LUND UNIVERSITY
School of Economics and Management

THE EFFECT OF CASH BENEFITS ON POVERTY REDUCTION

- A PANEL STUDY OF 18 OECD COUNTRIES

Author: Maria Molin

Supervisor: Therese Nilsson

Abstract

Methods of poverty eliminations are some of the most researched subjects in development, as well as, public economics. Procedures in which poverty is believed to be best fought have, and will continue to, deviate across countries. In this thesis, the linkages between poverty, elementary macroeconomic variables and cash benefits will be examined. To explore the direct as well as indirect effects on poverty rates, fundamental macroeconomic parameters as unemployment and education are to be included in the models along with parameters covering cash family allowance. The results vary across the models as do the variables of interest. The main variable of interest, the percentage of GDP spent on cash family benefits, does indicate positive effects on poverty reduction. That is, the larger the percentage of GDP allocated to this social benefit, the more probable it is that poverty rates in the country will decrease. The results gained in this thesis regarding the main variable of interest corroborates previous theory and research.

Acknowledgements

I want to thank and acknowledge everyone that has been essential in making this thesis possible. The help, advice and insights received has been immensely appreciated. Therefore, I want to thank my supervisor, Therese Nilsson, for providing the guidance in economics which lead to the formation of this thesis. I also want to thank and acknowledge my family and friends. Their support and kind words, especially at the end of this paper, were tremendously appreciated and treasured.

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1. Introduction

The subject of poverty reduction has and is on the majority of the developed countries' agendas, the UN millennium goals (Un Millennium Project, 2016) is one example. Poverty reduction has been identified as one of the main elements in improving living standards and thereof, many studies have been conducted and theories have developed as a result. The theories, as well as the underlying research, have detected some tools and components for poverty alleviation. Income, education and unemployment all have substantial effects on the poverty rate in each and every country. When income increases the effects tend to have a negative effect on poverty rates which means that a rise in income is expected to decrease poverty rates. The theory behind the effects of a high completed education on poverty follows a theory identical to the one of income growth, subsequently, a higher level of education is likely to reduce the chance of falling into poverty as well as increases the possibility of escaping poverty (Maldonado & Nieuwenhuis, 2015). As policies have developed to improve living standards, and thus decrease poverty, a focus on income inequalities has arisen. Income inequality in many forms, between the sexes or ages for example, have taken a greater role as an element correlating to poverty as women tend to earn less than men and hence are more likely to live in poverty. As research and policies have started to focus more on these inequalities, the difference in income, living standards and poverty started to be explored in a family context (Kopri, 2000; Maldonado and Nieuwenhuis, 2015).

For decades, OECD countries have had family policies and services aimed to strengthen family structures. As the policies developed, they came to include poverty prevention and improvements in living standards for families (Ferrarini, 2009). The implementation of these policies vary across all OECD countries but, nonetheless, seem to have a significant effect on the outcome of both the economy of families as well as living standards for families. Not only do family benefits vary over countries, they also vary depending on household structure, such as single- or two-parent household, the number of children in the household or the age of the children (Maldonado and Nieuwenhuis, 2015). As family policies started receiving more consideration, the framework of family policies progressed in diverse directions in different countries. Consequently, the guidelines for family allowance can be divided into various areas. First and foremost, the method of which benefits are used and distributed varies greatly. Many countries use a number of tax breaks for families to reduce the

cost of children. Another form of cost reduction is subsidised or free social services for children. The services can range from free or subsidised childcare to free medication and health services. An alternative form of cost reductions is cash family allowance. Each month, the family eligible for cash benefits receive a transfer of a pre-specified amount. The method of determining which families that should have access to these benefits is another area worth exploring. A limited number of developed countries base the eligibility of cash family benefits on income while others base it on family means. In the countries where means- or income-testing is common, the cash benefits tend to be progressive, meaning that the higher the level of income of the family, the lower the cash benefit received is likely to be. The reasoning behind this type of method is to better aim the cash transfers to families in greater need of assistance. However, many countries utilise a universal transfer as opposed to a progressive one. The transfer is then not based on income or means but instead, the level of cash benefit is predetermined by the government and consists of a flat cash transfer for each child. This method is based on a belief that all children are equal and since the transfer is aimed towards the child in question, each child should have the right to receive the same amount (Ferrarini, 2009). This aspect is if interest but will not be explored further in this thesis.

However, family policies are not limited to assistance for children and cash redistributions but include regulations for parental leave as well. The structure of parental leave policies is as diverse across countries as cash benefit policies. Thereof, some countries have extensive paid parental leave while other countries contrary have an extremely limited parental leave policy. Countries with limited parental leave tend to not have policies aimed to the parental leave being paid. The Nordic countries have strong parental leave policies which include regulations for the leave being paid by transfers from the government to the parent on leave. Contrary, the US does not have regulated paid parental leave nor a regulated amount of unpaid parental leave. Hence, in many cases, individuals are forced to re-enter labour only a short time after giving birth. Consequently, individuals with a higher income may have a better possibility of taking unpaid leave and hence delay re-entry into work as a result. This may create a gap in equality for working mothers with increasing inequalities between income groups as a result as well as improve the rates of maternity employment. Research has shown that these policies do generate a higher level of parental employment, in particular maternal employment (Letablier et al., 2009; Nieuwenhuis, Need and Van der Kolk, 2012).

As can be interpreted, the studies focusing on poverty have been various and diverse. Not only have several basic macroeconomic parameters, such as income,

unemployment and education, been shown to have extensive effect on poverty but variables focused on individuals, as family allowance for example, have been included into several reports as well. Family allowance, parental leave and several other microeconomic variables keep being included in models evaluating effects on poverty which emphasise the importance of these variables. Further, the reports have focused increasingly on the inequalities between the genders to extend the analysis of family policies. Correspondingly, this paper seeks to further broaden the insight into how cash family benefits specifically affects poverty rates. The perspective of the analysis will be on a macro level as opposed to several previous studies which have mainly focused on a micro perspective. The paper focuses on cash benefits mainly due to Sweden being the inspiration for this topic as the country utilise universal cash benefits. These estimations seek to further improve the understanding of the impact family benefits have on women as well as men. Thereof, a gender perspective is inserted to realize the implication the policies have on women and men separately on a deeper level in order to be able to develop policies that would be personalized in a more profound context.

The structure of this thesis will be as follows; Section 2 will highlight previous research and studies as well as theories developed as a result of these but also basic economic theory that can be strongly connected to poverty and inequality. Section 3 will outline the data sources, the variable specifications as well as the methodology of the thesis. Section 4 will present the results of the model regressions performed. The models will be divided by gender as well as by total population, hence, each category will be displayed in separate sections to thoroughly demonstrate the diverse results. Lastly, Section 5 will cover a conclusion that sums up the results and assumption that may or may not be drawn.

2. Theory and previous research

2.1 The economics behind poverty and inequality measures

Poverty and inequality can be discussed from many different angles, as has been done by a multitude of economists. Throughout history, poverty has been defined differently by numerous theories. Poverty can be discussed from a behavioural or decision-based view which in turn originates from classic economic theory. In the behavioural/decision-based approach, individuals themselves are seen as accountable for their own poverty. In other words, their poverty is the result of the shortages of the specific individual (Davis & Sanchez-Martinez, 2014). Not only are individuals and their behaviours the origin of their own poverty, but the major underlying principle states individuals' lack of involvement in the market as a conscious choice. Poverty is hence seen as a choice as the individual is seen to have plenty of opportunities to lift itself out of poverty by increasing its productivity or increase its work ethics. The main conclusion of this view is that it is the individuals themselves that have the active role in affecting their outcomes and hence the outcome of poverty (Blank, 2010). Consequently, this specific theory opposes subsidies as a means of poverty alleviation. Hence, government intervention is not an option, according to this approach. Therefore, cash family allowances should not be used as a poverty reduction method (Davis & Sanchez-Martinez, 2014).

Continuing on the path of cash benefits being viewed as subsidies, the inclusion of Becker's theory of household production is worth to mention. In the early 1960s, Becker outlined his theory which looked upon households as a type of firm (Wiro-Mattila, 1999). Households, as firms, always try to maximize their utility and productivity. This argument became the start of the theory that households have the same patterns as a firms. Further similarities between households and small producing firms can be examined by connecting to the behavioral/decision-based theory above. The theory opposed family allowances as subsidies method to decrease poverty. Just as firms or consumers receive subsidies with the purpose of affecting the price of a good, subsidies can be viewed correspondingly. In the occasion of consumers receive subsidies, the price of the good will decrease. In this thesis, cash family allowances are regarded as subsidies, with the purpose of decreasing the cost of having a child. In other words, just as the price will decrease for the consumers receiving subsidies, the cost of

children will decrease for parents. The theory of subsidies demands the government to intervene which the behavioral/decision-approach strongly opposes. As can be concluded, the behavioral/decision- theory and Becker's theory clashes greatly (Davis & Sanchez-Martinez, 2014; Wiro-Mattila, 1999).

There are several other economic theories that do approve of government intervention. Liberal theories tend to be more open to these kinds of intervention, one of which is the Keynesian view that focuses on underdevelopments in society as the main reasons behind poverty. Since market failures are factors of poverty, the justification of government intervention on a macroeconomic level becomes obvious. The interventions are established as redistributive policies and will either be applied as in-kind redistributions or pure cash transfers. Further, liberal theories view employment as an important factor in fighting poverty. Unemployment is seen as a principal source of poverty creation, which is why governments can intervene in this case as well. Policies may be developed in order to curve unemployment and henceforth prevent or fight poverty greatly (Davis & Sanchez-Martinez, 2014).

Neoclassical theory gives way to a monetary view of poverty. Pure monetary theories focus on income as measure of poverty as income has the possibility of capturing the differences in individuals' behaviour and situations. By observing the total consumption per individual, which depends on income, poverty may then be estimated through data on each individuals' income. Hence, the approach makes welfare easier to quantify poverty in order to be able to make estimations (Davis & Sanchez-Martinez, 2014). The monetary approach will be used in this thesis with along with the threshold for poverty at 50% of the mean disposable income. The poverty threshold is frequently used when modelling effects of variables on poverty. Other common thresholds are 40% of disposable income and 60% of disposable income (Fusarelli, 2015).

Studies on poverty and poverty reduction have often been combined with inequality measures. Inequality can take many different forms such as differences in the division of labour or differences in income. Studies and theories of inequality measures have historically focused on the inequality between races or classes. In the beginning of 1990, several economists started to discuss the inclusion of gender in the inequality measures (Kopri, 2000). Since, many theories have included gender inequality when estimating effects on income, for example, and this thesis seeks to include income inequalities based on gender, specifically.

While many previous studies have focused on intra-household effects (Kopri, 2000), this thesis will focus on inter-household effects.

Poverty as well as income inequalities have been frequent variables when analyzing the effects of welfare and/or redistributive policies (Gauthier, 2002). Many of the studies focus on child poverty while there are a substantial amount focusing on poverty across the entire population. Whiteford and Adema (2007) showed evidence of social transfers having a significant impact on the reduction of child poverty. This finding correlates with a report from UNICEF (2007) which concludes that countries with a higher levels of spending on social transfers, as percentage of GDP, were more likely to have lower child poverty rates than countries that spent less on social transfers. Further, a report by Letablier et al. (2009) states that countries with a low level of child poverty tend to have low unemployment rates as well as efficient redistribution policies. The relationship between poverty and social transfers chould be defined as in Figure 1 sketched below. The corresponding relationship is not likely to display as strong differences on a yearly basis nor have as strong of an effect on one another as in Figure 1. Yet, the relationship exists to a milder extent as describe in previous sentences.

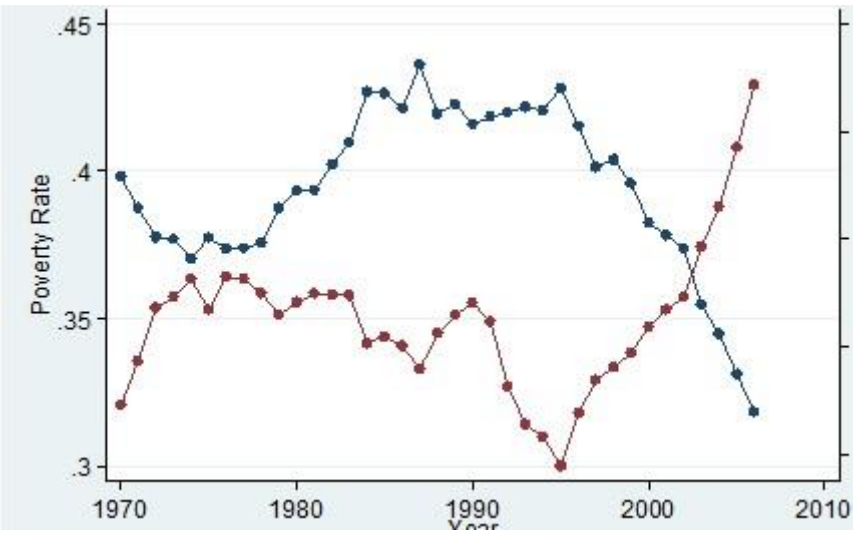

Figure 1 - Likely relation between poverty and % of GDP allocated to family allowance

Additionally, many studies focused on poverty and income inequalities have developed theories from not only a gender perspective but a single- or dual-household perspective. The studies point to family composition having a large effect on disposable income and poverty. A study from Maldonado and Nieuwenhuis (2015) show that single-parent

households are more likely than two-parent households to be poor. The reasons behind this deduction seem to be that the expenses and preferences of a parent depends heavily on the characteristics of each child and the number of children residing in the household. Hence, the consumption patterns and needs of a single-parent household differs greatly from a two-parent household. From this assumption as well as results from other analyses, it becomes quite easy to understand how a single-parent household is more likely to struggle financially than a two-parent household (Becker and Tomes, 1979). Further, single-parent households with female household head are more likely to suffer from low income than male single-parent households (Maldonado and Nieuwenhuis, 2015). This could be explained by the employment gender gap. On average, there are 70% women aged 25-54 that are employed compared to 85% of the men in the same age group across the OECD countries. In addition to the employment gap there is a difference in employment participation between the sexes. Men are more likely to be employed full-time than women while a larger part of women are part-time employed (OECD, 2011).

Not only does employment play a large role in studies regarding poverty, education has proven to have a significant effect on poverty and income inequalities. Many examinations have shown education to have both a positive direct effects as well as positive indirect effects. Direct effects are defined as the effect a high level of education has on income. The indirect effects of higher education are improvements in living standards as a result of better access to basic necessities (Awan et al, 2011). Several theories outline the relationship between poverty and education with one being the Human Capital Theory. The theory implies that education will improve productivity with increased eligibility for paid employment being the result (Oxaal, 1997; Tilak, 2002).

2.2 Family cash benefits and redistributive policies

Family policies differ from country to country, as has been proven by several studies. Even in relatively homogenous countries, the policies tend to vary. The reasoning behind the family policies are seemingly alike, though; to reduce poverty and income inequality (Thévenon, 2011). Additionally, the amount spend on family allowance varies greatly across the countries included in the analysis. The spending on family benefits can be measured as percentage of GDP. This measurement of benefits includes tax breaks, cash benefits and family services such

as child care. On average, OECD countries spend 2.55% of respective GDP on benefits for families (OECD, 2014).

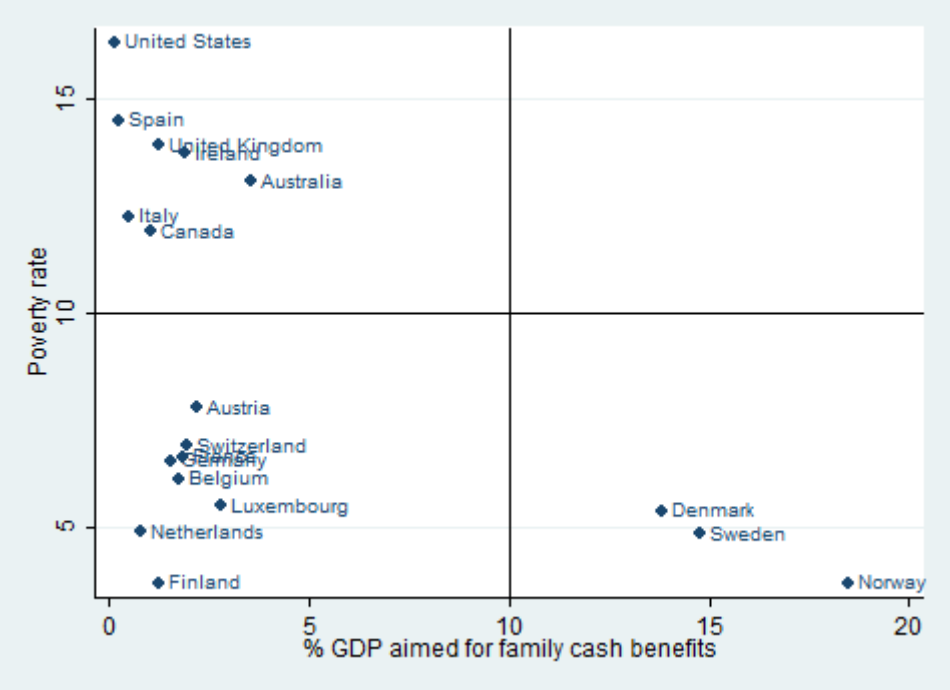

Figure 2 - Relation between Poverty and % of family allowance

The graph above displays the relationship between poverty rates in each country with the percentage of GDP that the country spends on cash family allowance. The corroboration with previous studies is obvious even though the x-variable only contains family allowance observations and not additional social transfer parameters as well as the y-variable containing the poverty rates for the total population as opposed to child poverty. As can be observed in graph 1, countries with high spending on cash benefits are more likely to have lower poverty rates. The United States only spends 0.1236167 % of GDP on cash family allowance while having the highest poverty rates of all countries included in the dataset. Norway is observed to have the highest spending of GDP on cash family allowance while additionally exhibiting one of the lowest poverty rates of the included countries. The visual results graph 1 concurs with previous research on the matter.

Research has shown that OECD countries are more likely to spend a larger part of the family benefits on cash benefits than on tax benefits or family services. Cash benefits can be categorised as either flat, means-tested or progressive. Simple cash benefits work as a

transfer from the government to either the mother, both parents or the custodian of the child (OECD, 2014). Ferrarini (2009) pointed out the fact that policies regarding cash benefits as a transfer to the child in question is based on equality across children. A universal transfer for each child is implemented to ensure each child has equal value as well as a guaranty no child is discriminated against (Ferrarini, 2009). In other countries, the level of cash transfers is determined by either a means- or income-test. When implementing means- or income-testing, the benefits are likely be lower the higher the household income. Maldonado and Nieuwenhuis found evidence that this type of benefit is most commonly used as a method to reach the lowest-income families in the society. For that reason, studies have found the lowest-income families will reap higher benefits than high-income families with the result of evening out economic foundations. Consequently, child poverty will likely be curbed and children will have more similar living standards (Maldonado and Nieuwenhuis, 2015).

There have been several studies examining the specific effects means-tested benefits have on income and in particular on poverty rates. Many studies evaluate the efficiency of means-testing as the change in poverty reduction. Hence, if poverty rates decrease when means-testing is introduced, the conclusion drawn by researchers is that income-testing does in fact have a positive effect on poverty reduction. Behrendt (2000a) examined this relationship for three countries; Germany, Sweden and the United Kingdom. The results gained by the author's estimations established that the effect of income-testing varied significantly across the countries. Further, means-testing did not prove to be a guarantee for poverty reduction but instead the policies used in countries seemed to be of greater importance. This could be related to issues discussed before, that no country has a policy identical to one another and hence, the effect of means-testing can vary (Thévenon, 2011). Further, means-testing or income-testing can be set in relation to the percentage spent on GDP per country. Letablier et al. (2009) researched family benefits in cash showing each European country providing cash benefits of some kind. As well as other studies have proven, the authors concluded that benefits aim to compensation for the cost of having a child. The family allowance is not solely based on the cost of having a child but also on other factor on having children, such as specific situations. In most cases, benefits for single parents or benefits for a disabled child are calculated into the percentage of GDP that is aimed for cash child benefits. The range of the compensation varied greatly across the European countries (Letablier et al., 2009), as other studies also have shown, and could once again be related to the variance in policies as well as policy implementations (Thévenon, 2011).

In addition to cash benefits, redistributive benefits play a big part of family policies. Parental leave, paid as un-paid, are in some countries very prominent, while in other countries do not play a bigger part in family policies. Parental leave is usually seen as a means to simplify the transition back to work for parents (Letablier et al., 2009) as well as improve the rates of maternity employment. Research has shown that these policies do generate a higher level of parental employment, in particular maternal employment (Nieuwenhuis, Need and Van der Kolk, 2012). Many studies have examined the effects parental leave have on individuals (Bruning & Plantenga, 1999). Theories and research point to parental leave, in this case paid, being a coping mechanism for the costs of children (Letablier et al., 2009). However, for many parents, mothers in particular, leave has been shown to have a negative effect on employment. Some studies provide evidence for career discontinuity which in turn undermines gender equality across many different areas (Letablier et al., 2009). Researchers focusing on paid parental leave specifically, have shown significant effects of the policy on earnings and in turn poverty (Bradshaw & Richardson, 2012). One study found a negative relationship between paid paternity leave and earnings (Rege and Solli, 2013) which may not be that surprising since during a period of parental leave, the parent on leave will get a percentage of the monthly income which in turn means that the income is lower the months the parent is on leave. In some countries parental leave pay is generous while in others not. In general, maternity leave is the basis on which parental leave compensation is calculated on. A percentage of the mother's pay constitutes the compensation the family receives in parental leave benefits. Studies have also provided information on that some countries tend to use other types of benefits as parental leave compensation (Letablier et al., 2009). A so-called *Baby Bonus* is used in some countries, such as Australia, and is a form of allowance that is paid around the birth of the child. This type of compensation is one example of substitutes for paid maternity leave (Brennan, 2007).

2.3 Pure effects of family policies

Family allowance has been proven to reduce child poverty (Maldonado & Nieuwenhuis, 2015), especially among single-parent families (Gornick & Jäntti, 2012). Additionally, research on family allowance imply that these policies have a negative impact on mother's incentive to work (Nieuwenhuis et al., 2012; 2014; Schwarz, 2012). As mentioned above, employment is a key component when aiming to improve income and henceforth reduce poverty. Therefore, the

results pointing to family allowance's negative effect on employment is far from desired (Maldonado & Nieuwenhuis, 2015).

Various theories have developed as in how to measure if family policies do in fact have an effect on poverty. Some economists measure the child poverty rate before the specific policy is implemented and the poverty rate after transfers have been made. This technique is justified by referring to the state of poverty before the transfer as the state which would exist if government intervention did not exist. By using this definition in their report, Bradshaw and Richardson (2012) exhibited a noteworthy positive result of cash transfers on poverty reduction. Other techniques for measuring changes in poverty rates include the evaluation of family policies on specific model families. A large number of studies, Bradshaw (2010) included, have been performed with this technique as a base. Yet, the definition of poverty measures tends to vary for studies performed and will most likely continue to do. The numerous measurement practices observe different factor while having diverse benefits (Bradshaw & Richardson, 2012).

The are several conclusions to be drawn from the theories and previous explorations of family policies presented in the section above. First and foremost, policies regarding family allowance, parental leave and other redistributive means related to family policies vary across all countries included in the analysis of this thesis. Further, the results of family policies on the depend variable of the model in this paper, poverty, are somewhat unclear but are more likely than not to have a positive effect on poverty. The effects of family policies can be either direct or indirect (Awan et al, 2011). Pure cash transfers seem to have a positive direct effect poverty but a negative indirect effect on employment, for example. Since employment has a direct effect on poverty, this indirect effect is seen as being a negative impact on poverty rates. The main conclusion to be drawn from the presented theories and research is that evaluations family policies are difficult due to the complexity of the policies in question. This paper seeks to simplify the analysis of family policies but focusing on pure cash transfers and their effects on poverty. A gender perspective is included due to large difference in many variables affecting income, such as gender wage gaps. Further, variables of family policies not based on pure cash transfers, weeks of parental leave and weeks of paid parental leave, are included to improve the insight of the analysis.

3. Data and methodology

3.1 Data and specifications

This section aims to outline the variables included in the model, the data sources, the composition of the variables as well as any specification included in the model. The period for the sample is 1980-2015 for each of the included countries, which can be viewed in Appendix 4. The observations in the model were apprehended from several databases and compiled in Stata. Various OECD databases were used as well as the ILO's database. Several datasets were gathered from the Comparative Family Policy (CFP) dataset, the Luxembourg Income study (LIS) dataset and the Barro-Lee dataset. As for the LIS dataset, the data compiled is gathered through censuses in each country. The censuses are not compiled on a yearly based but instead in waves. The data gathered from this dataset contains census surveys performed within the chosen period for this paper. Further explanations of the variables can be viewed in appendix 1.

The dependent variable in this thesis is percentage of people in the population living in poverty. The observations were gathered from the LIS dataset and is divided into gender. A variable containing the total population poverty rate was also gathered from the dataset to be able to compare the effects and outcomes of the genders as well as to compare with the entire population in the included countries. The observations were all individually weighted in order to get a sense of the countries' overall poverty rates in all three categories. The weighting was performed by LIS and not by the author of this thesis.

Mean equivalised disposable income observations were collected from the LIS dataset as well. The observations were weighted in the equivalent manner as the poverty rates for the same reasons. The observations were logged to eliminate levels in the variable in order for them to be estimated in the model and to not display misleading results.

Data on family allowances, including percentage spent on family allowances of national GDP and cash family allowance, was collected from the Comparative Family Policy Database. Variables on purchasing power parity (PPP) and consumer price index (CPI) were also collected from the named database. The PPP and CPI variables were used to calculate the

cash allowance in USD of each of the included. The underlying reason for the creation of the variable was to facilitate comparison between country variables and estimation of the model. The cash allowance variable was logged in order to not have the data in levels as well as to not have misleading results.

The educational variables included in the model were defined as education completed on a primary, secondary and tertiary level as percentage of female population as well as the same variables as percentage of male population. All educational variables were generated from the Barro-Lee dataset but as the dataset only includes data compiled every five years and therefore, yearly data was created by interpoling each educational variable per gender. After the yearly data was generated, percentage of primary and secondary education completed for the female population was combined into one variable to produce a variable displaying completed low education for the female population for each country. The percentage of female population completed tertiary education represents high education for females. The same procedure was performed for the variables representing male completed education levels which resulted in one variables displaying low education completed of the male population per country as well as high education for the male population. Further, the percentage of the total population that has completed a low education was generated into one variable. This variable was generated by combining the variable for percentage of females in the population that had completed a low education with the percentage of the male population that had completed a low education. Similarly, a variable containing the total percentage of the population that had completed a high education was created by combining the percentage of the female population that had completed a high education with the percentage of the male education that had completed a high education.

The unemployment variables were apprehended from the ILO database and included individuals in the age range 15-64, which is most often described as the working age. Total unemployment as percentage of the total population of each respective country was collected. The unemployment rates for women and men, separately, were collected as well. Upon apprehension, the observations were already divided by gender and defined in percentage of total female and male population, correspondingly.

Two variables were included to control for the effect paid as well as unpaid parental leave has on disposable income. Both variables were gathered from the CFP dataset where one variable consisted of the total number of weeks of parental leave while the other

variable is defined as cash benefits paid during parental leave as a percentage of women's wages in the manufacturing sector. Both variables were logged separately to eliminate the possibility for misleading results.

Lastly, a variable displaying the GINI coefficient for every country for each year was gathered from the LIS dataset. The observations ranged from 1980 to 2015 for each country but not all countries collected the data the same years as was explained above. The data was collected in waves by census surveys.

3.2 Methodology and tests

A panel data set was used in this paper and is made up of observations repeated over time on the same components. When using a more complex model, such as panel data, individual manners as well as omitted variables are controlled for. This may be due to panel data generally having a larger sample variety which leads to a better and more efficient interpretation of the parameters and variables. The main disadvantage of panel data is that the independence assumption between observations no longer applies (Forslund, 2015). The model itself was set up as poverty rates being the dependent variable of choice. As mentioned above, the data was represented as panel data with *code* being the panel variable and *year* obviously being the time variable. The variable *code* was generated by assigning a number to each country which in turn were sorted alphabetically. The initial model was set up by poverty rates and unemployment as the relation between the two have been thoroughly analysed by many economists, as mentioned in Section 2. As will be described more in detail in Section 4, each variable was included one by one to carefully examine the effect each variable had on the dependent variable. Year dummies were included in the model in order to have time fixed effects. Finally, the model was developed as a random effects model with robust standard errors with the underlying reason for the choice described below.

Panel data can, when using specific models, create correlation which creates complications. To determine whether to use a fixed effect model or a random effects model, the Hausman Test was performed. The test provides information on which of the two that fits the model best. If the null hypothesis is rejected, the fixed effects model is more suiting for the model as random effects do not capture effects on an individual level as well as fixed effects do. The null hypothesis could in this case not be rejected, consequently the random effects model was the best choice for the specified model (Stata, 2015a). The Hausman test was

performed on both low and high education as well as on total population and female population. The models based on male population were not tested since the difference between male and female should not be large. Hence, the result from the test for females should reflect on the male model specifications. The results from the tests performed on each indicated that the random effects model was a better choice than the fixed effects equivalent.

As some variables are quite similar, the possibility of correlation is obvious. Therefore, tests for correlation and multicollinearity were performed for some of the variables. First off, the two family allowance variables were tested for correlation. The result showed the correlation to be 0.3288. A check for multicollinearity was performed with the condition number returned at 7.0372 which is slightly but not high enough to exclude either of the variables. The correlation number could be viewed as high as well but the variables are nonetheless included because of several reasons. Not all families receive cash family allowance and some families received more than others, as was mentioned in Section 2. Thereof were both variables included in the model. The two parental leave variables also had the possibility of being correlated and were controlled in the same manner. The result from the correlation test returned a value of -0.4436, indicating a negative correlation between the two variables. As in the case with the family allowance variables, this value is rather high but will still be included as the number of weeks of parental leave are not necessarily paid. The test on multicollinearity returned a very high condition number of 23.0363. Even though the number being very high, the variables are still included for the reasons just mentioned.

To test the sensitivity of the model two tests were performed. The first test involved the models being regressed using fixed effect instead of random effects. The Hausman test displayed, as outlined above, that the random effects model was a better choice for the regression but this statement. The sensitivity test was used as a measure to confirm this statement and the results of the which can be viewed in appendix 3. Most important, when running the models with fixed effects instead of random effects, the educational variable become omitted which is not desirable as they act as controls. Further, the significance of the variables differs greatly from the random effects model with fewer coefficients displaying a significant result. Again, the concluding opinion remains the same, which is that random effects tend to be a better model for the regressions. The second sensitivity test performed consisted of an inclusion of a region dummy with the regions were defined as Europe, North America and Australia. The region dummy was introduced in model 2 to be included in the future models. The dummy displays a significant result for the majority of the models where included, which

can be observed in appendix 2. The coefficients do not change to a larger extent but only marginally compared the when the region dummy was not included. Therefore, the model excluding region dummies can be concluded to be rather stabile.

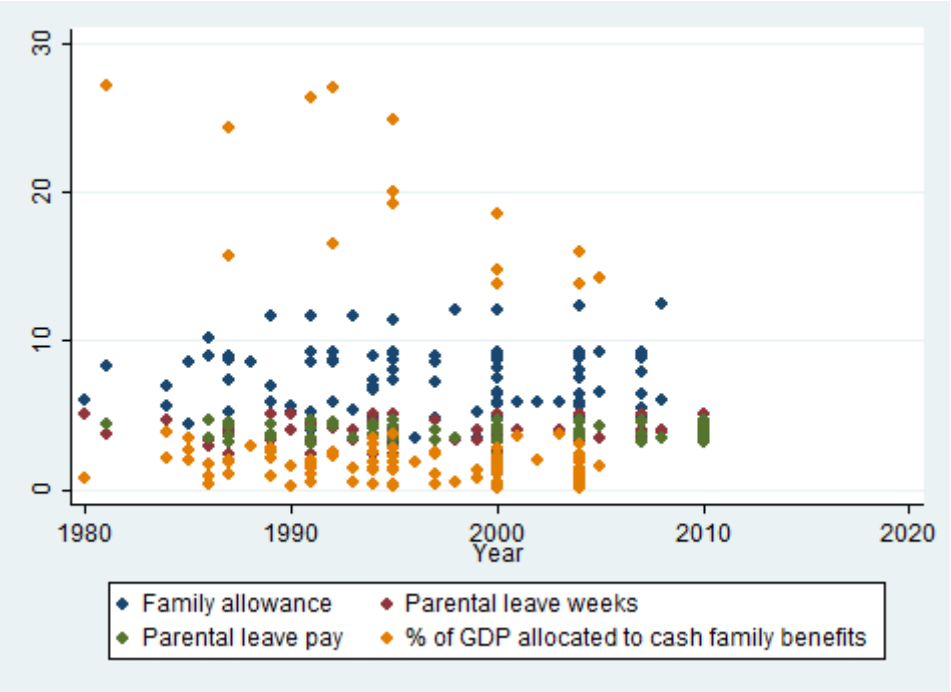

Figure 3 – Outliers

Lastly, a test for outliers was performed in which a few deviating from the pattern can be observed in the graph above. The outliers plotted in the graph, as well as the other observations, were all included in the models. Worth a mention is the exclusion of a heteroscedasticity test as the model uses robust standard errors which are for the purpose of controlling for this possibility.

4. Empirical results and analysis

This section will display the results gained from the models included in this thesis. The models were defined as either low or high education by gender as well as population. The results from the models with female population will be exhibited first, the results from the model with male population second and finally the results from the models with the entire population. In total, there were eleven models for each gender for each level of education. In each and every model the dependent variable is the poverty rate. Further, this section will discuss the estimations and results. Comparisons between the genders as well as between the levels of education will be made. The analysis will be based on previous research and theories put forward in Section 2. Additionally, the analysis will be based on these principles in order to acquire a deeper understanding and knowledge of the effects family policies have on disposable income, for the population as a whole as well as for the respective genders. The analysis will not discuss further any policies that should or should not be implemented nor the development of these since this is beyond the scope of this thesis.

4.1 Estimations including the entire population sample

The first Tables, Tables 1 and 2, exhibit the results from performing a series of estimations where only the variable *LowEd* is accounted for. This variable includes the rate of the total population completing low education. The latter Tables, Tables 3 and 4, display the results from the performing identical estimations with the exception of *HighEd* which includes observations on the rate of total population completing a high education.

Table 1 - Poor population on low completed education

VARIABLES	(1) Poor	(2) Poor	(3) Poor	(4) Poor	(5) Poor	(6) Poor
Unemp	0.280	-0.152*	0.282	0.0602	0.342*	0.226
	(0.202)	(0.0796)	(0.201)	(0.276)	(0.203)	(0.216)
log_EDHI		0.0291**	-0.00182	-0.0133	-0.0127	-0.0150
		(0.0123)	(0.0158)	(0.0352)	(0.0190)	(0.0335)
LowEd			-0.0682	0.981***	-1.095**	0.878***
			(0.338)	(0.249)	(0.546)	(0.291)
GDPtoFA				-0.275***		-0.177**
				(0.0951)		(0.0816)
log_FA					-0.00361	-0.00225
					(0.00347)	(0.00362)
Constant	0.0837***	-0.158	0.136	-0.288	0.790**	-0.225
	(0.0246)	(0.113)	(0.180)	(0.312)	(0.346)	(0.320)
Observations	124	124	120	93	99	87
R-squared	0.0453	0.126	0.0426	0.0769	0.0591	0.109
Number of code	18	18	18	18	17	17

Time fixed effected were included in all models in the Table
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The effect on poverty is positive in three of the models, models 2, 5, 7 and 8 which can be observed in Tables 1 and 2. In these models, the results exhibit significance on a 10 % confidence level in models 2, 5 and 8 while in model 7, the coefficient is significant ona 5 % confidence level. The variable *log_EDHI* does only exhibit a significant result in model 2, which can be observed in Table 1, with a confidence level of 5% which corresponds with the results in the previous models. The education variable displays significance in models 4 to 6, observed in Table 1. The effect varies from negative to positive and back to negative in the sixth model. When including the amount paid in cash child benefits, the variable displays a negative result in all models observed in Tables 1 and 2, which indicates once again that the amount spent on cash benefits of GDP has a strong impact on poverty in the matter of reducing

poverty rates. As in the case of models including each gender, *GDPtoFA* exhibit a negative relationship with poverty in Table 9. In all models where the variable is included, the results are significant for the coefficient. Oppositely, *log_FA* never exhibit a significant result, as was the case in some of the models displayed in the previous Tables.

Log_PL_PAY only exhibit a significant result on a 10% confidence level in one of the models, model 8. *Log_PL_WKS* does exhibit several significant results, all of which have a negative effect on the dependent variable. The significance level tends to differ between a 5% confidence level to a 10% confidence level. To mention, the GINI coefficient does not display a significant result. Lastly, the R-squared result is extremely low in the models in Table 1 but increases in model 10 and 11, observed in Table 2. This may be due to the fact of a larger amount of the variables in the dataset being included in these models.

Table 2 -Poor population on low completed education continued

VARIABLES	(7) Poor	(8) Poor	(9) Poor	(10) Poor	(11) Poor
Unemp	0.490**	0.589*	0.503	-0.151	-0.154
	(0.202)	(0.332)	(0.346)	(0.207)	(0.202)
log_EDHI	-0.00141	0.0282	0.0116	-0.0138	-0.0186
	(0.0217)	(0.0278)	(0.0283)	(0.0346)	(0.0315)
LowEd	0.176	-0.527	-0.931	0.326	0.356
	(0.438)	(0.578)	(0.701)	(0.374)	(0.377)
GDPtoFA				-0.381***	-0.384***
				(0.0654)	(0.0614)
log_FA				0.00372	0.00407
				(0.00252)	(0.00274)
log_PL_PKW	-0.0157*		-0.0135	-0.0150**	-0.0168**
	(0.00912)		(0.0107)	(0.00688)	(0.00656)
log_pay		0.0216*	0.0118	0.0103	0.00907
		(0.0130)	(0.0163)	(0.00663)	(0.00712)
gini					0.0737
					(0.0724)
Constant	0.0569	-0.0321	0.409	0.0489	0.0668
	(0.215)	(0.461)	(0.547)	(0.373)	(0.381)
Observations	86	61	61	45	45
R-squared	0.0195	0.118	0.165	0.482	0.485
Number of code	16	12	12	11	11

Time fixed effected were included in all models in the Table
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3 - Poor population on high completed education

VARIABLES	(1) Poor	(2) Poor	(3) Poor	(4) Poor	(5) Poor	(6) Poor
Unemp	0.280	-0.152*	0.282	0.0602	0.342*	0.226
	(0.202)	(0.0796)	(0.201)	(0.276)	(0.203)	(0.216)
log_EDHI		0.0291**	-0.00182	-0.0133	-0.0127	-0.0150
		(0.0123)	(0.0158)	(0.0352)	(0.0190)	(0.0335)
HighEd			0.0373	-0.514***	0.591**	-0.460***
			(0.185)	(0.130)	(0.295)	(0.152)
GDPtoFA				-0.275***		-0.177**
				(0.0951)		(0.0816)
log_FA					-0.00361	-0.00225
					(0.00347)	(0.00362)
Constant	0.0837***	-0.158	0.0971	0.267	0.170	0.272
	(0.0246)	(0.113)	(0.144)	(0.316)	(0.161)	(0.291)
Observations	124	124	120	93	99	87
R-squared	0.0453	0.126	0.0426	0.0769	0.0591	0.109
Number of code	18	18	18	18	17	17

Time fixed effected were included in all models in the Table
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

To begin with unemployment, which neither differs greatly compared to models including either of the genders, the results do not change considerably. In three of the models where unemployment exhibit significance, the effect on poverty is positive. This means that poverty will increase if the unemployment rate rises. In one of the models where unemployment display significance, the effect on poverty is negative which then provides the opposite assumption. The assumed explanation of this result is identical to the explanations for the results displayed in Tables 1 and as the results in Tables 3 and 4 are alike. The disposable income variable only displays a significant result in one of the models. The effect of disposable income on poverty can be observed as positive at a 5% confidence level. The result could be called into question as the result points to an increase in income leading to an increase in poverty. This strongly contradicts the theory outlined in Section 2 which argue the result of an increase in income should reflect a corresponding decrease in poverty rates. High completed education displays

three significant results in which two are negative and one is positive. The negative results observed are significant at a 99% level while the positive result is significant at a 95% level. As in the previous Tables, *GDPtoFA* is significant across all models with the majority of the results being significant on a 1% level. Contrariwise, *log_FA* never exhibit a significant result.

Table 4 -Poor population on high completed education continued

VARIABLES	(7) Poor	(8) Poor	(9) Poor	(10) Poor	(11) Poor
Unemp	0.490**	0.589*	0.503	-0.151	-0.154
	(0.202)	(0.332)	(0.346)	(0.207)	(0.202)
log_EDHI	-0.00141	0.0282	0.0116	-0.0138	-0.0186
	(0.0217)	(0.0278)	(0.0283)	(0.0346)	(0.0315)
HighEd	-0.0965	0.250	0.441	-0.137	-0.150
	(0.240)	(0.274)	(0.333)	(0.157)	(0.158)
GDPtoFA				-0.381***	-0.384***
				(0.0654)	(0.0614)
log_FA				0.00372	0.00407
				(0.00252)	(0.00274)
log_PL_PKW	-0.0157*		-0.0135	-0.0150**	-0.0168**
	(0.00912)		(0.0107)	(0.00688)	(0.00656)
log_pay		0.0216*	0.0118	0.0103	0.00907
		(0.0130)	(0.0163)	(0.00663)	(0.00712)
Gini					0.0737
					(0.0724)
Constant	0.157	-0.325	-0.109	0.228	0.263
	(0.202)	(0.232)	(0.248)	(0.334)	(0.314)
Observations	86	61	61	45	45
R-squared	0.0195	0.118	0.165	0.482	0.485
Number of code	16	12	12	11	11

Time fixed effected were included in all models in the Table
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The parental leave results differ with *log_PL_PAY* exhibiting a slightly positive result in model 8 with a confidence level of 10%. *Log_PL_WKS*, on the other hand, does exhibit negative effects on the poverty rate with the confidence level varying from 5% to 10%. The results give way to the assumption that parental leave, paid or not, is of greater importance than the amount paid on the occasion of parental related leave. Finally, the GINI coefficient does not display a significant result on poverty and as in the previous cases, the R-squared displays a substantially larger number in the last models compared to the earlier ones.

4.2 Estimations including female population

The first Tables, Tables 5 and 6, exhibit the results from performing a series of estimations where only the variable *LowEd_F* is accounted for. This variable includes the rate of women completing low education. The latter Tables display the results from the performing identical estimations with the exception of *HighEd_F* which includes observations on the rate of women completing a high education.

The unemployment coefficient varies across the models below, which is observed in Tables 5 and 6, while only being significant in some of the models. The variable is significant on a 10% confidence level or less in four of the models. When being significant, the variable is positive which indicates that in the occasion of a rise in unemployment, poverty will increase. Hence, the relationship between poverty and unemployment is positive. The unemployment variable is only significant when *GDPtoFA* is not included as a variable in the models, which is a noteworthy result. The absence of a pure significant result is somewhat questioning as theories clearly highlight the positive relationship between unemployment and poverty. By positive relationship it is indicated that if unemployment was to increase, the level of poverty will increase as well, which is not a desired result, yet likely inescapable (Davis & Sanchez-Martinez, 2014).

Table 5 - Poor female population on low completed education

VARIABLES	(1) Poor_F	(2) Poor_F	(3) Poor_F	(4) Poor_F	(5) Poor_F	(6) Poor_F
Unemp_F	0.101	0.101	0.102	-0.0102	0.151*	0.0928
	(0.0903)	(0.0920)	(0.0916)	(0.115)	(0.0771)	(0.0861)
log_EDHI_f		0.000149	-0.000285	-0.00247	-0.00562	-0.00596
		(0.00926)	(0.00967)	(0.0208)	(0.0101)	(0.0192)
LowEd_F			-0.0620	0.392***	-0.602**	0.327***
			(0.157)	(0.105)	(0.249)	(0.125)
GDPtoFA				-0.168***		-0.0954**
				(0.0538)		(0.0459)
log_FA					-0.00282	-0.00189
					(0.00186)	(0.00208)
Constant	0.0484***	0.0471	0.0837	-0.121	0.427***	-0.0575
	(0.0119)	(0.0794)	(0.0990)	(0.165)	(0.155)	(0.161)
Observations	124	124	120	93	99	87
R-squared	0.0280	0.0282	0.0265	0.0537	0.0350	0.0813
Number of code	18	18	18	18	17	17

Time fixed effected were included in all models in the Table
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Continued, the disposable income variable never exhibits significance which is why no conclusions can be drawn regarding the effect this variable may have poverty. As has been discussed in the theories in Section 2, income is one of the main determinants when evaluating the risk of poverty. The effect of income on poverty is direct and there are understandably factors affecting income directly as well, which has been discussed in Section 2. Education is one element that has an immense direct impact on income. Thereof, education should exhibit strong effects on poverty. Though, as education works as an indirect effect on poverty, it is not clear that this relationship should appear in the model above (Awan et al, 2011). If an interaction term would have been included, the corresponding results may have been observable in the model. Low education exhibits a significant result in models four to six. That is, when the family allowance variables are involved in the models but the parental leave

variables have yet to be included. The effect is negative in two of the models but positive in another which is questionable. As education has a positive effect on poverty, meaning that education will most likely indirect help decrease the poverty rate (Awan et al, 2011). In the case of where the parameters are negative, one may wonder if this negative effect may be viewed upon as any education, even if a low one, is positive in the sense of lower poverty rates.

Table 6 - Poor female population on low completed education continued

VARIABLES	(7) Poor_F	(8) Poor_F	(9) Poor_F	(10) Poor_F	(11) Poor_F
Unemp_F	0.235***	0.312**	0.270*	-0.0921	-0.0929
	(0.0707)	(0.129)	(0.141)	(0.106)	(0.103)
log_EDHI_f	-0.00244	0.0114	0.00406	-0.00158	-0.00429
	(0.0130)	(0.0148)	(0.0158)	(0.0182)	(0.0164)
LowEd_F	0.0170	-0.398	-0.515	0.155	0.169
	(0.192)	(0.330)	(0.341)	(0.213)	(0.196)
GDPtoFA				-0.225***	-0.227***
				(0.0443)	(0.0409)
log_FA				0.00234*	0.00256*
				(0.00138)	(0.00149)
log_PL_PKW	-0.00922*		-0.00632	-0.00817**	-0.00927***
	(0.00505)		(0.00593)	(0.00339)	(0.00342)
log_pay		0.0130*	0.00818	0.00554	0.00482
		(0.00750)	(0.00867)	(0.00396)	(0.00434)
gini					0.0452
					(0.0471)
Constant	0.0903	0.0636	0.231	-0.0127	-0.00217
	(0.115)	(0.266)	(0.288)	(0.198)	(0.190)
Observations	86	61	61	45	45
R-squared	0.0128	0.113	0.155	0.437	0.449
Number of code	16	12	12	11	11

Time fixed effected were included in all models in the Table
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

GDPtoFA on the other hand exhibits a significant result across all models. The coefficient displays a negative relationship with female poverty which can be interpreted as family allowance reducing the percentage of the female population in poverty. Conversely, *Log_FA* only displays a significant result when the parental leave variables are included in the model. The coefficient is significant on a 10% confidence level and exhibits a positive relationship with the poverty rate. The fact that the amount of family allowance has a positive relationship with poverty may be interpreted as poverty rising as a result of increases in the cash family allowance, which is opposite to the results exhibited by *GDPtoFA*. As outlined in Section 2, not all countries provide universal child benefits. Some countries instead tend to aim the cash family allowance towards poorer families. In the results displayed in Tables 5 and 6, the importance of family allowance can be interpreted as the amount of benefit as percentage of GDP being spent on the benefit has a stronger effect on poverty than the level of benefit aimed towards specific families.

The parental leave variables display varying results across the estimations. *Log_PL_WKS* exhibits a negative relationship with poverty whilst displaying significance on all three confidence levels, depending on the model. The strongest significance can be observed in Table 6, model 11. Hence, the results along with theory and research discussed above may result in the assumption that parental leave, paid or not, is of importance in the effort of reducing female poverty. *Log_PL_PAY* only displays a significant, and positive, result in model 8 on the 10% confidence level. The fact of the confidence level being rather high along with only being significant in one model may lead to the assumption of paid parental leave not being as central as parental leave overall. To conclude, the GINI coefficient does not demonstrate a significant result and therefore no assumptions can be indicated. Worth mentioning are the R-squared values, which can be observed in Tables 5 and 6, are extremely low until the final models. This may be explained by the numerous variables in the data set. As the models have been divided by gender and further by level of education this could affect the low numbers.

Table 7 - Poor female population on high completed education

VARIABLES	(1) Poor_F	(2) Poor_F	(3) Poor_F	(4) Poor_F	(5) Poor_F	(6) Poor_F
Unemp_F	0.101	0.101	0.102	-0.0102	0.151*	0.0928
	(0.0903)	(0.0920)	(0.0916)	(0.115)	(0.0771)	(0.0861)
log_EDHI_f		0.000149	-0.000285	-0.00247	-0.00562	-0.00596
		(0.00926)	(0.00967)	(0.0208)	(0.0101)	(0.0192)
HighEd_F			0.0351	-0.207***	0.333**	-0.172***
			(0.0890)	(0.0554)	(0.138)	(0.0659)
GDPtoFA				-0.168***		-0.0954**
				(0.0538)		(0.0459)
log_FA					-0.00282	-0.00189
					(0.00186)	(0.00208)
Constant	0.0484***	0.0471	0.0493	0.0963	0.0938	0.123
	(0.0119)	(0.0794)	(0.0851)	(0.188)	(0.0868)	(0.170)
Observations	124	124	120	93	99	87
R-squared	0.0280	0.0282	0.0265	0.0537	0.0350	0.0813
Number of code	18	18	18	18	17	17

Time fixed effected were included in all models in the Table
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As can be observed in Tables 7 and 8, the unemployment variable follows a similar pattern as when the educational variable was based on low education. In the models which will or have included high completed education, the unemployment coefficient is significant on either a 10% confidence level or above. When significant, the variable exhibits a positive relationship with the dependent variable. As mentioned in the part above, unemployment is likely to affect the poverty levels positively. Mean that when unemployment increases, so does poverty. The mean disposable income variable also follows a similar pattern in Tables 7 and 8 compared to Tables 5 and 6. The variable does not display significance at any level in the models observable in Tables 7 and 8. Similar to the previous estimation outlined above, no assumption can be drawn from the parameter even though the relationship between income and poverty should exist as income may have a strong effect on poverty.

Table 8 - Poor female population on high completed education continued

VARIABLES	(7) Poor_F	(8) Poor_F	(9) Poor_F	(10) Poor_F	(11) Poor_F
Unemp_F	0.235***	0.312**	0.270*	-0.0921	-0.0929
	(0.0707)	(0.129)	(0.141)	(0.106)	(0.103)
log_EDHI_f	-0.00244	0.0114	0.00406	-0.00158	-0.00429
	(0.0130)	(0.0148)	(0.0158)	(0.0182)	(0.0164)
HighEd_F	-0.00962	0.217	0.281	-0.0762	-0.0832
	(0.109)	(0.180)	(0.186)	(0.105)	(0.0966)
GDPtoFA				-0.225***	-0.227***
				(0.0443)	(0.0409)
log_FA				0.00234*	0.00256*
				(0.00138)	(0.00149)
log_PL_PKW	-0.00922*		-0.00632	-0.00817**	-0.00927***
	(0.00505)		(0.00593)	(0.00339)	(0.00342)
log_pay		0.0130*	0.00818	0.00554	0.00482
		(0.00750)	(0.00867)	(0.00396)	(0.00434)
Gini					0.0452
					(0.0471)
Constant	0.0997	-0.156	-0.0528	0.0722	0.0906
	(0.116)	(0.116)	(0.128)	(0.170)	(0.159)
Observations	86	61	61	45	45
R-squared	0.0128	0.113	0.155	0.437	0.449
Number of code	16	12	12	11	11

Time fixed effected were included in all models in the Table
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The education variable does exhibit significance in a limited number of models. In the models where the coefficient displays a significance it does so on a 99 % level. However, the coefficient seemingly affects the dependent variable negatively in models 4 and 6 while in model 5, the coefficient displays a positive effect. In other words, in model 5, the results of the coefficient can be interpreted as an increase in the level of high education will increase the poverty rate while the opposite case seems to occur in models 4 and 6. As many studies have concluded,

high education is a credible and positive indirect on poverty reduction. Hence, the negative results exhibited are to be expected as an increase in high completed education leads to a decrease in poverty rates in the model. Further, as many other variables, the family allowance variables display similar behaviours in Tables 7 and 8 as they did in Tables 5 and 6. *GDPtoFA* exhibits significance in all models where included while *log_FA* only displays significance in models 10 and 11. The former variable displays a negative coefficient whereas the latter variable demonstrates a somewhat positive effect on the dependent variable.

Additionally, the parental leave variables likewise exhibit nearly identical results in Tables 7 and 8 as in Tables 5 and 6 while the GINI coefficient again displays insignificant results. *Log_PL_WKS* demonstrates a negative effect on the poverty variable when significant while the significance level varying from a 10% confidence level down to a 1% confidence level. *Log_PL_PAY* only exhibits significance on a 10% confidence level when being included in the model along with the education variable, disposable income variable and the unemployment variable. Conclusively, the results from models including a high level of education as a substitute to a low level of education are practically identically when observing both significance as well as the coefficients themselves. Lastly, the R-squared display very low numbers until model 11 where all variables are combined. This again points to the fact that the dataset contains a large number or different variables which when not all are included will affect the R-squared.

4.3 Estimations including male population

The first Tables, Tables 9 and 10, exhibit the results from performing a series of estimations where only the variable *LowEd_M* is accounted for. This variable includes the rate of men completing low education. The latter Tables display the results from the performing identical estimations with the exception of *HighEd_M* which includes observations on the rate of men completing a high education.

Table 9 - Poor male population on low completed education

VARIABLES	(1) Poor_M	(2) Poor_M	(3) Poor_M	(4) Poor_M	(5) Poor_M	(6) Poor_M
Unemp_M	0.147	-0.0246	0.149	0.0672	0.162	0.117
	(0.107)	(0.0404)	(0.106)	(0.147)	(0.133)	(0.134)
log_EDHI_m		0.0137**	-0.000740	-0.00805	-0.00584	-0.00745
		(0.00604)	(0.00694)	(0.0146)	(0.00892)	(0.0142)
LowEd_M			0.0557	0.635***	-0.409	0.626***
			(0.187)	(0.161)	(0.310)	(0.177)
GDPtoFA				-0.113***		-0.0886**
				(0.0384)		(0.0380)
log_FA					-0.000767	-0.000218
					(0.00180)	(0.00168)
Constant	0.0396***	-0.0795	0.0165	-0.215	0.311	-0.220
	(0.0119)	(0.0553)	(0.0909)	(0.151)	(0.193)	(0.157)
Observations	124	124	120	93	99	87
R-squared	0.0818	0.102	0.0772	0.109	0.101	0.146
Number of code	18	18	18	18	17	17

Time fixed effected were included in all models in the Table
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results of the estimations including a male population as opposed to a female population can be observed in Tables 9, 10, 11 and 12. The unemployment variable is, as in the case with female population, the first variable to be regressed on the male poverty rate. The variable does not display a significant result in any of the models. The reason why the variable should display a significant result is identical to the model including female population and thereof will not be examined further. The disposable income variable does exhibit significance in model 2, Table 9, but not in any following models. The coefficient displays a positive relationship with the dependent variable, meaning that an increase in income would lead to an increase in the poverty rates for men. Again, the parameter should display a significant result as income has been estimated in many previous studies to have a strong effect on poverty. Similar to the income variable, a low completed education demonstrates a positive effect on poverty rates when displaying significance. The variable displays significance on a 99% level in both models 4 and

6. Hence, it may not be farfetched to assume that low income does have an effect on poverty. Continuing, *GDPtoFA* displays a negative effect on poverty rates while being significant on either a 5% or 1% confidence level depending on the model in question. Similarly, to the models including female population, the amount of percentage of GDP spent on cash family benefits seem to have a stronger and more resourceful effect on the reduction of poverty rates than the amount a family receives in cash benefits *Log_FA*, on the contrary, does not demonstrate a significant result in any of the models. The results correspond to the previous sentence which outlines the explanation for the differing result.

The parental leave variables, nevertheless, do exhibit significant result in some of the models. *Log_PL_WKS* displays a negative effect on the dependent variable in models 10 and 11, Table 10, while having a significance level of 10% in the former and 5% in the latter. The result points to the same assumption which was underlined in the previous Tables. *Log_PL_PAY* only exhibit a significant coefficient in model 10 where the confidence level stands at a 10% level. The effect of this variable on the poverty variable can be observed as positive, if yet a very low positive number. The amount of weeks of parental again displays a bigger effect on poverty than the amount paid for parental leave. As in the previous Tables, the GINI coefficient can be observed to be non-significant. Additionally, the R-squared exhibits a similar number as in the Tables above with the last models displaying a considerably larger number than in the earlier ones.

Table 10 - Poor male population on low completed education continued

VARIABLES	(7) Poor_M	(8) Poor_M	(9) Poor_M	(10) Poor_M	(11) Poor_M
Unemp_M	0.175	0.138	0.118	-0.0519	-0.0542
	(0.127)	(0.126)	(0.132)	(0.0906)	(0.0890)
log_EDHI_m	-0.00101	0.0176	0.00805	-0.0103	-0.0123
	(0.00939)	(0.0127)	(0.0138)	(0.0168)	(0.0156)
LowEd_M	0.226	-0.156	-0.511	0.264	0.278
	(0.263)	(0.406)	(0.550)	(0.262)	(0.290)
GDPtoFA				-0.159***	-0.160***
				(0.0263)	(0.0257)
log_FA				0.00160	0.00171
				(0.00138)	(0.00146)
log_PL_PKW	-0.00574		-0.00733	-0.00673*	-0.00741**
	(0.00460)		(0.00566)	(0.00359)	(0.00345)
log_pay		0.00563	0.00114	0.00495*	0.00449
		(0.00723)	(0.00903)	(0.00287)	(0.00306)
gini					0.0266
					(0.0313)
Constant	-0.0452	-0.0713	0.236	-0.00423	0.00277
	(0.118)	(0.216)	(0.344)	(0.234)	(0.249)
Observations	86	61	61	45	45
R-squared	0.0454	0.134	0.190	0.490	0.487
Number of code	16	12	12	11	11

Time fixed effected were included in all models in the Table
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 11 - Poor male population on high completed education

VARIABLES	(1) Poor_M	(2) Poor_M	(3) Poor_M	(4) Poor_M	(5) Poor_M	(6) Poor_M
Unemp_M	0.147	-0.0246	0.149	0.0672	0.162	0.117
	(0.107)	(0.0404)	(0.106)	(0.147)	(0.133)	(0.134)
log_EDHI_m		0.0137**	-0.000740	-0.00805	-0.00584	-0.00745
		(0.00604)	(0.00694)	(0.0146)	(0.00892)	(0.0142)
HighEd_M			-0.0290	-0.330***	0.213	-0.325***
			(0.0974)	(0.0834)	(0.162)	(0.0918)
GDPtoFA				-0.113***		-0.0886**
				(0.0384)		(0.0380)
log_FA					-0.000767	-0.000218
					(0.00180)	(0.00168)
Constant	0.0396***	-0.0795	0.0487	0.152	0.0740	0.142
	(0.0119)	(0.0553)	(0.0676)	(0.130)	(0.0764)	(0.122)
Observations	124	124	120	93	99	87
R-squared	0.0818	0.102	0.0772	0.109	0.101	0.146
Number of code	18	18	18	18	17	17

Time fixed effected were included in all models in the Table
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The final Tables, Tables 11 and 12, include high completed education in place of low education. As in the two previous Tables, unemployment can be observed to not have a significant effect on poverty in any of the models with the underlining justification being identical to the previous ones regarding unemployment. Mena disposable income only displays a significant result in model 2 where the confidence level can be observed to be 5% with the reasoning behind the results following the same pattern as was outlined in the earlier Tables. The education variable displays significant results in two of the models, models 4 and 6. In both models, the education coefficient exhibits a strong significance at 99% in respective model. Continuing, the cash allowance variables differ largely in comparison to one another. *GDPtoFA* exhibits solid significant results across all models with the coefficient displaying a negative relationship with poverty rates. However, *Log_FA* does not display significant results in any of the models.

The parental variables demonstrate diverse results; *log_PL_WKS* display significant results in model 10 and 11 with a confidence level of 10% in the former and 5% in the latter. *Log_PL_PAY* only exhibits a significant result at a 10% level in model 10 with the effect on poverty being positive, if yet exceptionally small. This corresponds with the previous results displayed and as in the prior Tables displaying results, the GINI coefficient does not display a significant result.

Table 12 - Poor male population on high completed education continued

VARIABLES	(7) Poor_M	(8) Poor_M	(9) Poor_M	(10) Poor_M	(11) Poor_M
Unemp_M	0.175	0.138	0.118	-0.0519	-0.0542
	(0.127)	(0.126)	(0.132)	(0.0906)	(0.0890)
log_EDHI_m	-0.00101	0.0176	0.00805	-0.0103	-0.0123
	(0.00939)	(0.0127)	(0.0138)	(0.0168)	(0.0156)
HighEd_M	-0.118	0.0591	0.193	-0.0830	-0.0875
	(0.137)	(0.154)	(0.208)	(0.0824)	(0.0912)
GDPtoFA				-0.159***	-0.160***
				(0.0263)	(0.0257)
log_FA				0.00160	0.00171
				(0.00138)	(0.00146)
log_PL_PKW	-0.00574		-0.00733	-0.00673*	-0.00741**
	(0.00460)		(0.00566)	(0.00359)	(0.00345)
log_pay		0.00563	0.00114	0.00495*	0.00449
		(0.00723)	(0.00903)	(0.00287)	(0.00306)
Gini					0.0266
					(0.0313)
Constant	0.0857	-0.158	-0.0465	0.140	0.155
	(0.0973)	(0.136)	(0.153)	(0.164)	(0.155)
Observations	86	61	61	45	45
R-squared	0.0454	0.134	0.190	0.490	0.487
Number of code	16	12	12	11	11

Time fixed effected were included in all models in the Table
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

5. Conclusion

This thesis sets out to examine the effects of cash benefits on poverty rates. The underlying reasons for the interest in the relationship is based on previous research examining the positive effects social benefits have on poverty reduction. The model was set up with poverty rates as the dependent variable and several macroeconomic elements as well as parameters from poverty policies and measures for cash family allowances as independent variables. The data was set up as a panel with the estimation building on a random effects model. Additionally, the estimations were divided based on gender as well as total population. Education was an element of interest in respect to macroeconomics and hence these variables was included but separated into two variables; completed low education and completed high education. The purpose of the separation was based in economic theory which implies that high education has an indirect effect on poverty, meaning that higher education lowers the risk of falling into poverty.

The results of the estimations differ to some degree when comparing to previous research and studies. Unemployment should, according to macroeconomic theory, have an effect on poverty by of which is meant that a rise in unemployment rates could possibly lead to a rise in poverty rates. The educational variables which were expected to display significant results on poverty only performed as anticipated in a few of the estimations. The foundation for the expectation lies on the same economic theory as unemployment did. Further, the parental leave variables varied compared to one another in the results. The amount of weeks of parental leave could be interpreted as being of greater importance than the actual cash benefits received when on parental leave. The main variables of interest, however, were the ones relating to cash family allowance. There were two variables displaying different aspects of cash benefits; the amount paid each month to the guardian of the child and the percentage of GDP that is allocated to cash family allowance per country. The latter was of greater interest as some countries had policies resulting on only specific households being eligible for the social transfer. Other countries utilise universal cash benefits which are explained as each household receives a flat amount each month. The former variable displayed significant results only in a minority of the models and when doing so, the results only indicated a very small impact on poverty. Hence, no linkages between poverty and the amount paid in cash transfers every month could be concluded. However, the other family allowance variable did exhibit significant results in the majority of the models estimated. In addition to being significant, the results displayed indicates a negative relationship with poverty rates. This means that an increase in the percentage of GDP spent on cash family allowance will very possibly lead to a subsequent decline in poverty rates.

The results of this parameter corresponds to the research and studies outlined in Section 2, in which studies have concluded that an increase in the percentage of GDP spent on family allowance will as a result decrease poverty. Further, the number of weeks of parental leave was indicated to matter to a larger extent than the amount paid in transfers from the government when utilising parental leave. The finding could be related to previous researched outlined in Section 2 as studies showed a positive effect of the number of weeks paid parental has on income. As mention above as well, income is regarded as a direct effect on poverty. Hence, the number of week of parental could be considered as an indirect effect on poverty with the result of poverty rates declining when increasing the number of parental weeks.

The results did not tend to differ vastly between the sexes nor when running estimations on the entire population sample. This could be interpreted as the difference between the sexes, i.e. inequalities between the sexes, not being very large in the sample compiled. Theories have stated that there is a large gap in many elements when observing gender. Inequalities in income between the genders have been widely investigated and therefore, one could have expected to see larger effects on poverty rates for women when income increase. This reasoning bases on the fact that men tend to have a higher income than women. To relate to the above section outlining the percentage of GDP allocated to family allowance, the difference in results between the gender could be anticipated to be larger due to the fact of women earning less and hence being more affected by this transfer than men. Yet, as the variable displayed significant results in the majority of the models, the element of cash family allowance could be interpreted as an important factor when developing policies for poverty prevention.

There were some limitations to the models specified of which one related to the number of observations and the size of the data set. As the dataset only included a specific amount of years for each country, the number of observations became restricted. In future research, it would be advised to extend the number of observations. This could provide more robust estimations as a lower number of observation is not necessarily as stabile statistically. However, the data was determined to have enough solid observation to perform robust estimations. Therefore, this thesis could outline the correlation between poverty and cash family benefits allocated as transfers from the government which was the intended purpose. Suggestions for future research is to focus more intensely on the direct effects of cash family allowance on poverty rates. Additionally, questions remain if means-testing has an effect on the amount of cash benefits being allocated, as this thesis did not explore this path. Do countries

that implement means-testing allocate roughly the same amount of cash benefits in the end and does that then indicate that the redistribution of benefits is more efficient? Thereof, a perspective focusing more on the aspects of cash benefits as percentage of GDP could be of great interest in order to further add insight into the topic.

References

Awan, MS. Malik, Nouman and Sarwar, Haroon and Waqas, Muhammad (2011): Impact of education on poverty reduction. Published in: *International Journal of Academic Research*, Vol. 3, No. 1 (2011): pp. 659-664.

Becker, G. and Tomes, N. (1979). An Equilibrium Theory of the Distribution of Income and Intergenerational Mobility. *Journal of Political Economy*, 87(6), pp.1153-1189.

Brennan, D. (2007). Babies, Budgets, and Birthrates: Work/Family Policy in Australia 1996 2006 *Social Politics: International Studies in Gender, State & Society*, 14(1), pp.31-57.

Behrendt, C. (2000a). Do Means-tested Benefits Alleviate Poverty? Evidence on Germany, Sweden and the United Kingdom from the Luxembourg Income Study, *Journal of European Social Policy* 10 (1): 23–42

Blank, R. (2010), "Selecting among anti-poverty measures, can an economist be both critical and caring?", *Review of Social Economy*, 61, 447-469.

Bradshaw, J. (2010). An International Perspective on Child Benefit Packages. *From Child Welfare to Child Well-Being: An International Perspective on Knowledge.* London, New York, Springer. 293-307.

Cantillon, B. (2001), The paradox of the social investment state: growth, employment and poverty in the Lisbon era, *Journal of European Social Policy*, Vol. 21, No. 5, pp. 432-449.

Canada Revenue Agency. (2016). *Canada child benefit - How we calculate your CCB.* [online] Available at: http://www.cra-arc.gc.ca/bnfts/ccb/clcltyrccb-eng.html [Accessed 3 Aug. 2016].

European Comission. (2016). *Your rights country by country - Employment, Social Affairs & Inclusion - European Commission*. [online] Available at: http://ec.europa.eu/social/main.jsp?catId=858&langId=en [Accessed 3 Aug. 2016].

Forslund, S. (2015). Labour Mobility, Housing Prices and Unemployment: A Swedish perspective. Master thesis. Lund University.

Fusarelli, L. (2015) Child Welfare, Education, Inequality, and Social Policy in Comparative Perspective, *Peabody Journal of Education*, 90:5, 677-690.

Gauthier A. Family Policies in Industrialized Countries: Is There Convergence? In: *Population* (English edition), n°3, 2002. pp. 447-474; Available at: http://www.persee.fr/docAsPDF/pop_1634-2941_2002_num_57_3_18403.pdf [Accessed 11 Aug. 2016].

Gauthier, A.H. (2010). Comparative Family Policy Database, Version 3 [computer file]. Netherlands Interdisciplinary Demographic Institute and Max Planck Institute for Demographic Research (distributors). Retrieved from www.demogr.mpg.de

Gornik, J., & Jännti, M. (2013). Introduction. In J. C. Gornik & M. Jäntti (Eds.), *Economic disparities in the middle class in affluent countries*. Stanford: Stanford University Press.

Kreitler Kirkpatrick, E. (1972). *Children's allowance in Japan*. 1st ed. [ebook] U.S. Social Security Administration. Available at: https://www.ssa.gov/policy/docs/ssb/v35n6/v35n6p39.pdf [Accessed 10 Aug. 2016].

Letablier, A et al. (2009) *The Costs of Raising Children and the Effectiveness of Supporting Parenthood Policies in European Countries: A Literature Review*. Rapport pour la Commission Européenne, INED.

Maldonado, L.C. and Nieuwenhuis, R. (2015a). Family policies and single parent poverty in 18 OECD countries, 1978–2008. *Community, Work & Family*, 18(4), pp. 395–415.

Maldonado, L.C. and Nieuwenhuis, R. (2015b). Prepare versus Repair? Combining Parental Leave and Family Allowances for Social Investment Against Single-Parent Poverty. *Belgisch tijdschrift voor Sociale Zekerheid*, (1), 115-123.

Nieuwenhuis, R. (2014), *Family Policy Outcomes: combining institutional and demographic explanations of women's employment and earnings inequality in OECD countries, 1975-2005*, Phd thesis, University of Twente.

Nieuwenhuis, R., Need, A. and Van der Kolk, H. (2012). Institutional and Demographic

Explanations of Women's Employment in 18 OECD Countries, 1975-1999, *Journal of Marriage and Family*, Vol. 74, No. 3, pp. 614-630.

OECD, (2011). *Doing better for families*. Paris: OECD.

OECD (2014) *Public spending on family benefits*. Available at: http://www.oecd.org/els/soc/PF1_1_Public_spending_on_family_benefits_Oct2013.pdf (Accessed: 3 August 2016).

OECD (2016) *OECD database.* Various countries. Available at: http://stats.oecd.org/ [Accessed July 2016]

Oxaal, Zoe. Education and poverty: A gender analysis. Vol. 53. *Institute of Development Studies at the University of Sussex*, 1997.

Rege, M. and Solli, I. (2013). The Impact of Paternity Leave on Fathers' Future Earnings. *Demography*, 50(6), pp.2255-2277.

Richardson, D. and Bradshaw, J. (2012) Family-oriented anti-poverty policies in developed countries, in Department of Economic and Social Affairs, Division for Social Policy and Development *Family Oriented Policies for Poverty Reduction, Work-Family Balance and Intergenerational Solidarity*, United Nations, New York, pp.55-91.

Schwarz, P., Tax disincentives and female employment in Organisation for Economic Co-operation and Development (OECD) countries, *Journal of European Social Policy*, Vol. 22, No. 1, pp. 17-29, 2012.

Stata, (2015a). *Hausman specification test*. Available online at: http://www.stata.com/manuals13/rhausman.pdf [Accessed 8 August 2016].

Tilak, J. (2002). Education and Poverty. *Journal of Human Development*, 3(2), pp.191-207.

Thévenon, O. (2011). Family Policies in OECD Countries: A Comparative Analysis. *Population and Development Review*, 37(1), pp.57-87.

Wiro-Mattila, P. (1999). *Economic theories of the household*. Helsinki: United Nations University, World Institute for Development Economics Research.

UNICEF. (2007). Child poverty in perspective: An overview of child well-being in rich

countries. Retrieved from http://www.unicef.org/media/files/ChildPovertyReport.pdf [Accessed 10 Aug. 2016]

Unmillenniumproject.org. (2016). *UN Millennium Project | About the MDGs*. [online] Available at: http://www.unmillenniumproject.org/goals/ [Accessed 10 Aug. 2016].

Appendices

Appendix 1

Explanations of variables included in the models

Variable	Definition
Poor	Poverty rate for the entire population per country. The poverty threshold is at 50 % of the mean disposable income in respective country
Poor_F	Poverty rate for the female population per country. The poverty threshold is at 50 % of the mean disposable income in respective country
Poor_M	Poverty rate for the male population per country. The poverty threshold is at 50 % of the mean disposable income in respective country
Unemp	Unemployment rate for the entire population per country
Unemp_F	Unemployment rate for the female population per country
Unemp_M	Unemployment rate for the male population per country
Log_EDHI	Logarithm of the mean disposable income per capita for the entire population per country
Log_EDHI_f	Logarithm of the mean disposable income per capita for the female population per country
Log_EDHI_m	Logarithm of the mean disposable income per capita for the male population per country

LowEd	Percentage of the total population per country that has completed a low education
LowEd_F	Percentage of the female population per country that has completed a low education
LowEd_M	Percentage of the male population per country that has completed a low education
HighEd	Percentage of the total population per country that has completed a high education
HighEd_F	Percentage of the female population per country that has completed a high education
HighEd_M	Percentage of the male population per country that has completed a high education
GDPtoFA	The percentage of GDP for respective country that is allocated to cash family allowance
Log_FA	Logarithm of the amount each respective country spends on cash family allowance
Log_PL_WKS	Logarithm of the number of weeks allocated per country to both paid and unpaid parental leave
Log_PL_PAY	Logarithm of the amount of cash benefits received in the occasion of parental leave per country
GINI	Index of inequality measure

Appendix 2

Regression models including total population, low education rates and region dummy

VARIABLES	(1) Poor	(2) Poor	(3) Poor	(4) Poor	(5) Poor	(6) Poor
Unemp	0.345**	-0.110	0.348**	0.152	0.362*	0.232
	(0.165)	(0.0851)	(0.164)	(0.219)	(0.193)	(0.205)
region	-0.0478***	-0.0368***	-0.0475***	-0.0398**	-0.0273**	-0.0257**
	(0.0148)	(0.0133)	(0.0144)	(0.0162)	(0.0131)	(0.0123)
log_EDHI		0.0266**	-0.0163	-0.0159	-0.0190	-0.0172
		(0.0124)	(0.0153)	(0.0310)	(0.0183)	(0.0317)
LowEd			0.128	1.018***	-0.364	0.970***
			(0.345)	(0.284)	(0.593)	(0.339)
GDPtoFA				-0.205***		-0.177**
				(0.0742)		(0.0735)
log_FA					-0.00138	-0.000298
					(0.00429)	(0.00403)
Constant	0.219***	-0.0366	0.296*	-0.176	0.527	-0.189
	(0.0507)	(0.127)	(0.172)	(0.297)	(0.328)	(0.316)
Observations	124	124	120	93	99	87
R-squared	0.0849	0.122	0.0650	0.0677	0.0741	0.110
Number of code	18	18	18	18	17	17

Time fixed effected were included in all models in the Table
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Regression models including total population, low education and region dummy

VARIABLES	(7) Poor	(8) Poor	(9) Poor	(10) Poor	(11) Poor
Unemp	0.478**	0.515	0.476	-0.0595	-0.0626
	(0.196)	(0.364)	(0.359)	(0.150)	(0.128)
Region	-0.0360**	-0.0294**	-0.0193	-0.0658***	-0.0672***
	(0.0158)	(0.0124)	(0.0206)	(0.0110)	(0.00970)
log_EDHI	-0.0134	0.0257	0.0141	0.0408	0.0346
	(0.0219)	(0.0279)	(0.0306)	(0.0271)	(0.0241)
LowEd	0.243	-0.432	-0.767	0.404**	0.452**
	(0.408)	(0.627)	(0.821)	(0.169)	(0.184)
GDPtoFA				-0.330***	-0.334***
				(0.0423)	(0.0375)
log_FA				0.00948***	0.0101***
				(0.00150)	(0.00149)
log_PL_PKW	-0.0114		-0.0101	0.00240	-4.18e-05
	(0.00961)		(0.0126)	(0.00408)	(0.00419)
log_pay		0.0175	0.0116	0.0118***	0.00996**
		(0.0143)	(0.0160)	(0.00446)	(0.00507)
Gini					0.113
					(0.0690)
Constant	0.217	0.0508	0.352	-0.408	-0.390
	(0.235)	(0.443)	(0.592)	(0.275)	(0.258)
Observations	86	61	61	45	45
R-squared	0.0634	0.135	0.169	0.560	0.581
Number of code	16	12	12	11	11

Time fixed effected were included in all models in the Table
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Regressions including total population, high education and region dummy

VARIABLES	(1) Poor	(2) Poor	(3) Poor	(4) Poor	(5) Poor	(6) Poor
Unemp	0.345**	-0.110	0.348**	0.152	0.362*	0.232
	(0.165)	(0.0851)	(0.164)	(0.219)	(0.193)	(0.205)
region	-0.0478***	-0.0368***	-0.0475***	-0.0398**	-0.0273**	-0.0257**
	(0.0148)	(0.0133)	(0.0144)	(0.0162)	(0.0131)	(0.0123)
log_EDHI		0.0266**	-0.0163	-0.0159	-0.0190	-0.0172
		(0.0124)	(0.0153)	(0.0310)	(0.0183)	(0.0317)
HighEd			-0.0703	-0.534***	0.196	-0.509***
			(0.189)	(0.149)	(0.320)	(0.178)
GDPtoFA				-0.205***		-0.177**
				(0.0742)		(0.0735)
log_FA					-0.00138	-0.000298
					(0.00429)	(0.00403)
Constant	0.219***	-0.0366	0.369**	0.400	0.320*	0.360
	(0.0507)	(0.127)	(0.165)	(0.284)	(0.170)	(0.286)
Observations	124	124	120	93	99	87
R-squared	0.0849	0.122	0.0650	0.0677	0.0741	0.110
Number of code	18	18	18	18	17	17

Time fixed effected were included in all models in the Table
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Regressions including total population, high education and region dummy

VARIABLES	(7) Poor	(8) Poor	(9) Poor	(10) Poor	(11) Poor
Unemp	0.478**	0.515	0.476	-0.0595	-0.0626
	(0.196)	(0.364)	(0.359)	(0.150)	(0.128)
Region	-0.0360**	-0.0294**	-0.0193	-0.0658***	-0.0672***
	(0.0158)	(0.0124)	(0.0206)	(0.0110)	(0.00970)
log_EDHI	-0.0134	0.0257	0.0141	0.0408	0.0346
	(0.0219)	(0.0279)	(0.0306)	(0.0271)	(0.0241)
HighEd	-0.133	0.205	0.364	-0.170**	-0.190**
	(0.223)	(0.297)	(0.389)	(0.0712)	(0.0774)
GDPtoFA				-0.330***	-0.334***
				(0.0423)	(0.0375)
log_FA				0.00948***	0.0101***
				(0.00150)	(0.00149)
log_PL_PKW	-0.0114		-0.0101	0.00240	-4.18e-05
	(0.00961)		(0.0126)	(0.00408)	(0.00419)
log_pay		0.0175	0.0116	0.0118***	0.00996**
		(0.0143)	(0.0160)	(0.00446)	(0.00507)
Gini					0.113
					(0.0690)
Constant	0.354	-0.189	-0.0740	-0.185	-0.141
	(0.218)	(0.231)	(0.254)	(0.243)	(0.221)
Observations	86	61	61	45	45
R-squared	0.0634	0.135	0.169	0.560	0.581
Number of code	16	12	12	11	11

Time fixed effected were included in all models in the Table
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix 3

Regressions including total population and low education with fixed effects

VARIABLES	(1) Poor	(2) Poor	(3) Poor	(4) Poor	(5) Poor	(6) Poor
Unemp	-0.190**	-0.209**	-0.232*	-0.162	-0.110	-0.127
	(0.0916)	(0.0879)	(0.118)	(0.115)	(0.102)	(0.114)
log_EDHI		0.0315***	0.0259**	0.0252	0.0282**	0.0245
		(0.00970)	(0.0121)	(0.0207)	(0.0108)	(0.0213)
o.LowEd			-	-	-	-
GDPtoFA				-0.0717		-0.126
				(0.137)		(0.141)
log_FA					0.00970	0.0117*
					(0.00584)	(0.00664)
Constant	0.110***	-0.171*	-0.152	-0.138	-0.231**	-0.198
	(0.00745)	(0.0869)	(0.112)	(0.182)	(0.0943)	(0.185)
Observations	124	124	120	93	99	87
R-squared	0.0392	0.127	0.365	0.424	0.523	0.506
Number of code	18	18	18	18	17	17

Time fixed effected were included in all models in the Table
Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Regressions including total population and low education with fixed effects

VARIABLES	(1) Poor	(2) Poor	(3) Poor	(4) Poor	(5) Poor
Unemp	-0.255	-0.0767	-0.0535	-0.147	-0.392
	(0.155)	(0.261)	(0.249)	(0.195)	(0.258)
log_EDHI	0.0159	-0.0134	-0.0226	0.0171	0.0183
	(0.0158)	(0.0314)	(0.0303)	(0.0327)	(0.0318)
o.LowEd	-	-	-	-	-
GDPtoFA				-0.164	-0.178
				(0.209)	(0.203)
log_FA				-0.00606	-0.00550
				(0.0165)	(0.0160)
log_PL_PKW	-0.0186		-0.0313*	-0.00687	-0.00636
	(0.0144)		(0.0156)	(0.0130)	(0.0127)
log_pay		0.00849	0.00808	0.0104	0.0171
		(0.0295)	(0.0281)	(0.0340)	(0.0334)
gini					0.348
					(0.248)
Constant	0.00873	0.159	0.342	-0.0473	-0.155
	(0.153)	(0.330)	(0.328)	(0.377)	(0.374)
Observations	86	61	61	45	45
R-squared	0.396	0.373	0.447	0.613	0.658
Number of code	16	12	12	11	11

Time fixed effected were included in all models in the Table
Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Regressions including total population and high education with fixed effects

VARIABLES	(1) Poor	(2) Poor	(3) Poor	(4) Poor	(5) Poor	(6) Poor
Unemp	-0.190**	-0.209**	-0.232*	-0.162	-0.110	-0.127
	(0.0916)	(0.0879)	(0.118)	(0.115)	(0.102)	(0.114)
log_EDHI		0.0315***	0.0259**	0.0252	0.0282**	0.0245
		(0.00970)	(0.0121)	(0.0207)	(0.0108)	(0.0213)
o.HighEd			-	-	-	-
GDPtoFA				-0.0717		-0.126
				(0.137)		(0.141)
log_FA					0.00970	0.0117*
					(0.00584)	(0.00664)
Constant	0.110***	-0.171*	-0.152	-0.138	-0.231**	-0.198
	(0.00745)	(0.0869)	(0.112)	(0.182)	(0.0943)	(0.185)
Observations	124	124	120	93	99	87
R-squared	0.0392	0.127	0.365	0.424	0.523	0.506
Number of code	18	18	18	18	17	17

Time fixed effected were included in all models in the Table
Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix 4

The 18 OECD countries included in the thesis;

Australia

Austria

Belgium

Canada

Denmark

Germany

Finland

France

Ireland

Italy

Luxembourg

Netherland

Norway

Spain

Sweden

Switzerland

United Kingdom

United States

Regression including total population and high education with fixed effects

VARIABLES	(1) Poor	(2) Poor	(3) Poor	(4) Poor	(5) Poor
Unemp	-0.255	-0.0767	-0.0535	-0.147	-0.392
	(0.155)	(0.261)	(0.249)	(0.195)	(0.258)
log_EDHI	0.0159	-0.0134	-0.0226	0.0171	0.0183
	(0.0158)	(0.0314)	(0.0303)	(0.0327)	(0.0318)
o.HighEd	-	-	-	-	-
GDPtoFA				-0.164	-0.178
				(0.209)	(0.203)
log_FA				-0.00606	-0.00550
				(0.0165)	(0.0160)
log_PL_PKW	-0.0186		-0.0313*	-0.00687	-0.00636
	(0.0144)		(0.0156)	(0.0130)	(0.0127)
log_pay		0.00849	0.00808	0.0104	0.0171
		(0.0295)	(0.0281)	(0.0340)	(0.0334)
gini					0.348
					(0.248)
Constant	0.00873	0.159	0.342	-0.0473	-0.155
	(0.153)	(0.330)	(0.328)	(0.377)	(0.374)
Observations	86	61	61	45	45
R-squared	0.396	0.373	0.447	0.613	0.658
Number of code	16	12	12	11	11

Time fixed effected were included in all models in the Table
Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1