THE TRANSFER COST OF PARENTHOOD IN EUROPE:

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ABSTRACT
What are the net resource transfer burdens of working-age parents and non-parents in Europe? We estimate all cash, in-kind, and time transfers of the market economy and the household economy, through both public and familial channels, for fourteen European countries in the early 2000s. 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 find that non-parents contribute almost exclusively to public transfers in net terms, somewhat more than parents do. But parents provide, in addition, a still larger amount of familial transfers. As a result, parents contribute on average 1.8 times as many net transfers as non-parents do, overall. Especially in view of the public good nature of children and contemporary rates of childlessness in Europe, this asymmetric transfer burden carries multiple implications for debates on public policy and a just society.

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1. Introduction: the positive externalities parents provide

The resources transferred between different age groups alive at any moment in time are a key building block in the process through which societies reproduce. They are the economic glue that links together different generations (Dasgupta 2019; Lee 2012; Lee et al. 2017). It is predominantly the surpluses produced by working-age people that finance consumption in childhood and old age. But these two streams work rather differently. Unlike childhood, old age did not always exist. Reconstructions of the age patterns of productivity and consumption demonstrate that traditional societies could not afford economic dependence beyond working age (Lee 2000). Old age as a resource-dependent life stage was born when more efficient agricultural technologies evolved, and it became a widespread experience in industrial societies. The consumption security of older people depends on the number and productivity of their juniors. This, in turn, is a function of previous investments made by the former in the human capital of the latter (Rangel 2003). The main channel through which these upward transfers are organized in contemporary Western societies is taxes and transfers; the institutional vehicle of (welfare) states (Gal et al. 2018).

The main mechanisms through which resources are conveyed downward to children and young adults are different (Mason and Lee 2011; Lee and Donehower 2011; Folbre and Wolf 2012). People in the active stages of their lifecycle do pay taxes that finance family benefits, child care, education, and other public services. But they also buy goods and services to their own children and spend unpaid time to care for them. Their savings find their way to younger adults through the mediation of financial services or real estate markets, and help them buy houses and/or establish families. However, both the visibility and the property rights status of such reallocations are different. Whereas market transactions are based on legally protected property rights and contracts, the tax-and-transfer mechanism is a non-*quid pro quo* type of transaction: giving and receiving these resources is not (or at best very loosely) interconnected. Familial transfers are even less palpable. Their amount is rarely fully registered. In the case of unpaid time, the very value of these transfers is uncertain. Also, returns on such transfers can hardly be legally enforced. The story of the prodigal son is one of the best-known parables of the Bible.

In short, there is an asymmetry in the observability of reallocations and in the way they create access to the surplus labor of working-age generations. Transfers changing hands among relatives, most typically between parents and children, are the least visible and enforceable, and they create the weakest entitlements to public resources. This raises the question: is there significant redistribution from parents to non-parents, possibly in statistically opaque ways? This takes on added urgency on an aging continent, notably in societies with rates of childlessness that are increasing (as in Central and Eastern Europe for post-1960s female cohorts) or already internationally high (as in Western and, even more so, Southern Europe) (Sobotka 2017; Albertini and Kohli 2017; Pessando 2019). If returns on transfers earlier provided by parents substantially finance the old age of non-parents, non-parents may free-ride on the positive externalities provided by parents in raising society's next generation.

After all, children are *public* goods which are predominantly paid for privately – by parents.[1] For it is parents, not states, who bear the lion's share of the cost of producing this public good - in cash and time, directly and in opportunities foregone. For many, parenting represents a very consequential extra burden indeed.[2] What is more, this private cost in rearing children is in part socially imposed on parents by socio-legal obligations for continuity of adequate care (Alstott 2004; Folbre 2008). And 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. For instance, as adults they will later produce innovations and finance public infrastructure and public pension, health and long-term care benefits - all of which will also benefit non-parents (Folbre 1994; England and Folbre 1999b; Wolf et al. 2011). Previous

research indicates the scale of the positive externalities parents provide. Lee and Miller (1990) find that, at least in industrial societies with fertility rates around or below reproduction level, these externalities are positive and significant.[3] Folbre (2008) shows that parents, especially mothers, pay most of the costs of raising the next generation whereas employers and taxpayers derive significant net benefits. Wolf et al. (2011) show that the combined net present value of taxes paid and benefits received for parents and their offspring exceeds that of non-parents by 66 percent. Parents, on their own, still contribute 43 percent more than non-parents through their lifetime in the baseline computation, which includes public transfers and only familial transfers of market goods and services (not transfers of time spent on housework or care).[4]

This article adds new European evidence to the debate. We split the age profiles of public and familial transfers (including the value of unpaid time) 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. We use a sample of 14 European countries representing 70 percent of the European Union population and covering all main types of welfare systems. Section 2 makes the case for the transfer gap between parents and non-parents without splitting the age-profiles by parenthood status. In section 3, we discuss conceptual issues such as who is a parent and how to model familial transfers. We also present the age-profiles of transfers split to parents and non-parents. Section 4 applies the age-profiles in a transversal exercise to assess synthetic life-courses of parents and non-parents in terms of net transfer payment during their working age. Section 5 discusses further implications for policy debates.

2. The age distribution of transfers: macro-level analysis

We use and extend National Transfer Accounts methodology (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). Labor 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, a vital concept of the NTA methodology, is defined as the difference between consumption and labor income at any given lifecycle stage (Lee & Mason 2011).

The lifecycle deficit is positive (an actual deficit) in childhood and old age, when one's labor 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 as paid for by their parents; the utilities and other 'household public goods' used also by household members who do not contribute to them; or any other components of consumption not supported by the labor income or asset-based revenues of individuals.[5]

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 NTA rearranges SNA but does not go beyond its frontiers, the market economy. Goods produced and services provided by unpaid household labor are not part of the national economy. Yet this 'household economy' is a significant source of inter-age transfers, too. So, making a step ahead NTA is extended with the National Time Transfer Account (henceforth NTTA; see Donehower

2013). Like NTA, NTTA compares consumption and the value of labor: in this case, the value of household labor consumed and the value of household labor produced. Here the only vehicle conveying the value in question is the transfer of labor 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.[6] The aggregation redefines some of the key concepts. Its equivalent in the total economy is the total lifecycle deficit: the sum of the consumption of goods and services produced in both the market and the household economy, minus the sum of labor income and the value of household labor performed.

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 total lifecycle deficit, that is by net overall resource dependency status. Childhood, by this definition, lasts until the combined net transfers (public and private transfers both of market goods and time) are positive, so that receipts are higher than the outflows. Old age starts when this recurs in later life and 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 (Gal and Monostori 2017). This method 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 market goods and time given or received.[7]

Public transfers
Public transfers received by individuals 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, defense, 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. Non-uniform age distributions of education, health care and social protection are drawn using two comparative surveys, the harmonized Household Budget Surveys and the European Union Statistics on Income and Living Conditions (EU-SILC). 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.

Figures of aggregate public revenues by type are drawn from the National Tax Lists of Eurostat. The database classifies all receipts of taxes and social contributions of the general government by economic function, such as taxes on consumption; labor 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 and excise taxes on alcohol, tobacco and fuel based on National Tax Lists and the Excise Duty Tables of the Directorate-General for Taxation and Customs Union of the European Commission. The National Tax Lists split personal income taxes among labor taxes borne by employees and the non-employed as well as taxes on capital income of households and self-employed persons.[8]

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 labor income and much of the operating surplus - profits) and pay most of the taxes. People in resource-dependent life stages (children and older people) are the primary beneficiaries of public cash and in-kind programs. However, shifting the unit of accounting requires 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 net national income in our 14-country sample.[9] Familial transfers add another 17 percentage points. They are exchanged almost exclusively within the household (16 percent). 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 income from labor, capital and property; net public cash transfers; and net private inter-household transfers) and consumption (at market prices) and a set of sharing rules of surpluses and deficits. The age-profiles of revenues and consumption are adjusted so that the population-weighted aggregates match the aggregates of national accounts.[10]
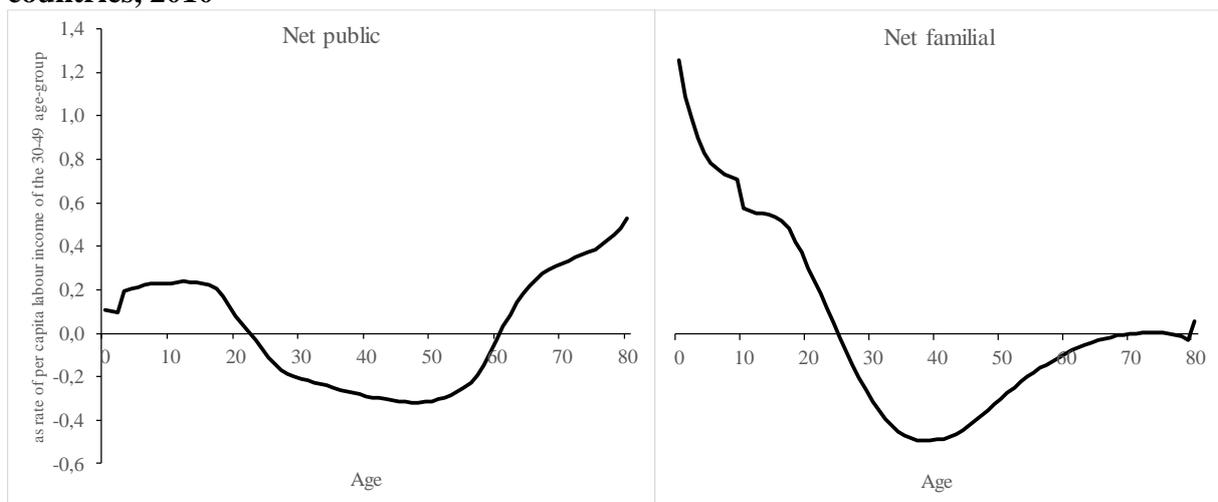
Time transfers

Time, the currency of life (Krueger et al. 2009), is key to a more complete understanding what generations do for each other (Gal et al. 2018). The third component of the transfer package is therefore the value of time transfers in the form of unpaid household labor. While often neglected in intergenerational transfer valuation exercises, there is a growing understanding of the importance of, and the changing patterns in, the time devoted to family duties and other household labor (Goodin et al. 2008; Guryan et al. 2008). By including time transfers, we go beyond 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, 2013) follows, and extends whenever necessary, the methods developed for Household Satellite Accounts.[11] 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 labor 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 labor consumed and the value of household labor provided. In this respect, net time transfers are the equivalent of LCD in the household economy.[12]

Results: age profiles at the macro level

Figure 1 shows the age-profiles of, respectively, public and familial transfers in net terms (transfers received less transfers provided). They condense information of our 14 European countries. As the aggregation requires re-scaling of the national age-profiles, we follow NTA

practice and use the average labor income of the 30-49-year-old age-group (including those who do not work), as 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 working-age adults 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.[13] However, such transfers travel only a short way between people of similar age and cancel out each other at the macro level. 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 Istenič 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.[14] No intra-household transfers take place here; only inter-household exchanges. Another 25 percent is formed by couples without cohabiting children. Household members exchange market goods 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 in Europe today. 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 remainder (5 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: working-age adults transfer resources to children and older people. But the familial transfer system is largely two-generational: parents support their children. Grandparenting (older parents helping their adult children to provide for their grandchildren or directly supporting the grandchildren) is of minor significance – in net terms. Grandparents do provide transfers, but these transfers are compensated 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 (Gal et al. 2018). Only the remaining 20 percent of what children receive in net terms comes from the public sector (for cost-benefits simulation results, 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 labor and asset-based revenues).

Children are raised mainly by their own parents; older parents are supported as a generation 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 et al. 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 (in their public good component) provided by working-age adults that establish the potential for transfers received once the latter grow old.

3. Splitting the age profiles by parenthood status

Familial transfers can take place not only within but also between households. Non-cohabiting parents often provide for children; divorced parents often share parenting. 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. Parents may have multiple children, but here we consider parenthood status as a binary variable. Moreover, parenthood is limited to cohabitation, which is acceptable in the analysis of public transfers and taxes. With very few exceptions, family benefits and other child-related public transfers flow to 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.

One consequence of the cohabitation-based definition is that the parenthood status changes by age.[15] 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 this definition (examples would be 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.[16] Cohabitation does not necessarily mean living together. Becoming independent is typically a process. For instance, young adults may study elsewhere but still be 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.

What is a parental transfer?
Child-related public transfers can be split between parents and non-parents in straightforward manner, as 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. 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. For instance, when a weekend-child is taken care of by the non-cohabiting parent, the time use survey records this as an activity benefiting a non-household member.[17] Not all inter-household transfers are familial: charities, friends, colleagues or neighbors 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.[18] As Figure 2 demonstrates, this limitation has an almost negligible effect: net inter-household transfers of both market goods and time are insignificant compared to intra-household transfers.

Figure 2: Per capita age profiles of intra-household and inter-household familial transfers of market goods and time in 14 European countries, 2010
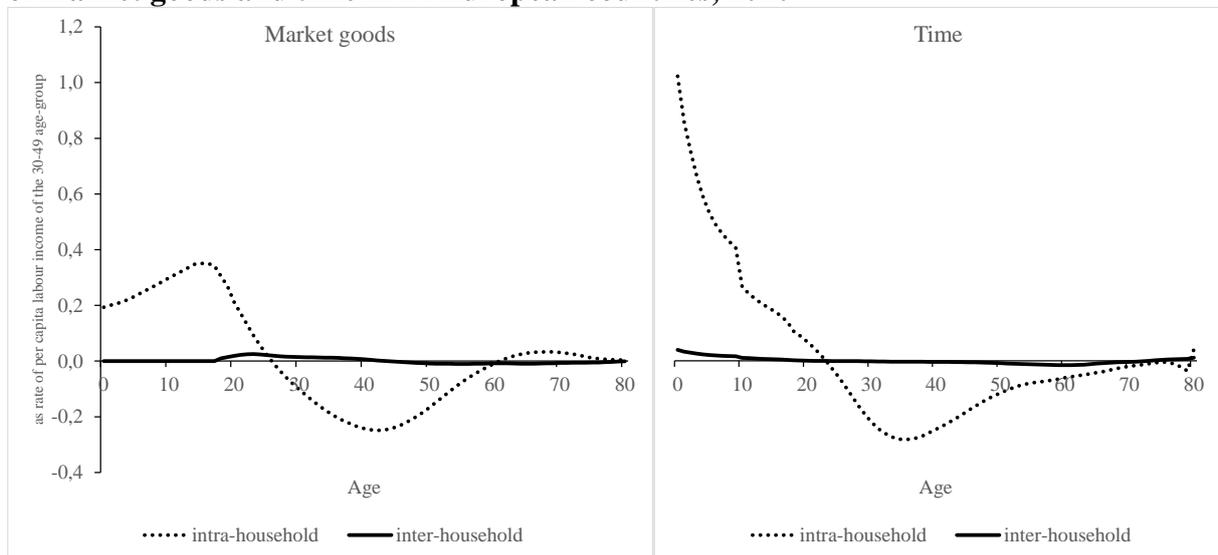
Sources: Authors' calculations from Istenič et al. (2016); Vargha et al. (2016).
Note: Per capita figures refer to entire year-groups, not only those who provide or receive transfers.

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 of cohabiting childless relatives or non-relatives. 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, as is assumed by the NTA intra-household sharing rule.[19] We assume 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. This ensures that non-parental transfers will not be assigned to parents, and parental support will not be included among non-parental transfers. These assumptions 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
In the 14-country sample, transfer-independence (hence adulthood) starts at age 24 and ends at age 61. 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 46, but the overall disparities are not particularly wide. 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. Of course, childless working-age people also provide valuable upward familial support (Pessando 2019), just like childless elderly people provide valuable downward contributions (Albertini and Kohli 2017). But on aggregate, familial transfers are provided overwhelmingly, 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.

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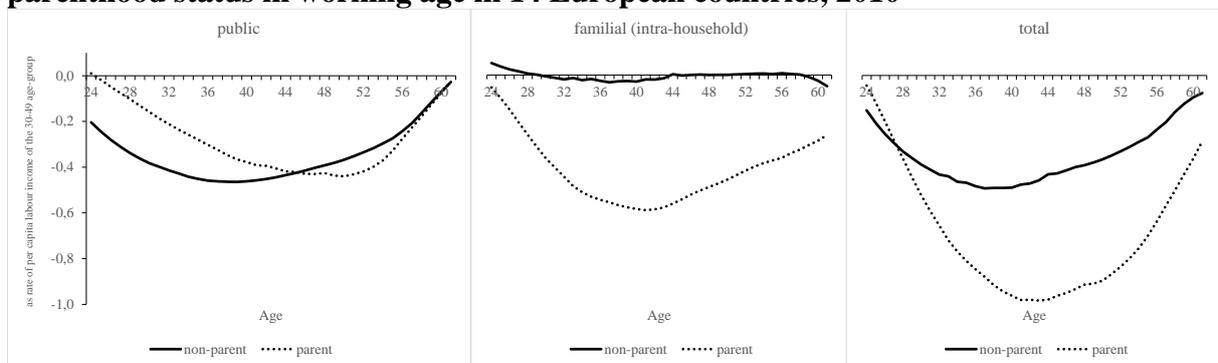
Source: Authors' calculation.

4. The lifetime cost of parenthood
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 et al. 1991; Bonin and Patxot 2004); the contribution wealth and the implicit pension debt derived from period age-profiles of contributions and pensions in pension economics (Settergren and Mikula 2006); and related policy indicators (Gal 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 in Table 1 show net transfers in terms of yearly labor 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.

Some results in Table 1 may seem contrary to prior expectations. Parents in some of the wealthiest countries, such as the UK, Denmark and Finland, give more familial transfers than parents in poorer countries such as Bulgaria and the Baltic states. 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, but also makes time more expensive. Wages, which are used to value unpaid household labor, increase, hence 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.

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	-0,6	-8,9	*-9,5*	-7,8	-7,3	*-15,1*	1,6
Bulgaria	0,4	-7,5	*-7,1*	-6,4	-5,9	*-12,3*	1,7
Germany	0,0	-7,3	*-7,3*	-8,0	-4,8	*-12,9*	1,8
Denmark	-0,1	-7,6	*-7,8*	-9,1	-6,9	*-16,0*	2,1
Estonia	-0,1	-7,6	*-7,7*	-7,0	-6,0	*-13,0*	1,7
Spain	-0,3	-6,9	*-7,1*	-8,1	-5,6	*-13,8*	1,9
Finland	0,0	-8,1	*-8,2*	-9,6	-7,2	*-16,8*	2,1
France	-0,1	-8,1	*-8,2*	-8,8	-6,1	*-14,9*	1,8
Hungary	-0,3	-10,7	*-11,0*	-8,3	-6,1	*-14,3*	1,3
Lithuania	-0,5	-8,1	*-8,6*	-6,0	-8,1	*-14,1*	1,6
Latvia	-1,0	-5,4	*-6,4*	-6,4	-4,5	*-10,9*	1,7
Poland	-0,3	-8,2	*-8,5*	-8,6	-6,5	*-15,1*	1,8
Sweden	-0,1	-7,7	*-7,8*	-8,8	-6,5	*-15,3*	1,9
UK	0,0	-7,6	*-7,5*	-10,7	-3,3	*-14,0*	1,9
EU14	**-0,1**	**-7,7**	***-7,8***	**-8,6**	**-5,3**	***-13,9***	**1,8**

Source: authors' calculation.
Notes: g= 1,5%; r=5%. Prime age earnings: average labor income of the 30-49-year-old age-group.

Another potentially unexpected result comes from the comparison of the transfer stock of parents and non-parents (rightmost column). Parents bear a larger burden than non-parents everywhere, on average 6.1 more years (13.9-7.8) of prime-age labor income. However, the difference is the largest in the three Nordic countries (respectively, 8.6, 8.2 and 7.4 years in respectively Finland, Denmark and Sweden), which have extensive public child-care facilities and other public services to support parents improving their work-life balance (Vanhuysse 2015). Although non-parents pay more public transfers than parents in each country, the Nordic countries are among those where the difference is the smallest (this time together with two Baltic states). This may seem counterintuitive. However, helping parents (mostly mothers) to more easily combine work and family life need not decrease net 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. Working women pay more taxes, which then 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, our key result 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 thirteen out of fourteen countries in our sample. On average, European parents provide 1.8 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 13.9 years of prime-age earnings, against the non-parents' 7.8 years. The results are robust with regard to the parameters of the transversal exercise. Changing them affects the net contributions but does not significantly alter the relative magnitudes.[20]

5. Conclusions and implications

There is an important asymmetry in the way all Western societies organize intergenerational resource transfers. Children are raised predominantly by their own parents, whereas older people are supported as a generation by the generation of their adult children. As a result, there is an asymmetric visibility of the support *received* by age: public statistics and administrations have a deeper and more complete knowledge of what older people receive compared to what children receive (Gal et al. 2018). This article has documented a closely related further asymmetry on the side of *providers* of intergenerational resource transfers: that between parents and non-parents. As we have shown, non-parents contribute almost exclusively to public transfers; somewhat more so than parents do. But importantly, parents additionally contribute very substantial (and typically larger) private familial transfers. On average for fourteen European countries, parents contribute *1.8 times more* resources than non-parents overall. All else equal, this means that unless parents later receive significantly more public transfers in old age, their returns on these contributions will be significantly lower than those of non-parents.[21] The asymmetry in the yields on the transfer package constitutes a *de facto* redistribution from parents to non-parents.

These results have implications for debates in public policy, social justice, and population politics. For instance, they speak to unresolved normative disputes about what society rightly owes parents in virtue of raising the children that will constitute the next generation of taxpayers and innovators. Why should these different transfer burdens matter at all? Why should the high private cost of raising children invoke any kind of compensatory social policy? As one side of the argument has it, just like when buying pets, parents also knew the conditions of having children in advance, yet still freely decided to have them. Parents therefore have no moral claim on subsidies for providing public goods by raising children, and may actually be taxed if their activities produce a public bad (Casal and Williams 1995, 2004). In contrast, George (1987) argues that it is morally unjust to redistribute the outcomes of one form of saving for old age (investments in the human capital of society's new generation) but not those of an alternative form (savings in financial assets). Similarly, Olsaretti (2013, 2017), Bou-Habib and Olsaretti (2013) and Trifan (2019) argue that the choice to have and rear children is different from other choices for which people ought indeed to be held responsible, like buying pets.

Efficiency arguments in turn point to the public good element of children mentioned above.[22] Children's later taxes and other societal contributions are *de facto* non-excludable and

will finance benefits and services irrespective of how and by whom children were earlier 'produced.' This creates opportunities for free-riding (Cigno 1993, Sinn 2004). Importantly, moreover, children are not naturally public goods – they are made so by societal *fiat*. Technically, older persons' social benefits could be conceived, in part or fully, as returns to the externalities embodied in their earlier investment in raising children – the public good component (Demeny 1987, Olsaretti 2013). But empirically, social programs (such as pensions or long term care) explicitly and significantly taking into account such parental externalities cannot be observed in contemporary Western societies. Everywhere, the societal returns of parental childrearing are redirected to non-parents, concomitantly reducing the benefits available to parents.

Economic theory predicts that the private provision of public goods will be suboptimal, indicating a possible cause for both low fertility (Bental 1989; England and Folbre 1999a; Abió et al. 2004) and suboptimal levels of transfers to children (Rangel 2003; Boldrin and Montes 2005). Policy proposals for internalizing these externalities vary, from cost sharing in childbearing years (Demeny 1987; Folbre 2008), to rewarding the value-added produced by parents with extra material resources (Coleman 1993) or extra political votes (Demeny 1986), to tying together the opposite flows of pensions and family benefits (Van Groezen, Leers, and Meijdam 2003; Rangel 2003) and child-related pensions (Sinn 2005; Cigno and Werding 2007).

Our results are also consistent with a perennial paradox of population politics - the frequently demonstrated small fertility effects of pro-natalist policies. Public pensions on the whole reduce fertility (Galasso et al. Profeta 2009; Boldrin, De Nardi, and Jones 2015), whereas family benefits increase it (Letablier et al. 2009, Thévenon and Gauthier 2011, Laroque and Salanié 2014). But crucially, the magnitude of the effects is small even when policies directly aim to boost fertility (for a review, see Sobotka et al. 2019). Fertility is not easily influenced by social policies – a conclusion frequently used to argue against pro-natalist social policies on futility grounds.

These two literatures, on the uncompensated externality of raising children and on the weak response of fertility to social policies, usually remain on separate trails. Here we suggest using a standard tax incidence framework to unite them. The incidence of a tax on any 'good' depends on the price elasticities of demand (e.g. Gruber 2011). If those involved have a rigid response to the change in the price, they can be easily made to bear the costs. However, if demand is price-elastic, the new tax will be ineffective and tax revenues small. Reversing this logic, the weak fertility response to policy incentives affecting the cost of childbearing suggests price-inelasticity on the part of parents; a high willingness (or better, commitment) to accept high taxes on the good 'children.' The parents/non-parents transfer gap demonstrated here is consistent with the small fertility effects. These may be two sides of the same coin. Willingly or otherwise, parents may accept a major gap in transfers precisely *because* their demand for children is inelastic.

To be sure, children provide private benefits to their parents, and some part of the cost of raising them resembles pure consumption. Yet, raising children, at least in high and middle income societies today, is best described deontologically as a strong intrinsic commitment (Folbre 2008; Zelizer 1985). Conceptually, children are neither regular household goods, nor pets or consumer durables (Becker 1991), nor investment goods (Schultz 1997). Parents also seem to view them as fundamentally *sui generis* 'goods.' They value time spent caring for children more than other household or leisure activities (Krueger et al. 2009), allocate their time use accordingly (Gershuny 2000), and react to material incentives rather weakly also when it comes to time spent with children (Guryan et al. 2008). In other words, parents' intrinsic commitment to children may be what makes demand for this 'good' price-inelastic. And since taxing price-inelastic activities minimizes deadweight losses, it gives governments an efficient opportunity to redistribute between those who do and do not raise children by 'taxing' (not fully

internalizing) child raising. The perverse result, we speculate, may be the underprovision of children – low fertility. Our contribution is only to illustrate the redistributions and policy tradeoffs involved, by more clearly shining a light on the sheer size of parental investments in producing the future tax base.

Our results may also help to restructure debates on pro-natalist policies. These are frequently criticized not just for their ineffectiveness but also for their illiberalism or interventionism ('government has no place in citizens' bedrooms'). With Goodin et al. (2008: 111), we note that since all societies have a strong interest in having someone produce the next generation, parenthood is not just another lifestyle choice about which to be indifferent, even for die-hard liberals. But in addition, our analysis shows that what may appear to be either illiberal favoritism of a particular model of the family or ineffective pro-natalism, is better viewed as compensation (incomplete compensation at that) for parents' societal contributions. So, the question is less whether nominally pro-natalist policies are effective or illiberal than whether they are essentially pro-natalist. Realizing that pro-natalist policies are in fact compensatory may help to defuse acrimonious debates about these policies' moral legitimacy, as questions of redistribution may provide more space for compromise and reasoned deliberation than those of states prying into deeply private decisions.

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Appendix: Age-profiles of public transfers

We use the international version of the EU-SILC and HBS datasets that usually contain less information than the original national surveys but fit better to a comparative analysis.

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. 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.

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_10a_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.

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 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 variables as explanatory variables and used this model to predict the VAT payment of households in the EU-SILC. The variables used to predict household VAT payment are: 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. 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.

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.

Endnotes

[1] See, notably, Folbre (1994; 2001, 2008); England and Folbre (1999a; 1999b); Lee and Miller (1990); Wolf et al. (2011). More precisely still: children are *forcibly and deliberately socialized* goods, whose future benefits are, technically, rival and excludable (Olsaretti 2013); see the conclusions section.

[2] For instance, tax-benefit simulations for six European countries estimate 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). Parents, most dramatically single parents, dispose of significantly less discretionary time than non-parents across six developed democracies (Goodin et al. 2008).

[3] They report on externalities to childbearing in the United States amounting to $105,000 in 1985 dollars, which is about $250,000 in today's currency or nearly three years of average salary including housing, transport, and other benefits.

[4] As Wolf et al (2011) show, the net present value of taxes paid and benefits received by non-parents through their adult life is 18 percent higher than that of parents, but parents 'pay' in-kind in the form of their offspring. The calculation takes into account the NPVs of the descendants, too, whom non-parents do not have.

[5] Beyond the inter-age aspect, familial transfers have characteristic inter-gender redistribution not discussed here. Vargha, Gál and Crosby-Nagy (2017) present comparative European NTA results by gender.

[6] 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 NTTA. Current NTA methodology does not tackle this issue. See an effort to eliminate the overlap in an NTA-NTTA exercise in Gál, Szabó and Vargha (2015).

[7] 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/).

[8] Age-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 proportionally to their labor income. Profiles of indirect taxes are created in a two-step procedure. First, consumption is distributed among household members. As other methods such as Engel's and Rothbarth's provide insufficiently robust estimates for an NTA exercise (Lee, Lee, and Mason 2008), we apply the NTA equivalence scale instead, 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). For further details on incidence assumptions and age-profiles construction, see the online Appendix

[9] This is a population-weighted average of public transfers received; calculations are based on Istenič et al. (2016)

[10] This way, the resulting age-profile of intra-household transfers will also be consistent with the SNA. The technical details can be found in United Nations (2013, Ch. 7) and Istenič et al. (2017) sections 3.2.4 and 6.1.

[11] See European Communities (2003). The estimation is based on time use surveys, specifically the 2010 wave of the Harmonized European Time Use Survey completed with data from the Multinational Time Use Study (Denmark) and a national survey (Hungary).

[12] HETUS surveys were carried out between 1998 and 2006; Danish data are from 2001, Hungarian data from 2010. All monetary values are adjusted by the average wage growth by country between the reference year and 2010. For calculation details, see Vargha, Gál, and Crosby-Nagy (2017). This article does not provide estimations on time transfers but takes the age profiles from the European NTTA Databank (Vargha et al. 2016).

[13] 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 labor (Vargha et al. 2017).

[14] The source of data in this paragraph is the *cens_11htts_r2* table of Eurostat.

[15] Note also that this 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. 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.

[16] 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. 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 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. Note also that 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.

[17] Grandparental support and services are considered parental transfers here 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.

[18] 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.

[19] This NTA rule 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

[20] Lower discount rates and faster economic growth widen the gap (a 3 percent discount rate enlarges the parent/non-parent ratio from 1.78 to 1.85; a 3.0 percent growth has the same effect (1.83); more radical discounting and slow growth to the contrary).

[21] 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.

[22] See endnote 1.