

Artículo de revista:

Abio, Gemma, Patxot, Ció; **Rentería**, Elisenda; Souto, Guadalupe; Istenič, Tanja (2025). «Lifecycle Analysis of the Gender Gap in Paid and Unpaid Work by Household Structure». *The Journal of the Economics of Agein*, 32/100597 <https://doi.org/10.1016/j.jeoa.2025.100597>



Full Length Article

Lifecycle analysis of the gender gap in paid and unpaid work by household structure

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ARTICLE INFO

JEL codes:

J12

J16

J22

Keywords:

National Transfer Accounts

Intergenerational transfers

Unpaid work

Gender

Family

ABSTRACT

The paper provides new insights into men and women's lifetime contributions to the overall economy and societal well-being, taking both market and non-market activities into account. It extends the National Transfer Accounts (NTA) and National Time Transfer Accounts (NTTA) methodologies by including household structure – specifically, partnership and parenthood status – in the analysis. Using Spain as a case study, the results reveal the need to consider family characteristics to fully understand gendered patterns of economic production. Three synthetic indicators are defined that permit new insights concerning the well-documented gender gap. Interestingly, this gap is already present in singles (single women spend more time doing housework), reinforced in childless couples (by the division of labour) and most apparent when children are present. Visible in the indicator of family generosity, the latter dimension also shows the existence of a sizeable 'parenthood gap'. Addressing both gaps is particularly urgent in the context of accelerated population ageing given the potential implications it holds for fertility, care provision, and intergenerational support.

Introduction

The ageing process brings challenges due to three main trends from the last century. From an economic perspective, the extension of markets, globalisation, and technological progress have driven economic development. Concurrently, life expectancy has improved while birth rates have declined, altering the population's age structure. Third, democratisation has led to social policies being developed, including public education, healthcare, and pensions, collectively known as the welfare state. These economic, demographic and political changes are key areas of research in the social sciences, where focus is given to analysing their driving forces and impacts on welfare.¹

Although the full scope of the interaction effects remains unclear, one element may be found at the intersection of the three mentioned axes of social development: the change in gender roles and the corresponding adjustment in family structures. Improvements in economic

conditions have affected family arrangements, in turn influencing demography. Parallel to this, shifting economic opportunities have led to increasing population concentrations in urban areas associated with a range of socioeconomic impacts, including changes in families' living arrangements. Moreover, economic development has profoundly affected fertility and life expectancy, with feedback loops on economic growth. Technological change has helped to increase the returns to education, while educating children for longer periods has raised the aggregate costs of education. As female education and labour market opportunities have progressively improved, and access to contraception has become widespread, the opportunity cost of having children has grown, causing a decline in fertility. At the same time, in the second half of the 20th century the welfare state expanded its role to cover many costs once borne by individuals or their families, notably through (compulsory) public education, publicly funded healthcare, state pensions and other social policies, and this has also entailed significant

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E-mail addresses: abio@ub.edu (G. Abio), cio.patxot@ub.edu (C. Patxot), erenteria@ced.uab.cat (E. Rentería), guadalupe.souto@uab.es (G. Souto), tanja.istenic@ef.uni-lj.si (T. Istenič).¹ The literature in those disciplines has been growing during the demographic transition. For a discussion on the process of gender revolution, see Esping-Andersen (2017). See also Doepke and Tertilt (2016) for a revision of the attempts to integrate changes in family structure into dynamic macroeconomic models. For a recent analysis of key challenges to social links during the life cycle, see Settersten et al. (2024).<https://doi.org/10.1016/j.jeo.2025.100597>

redistributive effects. As a result, a significant portion of transfers that traditionally took place within families have been replaced by transfers publicly provided via the welfare state.

National Transfer Accounts (NTA) arose early in the 21st century as a valuable tool for understanding the generational economy (Lee and Mason, 2011; UN, 2013). By integrating age into national economic macroaggregates, NTA permit the way resources are produced, consumed, and shared among coexisting generations to be observed, providing a rich dataset for analysing the interplay of economic and demographic dynamics. Particularly noteworthy is the estimation of the transfers occurring in the private sphere – primarily within families – beyond resource allocation via the market and the public sector. In aggregate terms, total family transfers tend to balance out since recipients and donors mostly belong to the same economy. Analysing the direction and magnitude of these transfers across age groups may provide valuable insights into intergenerational dynamics and the roles different generations play in supporting each other.

NTA initially limited the estimates to the market economy, thereby overlooking non-market production and transfers, which are essential if one seeks to understand the full scope of human well-being. National Time Transfer Accounts (NTTA) emerged precisely to address this deficiency (Donehower, 2019). By utilising data from national time use surveys, NTTA measures non-market production, consumption and transfers – expressed in time units rather than money, where key activities include housework and caregiving (for children, people with disabilities and frail older adults). Due to the historical gender-based specialisation of work whereby men have dominated in market activities and women assume most of the non-market tasks, incorporating NTTA estimates by gender is vital to ensure a complete analysis. While focusing exclusively on market activities (NTA), women consistently show a bigger life cycle deficit as their consumption exceeds the income they make in the labour market production. However, this picture changes significantly when NTTA are considered (Renteria et al., 2016a; Donehower, 2019).

This paper aims to deepen understanding of the roles of the market, the state and the family in the provision of well-being, maintaining both the age and gender perspective and placing particular emphasis on the role of family characteristics. To that end, we develop an extension of the integration of the NTA and NTTA methodologies, consisting of further disaggregating estimates by age and gender according to household characteristics: partnership status, parenthood status, and household living arrangements. A disaggregation of this nature may be seen as a natural extension of the standard NTA and NTTA methodologies, allowing a better grasp of family transfers and a more in-depth investigation of the drivers underlying the gender gap.

With this analysis, the aim is to provide fresh insights into men and women's lifetime contributions to the overall economy and societal well-being through both market and non-market activities. We also present the results obtained in a case study of Spain, a country that experienced a radical (and successful) socio-economic transformation between the 1970 s (end of the dictatorship) and early 2000 s (Souto et al., 2025). Besides recording one of the highest economic growth rates during that period, Spain was able to consolidate its democratic system and a strong welfare state, albeit with a considerable delay compared to other Western European countries. Yet, simultaneously, Spain encountered other profound structural transformations. On one hand, demographic patterns saw radical changes, leading to the country being ranked among those most affected by population ageing. Spain has one of the lowest fertility rates in the world, yet it also ranks among the countries with the highest average life expectancy. Along with this, the economic shift from a mostly agrarian system to one based on industry – especially services – has caused a significant increase in urbanisation and relocation of the population. On the other hand, a major educational transition began in the 1980 s, with women gradually entering the labour market and gaining access to social rights previously denied to them. Overall, the political, economic, demographic and social

transformation of Spain makes it an interesting case study to observe the current role of family characteristics in the organisation of intergenerational transfers, focusing on the gender perspective and examining the interactions with welfare state policies.

The presented analysis makes three main contributions to the literature. First, it extends the standard NTA and NTTA methodologies by further disaggregating estimates according to family characteristics, hence offering a more comprehensive view for the analysis of intergenerational transfers. Second, the case study results confirm that it is essential to consider family characteristics to fully understand men and women's contributions to economic production (in both the market and domestic spheres) and, thus, to the well-being of society as a whole. Third, the results reveal that, alongside the well-known gender gap, there is also a 'parenthood gap', reflecting the significant difference between people with children and those without. The fact that the pronounced ageing process is affecting high and medium-income countries makes addressing this parenthood gap a crucial challenge because it may hold important implications for fertility rates.

The remainder of the paper is structured as follows. Section 2 presents a brief literature review. In section 3, a brief description is provided of the data sources and the standard NTA and NTTA methodologies, concentrating on their extension to deal with family characteristics. Section 4 presents the results for NTTA disaggregated by household structure for Spain. Section 5 shows the integrated results for NTA and NTTA and considers a set of synthetic indicators designed to capture the role of the family in age reallocations. Section 6 concludes with a discussion and final remarks.

Literature review

The study of intergenerational transfers has been a central research topic ever since Samuelson's (1958) foundational work that introduced overlapping generations models (OLG) in economic analysis. Although notable empirical research has been conducted on this topic (Willis, 1988, Lee et al., 1994; Auerbach and Kotlikoff, 1999), progress was long hindered by limited data availability. It was in this context that the NTA methodology emerged in the early 2000 s with a view to build a new international database to capture how resources are redistributed across age groups within countries. NTA allows for economic flows to be broken down by age in a given country and year, provided that the data are both consistent with, complementary to National Accounts. This has opened the door to a wide range of analyses that combine demographic and economic perspectives so as to assess the economic implications of population ageing and the impact demographic change has on economic growth – the 'demographic dividend'. The NTA methodology was first published in Mason et al. (2009), while Lee and Mason (2011) collected the first set of NTA estimates and applications for different countries. Later, the NTA methodology was published by the UN Population Division (UN, 2013). NTA is today a well-established methodology, and a large number of countries around the world have produced partial or complete estimates for several years.²

Indeed, NTA has helped fill a critical gap in analysis of the generational economy and opened new ways for advancing research in this field. Researchers soon realised that while incorporating the age dimension is fundamental, by itself it is insufficient to fully capture the dynamics of intergenerational transfers. Additional factors like gender, education, and socio-economic status are equally vital for a comprehensive understanding, and extensions of the original framework soon quickly to emerge. Disaggregating NTA by gender revealed strong differences in lifecycle patterns between men and women driven largely by the gendered division of labour: while men predominantly engage in labour market production, domestic tasks (including caregiving) are

² For more information on participating countries and available data, see the official NTA website <https://www.ntaccounts.org/>.

generally carried out by women in most countries. This highlighted the need to account for non-market production in the analysis and adequately acknowledge women's contribution to the economy and, in turn, to overall well-being. In response to this need, the National Time Transfer Accounts (NTTA) framework was developed (Donehower and Mejía-Guevara, 2012; Zagheni and Zannella, 2013; Vargha et al., 2016; Donehower, 2019).³ Several studies have since combined NTA and NTTA estimates to obtain a more nuanced picture about the reallocation of resources between generations and gender in the economy (Kluge, 2014 for Germany; Zannella, 2014 for Italy; Renteria et al., 2016a for Spain).

Other studies proposed disaggregating NTA beyond age and gender, such as by level of education or income quantiles as a proxy for socioeconomic status. NTA estimates were provided by Hammer (2015) for Austria and Abio et al. (2017) for Spain by level of education, albeit with slight differences in the imputation method. In each case, differences in labour income between the highest and the lowest educated proved to be higher than consumption differences, causing larger life cycle deficits for the less educated. Overall, both studies conclude that education is crucial to sustain the welfare state in an ageing society. Using NTA by education level, Renteria et al. (2016b) assessed the impact of the demographic and educational transitions in Spain and Mexico, finding that education acts in the two countries as an important mechanism for reducing the adverse effects of ageing. Recently, Renteria et al. (2024) performed a similar exercise for a set of European countries, while Choo and Gee (2024) analysed the case of Singapore and Oosthuizen (2024) did so for South Africa. The role of education was also studied by Kelin et al. (2023), although the focus was on the effects on unpaid work. Some studies also considered socioeconomic status using NTA estimates (Olivera, 2023; Rosero-Bixby, 2024; Bucheli and Gonzalez, 2024) and both NTA and NTTA (Mejía-Guevara and Rivero Fuentes, 2024).

Some studies explicitly considered the family characteristics inherent to NTA. Vanhuyse et al. (2023) estimated NTA and NTTA profiles of parents co-residing with their children and the rest (non-parents and those who not live with their children) of working age in 12 European countries. They propose an indicator for measuring the transfer cost of parenthood, concluding that parents bear larger contributions and, consequently, face a "reproduction tax" whereas the benefits of the presence of children are shared by the whole of society. Similarly, Hammer and Prskawetz (2022) provide partial NTA estimates for Austria to differentiate parents from non-parents while focusing exclusively on private transfers. Abio et al. (2021a) estimate NTA in Spain disaggregated by parenthood and partnership status, in addition to level of education. In that case, however, household structure was simplified to allow it to be implemented in a microsimulation model that only considered nuclear families.

One can also find parallel literature investigating the allocation of time with respect to the structure of the household. Sayer (2010) analysed trends and gender differences in housework (excluding childcare) in nine countries using Multinational Time Use Survey (MTUS) data for the period 1960–2000. The sample was limited to ages 20–49, focusing among others on the effects of marital and parental status. Neilson and Stanfors (2014) examined the impact of parenthood on men and women's time use across welfare state regimes in the 1990 s. Rubiano-Matulevich and Viollaz (2019) analysed time use data in 19 countries with different income levels and determined the marriage and parenthood penalty on time use patterns over the lifecycle. Chao (2022) investigated the difference in the housework gender gap among singles, persons in shared households, and married persons across time in the USA. Somewhat similar papers in this literature are Apps and Rees (2005) and Anxo et al. (2011), who looked at time allocation by gender, controlling for the different stages of life in various countries,

accounting for the presence of children in the household (and cohabitation in the latter). In our case, the use of NTA-NTTA permits a more complete measurement of the lifecycle pattern of the gender gap by age, including the monetary and non-monetary aspects, for individuals living in different household structures.

The research strands described above point to the need to incorporate family characteristics to obtain a deeper understanding of the gender gap in both market and non-market activities. In this paper, we seek to extend the analysis of the economy to more strongly encompass a gender perspective. Compared to previous papers, we contribute to the literature by providing a more exhaustive measurement of the whole lifecycle pattern of the gender gap by age, including the monetary and non-monetary aspects, for individuals living in various household structures, while considering a more detailed classification of family types and including a revised assumption about the household head to more accurately account for the gender gap.

Methodology and data

In this section, we briefly describe the NTA and NTTA methods and the data used to obtain the estimates for Spain, our case study. These estimates refer to 2010 due to the lack of any more recent data on non-market activities. As noted already, we are especially interested in adding a new dimension to the analysis, consisting of studying the role of family structure in the division of both labour and domestic responsibilities between men and women. Therefore, we extend the NTA-NTTA results and the methodological framework to estimate age profiles of market and nonmarket activities not merely by gender but also considering three additional characteristics: partnership status, parenthood status and household composition. In particular, we distinguish men and women who live on their own from those who live with a partner and those who live with their parents or other adults in the same household. In addition, we differentiate between parents and non-parents in these three cases, thus obtaining six individual types for each sex. Types 1–3 are groups of nonparents. Type 1 includes one-person households, Type 2 includes households composed of two people living in partnership while Type 3 includes the remaining childless individuals (singles, or in a couple, living with other adults (parents, grandparents, siblings, other relatives or nonrelatives)). Note that all children living with their parents who are not parents themselves are included in Type 3, and in fact account for most of the individuals in this category (around 90 %). In contrast, Types 4–6 include parents, living or not with their children, depending on whether they live with no other members apart from their offspring (Type 4), with a partner (Type 5), and the remainder (Type 6), which includes parents who live with at least one member other than their partner and their children. Parents living in extended families (i.e., more than two generations living in the same household) are included in this type and account for 54 % of this category.

The micro surveys we used allowed us to identify certain characteristics of the individuals living in the household, including their age and sex. However, individuals were not asked whether they were parents. The imputation of parenthood is then implemented as follows: the surveys contain information on the household level about the relationships among household members. In this way, we identify parents as individuals living with any children of their own or with their partner who is reported to be a parent (we regard childless partners of biological parents as parents). At older ages (age 50 onwards), we use another method because grown-up children tend to leave their parents' home and the number of parents is clearly biased downwards by the previous criterion. In this case, we employ the imputation method described by Abio et al. (2021b) and based on the Survey of Health, Ageing and Retirement in Europe (SHARE). The method assigns parenthood status based on age, gender, partnership status, education and income so as to account for the marginal distributions obtained from Zeman et al. (2014) and Kreyenfeld and Konietzka (2017).

³ The Counting Women Work (CWW) project webpage provides NTTA estimates for several countries (<https://www.countingwomenswork.org/>).

Fig. 1 shows the population structure in Spain according to our individual classification based on the European Union Statistics on Income and Living Conditions (EU-SILC) and the Spanish Time Use Survey (TUS), namely, the main micro surveys we used. The distribution in the two datasets is very similar. Most nonparents live in households with other adults different from a couple, with most of them being children living with their parents (men exceed women in this category). In the case of parents, the most common household consists of a couple. There are more women in single-parent households and co-living with other adults. Table A.1 in the Appendix provides details of the number of observations in the main microdata sets by sex and household structure.

National Transfer Accounts (NTA)

NTA started in the early 2000 s as an international collaborative project with the goal to build adequate data to analyse the generational economy. For that purpose, National Accounts are disaggregated by age, allowing one to observe how resources are produced, consumed and shared by individuals of various ages living in the same time period. Lee and Mason (2011) published the first comparative results for 23 countries. Today, over 90 countries belong to the NTA network and have at least partial estimations for 1 year. The United Nations Population Division (UN, 2013) revised and published the methodology. In Europe, a Horizon 2020 project (AGENTA) produced comparable estimates for 25 countries referring to 2010 (Istenič et al., 2016).

NTA starts with the following transformation of the basic identity of National Accounts:

$$YL + YA + TG^+ + TF^+ = C + S + TG^- + TF^- \quad [1]$$

where YL and YA are labour and asset income, respectively; C is consumption; S is savings; TG is public transfers and TF is private transfers. Positive and negative signs in transfers indicate whether individuals receive (inflows, +) or pay (outflows, -) them. In the case of public transfers, flows go from the public sector to individuals or vice versa: negative TG are taxes and social contributions, and positive TG are benefits received as pensions, unemployment benefits, family allowances, publicly funded healthcare, etc. Private transfers take place among individuals of various ages and sexes. Those that flow within households are especially important (e.g., children receive a significant amount by way of transfers from their parents). Eq. (1) represents the necessary equilibrium between income sources (left-hand side) and income uses (right-hand side). Introducing age (a) and rearranging Eq. (1), we obtain the general NTA equation:

$$LCD^a = TG^a + TF^a + ABR^a \quad [2]$$

where LCD (lifecycle deficit) represents the difference between consumption and labour income for each age, a , in the observed period, which needs to be financed through (or devoted to) the three channels on the right-hand side: net public transfers (TG), net private transfers (TF) and inflows related to the asset market (asset income less savings), named asset-based reallocations (ABR).

NTA estimates require the use of various micro datasets to obtain individual profiles. Each variable in equation [2] is broken down further into multiple components. For example, LCD, the difference between consumption (C) and labour income (YL) implies estimating public consumption and private consumption on one hand, and wages, including employers' social contributions, and self-employment income on the other. Moreover, public and private consumption are further disaggregated into categories (health, education, other consumption). The process is complex and requires a lot of information from various data sources. Specifically, the two mentioned micro surveys contain the core data needed, although other statistical sources or administrative data are also used. First, EU-SILC provides most of the information related to income (including taxes and transfers received in cash). Second, the Spanish Household Budget Survey (HBS) contains data on

private consumption and expenditures. Consumption and some income variables are only collected on the household level, and thus, data need to be individualised. The standard procedure in NTA methodology is to impute other consumption (i.e., expenditures on food, clothes etc.) to household members using an equivalence scale that assigns a lower weight to children. The consumption of health and education is distributed using specific imputation methods or regression analysis.

Taxes, social contributions, and cash transfers are taken from EU-SILC and are mainly reported on the individual level. In-kind transfers are imputed using administrative and related sources on use by age and gender. Family transfers are computed first, calculating each household member's surplus by subtracting individual private consumption from disposable income; then transfers from members in surplus are given to members in deficit. The resulting household surplus (or deficit) is transferred to (or financed by) the household head, who is assumed to save (or dissave) the remaining resources.

In standard NTA, there is only one household head (the main earner), who is the default recipient of household benefits, inter-household transfers, and asset income. In this paper, to eliminate gender bias and more effectively capture money transfers inside the household, we improved the procedure to estimate intra-household transfers by allowing saving to include all adult members of the household with a positive income.⁴ To that end, we distribute household benefits and inter-household transfers among all adults in the household; with asset income, we also impute it to adults but here as a proportion of their individually reported current disposable income. We redefine standard NTA disposable income by including asset income when computing private transfers. Accordingly, we attempt to more accurately estimate private transfers for men and women, with women now being viewed less as net recipients of private intra-household transfers as their disposable income increases. Overall, while this procedure brings greater consistency, our results do not vary much from those based on the traditional NTA assumption concerning the household head.

Once the individual profiles have been estimated, they are adjusted to match the macroaggregates provided by National Accounts, ensuring consistency between the NTA and SNA estimates.

National time Transfer Accounts (NTTA)

NTTA are an extension of NTA because they compute the productive activities happening outside the markets but which still contribute to economic well-being. Donehower (2019) established the general methodology, which proposes using the third-party criterion to identify unpaid productive activities (Reid, 1934) (i.e., activities that can be delegated to another person upon paying a certain price). We can estimate the production of these activities based on the time spent on them.

The characteristics of nonmarket production mean it is consumed instantaneously and, unlike market production, cannot be saved, borrowed or intervened in by the government. Hence, the main equation for NTTA slightly differs from that for NTA. Now, the nonmarket LCD is defined as the difference between the consumption (CT) and production (YT) of domestic activities, both measured in units of time. The resulting deficit (surplus) has to be covered by transfers from/to other members of the community, typically other family members. TFTI and TFTO represent the private transfer of time individuals receive and give, respectively. Therefore,

$$CT - YT = TFTI - TFTO \quad [3]$$

Like with the case of NTA, we estimate the Spanish NTTA profiles for men and women separately, disaggregating them by parenthood status

⁴ Co-residing adult children can also be net givers. Using EU-SILC data for 19 European countries, Iacovou and Davia (2019) show that adult children give support to their parents while they live in the same household.

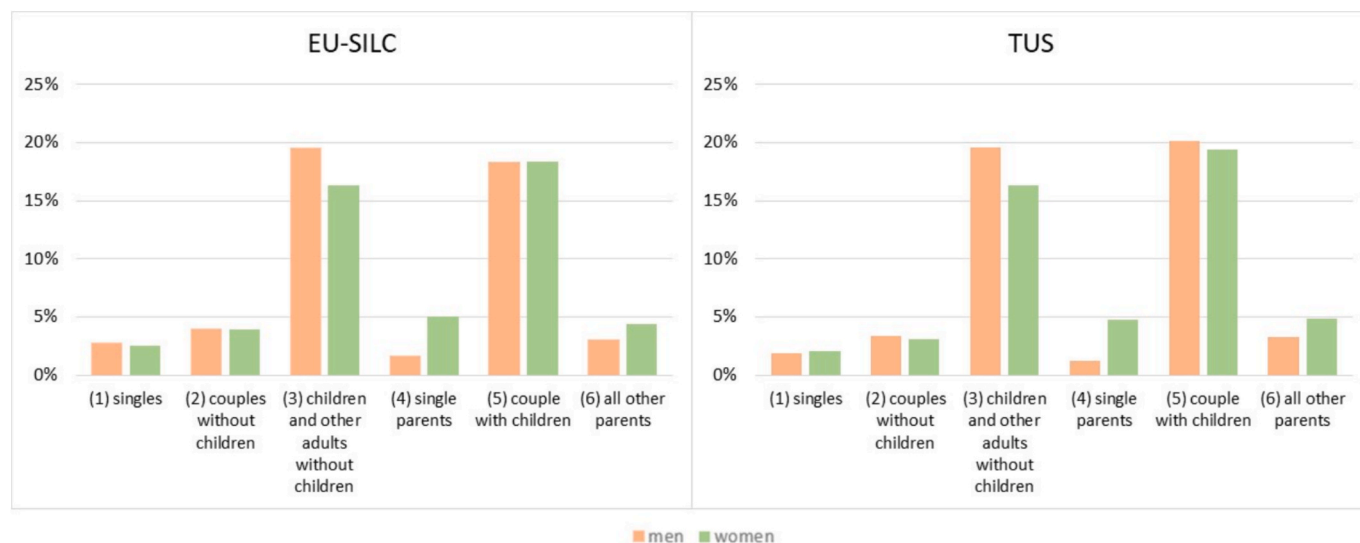


Fig. 1. Population composition by sex and household structure according to EU-SILC (2010) and TUS (2009–2010) Source: Authors' elaboration.

and household composition. The data come from the Spanish TUS 2009–2010, involving a sample of 25,895 people living in 9,541 private households. Over a 24-hour period, all members who were at least 10 years old completed an activity diary in which every 10 min they reported their current activities.

Domestic activities are divided into household work (cleaning, cooking, shopping, household management, gardening etc.) and care, differentiating childcare from adult care, within and outside the household. Following the standard NTA procedure, we only consider the main activity reported in the event a secondary activity was happening at the same time. This causes some activities to be underestimated, typically care, which is often performed alongside other household chores.

By its construction, the TUS provides all the information required to estimate NTA production profiles. Yet, certain assumptions are needed to obtain NTA consumption profiles. Household work activities are assumed to hold the characteristics of a public good inside the household; therefore, the time each household member reports is evenly divided among all household members. For care activities, we regress each type of care production on the number of individuals in each age group, separating children (under age 18) and adult consumers. Care for people living outside the household cannot be broken down into adult or children care, and we assume their age profile is the same as that of the whole sample. Transfers are obtained as the difference between production and consumption profiles.

In the second step, to make them comparable to NTA, the NTA profiles must be monetised. Following the NTA methodological framework, we opt to use the replacement cost to determine the value of nonmarket activities using the following strategy. We distinguish household chores, childcare, adult care and other care (a small part that cannot be classified based on the recipient's age). For housework, we take the minimum wage established by law in 2010 for domestic workers. We determine the value of childcare and adult care based on the minimum legal wage for workers in specific institutions that provide such services (nurseries for childcare, centres to help people in need of adult care). In this case, we use the median wage for the skill categories, although it is still a low amount. Finally, for other care, we opt to use the minimum legal wage. As shown in Table 1, the wages finally used to express home production in euros are low compared to the average wage in Spain in the same year. This difference implies that our results for the value of nonmarket activities should be viewed as the minimum. To test our valuation method, we conduct a sensitivity exercise where the average wage for the whole economy is used to assign a monetary value

Table 1

Replacement wages used to monetise domestic activities in Spain (2010).

	Amount per hour (€)
Housework	5.60
Childcare	6.50
Adult care	7.70
Other care	5.50
Average wage	13.00**

(**) The average wage per hour is obtained from the annual average wage estimated by the National Institute of Statistics (INE), where a year is seen as entailing 1,750 h of work.

Source: Authors' elaboration based on data from INE and collective agreements.

to nonmarket activities.

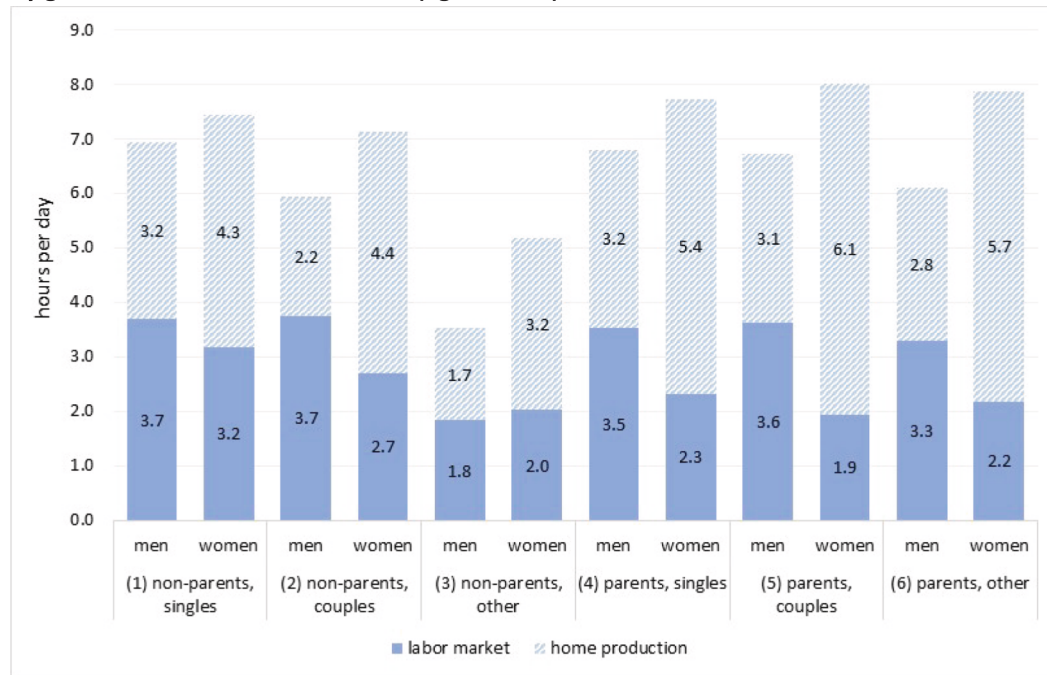
Extended National time Transfer Accounts (NTTA): Accounting for household structure

In this section, we present estimations of NTA for Spain disaggregated by sex and household structure. First, we look at total time worked in the market and in home production for ages 20–64 (see Fig. 2). Our results confirm previous findings that show women bear the biggest share of nonmarket production. The same result was established for Spain (Renteria et al., 2016a) and other European countries (Vargha et al., 2017) using standard NTA estimations by age and gender. More generally, the data produced in the Counting Women's Work (CWW) project show the share of market and home production performed by women in various countries varies substantially. For example, in India, where nonmarket activities account for the largest observed percentage of GDP (45 %), women's contribution to market and home production is 29 % vs 91 %. On the contrary, in the USA and Spain, with estimated home production of 31 % and 24 %, respectively, of their GDP, women's contribution to market and nonmarket production is respectively 42 % vs 62 % and 39 % vs 63 %.⁵

The biggest novelty of our analysis is the household dimension considered. The aim here was to disentangle how living arrangements and parenthood affect men's and women's participation in both the

⁵ Data extracted from the Counting Women's Work (CWW) project, available at <https://www.countingwomenswork.org/publications/infographics>.

a) Average (per capita) number of daily hours of work (labour market and home production) by gender and household structure (ages 20–64)



b) Average number of daily hours devoted to home production by type (ages 20+)

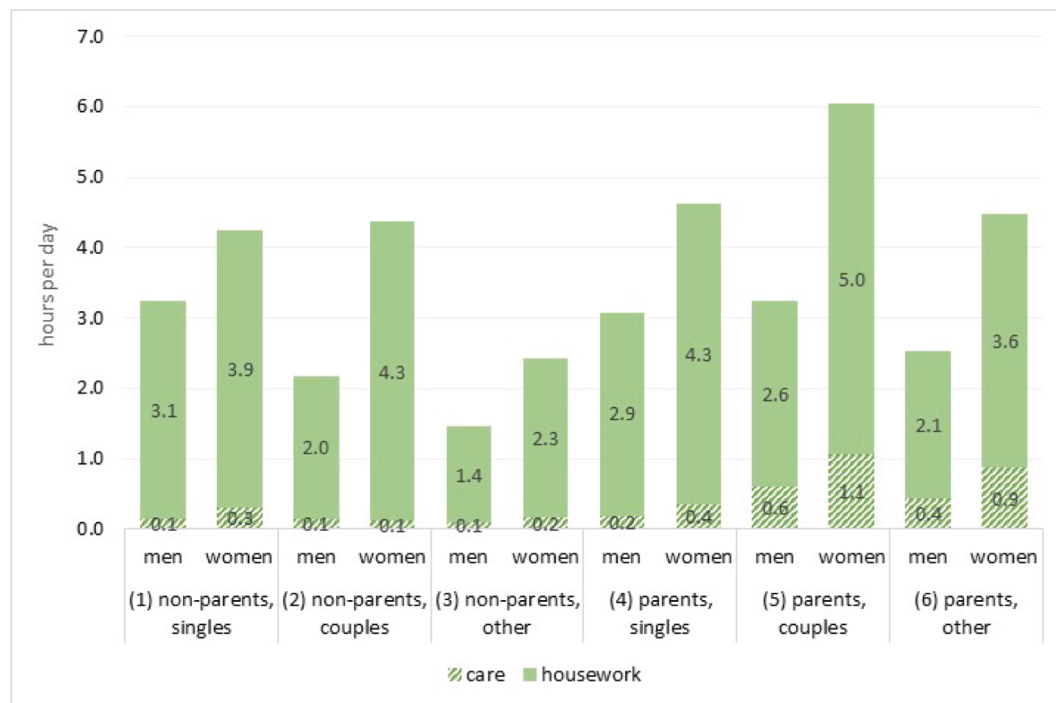


Fig. 2. Time allocation in productive activities a) Average (per capita) number of daily hours of work (labour market and home production) by gender and household structure (ages 20–64) b) Average number of daily hours devoted to home production by type (ages 20 +) Notes: Weighted average for ages 20 + obtained from per capita age profiles Source: Authors' elaboration.

labour market and home production. This is why our results are presented starting at age 20. It is worth noting that due to the detailed disaggregation pursued in a few specific cases the profiles were obtained with a small number of observations and thus the results must be taken carefully. This is the case of single fathers younger than 40 and non-parents aged 75 + living with others (see Table A.1 in the Appendix).⁶

Disaggregating production by household structure, panel a) in Fig. 2 confirms that total time worked is higher for women irrespective of the type of household. Even with singles, among which the gender gap is the smallest, single women work half an hour more per day than single men. Similarly, the distribution between market and home working time reveals a gender gap even for childless singles, with women devoting more time to home production and men more time to the labour market. Among childless couples, these gender gaps increase, suggesting some degree of gender specialisation. The third group of individuals (non-parents, other) has the lowest figures for time worked because the majority of individuals in this category are children (who are not parents themselves) who live with their parents, and many do not work. Still, a significant gender gap in housework is revealed for children living in the same household. In line with Domínguez (2012) and Dribe and Stanfors (2009), we find that the gender gaps in market work and home production are bigger for all types of parents (singles, living as a couple, living with others). The age profiles of home production for each type of individual (Fig. A.1 in the Appendix) reaffirm that women devote more time than men to home production at any age.

Table 2 compares the average number of hours devoted to home production for two broad age groups: 20–49 (typically related to child rearing and more strongly affected by participation in the labour market) and 50 + . Each box contains data for both sexes in each household structure and summarises the differences by sex (average hours worked by women compared to men) and age group (average hours worked by people aged 20–49 compared to those aged 50 +).

The data in Table 2 reveal interesting results that capture the effect of the gender gap (shown in the columns) and age (shown in the rows). First, as stated above, women always participate more in nonmarket production, regardless of age group and household structure. Second, in households without children, those aged 50+, compared to those aged 20–49, work more hours in home production for both sexes. The exception is men living as a couple, who contribute slightly less to nonmarket activities. However, the situation is clearly reversed for parents. Even though individuals aged 50 + tend to leave the labour market, they do less home production because children are less commonly present in the household, reducing the need for the care and household chores associated with childrearing. One exception is single fathers, albeit no conclusions can be drawn due to the limited data for this group. The last row in the table shows the difference in hours explained by the presence of children in each household structure. The ratio is greater than 1 (and larger for women) for ages 20–49 (once again, except for single fathers), and is smaller and typically lower than 1 for ages 50 + . The lower labour market participation and children's emancipation have opposite impacts on home production. The combination of effects implies that men 50 + living as a couple do less nonmarket work if they are parents. Another interesting pattern is the size of the gender gap for individuals who live with others, which is even bigger when they are parents. Overall, the gender gap in nonmarket work is explained not simply by the presence of children but by co-residence and the effect of age as well.

Differences in the consumption of nonmarket activities are considerably smaller than those observed for production (see Fig. A.1 in the Appendix), partly because the former is registered in surveys on the

household level and must therefore be individually imputed. The largest gender differences occur in single households, in which women consume (and produce) significantly more than men. This is consistent with findings presented in the literature (South and Spitze, 1994). For men and women, nonmarket consumption tends to increase until ages 60–65, before slightly decreasing later.

As explained above, total production must exactly match total consumption at any given moment. Consequently, any differences appearing between home production and consumption can only be explained by the existence of time transfers among individuals within (intra-household) or between (inter-household) households. Fig. 3 distinguishes the per capita age profiles of time transfers received (inflows) and given (outflows). The figure starts at age 20 because our analysis focuses on differences among adult individuals based on their partnership status, parenthood status, and household composition. As may be expected, transfers are very small in one-person households where only inter-household transfers might occur, indicating that most time transfers happen in multi-person households. Time transfers are especially large for parents and for ages associated with child rearing. Irrespective of age and household structure, we observe that women's outflows are always greater than men's and larger than their inflows (except among very old single mothers and mothers living with others), indicating that the greater amount of time women spend on nonmarket activities is actually transferred to other individuals, not just consumed by themselves. Overall, Fig. 3 shows that the gender gap, especially strong among parents, decreases with age.

Combining NTA and NTTA disaggregated by living structure

To complete the picture of men and women's actual role in the economy, we need to combine the domestic activities shown above with market activities. To accomplish that, an estimation of traditional NTA with the same level of disaggregation used for NTTA is needed. We obtain these estimates following Abio et al. (2021a), changing the definition of individual types and refining the household head assumption.

Fig. 4 shows the per capita age profiles of total production from market (NTA) and nonmarket (NTTA) activities for ages 20 + . NTTA profiles are monetised for convenience, as explained in section 2. In the small box in the top-right of the figure, the relative magnitude of market and nonmarket production is plotted, obtained as a weighted average for all ages. The figure reveals interesting differences between men and women, but also by type of household structure. First, we observe that men show more market production than women due to their greater participation in the labour market and the gender wage gap. The main exception is nonmothers living with others who earn more than their male counterparts, consistent with the higher female labour market participation seen in Fig. 2. Differences are minor for singles, with a small gender gap in the early years of their careers that vanishes and even reverses at higher ages when women earn slightly more than men. In contrast, women living as a couple without children and all mothers show labour income profiles significantly lower than men in the same situation.

When we sum up both types of production, the total value is higher for men in most cases partly due to the low monetary amount assigned to home production because, as Fig. 2 shows, total work time is higher for women. However, Fig. 4 reveals that nonmothers living alone or with other adults produce more than men at almost every age. With the remaining household structures, this only happens after retirement age (65 +), when nonmarket activities become the main mode of production.

Despite the low value attributed to nonmarket activities, our results show that on average they represent 34 % of the total value of production, with relevant differences by gender and household structure. On average, home production accounts for 47 % of total women's production but just 22 % of men's, and the share of nonmarket activities in

⁶ All NTA and NTTA profiles are obtained for 5-year age groups to minimise the limitations posed by the small number of observations in some categories (see detailed data on the number of observations by category in Table A.1 in the Appendix).

Table 2

Average nonmarket production by broad age groups, gender, and household structure (in hours per day).

	(1) non-parents, singles			(2) non-parents, couples			(3) non-parents, other		
	men	women	Gender Gap: women/men	men	women	Gender Gap: women/men	men	women	Gender Gap: women/men
20–49	3.2	4.0	1.28	3.3	4.1	1.25	1.5	2.3	1.52
50+	3.5	4.5	1.29	3.2	5.2	1.62	2.5	4.1	1.67
Age effect: 50+/20–49	1.10	1.11		0.98	1.27		1.64	1.80	
	(4) parents, singles			(5) parents, couples			(6) parents, other		
	men	women	Gender Gap: women/men	men	women	Gender Gap: women/men	men	women	Gender Gap: women/men
20–49	2.6	5.5	2.11	3.7	6.6	1.76	2.9	5.8	2.00
50+	3.0	4.4	1.44	2.8	5.5	1.95	2.3	3.9	1.68
Age effect: 50+/20–49	1.17	0.80		0.75	0.84		0.80	0.67	

Source: Authors' elaboration



Fig. 3. Age profiles of time transfers received (inflows) and given (outflows), by gender and household structure (in hours per day) Source: Authors' elaboration.

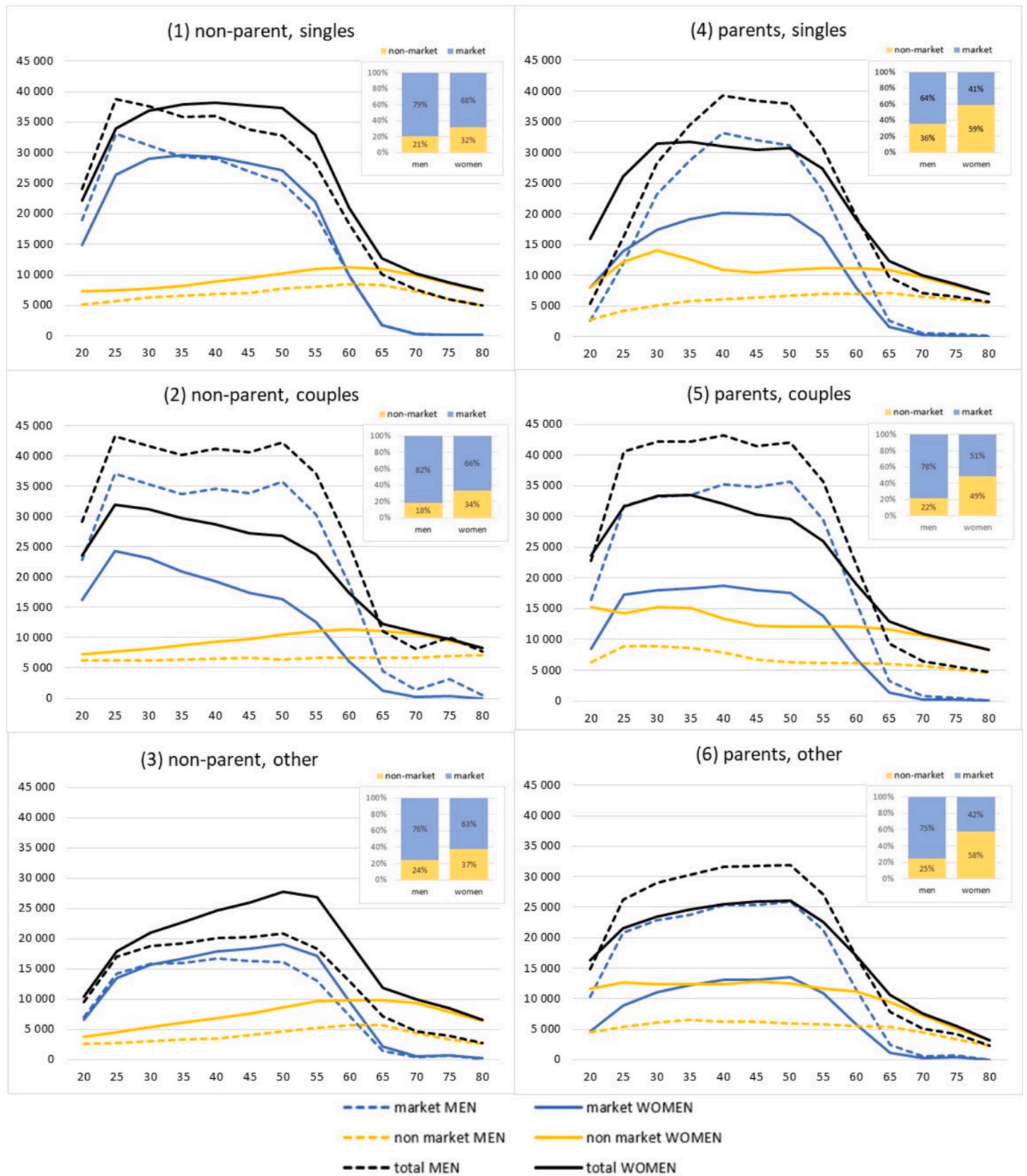


Fig. 4. Per capita age profiles of production (market, nonmarket, total), by gender and household structure (in euros per year). [Bar graphs: share of market and nonmarket over total production by gender] Source: Authors' elaboration.

total production is greater for women in all households. It is worth observing the significant differences between non-mothers living alone, and those living as a couple, where the latter have a considerably lower age profile of market production. For parents (compared to childless individuals), the age profiles of home production increase significantly

for women, yet only slightly for men aged 20–45 (associated with the raising of small children). Altogether, our results confirm that women are specialised in home production, particularly when they are mothers. In contrast, men's home production remains significantly below women's in all households.

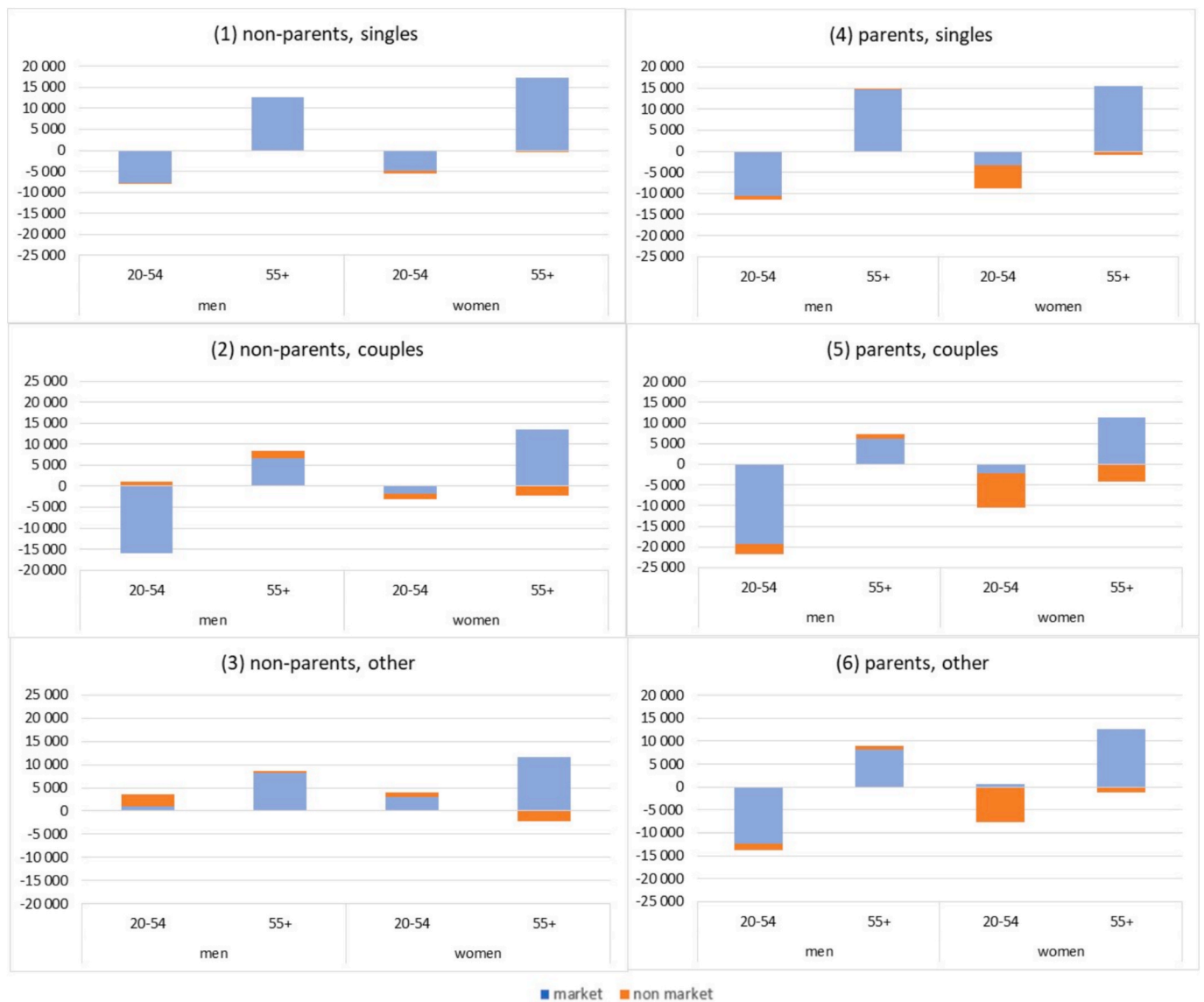


Fig. 5. Average per capita life cycle deficit (LCD) from market and nonmarket activities by broad age groups, sex, and household structure (in euros per year) Source: Authors' elaboration.

To evaluate the effect of the amount in euros used to monetise home production, we conducted a sensitivity test that considered the average wage in the economy instead of the lower replacement wage used in the base scenario. Fig. A.3 in the Appendix compares the value of total production using the two alternative values. The effects of increasing the valuation are quite substantial. The hidden value of women's home production now becomes apparent. Accordingly, the value of total production is similar or even higher for women in all household structures throughout their adult life, except those in couples without children (recall that women in this case reduce market production). Particularly in couples with children, even though the gender gap in total production that previously was observed over one's working lifetime, practically disappears, the gender labour division remains.

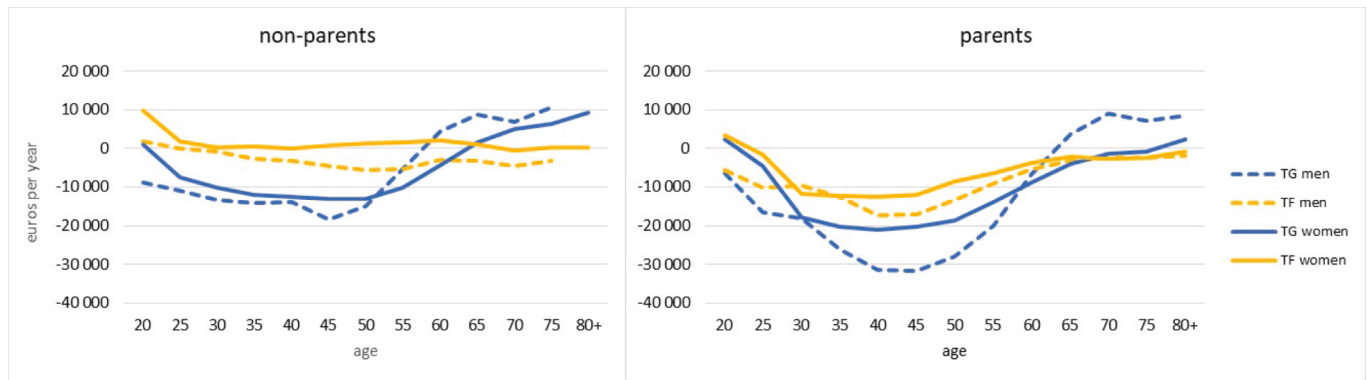
Consumption has a smooth shape along the lifecycle for market and nonmarket services, but it can increase towards the end of life. Figs. A.1 and A.2 in the Appendix show detailed age profiles for nonmarket and market consumption, respectively. In summary, the consumption of home activities is considerably below those directly purchased in the market. Differences by sex and household structure are low, partly due

to the limits the data pose for the imputation process. Nevertheless, some differences remain. When living alone, women consume more than men (from both the market and home production). Something similar (with smaller differences) happens when they live with more adults. However, when they live as a couple without children and when they are mothers their consumption age profiles are very close to men's. The results also show that parents' consumption is significantly lower than that of nonparents, especially until age 50–55. This applies to the consumption of both market and home activities and is related to economies of scale in household consumption.

One can obtain the LCD by combining the production and consumption age profiles. Fig. 5 shows the average LCD resulting from each household structure by men and women, differentiating two broad age groups: 20–54 and 55+. Further, we differentiate the LCD derived from NTA (only market production and consumption) and from NTTA (nonmarket activities).

For both market and nonmarket LCD, differences by sex are higher at younger ages than at older ages. In addition, nonmarket LCD gender differences are more prominent among younger parents (in any

a) Per capita age profiles of net public (TG) and total (market and nonmarket) private (TF) transfers



b) Per capita age profiles of total (market and nonmarket) private transfers received (TFI) and given (TFO)

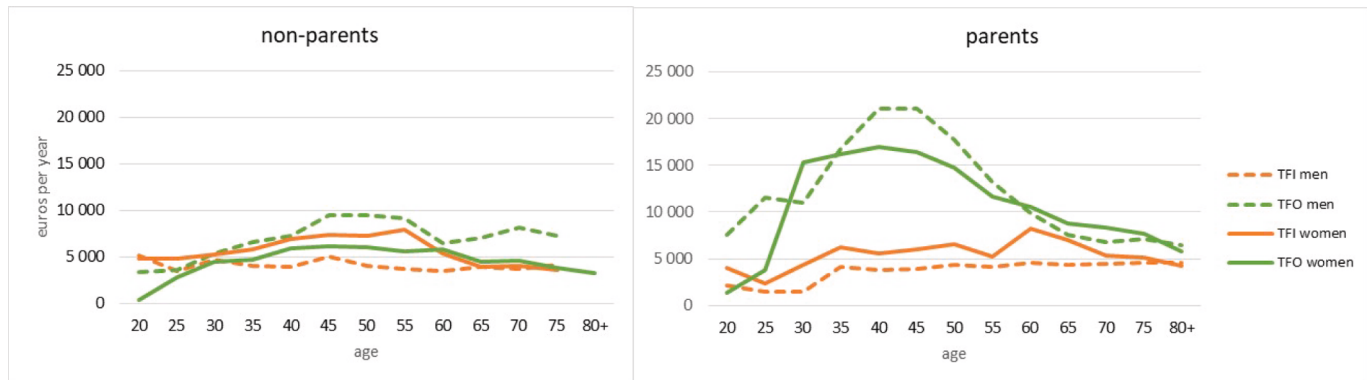


Fig. 6. Per capita age profiles of transfers for parents and nonparents (in euros per year) a) Per capita age profiles of net public (TG) and total (market and nonmarket) private (TF) transfers b) Per capita age profiles of total (market and nonmarket) private transfers received (TFI) and given (TFO) Source: Authors' calculations.

household structure) than non-parents. Regarding the market LCD, gender differences are larger among couples and parents living in other arrangements.

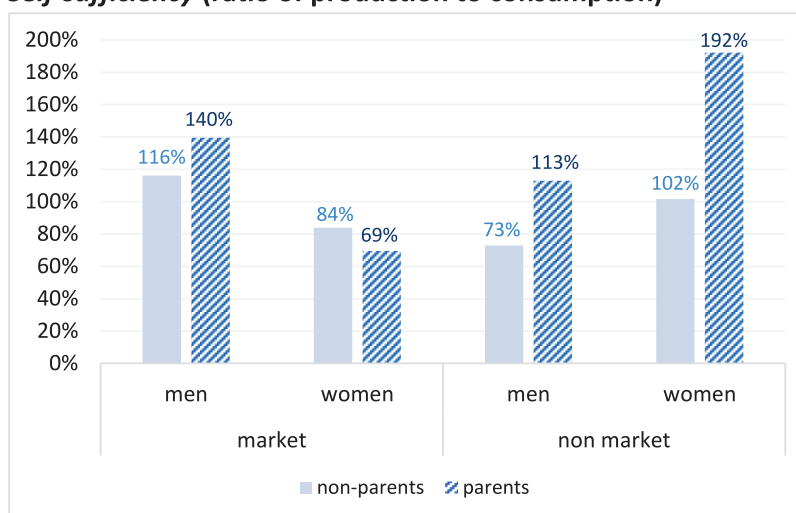
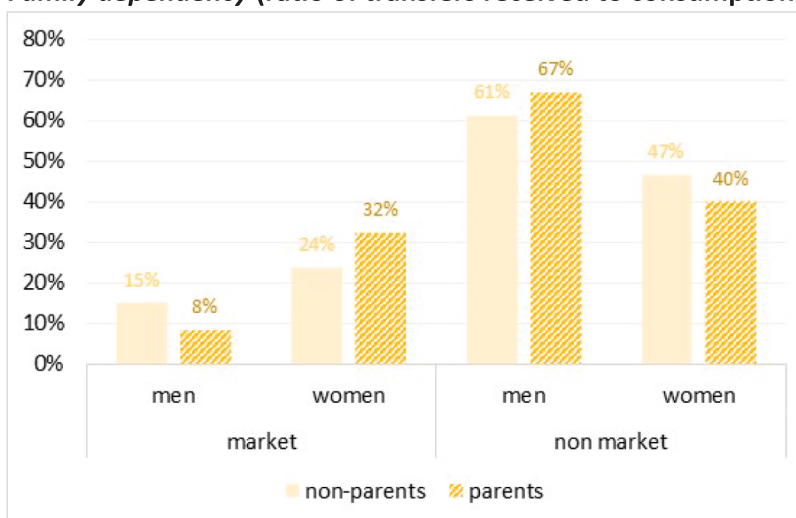
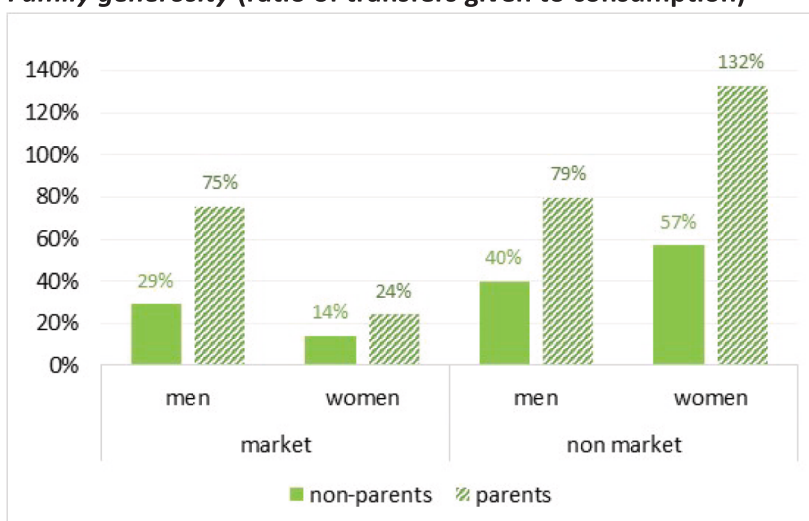
In the younger age group, the market LCD is only positive (consumption exceeds production) for childless individuals who are still living with their parents and for mothers living with others; the negative values for market LCD elsewhere in this age group are generally much stronger for men, only being more similar for men and women living alone. The market LCD is always positive for ages 55+, when most people leave the labour market. As for nonmarket activities, women show a surplus in all household structures, except in the 20–54 age group when they are childless and living with their parents. The surplus is especially large for mothers in the 20–54 age group. Men in the 20–54 age group, however, show a much smaller surplus when they are fathers, having the biggest deficit in nonmarket activities when they are childless and still living with their parents.

Differences by sex observed in LCD are even higher when we use the average market wage to monetise nonmarket activities, as shown in Fig. A.4 in the Appendix. The results of the sensitivity test, that increase the value of home production, imply that women have a greater total surplus in working age and a smaller total deficit in the 55+ age group, which becomes a surplus in certain household structures.

Fig. 6 summarises the market and nonmarket transfers occurring in the economy, including private and public ones. In this case, we present

the results by parenthood status since this is the main characteristic driving the differences in private transfers. Panel a) summarises the age profiles of net private and public transfers (received minus given). Public transfers are negative up until retirement age (a little earlier for men), reflecting taxes paid, before they become positive (transfers received). As may be expected, men give and receive more than women due to their greater participation in the labour market; these differences are more pronounced in the case of parents. Regarding private transfers, men are net givers throughout their whole adult period (independently of parenthood status), and the same happens with mothers, whereas childless women have a profile very close to zero. It is interesting to observe that private transfers become considerably more negative for parents of childrearing age (25–54), especially for men (who have higher labour income). Panel b) focuses on private transfers, differentiating the age profile of inflows and outflows. It shows that the larger amount of transfer outflows by parents with young children is what drives the differences in net transfers observed in panel a).

To form a clearer picture of the overall importance of transfers that are made in families, we propose a set of synthetic indicators to help determine how resources are produced, consumed and shared among individuals. All three indicators are obtained as a weighted average for ages 20+. For reasons of simplicity, we focus on differences between parents and nonparents. It is worth noting that the effects of the choice of the monetisation criterion for valuing nonmarket variables are

a) Self-sufficiency (ratio of production to consumption)**b) Family dependency (ratio of transfers received to consumption)****c) Family generosity (ratio of transfers given to consumption)****Fig. 7.** Indicators of private transfers Source: Authors' elaboration.

minimised in these indicators because they are defined as ratios.

Panel a in Fig. 7 shows *self-sufficiency*, defined as the ratio between production and private consumption. We observe that men are always self-sufficient in market activities, and in nonmarket activities only when they are fathers, whereas women are always self-sufficient in nonmarket activities. Parenthood boosts self-sufficiency indicators for men, reflecting their greater involvement in market and domestic work when they become fathers. For women, market self-sufficiency is lower among mothers due to their reduced labour market participation. Still, mothers produce nearly twice as much as they consume in domestic activities.

Family dependency (see panel b) is defined as the ratio of transfers received to finance private consumption across ages. This indicator focuses exclusively on private transfers (monetary and nonmonetary), and shows which share of private consumption is financed by transfers received from other members of the community (typically the family). Like the results observed for *self-sufficiency*, there is a different pattern by sex in market and nonmarket activities: men tend to depend less on market transfers (because they receive more labour income) while women need fewer nonmarket transfers (because they dominate in home production). By parenthood status, the identified pattern is reinforced: dependency on monetary transfers decreases for fathers and increases for mothers whereas the opposite happens with nonmonetary transfers.

Finally, panel c shows the *family generosity* indicator, defined as the ratio of transfers given to own consumption. This indicator is computed as the ratio of private transfers given to private consumption, ignoring publicly provided services. The results reveal that *family generosity* is an outcome of being parents (generosity ratios are double those observed for nonparents). Further, men reveal a higher rate of generosity in market activities while women are more generous in providing home services (nonmarket transfers given by mothers reach up to 132 % of their consumption). These results show that the gender gap is interacting with what we might call a ‘parenthood gap’.

Discussion and final remarks

This study offers a quantified view of the ways resources move across age groups through the family, market, and public sector, while considering differences by household structure to more deeply examine the gender gap of paid and unpaid work. Using cross-sectional data, we aimed to give an approximation of how needs are financed along the lifecycle, by gender and family type. To do that, we started with the NTA method and the extension developed to account for nonmarket production and consumption in gender profiles (using NTTA) and also introduced heterogeneity in parenthood status and household structures.

Our results corroborate previous analyses showing that women work more hours than men in total and that they specialise in home production, and that this is strongly defined by the household structure they live in. The first striking feature is seen when we compare singles with couples without children. Women, even when living alone, spend more time in home production than men, while the time they spend in the market is only slightly less than for men. Second, the household labour division is quite substantial already in couples without children. In fact, men in childless couples devote less time to home production than single men with similar paid employment, whereas childless-coupled women decrease their participation in the labour market and only slightly increase their home production compared to singles. As expected, the presence of children in the household reinforces this labour division.

As a result of greater nonmarket production during all adult life and for all household structures, women are net givers of nonmonetary transfers. Most of those transfers occur within the household, and in the case of parents, the lion’s share goes from parents to children.

To complete the picture of men and women’s roles in the economy, we combined market with domestic activities, monetising the latter.

Nonmarket production was estimated to reach 34 % of total production, even when we assign quite a low monetary value to time. Most of these activities are performed by women, who always work more hours than men. Nonetheless, the value of total production is higher for men because of the low value ascribed to household and care time, as shown in the sensitivity analysis. Only nonmothers living alone or with other adults different from a partner produce more than men almost at every age. In the remaining household structures, this only happens after retirement age (65 +).

Further, the differences observed in the value of production by gender and household structure and the smaller differences observed in consumption are reflected in the LCD. The market LCD follows the typical life cycle pattern (a surplus for 20–54 and a deficit for 55 +), the former being higher for men and the latter higher for women. In contrast, the nonmarket LCD follows a gender pattern: women tend to have a surplus and men a deficit, as described in previous works. Women always show a surplus in nonmarket activities, irrespective of the household structure (even when living alone). This surplus is especially large for the 20–54 age group and those living in households with children. Men, in turn, show a deficit as soon as they live with women or other people, except when raising children.

Individuals who have a surplus can transfer money or time to other household members. We computed three indicators to assess the overall transfers involved in providing well-being. Focusing on gender and parenthood status, we found that throughout their adult period parents are more *self-sufficient* (they compensate for their consumption with their production) than nonparents, except for women in market activities. Moreover, men are self-sufficient in market activities whereas women are self-sufficient in nonmarket activities. We also assessed dependency and generosity with respect to total family transfers (monetary and nonmonetary). On one hand, men depend less on market transfers whereas women need fewer nonmarket transfers, and parenthood status reinforces this pattern. On the other hand, *family generosity* is especially important for parents (generosity ratios are twice those observed for nonparents). As expected, men show greater generosity in monetary transfers while women are more generous in providing home services.

Overall, our results show interesting interactions among gender, parenthood, and household structure. The gender gap is already present in singles (single women spend more time on housework), becomes reinforced in childless couples (by labour specialisation), and is most apparent when children are present. This latter dimension is visible in the indicator of family generosity, showing the existence of a ‘parenthood gap’. Further research is needed in the evaluation of home production, which significantly underestimates women’s contribution to economic activity. The sensitivity test using the average wage instead of the replacement rate to monetise home production revealed that the results depend heavily on the value chosen. The availability of new TUS longitudinal data would allow researchers to determine to what extent cohort effects affect the results, and thereby acquire a better understanding of what causes the gender gap in production and how this interacts with the transfer capacity to provide welfare to economically dependent individuals.

CRedit authorship contribution statement

Gemma Abio: Writing – review & editing, Visualization, Validation, Software, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Ciò Patxot:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Conceptualization. **Elisenda Rentería:** Writing – review & editing, Visualization, Validation, Software, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Guadalupe Souto:** Writing – review & editing, Writing – original draft, Visualization, Validation, Software,

Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Tanja Istenič:** Writing – review & editing, Visualization, Validation, Software, Resources, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgement

We herewith acknowledge data provision for EU-SILC by Eurostat and the European Commission, respectively. We also acknowledge all institutions and statistical agencies that provided data we used in our

estimations.

This work was financially supported by the Spanish Ministry of Science, Innovation and Universities, Spain [grant number PID2020-114040RB-I00, PID2023-152779OB-I00 and Ramon y Cajal grant number RYC-2017-22586]; the Catalan Research Agency [grant number 2021SGR00678, 2021SGR762 and CERCA program]; the following Slovenian Research Agency grants: P5-0128, J5-4575, J7-4540; the Horizon 2020 Joint Program Initiative More Years, Better Live's second joint transnational call (WELLCARE project Spanish grant numbers PCI-2021-121913, PCI2021-121975); and the European Union's Horizon Europe Research and Innovation Programme under Grant Agreement number 101095175 (SUSTAINWELL project) and the UK Government. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or UKRI. Neither the European Union nor the UK can be held responsible for them.

Appendix

Appendix of: Lifecycle analysis of the gender gap in paid and unpaid work by household structure.

Table A1

Number of observations in the main microdata sets (EU-SILC, HBS and TUS), by gender and household structure (Spain, 2010).

REPRESENTATIVENESS OF SAMPLES																		
(1) non-parents, singles							(2) non-parents, couples						(3) non-parents, other					
	Men			Women			Men			Women			Men			Women		
age	SILC	HBS	TUS	SILC	HBS	TUS	SILC	HBS	TUS	SILC	HBS	TUS	SILC	HBS	TUS	SILC	HBS	TUS
0-4	0	0	0	0	0	0	0	0	0	0	0	0	853	1,842	760	809	1,622	675
5-9	0	0	0	0	0	0	0	0	0	0	0	0	902	1,706	697	912	1,719	650
10-14	0	0	0	0	0	0	0	0	0	0	0	0	887	1,697	684	807	1,648	630
15-19	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	999	1,828	484	882	1,716	442
20-24	23	21	<20	<20	<20	<20	<20	36	<20	34	67	20	910	1,709	398	839	1,417	378
25-29	56	57	22	46	61	25	84	200	62	134	291	94	726	1,257	305	535	874	272
30-34	94	106	47	71	74	50	210	416	128	183	407	135	445	689	180	290	439	128
35-39	84	125	62	66	68	32	126	285	99	101	263	89	283	459	121	159	253	88
40-44	94	129	54	62	87	35	99	212	74	113	170	59	186	365	115	132	204	75
45-49	87	128	50	62	79	40	72	191	64	107	214	75	177	259	99	104	199	66
50-54	<20	38	<20	80	84	33	92	172	59	77	198	42	42	72	34	56	122	50
55-59	34	34	22	51	80	36	87	184	38	94	151	48	36	55	25	26	60	21
60-64	64	88	35	42	70	31	87	148	52	76	116	38	40	72	23	30	58	<20
65-69	35	56	32	61	74	36	75	105	35	54	84	28	20	36	<20	28	37	<20
70-74	<20	43	21	55	84	48	56	67	25	45	68	24	<20	<20	<20	<20	23	<20
75-79	26	26	<20	70	106	55	48	90	28	39	57	20	<20	<20	<20	<20	23	<20
80+	<20	37	28	111	130	81	58	66	20	36	34	<20	<20	<20	<20	40	77	25
TOTAL	644	888	422	798	1,014	510	1,108	2,174	699	1,096	2,128	684	6,529	12,088	3,945	5,676	10,491	3,545
(4) parents, singles							(5) parents, couples						(6) parents, other					
	Men			Women			Men			Women			Men			Women		
age	SILC	HBS	TUS	SILC	HBS	TUS	SILC	HBS	TUS	SILC	HBS	TUS	SILC	HBS	TUS	SILC	HBS	TUS
0-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5-9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-19	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
20-24	<20	<20	<20	<20	<20	<20	<20	<20	<20	27	81	31	<20	31	<20	40	87	23
25-29	<20	<20	<20	<20	<20	<20	60	171	65	134	318	97	26	50	<20	69	116	42
30-34	<20	<20	<20	34	56	26	302	715	272	496	1036	401	40	84	26	78	151	71
35-39	<20	<20	<20	64	114	47	689	1359	482	768	1584	611	56	124	43	100	186	73
40-44	<20	<20	<20	103	167	82	819	1717	554	914	1834	647	87	135	54	135	244	97
45-49	<20	<20	<20	121	182	73	874	1718	600	887	1688	618	110	175	58	139	234	113
50-54	81	103	50	141	201	93	848	1586	544	836	1497	541	218	307	111	180	314	120
55-59	69	98	42	150	203	101	698	1194	455	661	1184	474	129	287	108	139	294	114
60-64	29	50	41	168	240	96	679	1180	444	655	1049	446	104	192	95	118	255	106
65-69	64	85	19	226	247	109	620	940	375	540	883	325	94	158	47	114	190	81
70-74	58	73	25	176	315	155	438	745	305	384	637	266	84	111	47	102	186	60
75-79	82	98	38	255	364	173	430	673	254	320	492	196	81	118	46	121	221	65
80+	142	143	73	438	531	265	348	538	220	200	289	130	135	215	56	305	554	119
TOTAL	555	691	308	1,892	2,639	1,231	6,818	12,558	4,578	6,824	12,578	4,787	1,173	1,993	709	1,643	3,056	1,090

Source: Authors' elaboration

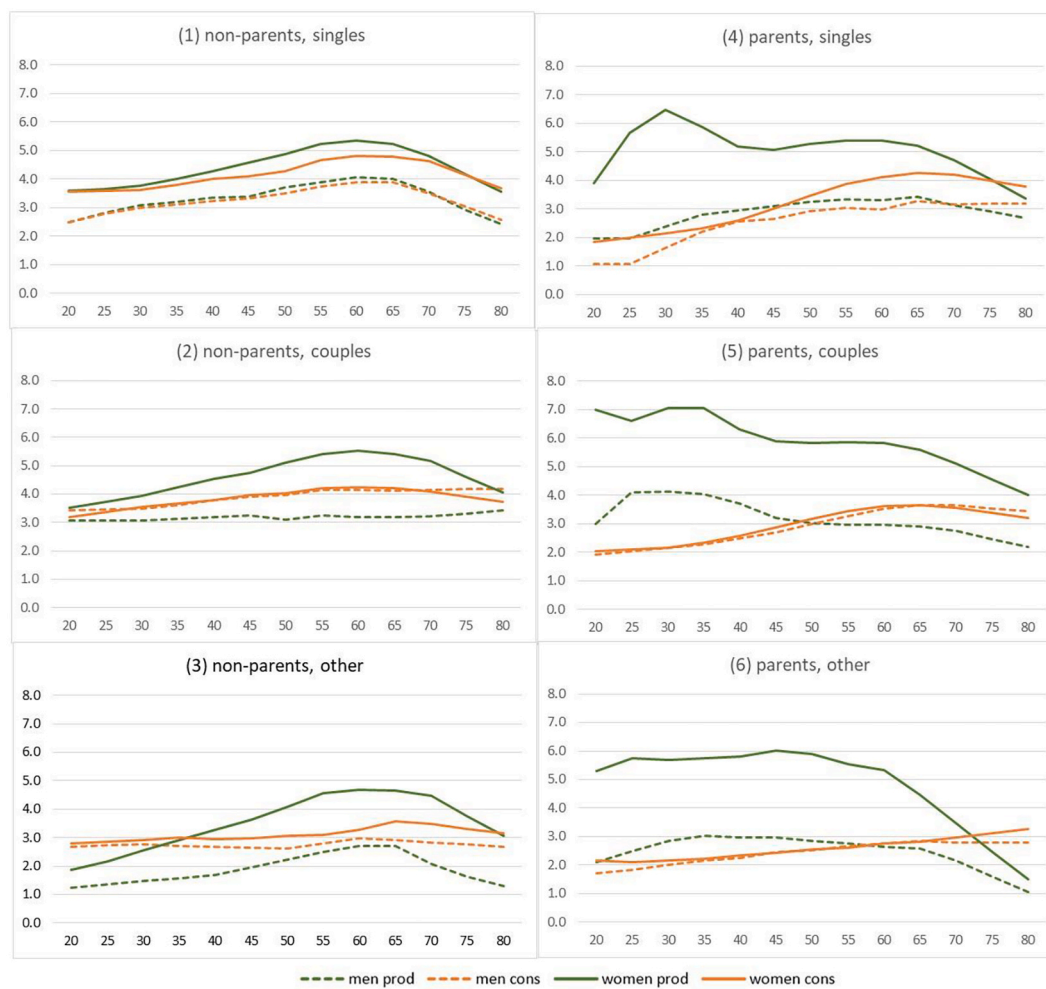


Fig. A1. Per capita age profiles of nonmarket production and consumption, by gender and household structure, in hours per day (Spain, 2010) Source: Authors' elaboration

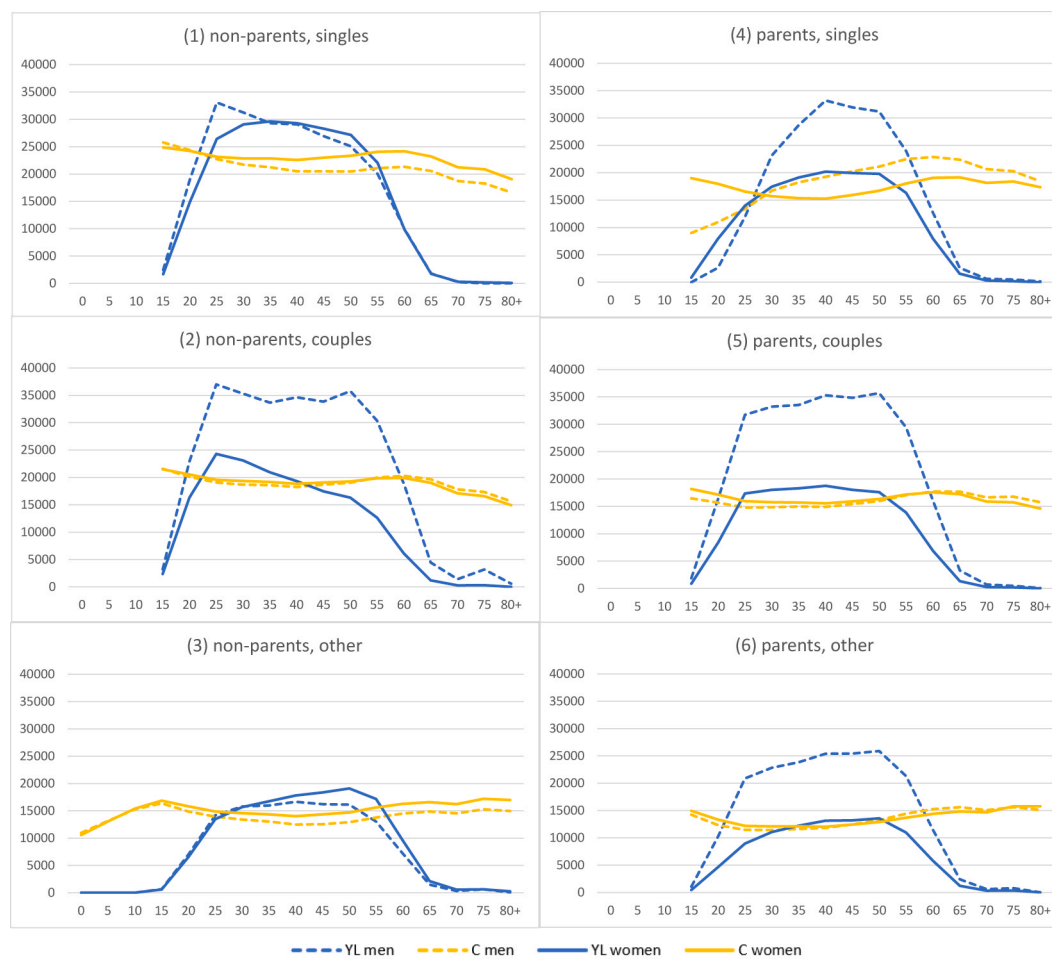


Fig. A2. NTA per capita age profiles of labor income and market consumption by gender and household structure, in euros per year (Spain, 2010) Source: Authors' elaboration

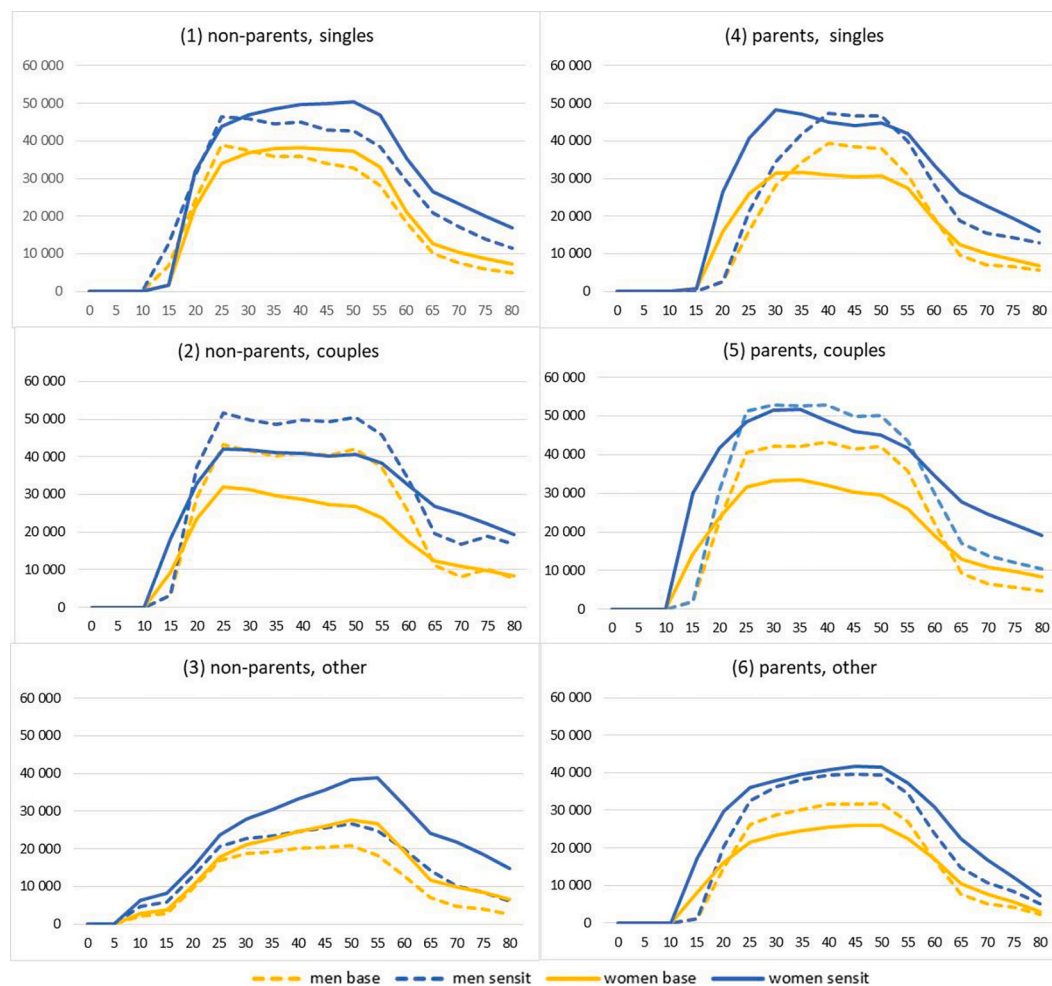


Fig. A3. Sensitivity analysis to the monetary value of nonmarket activities (base scenario and sensitivity): Per capita age profiles of market and nonmarket production (Spain, 2010) Note: The sensitivity scenario is constructed using the average market wage in the economy to express nonmarket activities in euros instead of the replacement wage (see text for more details). Source: Authors' elaboration



Fig. A4. Sensitivity of LCD to monetary value of nonmarket activities: comparing nonmarket and total LCD (baseline and sensitivity), in euros per year (Spain, 2010) Note: The sensitivity scenario is constructed using the average market wage in the economy to express nonmarket activities in euros instead of the replacement wage (see text for more details). Source: Authors' elaboration

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