

# COMPARISON OF SEPARATED FAMILIES' STANDARD OF LIVING IN GERMANY

## Analyzing the Equalised Incomes in Simulated Families after Child Support and Child Benefit Paid

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### KEYWORDS

Child support, risk of poverty, one-parent household, equivalence scales, child penalty, inequality

### ABSTRACT

In this paper, I describe the inequality in the standard of living in Germany after divorce and compare their risk of poverty. The one-parent families have the highest poverty risk everywhere in the world. In Germany, a directive is available for anybody to determine the child support geared to the non-custodial parent's disposable income. Assuming that the non-custodial parent pays child support following this directive of *düsseldorfer* tables I found deep differences in the equalised incomes of the divorced households in simulated cases. Equalised incomes were determined by two types of the OECD scales to make comparable the different composed families' incomes. Both methods result in fewer life standards for one-parent households in more than 83 % of the cases, however, the risk of poverty is not higher for the custodial parent's household. This indicates some modification in the directive: the respect of the custodial parent's income and/or correction of the amounts in the tables mainly on the higher income categories.

### INTRODUCTION

The risk of poverty in lone parent households is the highest in the world as well as in the European Union. First of all, the market is responsible for this phenomenon, so the states usually help these families by subventions in the form of financial or institutional assets. But what can the non-custodial parents do for their children to avoid this risk? There are judicial recommendations for child support payment in some countries, e.g. in Germany the so-called '*Düsseldorfer Tabelle*'. This paper investigates if this guideline is enough to prevent social sinking or only for conscience's sake? Could the non-custodial parent pay more without endangering her/his own well-being more than it needs? Simulating 1000 families regarding the children's effect on the wages and the state subventions, I calculate the difference in the standard of living of the two new households after their divorce. I supposed that the non-custodial parent pays child support according to the official guideline. I investigate if the recommendation is enough or if any modification is needed

to make a fair system. Two (or more) different composed households' disposable incomes are comparable by OECD equivalence scales. Two alternatives are popular nowadays: the modified and the square-root methods. I wondered also if they give the same or different results, which is better for economic analysis. I choose Germany because there exists a guideline that is available for anybody so it can be a standard for other countries in the European region (especially for similar social market economies). It is the most populated country in the EU meanwhile one of the most developed although the one-parent families' risk of poverty here is higher than the average in both the EU and Euro area. Henceforward there are many studies about poverty among households regarding their composition but none of these papers analyses the effect of the child support system. Obviously many aspects are responsible for the well-being of a household from the market to the state but it is time to see the role of a child support guideline.

### BACKGROUND

#### Risk of Poverty

##### The Measurement Method

The at-risk-of-poverty rate is the share of people whose equivalised disposable income (after social transfer) is below the at-risk-of-poverty threshold. This poverty line is set at 60 % of the national median equivalised disposable income (after social transfers) in the Eurostat statistics (Eurostat. Glossary 2022) but it can also be addressed at 50 % of the median value. In the samples of Hansen et al. (2005) level of the threshold does not disturb the results, I have also seen it in my calculation as well.

Determining and comparing the standard of living in different households is a reasonably hard task. The necessities of a younger or older adult, either a baby or a pupil diverged. Near to this two adults of the same age usually don't need twice the disposable income as one adult to achieve the same well-being due to the fixed costs of a household, the economies of scale in consumption.

Consequently, the income data of households determined per capita can be elusive. To avoid this problem OECD worked out many methods in the past decades. Nowadays both the Eurostat and the OECD statistics supply the concept of equivalised income.

“The equivalised disposable income is the total income of a household, after tax and other deductions, that is available for spending or saving, divided by the number of household members converted into equalised adults.” (Eurostat, 2022a)

Eurostat calculates the equivalised adults as the size of the household according to the so-called “OECD-modified” (or OECD2) equivalence scales. In this method, the weight of the first adult is 1, and any other member of the family aged over 14 years is 0.5, meanwhile, a child (aged under 14) weighs 0.3. Practically it means that: if one adult needs 100 units then one adult plus one child has 130 units for the same standard of living. It comes from that the equivalised adults in the second household are  $1+0.3 = 1.3$  (one adult plus one child), so their income has to be divided by this amount:  $130/1.3 = 100$ .

Nowadays OECD publications apply a later suggested method, the so-called square-root scale. According to it the age of any member of the household doesn’t matter only the size of the household. The total income of a household is divided by the square root of the number of members. (E.g. in the case of four members in the household the income is divided by two:  $\sqrt{4}=2$ ). Practically it means that if one adult has 100 units then one adult plus one child need 141 units for the same standard of living. It comes from that the equivalised adults in the second household are  $\sqrt{2} \approx 1.41$  (two persons disregarding their age), so their income has to be divided by this amount:  $141/1.41 = 100$ . (OECD, 2022)

Table 1 compares the two methods if there is only 1 adult in the household and 0 to 4 children. Hansen et al. (2005) used the modified OECD scale I calculated both methods to compare the results.

Table 1: Equalised adults in one-adult households (own calculation based on OECD, 2022)

Household size	„OECD-modified” scale	Square root scale
1 adult	1	1
1 adult, 1 child	1.3	1.4
1 adult, 2 children	1.6	1.7
1 adult, 3 children	1.9	2.0
1 adult, 4 children	2.2	2.2

## Statistics

In the European Union and the Euro area, every fifth citizen lives at risk of poverty or social exclusion (see Total row in Table 2). Seeing the details according to the composition of the households the most endangered type is where one adult lives with one or more children. (Unfortunately, there is no detailed data for one, two, three, or more children.) Their rate is the highest, more than 40 % of the people who live in one-parent families lie under this risk. In Germany, which is the most populated country in the EU, the same rate is closer to 50 %! In the next

subsection, I present the phenomenon of child penalty which is mainly responsible for it.

Table 2: People at risk of poverty or social exclusion by different household types in 2020 (Eurostat, 2022b) (%)

Household composed of ...	European Union - 27 countries	Euro area - 19 countries	Germany
... 1 adult	33.2	32.2	34.8
... 1 adult with dependent children	42.1	43	46.7
... 2 adults	16.4	16.2	16.3
... 2 adults with 1 dependent child	15.7	16.6	15.8
... 2 adults with 2 dependent children	16.7	17	17.6
... 2 adults with 3 or more dependent children	29.6	29.8	30.9
... 3 or more adults	18.1	18.8	15.4
... 3 or more adults with dependent children	25.2	25.7	19.7
<b>Total</b>	<b>21.9</b>	<b>22</b>	<b>22.5</b>

As can be seen from Table 1, the household composed of 1 adult with dependent children has the highest chance to live at risk of poverty or social exclusion both in the EU and the Euro area (not only in 2020). In 2020 that data was worse in Germany by 4.6 (3.7) percentage points than in the EU (Euro area) on average. Almost every second person who lives in a one-parent family was at risk of poverty. Almost half of these people have less equalised income than half of the median income. They are in the poorest quartile of society. At the same time, a household with only one adult without children has the second-highest chance to live at risk of poverty or social exclusion. Practically third of these people have less equalised income than half of the median income. Divorce prognosticates both the exes-partner and their child(ren) increasing risk of poverty if they do not find a new partner.

## Impact of having a child

### Child Penalty: the Market

The ‘motherhood pay gap’ or in more general form the ‘child penalty’ is a well-known and researched social problem. (see Grimshaw and Rubery, 2009) Over the gender gap, the mothers earn less than other women without children. Many studies investigate this phenomenon and try to determine its extent. Gangl – Ziefle (2009) found that the German wage penalty for motherhood was 16%–18% per child which was the highest result among the investigated countries (USA 9-16 %, Britain 13 %) in the 50<sup>th</sup> and 60<sup>th</sup> decades. Kleven et al. (2019) determined 61 % as the long-run child penalty in Germany. In their paper, Germany had the highest rate

among the investigated six countries. E.g. in the case of Denmark, it was ‘only’ 21 % for women who birthed their first child between 1985-2003. The penalties can come from three deviations: employment, working hours, and the wage rate.

#### Child Benefit: the State

Since the phenomenon of child penalty and to avoid children’s high risk of poverty governments usually gave some subvention for parents. In Germany, its extent depends on the number of children as Table 3 shows it.

Table 3: Child benefits in Germany (Bundesregierung, 2022)

Child benefit per capita in euro	
1st and 2nd child	219
3rd child	225
from 4th child	250

#### Child Support: the Ex-Spouse

The most important financial asset which can moderate (if not solve fulfilled) the risk of poverty is a well-defined (and paid) child support from the non-custodial parent. (Monostori, 2019). In Germany, the recommendation for the amount of child support is contained by the so-called Düsseldorf Tabelle (see Table 3 and Appendix Table 4 and 5). There is also a recommendation for the amount of spousal support in the directive but this paper does not deal with the theme.

Table 3: Child support (euro) payment for the first and second child per capita in 2022

Chargeable net income (euro)		Child support depends on the age of the child (years)			
from	to	0-5	6-11	12-17	from 18
1	1900	286.5	345.5	423.5	350
1901	2300	306.5	368.5	450.5	379
2301	2700	326.5	391.5	477.5	407
2701	3100	346.5	414.5	503.5	436
3101	3500	366.5	436.5	530.5	464
3501	3900	397.5	473.5	573.5	510
3901	4300	429.5	509.5	615.5	555
4301	4700	461.5	546.5	658.5	601
4701	5100	492.5	582.5	701.5	646
5101	5500	524.5	618.5	743.5	692
5501	6200	556.5	655.5	786.5	737
6201	7000	587.5	691.5	829.5	783

7001	8000	619.5	728.5	871.5	828
8001	9500	651.5	764.5	914.5	874
9501	11000	682.5	800.5	956.5	919

According to Table 3 when the non-custodial parent’s chargeable net income before paying child support is e.g. 4500 euros a month he/she should pay 601 euros for a child aged 18 and 658.5 euros for a child aged 13 if there are no more children. If there is a third (younger) child in this family the non-custodial parent has to pay according to a lower income bracket: 555 euros for the child aged 18 and 615.5 euros for the child aged 13. The child support payment for the third (youngest) child is determined by Table 4 (see the Appendix). In the case of four children, the discount is -2, so the non-custodial parent has to pay according to the lower income bracket by 2. From the example above if the non-custodial parent should pay 510 euros for the child aged 18 and 573.5 euros for the child aged 13 if the two siblings are younger. (The first child is always the oldest.)

Near to it, there is a maximum level of child support depending on the net chargeable income. If this couldn’t cover the sum of the calculated support and the minimum living expenses (in 2022: 1.160 euros), he/she only has to pay the difference between the chargeable net income and the minimum living expenses. In the case when this difference is negative no payment is obligated.

## METHODS

### Dataset by simulation

#### Size of the families

In the beginning, 1000 sample families were simulated. They could have 0, 1, 2, 3 or 4 children altogether but at the most only one in every different age bracket (0-5, 6-11, 12-17 and from 18) which is signed in Table 3. It means that the numbers of the child in each category are independent and identically distributed random variables and for every bracket, it could be 0 or 1. The adult (age 18+) child was supposed to be a pupil in the analysis (otherwise the amount of child support would diverge from Tables 3, 4 and 5). Among the simulated families, there were 0 children in 62 cases in each category. Those data were eliminated so the cleaned sample had 938 cases.

The further calculation supposed that every family has one custodial and one non-custodial parent, all children in the family live with the custodial parent and the non-custodial parent lives alone. A new marriage or new children would modify both the disposable income and the number of equalised adults in their households. Accordingly, their quotient, the equalised income, could be higher and less as well so the analysis disregarded these opportunities and assumed one adult and zero children in the non-custodial parent’s household.

## Disposable income of the households

### The non-custodial parents:

1. step: net income from employment was set as independent and identically distributed random variables between 960 and 11.000 euros. The aim was to test the effect of the whole range of the German guideline.
2. step: for determining the child support the chargeable net income came from the net income by reducing it by 5 %. (This is the countable cost related to work which is deductible according to the guideline.) The child support was determined from the chargeable net income according to Tables 3, 4 and 5 depending on the number of children suggested by the reviewed guideline, regarding the mentioned maximum level of child support.
3. step: the non-custodial parent's net income from employment (see step 1) decreased by the child support (see step 2) to determine the disposable income.

### The custodial parents:

1. step: net income from employment was set as independent and identically distributed random variables between 960 and 11.000 euros as in the case of the non-custodial parent
2. step: the data set was modified by the so-called child penalty. I chose the result of Kleven et al. (2019) since it is recent and gender-neutral so I discounted the random variable income data from step 1 by 61 %.
3. step: the custodial parent's income from step 2 is increased by the child support from non-custodial's step 2 and the child benefit according to Table 3.

## Methodological strategy

Since the non-custodial parents were assumed to live alone, their equalised income is simply their disposable income. In the case of custodial parents' households, the equalised income was determined by both the OECD-modified (OECD2) and Square root scales. The latter was simpler because it doesn't deal with the age of a person. In the case of the OECD-modified scale, the age categories in the düsseldorf tabelle did not match it as a whole. In the first two categories (age 0-5, 6-11) the weight of a child is 0.3, and the fourth category (from 18 years) gets the weight of 0.5. But in the third bracket (age 12-17) 0.4 was chosen since the method gives 0.3 under age 14 and 0.5 above it.

According to Table 1, I supposed significant difference in the results along with the two scales but there were not demonstrable only some differences as you can see in the next section.

## RESULTS

In 141 cases (15 %) both of the indicators signed the non-custodial had less equalised income than in the single parent's household. In 17 cases (1.8%) the OECD2 and

the square root method gave a different signs. In the remaining 780 (83.2 %) cases according to both of the methods, the lone parent's household has less equalised income than the non-custodial parent. Henceforth the extent of the difference is measured by the quotient of the equalised incomes of the households.

### 'Negative' cases

First I investigated those 158 'negative' cases when at least one method give a worse result (less equalised income) for the non-custodial parent. The average number of children in this sample was 2.37 meanwhile in the original sample it was 2.15. Not surprising significantly less.

In 116 cases the custodial parent's net income from employment was higher than the non-custodial's one. On average the custodial parent had a higher original income of 829 euros. Consequently, the higher life standard comes from this higher salary mainly not from the high child support. In detail: in 21 cases the child support was 0, in 57 cases was less than would come from the Tabelle and paid only amount above the 1160 limit.

Among the 158 cases in the most extreme situation, the custodial parent's household has 2.8 times higher equalised income than the non-custodial.

The differences can be seen in Figure 1.

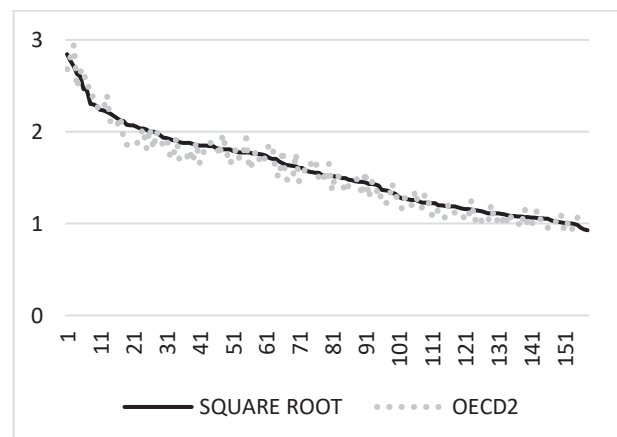


Figure 1: The quotient of the equalised income of the custodial and non-custodial parent's household in the cases where at least one scale signed less equalised income for the non-custodial parent (own calculation)

### 'Positive' cases

In the 780 'positive' cases (83.2 %) both of the indicators signed the non-custodial has more equalised income than in the single parent's household. At the highest difference, the custodial parent has 8.8 times higher equalised income than his/her child(ren). Figure 2 shows the quotients of equalised income for these 780 cases.

The average number of children in this sample was 2.11. Only in 6 cases, the custodial parent's original income was higher than the non-custodial's one. On average the custodial parent has less net income from employment by 4.453 euros.

In 12 cases the child support was 0 even though the life standard was higher for the custodial parent. In 19 cases the support was less than would come from the Tabelle and paid only the amount above the 1160 limit. In 211 cases the non-custodial parent's equalised income was more than 2.8 times higher than his/her children. (2.8 was the highest value in the 'negative' cases.)

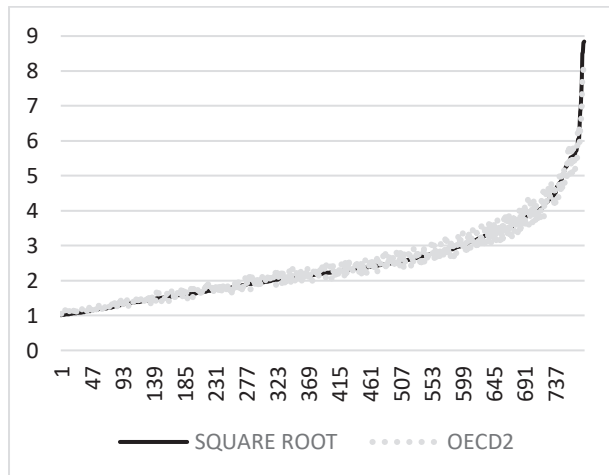


Figure 2: The quotient of the equalised income of the non-custodial and custodial parent's household in those 780 cases where both scales signed higher equalised income for the non-custodial parent (own calculation)

### The whole sample

For the whole sample Figure 3 shows the differences between non-custodial and custodial parent's households. The average difference in equalised income (the broken line in the figure) is more than twice (2.2). The line at 1 unit shows the equal case when both households had the same equalised income.

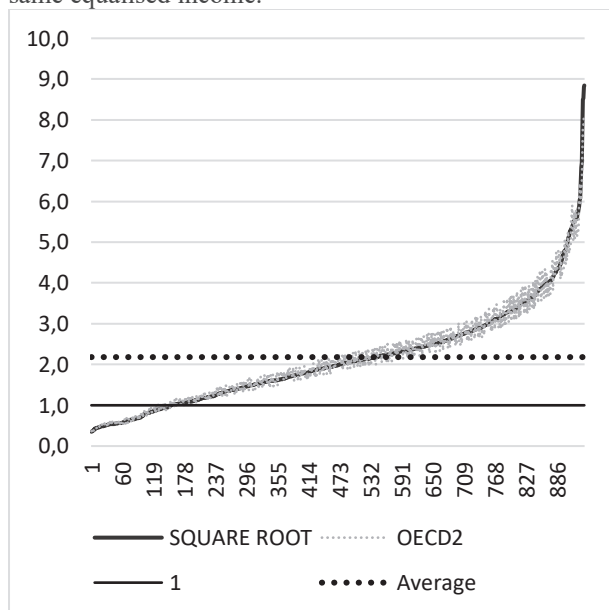


Figure 3: The quotient of the equalised income of the non-custodial and custodial parent's household (own calculation)

The risk of poverty in the sample for the households at different levels of median income and on different OECD scales are summarized in Table 4. It gave us a less extreme situation. In the sample, the risk of poverty is not too far in the two types of households.

Table 4: Households at risk of poverty or social exclusion in the sample (own calculation)

	OECD 2		Square root	
	50 % median	60 % median	50 % median	60 % median
Custodial household	5.9%	11.5%	5.5%	11.0%
Non-custodial household	6.2%	7.8%	6.3%	7.9%

### DISCUSSION

The paper investigated the German child support guideline considering the child benefit system as well. It used the OECD scales to determine the equalised income to compare the standard of living in separated households. Regarding 938 cases with a different number of children, it found an unfair distribution of income after divorce.

In general, if we see the differences between the living standards the sum of the child support should become at least twice the current values. As we saw in the details there are some cases where it is not necessary but in other cases, the amount could be either 8 times higher.

At the same time, if we see only the risk of poverty the german guideline is enough.

However, the construction of a fair system needs further research, this paper wished to draw attention to the current unfair system.

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## Appendix

Table 4: Child support (euro) for a third child in 2022

Chargeable net income (euro)		Child support depends on the age of the child (years)			
from	to	0-5	6-11	12-17	from 18
1	1900	283.5	342.5	420.5	344
1901	2300	303.5	365.5	447.5	373
2301	2700	323.5	388.5	474.5	401
2701	3100	343.5	411.5	500.5	430
3101	3500	363.5	433.5	527.5	458
3501	3900	394.5	470.5	570.5	504
3901	4300	426.5	506.5	612.5	549
4301	4700	458.5	543.5	655.5	595
4701	5100	489.5	579.5	698.5	640
5101	5500	521.5	615.5	740.5	686
5501	6200	553.5	652.5	783.5	731
6201	7000	584.5	688.5	826.5	777
7001	8000	616.5	725.5	868.5	822
8001	9500	648.5	761.5	911.5	868
9501	11000	679.5	797.5	953.5	913

Table 5: Child support (euro) from fourth child per capita in 2022

Chargeable net income (euro)		Child support depends on the age of the child (years)			
from	to	0-5	6-11	12-17	from 18
1	1900	271	330	408	319
1901	2300	291	353	435	348
2301	2700	311	376	462	376
2701	3100	331	399	488	405
3101	3500	351	421	515	433
3501	3900	382	458	558	479
3901	4300	414	494	600	524
4301	4700	446	531	643	570
4701	5100	477	567	686	615
5101	5500	509	603	728	661
5501	6200	541	640	771	706
6201	7000	572	676	814	752
7001	8000	604	713	856	797
8001	9500	636	749	899	843
9501	11000	679.5	797.5	953.5	913