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The division of inter-vivos parental transfers in Europe

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Abstract

This paper explores the patterns of the division of inter-vivos financial transfers from old parents to adult children in a sample of 14 European countries drawn from two waves of the Survey of Health, Aging, and Retirement in Europe. Contrary to previous research mostly focused in US, this study finds a higher frequency of parents that equally divide their financial transfers among their adult children. On average, 36% of European parents divide equally. These results sharply contrast with approximately 6.4%-9.2% of American parents that divide equally. It is possible that altruistic parents are also concerned with a norm of equal division, and therefore they do not fully offset the differences of income among their children as predicted by the standard model of altruism. The econometric results show that parents are more likely to give equal transfers if, in their view, income inequality among their children is not too high. Furthermore, the analysis is extended by adding variables at the country level. In this regard, income inequality, pension expenditures, the societal level of altruism and inheritance taxes are key to explain country differences.

JEL classification: D64, D91, H31.

Keywords: inter-vivos transfers, altruism, equal division, Europe, income inequality, pensions.

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1. Introduction

The literature on family financial transfers has long established the key relationship between motives of parents to provide financial transfers to adult children and the final effects of intergenerational redistributive policies. For example, a redistributive policy favouring the old over the young can be neutralized if the family is linked by altruism because altruistic parents will offset the reduction in child income with financial transfers (Becker 1974, Barro 1974 and Tomes 1981). In contrast, the so-called exchange approach (Bernheim *et al.* 1985 and Cox 1987) considers that strategic motives explain transfer behaviour as parents seek to obtain various child services in return (e.g., help, visits, companion). In this case, the reduction of child income is only partly compensated by the parent, and therefore the redistributive policy is not fully neutralized.

Family financial transfers are given in the form of inter-vivos transfers and bequests. In the empirical literature, mostly based on US data, it is generally accepted that inter-vivos transfers are given unequally to children while bequests are mostly equally divided. Studies by McGarry (1999), Light and McGarry (2004) and Norton and Van Houtven (2006) find that 83%, 92% and 95% of parents in US intend to give equal bequests, respectively. In contrast, equal inter-vivos transfers occurs only in 6.4% to 9.2% households (McGarry 1999 and Hochguertel and Ohlsson 2009). The equal division of states among children is also prevalent in Europe (see Table 1), but what is sharply different between US and Europe is the high frequency of equal division of inter-vivos transfers. Indeed, data from the Survey of Health, Ageing, and Retirement in Europe (SHARE) reveals that approximately one third of parents in 14 European countries make equal transfers to their children, though there is substantial regional variation. For example, countries such as Sweden and Denmark show more than 45% of parents giving equal transfers, while that Greece show a figure of 16%. Equal division of inter-vivos transfers has not been extensively studied nor observed in previous studies, being perhaps the study by Halvorsen and Thoresen (2011) the only one focussed on studying the determinants of equal transfers in an European

country (in Norway). A high prevalence of equal division cannot be solely explained by the standard approaches of altruism and exchange, and pose an interesting challenge to the empirical literature on family transfers. Therefore, the aim of the present paper is to study the patterns of the division of parental inter-vivos transfers in Europe.

Table 1. Percentage of parents giving equal transfers or bequests to children

Country	Inter-vivos transfers		Bequests	
	%	N	%	N
Sweden	49.3	676	95.0	220
Denmark	45.0	402	89.8	167
Belgium	43.7	263	97.8	135
France	38.5	330	92.5	133
Italy	36.7	256	96.4	169
Czech Republic	35.9	167	89.7	156
Switzerland	35.5	197	98.3	59
Netherlands	35.3	363	89.3	103
Austria	32.1	224	89.4	104
Germany	27.3	462	78.7	47
Poland	22.1	113	75.9	112
Spain	20.0	40	92.2	219
Ireland	18.4	38	n.a.	n.a.
Greece	16.0	344	89.7	87
EU total	36.2		90.4	
US	6.4-9.2		83.0-95.0	

Note: For inter-vivos transfers, figures in Europe are computed with SHARE waves 1 and 2 for parents with two or three children (>18 and not living in the same household) and conditional on the existence of at least one transfer; and for US, figures are estimated in McGarry (1999) and Hochguertel and Ohlsson (2009). For bequests, figures in Europe are computed with SHARE-End of Life waves 2, 3, 4 and 5; and for US, figures are estimated in McGarry (1999) and Norton and Van Houtven (2006).

This paper differs from existing empirical literature in several respects. This exploits a dataset with rich and harmonized information on parental transfers for a sample of 14 European countries, which complements previous studies focussed on only one country. It is argued that parents are altruistic and also equality-minded, meaning that they want to give equal transfers to all their children. The generation and strength of the social norm of equal division is not studied; instead, a stylised theoretical model considers altruistic parents that are concerned with this norm to different degrees. This setting highlights the tension between being altruistic towards children (i.e., favouring the poorer child with larger transfers) and following the norm of equal division.

The model shows that compliance with the norm of equal division weakens with an increase in income differences of children, and hence parents may prefer to give unequal transfers to their children. The econometric results -based on the estimation of the likelihood of equal division- support this relationship under different robust checks. In addition, the analysis of the reasons to make transfers directly mentioned by the parents in SHARE provides further support to the idea that altruism conflicts with the norm of equal division. In particular, only a reduce fraction of parents that mention reasons grouped as altruistic or insurance give equal transfers, while that a larger share of parents that do not provide specific reasons give equal transfers. Another contribution of this paper is the assessment of the role of country level variables on the patterns of transfer division. It is found that income inequality, redistribution, pension expenditures and average social preferences are useful to explain country differences with respect to the division of transfers.

The paper is organized as follows. The next section presents the theoretical framework. Section 3 presents the data and some descriptive statistics. Section 4 presents and discuss the empirical strategy and results. Section 5 analyses the potential role of contextual variables. Finally, section 6 provides a conclusion.

2. Theoretical framework

2.1 The equal division norm

The literature about the motives of parents to make transfers to adult children is large, but few studies focus on the division of inter-vivos transfers¹. Empirical studies have regularly found that the division of bequests among children is mostly equal and bequests are in general much larger than inter-vivos transfers. These facts have perhaps contributed to pay less attention to the division of inter-vivos transfers. An exception is the study by Bernheim and Severinov (2003),

¹ Reviews of the literature on family transfers are Pestieau (2003), Laferrère and Wolff (2006), Arrondel and Masson (2006) and Cox and Fafchamps (2008).

which offers a unitary framework to understand different patterns of division of bequests and inter-vivos transfers. This approach considers a setting of altruistic parents where inter-vivos transfers are treated as private information and bequests are public and signal parental affection. It is found that the norm of equal division will prevail even in the presence of child income inequality, provided that this inequality is not too large. Halvorsen and Thoresen (2011) find econometric evidence in Norway suggesting that parents want to divide their inter-vivos transfers equally because they are adverse to the inequality of transfers, which is in conflict with their altruism. The study by McGarry (1999) contains a brief section that empirically assesses the determinants of equal division of inter-vivos transfers in the US and finds that child income differences negatively affect the probability to make equal transfers. These studies offer arguments to hypothesise a negative relationship between the degree of child income inequality and the strength of the equal division norm. In addition, this also allows to highlight the tension between altruism and the equal division norm.

A variety of reasons can be behind the equal division norm. For example, Lundholm and Ohlsson (2000) consider that parents care about a post mortem reputation. This reputation is damaged if parents depart from the social norm that stipulates equal sharing among children. In Laitner (1997), the social norm of equal sharing of transfers may enhance efficiency by reducing rent-seeking behaviour in siblings who compete for larger parental resources and help to preserve peace in the family. In Wilhelm (1996) parents equally distribute their estates because they would suffer psychological costs (jealousy and family conflict) if they deviate from equal division. Similarly, Cremer and Pestieau (1996) cite sociological theory to argue that the unaccomplished equal division of estates may lead to dispute among children, which parents fear the most. Equal division is a norm that commonly emerges in behavioural economic experiments (Camerer and Fehr, 2004; Fehr and Schmidt, 2002). In a model of social image, Andreoni and Bernheim (2009) argue in favour of a 50–50 norm for a variety of environments (including dictator games

comparable with parental decisions about the division of transfers) when individuals are fair-minded, and people like to be perceived as fair.

On the basis of these ideas, next section presents a model that highlights the tensions between altruism, child income inequality and the norm of equal division.

2.2 A model of equal division of transfers

Consider an altruistic parent who derives utility from her own consumption and the consumption of her two children. Budget restrictions dictate that parent's consumption is equal to her income net of transfers given to children, and that consumption of each child is financed out of own income and parental transfer. The parent must decide the size and distribution of transfers to both children by optimizing the following utility function:

$$U_u = \ln(y_p - T) + \beta[\ln(y_1 + (1 - p)T) + \ln(y_2 + pT)] \quad (1)$$

$$\text{and assume } y_p \geq y_1 \geq y_2 ; \quad p, \beta \in [0,1] \quad (2)$$

Child consumption is valued through the parameter of parental altruism β . y_p and y_i ($i=1,2$) are parental and child income. In this setting, the parent finds optimal values for the amount of total transfer T and shares $1-p$ and p of this transfer to allocate to child 1 and child 2, respectively.

The F.O.C. are $\frac{\beta T(T+y_1-y_2-2Tp)}{(Tp+y_2)(T+y_1-Tp)} = 0$ and $\frac{\beta(1-p)}{(y_1+(1-p)T)} + \frac{\beta p}{y_2+pT} - \frac{1}{y_p-T} = 0$, and therefore the

optimal values are $p = \frac{y_2 + \beta(y_2 - y_1 - y_p)}{y_1 + y_2 - 2\beta y_p}$ and $T = \frac{2\beta y_p - y_1 - y_2}{1 + 2\beta}$. The division of transfers will always

be unequal, unless $y_2 = y_1$. The indirect utility of a parent who intends to give unequal transfers is the following:

$$V_u = (1 + 2\beta) \ln\left(\frac{y_1 + y_2 + y_p}{1 + 2\beta}\right) + 2\beta \ln(\beta) \quad (3)$$

If the parent favours equal division (with $p=0.5$), then the indirect utility will become:

$$V_e = \ln\left(\frac{y_1+y_2+y_p}{1+2\beta}\right) + \beta \ln\left(\frac{y_1-y_2+4\beta y_1+2\beta y_p}{2(1+2\beta)}\right) + \beta \ln\left(\frac{y_2-y_1+4\beta y_2+2\beta y_p}{2(1+2\beta)}\right) \quad (4)$$

It is not difficult to notice that $V_u - V_e > 0$ when $y_1 > y_2^2$. So, a parent that gives equal transfers must be an individual for whom the value to stick to the equal division norm compensates the loss of utility embedded in the equal division decision. It will be assumed that the altruistic parent is also concerned with a norm of equal division and that this can be measured with a parameter $\gamma \in [0,1]$. Thus, the parent will make equal transfers only if:

$$V_e \geq (1 - \gamma)V_u \quad (5)$$

If the norm of equal division does not matter ($\gamma=0$) the parent will choose unequal sharing of transfers. The parent will give equal transfers only if equation 5 holds, which will be the case for a large enough γ . A latent variable approach may help to clarify the parental dilemma about the division of transfers and outline the empirical strategy. Define a latent variable z^* such that the parent gives equal transfers if $z^* \geq 0$, otherwise transfers are unequal.

$$z^* = V_e - (1 - \gamma)V_u \quad (6)$$

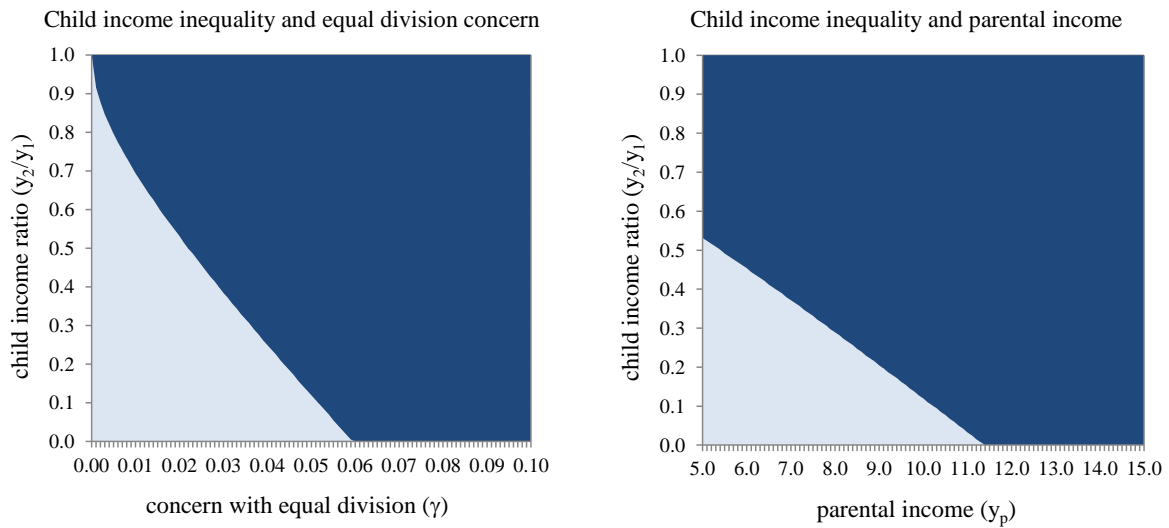
The negative or positive value of the latent variable depends on the value of certain parameters and variables. It is clear that parents with a concern for equal division $\tilde{\gamma} \geq 1 - V_e/V_u$

² It holds that $V_u - V_e = \ln\left(\frac{2\beta(y_1+y_2+y_p)}{y_1-y_2+4\beta y_1+2\beta y_p}\right) + \ln\left(\frac{2\beta(y_1+y_2+y_p)}{y_2-y_1+4\beta y_2+2\beta y_p}\right) > 0$ when $y_1 > y_2$.

will divide their transfers equally; otherwise, they will divide unequally. This means that a higher concern with the equal division norm will increase the probability of giving equal transfers. The key implication of this setting is that the latent variable diminishes when child income inequality increases. Given that $y_1 \geq y_2$, an alone increase of child 1's income is equivalent to a raise in child income inequality. Finding a clear cut expression for $dz^*/dy_1 < 0$ is possible but tedious. Nonetheless, the effects of different values for variables and parameters on z^* can be highlighted by simulation. This is shown in Figure 1. The left hand side panel of Figure 1 shows the map of possible points of equal/unequal division of transfers for different combinations of child income inequality and γ values. Child income inequality is measured with the ratio y_2/y_1 , which is bounded between 0 and 1 given the assumption $y_1 \geq y_2$. A ratio closer to 1 indicates more equality, and a value closer to 0 indicates more inequality. All points in the darker colour area indicate that equal division is optimal –and hence chosen by the parent- for the corresponding pair of values in vertical and horizontal axes. It is observed that child income inequality reduces the occurrence of equal sharing, and that the concern with the equal division norm increases this. The right hand side panel of Figure 1 shows the effect of parental income on the occurrence of equal division. This effect is positive because the loss of parental utility due to the equal division is relatively less important for a wealthier parent.

In sum, the parent faces a trade-off. On the one hand, the parent wants to maximize her utility by giving unequal transfers according to her altruistic motives, i.e. giving larger transfers to poorer children. But on the other hand, the parent is concerned with an equal division norm calling for equal distribution of transfers.

Figure 1. Existence of equal division in simulations



Note: points in the darker colour area indicate that equal division is optimal for the corresponding pair of values in vertical and horizontal axes. It is assumed that $\beta = 0.99$; $y_p = 10$; $y_2 = 2$ in the first panel, and $\beta = 0.99$; $y_2 = 2$; $\gamma = 0.05$ in the second panel.

3. Data

3.1 Data selection

The first two waves of the Survey of Health, Ageing, and Retirement in Europe (SHARE, release 2.6.0) provide the data needed to study the distribution of parental transfers. Only these waves are suitable to analyse the equal/unequal division of transfers because they ask for the exact amount of monetary inter-vivos transfers given to adult children³. This data has representative and comparable information from standardized surveys applied to respondents aged 50+ in Israel and 14 European countries: Austria, Germany, Sweden, The Netherlands, Spain, Italy, France, Denmark, Greece, Switzerland, Belgium, Czech Republic, Poland and Ireland. The last three countries were added in the second wave. The interviews were conducted in 2004/2005 and 2006/2007 for the first and second waves, respectively (Ireland was included in 2008). The variables are at individual and household levels. In total and without any selection, the original

³ Parents can also receive transfers from children but this is minimal. According to Albertini *et al.* (2007), only 3% of parents from the first wave of SHARE receive transfers from children, which contrasts with 21% of parents that give transfers to children.

dataset includes 30,816 and 36,731 respondents in waves 1 and 2, respectively. In addition to standard demographic variables, this dataset includes key questions about financial transfers (larger than 250 Euros in the last 12 months) between parents and children⁴. More detailed information about SHARE can be found in Börsch-Supan *et al.* (2013). Specific methodological features of SHARE concerning financial transfers can be consulted in Emery and Mudrazija (2015).

The sample for analysis is composed of respondents with at least two children that gave at least one transfer to any children during the 12 months previous to the interview. The sample does not include the cases of respondents that live with their children in the same household nor respondents with children aged less than 18 years. The reason, as mentioned in McGarry (1999), is that transfers to non-adult children might be due to legal obligations, and it is difficult to quantify the value of shared food and housing for co-resident children. Respondents with missing values in their own variables and children demographics are also omitted. In SHARE, demographic information of respondent's children is registered for up to four children, while that the amount of the financial transfer is recorded up to the third person that receives/gives it. Therefore, a further selection considers respondents who have at most three children (approximately 86% of respondents fulfilling the previous selections have up to three children). Other observations to be dropped are the 3-children (or 2-children) parents that report at least one (or two) transfer to a person who is not a child. The reason is that it is not possible to know if the unreported children received a transfer or not⁵. Then, the final sample size consists of a total of 3,826 observations, with 1,649 and 2,177 observations corresponding to wave 1 and 2. Given the

⁴ Although transfers below 250 are not captured, this amount represents a small enough percentage of parental income in Europe so that the majority and more relevant transfers are recorded in the survey. This is a standard practice in other similar surveys like the Health and Retirement Study (HRS) and the Asset and Health Dynamics Study (AHEAD), which report transfers above US\$500.

⁵ For example, the case of a parent of three children that reports transfers for two children and her own mother will be excluded because the recording of transfers is truncated to three recipients, and hence it is not possible to know if the unreported child received a transfer or not.

longitudinal design of SHARE, it is important to mention that only 472 individuals are observed in both waves.

3.2 Child income

Similarly to other datasets based on middle-aged interviewees, the respondent's child income is not directly asked in SHARE. However, child income can be computed with the regression coefficients of earning equations estimated with an auxiliary dataset that contains the same child demographics available in SHARE. This is done with the European Union Statistics on Income and Living Conditions dataset (EU-SILC) for years 2005-2008⁶ which reference period for income is 2004-2007. The log of hourly labour gross income of employees in full-time jobs and aged 18-65 is regressed against age, age square, marital status and education level by country and sex⁷. Other authors also impute earnings to solve the lack of information for either children or parents. For example, Cox (1987) and Cox and Jakubson (1995) assume that children and parents live near each other, so that they use the average income of the metropolitan areas where children live to approximate parental income. McGarry (1999) uses the mid points of child income brackets -reported by parents- to compute child income. Cox and Rank (1992) use earnings functions estimated with the same dataset that contains child information to impute parental income at the standardized age of 45. Although it would be desirable to correct the earnings equations for sample selection, there is not enough demographic information for children in SHARE. However, as suggested by Harmon *et al.* (2003) in their analysis on the returns of education in European countries, some sample bias could exist, but this appears to be small.

⁶ The log of hourly labour gross income of employees in full-time jobs (aged 18-65) is regressed against age, age square, marital status and education level, which are also measured in SHARE. The estimates are available from the author upon request.

⁷ In addition, a child in part-time occupation is assumed to work the average of hours specific to her country and sex. Unemployed children, and those looking after the home or in training are assumed to have zero income.

3.3 Variables and descriptive statistics

About one third of European parents give equal transfers, although there is considerable country variation (see Table 1). It is interesting to find distinctive groups such as the Nordic countries in the top of the ranking of equal-dividing parents and Mediterranean countries such as Greece and Spain in the bottom part. This somewhat reproduces well-established differences in welfare regimes and economic inequality. Table 2 shows the descriptive statistics of the variables of interest and used in the econometric analysis. The transfer amount is important for the child who receives this. The transfer to child income ratio is 22%. This ratio is larger in the case of children that receive unequal transfers (26%) than in that of children receiving equal transfers (18%). The variable *good health* takes value 1 if the respondent reports being at least in good health in a 5-scale subjective question on health, and 0 otherwise. The variable *top 20% wealth* takes value 1 if the respondent belongs to the first quintile of the distribution of net wealth in each country. Net wealth is used as an indicator of the relative economic situation of the household instead of household income because the measure of income is not comparable between waves 1 and 2. Household gross income was asked in wave 1, but in subsequent waves this was changed to net household income.

In SHARE, respondents who give transfers must also report the main reason for it. Four groups can be composed according to these answers. *Motive1* indicates the altruistic reason of ‘meet basic needs’. *Motive2* specifies that the transfer was given to help with a large expenditure such as a house, furniture, a wedding, etc. *Motive 3* indicates that the parent has not a specific reason to give the transfer. *Motive 4* indicates insurance reasons as ‘help with a divorce’, ‘help following a bereavement or illness and ‘to help with unemployment’. Interestingly, 27% of parents that give unequal transfers mention altruistic reasons, which contrast with 17% in the case of parents that give equal transfers.

Given the unit of analysis is the respondent, children variables are transformed in inequality measures for each respondent. Inequality is captured with the range, i.e. the difference between the highest and lowest value of the relevant variable among children. However, there are two exceptions. Child income inequality is measured with the ratio of lowest to highest income of children in the family (y_{min}/y_{max})⁸, which is bounded between 0 and 1 and hence can ease the interpretation of the econometric results. A value closer to one reveals more child income equality in the family, and a value closer to 0 indicates more child income inequality. According to the theoretical framework, it is expected a positive relationship between the probability of giving equal transfers and the ratio y_{min}/y_{max} . In order to account for potential evolutionary motives (Francesconi *et al.* 2015, Light and McGarry 2004), the analysis will include a dummy indicating that at least one child in the family is adopted or stepchild. The variables *contact with parents* and *distance from parent's home* are useful to account for child services⁹. For example, Cox and Rank (1992) consider that the distance between child and parental home is a proxy for the provision of child services because services are more costly to offer when the child lives further from her parent's home. Under the exchange approach (Bernheim *et al.*, 1985; Cox, 1987), the parents “buy” services from children, paying with a transfer, and hence the children may end up receiving different amounts of transfers.

⁸ This ratio is preferred to its inverse, otherwise this cannot be defined for the cases of zero income in the denominator. In addition, if all children have zero incomes, the ratio is equal to 1.

⁹ These variables are originally in brackets, but for the ease of presentation and analysis these variables are transformed in a linear variable by taking the midpoints of each bracket.

Table 2. Descriptive statistics

Variable	Unequal transfers		Equal transfers		Total	
	mean	s.d.	mean	s.d.	mean	s.d.
Parental characteristics						
Equal division of transfers*	0.00	0.00	1.00	0.00	0.36	0.48
Male*	0.50	0.50	0.53	0.50	0.51	0.50
Married*	0.68	0.47	0.73	0.44	0.70	0.46
Age	65.04	9.18	65.18	9.23	65.09	9.20
Good health*	0.33	0.47	0.40	0.49	0.36	0.48
Top 20% wealth*	0.26	0.44	0.30	0.46	0.28	0.45
Number of children	2.25	0.43	2.35	0.48	2.28	0.45
Motive 1 (altruistic reasons)*	0.27	0.45	0.17	0.38	0.24	0.43
Motive 2 (large gifts)*	0.51	0.50	0.45	0.50	0.49	0.50
Motive 3 (no spec. reasons)*	0.20	0.40	0.37	0.48	0.26	0.44
Motive 4 (insurance reasons)*	0.07	0.25	0.02	0.14	0.05	0.22
Within children characteristics						
Income ratio (ymin/ymax)	0.52	0.36	0.58	0.34	0.54	0.35
Diff. in age	4.89	3.39	4.97	3.16	4.92	3.31
Diff. in education levels	0.93	1.05	0.90	1.02	0.92	1.04
Diff. in number of children	1.09	1.11	1.06	1.13	1.08	1.12
Diff. in contact with parents (days/100)	1.03	1.17	0.90	1.09	0.99	1.14
Diff. in distance from parent's home (km./100)	1.31	1.73	1.14	1.60	1.25	1.68
At least one child is adopted	0.10	0.30	0.09	0.29	0.10	0.30
Transfers to children						
Total transfers (ppp-Euro)	4,520		6,716		5,317	
Mean of transfer (ppp-Euro)	4,216		3,532		3,872	
Transfer to child income ratio	0.26		0.18		0.22	
Observations	2,438		1,388		3,826	

* Indicates a dummy variable with values 0/1.

The idea that altruism conflicts with the norm of equal division finds further support in the statistics reported in Table 3. It is found that only a reduce fraction of parents that mention reasons grouped as altruistic (27%) or insurance (14%) give equal transfers, while that a larger share of parents that do not provide specific reasons give equal transfers (52%). Furthermore, it is observed that parents who give transfers with altruistic reasons face more child income inequality (mean ratio=0.49) than parents with no specific reasons (mean ratio=0.58). The other statistics in Table 3 does not seem to be too different among transfer motives.

Table 3. Means of selected variables by motives for transfers

Variable	Motive 1 (altruistic reasons)	Motive 2 (large gifts)	Motive 3 (no spec. reasons)	Motive 4 (insurance reasons)
Equal division of transfers	0.27	0.34	0.52	0.14
Top 20% wealth	0.27	0.30	0.28	0.28
Income ratio (ymin/ymax)	0.49	0.54	0.58	0.51
Diff. in contact with parents (days/100)	0.98	0.96	0.96	1.01
Diff. in distance from parent's home (km./100)	1.28	1.21	1.23	1.19
At least one child is adopted	0.11	0.10	0.09	0.11

4. Econometric results

4.1 Empirical strategy

The analysis of the determinants of the probability of giving equal transfers is performed with logit regression models and estimated with maximum likelihood. The unit of analysis is the respondent and the sample consists of the two pooled waves of SHARE as defined before (n=3826). In terms of the latent variable z_{it}^* , the model can be expressed as:

$$z_{it}^* = X_{it}\beta + v_{it} \quad ; \quad t = 1,2 \quad z_{it} = \begin{cases} 1 & \text{if } z_{it}^* > 0 \\ 0 & \text{if } z_{it}^* \leq 0 \end{cases} \quad (7)$$

The dependent variable takes the value of 1 if the parents give equal transfers to all their children, and 0 otherwise. A parent decides to divide equally or unequally her transfers by taking into account the differences among her children. Vector X_{it} contains these variables and some parental demographics as defined in section 3.3, and v_{it} is the error term. Given the longitudinal design of SHARE, the error term of equation 7 could be treated as a composite error $v_{it} = c_i + u_{it}$ formed by the unobserved effect c_i and the idiosyncratic error u_{it} , and apply panel data methods to account for unobserved heterogeneity. Although there are only 472 individuals observed in both waves, random effects is still an option to check if the estimates hold after

controlling for heterogeneity. However, it is not meaningful to apply a fixed effects model because the sample of observations with varying values in the dependent variable between both waves is very small (only 147) in comparison with the full sample.

4.2 Main results

Table 4 shows the results for the probability of making equal transfers. The first two columns report the results of a pooled logit model, first without entering the motives to give transfers mentioned by the parents, and then entering these variables. The last column report the results of a logit model with random effects. Concerning parental characteristics, it is observed that parents that are married, richer and having more children have a higher probability of giving equal transfers. The positive relationship between parental affluence and equal division of transfers is in line with the theoretical model predictions. The dilemma between giving equal transfers and behaving more altruistically (dividing unequally) is less important for a wealthier parent as she can better tolerate the loss of utility associated with equal division. The positive relationship between the number of children and equal division is somewhat surprising and contradicts what have been found in other studies (e.g. Hochguertel and Ohlsson 2009 when using the Health and Retirement Study). However, the sample is not strictly comparable with the one analysed in Hochguertel and Ohlsson (2009) as the sample in this paper is composed only of parents with two or three children and conditional on the existence of at least one transfer¹⁰.

The key result of the regressions is the positive association between the ratio of child incomes y_{min}/y_{max} and the probability of giving equal transfers. Recall that this ratio measures income equality within the children (a ratio closer to 0 means more inequality and a ratio closer to 1 means more equality), so higher child income inequality is negatively related with the likelihood of giving equal transfers, as highlighted in the theoretical model. The variables measuring

¹⁰ This means that a parent with zero transfers to each child is not treated as an equal divider, simply she is not included in the sample.

differences in *contact with parents* and *distance from parent's home* are negative and significant. This means that the parents care, to some extent, about the differences in services provided by their children at the moment they decide between equal and unequal transfers. Therefore, the probability of giving equal transfers decreases when the differences in the provision of child services becomes too large. In the case of *distance from parent's home*, it is expected that a child living closer to her parent can offer more services, and that the parent positively values the proximity of her child. Although it is not certain the exact motive of the child to live close to her parent, the influencing factor in the decision of equal transfers is the difference in distance among siblings.

Once the parent's motives to give transfers are introduced (column 2 of Table 4), the results basically do not change. The key finding about the relationship between child income inequality and equal division is practically unaffected. The coefficient keeps its significance, but the size slightly lowers from 0.112 to 0.098. Interestingly, parents that express altruistic reasons have a lower probability to give equal transfers, which supports the assumption that altruism rivals with equal division. Large financial gifts are also associated with the reduction of the probability of equal division. Due to budgets constraints, it will be difficult for the parents to give the same large amount to each child. In line with the altruistic reasons mentioned above, the parents that mention insurance reasons (help with a divorce, illness, or unemployment) are also less likely to give equal transfers. Contrary to the previous effects of parental reported motives, the probability of giving equal transfers is positively associated with the parent report no specific reasons to give transfers. This case is close to a situation of a "pure" financial gift with no attached strings. In such a case, equal division prevails.

Other two effects are worth to mention. The effect of the difference in the number of grandchildren on equal division is negative and significant. A child with a larger family has more expenses to cope with and hence she could receive larger transfers from an altruistic parent. Therefore, having more differences in the number of grandchildren reduces the likelihood of the

parents to give equal transfers. The other effect is the negative impact of having adopted children in the family on the decision to give equal transfers. The probability of dividing transfers equally decreases by 7% when the respondent has at least one adopted child. This negative relationship has also been found in bequest division in Francesconi *et al.* (2015) and Light and McGarry (2004). These last authors argue that, apart from exchange and altruism, parents can be driven by evolutionary motives in their transfer behaviour, and hence they will favour biological over non-biological children. After controlling for heterogeneity with the random effects model, it is observed that the results are practically unaffected.

Table 4. Logit marginal effects of the probability of equal transfers

Variable	(1)		(2)		(3) random effects	
	dF/dx	s.e.	dF/dx	s.e.	dF/dx	s.e.
Parental characteristics						
Male	0.018	(0.017)	0.018	(0.019)	0.020	(0.019)
Married	0.041*	(0.022)	0.043**	(0.021)	0.054**	(0.021)
Age	0.149	(0.101)	0.029	(0.107)	0.045	(0.104)
Good health	0.021	(0.019)	0.019	(0.020)	0.024	(0.020)
Top 20% wealth	0.032***	(0.010)	0.031***	(0.011)	0.040***	(0.013)
Number of children	0.191***	(0.035)	0.194***	(0.036)	0.242***	(0.044)
Within children characteristics						
Income ratio (ymin/ymax)	0.112***	(0.033)	0.098**	(0.038)	0.119***	(0.041)
Diff. in age	-0.007	(0.004)	-0.006	(0.004)	-0.007**	(0.004)
Diff. in education levels	-0.009	(0.011)	-0.009	(0.011)	-0.010	(0.010)
Diff. in number of children	-0.024**	(0.011)	-0.027***	(0.010)	-0.033***	(0.011)
Diff. in contact with parents (days/100)	-0.029***	(0.006)	-0.028***	(0.006)	-0.033***	(0.006)
Diff. in distance from parent's home (km./100)	-0.024***	(0.004)	-0.024***	(0.005)	-0.030***	(0.005)
At least one child is adopted	-0.073***	(0.024)	-0.070***	(0.025)	-0.082***	(0.020)
Motives to make transfers						
Motive 1 (altruistic reasons)			-0.108***	(0.020)	-0.118***	(0.022)
Motive 2 (large gifts)			-0.042*	(0.025)	-0.050**	(0.023)
Motive 3 (no spec. reasons)			0.144***	(0.022)	0.183***	(0.025)
Motive 4 (insurance reasons)			-0.234***	(0.024)	-0.235***	(0.024)
pseudo R ²	0.065		0.099			
number of observations	3826		3826		3826	

Regressions include dummy variables for country and wave. Robust clustered (by country) standard errors are in parenthesis.

*** indicates significance at 1%, ** at 5%, * at 10%.

4.3 Additional checks

The sample was selected to include only respondents with up to three children because the survey only registers up to three persons receiving financial transfers. The results do not change considerably if the regressions are applied separately to samples of parents with two and three children. The variable of interest -child income ratio- maintains its direction and significance. For example, the marginal effect found in the first model of Table 4 become 0.1056 (*s.e.*=0.0385) and 0.1116 (*s.e.*=0.0343) in the sample of parents with two and three children, respectively. Equal transfers could be underestimated if unequal transfers are very similar under different “windows” in the value of the transfers given to each child. For example, Hochguertel and Ohlsson (2009) report different estimates of equal division by allowing an absolute deviation of 20% from the intra-family mean of each transfer received by siblings; Wilhelm (1996) allows a variation of $\pm 2\%$. In the sample analysed in this paper, there are not important changes in the frequency of equal transfers if a large window of 20% of the intra-family transfer mean is allowed. In this case, the frequency of equal transfers increases from 36.3% to 37.4%. The use of this new dependent variable in the first regression model of Table 4 does not change the direction and significance of the coefficient for child income ratio, although there is an increase in the size of the effect to 0.1349 (*s.e.*=0.0285).

The analysis employs the child income ratio y_{min}/y_{max} as a measure of the degree of income inequality among children. The use of two other inequality measures, the range and the square of the coefficient of variation, also provides support for a negative relationship between child income inequality and the probability of giving equal transfers. Among these two measures, the squared coefficient of variation is better established in the empirical literature as this belongs to the family of additive and decomposable inequality measures (Shorrocks, 1980). Similarly, Light and McGarry (2004) use the coefficient of variation of child income as a child income inequality measure. Table 5 reports negative and statistically significant coefficients for these inequality

measures when model 1 of Table 4 is used as the baseline. These results (direction and statistical significance) are also maintained when models 2 and 3 of Table 4 are used instead.

Table 5. Marginal effect of alternative measures of child income inequality

Variable	dF/dx	mean
Child income ratio (ymin/ymax)	0.1124*** (0.0334)	0.542
Child income range (ymax - ymin)	-0.0561*** (0.0139)	0.770
Squared coefficient of variation	-0.1111*** (0.0253)	0.251

Each cell contains the coefficient of a regression with a different child income inequality variable. The models are similar to model 1 of Table 4. *** indicates significance at 1%, ** at 5%, * at 10%.

5. The role of country level variables

Cross-country differences in macro variables and attitudes at the societal level may shed some light to understand different patterns of equal division. Table 6 contains some of these variables with a potential influence on the transfer division variation by country. In particular, a score for altruism in the country is computed with a question included in the World Values Survey (WVS) and the European Social Survey (ESS)¹¹. Interestingly, the correlation between average altruism and the frequency of equal division in the country is negative (-0.182), which is in line with the previously highlighted tension between equal division and altruism.

¹¹ This is a question to derive the Schwartz value of benevolence associated with altruism. The question is as follows: "Tell me how much each person is or is not like you: It's very important to her/him to help the people around her/him. She/he wants to care for their well-being". The recoded scale ranges from 6 (very much like me) to 1 (not like me at all), and hence, a higher score means more altruism.

Table 6. Variables at the country level (circa 2006)

Country	Frequency of equal transfers (%)	Altruism	Mandatory expenditures in pensions (% GDP)	Mandatory and voluntary expenditures in pensions (% GDP)	Gini of disposable income	Gini of market income	Redistribution (Gini mkt inc / Gini disp inc)	Inheritance tax rate (min)	Inheritance tax rate (max)	Inheritance tax rate (average)
Austria	32.14	4.80	10.85	11.38	25.30	45.00	1.78	2.00	15.00	8.50
Germany	27.27	4.78	8.96	9.73	26.80	55.20	2.06	7.00	30.00	18.50
Sweden	49.26	4.52	9.20	11.25	24.00	43.20	1.80	0.00	0.00	0.00
Netherlands	35.26	4.81	5.36	8.95	26.40	44.20	1.67	5.00	27.00	16.00
Spain	20.00	4.83	6.48	6.48	31.90	45.60	1.43	7.65	34.00	20.83
Italy	36.72	4.96	12.75	12.97	32.10	47.90	1.49	0.00	0.00	0.00
France	38.48	4.59	11.06	11.14	27.30	50.70	1.86	5.00	40.00	22.50
Denmark	45.02	4.92	7.39	9.50	23.70	44.20	1.86	2.10	2.10	2.10
Greece	15.99	5.15	9.94	10.32	34.30	48.90	1.43	1.00	1.00	1.00
Switzerland	35.53	4.94	11.54	11.56	30.40	46.50	1.53	0.00	0.00	0.00
Belgium	43.73	4.89	7.27	10.54	27.80	48.70	1.75	3.00	30.00	16.50
Czech Rep.	35.93	4.34	6.95	6.95	25.30	45.20	1.79	0.00	0.00	0.00
Poland	22.12	4.71	9.39	9.39	33.30	53.00	1.59	3.00	7.00	5.00
Ireland	18.42	5.08	2.92	3.83	31.90	48.50	1.52	20.00	20.00	20.00
United States	9.23	4.52	5.24	9.31	38.00	48.60	1.28	18.00	55.00	36.50

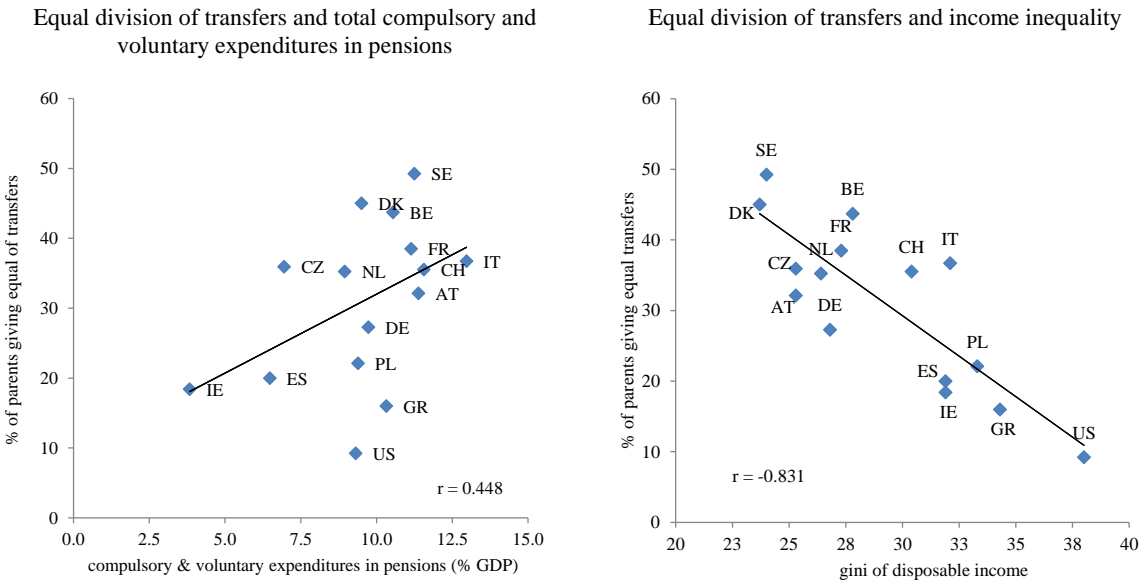
Note: The frequency of equal transfers for US is inferred from Hochguertel and Ohlsson (2009). The score for altruism is computed for 50+ individuals from the question "tell me how much each person is or is not like you: It's very important to her/him to help the people around her/him. She/he wants to care for their well-being" (available in the ESS/2004 and WVS/2006). The recoded scale ranges from 6 (very much like me) to 1 (not like me at all), and hence, a higher score means more altruism. The gini coefficients come from Eurostat for Europe and OECD for US, circa 2006. Pension data is drawn from the OECD social expenditure database. Mandatory expenditures in pensions correspond to private and public expenditure in old-age benefits as % of GDP for year 2006; and voluntary expenditures correspond to voluntary private expenses in old-age benefits. Czech Republic and Poland have not data available for voluntary expenses. Inheritance tax rates correspond to direct heirs (spouse and children) and are drawn from the CESifo-DICE report "Inheritance Taxation, General Characteristics, 2007". The tax rate information for direct heirs in Poland and Greece comes from the 2013 report.

According to the econometric results showing that wealthier parents are more likely to give equal transfers, it could be the case that parents from countries with more generous pension regimes are in a better position to divide their transfers equally. Indeed, this is observed when the percentage of parents that give equal transfers in the country is plotted against total pension expenditures (see left panel of Figure 2). The correlation between the frequency of equal division and pension expenditures is larger if both mandatory and voluntary pensions are included in pension expenditures ($r=0.448$). If only mandatory pensions were included, the correlation would be 0.343. This reflects the importance of voluntary pension plans in some countries. The variable that shows the clearest relation with the division of transfers is the Gini index of disposable incomes (see right panel of Figure 2). These variables report a large correlation of -0.831. Parents living in more egalitarian countries are more likely to equally divide their transfers. This pattern suggests that the outcome of equal division is more likely when child income differences are also lower. In addition, the degree of redistribution implemented in the country -measured as the Gini

of market income to Gini of disposable income ratio- is positively related to the share of equal transfers ($r=0.654$). It seems that the efforts of the government to redistribute incomes in the country reduce somewhat the need of parents to make compensatory transfers to their children.

Another variable with potential influence on the division of transfers is the level of taxation on bequests. In countries with high inheritance taxes, parents may prefer to substitute bequests with intra-vivos transfers in order to reduce the tax burden. Therefore, it will be interesting to explore whether this substitution effect has any consequence in the way parents divide inter-vivos transfers. The correlation between equal division of transfers and the average inheritance tax rate in the country is strong and negative ($r=-0.498$), although it is not obvious how to interpret this relationship. On one hand, one could expect that parents with a strong concern with the norm of equal division will distribute equally their states in advance by making equal inter-vivos transfers. On the other hand, inter-vivos transfers are easier to hide than bequests from one child to another and therefore parents may exploit this feature to give unequal transfers and prevent, for example, jealousy from children or repay for child services. In any case, the negative relationship between equal division of transfers and inheritance tax is closer to the latter reason.

Figure 2. Equal division of transfers, pension expenditures and income inequality



The relationship between equal division and macro variables are better tested in the framework of previous logit model regressions. For this, the country dummies included in the models derived from equation 7 must be replaced by variables at the country level. The results of these new regressions are reported in Table 7. In general, it is observed that the coefficients, statistical significance and directions of the variables at the respondent level basically do not change. In particular, the effect of child income inequality on equal division is unaffected. Only one macro variable is introduced in each of the first four models of Table 7, and then all of them are added to the model in the last column. It is observed that income inequality in the country reduces the probability of giving equal transfers. Larger pension expenditures increase the likelihood of equal division only once the other macro variables are also included (last column of Table 7). An interesting outcome, that confirms the theoretical model and previous econometric results, is the negative and significant relationship between equal division and the level of altruism in the country. Furthermore, it is observed that inheritance taxes reduce the probability of equal division when the other macro variables are also included in the model. In terms of size effects (last model of Table 7), one percentage point increase in the Gini index will decrease the probability of equal division by 2.2%, while that an extra percentage point in the pension expenditures to GDP ratio will increase the probability of equal division by 2.8%. In the case of the score of societal altruism (bounded between 1 and 6 with mean 4.79), one extra point in the score will reduce the probability of giving equal transfers by 11.8%. Furthermore, a 1-percentage-point change in inheritance taxes reduces the probability of equal division slightly by 0.2%. In sum, country variables provide evidence that parents can more easily care about equal division when incomes are more equally distributed in the country, pension benefits are larger, altruism is less strong and inheritances taxes are lower.

Table 7. Logit marginal effects of the probability of equal transfers

Variable	(1)		(2)		(3)		(4)		(5)	
	dF/dx	s.e.	dF/dx	s.e.	dF/dx	s.e.	dF/dx	s.e.	dF/dx	s.e.
Country level variables										
Gini index of disposable income	-0.024***	(0.006)							-0.022***	(0.004)
Total pension expenditure in pensions			0.014	(0.014)					0.025***	(0.006)
Altruism					-0.305**	(0.127)			-0.118***	(0.036)
Inheritance tax rate							-0.002	(0.003)	-0.002**	(0.001)
Parental characteristics										
Male	0.015	(0.018)	0.011	(0.015)	0.016	(0.019)	0.013	(0.016)	0.018	(0.019)
Married	0.047**	(0.023)	0.045*	(0.024)	0.044**	(0.022)	0.044*	(0.023)	0.045**	(0.022)
Age/100	0.025	(0.098)	-0.033	(0.126)	0.023	(0.103)	-0.035	(0.119)	0.002	(0.102)
Good health	0.031	(0.025)	0.051**	(0.022)	0.053***	(0.020)	0.047***	(0.018)	0.024	(0.021)
Top 20% wealth	0.030***	(0.012)	0.033***	(0.012)	0.030**	(0.012)	0.035***	(0.011)	0.034***	(0.011)
Number of children	0.196***	(0.036)	0.193***	(0.035)	0.192***	(0.034)	0.195***	(0.034)	0.200***	(0.035)
Within children characteristics										
Income ratio (ymin/ymax)	0.107***	(0.040)	0.120***	(0.037)	0.111***	(0.034)	0.117***	(0.036)	0.106***	(0.038)
Diff. in age	-0.006	(0.004)	-0.004	(0.004)	-0.005	(0.004)	-0.004	(0.004)	-0.007*	(0.004)
Diff. in education levels	-0.009	(0.011)	-0.007	(0.011)	-0.009	(0.011)	-0.007	(0.010)	-0.008	(0.011)
Diff. in number of children	-0.024***	(0.009)	-0.019**	(0.010)	-0.023**	(0.009)	-0.019**	(0.009)	-0.025***	(0.010)
Diff. in contact with parents (days/100)	-0.028***	(0.006)	-0.026***	(0.006)	-0.029***	(0.007)	-0.026***	(0.006)	-0.028***	(0.006)
Diff. in distance from parent's home (km./100)	-0.022***	(0.005)	-0.020***	(0.005)	-0.022***	(0.005)	-0.019***	(0.005)	-0.025***	(0.005)
At least one child is adopted	-0.062**	(0.025)	-0.033	(0.026)	-0.047*	(0.028)	-0.034	(0.028)	-0.067***	(0.025)
Motives to make transfers										
Motive 1 (altruistic reasons)	-0.109***	(0.022)	-0.123***	(0.023)	-0.120***	(0.023)	-0.123***	(0.023)	-0.112***	(0.022)
Motive 2 (large gifts)	-0.052*	(0.027)	-0.054*	(0.030)	-0.057**	(0.027)	-0.054*	(0.030)	-0.049**	(0.024)
Motive 3 (no spec. reasons)	0.152***	(0.024)	0.143***	(0.026)	0.152***	(0.023)	0.146***	(0.026)	0.148***	(0.022)
Motive 4 (insurance reasons)	-0.235***	(0.025)	-0.236***	(0.025)	-0.238***	(0.026)	-0.238***	(0.024)	-0.233***	(0.028)
pseudo R ²	0.090		0.073		0.083		0.073		0.095	
number of observations	3826		3826		3826		3826		3826	

Regressions include a dummy for wave. Robust clustered (by country) standard errors are in parenthesis. *** indicates significance at 1%, ** at 5%, * at 10%.

6. Conclusion

Approximately 36% of parents drawn from a sample of 14 European countries divide equally their transfers, although there is important cross-country variation (from 16% in Greece to 49% in Sweden). The high frequency of equal division found in Europe contrasts with the results of previous studies -mostly based on US data- that report about 6%-9% of parents giving equal transfers. The present study argues that altruistic parents are also concerned with the equal division of transfers to different degrees, and hence they do not offset child income inequality as predicted by the standard altruistic model of family transfers. Indeed, the theoretical model presented in Section 2 highlights the tension between being altruistic towards children (i.e., favouring the poorer child with larger transfers) and following a norm of equal division. The hypothesis that child income inequality rivals with the decision of giving equal transfers is supported by the econometric results under different model specifications and robust checks. The

key finding is that the likelihood of giving equal transfers is negatively associated with more child income inequality. Moreover, the econometric results also suggest that other motivations play a role in the decision to make equal transfers. Exchange motives are in place because parents care, to some extent, about the differences in services provided by their children (measured by child differences in contact with parents and distance from parent's home) at the moment to decide between equal and unequal transfers. Evolutionary motives are also revealed by the negative effect of having adopted children on the probability of giving equal transfers.

In addition, variables at the level of the country shed light to explain country differences with respect to the division of transfers. There is evidence that the probability of giving equal transfers is positively affected when incomes are more equally distributed in the country, pension benefits are larger, the level of societal altruism is less strong and inheritances taxes are lower. It seems that the inclusion and assessment of contextual variables is worth to pursue in future research agenda.

Disclaimer

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