. On average, single parents obtain a market income 59% as high as other parents.

$$Rel.SPincome = \frac{SPincome}{TPincome} * 100 \tag{5}$$

Figure 3: Relative market income

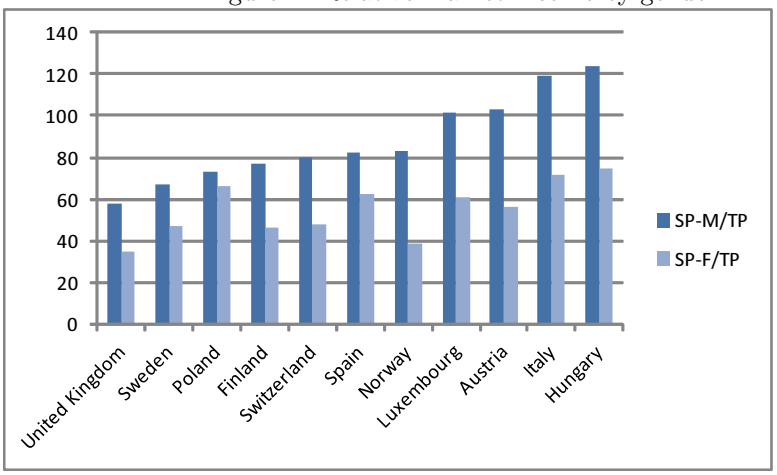


Single parent market income relative to two-parent market income (%), year 2004. Data: LIS.

A closer look at the market incomes of single parent households reveals substantial gender differences, as illustrated in figure 4. While single mothers on average earn only 55% of a two-parent income, single fathers earn on average 88%, with the figure exceeding 100% in four countries. The difference is especially striking in Norway, where single fathers have over double the relative income of single mothers.

Plotting the difference in relative outcomes of male and female single parents against the share of single fathers in the country results in a positive relationship, indicating that the single parent gender wage gap is larger in countries where single fathers are more common. While this could be a result of for example increased political power of single fathers, it may also be a result of some external factor such as country income, which seems to be linked both to larger wage gaps and to a higher share of male single parenting.

Figure 4: Relative market income by gender



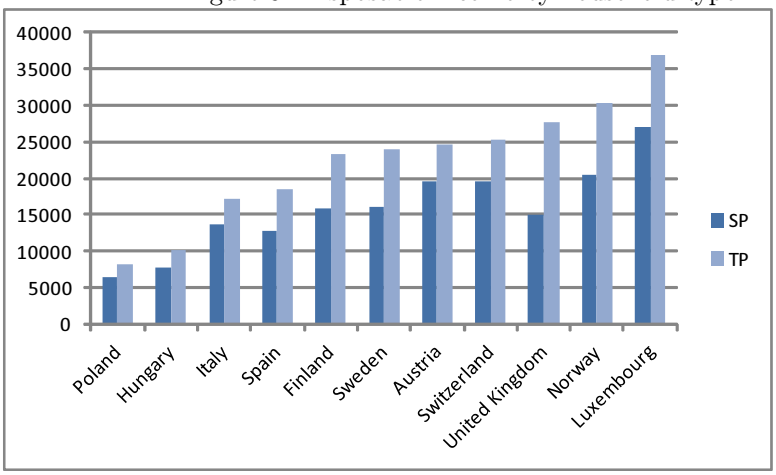
Relative market income of female headed single parent households (SP-F) and male headed single parent households (SP-M) (%), year 2004. Data: LIS.

6.2 Disposable income

The disposable income of single parent households is below that of a two-parent household in all sample countries, as illustrated in figure 5. However, the differences appear smaller in magnitude then was the case for market income. While the average single parent household has a disposable income of Int$ 15,856, the average two parent household has a disposable income of Int$ 22,396.

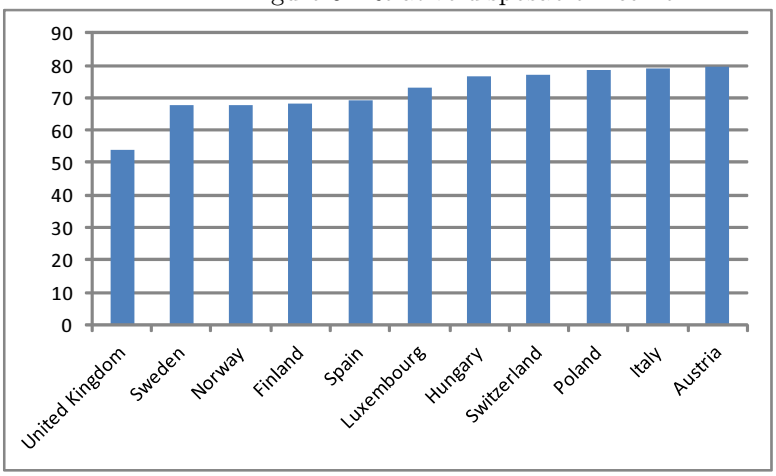
Expressing single parent disposable income relative to two-parent income yields the estimates presented in figure 6. Single parents have relative disposable incomes ranging from 70-80% in Luxembourg, Hungary, Switzerland, Poland, Italy and Austria, while having incomes just below 70% in Sweden, Norway, Finland and Spain. Relative single parent outcomes appear to be noticeably lower in the United Kingdom than in the rest of the sample, with relative income just exceeding 50%. This appears to be caused by the low relative market income of single parent families rather than a low degree of redistribution, suggesting that British single parents obtain noticeably low incomes in the market compared to other British parents. Part of the explanation may lie in the remarkably high unemployment rates observed for single parent households in the United Kingdom.

Figure 5: Disposable income by household type



Disposable income for single parent households (SP) and two-parent households (TP) (Int$), year 2004. Data: LIS

Figure 6: Relative disposable income

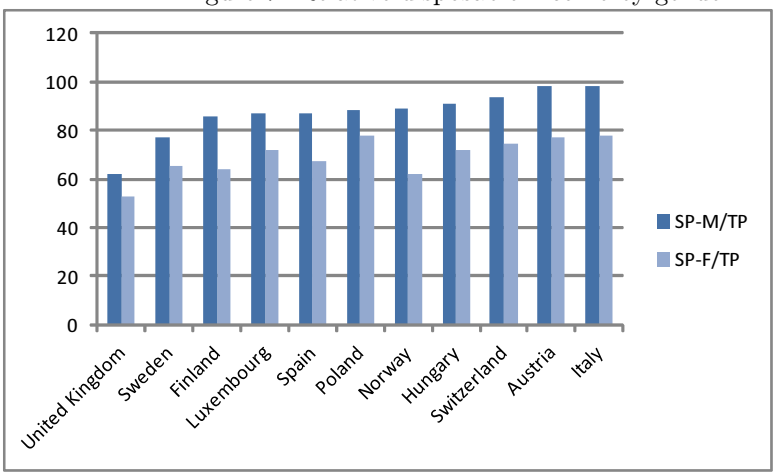


Single parent disposable income relative to two-parent disposable income (%), year 2004. Data: LIS

Considering relative income by gender shows that the gender gaps have decreased quite substantially in going from market income to disposable income. Although the single parent gender gap is still largest in Norway, it has fallen dramatically, from 116% to 44%. On average, single fathers have relative disposable incomes that exceed single mothers with 26%. This is much lower than

the 62% difference found when considering relative market income, suggesting that single mothers receive particularly large gains from the tax-transfer system. However, these gains are nowhere near eliminating the gender wage gaps.

Figure 7: Relative disposable income by gender



Relative male single parent disposable income (SP-M) and relative female single parent disposable income (SP-F) (%), year 2004. Data: LIS.

6.3 The tax-transfer effect

Disposable income can be either higher or lower than market income, depending on whether the household is a net beneficiary or a net financer of the tax-transfer system. Single parent households appear to be net beneficiaries in all countries, as seen from table 6. Going from market income to disposable income increases their income by on average 14%, ranging from 4% in Luxembourg, to 25% in Poland. Disaggregating the results by gender reveals that the positive effect is almost entirely driven by single mothers. Single fathers are net beneficiaries only in Spain and Poland, where their income increases by 14 and 27% respectively.

As for two parent households they appear to be net financers in most countries, and get their income reduced by on average 6% when moving from market income to disposable income. Only in Spain, Hungary, Italy and Poland does their income increase, and most notably so in Hungary. The gender differences appear modest in all countries when considering two-parent households, which is as could be expected.

Table 6: Change in income caused by tax-transfer system

Country	SP-M	SP-F	SP	TP-M	TP-F	TP
Luxembourg	-21	8	4	-9	-6	-8
Finland	-11	11	5	-20	-17	-20
Austria	-18	17	9	-14	-14	-14
Hungary	-9	20	11	24	27	24
Italy	-14	14	11	4	6	5
Sweden	-4	18	13	-17	-11	-16
Switzerland	-8	22	15	-21	-19	-21
Spain	14	17	17	8	8	8
United Kingdom	-11	25	20	-18	-17	-18
Norway	-9	37	21	-15	-13	-15
Poland	27	25	25	6	6	6
Average	-6	19	14	-7	-5	-6

Change in income when going from market income to disposable income (%), for male single parent households (SP-M), female single parent households (SP-F), single parent houesholds (SP), male headed two parent houesholds (TP-M), female headed two parent households (TP-F) and two parent households (TP), year 2004. Data: LIS.

While all single parent households achieve increased incomes through the tax-transfer system, this does not necessarily imply that their relative income must rise. As illustrated in figure 8, the relative outcomes of single parents do however improve for nearly all countries when taxes and transfers are accounted for. The exception is Hungary, in which single parent households actually see their relative income reduced by the public welfare system. The reason for this is found in table 6, in which it is made clear that Hungarian two parent households benefit *more* from the tax-transfer system than single parent households.

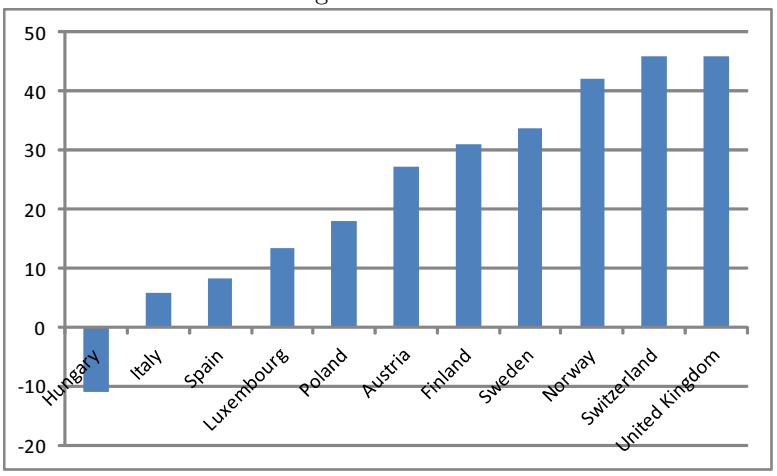
The largest redistributive effects are found in the United Kingdom, Switzerland and Norway, where relative single parent income increases by more than 40% when taxes and transfers are accounted for. Increases exceeding 30% are found in Finland and Sweden, with the increase for Austria just falling short of 30%. More modest increases are found in Luxembourg and Poland (10-20%) and Italy and Spain (less than 10%). It thus seems like the Scandinavian and the Anglo-Saxon countries are most successful in raising single parent relative income through the tax-transfer system.

Comparing the results from figure 8 to the relative market incomes of single parents, a clear pattern emerges. The countries that increase relative outcomes the most through the tax-transfer system are the countries in which relative

single parent outcomes were initially the lowest. The large amounts of redistribution in Norway, Switzerland and the United Kingdom must thus be seen in connection with the low market outcomes in these countries. Similarly, the two countries with the lowest degree of redistribution, Hungary and Italy, are also the countries in which relative single parent outcomes were originally the highest.

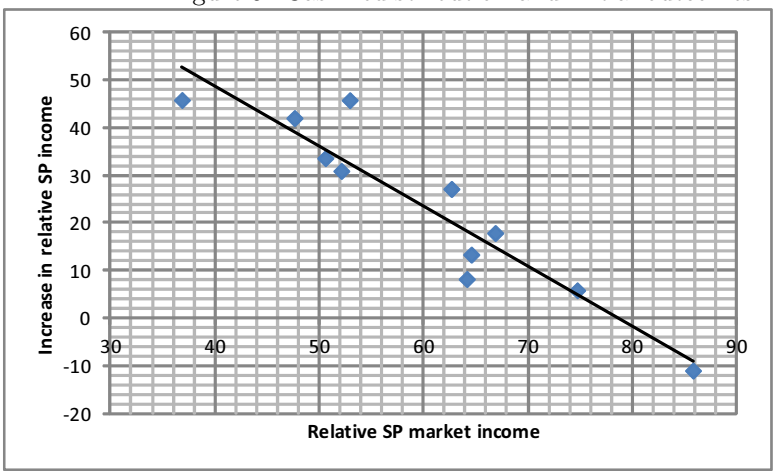
Figure 9 plots relative single parent market income against the degree of redistribution, thereby capturing the strong negative relationship. As a result of this trend there is less dispersion in relative disposable incomes then in market incomes across countries.

Figure 8: Cash redistribution



Change in relative single parent income when going from market income to disposable income (%), year 2004. Data: LIS.

Figure 9: Cash redistribution and initial outcomes

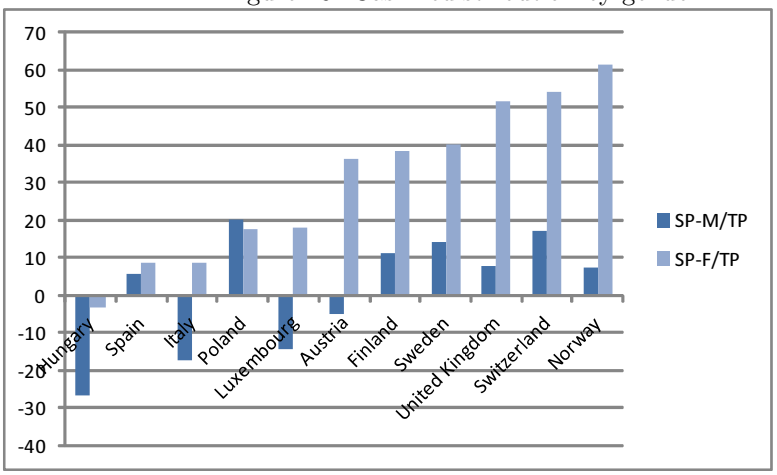


Relative single parent market income (%) and the increase in relative single parent income when going from market income to disposable income (%), year 2004. Data: LIS.

Decomposing the re-distributional effect by gender yields the results presented in figure 10. Both male and female single parents increase their relative income due to the tax-transfer system in Spain, Poland, Finland, Sweden, the United Kingdom, Switzerland and Norway. In Italy, Luxembourg and Austria, only female single parents benefit, while both genders are made relatively worse off in Hungary. Only in Poland however, do single fathers benefit more (or loose less) than single mothers.

While the United Kingdom achieved the largest redistribution when considering all single parents, the country moves down two places in the relative ranking when only single mothers are considered. Norway on the other hand, moves up two places, thereby achieving the highest degree of redistribution for female single parents with a 61% increase in their relative income. Other countries that get their relative ranking affected include Luxembourg and Italy, who move up one place, and Poland and Spain, who move down one place.

Figure 10: Cash redistribution by gender



Change in relative single parent income when going from market income to disposable income, by gender (%), year 2004. Data: LIS.

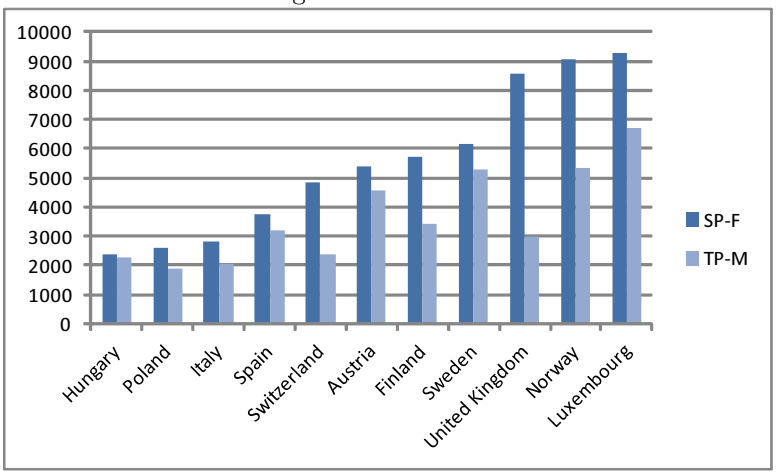
Transfers

A complete decomposition of the redistribution achieved when moving from market income to disposable income is not possible with the information at hand. However, as data exists on social transfers, transfer income and income taxes, most of the difference is captured. Note that the re-distributional effect found when considering market income and disposable income need not perfectly match the redistribution found when considering market income, income taxes and transfer. This is due to the components left out, such as capital taxes and wealth taxes. Because several of the sample countries do not provide data on male headed single parent households and/or female headed two-parent households when taxes and transfers are considered separately, only female headed single parent households and male headed two-parent households will be considered in the rest of this section.

Figure 11 illustrates the social transfer income received by the two household types. Single mothers receive more in social transfers than two-parent households in all sample countries, with the difference appearing especially large in Switzerland and the United Kingdom. The average single parent transfer income equals Int$ 5,496, with the equivalent two-parent figure being 3,642.

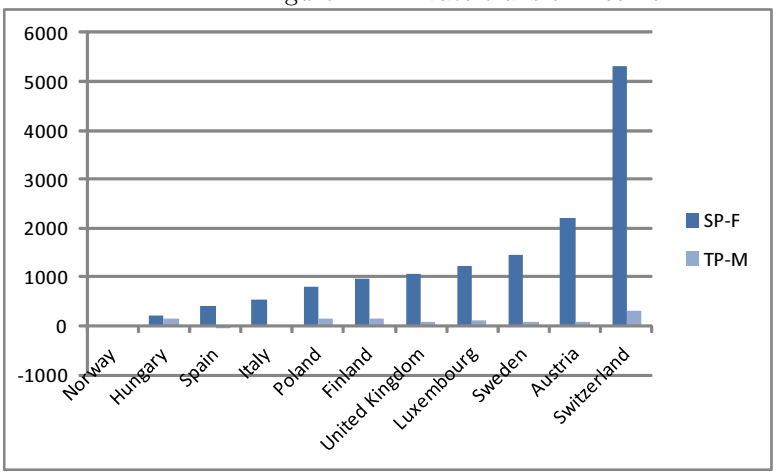
Private transfer income is found by subtracting social transfers from the total transfer income. The results are presented in figure 12. As can be seen, private transfers are lower in magnitude than social transfers, and appear quite limited in a number of countries. The figures for Norway are especially low, as single parent households receive only Int$ 12 in private transfers. Private transfer income is positive in all countries, with the exception of Spanish two-parent households. All though single parents appear to benefit from private transfers in a number of countries, Switzerland stands out as the only country where private transfers and social transfer are comparable in size. Swiss single mothers receive more than Int$ 5,000 in private transfers, which is more than double the amount of any other sample country. Although LIS achieves a high degree of consistency in its datasets, this could in theory be the result of some difference in statistical procedure.

Figure 11: Social transfer income



Social transfer income for female single parent households (SP-F) and male two-parent households (TP-M) (Int$), year 2004. Data: LIS.

Figure 12: Private transfer income

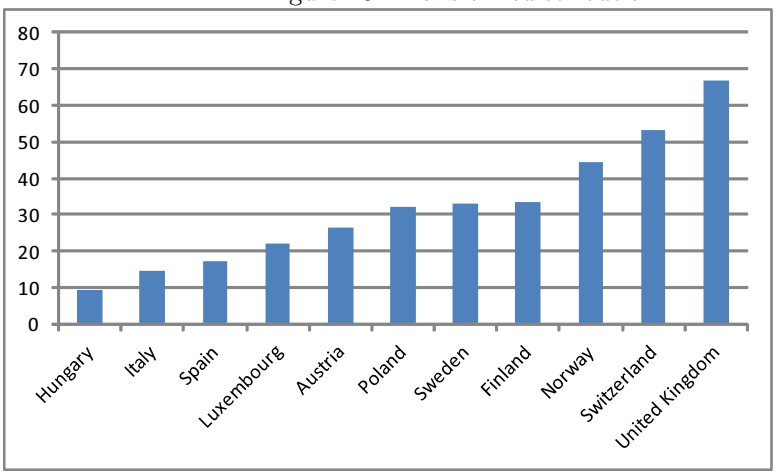


Private transfer income for female single parent households (SP-F) and male two-parent households (TP-M) (Int$), year 2004. Data: LIS.

As the transfer income of single parents exceed that of other parents in all countries, including transfers in the analysis should raise relative single parent outcomes. This is confirmed in figure 13, which illustrates the change in relative single parent income when transfers are added to market income. The largest effects are found in Norway, Switzerland and the United Kingdom, where relative incomes increase with 44, 53, and 67% respectively. Increases around 30% are found in Poland, Sweden and Finland, while increases ranging from 20-30% are found in Luxembourg and Austria. More modest effects are found in Hungary, Italy and Spain. Transfers are thus found to benefit single parents relative to other parents in all sample countries, and especially so in the Scandinavian and Anglo-Saxon countries.

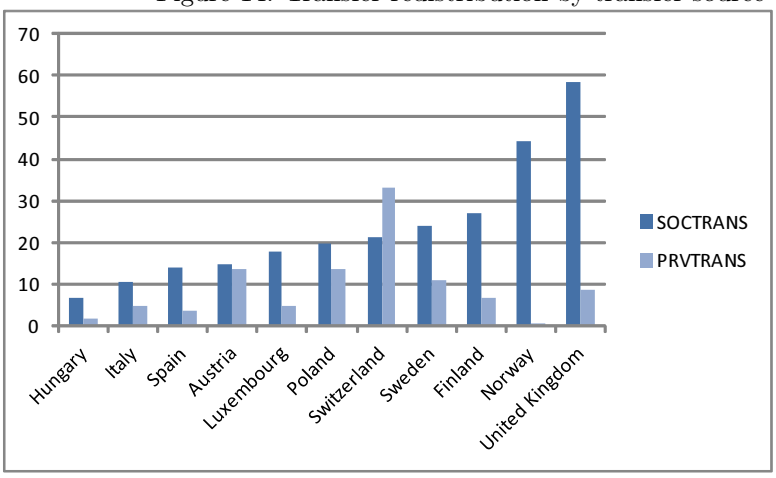
Looking at the figures for social and private transfers separately, it seems clear that the two vary in importance across countries. Figure 14 decomposes the increase in relative income by transfer source, with social transfers dominating private transfers in all countries except Switzerland. Social transfers increase relative outcomes the most in Norway and the United Kingdom, followed by Sweden and Finland. Private transfers on the other hand, have the largest effect in Switzerland, followed by Poland and Austria. Both social and private transfers are thus found to improve single parent relative outcomes across the sample.

Figure 13: Transfer redistribution



Increase in relative single parent income (SP-F/TP-M) due to transfer income (%), year 2004. Data: LIS.

Figure 14: Transfer redistribution by transfer source



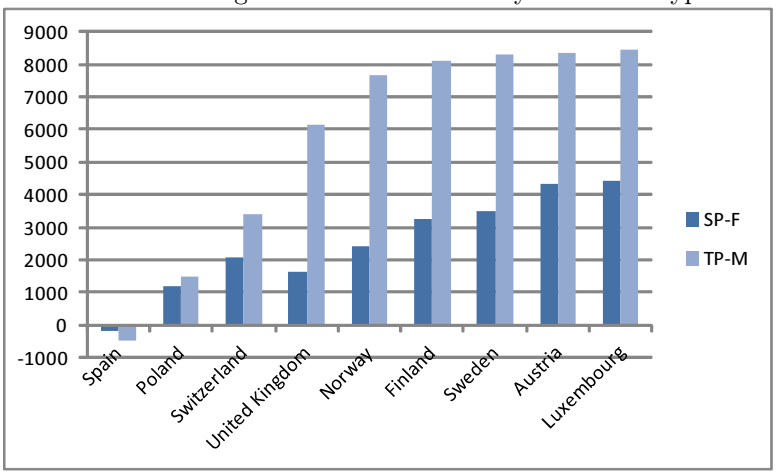
Increase in relative single parent income (SP-F/TP-M) due to social transfer income and private transfer income (%), year 2004. Data: LIS.

Taxes

Figure 15 presents income taxes by household type. Because of missing data Hungary and Italy are left out of the tax analysis. As sees from the figure, single parents pay less in income tax than a two-parent household, although the magnitude of the difference varies across the sample. In Spain both household types are found to pay a negative income tax, with the benefit directed at two parent households actually exceeding that of single parent households.

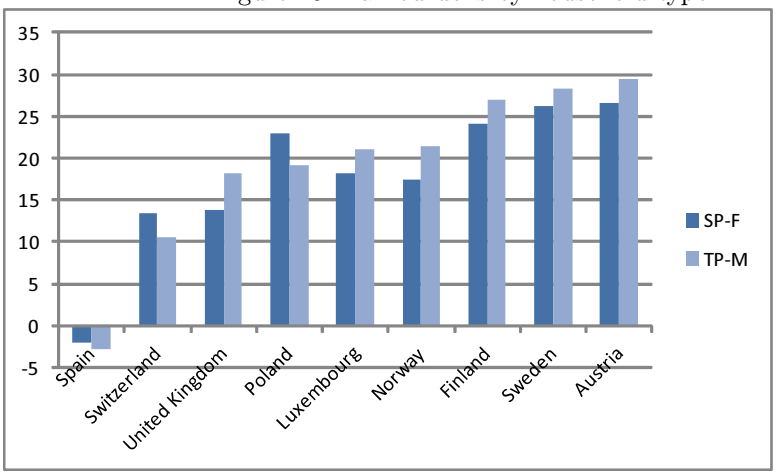
As single parent families have relatively low market incomes it comes as no surprise that they pay less in income taxes. Expressing tax payments relative to market income yields the figures illustrated in figure 16. Single parent households face tax burdens below two-parent households in most countries, but the differences appear modest compared to the gains resulting from transfer income. In Poland and Switzerland single parents actually face higher tax burdens than other parents.

Figure 15: Income taxes by household type



Income taxes for female headed single parent households (SP-F) and male headed two parent households (TP-M) (Int$), year 2004. Data: LIS.

Figure 16: Tax burdens by household type

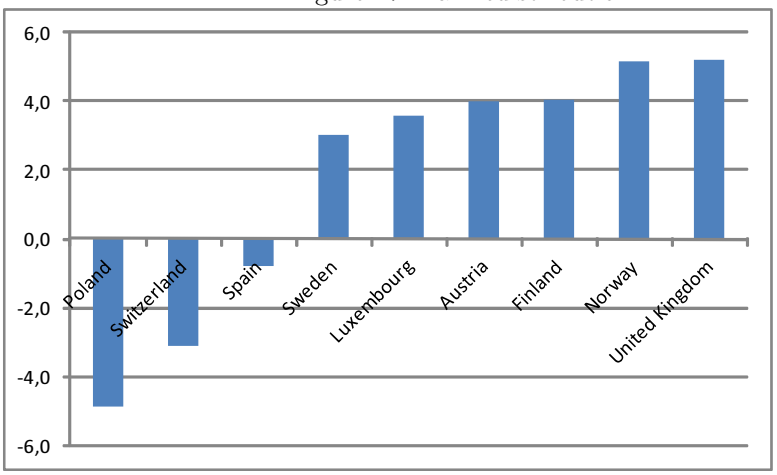


Income taxes for female headed single parent households (SP-F) and male headed two parent households (TP-M), relative to market income (Int$), year 2004. Data: LIS

While transfer income was found to increase the relative income of single parents by on average 32%, more modest increases are found when considering taxes. Figure 17 illustrates the change in single parent relative income when income taxes are subtracted from market income, leading to an average increase of 1.8%. The effect is found to be negative in three countries, with the largest positive effects found in Norway and the United Kingdom. Considering only the six countries with a positive tax effect the average impact is found to equal 4.2%.

The United Kingdom and Norway appear to have relatively large re-distributional effects both when taxes and transfers are being considered. Switzerland on the other hand, achieves a large re-distributional effect through transfers, but is found to implement a negative re-distributional effect through the tax system. Accordingly, there does not appear to be any clear connection between the degree of transfer redistribution and the degree of tax redistribution within countries.

Figure 17: Tax redistribution



Increase in the relative income of female headed single parent households due to income taxes (%), year 2004. Data: LIS.

6.4 Summing up

To sum up, single parents have market incomes of on average 59% of other parents. The figures range from less than 40% in the United Kingdom, to more than 80% in Hungary. When considering disposable income single parents perform better, suggesting that the tax-transfer system works to their benefit. On average, single parent disposable income equals 72% of other parent's income, ranging from just above 50% in the United Kingdom, to 80% in Austria. The difference in outcomes between single mothers and single fathers is also substantially reduced when taxes and transfers are accounted for.

In going from market income to disposable income the relative income of single parents increase with about 20%. Only in Hungary is the effect found to be negative, while modest positive effects of less than 10% are found for Italy and Spain. The largest effects are seen for the United Kingdom, Switzerland and Norway, in which case the increase exceeds 40%. It appears that the redistributional effect is largest in countries where initial single parent outcomes are low. Accordingly, there is less variation in relative disposable incomes across countries, then in relative market incomes. With respect to the different types of welfare regimes, the highest degrees of cash redistribution is seen in the

Scandinavian and Anglo-Saxon countries. More dispersed levels are found for the Bismarckian countries, with especially Switzerland achieving levels in the top range.

Decomposing the re-distributional effect into transfers and taxes reveals that transfers are more important in improving the outcomes of single parents. While transfers increase relative single parent income in all countries, income taxes are found to have a negative re-distributional effect in Poland, Switzerland and Spain. The sample countries also differ in the relative magnitudes of private and social transfers, with private transfers being less important in all countries but Switzerland.

7 Extended income calculations

In kind income in the form of education and health care benefits will be included in the extended income measure. This has the benefit of capturing a larger share of the redistribution achieved by the public sector. Education benefits are assumed to equally benefit all children in the relevant age group, while health care benefits are assumed to vary with age and gender. The difference in the in kind income received by single parent households and two parent households will thus be driven by differences in household size and composition only. In other words, after adjusting for the number of children and adults living in a household, the in kind benefits received by the two household types will be the same. This method thus ignores other sources as to why education and health care benefits may vary across households, such as the health status of the household members, the utilization rate of private education services etc. Including in kind benefits will still have re-distributional effects after household composition is controlled for, as initial single parent income is low compared to other parents.

7.1 Education income

Assigning education transfers to single parent households

Data on education expenditures are retrieved from the Euro stat database and are defined to include both primary and secondary education. The relevant

age group for benefiting from education expenditures is thus assumed to be 6-16. Some sample countries have mandatory education until the age of 18, in which case the two last years of compulsory education will be excluded from the analysis.

It will be assumed that all people aged 6-16 benefit equally from public education expenditures. The assumption is thus a take up rate of 100% and a uniform utility distribution. As pointed out by Aaberge et al (2010b) private schools may prove a concern if the magnitude of these services is sufficiently large. However, as private schools play a limited role in most European countries this should not be too problematic (Aaberge et al 2010b, p.333).

To allocate education expenditures data on the age distribution of children and the average number of children in single parent households are needed. These data are taken from the Euro stat SILC database and the OECD Family database respectively. While children include all persons below the age of 18, only those aged 6-16 are assumed to receive education benefits. By utilizing population data by birth year the share of children in the relevant age group can be calculated according to formula (6), where NCij stands for the average number of children in each age group (i) for a given country (j).

$$Share6-16_j = \frac{\sum_{i=6}^{16} NC_{ij}}{\sum_{i=0}^{17} NC_{ij}} \tag{6}$$

The average number of children in two parent families exceeds the average number of children in single parent families in all sample countries except Sweden. As can be seen from Table 7 the average number of children ranges from less than 1.5 in Finland and Austria, to more than 1.7 in Spain and Sweden. Multiplying the average number of children with the share aged 6-16 yields the expected number of students (NS) in the average single parent household, as illustrated in formula (7). Column three of Table 7 presents the average number of children in the relevant age group for all sample countries.

$$E\left(NS_j\right) = Share6-16_j * NC_j \tag{7}$$

Table 7: Children in single parent households

Country	NC	Share6-16	NS
Finland	1.47	0.62	0.92
Austria	1.49	0.64	0.95
Norway	1.50	0.62	0.93
Italy	1.51	0.61	0.92
Hungary	1.57	0.63	0.99
United Kingdom	1.60	0.67	1.08
Switzerland	1.61	0.63	1.01
Poland	1.61	0.64	1.03
Luxembourg	1.70	0.62	1.06
Spain	1.76	0.59	1.04
Sweden	1.83	0.62	1.13

Number of children in the average single parent household (NC), share aged 6-16, and number of children aged 6-16 (NS), year 2004. Data: OECD, SILC.

The education transfer to the average single parent household ($Educ_{HH}$) is found by multiplying the per student expenditure level ($\overline{Educ}$) with the expected number of students in the household, in accordance with formula (8). Because household size differs across countries equivalence scales are needed to correct for economics of scale. To achieve consistency the same equivalence scale as used for cash income is utilized also for in kind income. This implies dividing the household education transfer by the square root of the number of household members in accordance with formula (9).

$$Educ_{HHj} = E(NS_j) * \overline{Educ_j} \tag{8}$$

$$AdjEduc_{HHj} = \frac{Educ_{HHj}}{\sqrt{HHm_j}} \tag{9}$$

Table 8 presents the education transfer accruing to the average single parent household, both before and after correcting for household size. For illustrational purposes the adjusted education transfers are further presented in Figure 18. As could be expected, there are large cross country differences in the amount of education support achieved by the average single parent household. At the low end of the distribution one finds Poland and Hungary, with education transfers around Int$ 3,000. In Spain, Italy and Finland transfers range from 4,000 to 6,000, while being roughly equal to 6,000 in the United Kingdom and Austria. Education transfers lie between 7,000 an 8,000 in Switzerland, Norway and

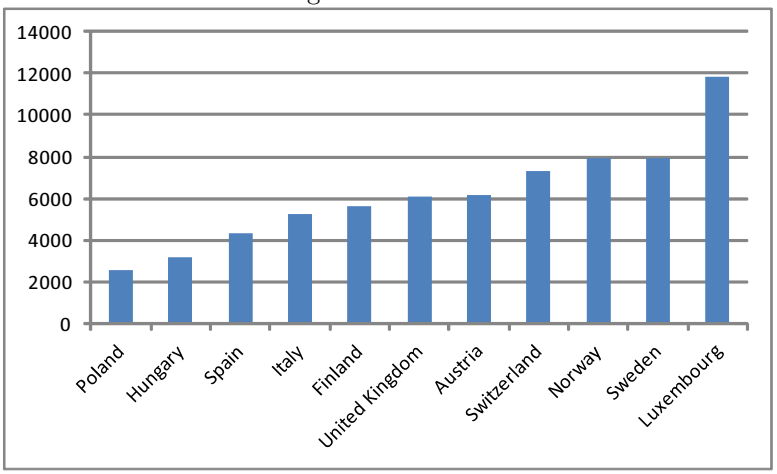
Sweden, and reach a record high of almost 12,000 in Luxembourg.

Table 8: Education transfers

Country	$\overline{Educ}$	$Educ_{HH}$	$ES = \sqrt{HHm}$	$AdjEduc_{HH}$
Poland	4,039	4,155	1.62	2,572
Hungary	5,093	5,030	1.60	3,136
Spain	6,907	7,180	1.66	4,324
Italy	9,045	8,354	1.58	5,271
Finland	9,629	8,824	1.57	5,615
United Kingdom	9,127	9,831	1.61	6,098
Austria	10,266	9,706	1.58	6,153
Switzerland	11,573	11,745	1.61	7,275
Norway	13,401	12,497	1.58	7,905
Sweden	11,833	13,351	1.68	7,936
Luxembourg	18,428	19,451	1.64	11,844

Education transfers (Int$), equivalent scales and adjusted education transfers for the average single parent household (Int$), year 2004. Data: OECD, SILC.

Figure 18: Education transfers



Adjusted education transfers (Int$), year 2004. Data: OECD, SILC.

Calculating relative single parent education income

The same procedure as outlined above is used to find the education income of two parent households. The income figures of both household types are presented

in Table 9, and show that single parent households receive higher benefits from education services than other families in seven of the sample countries. The only reason why the education transfers differ between the household types is household size and composition. The countries in which single parent families receive relatively large education transfers are the countries in which single parent families also have relatively many children. Sweden is for example the only country in the sample where single parent families have more children than two parent families, and is also clearly the country in which relative single parent education income is the highest. On the other end of the scale one finds Norway, Finland and Austria, where single parent families have relatively few children, and single parent families accordingly receive less in education transfers relative to other families.

Table 9: Education transfers by household type

Country	TP	SP	SP/TP
Norway	8178	7905	97
Finland	5738	5615	98
Austria	6205	6153	99
Poland	2576	2572	100
Switzerland	7128	7275	102
Hungary	2999	3136	105
Luxembourg	11292	11844	105
Italy	5019	5271	105
United Kingdom	5790	6098	105
Spain	3957	4324	109
Sweden	5757	7936	138

Education transfers for two parent households (TP) and single parent households (SP) (Int$) and single parent education transfers relative to two parent education transfers (SP/TP) (%), year 2004. Data: OECD, SILC.

7.2 Health care income

Assigning health care transfers to single parent households

Data on health care expenditures per capita are derived from the OECD Health database. Only government expenditures are included, thereby excluding private sector expenditures and household out-of-pocket payments.

While it was assumed that all people in the target group received the same

benefit from education services, this is not the case when dealing with health care. Health care transfers will instead be allocated based on the so called insurance principle. In a private insurance market people will pay different premiums on their health insurance based on certain demographic characteristics, such as age and sex. To capture the differences in health care needs, the average households will thus be assigned health care income in accordance with its demographic profile.

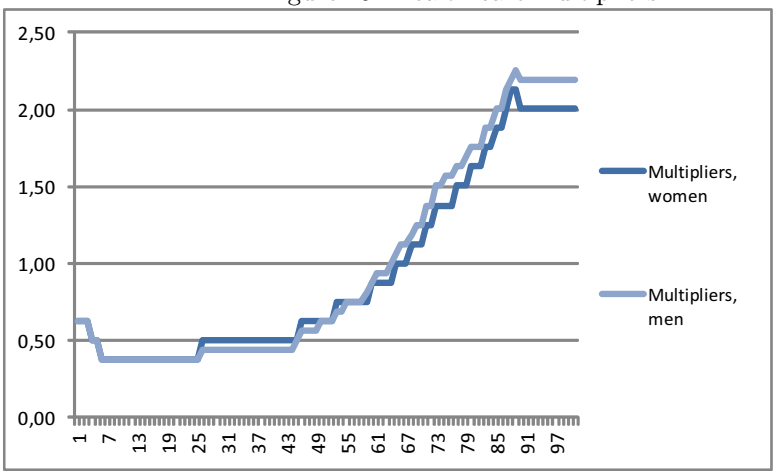
The European Commission (2012) provides data on health care usage by age and sex. These figures are used to construct so called health care multipliers, which indicate the relative health care needs of different age-sex groups. The health care multipliers are derived according to formula (10). H_{ig} stands for expected health care usage given age (i) and sex (g). The utilization rates are expressed as a share of GDP per capita ($\bar{Y}$). Dividing group specific health care needs as a share of GDP by total health care needs as a share of GDP, yields *relative* group specific needs. The multipliers are illustrated in Figure 19 and listed in the appendix. As can be seen, health care usage falls in the first years of life, and starts increasing in the 50's. Women have higher multipliers than men in childbearing years, but this trend is reversed before the age of 60.

$$Mult_{ig} = \frac{\frac{H_{ig}}{\bar{Y}}}{\sum_{i=1}^{100} \frac{H_{ig}}{\bar{Y}}} \tag{10}$$

To allocate health care expenditures across households some assumptions must be made. First, it is assumed that the utilization rates by age and sex are the same across the sample. Data indicates that there are substantial differences in the health care usage of elderly people across countries, but less so for younger age groups. As this paper looks only at children and adults with children below the age of 18 this should not be a source of great concern.

A second assumption is made regarding the age structure of households. It is assumed that the age distribution of both children and parents are the same for single parent households and two parent households within each country. This is likely to be an oversimplification as there may very well be significant differences in the age of especially single parents and non-single parents. However, such age differences can be expected to be minor in magnitude, and since health care multipliers for adults do not change between the age of 26 and 43, this should not bias the results noteworthy.

Figure 19: Health care multipliers



Health care multipliers for women and men by age. Data: European Comission (2012).

After estimating the multipliers, health expenditures are allocated to the respective household members. The health care transfer accruing to children in the average single parent household is found in accordance with formula (11), by multiplying the average country health care transfer ($\overline{HT}$) with the average number of children (NC) and the appropriate health multiplier ($Mult$), given the expected age of the child. The latter is found by utilizing population data from the SILC database. As there are no differences in health care needs between the sexes for children, only the age of the child (i) is accounted for.

$$HTchildren_j = \overline{HT_j} * Mult_{ij} * NC_j \tag{11}$$

For adults it is necessary to control both for the age and gender of the single parent. This is done by combining data on the mean age of first time mothers with the expected child age to arrive at the expected age of the mother. First time fathers are found to be 10% older than first time mothers, and it is assumed that this age gap is the same for all sample countries[3]. The OECD Family database provides data on the prevalence of single mothers and single fathers in all sample countries, thus making it possible to calculate the expected adult health transfer according to formula (12), where FSP stands for the share of female single parents, and MSP stands for the share of male single parents.

[3]This is not based on country specific data, but on estiamtes from Norway and the Netherlands only.

$$E(HTadult_j) = (\overline{HT_j} * FSP_j * Mult_{igj}) + (\overline{HT}_j * MSP_j * Mult_{igj}) \quad (12)$$

$$HT_{HHj} = HTchildren_j + HTadult_j \quad (13)$$

The total household health care income is then given as the sum of the child and adult transfer, as expressed in formula (13). As can be seen from Table 10, child transfers are larger in magnitude than adult transfers in all countries. As children in the relevant age group do not have health multipliers higher than their parents this is a result of the mechanical fact that there are more children than adults in the average single parent household.

Table 10: Health care transfers by household member

Country	$HTchildren$	$HTadult$	HT_{HH}
Poland	335	269	604
Hungary	547	449	996
Spain	990	716	1,706
Italy	1,023	863	1,886
Finland	1,015	886	1,901
United Kingdom	1,239	999	2,237
Switzerland	1,387	1,108	2,495
Austria	1,430	1,234	2,665
Sweden	1,652	1,156	2,808
Norway	1,919	1,630	3,548
Luxembourg	2,226	1,651	3,877

Average health care transfers to single parent households by receiving household member (Int$), year 2004. Data. OECD, SILC.

As with education transfers, health care income needs to be adjusted for household size. This is again done by dividing the health care transfer with the square root of the number of household members in accordance with formula (14). The results are presented in Table 11, and the adjusted health care transfers are further illustrated in figure 20.

$$AdjHT_{HHj} = \frac{HT_{HHj}}{\sqrt{HHm_j}} \quad (14)$$

Health care transfers accruing to the average single parent family are smaller in magnitude than in kind education income. This is mainly a result of the

demographic structure of single parent households. As single parent families have relatively many children per adult education income is an important source of in kind income. Expected health care usage is on the other hand relatively low because of the young age structure of these households.

Health care transfers per household are lowest in Poland and Hungary at Int$ 374 and 621 respectively. The figures range from 1,000 to 1,500 in Spain, Italy, Finland and the United Kingdom, while exceeding 1,500 in Switzerland, Sweden and Austria. Norway and Luxembourg stand out as the two countries with the highest health care transfers per household, with figures well above Int$ 2,000.

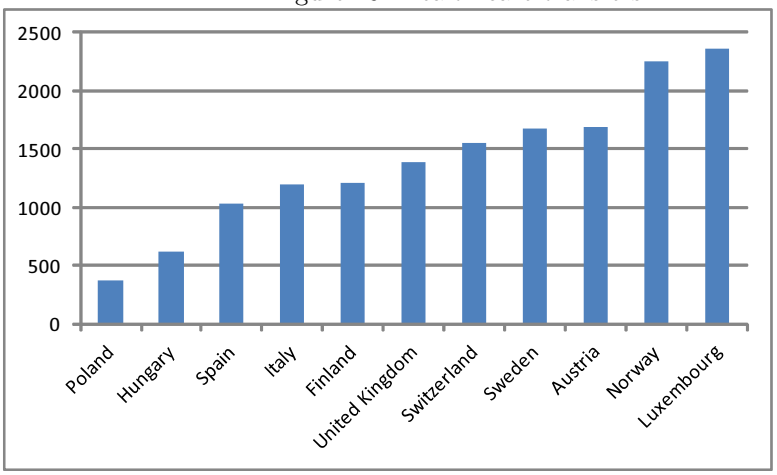
Most countries receive the same relative country ranking when considering health care transfers and education transfers. There are however some exceptions. Austria and Norway both receive a higher ranking when considering health care transfers rather than education transfers, while the opposite is true for Switzerland and Sweden. No country moves with more than two places however, making the variations appear modest.

Table 11: Health care transfers

Country	$\overline{HT}$	HT_{HH}	$ES = \sqrt{HHm}$	$AdjHT_{HH}$
Poland	553	604	1.62	374
Hungary	926	996	1.60	621
Spain	1,500	1,706	1.66	1,027
Italy	1,802	1,886	1.58	1,190
Finland	1,838	1,901	1.57	1,210
United Kingdom	2,062	2,237	1.61	1,388
Switzerland	2,298	2,495	1.61	1,546
Sweden	2,403	2,808	1.68	1,669
Austria	2,558	2,665	1.58	1,689
Norway	3,406	3,548	1.58	2,244
Luxembourg	3,491	3,877	1.64	2,361

Health care transfers to the average single parent household (Int$), equivalent scale and adjusted health care transfer to the average single parent household (Int$), year 2004. Data: OECD, SILC.

Figure 20: Health care transfers



Adjusted health care transfers to the average single parent household (Int$), year 2004. Data: OECD, SILC.

Calculating relative single parent health care income

Health care income for two parent families is found by using the method outlined above. The only difference regards the calculation of the adult health care transfer, in which it is assumed that each two-parent family consists of one male and one female parent. Table 12 presents health care incomes by household type and the relative transfer received by single parent families. As seen in column three, single parent families receive between 81 and 91% of the health care transfer received by other families. This is partly due to single parent households on average having fewer members than other households, although this is in part controlled for through the use of equivalence scales. Another reason is that single parent households have a high number of children per adult, and these children have lower health care multipliers than their parents. As was the case with education transfers, single parent families receive larger relative health care transfers in countries where they on average have more household members.

Table 12: Health care transfer by household type

Country	TP-HH	SP-HH	SP-HH/TP-HH
Norway	2,758	2,244	81
Finland	1,478	1,210	82
Austria	2,054	1,689	82
Poland	450	374	83
Switzerland	1,857	1,546	83
Italy	1,429	1,190	83
Luxembourg	2,830	2,361	83
Hungary	741	621	84
United Kingdom	1,651	1,388	84
Spain	1,210	1,027	85
Sweden	1,843	1,669	91

Health care income for two parent households (TP) and single parent households (SP) (Int$) and relative single parent health care income (SP/TP) (%), year 2004. Data: OECD, SILC.

7.3 Total income

Adding in kind transfers to disposable income mechanically raises the total income of single parent households. The sum of in cash and in kind income can be thought of as an extended income measure, in which the two most important publicly provided private goods are included. Table 13 presents the income of the average single parent family in each sample country, both in cash and in kind. While cash income exceeds in kind transfer income in all countries, education and health care transfers increase household income by on average 48%, thereby making up a substantial part of the extended income measure. Adding in kind income does not significantly alter the relative country ranking, as only Austria and Switzerland are affected. Switzerland moves up from fourth to third place when in kind income is included, while Austria moves down from third to fourth place.

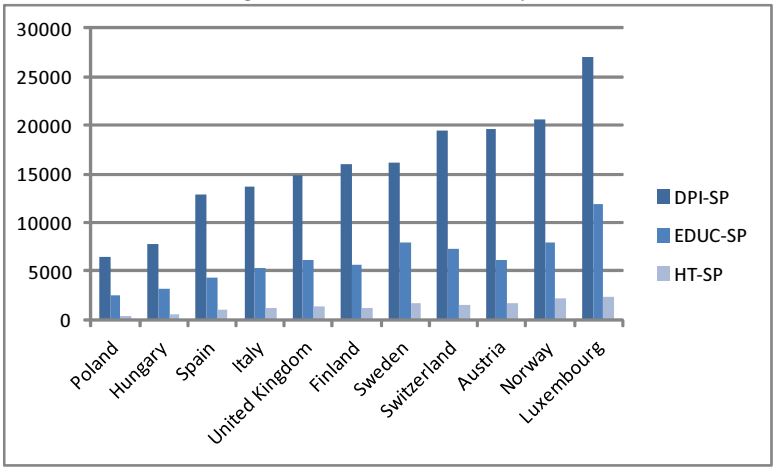
Table 13: Single parent income

Country	In cash	In kind	Total
Poland	6,435	2,945	9,380
Hungary	7,822	3,757	11,579
Spain	12,817	5,351	18,168
Italy	13,633	6,461	20,094
United Kingdom	14,892	7,486	22,377
Finland	15,927	6,825	22,751
Sweden	16,161	9,605	25,766
Austria	19,645	7,843	27,488
Switzerland	19,498	8,821	28,318
Norway	20,546	10,150	30,695
Luxembourg	27,038	14,205	41,242

Single parent household income in cash, in kind and total (Int$), year 2004. Data: LIS, OECD, SILC.

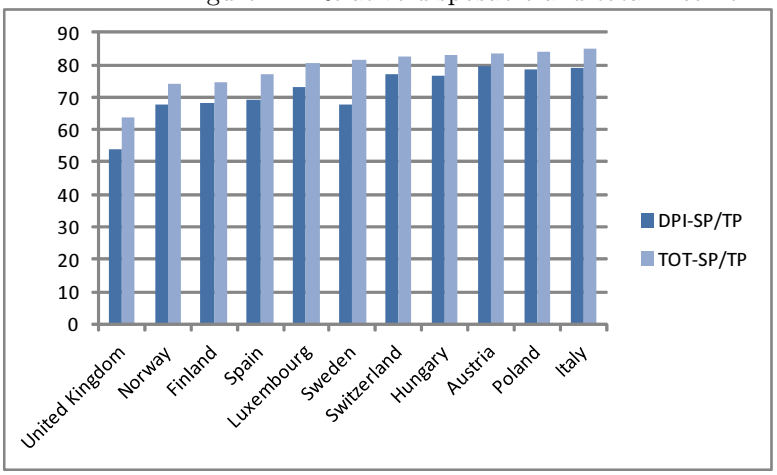
Figure 21 provides a closer look at the different income concepts. As seen from the graph, education transfers dominate health care transfers in all sample countries. While education transfers on average raise total income by 39%, the equivalent figure for health care transfers is 9%. In other words, education transfers stand for more than 80% of the income increase caused by adding in kind income to the analysis.

Figure 21: Total income by income source



Single parent household disposable income (DPI-SP), education income (EDUC-SP) and health care income (HT-SP) (Int$), year 2004. Data: LIS, OECD, SILC.

Figure 22: Relative disposable and total income



Single parent household disposable income (DPI) and total income (TOT) relative to two parent households (%), year 2004. Data: LIS, OECD, SILC.

Single parent families receive about the same in education and health care benefits as other families, once household size and composition is accounted for. As single parent disposable income is lower that the income of other families, including these publicly provided services should have a positive re-distributional effect. This is confirmed in figure 22, which illustrates the relative disposable income and the relative total income of single parent families. Relative income rises across the sample when education and health care transfers are included in the extended income measure.

Table 14 lists relative single parent household income for disposable and total income. Column three shows the percentage increase in relative income when going from cash income to the extended income measure. Adding education and health care income increases the relative income of single parent households by on average 10%, with the effect ranging from 5% in Austria to 21% in Sweden. Note however that this redistributive effect is due to both the generosity of public transfers *and* household structure[4]. There again appears to be a negative correlation between initial cash outcomes and the degree of increase in the relative income figures. That is, in countries where the relative disposable income of single parent households is low, adding in kind income

[4] Efforts to isolate the generosity effect is undertaken in section 8.

has a larger positive effect on their relative outcomes. This is caused by the redistributive effect that comes about when assigning the same transfer value to households with different initial incomes.

Table 14: In kind redistribution

Country	rel. DPI	rel. TOT	Increase in rel. income
Austria	80	84	5
Poland	79	84	6
Switzerland	77	83	7
Italy	79	85	7
Hungary	76	83	8
Finland	68	74	9
Norway	68	74	10
Luxembourg	73	81	10
Spain	69	77	11
United Kingdom	54	64	18
Sweden	68	82	21

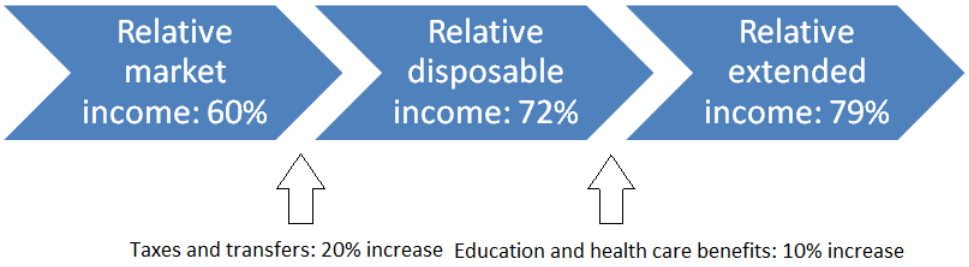
Single parent household income relative to two parent household income (%), year 2004. Data: LIS, OECD, SILC.

8 Discussion

8.1 Summary of results

Single parent households obtain a market income that on average equals roughly 60% of a two-parent income. This relative performance increases to 72% after taxes and transfers are included, implying an increase in relative single parent income of 20%. Adding education and health care benefits further increases their equalized relative income to 79%, indicating a 10% increase in relative outcomes. The performance of single parent households thus increases with a total of just above 30% once in cash and in kind redistribution is accounted for. While taxes and transfers account for the majority of the redistribution, public services still make up around 1/3 of the re-distributional impact. Including more public services in the analysis should increase the relative importance of in kind transfers further.

Figure 23: Summary of results

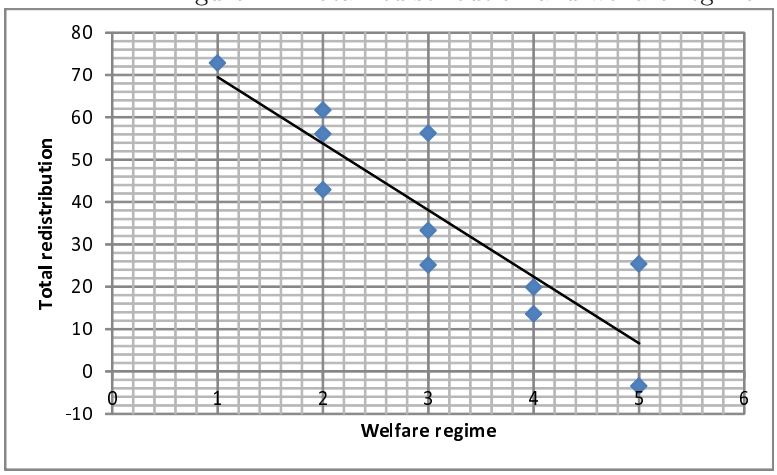


8.2 Redistribution in the different welfare regimes

Total redistribution is found to be high in the social democratic countries at above 50%. That is, through taxes, transfers and public service provision, the income of single parents relative to other parents is increased by 54%. The effect is highest in Sweden at just above 60%, followed by Norway at 56% and Finland at 43%. The three countries thus obtain relatively similar levels of redistribution, confirming the appropriateness of grouping the Nordic countries together as one welfare regime type. The high level of redistribution found in the social democratic countries is as predicted. That is, in accordance with the hypothesis it seems as though single parents are important beneficiaries of universal welfare regimes, even though these do not specifically target low income households. This result is in line with the findings of Moene and Wallerstein (2001), Brady and Burroway (2012), Mitchell et al. (1994) and Korpi and Palme (1998).

Decomposing redistribution by transfer source yields similar results. Cash redistribution in the Nordic countries is found to be high at around 37%, although Switzerland and the United Kingdom both achieve even higher rates of redistribution. Looking at gender specific redistribution rates however, Norway surpasses Switzerland and the United Kingdom, thereby achieving the highest redistribution rate towards single mothers at just above 60%. The redistribution directed at single fathers appears modest in comparison, but also here the Scandinavian countries perform relatively well.

Figure 24: Total redistribution and welfare regime

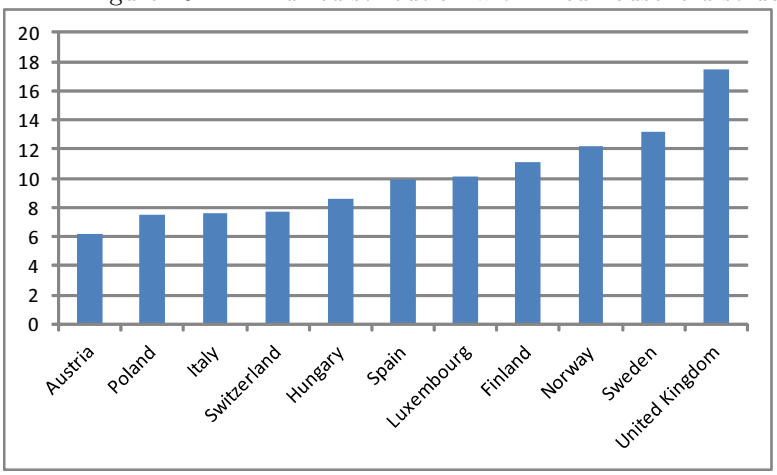


1: Anglo-Saxon, 2: Scandinavian, 3: Bismarckian, 4: Southern, 5: Post-Communist.

As previously mentioned, the redistributive effect of in kind income is the result of two factors – the generosity of social services and differences in household structure. In order to isolate the generosity effect one can assume that the *difference* between single parent and two parent household structure is the same for all countries, so that $NC_j = \overline{NC}$, $NS_j = \overline{NS}$, $MultChild_j = \overline{MultChild}$, $MultFemale_j = \overline{MultFemale}$, $MultMale_j = \overline{MultMale}$ for both household types, and $SPF_j = \overline{SPF}$, $SPM_j = \overline{SPM}$. Any difference in the redistributive effect across countries will now be due to differences in the magnitude of in kind income relative to disposable income only. It can be argued that the redistributive impact found when holding household structure fixed is more relevant for the hypothesis, as it better reflects the direct generosity of the welfare state. In particular, it ensures that the countries in which single parent families have relatively many children are not deemed as having more generous transfer schemes than they in fact have.

The redistribution achieved in kind when holding household structure fixed is illustrated in figure 25, and is plotted against type of welfare regime in figure 26. As seen from the graph, the Scandinavian countries achieve high levels of redistribution also when in kind transfers are considered, with an average effect of 13%.

Figure 25: In kind redistribution with fixed household structure

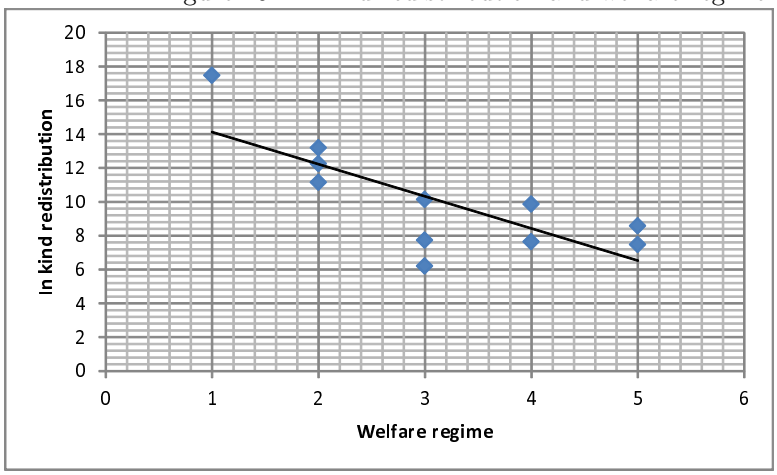


Increase in relative single parent income caused by in kind transfers, when household structure is held fixed (%), year 2004. Data: OECD, SILC, LIS.

The United Kingdom is the only Anglo-Saxon or liberal country in the sample, thereby making it somewhat difficult to draw any definite conclusions on the outcomes of this group. However, the country appears to achieve remarkably high levels of redistribution, and even exceed the rates observed in the Scandinavian countries in many cases. Although this may be the result of a number of different factors, two potential causes are mentioned here. First, single parent employment is extremely low in the United Kingdom, compared to the sample average. With every one in two British single parents being unemployed, it seems almost unavoidable that this will lead to transfer income being high relative to market income – thus explaining the high levels of redistribution observed.

A second possible explanation is found by looking at the British welfare system over time. While the United Kingdom today is usually grouped together with liberal countries such as the United States and Australia, the pre-Thatcher period was characterized by a larger degree of universal welfare programs. Levy (1999, p. 241) argues that Britain may in fact have more in common with the Scandinavian countries than the Bismarckian countries with respect to universal welfare benefits, and that this is largely a result of pre-Thatcher traditions. It can therefore be argued that the high level of redistribution found in the United Kingdom is in line with the theory that single parents have much to gain from universal welfare programs.

Figure 26: In kind redistribution and welfare regime



1: Anglo-Saxon, 2: Scandinavian, 3: Bismarckian, 4: Southern, 5: Post-Communist.

The remaining welfare regimes achieve intermediate to modest levels of re-distribution. Looking first at total redistribution the Bismarckian countries seem to outperform the Southern and the Post-communist countries, but all three groups obtain similar levels of redistribution when only in kind income is considered.

Regarding the social outcomes observed in the different welfare regimes, there seems to be a high degree of consistency within the different groups. The Social democratic countries are found to achieve similar social outcomes, as are the Southern countries. There is somewhat more variation seen in the total levels of redistribution in the Bismarckian countries, but less so when considering in kind income. The only group that does not appear to reach comparable social outcomes is the Post-communist regime type. While Hungary is found to actually *decrease* the relative income of single parent households through the public welfare system, Poland achieves an increase in relative income of around 25%. The two countries do however reach similar outcomes when considering in kind redistribution only.

All in all the welfare regime typology seems successful in its ability to predict the re-distributional outcomes obtained in the different countries, and confirms the hypothesis that universal welfare programs represent substantial benefits also for weaker groups.

8.3 Robustness

Assumptions

To complete the analysis with the data at hand some assumptions have been made. These vary from plausible theories to obviously inaccurate simplifications. First, some income figures are estimated because of missing data. This is the case for single father income in Switzerland, Hungary and Italy, and female headed two parent households in Hungary and Norway. In both cases the average gender wage gap is calculated based on the countries with complete data sets. The missing income figures are then found by using the income of the non-missing gender combined with the average wage gender gap. As the difference in wages between the sexes varies across the sample, this is obviously suboptimal.

Second, it is assumed that the difference between market income and disposable income reflects the cash redistribution taking place through a country's tax-transfer system. As also private transfers affect disposable income, the redistribution taking place is not in whole controlled by the government.

Most of the assumptions are however connected to the calculation of the in kind income levels. It is assumed that all children in the relevant age group benefit equally from education. This ignores the use of private school services, as well as potential drop-outs. It also does not account for the more hard-to-measure concept of learning potential, which might depend on the education level of the parents, the personal characteristics of the child etc. A further assumption is made that school attendance is mandatory for ages 6-16. This is somewhat inaccurate as the duration of mandatory education varies between countries. All sample countries except Luxembourg and the United Kingdom start their mandatory schooling at age 6 or 7. Children in Luxembourg start compulsory schooling at age 4, but this is registered as pre-primary education, and thereby not included in they analysis. Primary school starts at age 6 in Luxembourg, and is therefore in line with the rest of the sample. As table 15 illustrates there is more variation in school leaving age, which might also bias the results. Austrian students are free to end their education at age 14, while Hungarian and Polish students must attend until age 18. Most of the sample countries complete their mandatory education at age 16. A more accurate estimation technique could improve the preciseness of these results.

Table 15: School age

Country	Entry age	Exit age
Austria	6	14
Finland	7	16
Hungary	6	18
Italy	6	15
Luxembourg	4	15
Norway	6	16
Poland	6	18
Spain	6	16
Sweden	7	16
Switzerland	7	15
United Kingdom	5	16

Compulsory school entry and exit age. Source: Educate Abroad.

When considering health care services, differences in need caused by age and sex are accounted for. Other reasons why health care needs may differ are however not included in the analysis. Potential reasons include differences in income, area of residence, personal preferences etc. When considering single parent households two concerns in particular come to mind. First, as the average single parent household has a relatively low income, this may be linked to lower expected health status. If so, their benefit from health care income is being underestimated. Second, as single parent families may have less access to private health care services due to their lower income, their reliance on public provision may be higher. This may lead them to value health care services more than other families, as they have less access to substitutes through the private market. It is further assumed that the health care multipliers are the same for all countries, implying that the need of a 20 year old female relative to a 70 year old male is the same for all countries. As previously noted there is little variation in relative needs for those below 50, suggesting that this should not be an important issue in practice.

In the allocation of in kind income some assumptions must be made regarding the age structure of the household members. The expected age of the child is found by calculating the share of children in each age group. To find the expected age of the mother the average age of the child is added to the expected age of first time mothers. This is done with country specific data. To arrive at the expected age of the father however, it is assumed that fathers are 10% older than mothers, a figure which is based on data from Norway and the Netherlands only.

It is further assumed that the age structure is identical for single parent and two parent families. While this is almost certainly not the case, the simplification is probably without significant importance. Expected parental age is only relevant when calculating health care needs, and as the health multipliers hardly change within the relevant age interval this should not affect the results noteworthy. Finally, it is assumed that two parent families consist of one male and one female parent, which is probably not very far from the truth. Even if this does not hold, the difference in health care needs between men and women is relatively modest.

Analysis

As discussed in section 5.3 the choice of equivalence scale can affect the results. This paper uses the square root scale, which takes into account the number of household members, but not the age composition. The chosen equivalent scale assigns a weight of 0.5 to each (additional) household member, thereby implying relatively large economics of scale. While it is well documented that the choice of equivalence scale can affect the results, this should be less of a problem when comparing one household type across countries (Burniaux et al. 1998, p.83).

The importance of adjusting for differences in needs is highlighted in Aaberge et al. (2010a,b). The authors show that not adjusting for needs may lead to an overestimation of the benefit of in kind income for high-need groups, such as single parent households. No such adjustment is done in this paper. However, as the paper does not seek to compare different household groups, but rather compare the economic outcomes of single parent households across countries, this should be acceptable. Even though single parent income is expressed relative to two parent income, no attempt is made to compare the welfare of the two household types. Rather, the income of other families is used to arrive at a *relative* single parent income measure, thereby allowing for a meaningful comparison across countries.

Another issue raised by Aaberge et al. (2010a) is the comparability of public spending across geographical areas. It is not given that Int$ 200 worth of education in Hungary is the same as Int$ 200 worth of education in Switzerland, although the figures are PPP-adjusted. This could be caused by a multiple of factors, for example economics of scale, country specific institutions or the quality of teachers. No attempt is made to correct for this. Aaberge et al. (2010a)

find significant variation in unit costs for Norwegian municipalities, especially in primary education, health care and administration. The authors further find that unit costs decrease with population size, and adopt a functional form which allows the variation in costs to approach zero as the population grows sufficiently large. It is therefore somewhat comforting that this paper deals with populations of several million people, but is still seems plausible that costs vary across the sample.

In valuating in kind income it is assumed that the benefit received by the household equals the public expenditure. As discussed in section 5.1, this need not be true. However, as this paper sets out to compare the economic outcomes of single parents across countries it is not crucial to the analysis that in kind income is valuated exactly right. If all single parent households valuate education income at, lets say, 80% of the expenditure level, this should have only a modest effect on the analysis. If however, Spanish single parents value education benefits at 120% while Swedish single parents value them at 40%, the results might be misleading.

An obvious limit to the analysis is that only two publicly provided private goods are included. Other relevant services include child care in particular, and also dental care, social housing etc. The benefit to considering education and health care is the large degree of consistency in their organization across the sample. All sample countries provide public education services, and all practice universal health care. Once other goods are considered there is more variation across countries, thereby demanding a higher degree of complexity in the analysis.

The static approach adopted in this paper might be viewed as a further limitation. Single parent families may change into two parent families, plausibly increasing not only total household income, but also income per household member. Knowing that single parent households represent about 10% of all households, a relatively large share of children will spend time in what is likely to be a low income single parent household. The duration of such a low (relative) income spell seems highly relevant.

Comparing the economic situation of households before and after public sector involvement ignores any behavioral effects caused by there actual being a public sector. It is conceptually impossible to measure the redistribution obtained by the public sector, as the counterfactual of no taxes, transfers or public services will never be observed. It seems plausible that the market income in such a setting would differ from the market income obtained in the presence

of a public sector. This highlights the difficulties of isolating the many effects at hand. For example, if single parents work less than other parents this will lead to a lower relative market income, and will probably also increase the degree of cash redistribution. But the decision to work or not may be endogenous to the degree of cash redistribution achieved or the type of welfare regime considered.

Data

The income data taken from LIS relies on national surveys. Table 16 presents the number of households participating in the survey for each sample country. A possible concern is the number of single parent households participating, as this is expected to be low if the total number of participating households is low. The only country in which there are less than 100 participating single parent households is Hungary, in which only 57 such households are included. On average, 592 single parent households are included in each national survey. If there are less than 15 observations for any variable it is automatically left out of the dataset. While LIS provides micro data this paper is based on average income measures for the different household types. The use of micro data would make it possible to control for employment status etc. for each household, instead of handling aggregate figures for the two household groups.

To obtain the income measures for single parent households independent of gender, gender distributions from the LIS database are utilized. However, as the database does not provide this information for Sweden and Switzerland, OECD-data is then utilized instead. As different databases may produce slightly different figures, combining two different sources in such a way is not optimal. It is also worth noting that the disaggregation of cash redistribution depends on more estimated figures that the rest of the paper. The separate results on taxes and transfers from section 6.3 are therefore not used in the discussion, which instead focuses on cash redistribution as a whole.

Table 16: Number of households in survey

Country	SP	TP
Austria	238	1388
Finland	413	3278
Hungary	57	440
Italy	150	1785
Luxembourg	179	1111
Norway	654	4161
Poland	1329	11127
Spain	350	3810
Sweden	660	3804
Switzerland	124	947
United Kingdom	2363	6213

Number of single parent households (SP) and two parent households (TP) participating in the national surveys used in LIS, year 2004. Data: LIS.

As for data on in kind income it is taken from the Euro stat database and the OECD Health database for education expenditures and health care expenditures respectively. This should ensure a higher level of consistency then if operating with national statistics separately. Health care multipliers are taken from the European Commission (2012), and are based on European countries only. The countries in question do not perfectly match the sample countries, which could in theory bias the results. However, the differences in multipliers are of modest size, and should not be a source of great concern.

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9 Data appendix

Table 17: Health care multipliers

Age	Health multipliers, female	Health multipliers, male
0-2	0.63	0.63
3-4	0.50	0.50
5-24	0.38	0.38
25-43	0.50	0.44
44	0.50	0.50
45-48	0.63	0.56
49-52	0.63	0.63
53	0.75	0.69
54-57	0.75	0.75
58	0.75	0.81
59	0.88	0.88
60-62	0.88	0.94
63	0.88	1.00
64	1.00	1.06
65-66	1.00	1.13
67	1.13	1.19
68-69	1.13	1.25
70-71	1.25	1.38
72-73	1.38	1.50
74-75	1.38	1.57
76-77	1.50	1.63
78	1.50	1.69
79-81	1.63	1.75

Health care multipliers by age and gender. Data: European Commision (2012).

Table 18: Income by household type

Country	DPI		MI		S.TRANS		TRANS		V11	
	SP	TP	SP	TP	SP(F)	TP(M)	SP(F)	TP(M)	SP(F)	TP(M)
Austria	19,645	24,659	17,975	28,691	5,402	4,552	7,621	4,619	4,310	8,357
Switzerland	19,498	25,275	16,929	31,999	4,831	2,393	10,147	2,689	2,064	3,392
Spain	12,817	18,467	10,955	17,084	3,752	3,189	4,148	3,183	-212	-484
Finland	15,927	23,343	15,150	29,077	5,700	3,428	6,656	3,579	3,248	8,091
Hungary	7,822	10,243	7,072	8,242	2,353	2,292	2,551	2,433	-	-
Italy	13,633	17,238	12,296	16,461	2,787	2,041	3,337	2,045	-	-
Luxembourg	27,038	36,942	25,974	40,235	9,290	6,706	10,511	6,810	4,447	8,449
Norway	20,546	30,381	16,969	35,644	9,050	5,320	9,062	5,324	2,392	7,653
Poland	6,435	8,165	5,154	7,711	2,611	1,902	3,404	2,038	1,178	1,483
Sweden	16,161	23,914	14,342	28,363	6,140	5,271	7,601	5,355	3,473	8,322
United Kingdom	14,892	27,728	12,425	33,743	8,546	2,965	9,609	3,054	1,629	6,163

Single parent household disposable income (SP-DPI), Two parent household disposable income (TP-DPI), Single parent household market income (SP-MI), Two parent household market income (TP-MI), Female single parent household social transfer income (SP(F)-S.TRANS), Male two parent household social transfer income (TP(M)-S.TRANS), Female single parent household transfer income (SP(F)-TRANS), Male two parent household transfer income (TP(M)-TRANS), Female single parent household income taxes (SP(F)-V11), Male two parent household income taxes (TP(M)-V11). Data: LIS.

Table 19: Employment status by household type

Country	Not empl.		Empl.		No earners		One earner		Two earners		Low educ.		Medium educ.		High educ.	
	SP	TP	SP	TP	SP	TP	SP	TP	SP	TP	SP	TP	SP	TP	SP	TP
Austria	26	26	74	74	17	1	64	30	15	55	17	13	66	66	17	22
Finland	29	6	71	94	13	1	51	11	27	59	18	15	51	43	31	42
Hungary	33	16	67	84	-	5	70	34	-	54	-	-	-	-	-	-
Italy	20	20	80	80	11	3	74	43	13	49	43	48	47	40	10	11
Luxembourg	34	17	66	83	21	5	74	37	-	54	42	40	29	28	29	32
Norway	12	6	88	94	11	1	54	8	24	61	10	9	62	61	27	31
Poland	37	9	63	91	36	7	56	35	6	52	17	10	70	75	13	15
Spain	26	14	74	86	15	4	62	37	18	52	54	49	23	24	23	27
Sweden	22	6	78	94	13	2	60	11	20	64	16	12	59	58	25	30
Switzerland	37	3	63	97	-	-	-	-	-	-	-	7	74	54	16	39
United Kingdom	52	13	48	87	46	7	44	27	9	54	-	-	-	-	-	-

Employment status (empl.)(%), number of earners and share of household heads with low, medium and higher education (%), by household status. Data: LIS.

Table 20: Total public expenditure on education and health care

Country	Primary education expenditures	Secondary education expenditures	Health care expenditures
Spain	10,301	15,755	1,500
Italy	15,857	29,138	1,802
Luxembourg	531	439	3,491
Hungary	1,423	3,390	926
Austria	2,346	5,895	2,558
Poland	7,128	8,405	553
Finland	1,806	3,465	1,838
Sweden	4,694	6,548	2,403
United Kingdom	20,790	37,997	2,062
Norway	3,079	4,280	3,406
Switzerland	3,504	5,025	2,298

Total public expenditure on education in millions PPS (EUR), at primary and secondary level of education, data: Euro stat.
Total government expenditure on health care in per capita PPP adjusted USD, data: OECD.

Table 21: Other variables

Country	Gini	GDP	SP-HH share	FSP share	Age, first time mothers
Austria	26.2	32.856	10	85	27.6
Finland	26.0	29.863	8	85	27.7
Hungary	27.6	16.188	11	87	27.2
Italy	32.8	27.528	9	83	29.9
Luxembourg	26.5	64.998	8	78	29.3
Norway	28.2	42.479	9	82	27.6
Poland	35.6	13.010	13	88	25.5
Spain	31.8	25.956	10	81	29.7
Sweden	23.4	32.494	7	85	28.4
Switzerland	-	35.593	5	85	29.6
United Kingdom	34.6	31.700	10	87	30.0

GINI coefficients 2005, GDP per head 2004 (USD), Share of all households that are single parent households (SP-HH share) (%), share of single parents which are women (FSP share) (%) and age of first time mothers. Data: OECD.

Table 22: Population data by age

Age	Spain	Italy	Luxembourg	Hungary	Austria	Poland	Finland	Sweden	United Kingdom	Norway	Switzerland
...<1	478,796	558,025	5,500	96,206	77,122	384,283	58,838	106,411	754,247	59,026	74,471
1	472,078	560,626	5,554	96,748	79,135	373,197	58,476	105,497	738,059	58,908	73,880
2	464,168	558,697	5,635	96,837	79,801	362,847	57,992	104,009	719,279	58,585	73,941
3	457,103	556,868	5,684	96,796	80,129	358,701	57,628	101,870	701,581	58,510	74,029
4	451,113	556,530	5,760	96,539	80,652	359,208	57,319	99,713	690,113	58,722	74,409
5	443,242	555,662	5,823	95,905	81,026	362,135	57,330	97,841	684,616	59,200	75,256
6	434,229	553,138	5,829	96,056	81,736	368,333	57,228	96,181	683,954	59,485	76,214
7	425,354	551,616	5,900	96,732	83,141	378,011	57,691	94,922	688,856	60,128	77,653
8	419,526	551,333	5,972	98,076	85,012	390,422	58,527	94,957	698,409	61,188	79,299
9	414,049	550,630	6,003	100,418	87,254	403,117	59,712	97,021	709,158	61,936	80,835
10	411,262	549,637	6,010	102,931	89,538	417,730	61,113	100,590	720,395	62,258	82,464
11	411,994	552,680	5,992	106,487	92,284	434,833	62,359	105,411	731,006	62,474	83,727
12	415,819	559,598	6,012	110,438	94,644	453,721	64,029	111,035	741,777	62,934	85,387
13	421,654	566,620	5,951	114,900	96,682	475,033	65,133	116,908	753,232	63,234	86,932
14	428,503	574,214	5,898	118,441	97,663	495,408	66,081	122,221	763,218	63,311	88,057
15	436,004	580,986	5,813	120,494	98,682	514,843	66,300	125,077	774,735	63,189	89,030
16	444,325	587,646	5,728	122,341	99,227	532,518	66,205	126,080	786,418	62,884	89,862
17	454,154	589,711	5,620	124,005	99,221	549,045	65,579	125,073	795,678	62,144	89,899

Number of people in each age interval from one to seventeen, year 2004. Data: Euro stat.