

**THE TRANSFER COST OF PARENTHOOD:
A NATIONAL TRANSFER ACCOUNTS ANALYSIS FOR EUROPE**

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ABSTRACT

This paper compares the net resource transfer burdens of working-age parents and non-parents for fourteen European countries. We advance National Transfer Accounts methodology by splitting up macro-aggregates into three groups: parents, non-parents living in childless households and non-parents cohabiting with children. We estimate all cash, in-kind, and time transfers of the market economy and the household economy, irrespective of whether they are transmitted through public or familial channels. We find that on average, parents contribute almost twice as many net transfers as non-parents. Non-parents contribute almost exclusively to public transfers. Parents provide, in addition to public transfers, a still larger amount of familial transfers. Over the 38 years during which Europeans on average are net contributors of intergenerational resources, parents contribute 14.6 years of prime-age earnings, and non-parents' 7.7 years. This asymmetric transfer burden carries multiple implications for debates on public policy and a just society.

Keywords: National Transfer Accounts, parenthood, cost of children, intergenerational transfers; distributional equity, pronatalist policy



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Introduction¹

The empirical contribution of this paper is to split the age profiles of public and familial transfers by parenthood status and use them in a transversal exercise to assess synthetic life-courses of parents and non-parents in terms of net transfer outflows in working age. The paper uses a sample of 14 European countries representing 70 percent of the population of the European Union and covering all main types of welfare systems. The applied methods conform to the National Transfer Accounts standards.

The age distribution of transfers: macro-level analysis

This paper applies the methodology of National Transfer Accounts (henceforth NTA; see Lee 1994a, Lee & Mason 2011, United Nations 2013). NTA introduces age into the age-insensitive System of National Accounts (SNA). Whereas in SNA, revenues flow among institutions (e.g., households, government and firms), NTA recognizes that the main entries of SNA's Income Account have characteristic age distributions (or age profiles as they will be called below). Labour income is minimal or zero in childhood and old age, and is primarily concentrated in working age. Consumption is more uniformly distributed among age-groups. Public transfers are financed mostly by people in their active age and consumed mostly by people at young or old ages. Resources of households are also reallocated from the active aged to children and older persons. The lifecycle deficit (henceforth LCD), a vital concept of the NTA methodology, is defined as the difference between consumption and labour income at any given lifecycle stage (Lee & Mason 2011).

LCD is positive (an actual deficit) in childhood and old age when one's labour income does not cover consumption. The gap is filled with public transfers (e.g. public education, health care, pensions and pure public goods) and familial transfers. The introduction of the latter to the accounting framework is a significant novelty of NTA. To the government-organized secondary redistribution of primary income, NTA adds a tertiary redistribution that takes place among private actors, almost exclusively relatives. These include, for instance, the food and clothes consumed by children and paid for by their parents; the utilities and other household public goods used by household members who do not contribute to them; or any other components of consumption that is not supported by the labour income or asset-based revenues of the individual.²

NTA data largely increase the visibility of the inter-age transfer system by adding familial transfers to the picture. However, even this extension is one-sided, in that the public package includes both cash and in-kind components but the private transfers captured by the new accounting methodology are only in cash. NTA rearranges SNA but does not go beyond its frontiers, the market economy. In-kind private transfers, such as goods produced and services provided by unpaid household labour, are not part of the national economy. They belong to the household economy, which is a significant source of inter-age transfers. So, making a step ahead NTA is extended with the National Time Transfer Account (henceforth NTTA; see Donehower 2011). Like NTA, NTTA compares consumption and the value of labour: in this case, the value of household labour consumed and the value of household labour produced. Here the only vehicle conveying the value in question is the transfer of labour or alternatively the transfer of time. The combination of the two sets of accounts describes what we call here the total economy: the sum of the market economy and the household economy.³ The aggregation redefines some of the key concepts, such as LCD. Its equivalent in the total economy is the total lifecycle deficit (TLCD): the sum of the consumption of goods and services produced in both the market and the household economy, minus the sum of labour income and the value of household labour performed.

The application of the NTA framework results in a set of age profiles of the various transfer routes, such as those of taxes and contributions paid, public services used and benefits collected as well as familial transfers of cash and time given or received. Such profiles have been drawn for numerous countries and can be accessed from the global NTA network (<http://www.ntaccounts.org/web/nta/show/Browse%20database>) or the European NTA database (<http://dataexplorer.wittgensteincentre.org/nta/>).

Public cash transfers and services

Public transfers received by the individual include all cash benefits and in-kind services paid for by what public statistics call the general government: the central government (at both levels in countries having a federal structure), social security funds and other public funds as well as local governments. Data on expenditures are based on Eurostat sources (*gov_10a_exp*). Cash benefits are identified as ‘social benefits other than social transfers in kind’ in terms of the classification of the functions of government (COFOG) standard. In-kind services are items of public consumption, which can be either individual or collective in COFOG terminology. Pure public goods, such as general public services, defence, public order and safety, economic affairs, environmental protection, as well as housing and community amenities, can only be collective public consumption. They are neutral in terms of age and parenthood status, so they have a flat age profile for both parents and non-parents.

Below, we present non-uniform age distributions of education, health care and social protection by parenthood status. The main data sources are two comparative surveys, the harmonized Household Budget Surveys (HBS) and the European Union Statistics on Income and Living Conditions (EU-SILC). We use the international version of the datasets that usually contain less information than the original national surveys but fit better to a comparative analysis. Our reference year is 2010, the only year for which comparative HBS data were available at the time of writing. Besides, data on the consumption of health care services are drawn from the 2009 wave of the European Health Interview Survey (EHIS).

EU-SILC can be used to reconstruct the age and parenthood status of the recipients of *cash benefits* in the social protection categories of old-age, survivorship, sickness/disability benefits, unemployment, family/children, housing and other forms of social exclusion. Education-related cash benefits can also be captured in the dataset. Many of the listed categories comprise several allowances. Some benefits appear in the individual files of the dataset, making them easy to assort by age and parenthood status. Others, such as those in the categories of family/children, housing and other social exclusion, are recorded at the household level. Allocating them among household members requires additional assumptions. We assigned the latter two types to working-age adults in the household and distributed them equally among them.

The allocation of benefits of the family/children category requires special attention when comparing parents and non-parents. In our basic specification, child-related benefits and other forms of family allowances are allocated to parents, not children. Either way, the choice affects the age-profile of public transfers for parents while leaving the profiles for non-parents (who receive no family benefits) unaffected. Nevertheless, the parent/non-parent comparison will remain unaffected, since familial transfers offset the allocation of public transfers. We will return to this issue in the subsection on familial transfers. Also, we will present the results of the alternative specification (family benefits assigned to children) in Online Appendix 2.

As against cash benefits, the value of the consumption of *in-kind services*, such as education and health care, is not directly recorded in the surveys applied here. Data on use, if available, has to be extended with external information or assumptions. Regarding education (which

includes pre-school education here), users can be identified in EU-SILC. The survey explicitly asks about attendance, and its level, individually. Aggregate public spending is also available by educational level in the *gov_10a_exp* data matrix of Eurostat. This information set is extended here with the assumption that per capita spending by educational level is uniform and it does not differ by parenthood status (which is practically irrelevant as there are hardly any parents among pupils and students).

As for health care, even the information on the use of services is missing from HBS or EU-SILC. We apply the ‘insurance value approach’ commonly recommended in the literature (Verbist, Förster, and Vaalavuo 2012). It states that the benefit is not the actual use but the availability of service. Consequently, the value of the service equals the average cost of its provision. Every individual receives a benefit determined by the average health care spending on their demographic and socio-economic group. We employ data from the first wave of the European Health Interview Survey (EHIS), which records the number of days spent in hospital as well as the number of visits to a general practitioner or doctor. We calculate the average use of primary and outpatient services by gender, age-group and educational category, impute these averages into the EU-SILC dataset and weight them by per patient public spending in the relevant service categories (available in the *gov_10_exp* matrix mentioned above). Accordingly, the health profiles are based on the frequency and length of consuming health care services but not on actual spending.

Taxes, contributions and other public revenues

Figures of aggregate public revenues by type are drawn from the National Tax Lists (NTL) of Eurostat. The database classifies all receipts of taxes and social contributions of the general government by economic function, such as taxes on consumption; labour taxes (separately by employers, employees and the non-employed); taxes on capital income (separately by corporations, households and the self-employed); and taxes on the capital stock. Consumption taxes can be further decomposed to value-added tax (VAT) and excise taxes on alcohol, tobacco and fuel based on NTL and the Excise Duty Tables of the Directorate-General for Taxation and Customs Union of the European Commission. The NTL splits personal income taxes among labour taxes borne by employees and the non-employed as well as taxes on capital income of households and self-employed persons.

Profiles of direct taxes, which are levied on persons or their property, are estimated from EU-SILC. Such taxes are reported at the household level. The amounts in question are divided among household members proportionately to their labour income.

Profiles of indirect taxes are created in a two-step procedure. First, consumption is distributed among household members. While preparing the methodological standards of NTA, Lee, Lee, and Mason (2008) found that the frequently used methods, such as Engel’s method and the Rothbarth method, provide insufficiently robust estimates for an NTA excise. Instead, we apply the NTA equivalence scale, which is based exclusively on age. It is constant at 0.4 for those age four or younger, increases linearly from age 4 to age 20, and is equal to 1 for adults age 20 and older. In the second step, VAT payment is calculated from individual consumption expenditure and VAT rates. Average VAT rates by main COICOP categories are drawn from CPB (2013).

Excise tax is levied on consumption of tobacco, alcohol and fuel. The latter is estimated from HBS data using weights developed by experts of the Hungarian Central Statistical Office (Baranyai, 2004), to split consumption among household members. As for tobacco and alcohol,

the HBS only provides information on household expenditure but not the quantities consumed. For estimates of the latter, we used the 2009 wave of the EHIS survey.

The primary data source of the calculations is the EU-SILC. However, as listed above, various taxes are estimated from the HBS and EHIS. In order to get to total taxes paid, and net benefits (benefits less taxes), VAT and excise tax payments are imputed to EU-SILC. Similarly to other studies analyzing the redistributive effect of indirect taxes (e.g. De Agostini et al. 2017, Pestel and Sommer 2017), we applied a regression-based imputation method. We constructed a model of VAT payments in the HBS based on overlapping socio-demographic variables⁴ as explanatory variables and used this model to predict the VAT payment of households in the EU-SILC. A similar method was used to impute units of alcohol and tobacco consumption from EHIS into EU-SILC in estimating the age and SES profiles of excise taxes.

Taxes levied on the consumption of children are assigned to them, the children, that is the actual consumers and not the parents. As above, the choice of incidence affects the age-profiles of taxes but does not change the parent/non-parent comparison of combined (public and private) transfer packages. Again, it is familial transfers that offset the effects of the allocation choice. We will discuss the issue more in detail in the following subsection and present the results of the alternative assumptions (parents collecting child-related benefits and paying the taxes of children's consumption) in the online Appendix 2.

Familial transfers

The units of national accounting are institutions. It is households, corporations and the government that have primary income, pay or collect taxes and receive benefits or use public services in the process of secondary redistribution, and consume or save the resulting disposable income. In contrast, the units of NTA are age-groups. People in working-age generate most of the primary income (almost all labour income and much of what statisticians call the operating surplus, that is profits); they pay most of the taxes; and people in dependent age, children and older people are the primary beneficiaries of public cash and in-kind programs. However, shifting the unit of accounting requests the inclusion of a tertiary redistribution of national income, familial transfers, in the accounting system. Primary income is further redistributed within households when, for instance, parents spend their earnings on goods and services for their dependent children or between households, when pensioners support their adult children. Essential for the complete description of parent versus non-parent differences in inter-age reallocations, such transfers can now be taken into consideration.

The secondary redistribution mobilizes 46 percent of the net national income (NNI) in the 14-country sample (population-weighted average of public transfers received; calculations based on Istenič et al. 2016). Familial transfers add another 17 percentage points. They are exchanged almost exclusively within the household, 16 percent of NNI, and the rest between households. Intra-household transfers do not change hands as a particular act of giving and receiving. They are not even recognized as transfers most of the time. Parents who buy food for their children perceive it as a cost but would not specifically name it a transfer in a questionnaire. In this respect, the concept of familial transfers applied here is wider than the everyday use of the word.

Intra-household transfers are not directly observed but modelled by the NTA methodology. Estimations are based on the difference between individual revenues (net labour income, public cash transfers and private inter-household transfers) and consumption (at market prices) and a set of sharing rules of surpluses and deficits. The resulting age-profiles are adjusted so that the population-weighted aggregates remain consistent with the aggregates of national accounts.

Again, the reference year is 2010. The technical details can be found in Chapter 7 of the UN Manual (United Nations 2013) and sections 3.2.4 and 6.1 of the European NTA Manual (Istemic et al. 2017).

The inclusion of familial transfers makes the assignment of taxes and transfers in the child/parent relationship broadly irrelevant. While the incidence assumption affects the amount of public transfers paid and received, it does not change the sum of public and familial transfers for any of the actors. In the end, parents provide the same amount of transfers and the tax and transfer incidence determines only the composition of the transfer package. We demonstrate it on the example of the introduction of a new form of family benefits. Non-parents have no access to such a benefit. Only parents or their children can get it. As in the Rotten Kid model (Becker 1974), we assume selfish children and altruistic parents. The new benefit will increase only the child's consumption irrespective of the incidence of the transfer. If the child is assumed to obtain the transfer, she will consume it and will not share it with the parent. If the parent is the target of the transfer, she will pass it further to the child in the form of a familial transfer. A similar argument can be used if a new tax on children's consumption has to be allocated. If the child pays it, she will be compensated by the parent through familial transfers. If the parent pays it, her public transfer payment will be larger, but she will have to provide for less familial transfers to the child.

Time transfers

The third component of the transfer package discussed here is the value of unpaid household labour. The literature calls the transfer of the goods and services provided by such labour time transfers. By including time transfers, the analysis crosses over the frontiers of national accounting and NTA. The previous reference points do not apply, and both the aggregate values and the age profiles have to be estimated from a sample. The methodology (Donehower, 2011) follows, and extends whenever necessary, the methods developed for Household Satellite Accounts (European Communities 2003). The estimation is based on time use surveys, specifically the 2010 wave of the Harmonized European Time Use Survey (HETUS)⁵ completed with data from the Multinational Time Use Study (Denmark) and a national survey (Hungary).

As a first step, the time spent on household production activities is identified, and its age profile is drawn. Second, home production is assigned to its actual consumers. Third, the value of time spent in unpaid household labour is evaluated using the market wages of the person whose job is done as our reference point. As mentioned, net time transfers are calculated as the difference between the value of household labour consumed and the value of household labour provided. In this respect, net time transfers are the equivalent of LCD in the household economy. HETUS surveys were carried out between 1998 and 2006; Danish data are from 2001, and the Hungarian dataset is from 2010. All monetary values are adjusted by the average wage growth by country between the reference year and 2010. The details of the calculation are described in Vargha, Gál, and Crosby-Nagy (2017). This paper does not provide estimations on time transfers but takes the age profiles from the European NTA Databank (Vargha et al. 2016).

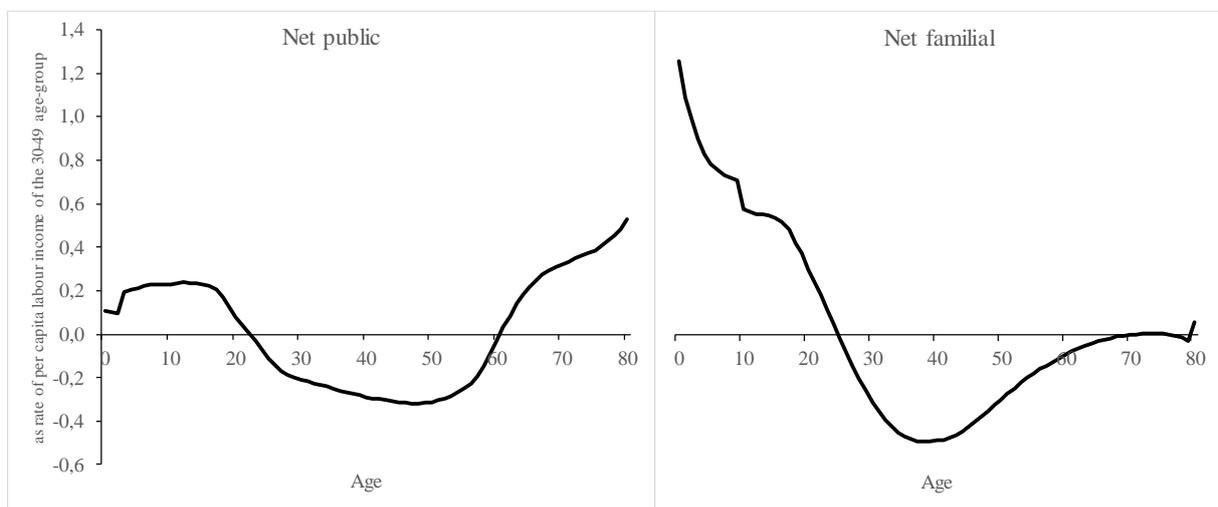
Results: age profiles at the macro level

The two panels of Figure 1 show the age profiles of, respectively, net public and net familial transfers. Both include cash and in-kind components – the in-kind familial transfers are the time transfers. Online Appendix 4 presents all four constituents separately. The two age profiles shown here are given in net terms (transfers received less transfers provided). They condense

information of the 14 European countries. As the aggregation of national values requires re-scaling, we use the average labour income of the 30-49-year-old age-group (including those who do not work) as a tool for normalizing the national profiles. This scale is presented on the vertical axis of Figure 1. The horizontal axes represent ages in cross-section.

The public transfer curve (left panel) marks three separate age-groups. Children and older adults are net beneficiaries; working-age adults are net contributors. This is in sharp contrast with familial transfers (right panel). Here, children are net beneficiaries and workers are net providers, but the balance for older adults converges to zero. In effect, older age-groups are absent from the inter-age familial net transfer mechanism. This does not suggest that they provide or receive no familial transfers.⁶ However, such transfers go only a short way between people of similar age and cancel out each other on the macro level. Also, grandparents provide transfers to their offspring, but they receive practically the same amount from them.

Figure 1: Per capita age profiles of net public and familial transfers in 14 European countries, 2010



Sources: Authors' computations from Istenic et al. (2016); Vargha et al. (2016).

Note: Per capita figures refer to entire year-groups, not only those who provide or receive transfers.

This finding is consistent with the current European household structure. Of the 146 million households of the 14 countries discussed here, 32 percent counted only one person.⁷ No intra-household transfers take place in such establishments. They can only participate in inter-household exchanges. Another 25 percent is formed by couples without cohabiting children. Household members exchange cash and time, but these are not inter-age transfers as the participants are close in age. In sum, no inter-age transfers can take place within the majority of households. Of the remaining households, the vast majority (38 p.p.) are couples or lone parents raising children. This limits inter-age transfers to nuclear families consisting of working-age parents and children. The rest, five p.p., are either households composed of two or more families (2 p.p.) or of people who do not form a family (3 p.p.). Such households can be forums for inter-age transfers but not parental transfers.

In sum, the European public transfer system is three-generational through which working-age adults transfer resources to children and older people, whereas the familial transfer system is two-generational through which parents support their children. Grandparenting (older parents helping their adult children to provide for their children or directly supporting the

grandchildren) is of minor significance. Again, this finding needs to be understood in net terms. Grandparents do provide transfers, but these transfers are compensated for by what they receive from their children or grandchildren.

More importantly, there seems to be no return on parental support. Not only do grandparents provide comparatively little in net transfers to their children or grandchildren, but they also receive no net transfers back. Working-age parents support their children, but older people receive practically nothing in net terms from their adult children. About 80 percent of the gap between what children consume and what they produce is filled through familial channels (Gál, Vanhuyse and Vargha 2018). Only the remaining 20 percent of what children receive in net terms comes from the public sector (for cost-benefits simulation results on the cost of children, see Penne et al. 2020). By contrast, consumption of the old age-group is supported almost exclusively through the public sector (in addition to their labour and asset-based revenues).

Children are raised by their own parents; old parents are supported by the generation of their adult children. As a result, Europe is a continent of pro-elderly welfare states, embedded within societies composed of strongly child-oriented parents (Gal, Vanhuyse & Vargha 2018).

The results strongly indicate an asymmetry between parents and non-parents. Net familial transfers go from parents to children. Non-parents hardly contribute to the familial transfer flow in net terms. Besides, parental transfers do not seem to pay back. Older parents receive no net transfers from their adult children. Unless non-parents contribute significantly more to the public channel while in active age, or parents receive significantly more public transfers in old age, the returns on the transfer package will differ by parenthood status. For the same transfer investment in working-age, parents receive less than non-parents in old age. Alternatively, for the same support in old age, parents have to provide more transfers than non-parents do while they are in active age. The asymmetry in the yields on the transfer package constitutes a de facto redistribution from parents to non-parents. It is transfers to children provided by working-age adults that establish the potential for transfers received once the latter grow old.

Splitting the age profiles by parenthood status

There could conceivably be various instances potentially weakening the above conclusions that cannot be captured at the aggregate level. Familial transfers can take place not only within but also between households. Non-parents, such as childless aunts or uncles, can support and take care of the children of their siblings. Also, there are various atypical forms of households in which working-age non-parents can support someone else's children, such as relatives cohabiting with parents and children. There can also be cases of misidentified transfers. For example, grown-up children who became financially independent but still live with their parents can provide transfers to the family and in this way to their younger siblings. Such instances would be interpreted as parental support at the aggregate level even though they are not. This section is devoted to the outstanding issues that cannot be reassuringly cleared in the aggregate-level analysis.

Who is a parent? Who is a child?

Neither the HBS nor the EU-SILC contains information on the total number of children a person has. Instead, we exploit the data provided by the household rosters that reveal parent-child relations among cohabiting persons. Parenthood is limited to cohabitation, which is acceptable in the analysis of public transfers and taxes. With almost no exceptions, such resource flows affect only the parent living with the child, so no transfers or taxes would be misallocated or

left out. Also, in this way, we can capture non-biological parenthood: parenthood status is self-declared, and the coding instructions of the questionnaires accept non-biological parents as parents. This procedure probably underestimates the number of parents and consequently reclassifies parental transfers to non-parental transfers, because in some cases the respondents may not declare the parenthood of persons acting as parents.

The cohabitation-based definition goes against the standard understanding of parenthood, which reflects a relationship, not a section of the lifecycle. In everyday use, the concept of parenthood refers to an irreversible status, rare extreme cases excepted. Once a parent, always a parent. It misses out parental relationships of relatives living apart, resulting in a distorted picture of the familial side of the transfer system. Divorced parents typically support their children. Adult children and their elderly parents help each other in both directions; so do grandparents and grandchildren. Such cases will be discussed below.

Another consequence of the cohabitation-based definition is that the parenthood status changes by age. The number of children increases as they are born one after the other, and then it decreases as the parents separate/divorce or the children grow up and move out. Beyond a certain age there are hardly any parents left going by the definition used here, such as men establishing a new family after re-marrying to a younger wife or old parents living with their adult children. This limits the comparison of parents and non-parents to age-groups in their working age. We can provide estimates of net public transfers separately for parents and non-parents while they are in working (that is parenting) age but we cannot do that when they are old and appear to be non-parents.⁸

Although the above examples include parents of multiple children, parenthood status will be considered binary throughout this paper. No distinction is made among parents by the number of their children. Cohabitation does not necessarily mean living together. Becoming independent is typically a process, for instance, when young people study elsewhere but are still regularly supported by their parents. Questionnaires code such an occurrence as cohabitation. In contrast, there are cases when children live with their parents even after they grew out of childhood and became financially independent. Unlike parenthood, being a child reflects both a relationship and a section of the lifecycle. As people grow up, they cease to be children, but they can remain someone's child.

A particular advantage of the NTA framework is its inductive and data-driven definition of the main stages of the life-course, childhood, working age and old age. The standard demarcation ages are defined by the lifecycle deficit mentioned above, that is by net resource dependency status. Childhood by this definition lasts as long as labour income on average stays below consumption; old age starts when this recurs and once again consumption exceeds labour income in later life. The TLCD curve, which includes the household economy in addition to the market economy, cuts alternative and slightly different demarcation ages. Since this paper focuses on the full transfer package, we will use yet another type of demarcation ages cut by the combined transfer curve (Gal, Vanhuyse & Vargha 2018). Accordingly, childhood lasts until the combined net transfers, including public and private transfers both in cash and in-kind, are positive (so that receipts are higher than the outflows). Old age starts when the package becomes positive again. The demarcation ages vary by definition and across countries, and they can change over time, which makes them more realistic than other methods of sectionalizing the lifecycle (Gál and Monostori 2017).

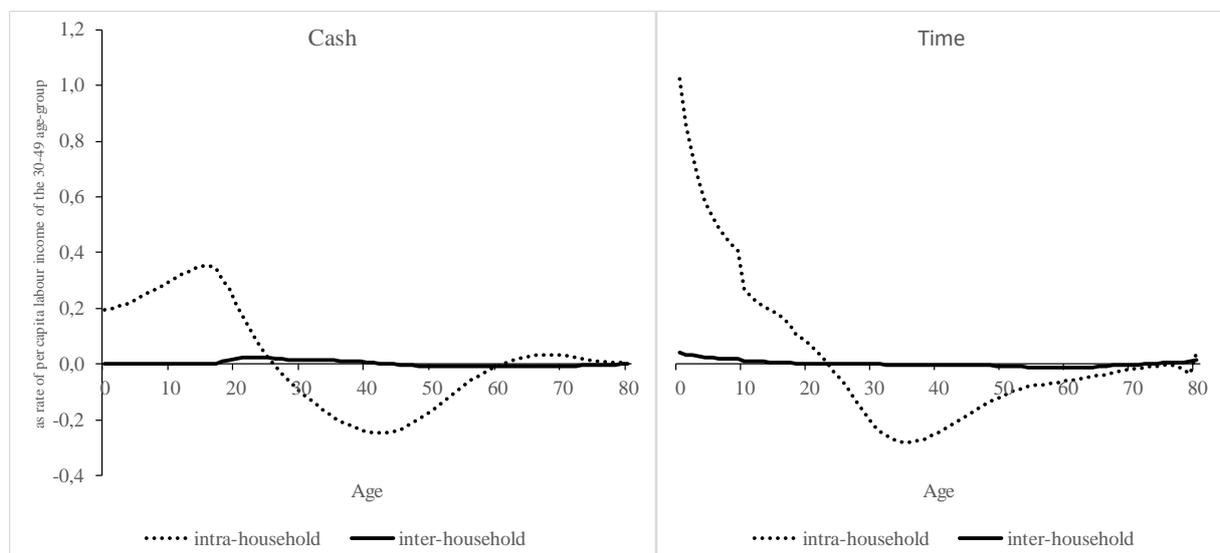
What is parental transfer?

Child-related public transfers can be straightforwardly split between parents and non-parents because the allocation of such transfers matches the definition of parenthood used here. Eligibility rules exclude non-cohabiting parents almost entirely. The relationship between parenthood status and familial transfers is more complicated. There are parents (in the ordinary sense of the word) who do not live with their children, and there are non-parents who live with children. Both groups can be donors of familial transfers to children, but we need to exclude such forms of support from the calculation as they are familial but not parental.

In fact, the transfers provided by non-cohabiting parents can be captured by NTA and NTTA with a high degree of certainty. Inter-household transfers are part of both accounting systems. Such transfers are dominantly provided by divorced parents (e.g. when a weekend-child is taken care of by the non-cohabiting parent, usually the father, and the time use survey records this as an activity benefiting a non-household member); or by non-cohabiting grandparents. Grandparental support and services are considered parental transfers in this paper so they would be included in the calculation should the data source include information about the provider of inter-household transfers received or about the target of such transfers provided. The same applies to transfers from divorced parents. Unfortunately, neither time use surveys nor the income and consumption surveys include such details.

Not all inter-household transfers are familial: charities, friends, colleagues or neighbours also give support. Even familial inter-household transfers are not necessarily parental: childless uncles and aunts, for instance, also transfer resources. We therefore limit the analysis to intra-household transfers. As Figure 2 demonstrates, this limitation has an almost negligible effect⁹: net inter-household transfers of both cash and time are insignificant compared to intra-household transfers.

Figure 2: Per capita age profiles of intra-household and inter-household familial transfers of cash and time in 14 European countries, 2010



Sources: Authors' calculations from Istenic et al. (2016); Vargha et al. (2016).

Note: Per capita figures refer to entire year-groups, not only those who provide or receive transfers.

The alternative case, transfers from cohabiting non-parents, requires further attention. These are instances of self-supporting older siblings who are already net contributors to the familial

transfer system; or those of cohabiting childless relatives or non-relatives. In order to avoid mixing up such transfers with parental transfers, intra-household transfers have to be split to two groups depending on whether they are provided by parents or non-parents and the latter have to be added to the age-profiles of non-parents living in childless households.

Up to this point, all our assumptions have complied with standard NTA. Here we make a step further by allowing non-parental intra-household transfers to flow directly to children (rather than the household head). Such a procedure would reclassify non-parental intra-household transfers as parental transfers in many instances. We cut this circuit short and carve out non-parental transfers from what the standard sharing rule could potentially identify as parental ones.

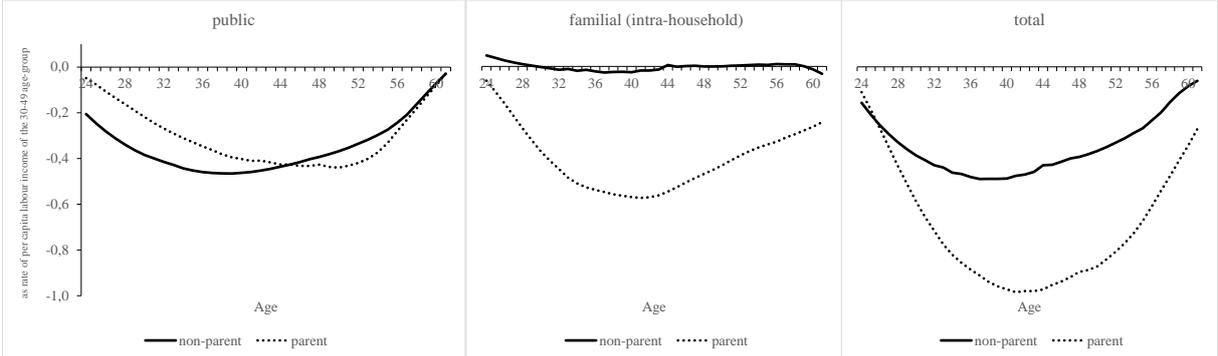
The HETUS database does not allow a similar separation of parents and non-parents since it does not include a household roster. Instead, we use the assumption that the effect of non-parents living in households with resident children is the same on the parental and non-parental time transfers as it is on the corresponding cash transfers.

The above set of assumptions guarantees that non-parental transfers will not be assigned to parents, and parental support will not be included among non-parental transfers. All our limitations are conservative, in that they decrease the parent/non-parent ratio. The estimates below can therefore be considered as a lower limit.

Results: Age-profiles by parenthood status

This paper compares the net transfer packages of parents and non-parents during their working age.¹⁰ Also, children are omitted from the comparison because including them would not add to the conclusions on the transfer cost of parenthood. Children cannot be parents. The three large age-groups, children and people in working or old ages, are separated by the all-transfers demarcation ages introduced before. In the 14-country sample, transfer-independence (hence adulthood) starts at age 24 and ends at age 61.

Figure 3: Per capita age profiles of public and intra-household familial transfers by parenthood status in working age in 14 European countries, 2010



Source: Authors' calculation.

The profiles are presented in Figure 3. Parents and non-parents do not differ much in terms of their net contributions to public transfers (left panel). Parents only pay higher taxes than non-parents after age 47, but the overall disparities are not particularly wide and on the whole non-parents pay somewhat more in net taxes than parents do. The real difference comes in familial

intra-household transfers (central panel). Non-parents living in childless households do not provide such transfers. Non-parents who cohabit with a child do, but they make up less than three percent of the non-parent population. Familial transfers are provided overwhelmingly – in fact, almost exclusively - by parents. Consequently, the overall transfer package of parents is significantly larger than that of non-parents (right panel). Separation of parents and non-parents in the households of the survey samples qualifies the results of the macro-level analysis but does not change the conclusions.

Pricing parenthood by estimating resource transfers

Period age-profiles of flows are frequently used to estimate stocks generated over time (Willis 1988, Lee 1994b, Bommier and Lee 2003). Examples include the generational imbalance and the sustainability gap estimated from cross-sectional age-profiles of net taxes in generational accounting (Auerbach, Gokhale, and Kotlikoff 1991, Bonin and Patxot 2004); contribution wealth and the implicit pension debt derived from period age-profiles of contributions and pensions in pension economics (Holzmann, Palacios, and Zviniene 2004, Settergren and Mikula 2006); and several similar indicators (Gál and Monostori 2017). Here we use a similar procedure to compare the transfer stocks of parents and non-parents over their working years. We call the resulting gap the transfer cost of parenthood.

The calculation is based on the period age-profiles presented above in Figure 3. The profiles are adjusted by economic growth (1.5 percent annually in the base case), mortality (Eurostat *demo_mlifetable_px* table) and a discount rate (5 percent). The results, by country, are presented in Table 1. The numbers in the table express net transfers in terms of yearly labour income of people between age 30 and 49. Accordingly, the denominator refers to an indicator of the market economy, whereas the numerator includes items both from the market economy and the household economy.

Table 1: Various transfer stocks of parents and non-parents generated over the working life in terms of years of prime-age earnings, 14 European countries, 2010

	Non-parents			Parents			Parents total / Non-parents total
	Familial	Public	Total	Familial	Public	Total	
Belgium	-0.5	-8.8	-9.3	-7.8	-7.9	-15.8	1.7
Bulgaria	0.2	-7.4	-7.2	-6.4	-6.8	-13.2	1.8
Germany	0.1	-7.2	-7.1	-8.0	-5.5	-13.5	1.9
Denmark	-0.1	-7.3	-7.4	-9.2	-8.5	-17.7	2.4
Estonia	-0.1	-7.7	-7.8	-7.0	-6.9	-13.8	1.8
Spain	-0.1	-6.8	-7.0	-8.2	-5.7	-13.9	2.0
Finland	-0.1	-8.1	-8.2	-9.2	-9.1	-18.3	2.2
France	0.0	-8.1	-8.2	-8.6	-6.8	-15.3	1.9
Hungary	-0.3	-10.7	-11.0	-8.8	-7.1	-15.9	1.5
Lithuania	-0.5	-8.3	-8.7	-6.8	-8.7	-15.4	1.8
Latvia	-0.9	-5.4	-6.3	-6.5	-4.7	-11.2	1.8
Poland	-0.2	-8.2	-8.4	-8.7	-6.6	-15.3	1.8
Sweden	-0.1	-7.7	-7.8	-8.8	-7.8	-16.6	2.1
UK	0.0	-7.5	-7.4	-10.7	-4.5	-15.2	2.0
EU14	0.0	-7.7	-7.7	-8.6	-6.0	-14.6	1.9

Source: authors' calculation.

Notes: $g = 1.5\%$; $r = 5\%$. Prime age earnings: average labour income of the 30-49-year-old age-group.

Some results in Table 1 may seem to be contrary to prior expectations at first sight. Some of the poorer and less developed member states, such as Bulgaria, Estonia, Latvia and Lithuania

(though not Hungary or Poland) have relatively smaller familial transfers in parents' transfer package than some of the wealthiest countries, such as the UK, Denmark and Finland. To a large extent, economic development is a process of the market economy taking over ever more tasks from households. In pre-modern societies, households produce their own food; in middle-income societies, they buy unprocessed food in the market and prepare meals at home; in rich countries the food sector delivers ready-for-consumption products. Development reduces the time needed for such primary activities. However, it also makes time more expensive. Wages, which are used to value unpaid household labor, grow higher and the price for services increases disproportionately. So even if people living in rich countries spend less time with manual housework, the value of this time could be higher.

Another potentially unexpected result comes from the comparison of the public transfer stock of parents and non-parents. On average, European non-parents pay net taxes equivalent to 7.7 years of prime-age earnings during their working life. This is more than parents do (6.0 years). This pattern is repeated in most countries in the sample, but not everywhere. Most notably, in the three Nordic countries and in Lithuania, parents provide more net public transfers than non-parents. Since the Nordic welfare states are known to have extensive public child-care facilities and other public services to support parents improving their work-life balance (Vanhuysse, 2015; Birnbaum et al. 2017), the results may look surprising. However, helping parents, mostly women, to more easily combine work and life increases, need not decrease parental taxes. Childcare facilities improve parents' welfare, but they do not necessarily give them net transfers. Rather, support for women to work more and stay less in the household is a transfer-transformation. Women now pay more taxes and these extra taxes finance services consumed not by themselves but by their children. A mother raising a child while at home gives time transfers to her child. If she hires a nanny and takes up a job, the time transfer is transformed to a familial cash transfer between parent and child (through a market transaction between the parent and the nanny and service provided by the nanny to the child). Also, the transformation of the transfer increases parental contributions to public transfers. If it is the government that establishes child care facilities, the mother in question will pay taxes she did not pay before, and her original time transfer will be transformed directly to a parental public transfer. Childcare facilities help women not by decreasing their tax burden but by allowing them to transform a significant share of their transfers from time transfers to public transfers.

This said, the key result of this paper is that the transfer packages of parents and non-parents are quite radically different. Non-parents contribute almost exclusively to public transfers. In contrast, parents provide more familial transfers than public transfers in most countries and in the 14-country sample as a whole. On average, European parents provide 1.9 times more transfers than non-parents. During the 38 years during which Europeans on average are net contributors to the inter-age transfer system, parents contribute an equivalent of 14.6 years of prime-age earnings, against the non-parents' 7.7 years.

The results are robust with regard to the parameters of the transversal exercise. Changing them affects the outcome but do not significantly alter the relative magnitudes. Lower discount rates and faster economic growth widen the gap (a 3 percent discount rate enlarges the parent/non-parent ratio from 1.9 to 2.0; a 3.0 percent growth has the same effect; more radical discounting and slow growth to the contrary).

Conclusions and implications

There is a highly consequential asymmetry in the way all modern societies organize intergenerational resource transfers. Children are raised predominantly by their *own* parents, older people are supported as a generation by the *generation* of their adult children. As a result,

when we take together all resource transfers – in both cash and time, by both state and families - we observe pro-elderly welfare states embedded within societies composed of strongly child-oriented parents (Gal, Vanhuyse & Vargha 2018). This article has documented a further related asymmetry in intergenerational resource transfers: that between working-age parents and non-parents. Non-parents contribute almost exclusively to public transfers; marginally more so than parents. But importantly, parents also provide very substantial (and typically larger) *familial* transfers in addition to these public transfers. On average for fourteen European countries, parents provide *1.9 times more* transfers than non-parents overall – the equivalent of 14.6 years of prime-age earnings (compared to 7.7 years for non-parents).

These results have implications of debates in public policy, social justice, and population politics. Regarding the latter, for instance, our results are consistent with the frequently demonstrated small fertility effects of pro-natalist policies. If fertility responses to financial incentives are weak (demand for children is price inelastic), there will be an opportunity for redistribution between those who do and do not raise children. The results also restructure the debate on the efficiency of pro-natalist policies: the question is not whether they are efficient but whether they are pro-natalist. Besides, it may help to defuse acrimonious moral debates about the legitimacy of pro-natalist policies, as questions of redistribution may provide more space for compromise than discussions about government intervention in deeply private decisions.

Importantly, moreover, our findings speak to unresolved normative debates about what society rightly owes parents in virtue of having and raising the children that will constitute the next generation of taxpayers and innovators (Bou-habib and Olsaretti 2013; Olsaretti 2013; Trifan 2019). They indicate that unless parents receive significantly more public transfers in old age, the returns on what parents have contributed to society during their active ages will be significantly lower than those of non-parents. For the same transfer investment in working-age, parents receive less than non-parents in old age. Alternatively, for the same support in old age, parents have to provide more transfers than non-parents do while they are in active age. The asymmetry in the yields on the transfer package constitutes a *de facto* redistribution from parents to non-parents.

This observation has multiple potential equity implications. After all, children are significant *public* goods, predominantly paid for privately - by *parents* (Demery 1987; Folbre 1994, 2008; Lee and Miller 1990; Wolf et al. 2011). To be sure, children also provide private benefits to their parents, and some part of the cost of raising them resembles pure consumption. Yet, while raising children may be better described as an intrinsic commitment rather than a deliberate investment, it is a highly socially beneficial commitment all the same (Folbre 2008) – and for many parents a very costly one to boot. A recent tax-benefit simulation study for six European countries, for instance, estimates that for households living on a low gross wage, parents have less adequate incomes than non-parents, to the point in many cases of being insufficient to participate adequately in society (Penne et al. 2020).

As we have shown, parents bear the lion's share of these costs - in cash and time, both directly and in terms of opportunities foregone. These private costs are in part socially imposed by socio-legal obligations for continuity of adequate care (Alstott 2004). Yet, to the extent that children subsequently become productive tax and social security paying adults, they create positive externalities that will benefit all of society. They will finance, for instance, future public pension and health and longterm care benefits - all of which will also benefit non-parents. Not just are the current costs of children in part socially created but only very partly socialized, children's future social benefits are fully socialized. Society forcibly redirects some of these benefits to nonparents, thereby reducing the benefits available to parents (Olsaretti 2013; Gal, Vanhuyse and Vargha 2018). In other words, children are forcibly and deliberately

socialized goods, whose future benefits are, technically, rival and excludable (Olsaretti 2013). So the question remains: why do we observe *so little* internalization of the positive externality provided by parents in raising children?

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² Beyond the inter-age aspect, familial transfers have characteristic inter-gender redistribution not discussed here. Vargha, Gál and Crosby-Nagy (2017) and Hammer et al. (2020) present comparative European results by gender in an NTA framework.

³ Since national accounts include the value of food produced for own consumption and construction of houses for own use, there is a slight overlap between NTA and NNTA. Current NTA methodology does not tackle this issue. See an effort to eliminate the overlap in an NTA-NNTA exercise in Gál, Szabó and Vargha (2015).

⁴ Variables used to predict household VAT payment: gender of household head, age of household head, percentage of household members below age 5, percentage of household members between age 6 and 14, percentage of household members aged 70 years or older, urbanization (densely populated, intermediate, thinly populated), region, household size, household type (six categories), highest education level of household head (less than upper secondary, upper secondary, tertiary), the economic activity of household head (employed, unemployed, retired, inactive), occupation of household head (10 categories) and log household income.

⁵ HETUS is an effort to harmonize European time use surveys: <https://www.h2.scb.se/tus/tus/default.htm>

⁶ For instance, in households of retired couples, men typically have higher pensions than women, but women produce significantly more value in the form of household labour, so they support each other (Vargha et al. 2017 and Hammer et al. 2020).

⁷ The source of data in this paragraph is the *cens_11htts_r2* table of Eurostat.

⁸ In fact, we could. Just around the age when people become dependent again, the cell frequencies of parents drop in the survey samples. If this limited subsample is compared to the large group of non-parents of the same age, the result, which is presented in Online Appendix 1, would be supportive to our findings of differences (or rather the lack thereof) between parents and non-parents in the public transfer system. Including them would make our case more substantial and the argument simpler. Still, we do not use them in the body text because we found the cell frequencies too small to lend support sufficiently.

⁹ Inter-household time transfers cannot be separated from the rest in Belgium and Denmark, reducing the population represented in this particular case by somewhat less than five percent.

¹⁰ As mentioned, transfer packages of the two groups in old age are left to online Appendix 4 because of the selective nature of being a parent, that is someone living with their resident child, in higher ages