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The division of parental transfers in Europe

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Abstract

In the extensively studied equal division puzzle, one finds very large shares of equal bequests and unequal *inter-vivos* transfers given to adult children. However, such puzzle is less evident in Europe as we find a higher prevalence of parents giving equal *inter-vivos* transfers. We argue that altruistic parents are also concerned with norms of equal division. Thus, parents do not fully offset child income inequality. The parents start to give larger transfers to poorer children if the child income inequality becomes unbearable from the parent's view. We find econometric evidence for this behaviour using microeconomic data of 12 European countries from the two waves of the Survey of Health, Aging, and Retirement in Europe (SHARE).

JEL classification: D19, D64, J18.

Keywords: inter-vivos transfers, altruism, equal division

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1. Introduction

Considerable research has been devoted to study the financial transfers from parents to adult children as this enables to infer the motive for transferring family resources, which in turn allows to asses the effectiveness of a redistribution policy[1]. These transfers are made in the form of *inter-vivos* transfers and bequests. Many studies that use data from the US show that *inter-vivos* transfers are given unequally to children while bequests are mainly equally shared. Dunn and Phillips (1997), Wilhem (1996), McGarry (1999) and Norton & Van Houtven (2006) find that, in general, more than 80% of the families intend to give equal inheritances. By contrast, only 17.7% of the mothers in Light and McGarry (2004) give equal transfers to their adult children. Using the Health and Retirement Study dataset (HRS), McGarry (1999) finds that 6.4% of the households give equal financial transfers to their adult and non co-resident children; this figure is 7% in McGarry & Schoeni (1995). With the same dataset for the years 1992-2002, we can infer from the results of Hochguertel and Ohlsson (2009) that about 9% of households give equal transfers to their children, although these figures include children of any age and residing or not in the same home with the parents. The equal division of bequests is not predicted by altruistic and exchange models, which has lead to the so called equal division puzzle. The signalling model of Bernheim and Severinov (2003) explains this puzzle in a setting of altruistic parents by considering that *inter-vivos* transfers are private information while bequests are public, and that bequests signal parental affection. Lundholm and Ohlsson (2000) also assume the private/public information dimension of the transfers but they consider that parents care about a post mortem reputation. This reputation is damaged if parents depart from a social norm that stipulates equal sharing among siblings. The existence of this equal division norm is only assumed in Lundholm and Ohlsson (2000) but the model of Bernheim and Severinov (2003) explains its existence and strength. This model leads to equilibria where equal division of bequests and unequal distribution of financial gifts are feasible.

[1] In Becker (1974), Barro (1974) and Tomes (1981) the parent transfers money to her adult children due to her altruism, so that a non-distortionary intergenerational redistribution policy would be fully neutralized by the parent. In contrast, Bernheim et al (1985) and Cox (1987) consider strategic motives to transfer, under which the parent gives bequests or *inter-vivos* transfers to instil some services (help, visits, etc.) from her children. In this approach, the redistribution policies can still be effective. Pestieau (2003), Laferrere and Wolff (2006), Arrondel and Masson (2006) and Cox and Fafchamps (2008) offer reviews of the literature on *inter-vivos* transfers and bequests.

In terms of Laitner (1997), a social norm of equal sharing of transfers may enhance efficiency by cutting rent seeking behaviour from siblings who compete for larger parental resources and help preserve peace in the family. For Wilhelm (1996), parents distribute equally their estates because they would suffer of psychic 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, much more than not achieving an equal distribution of income. Moreover, in behavioural economic experiments, equal division is a norm that commonly emerges (see Camerer and Fehr, 2004; Fehr and Schmidt, 2002) from the interaction among individuals. 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 that can be extended to parental decisions about division of transfers) when individuals are fair-minded and people like to be perceived as fair.

Most of the theories and empirical research try to explain patterns of family transfers with US data. As suggested in Pestieau (2003), there is a lack of studies with a focus on Europe due to data limitations. The institutional variation of European countries may make it possible to test different theoretical predictions in a more convincing way. Fortunately, the launch of the Survey of Health, Aging, and Retirement in Europe (SHARE) in 2004 may help to overcome this limitation and shed some light on how European parents behave with regard to family transfers. A quick inspection of the data reveals that the pattern of bequest distribution is similar to the one mentioned for US; about 90% of European parents divide their states equally among children (see table 1)[2]. Apart from the above mentioned explanations of equal sharing of bequests, note also that in Europe the freedom to depart from equal division of bequests is limited by inheritance laws. The costly process of writing a will is the way to distribute the state unequally among children, although within the limits of the inheritance laws. 29% of the deceased with at least two children left a will, but only 16% of them decided to divide their states unequally.

[2] In the waves 2 and 3 of SHARE there is an *end of life* questionnaire to gather information about a deceased respondent. The relatives (mainly children and spouse) of the deceased are asked if the state was divided equally or about equally among the children.

Table 1. State divided among children (%)

Country	Unequally	Equally	N
Austria	23.1	76.9	26
Germany	20.6	79.4	34
Sweden	3.1	96.9	65
Netherlands	8.0	92.0	50
Spain	7.0	93.0	86
Italy	6.7	93.3	60
France	5.4	94.6	56
Denmark	7.7	92.3	65
Greece	10.3	89.7	87
Switzerland	6.7	93.3	15
Belgium	2.1	97.9	48
Czech Rep.	6.7	93.3	30
Poland	36.6	63.4	41
Total	9.8	90.2	663

Calculated for deceased people between 2004 and 2009, with at least two children. Source: SHARE-R.2.3.1, SHARELIFE-R.1. Own calculations.

Contrary to the bequests results, the patterns found in the division of *inter-vivos* transfers for European parents are striking (see table 2). There is a remarkably high prevalence of parents giving equal *inter-vivos* transfers, being about 35%. This percentage is much higher than the ones found with US data. As we have mentioned, equal division of *inter-vivos* transfers is hardly explained by the standard approaches in the literature. Indeed, the main efforts of the recent literature on transfers are directed to solve the puzzle of having a very large share of equal bequests and a very low share of equal *inter-vivos* transfers. However, such puzzle is less evident for European countries as the data on *inter-vivos* transfers reveals.

Table 2. % of parents giving equal transfers to children*

Country	2004/05		2006/07		Both waves	
	%	N	%	N	%	N
Austria	28.4	141	36.4	129	32.2	270
Germany	25.3	217	26.0	235	25.7	452
Sweden	44.2	403	47.0	389	45.6	792
Netherlands	35.7	235	35.7	210	35.7	445
Spain	11.1	27	15.0	20	12.8	47
Italy	26.3	80	42.5	134	36.4	214
France	32.9	173	32.8	186	32.9	359
Denmark	42.5	174	45.5	308	44.4	482
Greece	14.0	157	17.4	121	15.5	278
Switzerland	28.0	75	30.9	110	29.7	185
Belgium	39.2	171	46.9	160	42.9	331
Czech Rep.			40.3	159	40.3	159
Poland			19.4	108	19.4	108
Ireland			7.7	65	7.7	65
Total	33.6	1,853	36.3	2,334	35.1	4,187

*Calculated for parents with at least two children (>18 and not living in the same household) and conditional on the existence of at least one child receiving transfers. Source: SHARE-Release 2.3.1. Own calculations.

We are ready to accept the plausible assumptions that i) bequests are public information and *inter-vivos* transfers are private information, and ii) giving equal bequests can signal affection for children, prevent family conflict or be interpreted as the accomplishing of a social norm of equal division, given that bequests are common knowledge. Therefore, an altruistic parent might distribute her *inter-vivos* transfers unevenly among her children given that the value of these gifts is kept secret. However, more than one third of European parents do not conform to this. In this paper we argue that parents may be regarded as equality-minded, so that they want to give equal *inter-vivos* transfers to all their children[3]. Despite the facts that the distribution of financial gifts is hidden to the children and that children have different incomes, the parents want to follow the social norm of equal division. However, if differences in child income grow, the altruistic parent may be less willing to provide equal financial gifts, so that she may start to compensate poorer children with larger transfers. The roots of this reasoning are in the model of Bernheim and Severinov (2003), in which a norm of equal division can prevail even in presence of child income inequality, provided that the degree of this inequality is not too large. Therefore, we may generalize that the degree of child income inequality weakens the equal division norm. Similarly, Halvorsen and Thoresen (2011) argue that parents desire to divide equally *inter-vivos* transfers among children because they are adverse to inequality of transfers, which rivals with their altruism. These authors exploit a Norwegian dataset of *inter-vivos* transfers to find econometric results suggesting such parental dilemma.

The aim of this paper is to study the patterns of the division of downward *inter-vivos* financial transfers in Europe. We do not study the equal division of bequests as this has been extensively studied in previous studies. The results shown in table 1 are in line with the ones observed in US. Based on the use of the recent harmonized European dataset SHARE, we intend to contribute to the literature of transfers by showing and explaining the equal distribution of *inter-vivos* transfers. In this regard, the paper by Halvorsen and Thoresen (2011) is perhaps the only one studying the equality of financial gifts, although this uses only Norwegian data. For the US, the study by

[3] Although not conclusive, the apparently greater preference of Europeans for more equality with respect to the Americans might give support to the different patterns of *inter-vivos* transfers found in Europe and US. In this regard, Alesina et al (2004) show appealing evidence.

McGarry (1999) contains a brief section to study empirically the equality of *inter-vivos* transfers, although such results are not derived from the theoretical model presented there. As proposed here, McGarry (1999) finds that child income differences affect negatively the probability to make equal transfers. We do not study the generation and strength of a social norm of equal division; instead, we consider that parents are concerned with this norm at different degrees.

One of the major results of this paper is that we find econometric evidence showing that child income inequality affects negatively the probability to make equal *inter-vivos* transfers. These results are robust in different specifications and also when we account for unobserved heterogeneity. The rest of the paper is organized as follows. We present a theoretical discussion in section 2. Section 3 deals with the empirical specification and discusses the results. Finally, section 4 concludes.

2. Theoretical discussion

In a simple model of altruism, a parent cares about her own consumption and her children's consumption, so that she decides about the size and the distribution of an amount *T* of transfers between her two children. To do so, the parent maximizes a utility function to find the shares *1-p* and *p* of transfers *T* to allocate to child 1 and child 2, respectively:

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

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

The utility function is composed by the parental consumption and the consumption of each child valued through the parameter of parental altruism β. y_p and y_i are the parental and child incomes respectively. The F.O.C. for p and T are $\frac{\beta T(T+y_1-y_2-2Tp)}{(Tp+y_2)(T+y_1-Tp)} = 0$ and $\frac{\beta(1-p)}{(y_1+(1-p)T)} + \frac{\beta p}{y_2+pT} - \frac{1}{y_p-T} = 0$, respectively. The optimal values are $p = \frac{\beta(y_1-y_2+y_p)-y_2}{2\beta y_p-y_1-y_2}$ and $T = \frac{2\beta y_p-y_1-y_2}{1+2\beta}$. An equal division minded parent will use p=0.5, and reach the following level of indirect utility:

$$V_e = \ln\left(\frac{y_1+y_2+y_p}{1+2\beta}\right) + \beta \ln\left(\frac{y_1-y_2+4\beta y_1+2\beta y_p}{2(1+2\beta)}\right) + \beta \ln\left(\frac{y_2-y_1+4\beta y_2+2\beta y_p}{2(1+2\beta)}\right) \quad (3)$$

If a parent intends to give unequal transfers, she will get an indirect utility value larger than that of the case of equal transfers, given that the unequal transfers maximize equation 1.

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

However, a parent is also concerned with the norm of equal division of transfers as this is considered a way to be fair with children[4]. We can think that parents want to provide equal opportunities to children by giving equal *inter-vivos* transfers, no matter what is the relative income of the children. If the importance of the equal division norm is measured through a parameter $\gamma \in [0,1]$, the parents might follow a decision rule such that they will divide equally only if this action involves more utility given their taste for the equal division norm:

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

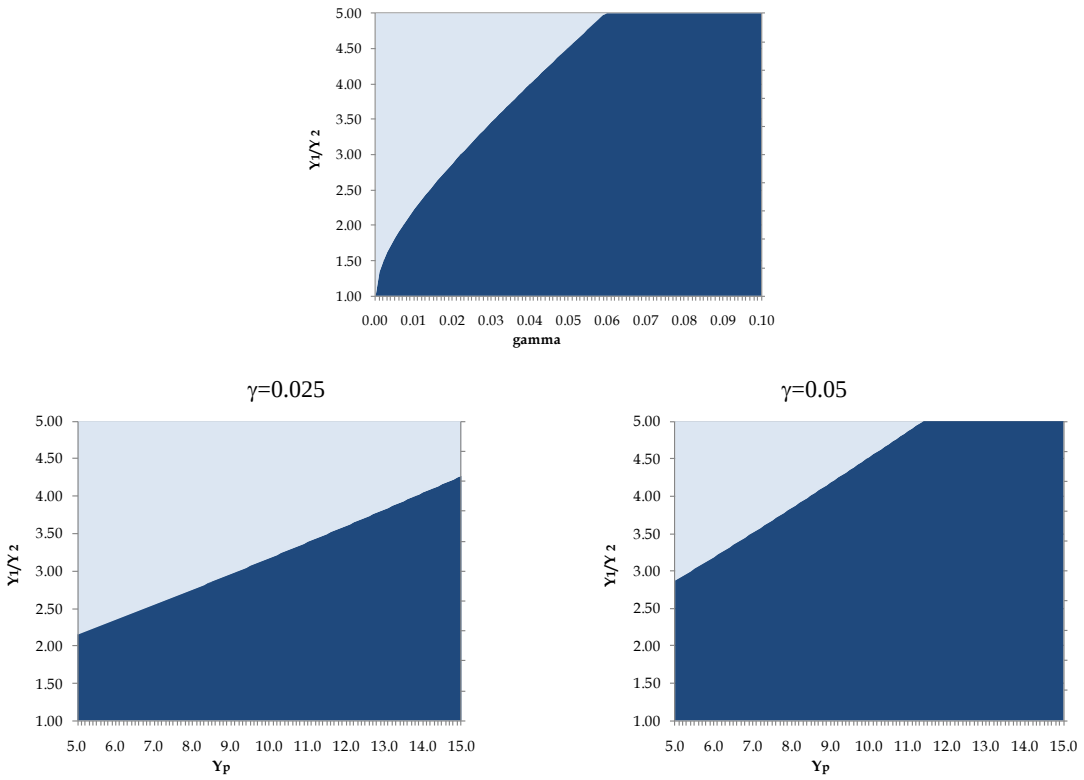
If the norm of equal division does not matter (γ=0) the parent will choose unequal sharing of transfers. The parent will give equal transfers only if equation 5 holds, which will happen for a high enough γ. A latent variable approach may help to clarify the parental dilemmas about the division of transfers and bring us readily to the empirical strategy. We define a latent variable z^* such that the parent gives equal transfers if $z^* \geq 0$, otherwise transfers are unequal.

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

[4] In terms of Kolm (2006), parents may give equal transfers because they have a constraint to be fair.

The negative or positive value of the latent variable depends on parameter and variable values. For example, from equation 6 it is clear that parents with a concern of equal division $\tilde{\gamma} \geq 1 - V_e/V_u$, 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 the child income inequality increases. Given that $y_1 \geq y_2$, an increase of child 1´s income is equivalent to a raise in the child income inequality. Finding a clear cut expression for $dz^*/dy_1 < 0$ is possible but tedious. Nonetheless, we can highlight the effects of different values of variables and parameters on z^* by simulation. The top panel of figure 1 shows the possibility of the equal division outcome and the effects of the child income inequality (measured as y_1/y_2) and γ. The darker area denotes all the points where equal division is chosen (i.e. $z^* \geq 0$) given the corresponding values of y_1/y_2 and γ (it is assumed β = 0.99; y_p= 10; y_2= 2). As is observed, child income inequality reduces the occurrence of equal sharing, while the concern with equal division increases this.

Figure 1. Existence of equal division norm



The other two panels of figure 1 show 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, she wants to maximize her utility by giving unequal transfers, but on the other hand she is concerned to be fair by dividing the transfers equally. The next section presents the empirical analysis.

3. Data and econometric results

3.1 The data

We use the two waves of SHARE (released 2.3.1) which has representative and comparable information from standardised surveys applied to people over 50 years old 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 taken in 2004/2005 and 2006/2007 for the first and second wave (Ireland entered in 2008). The variables are at individual, household and couple level. In total, SHARE includes 31,115 and 33,281 respondents in wave 1 and 2, respectively[5]. Apart from standard demographic variables, this dataset includes key questions about financial transfers (larger than 250 Euros) between parents and children.

Our sample is composed by respondents with at least two children and provided that at least one of them received a parental financial transfer during the 12 months previous to the interview. McGarry (1999) argues that zero transfers to all children do not mean a desire to treat all of them equally. Due to our interest in European countries, we delete observations from Israel[6]. Like other studies, we drop respondents living with their children in the same household or aged less than 18 years. According to McGarry (1999), transfers to non-adult children might be due to legal

[5] See Börsch-Supan et al (2005, 2008) and Börsch-Supan and Jürges (2005) for detailed information on the dataset and methodology.

[6] We do not include Ireland as this country has not yet generated key variables such as the respondent's household incomes, for example. Observations from Switzerland are also dropped because there are no data available to impute labour income for respondents' children.

obligations, and it is difficult to quantify the value of shared food and housing for co-resident children. Respondents with missing values for financial transfers, and without demographic information for children were also dropped. After all these selections, the sample contains 1,778 and 2,159 respondents in wave 1 and 2. The pooled sample consists of 3,937 observations but it represents 3,457 respondents as some of them (=480) have answers in both waves. In the pooled sample, 35.8% of parents give equal transfers. We must bear in mind that in SHARE, some demographic information for children (e.g. education, marital status) is registered up to four children and the amount of financial and time transfers is accounted up to the third person that receives/gives it. This truncation is not too severe as 96.9% of the respondents of the pooled sample have up to four children (and 89.5% have up to three children).

Similarly to other datasets based on middle age interviewees, in SHARE there is no direct information for children's income. However, we can impute this variable by introducing some child demographics into the earnings equation estimated with another dataset. This equation is estimated for each country and by gender with information from the European Union Statistics on Income and Living Conditions (EU-SILC) of year 2006[7] (see estimates in the appendix). Other authors also impute earnings to solve the lack of information either for children or for 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 the parental 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. McGarry (1999) uses the mid points of child income intervals -answered by the parents- to impute child income. Although it would be desirable to correct the earnings equations for sample selection, there is not enough demographic information in SHARE for respondents' children. However, as suggested by Harmon et al (2003) in their analysis on the returns to education in European countries, some sample bias could in general exist but this appears not to be large.

[7] The EU-SILC contains comparable cross-sectional and longitudinal multidimensional microdata on income, poverty, social exclusion and living conditions in Europe. We construct the log of hourly labour income by using the gross yearly wage of employees in full-time jobs (aged 18-65). Due to availability, in Greece and Italy we use the monthly wage. This variable is regressed against variables measured in SHARE as well, i.e. age and its square, marital status and education level.

We focus our attention on monetary transfers from parents to non co-resident adult children[8]. The descriptive statistics of the variables used are reported in table 3. The transfers are important for the children who receive them. The mean of the ratio of transfers received over child income is 0.141 for all respondents' children of our sample. Furthermore, all the transfers sent to children represent 12.4% of the parent's household income.

Table 3. Statistics for variables in pooled sample

Variable	N	Mean	Std Err
Parental characteristics			
Household income (ppp-Euro)	3,937	41,973	39,248
Equal transfers	3,937	0.358	0.479
Male	3,934	0.515	0.500
Married or with couple	3,930	0.768	0.422
Age	3,933	64.178	8.882
Years of education	3,903	11.674	3.941
Have long term illness	3,933	0.471	0.499
Number of children	3,934	2.582	0.903
Children characteristics (differences)			
Age	3,927	5.665	3.959
Years of education	3,805	2.527	2.685
Labour income (ratio)	3,729	1.480	0.482
Number of children	3,932	1.200	1.215
Hours of help given to parents	3,937	1.224	6.239
Contact with parents, in days	3,932	108.850	117.879
Distance from parental home, in Km.	3,932	136.842	171.353

Similar to McGarry (1999), the variables for the children indicate the difference between the highest and lowest value of the relevant variable within the family. In the case of the imputed child income, we prefer to use the ratio between the highest and lowest values in order to make this variable comparable among countries[9]. So, y_{max}/y_{min} represents a measure of income inequality between children of the same family and this is the variable of our main interest. To ease comparison among countries, and to inspect for non linearities, we use quintiles of the parent's household income constructed within each country.

[8] 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 contrast with the 21% of parents who give transfers to children.

[9] Countries differ in currency, living standards and taxation systems. Furthermore, the imputed child labour income uses a measure of income that is harmonized in SILC-EU at great extent, but not completely. Therefore, the ratio of child incomes between siblings can measure better the child income inequality and be comparable among countries. It is expected that this inequality should not be too large for children that belong to the same family, so that taxation treatment should not be too different among siblings.

3.2 Empirical strategy

We use the pooled sample to run a logit model of the probability of giving equal transfers, with the respondent as the unity of analysis. In terms of the latent variable z_{it}^{*}, the model can be expressed as:

$$z_{it}^{*} = X_{it}\beta + v_{it} \quad ; \qquad t = 1,2 \tag{7}$$

$$z_{it} = \begin{cases} 1 & if \ z_{it}^{*} > 0 \\ 0 & if \ z_{it}^{*} \leq 0 \end{cases}$$

The dependent variable takes value 1 if the parents give equal transfers to all their children, and zero otherwise. A parent decides to divide equally or unequally her *inter-vivos* transfers by taking in account the differences among her children. X_{it} contains these variables and the parental demographics. As mentioned in the theoretical discussion, we expect a negative relation between the probability of giving equal transfers and the degree of income inequality among children. The last term of equation 7 is the composite error $v_{it} = c_i + u_{it}$, which is formed by the unobserved effect c_i and the idiosyncratic error u_{it}. Although the use of the differences among child variables is somehow equivalent to account for family-child unobserved effects that are common to all children, there is still unobserved heterogeneity within the family. For this reason, and in order to profit from the longitudinal nature of SHARE, we will account for unobserved heterogeneity within the family with a random effects model. A Hausman test -that we explain further- gives support to this choice of model. Moreover, the random effects model allows us to show the marginal effects and find the contribution of all explanatory variables (both time constant and time-varying variables). Finally, we consider clustering for the estimation of robust standard errors as the sample includes few observations where the donor of transfers in one of the waves is the spouse of the donor of the other wave (274 over 3,697 respondents).

3.3 Results

Table 4 shows the results for the probability of making equal transfers. The first three columns show the results of a pooled logit model with different specifications and the last one contains the results when random effects are considered.

Concerning the parental characteristics, we observe that the number of children reduces the probability to give equal transfers. It is more difficult to maintain the equal division of transfers when there are more children who can differ more noticeably with respect to their needs and incomes. There are no significant effects of the household income but belonging to the lowest quintiles of the household net wealth distribution diminishes the probability of equal division; so this relation is not linear (like in McGarry, 1999 when use HRS data). The dilemma between giving equal transfers and behaving more altruistically (dividing unequally) is less important for a wealthier parent as she can tolerate better the loss of utility associated with the equal division. Although education and age are proxies of permanent income, we find that years of education affect negatively the probability of equal division. However, note that given that income, wealth and age are included in the regressions, the permanent income attribute of parental education becomes less important.

If the imputation of child labour income were not possible, we should look at the proxies of permanent income: *age* and *years of education* (first column). These variables are presented in the form of differences among siblings and affect negatively the probability of equal division. So, a larger difference in permanent income among children makes more difficult the decision to stick to the equal division of transfers, which is in line with our predictions. Column 2 shows clearly our main prediction with the imputed income: the larger the inequality of labour income among children, the lower the probability of giving equal *inter-vivos* transfers. For instance, if the child income ratio doubles (departing from equality $y_{max}/y_{min} = 1$), the probability to give equal transfers declines by 6%. The variables *hours of help, contact with parents* and *distance from parental home* are proxies for child services[10]. In the exchange approach, the parents "buy"

[10] Cox & Rank (1992) consider that the distance between child and parental home is a *proxy* for the provision of child services, since services are more costly to offer when the child lives further from his parent's home.

services from children by paying accordingly with a transfer, so that children will end up receiving different amounts of transfers. The variables measuring differences in *contact with parents* and *distance from parental home* are negative and significant in all regressions. This means that at the moment to decide between equal and unequal transfers, parents care to some extent for differences in services provided by children. Like in the case of the child income inequality, parents will give unequal transfers if the inequality in the provision of child services becomes too large.

In SHARE, the respondents are also asked about the motive of the financial transfer. The model of the third column of table 4 adds dummy variables for each motive, which take value 1 when at least one child received a transfer due to the corresponding motive. A child receiving a transfer to meet basic needs can be considered as an act of altruism, so that the equal division of transfers should be less probable. And this is what we observe in our results. Helping at least one child to buy a house or with a large expenditure also reduces the probability of equal transfers. In these cases, the equal division is less likely because the parent is unable to donate the same high amount of money to all her children. Helping a child when facing a shock (sudden illness, unemployment and divorce) reduces the probability of equal transfers as well. The probability of equal transfers also diminishes when at least one child receives a transfer to fund further education. Each child has different needs with respect to their educational formation, so that the timing and cost of this acquisition can differ a great deal among siblings. Thus, equal transfers aimed at funding further education should be unequal. Contrary to the previous effects, the probability of giving equal transfers increases when there are no specific reasons to transfer. This case is close to a situation of a "pure" financial gift with no attached strings. In such a case, the equal division norm prevails.

The model in the last column of table 4 controls for unobserved heterogeneity with random effects. A Hausman test between fixed and random effects (*p-value* = 0.783) does not allow us to reject the null hypothesis of no correlation between the unobserved effect and the covariates, so that we can use a random effects specification. There are not many differences between this model and the pooled logit. Our main variable of interest –child income inequality- still affects negatively the probability of equal transfers and significantly (*p-value* = 0.022), although the marginal effect

becomes slightly larger. Furthermore, the effect of the difference in the number of grandchildren is negative and significant. If one child has a bigger family, then that child has more expenses to cope with, so that she could receive larger transfers from the respondent. And this will reduce the willingness of the parents to give equal transfers.

Table 4. Logit marginal effects of the probability of equal *inter-vivos* transfers

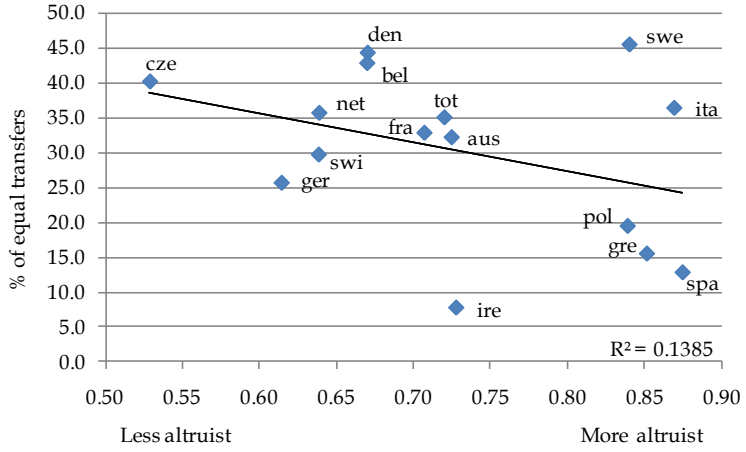
	(1)		(2)		(3)		Random Effects	
Variable	dF/dx	S. E.	dF/dx	S.E.	dF/dx	S.E.	dF/dx	S.E.
Parental characteristics								
Male	0.0118	0.017	0.0120	0.018	0.0113	0.018	0.0120	0.022
Married	0.0308	0.022	0.0326	0.023	0.0316	0.023	0.0430	0.028
Age	0.0045	0.001***	0.0038	0.001***	0.0017	0.001	0.0025	0.001*
Years of education	-0.0108	0.003***	-0.0102	0.003***	-0.0074	0.003***	-0.0087	0.003***
Long term illness	-0.0041	0.017	-0.0046	0.017	0.0001	0.017	-0.0041	0.022
Number of children	-0.0544	0.014***	-0.0709	0.013***	-0.0660	0.013***	-0.0835	0.016***
Income quintiles								
1st - lowest	-0.0110	0.032	-0.0097	0.032	-0.0173	0.033	-0.0061	0.041
2nd	0.0082	0.030	0.0082	0.030	0.0015	0.030	0.0150	0.038
3rd	0.0095	0.026	0.0112	0.026	0.0066	0.026	0.0206	0.033
4th	0.0022	0.024	0.0001	0.024	-0.0063	0.024	0.0032	0.030
Net wealth quintiles								
1st - lowest	-0.0717	0.029**	-0.0752	0.029***	-0.0577	0.030*	-0.0800	0.034**
2nd	-0.0631	0.025**	-0.0662	0.025***	-0.0535	0.026**	-0.0743	0.030**
3rd	0.0025	0.025	-0.0020	0.025	0.0057	0.026	0.0000	0.032
4th	0.0094	0.023	0.0082	0.023	0.0078	0.024	0.0027	0.029
Children characteristics (diff.)								
Age	-0.0087	0.003***						
Years of education	-0.0091	0.003***						
Labour Income (ratio)			-0.0601	0.020***	-0.0466	0.021**	-0.0614	0.027**
Number of children	-0.0093	0.008	-0.0113	0.009	-0.0174	0.010*	-0.0202	0.010**
Hours of help given to parents	-0.0010	0.001	-0.0011	0.001	-0.0014	0.001	-0.0011	0.002
Contact with parents	-0.0004	0.0001***	-0.0004	0.0001***	-0.0004	0.0001***	-0.0005	0.0001***
Distance from parental home	-0.0003	0.0001***	-0.0003	0.0001***	-0.0003	0.0001***	-0.0004	0.0001***
Motives to make transfers								
To meet basic needs					-0.1374	0.022***	-0.1562	0.024***
Buy/furnish a house					-0.0489	0.024**	-0.0546	0.027**
Help with a large expenditure					-0.0740	0.024***	-0.0942	0.026***
For a major event					0.0204	0.028	0.0329	0.035
To help coping a shock					-0.2346	0.024***	-0.2300	0.019***
For further education					-0.0994	0.032***	-0.1062	0.032***
To meet legal obligations					-0.1138	0.079	-0.1411	0.065**
No specific reasons					0.1609	0.025***	0.2155	0.034***
Number of observations	3762		3697		3697		3697	

Pooled logit regressions include dummies for countries and wave. Random effects include country dummies.
*** indicates significance at 1%, ** at 5%, * at 10%.

In SHARE there is a proxy to parental altruism only measured in the sample of persons who completed the self-administered questionnaire of the survey. These persons are asked how much they agree with the following statement: "parents' duty is to do their best for their children even at the expense of their own well-being". The responses range from 1=strongly agree to 5=strongly disagree. In figure 2, the share of parents who give equal transfers is depicted against the average

of the altruism *proxy* in each country[11]. Higher values of this proxy indicate a larger degree of altruism. Although far from conclusive, figure 2 suggests the existence of a negative relation between altruism and equal division. Note that different countries with similar share of equal division have different degrees of altruism. However, this *proxy* is not significant when it is included (linearly or non-linearly) in the regressions. In addition, as this *proxy* is answered by a considerably fewer number of persons, the sample is severely reduced when that variable is included in the regressions.

Figure 2. Equal transfers and degree of altruism



Furthermore, our results can be compared to those that use American data. For instance, the coefficient of variation of the parental income in our sample is rather similar to that of McGarry (1999) and McGarry & Schoeni (1995) who use the HRS and AHEAD datasets. Although it would be ideal to measure the percentage that the transfers represent with respect to the child's income in the studies made with European and American data, there is only available and comparable data for parental income. We find that the ratio of transfers over the parental income is similar. Thus, differences between European and American parents with respect to their transfer behaviour do not necessarily rely on sample design differences or on sharp income variability[12].

[11] For the figure, the original responses are simply rescaled as (1; 2; 3; 4; 5) = (1; 0.75; 0.50; 0.25; 0).
[12] The coefficient of variation for the parental income in our sample is 0.94, whilst it is 0.85 and 0.90 in McGarry (1999) for the HRS and AHEAD datasets, respectively. And it is 1.09 in McGarry & Schoeni (1995). The proportion of the average transfer over the average parental income of the population analysed is 0.07 in our sample and in McGarry & Schoeni (1995) as well.

As mentioned, the incidence of equal transfers decreases with the number of children which is also present in the results with US data. Table 5 compares our results with the ones of Hochguertel and H. Ohlsson (2009) who use the HRS dataset.

Table 5. % of parents giving equal *inter-vivos* transfers

N. of children	Our sample	US*
2	41.5	18.0
3	29.4	8.2
4	23.8	5.4
+4	18.2	2.8
Total	35.8	9.2

* Hochguertel & Ohlsson (2009), HRS waves 1992-2002

In US, the percentage of equal transfers also decreases with the number of children but its level is much lower than in Europe. Although in SHARE the financial transfers are recorded up to the third receiver and some demographics are obtainable up to four children, we still observe a remarkable difference between the European and American parents who have two and three children. In order to asses the specification of our model, we can run the last regression of table 4 only in the sample of parents who have up to four and three children. The results are not very different, and our variable of interest -income inequality- remains significant and negative. With the sample restricted to parents with a maximum of 4 and 3 children, the marginal effects decrease slightly to -0.0587 (*p-value* = 0.042), and -0.0529 (*p-value* = 0.097), respectively.

Although the analysis of bequests is not part of the scope of this paper, it is interesting to present some descriptive information about how parents distribute bequests and *inter-vivos* transfers in comparison to other studies. For example, in Light & McGarry (2004) only 15.8% of the mothers surveyed in their study intend to divide both bequests and transfers equally. Although our sample is small (n=64) -because few respondents of SHARE with information on financial transfers have deceased- we can highlight a different behaviour in Europe. In our sample, there is more consistency in the behaviour of parents with respect to the division of states and transfers. In table 6, one can observe that 31.3% of European parents divide bequests and transfers equally. As mentioned in the introduction section, American and European show a remarkably different pattern to distribute bequests and *inter-vivos* transfers.

Table 6. Division of *inter-vivos* transfers and bequests

		Light & McGarry (2004): Transfers			*Our sample:* Transfers		
		unequal	equal	n	unequal	equal	n
Bequests	unequal	5.3%	1.9%		9.4%	3.1%	
	equal	77.1%	15.8%	855	56.3%	31.3%	64

Finally, a complementary way to analyse the equal division of transfers is to inspect how far the parents are willing to depart from the equal division norm. For this purpose, we create a new dependent variable that measures the degree to which the parents deviate from the equal division norm. For each respondent, we divide the largest transfer given to one of the children over the sum of all transfers and subtract the proportion of the transfers that each child should receive under the norm of equal division. For a family j with n_j children, the expression of the dependent variable is $T_{j,max}/\sum T_{ji} - 1/n_j$. This variable is positive when the division of transfers is unequal and zero when it is equal. Larger values will indicate that the departure from the equal division norm is more intense. As this variable contains a focal point at the value of zero (for equal transfers), it is appropriate to use a corner solution model. Table 7 shows the results of a Tobit model when we regress the intensity of unequal division against the same set of variables considered in the previous regressions. The results are comparable to the ones of table 4. Child income inequality affects positively the intensity of unequal division, which is in line with the negative logit estimate for the probability of equal division. Indeed, that variable is the one that contributes more to the level of the intensity of unequal division with a coefficient of 0.073, which is one fourth of the mean of the dependent variable (=0.288). As before, two of the proxies for child services *contact* and *distance from parental home* are significant. Their coefficients are positive which also accords with the results of the logit regressions.

Table 7. Tobit estimates of the intensity of unequal division

Variable	Pooled Tobit		Random effects Tobit	
Parental characteristics	Coeff.	Std Err	Coeff.	Std Err
Male	-0.0001	0.013	0.0000	0.013
Married	-0.0298	0.017*	-0.0305	0.017*
Age	0.0001	0.000	0.00001	0.000
Years of education	0.0030	0.001	0.0031	0.001
Long term illness	-0.0003	0.012	0.0001	0.012
Income Quintiles				
1st - lowest	0.0249	0.023	0.0240	0.023
2nd	0.0149	0.022	0.0132	0.021
3rd	0.0112	0.019	0.0110	0.018
4th	0.0085	0.017	0.0064	0.017
Net wealth Quintiles				
1st - lowest	0.0618	0.022***	0.0618	0.022***
2nd	0.0369	0.020*	0.0409	0.020**
3rd	0.0013	0.019	0.0011	0.018
4th	0.0084	0.018	0.0106	0.017
Children characteristics (differences)				
Labour Income (ratio)	0.0723	0.012***	0.0729	0.013***
Number of children	0.0297	0.007***	0.0298	0.005***
Hours of help given to parents	-0.0001	0.000	-0.0003	0.000
Contact with parents, hours	0.0004	0.000***	0.0004	0.000***
Distance from parental home, km.	0.0002	0.0000***	0.0003	0.0000***
Constant	0.0999	0.077	0.1024	0.078
Number of observations	3,697		3,697	
R2	0.151			
Log likelihood	-1,965.2		-1,933.0	

Regressions include dummies for countries, motives to make transfers and wave.
*** indicates significance at 1%, ** at 5%, * at 10%.

4. Conclusion

We find in the newly harmonized dataset SHARE that the equal division puzzle is less evident in Europe as there is a high prevalence of parents giving equal *inter-vivos* transfers to their adult children. Approximately 90% and 35% of parents distribute their states and *inter-vivos* transfers equally, respectively. In US the share of equal division of states is similar but the share of equal division of *inter-vivos* transfers is remarkably lower, about 7% depending on the study. In this paper we argue that altruistic parents are also concerned with norms of equal division. Thus, parents do not fully offset child income inequality as the altruistic model of transfers predicts. We consider that parents start to give larger transfers to poorer children if the child income inequality becomes unbearable. To sustain this idea, we find econometric evidence about the negative effect of child income inequality on the probability of giving equal transfers under different specifications and accounting for unobserved heterogeneity.

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Appendix

Estimates of the log of hourly labour income (employees 18-65 in full-time jobs)

Variables	Austria	Belgium	Cz. R.	Germany	Denmark	Spain	France	Greece	Italy	Nether.	Poland	Sweden
Women												
Age	0.0742	0.0586	0.0343	0.1367	0.1135	0.0502	0.0555	0.0549	0.0354	0.1226	0.0974	0.1648
	0.0122	*0.0135*	*0.0089*	*0.0087*	*0.0079*	*0.0107*	*0.0092*	*0.0089*	*0.0037*	*0.0153*	*0.0087*	*0.0127*
Age sq.	-0.0007	-0.0005	-0.0003	-0.0014	-0.0011	-0.0003	-0.0004	-0.0005	-0.0002	-0.0013	-0.0009	-0.0016
	0.0002	*0.0002*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0000*	*0.0002*	*0.0001*	*0.0001*
Married	-0.0134	0.0699	0.0051	0.0408	0.0237	0.0820	-0.0089	0.0914	0.0637	0.1151	0.0414	0.1069
	0.0376	*0.0275*	*0.0247*	*0.0237*	*0.0253*	*0.0274*	*0.0235*	*0.0252*	*0.0109*	*0.0365*	*0.0220*	*0.0432*
Low sec.	0.0387	0.1533	0.3367	0.4726	0.4647	0.1775	0.2234	0.1291	0.1342	0.0322	0.4631	0.0109
	0.1703	*0.0800*	*0.0373*	*0.2388*	*0.2346*	*0.0518*	*0.0592*	*0.0469*	*0.0276*	*0.1283*	*0.2126*	*0.0920*
Upper sec.	0.4825	0.2781	0.6566	0.9150	0.6622	0.4382	0.3908	0.3730	0.3894	0.3131	0.3496	0.0885
	0.1663	*0.0690*	*0.0176*	*0.2338*	*0.2338*	*0.0482*	*0.0533*	*0.0354*	*0.0263*	*0.1152*	*0.0382*	*0.0684*
Tertiary	0.8638	0.5391	1.1681	1.1427	0.8581	0.8480	0.7313	0.7798	0.6725	0.6055	1.1044	0.2464
	0.1690	*0.0655*	*0.0299*	*0.2340*	*0.2339*	*0.0450*	*0.0539*	*0.0363*	*0.0284*	*0.1117*	*0.0401*	*0.0685*
Constant	0.1383	0.6838	-0.6993	-1.6326	-0.5795	-0.0242	0.3110	-0.0855	0.8273	-0.5128	-2.1601	-1.8686
	0.2747	*0.2803*	*0.1805*	*0.2875*	*0.2862*	*0.2237*	*0.1851*	*0.1766*	*0.0730*	*0.3174*	*0.1689*	*0.2688*
n	1439	1090	2040	2427	2256	1815	2834	1259	5062	938	4633	2263
R2	0.222	0.231	0.065	0.423	0.319	0.358	0.179	0.432	0.349	0.300	0.344	0.237
Men												
Age	0.0716	0.0607	0.0603	0.1315	0.1077	0.0527	0.0791	0.0579	0.0378	0.1240	0.0774	0.1483
	0.0081	*0.0091*	*0.0075*	*0.0062*	*0.0072*	*0.0073*	*0.0068*	*0.0064*	*0.0029*	*0.0069*	*0.0074*	*0.0116*
Age sq.	-0.0007	-0.0005	-0.0007	-0.0013	-0.0011	-0.0004	-0.0007	-0.0005	-0.0003	-0.0012	-0.0008	-0.0015
	0.0001	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0000*	*0.0001*	*0.0001*	*0.0001*
Married	0.0991	0.0844	0.1204	0.1414	0.2175	0.1299	0.1252	0.1063	0.0861	0.2105	0.2616	0.2374
	0.0280	*0.0226*	*0.0225*	*0.0228*	*0.0341*	*0.0254*	*0.0226*	*0.0213*	*0.0093*	*0.0238*	*0.0259*	*0.0429*
Low sec.	0.4888	0.1639	0.6448	0.3564	0.2520	0.1193	0.1291	0.0797	0.1238	0.0518	-0.3614	-0.0995
	0.5199	*0.0451*	*0.0409*	*0.1640*	*0.2102*	*0.0282*	*0.0343*	*0.0296*	*0.0167*	*0.0319*	*0.2572*	*0.0613*
Upper sec.	0.8512	0.3038	0.9083	0.7853	0.4274	0.3458	0.2231	0.1891	0.2810	0.2140	0.3336	0.0569
	0.5190	*0.0395*	*0.0146*	*0.1597*	*0.2089*	*0.0269*	*0.0271*	*0.0226*	*0.0167*	*0.0293*	*0.0348*	*0.0507*
Tertiary	1.1310	0.5056	1.3558	1.1099	0.6203	0.6236	0.5401	0.5304	0.5937	0.5652	0.9907	0.2465
	0.5193	*0.0401*	*0.0271*	*0.1598*	*0.2093*	*0.0262*	*0.0293*	*0.0262*	*0.0214*	*0.0303*	*0.0392*	*0.0527*
Constant	-0.0609	0.7719	-1.1246	-1.4321	-0.0859	0.3155	0.1202	0.2116	0.9999	-0.5131	-1.5499	-1.1656
	0.5424	*0.1912*	*0.1562*	*0.1964*	*0.2577*	*0.1462*	*0.1357*	*0.1224*	*0.0555*	*0.1436*	*0.1433*	*0.2450*
n	2796	2015	2556	5077	3008	3006	4248	1971	7991	4270	5670	2980
R2	0.240	0.277	0.197	0.475	0.323	0.317	0.256	0.383	0.303	0.428	0.250	0.241

Primary education is the reference for the education dummies. Standard errors in italics.