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Money and time transfers and the role of the welfare state models

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1. Introduction

Economic wellbeing was initially measured only through indicators based on the market activity, mainly GDP. The need to complement this measure has given rise in less developed countries to alternative measures of development, while in the developed world it has produced satellite accounts complementing the System of National Accounts (SNA) like environmental and household satellite accounts, among others. Indeed, non-market activities create welfare, although they are not included in the GDP and are therefore invisible. The National Transfer Accounts (NTA) project complements and extends the role of the household satellite accounts by adding the age and gender dimensions. This addition is valuable, first, because people's economic behavior varies systematically by gender and along their life cycle. Indeed, both market and non-market allocations present different patterns by age and gender. Second, it provides crucial information to investigate the impact of the demographic transition.

This demographic transition occurred in parallel with a drastic change in the gender roles, still in process. Interestingly, the demographic transition led first to a predominance of the working-age population enlarged by numerous baby boom generations and females entering the labour market that ensured the economic growth –the so-called demographic dividend- and hence the sustainability of the transfer system. Nevertheless, those numerous generations are now entering retirement. The resulting population aging will produce changes in the distribution of income, public resources, and home production and risks for the sustainability of the welfare state. Besides, different welfare state models induce different public sector costs and influence life course risk differently.

The National Transfer Accounts (NTA) project has developed a system of accounts that uses household surveys to impute the National Accounts aggregates (production, consumption, taxes, transfers, etc.) by age and gender (Lee and Mason, 2011).[1] As a result it enables studying how resources from the ages in midlife – when we earn labor income – are transferred to the young and the elderly or used in the future through asset-based reallocations. The resulting estimates offer a quantified view of how markets, and/or intergenerational transfers (from the government or private institutions, mainly the family) contribute to the welfare of agents along the life cycle, including dependent population both in childhood and elderly. Besides introducing age and gender into SNA the method provides for the first time a systematic method to estimate inter and intra household monetary transfers. The former, provided they are explicit monetary transfers are registered to some extent in household income surveys. The latter need to be estimated from household surveys including income and consumption. Interestingly, the first estimations distinguishing agents by gender have highlighted the need to take into account also non-monetary transfers resulting from home production of housework and caring. The method has been extended by Donehower (2018) to cover also

[1] The initial method started imputing SNA by age, but gender was soon incorporated.

non-market work, both produced and consumed. In this case, time use surveys are exploited to obtain home production and consumption and the resulting time transfers (National Time Transfer Accounts (NTTA). Both market and non-market activities depend strongly on age and differ also by gender. The gender perspective is important because it makes visible the women's significance as producers of welfare, who are usually the main providers of caring and housekeeping.

Indeed, connecting market and non-market labor activities to an age and gender perspective is essential because it extends our understanding of how transfers are allocated over the life cycle through the welfare system and how non-market work is allocated by age and gender. This widens the gender perspective and makes visible to what extent welfare depends on invisible non-market work.

Each welfare regime establishes a different level of family transfers, which affects labor market participation, and hence, non-market work. In the Nordic countries, the strategy of income redistribution is based on a combination of social insurance and universal benefits supplemented by targeted benefits (Palme, 2006). Low-income inequality is based on the fact that the middle class is heavily involved as both payer and beneficiary. The Nordic countries have evenly divided disposable incomes because earned incomes (wage and entrepreneurial income) are evenly distributed and women's employment rate is quite high. Although wage income explains the great part of the differences in factor income in Finland, the strong increase in income disparities since the mid-1990's was due to an increase in capital income for high earners (Jäntti et al. 2010).

On the other hand, Southern European countries have developed a more limited welfare state model, which hence relies heavily on the family's role (particularly women's) and implies a much lower level of public expenditure. According to OECD data for 2017, social public expenditure in Spain was among the lowest in the EMU (26.5% of the GDP), while France (37.8), Finland (37.6), and the rest of Nordic countries show the highest values. It is important to highlight that women's role in the economy has been, and still is, very different in the South and the North. Opposite to Finland, women's participation in the formal labor market is still low in Spain and Italy. At the same time, they bear most non-paid economic activities, especially housework and care (both for children and adults). The lower development of the welfare state in Southern countries is one of the factors behind the income disparities from the North. For example, by 2018, the Gini index was 6 percentage points higher in Spain (0.33) than in Finland (0.27) (OECD, 2020). The same year, the AROPE (at-risk-of-poverty or social exclusion rate) was 16.5% in Finland, while 26.1% in Spain.

In this paper, we obtain NTTA for Finland and compare the results to those previously obtained for Spain. These two countries represent two different welfare state regimes. Finland represents the Nordic model, characterized by substantial social expenditure, including high family transfers, with a wide coverage, whereas Spain has developed a Mediterranean welfare state model, with narrower coverage and lower public transfers, especially regarding family aids. We aim to identify

differences in the socioeconomic organization in the two countries, particularly family and women's roles, which could be related to the specific characteristics of the welfare state model developed in each country.

We estimate NTTA for Finland using the two available Time Use Survey waves (1999-2000 and 2009-2010) and compare the results to those for Spain in 2002-03 and 2009-2010. We find significant differences between the results for the two countries. First, in Finland, gender differences in market and non-market work are lower than in Spain, especially in early 2000. In 2009-10, the gender bias in the Spanish labor market was reduced significantly due to the huge increase of male unemployment because of the Great Recession. Still, it continues to be higher than in Finland. Regarding non-market work, gender differences in Spain remained unchanged. Second, the age profiles of time worked are also different. In Spain, female labor market participation peaks at ages 25-30, while in Finland the peak is in the 50-year-olds. This reflects the lower female participation in Spain once they decide to be mothers.

The next Section describes the demographic situation in Finland and Spain. Section 3 explains the methodology and data employed, while Section 4 presents the results. The final Section discusses the implications of our results comparing the results obtained for Finland and Spain with estimations for two other countries taken from the AGENTA project. The countries have been chosen as representatives of the other welfare state models in the analysis developed in the WELTRANSIM project. The UK stands for the liberal model and Austria stands for the conservative one.[2]

[2] This report is part of the WELTRANSIM project, a project of the Horizon 2020 Joint Program Initiative More Years, Better Lives second joint transnational call entitled Welfare, Wellbeing and Demographic Change: Understanding Welfare Models (weltransim.eu). See www.weltransim.eu for details.

2. Demographics in Finland and Spain

Population in Finland has tripled since 1860. Population has declined four times: in 1865–1868 (years of crop failure), 1917–1918 (the Civil War), 1939–1940 (the Winter War) and 1968–1970 (emigration). In 1947 the number of births reached a maximum peak. In this year 108,168 children were born (Official Statistics of Finland). In 2018, there were 47,663 born and the population was 5.53 million.

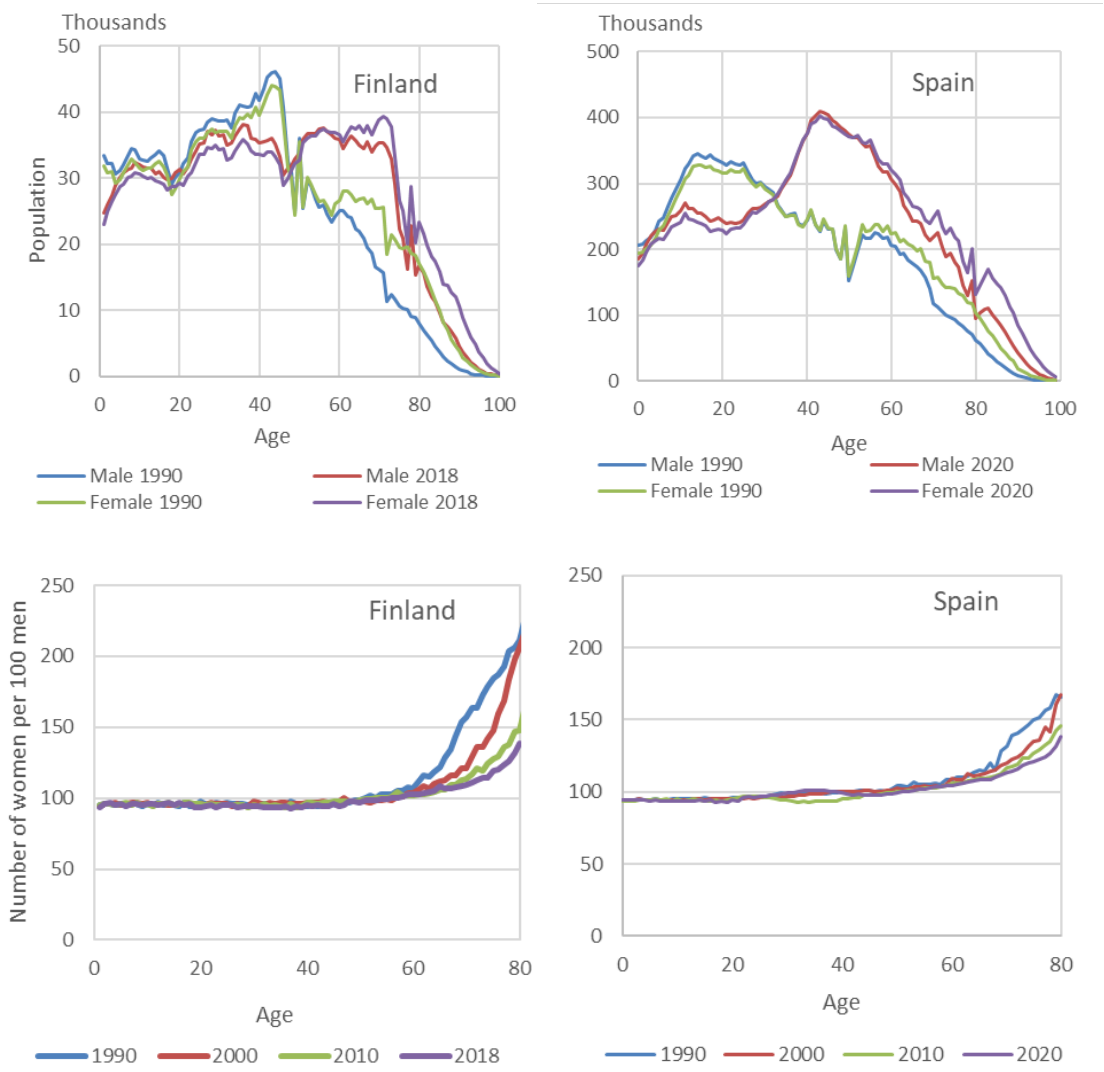
Since the 1960s, and due to the decline of fertility, the share of the 0–14-year-olds decreased. Simultaneously, the share of people ages 65 and more began to grow and accelerated in the 2010s. The gradual aging process is reinforced by the large post-war age cohort (a kind of baby-boom), reaching age 65 from 2010, the decline in the birth rate, and the increase in lifespan (Figure 1). Furthermore, men's lifespan has grown faster, which is reflected in the decrease in women's proportion in old age groups.

The number of households has increased since 1975. The phenomenon is explained by the reduction of the average size, which fell from 2.77 in 1976 to 2.08 in 2010 and 2.02 in 2016 (Official Statistics of Finland, 2021). In Spain, household size decreases from 3.82 members in 1970 to 2.58 in 2011 and 2.50 in 2018 (National Statistics Institute of Spain).

Spanish population grew from 18.6 million people in 1900 to more than 40 million by the beginning of this century, implying an annual average growth rate over 3%. However, this growth rhythm slowed down during the current century, mainly due to the changes in fertility occurred several decades before. By 1900, fertility in Spain was around 4.6, and reduced to 2.5 by mid-century. The decline was particularly high after the Civil War (1936-39). Nevertheless, by the end of the 1950s, fertility recovered, and Spain lived a baby-boom for two decades, with fertility rates near 3. The baby boom ended quite abruptly, and fertility dropped from 2.7 in 1975 to a measly 1.1 during the 1990s. Despite the slight recovery during the 2000s, those fertility changes are clearly visible in the current population age composition (Figure 1).

Comparing both countries, it is easy to observe that population aging started earlier in Finland. This is basically because the baby boom was stronger and occurred later in Spain, which also registered a high level of immigration during the 2000s. The ageing process has progressed further in Finland than in Spain. According to OECD (2017), the old dependency ratio increased from 24.8 to 35.0 in Finland from 2000 to 2019, while from 26.9 to 30.6 in Spain. However, future projections show a much stronger aging in Spain, which would reach an old dependency ratio of 77.5% in 2050, markedly over the 48.8 predicted for Finland.

Figure 1. Population by age and gender in Finland and Spain



Source: Official Statistics of Finland and National Statistics Institute for Spain

3. Methodology and data

This article is based on the methodologies of National Transfer Accounts (NTA) and National Time Transfer Accounts (NTTA). [3]

National Transfer Accounts (NTA)

National Transfer Accounts (NTA) is a framework for collecting, combining and analysing intergenerational and lifecycle reallocation variables, consistent with the System of National Accounts (SNA) (Mason and Lee, 2011 and UN, 2013). NTA methodology provides tools for estimating private as well as public consumption and labour income by age, and for calculating the difference between the two, called the lifecycle deficit (LCD). Therefore, the sources from which the lifecycle deficit is financed are derived from age-specific data on public and private asset income, savings and transfers.

SNA and NTA share the same basic economic concepts: production in the economy is equal to total factor income, which further equals total spending. NTA measures national, rather than domestic values. Net national disposable income equals spending:

$$Y = Y_l + Y_a + T = C + S \qquad (1)$$

Where Y is net income, which can be disentangled in labour income (Y_l) asset income (Y_a) and net current transfers from the rest of the world (T). On the other hand, income must equal consumption (*C*) and net savings (*S*), which both have public and private components. Regarding transfers, on the aggregate level they only correspond to the net flow with the rest of the world, but they can be positive or negative for each particular age. These magnitudes are not measured on SNA and hence NTA establishes a procedure to impute by age all public transfers and to estimate private transfers (both intra and interfamily).

It makes good sense to examine the breakdown of the national accounts by age groups because the main reason for financial flows between age groups is that people in the early and final stages of their lifecycle typically consume more than they earn. The difference is covered by direct or indirect income transfers from the working age population or by asset-based reallocations. Over time the flow of transfers will vary with fluctuations in the size of age groups, and they will ultimately determine the direction of income transfers on the age axis. Saving and the amount of asset income also depend on lifecycle stages.

The rearranged identity of income and expenses (Eq. 1) is the lifecycle deficit for a single one-year age group (*a*):

[3] For further details see the United Nations manual (UN, 2013), the AGENTA manual for NTA (Istenič et al., 2016) and the AGENTA NTTA manual (Vargha et al., 2016).

$$C^f(a)+C^g(a)-\mathrm{Y}_l(a)=\mathrm{Y}_A^f(a)+\mathrm{Y}_A^g(a)-S^f(a)-S^g(a)+T^f(a)+T^g(a) \qquad (2)$$

The variation in income and consumption over the lifecycle makes the identity particularly interesting. The left-hand side of the equation represents de difference between total consumption and total labor income for a given age *a*, named the lifecycle deficit (LCD). The right side indicates that LCD must be financed through three possible mechanisms: asset-based reallocations, private transfers or public transfers (superscript *(f)* refers to private and *(g)* to public components).

Cross-country comparisons require standardization. When equation (2) is presented with the per capita figures for each age group, standardization is usually performed using the average per capita labour income of the age group 30-49 in the same year (Lee and Mason, 2011).

National Time Transfer Accounts (NTTA)

The estimation of time transfers requires an analogous procedure, though only production and consumption of non-market goods and private transfers apply. To estimate non-market activities, we follow the methodology proposed by Donehower (2018).

We start from data collected in national Time Use Surveys (TUS), where individuals report the different activities they perform during a day. We use data for 1999–2000 and 2009–2010 provided by Official Statistics of Finland; and the TUS produced by the Statistical National Institute in Spain for 2003 and 2008-09. In Finland, TUS collects data both at individual and household levels, excluding those people living in institutions. At household level, it contains information for individuals aged 10 or more at the time of survey. At individual level, sample reflects data for those over age 15. The data collection was based on face-to-face and telephone interviews. Each household keeps a diary with all the members' activities for two days, being one Saturday or Sunday (Pääkkönen and Hanifi, 2012). For Spain, the results shown were estimated in Renteria et al., (2016) for 2009 and in the AGENTA project for 2003.

Time spent by households is generally classified into three main categories: market, non-market and other activities. For example, people spend time in self-caring (sleeping, eating, etc.), domestic work, providing care to others (children, partner, other dependents inside or outside the household), in a paid employment, or in free-time activities (like personal care, study and other free-time activities). Non-market work refers to those activities, which are done by a household member without being paid, but which alternatively could be hired to another person external to the household (meeting the so-called "third party criterion" by Margaret Reid, 1934). Hence, self-caring activities like sleeping or eating are not considered productive non-market activities while cooking, cleaning and caring are.

To deal with the multitasking problem, they are required to report only the main task performed. Thanks to the rich information provided in the micro data, it is

possible to build a per capita age profile of time devoted to the different tasks considered as non-market work activities.

Consumption of household activities is estimated from household production. For each household, total non-market production is divided equally among all household members. In the case of childcare, it is allocated only to under 18-year-old members, and especially under 7-year-old. Adult care, in turn, is allocated to household members aged 18+.

Altogether, total household production must equal consumption, because household production cannot be saved. Hence, it is important to note that, at the aggregate level, in NTTA there is no a deficit/surplus, as there is in NTA.

Monetary value of non-market activities

Time Use Surveys yield information in terms of time (in minutes per day), which can be later transformed into monetary terms. This is a necessary step if we want to know the contribution of unpaid work to total welfare. There is no consensus on the wage that should be used to convert time worked in household activities to its monetary equivalent. However, it is a critical decision to get an accurate picture about the gender contribution to wellbeing. There are two main alternatives in looking for the appropriate wage. First, the opportunity cost approach is based on the wage that the person would receive in his/her best choice in the formal labor market. Second, the approach based on the task instead of on the person, implies that the average wage for people who perform the same task in the market, should be the appropriate. Varjonen et al. (2014) did not recommend opportunity cost in the national accounts framework. The use of professional salaries for household work is also problematic, because people have different abilities and can perform household work with a different intensity. Hammer et al. (2020) used the net wage of a full-time worker for all. Renteria et al. (2016) used the average wage for the same professional category in the market, as proposed in Donehower (2018). Because we do not know how effectively or professionally people perform household work, we have chosen the minimum wage approach.

As opposed to, for example, Hammer et al. (2015[4], 2020), we use in Spain minimum wage and in Finland a salary that would be paid in the care sector in the median of the lowest decile. The solution affects results significantly, especially in Spain, where women participate less in the labor market and do much more unpaid work than men. The wage we used is 9.5 euros per hour in Finland and 5 euros per hour in Spain.

[4] Hammer et al. (2015) valued the housework using wage that corresponds to the average hourly net income of the worker in the age group 30–49 years.

4. Results: National (Time) Transfers Accounts by gender in Finland and Spain

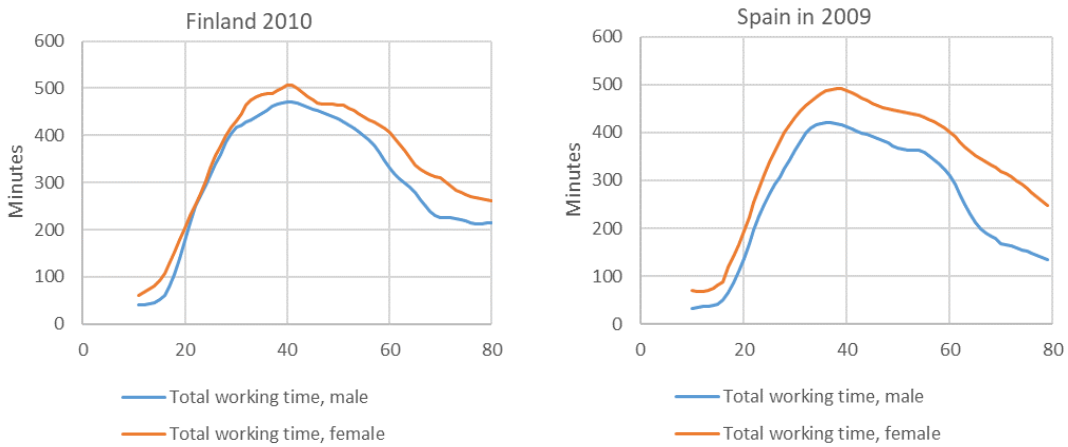
This section presents the NTTA profiles estimated for Finland using the last two waves of the national Time Use survey (1999-2000, 2009-2010), comparing results to those for Spain (2002-2003, 2009-2010). Results show that time use differs markedly by age and gender. In the first case, differences are explained by the own lifecycle, which influences household activities production and the need for their outcome. Regarding gender, the age profiles are fundamentally influenced by how men and women share their time differently between paid and unpaid work.

Second, the monetary value of NTTA profiles is estimated. Finally, combining NTTA with NTA profiles, we obtain the total lifecycle as the difference between total consumption and production at each age, including both market and non-market activities.

4.1 Time spent in market and non-market activities in Finland and Spain

Figure 2 displays the age profile of total time worked -both in market and non-market activities- by gender in Finland and Spain. As in previous studies, we found that total time worked by females is higher, although the gender difference is considerably smaller in Finland. Interestingly, the gender gap is growing with age in both countries, being particularly high for people aged over 60, probably reflecting differential cohort effects in terms of education, labor market participation, etc.

Figure 2 Total time worked by gender in Finland and Spain, minutes per day

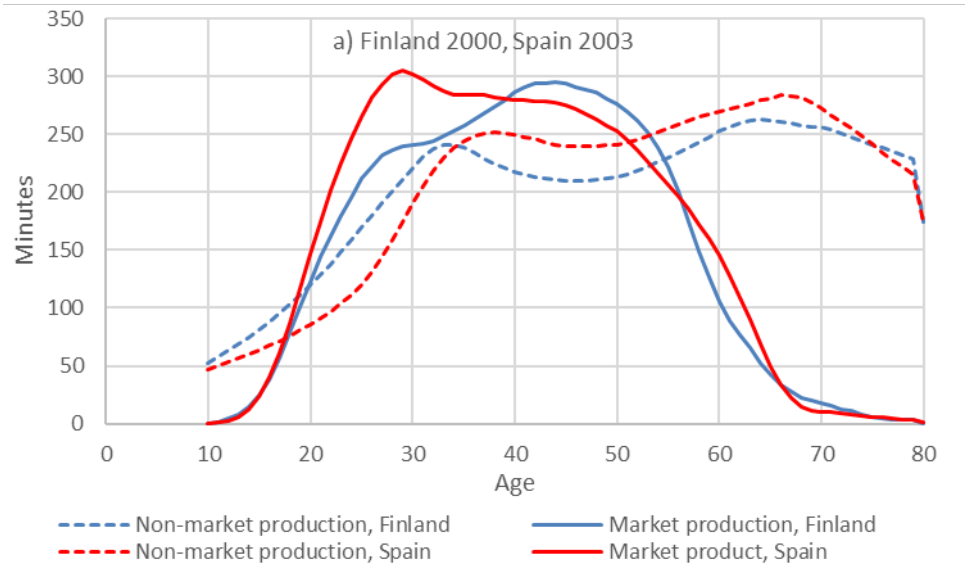


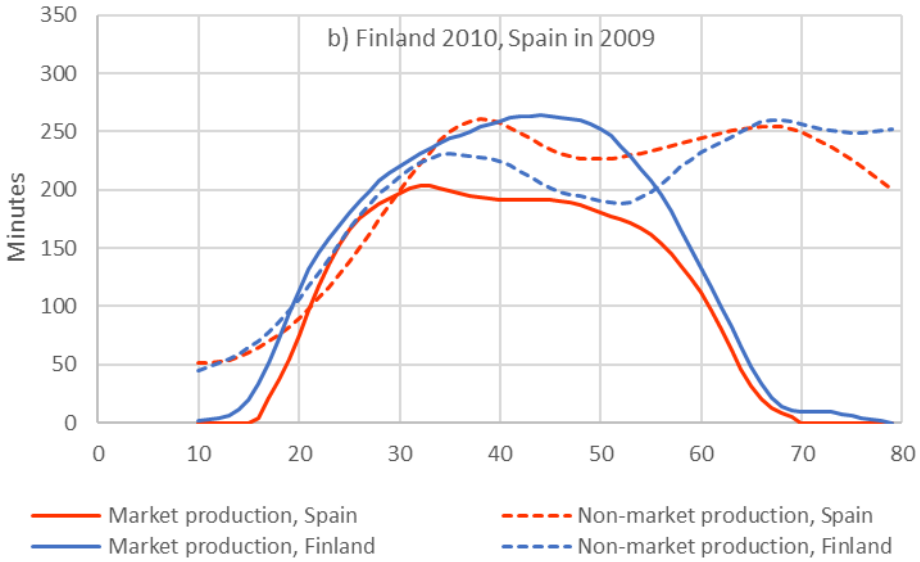
Sources: Authors' calculations from Time Use Survey 2009–2010, Official Statistics of Finland and Time Use Survey 2009-2010, National Statistics Institute for Spain.

Figure 3 shows that age profiles of time worked in market and non-market activities are clearly different. Time devoted to the formal labor market shows the typical U-inverted shape, although it has some differences by period and country. These differences are partly explained by the different patterns in the labor market as shown in Figure A.I in the appendix. On the one side, female participation in the labor market is clearly higher in Finland. On the other side, the impact of the crisis in the labor market was much more negative in Spain. In the early 2000's the age profile peaks at a younger age (before 30) in Spain than in Finland (around age 45). In both cases, it declines rapidly after the age of 50. By the end of the same decade, time worked reduced in both countries for almost every age. The reduction is exceptionally high in Spain, due to the hard effects of the economic crisis in this country, which led to a dramatic increase of unemployment.

On the other hand, the age profile of non-market activities starts at younger ages and keeps positive for the rest of the lifecycle, showing two bumps: one coinciding with parenting (ages 30-40) and the second around ages 60-70. In both countries, the working-age population spends less time in non-market activities than in paid work. Conversely, the very young (under 20) and the older (over 55 years old in Finland and about over 50 in Spain) work more in non-market activities.

Figure 3 Time spent in market and non-market work in Finland and Spain





Sources: Authors' calculations from Time Use Survey 2009–2010, Official Statistics of Finland and Time Use Survey 2009-2010, National Statistics Institute for Spain.

Figure 4 displays the age profiles of time spent in market and non-market production by gender. Regarding the formal labor market, males show a higher profile in both countries. This gender gap is much bigger in Spain by 2003, but it is reduced significantly by 2009 due to the above-mentioned dramatic effects of the economic crisis, which increased mainly male unemployment. Moreover, it is interesting to observe the different shapes of the female age profile in Finland and Spain. Although the entry age is similar, Spanish women seem to leave earlier the labor market. This is partially explained by childrearing. When becoming mothers, a significant number of women leave the labor market permanently. However, this trend is not appreciated in Finland, where the age profile of female time worked continues to increase to peak around age 40-50.

As far as household work is concerned, for both countries and periods, the age profile shows the same shape, with a first peak matching with parenting age (around 30 for women and a bit later for men), and a second one around age 60-70. Once more, a clear gender gap exists, but this time it is women who spend more time on these production activities. Again, the gender difference is much more significant in Spain, although a decrease is appreciated by 2009 regarding 2003.

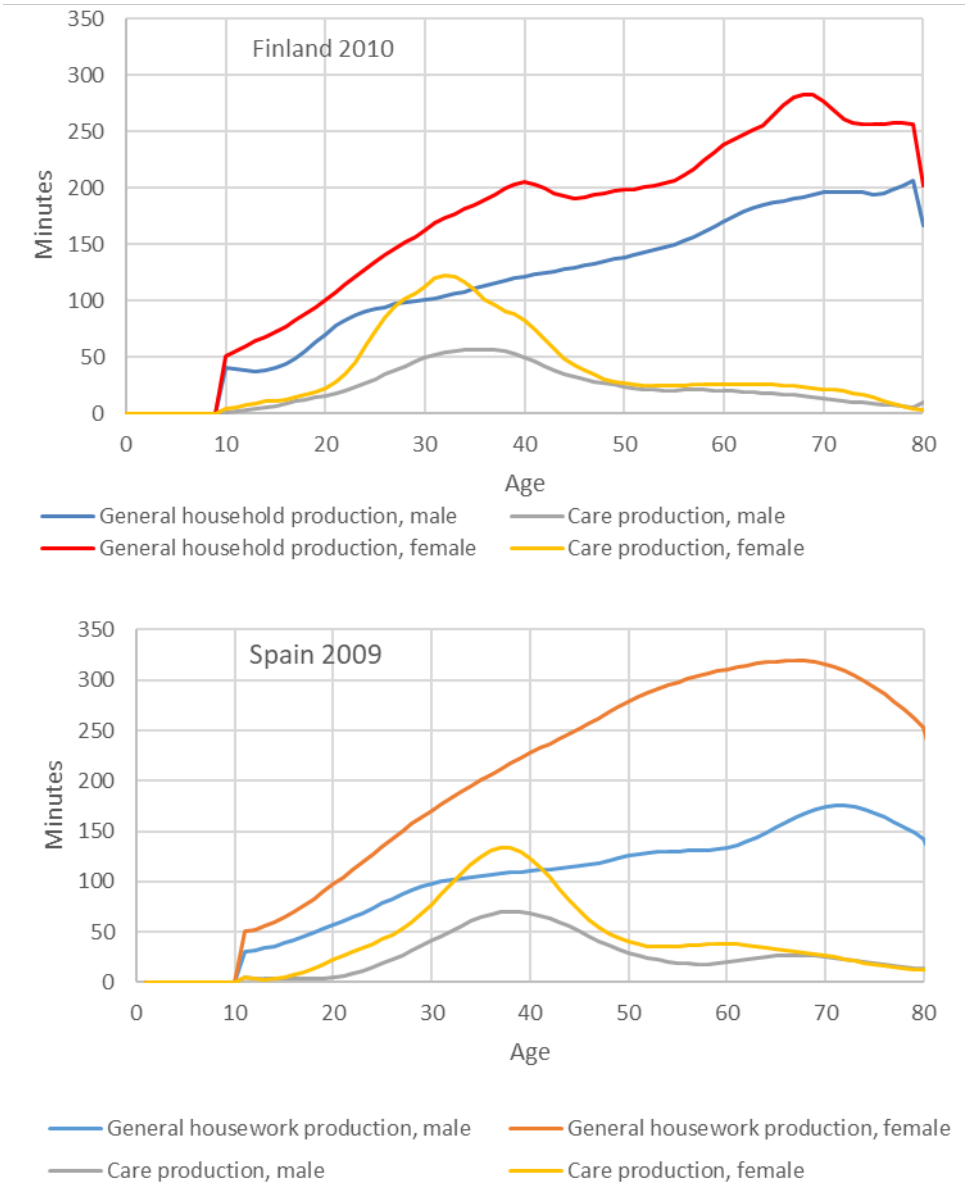
Figure 5 disentangles age profiles of time worked in non-market by type of activity, differentiating housework and care. There are no significant differences between Finland and Spain in care age profiles, which in both cases show a maximum in ages of childrearing (a bit earlier in Finland). The gender is also very similar in both countries. However, in Spain women do more housework than in Finland. This is basically due to the lower female labor participation in Spain once they become mothers, as mentioned above (Figure 4). Conversely, in Finland parental leaves are quite long, but women return to the labor market.

There have been no significant changes in age profiles structure or its level between 2000 and 2010 in Finland. Women stay in the labor market a little longer (see also Figure A.I in appendix) and do slightly less non-market production. Men spend a little less time in market work at all ages, although their employment rate was much higher in 2010 (Figure A.I in appendix). In contrast, in Spain, the male employment rate decreased significantly between 2000 and 2010 because of the crisis, while it increased for females. However, time spent on non-market work did not completely compensates for this change.

Figure 4 Time worked in market and non-market activities by gender in Finland and Spain, minutes per day

Sources: Authors' calculations from Time Use Survey 2009–2010, Official Statistics of Finland; Time Use Survey 2009-2010 National Statistics Institute for Spain; and data from the AGENTA project for 2000 and 2003.

Figure 5 Time spent in non-market activities (housework and care) in Finland 2010 and Spain 2009



Sources: Authors' calculations from Time Use Survey 2009–2010, Official Statistics of Finland and Time Use Survey 2009-2010, National Statistics Institute for Spain.

4.2 Monetizing non-market work

The previous section presented the results of NTTA directly obtained from exploiting time use surveys. NTTA shows how people allocate their time to produce and generate resources and improve their wellbeing, both through market and non-market activities. Hence, it complements the information provided by standard NTA, exclusively focused on market activities.

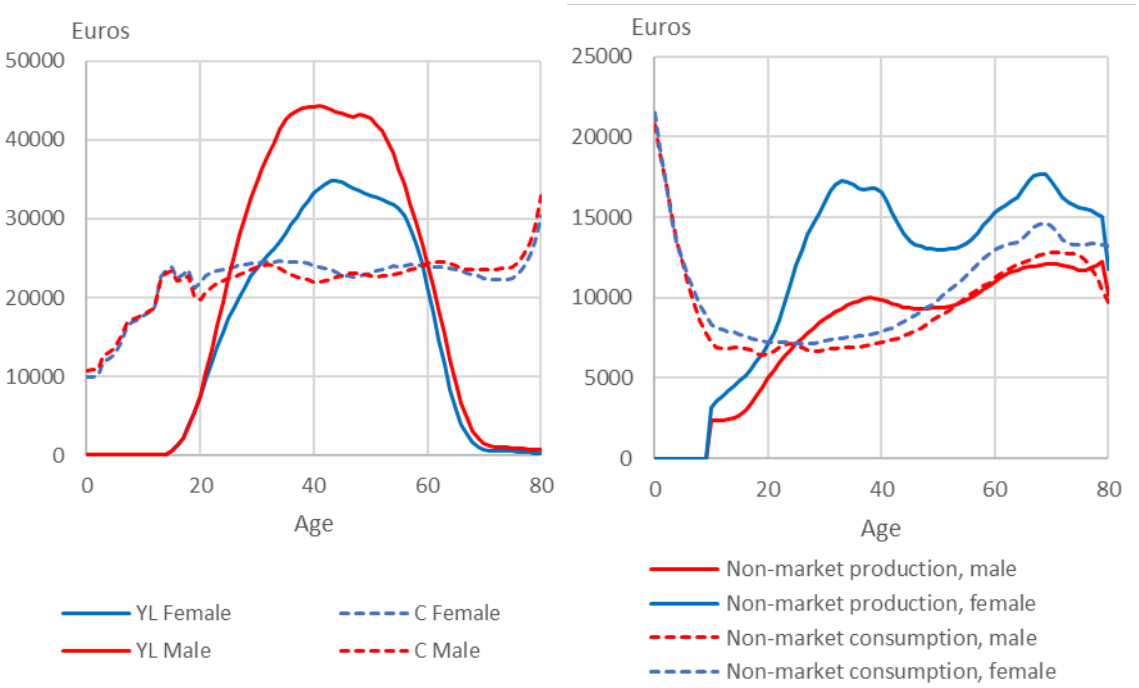
Merging NTTA profiles with NTA implies the need to transform the first into monetary terms, as the second is. In particular, we need to convert time age profiles of non-market production and consumption into monetary age profiles. To that purpose, the minimum wage in the corresponding formal labor sector is used, as exposed above. In the case of market activities, instead, the NTA age profiles are directly used.

Figures 7 and 8 compare production and consumption age profiles by gender obtained from NTA (market activities) and NTTA (non-market activities), both expressed in current euros, for Finland and Spain. As already observed in the previous section, production age profiles are different by gender in both countries: women produce a lower labor income but, in turn, contribute much more to household production. However, consumption profiles are very similar by gender for both market and non-market activities. It is worth mentioning that, as non-market work is valued at minimum wage, its monetary impact on total production is smaller than in terms of time (comparing Figures 6 and 7 to Figure 4).

Panel a) in Figures 6 and 7 show that, lifecycle deficit – the difference between consumption and production – created in the market is higher for women, as they consume practically the same as men, while they generate lower labor income. However, the opposite is true when we look at the life cycle deficit of unpaid work (panel b). The age profile of women's unpaid work changes opposite to how women participate in the labor market: When the labor market participation increases, the importance of household work declines. Women's time worked in non-market activities reaches two peaks: one at the age of family establishment, and the other around retirement age. In Spain, the age profile is more smoothed than in Finland between the two peaks, due to the lower female participation in the formal labor market after mothering.

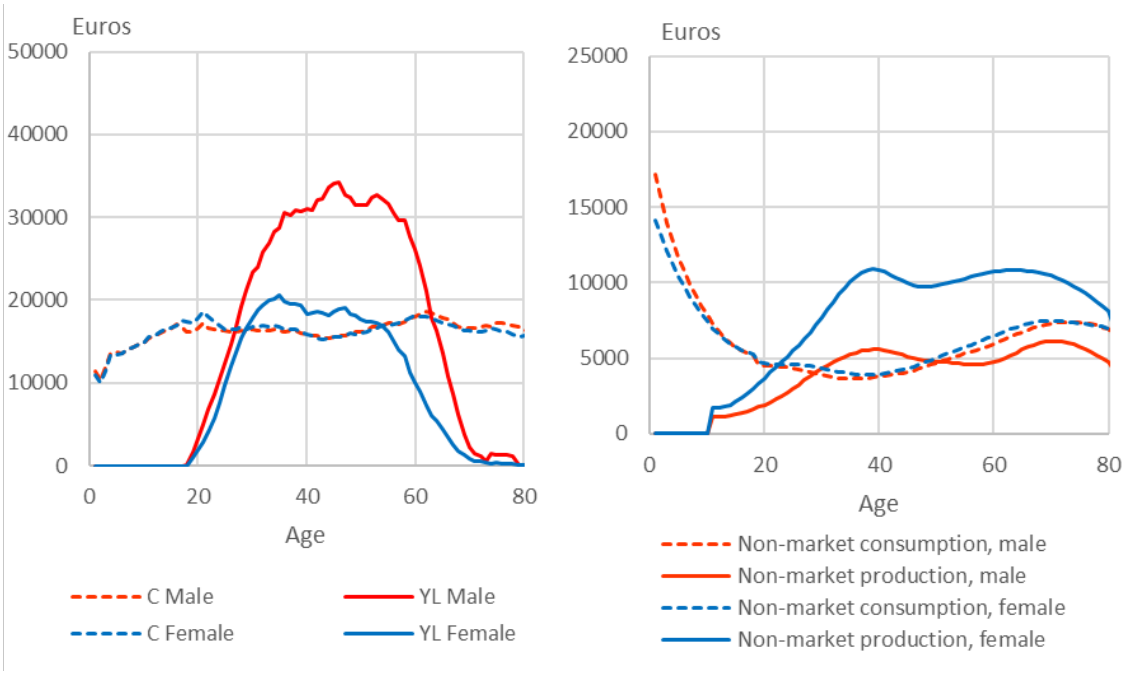
It is worth highlighting that non-market work proves not to be a mere alternative to labor market: older women continue doing more unpaid activities than men, although participation in the labor market is equally low. The results reveal the higher contribution of women over 70 years old as welfare producers through non-market work.

Figure 6 Market and non-market production and consumption by age and gender in Finland (2010)



Sources: Authors' calculations from Time Use Survey 2009–2010 Official Statistics of Finland; Time Use Survey 2009-2010, National Statistics Institute for Spain; and data from the AGENTA project for 2000 and 2003.

Figure 7 Market and non-market production and consumption by age and gender in Spain (2010)



Source: Renteria et al. (2016).

Figure 8 displays the age profile of lifecycle deficit (consumption minus labor income) generated by market activities provided by standard NTA. Likewise, Figure 9 shows the age profile of the estimated lifecycle deficit from non-market activities, estimated by NTTA. In this second case, the lifecycle deficit is defined as the difference between consumption and production of non-market activities, at each age. As both are measured in monetary terms, they can be aggregated later to obtain total lifecycle deficit.

A negative value of the total lifecycle deficit at a certain age can be interpreted that a person produces more welfare than he consumes, and the opposite if it is positive (a surplus). Middle-aged people are, on average, net producers of welfare (they produce more than they consume), while children and the elderly are net consumers. The age at which the life cycle deficit becomes negative and again positive varies depending on gender and whether we look at the life cycle deficit generated in the market, outside the market, or the combined effect. Table 1 shows the age range with a negative life cycle (surplus) resulting in Finland and Spain. Values show the big difference between market and non-market activities, as well as by gender, in both countries. Non-market surplus starts earlier and lasts longer (until very old age), but fundamentally thanks to women.

Table 1 Age of negative LCD in Finland and Spain

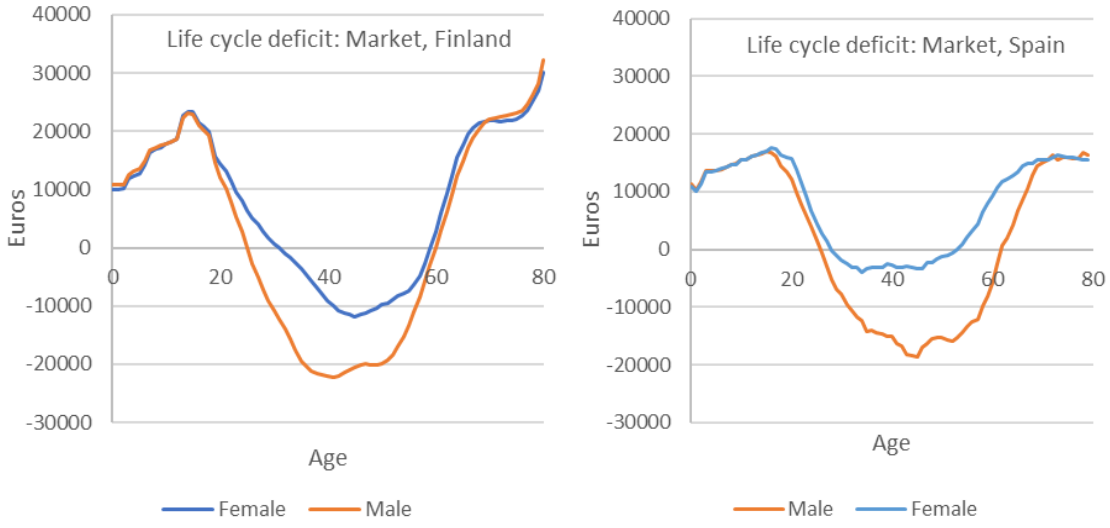
Finland	Total	Male	Female
Market	27-59	25-60	31-59
Non-market	22-79	25-53	21-79
Total	26-59	25-59	26-59

Spain	Total	Male	Female
Market	27-58	26-61	28-53
Non-market	25-77	28-49	22-79
Total	27-59	26-61	27-57

Sources: Authors' calculations from Time Use Survey 2009–2010, Official Statistics of Finland and Time Use Survey 2009-2010, National Statistics Institute for Spain.

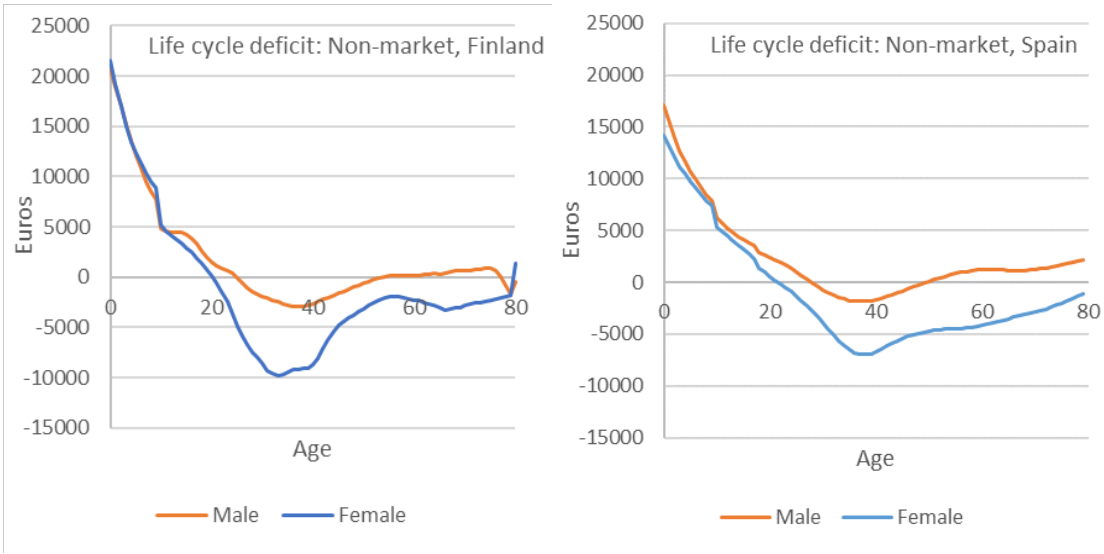
Results are, overall, quite similar in both countries, although with some differences. In Finland, females generate a surplus in market production for a longer period, as they keep their participation at higher levels than in Spain. In the case of non-market activities, the differences are by gender: Finnish males have a significant longer period of surplus than Spaniards, indicating the bigger gender gap in the second country.

Figure 8 Life cycle deficit (LCD) of market work by gender in Finland and Spain, 2010



Sources: Authors' calculations from Time Use Survey 2009–2010, Official Statistics of Finland and Time Use Survey 2009-2010, National Statistics Institute for Spain.

Figure 9 Life cycle deficit (LCD) of non-market work by gender in Finland and Spain, 2010



Sources: Authors' calculations from Time Use Survey 2009–2010, Official Statistics of Finland and Time Use Survey 2009-2010, National Statistics Institute for Spain.

Figure 10 shows the age profiles of total lifecycle deficit once summed up both market and non-market production and consumption activities. It is interesting to compare it to standard LCD obtained in NTA in Figure 8, to correctly understand the effects of the non-market output and consumption in the economy. First, total

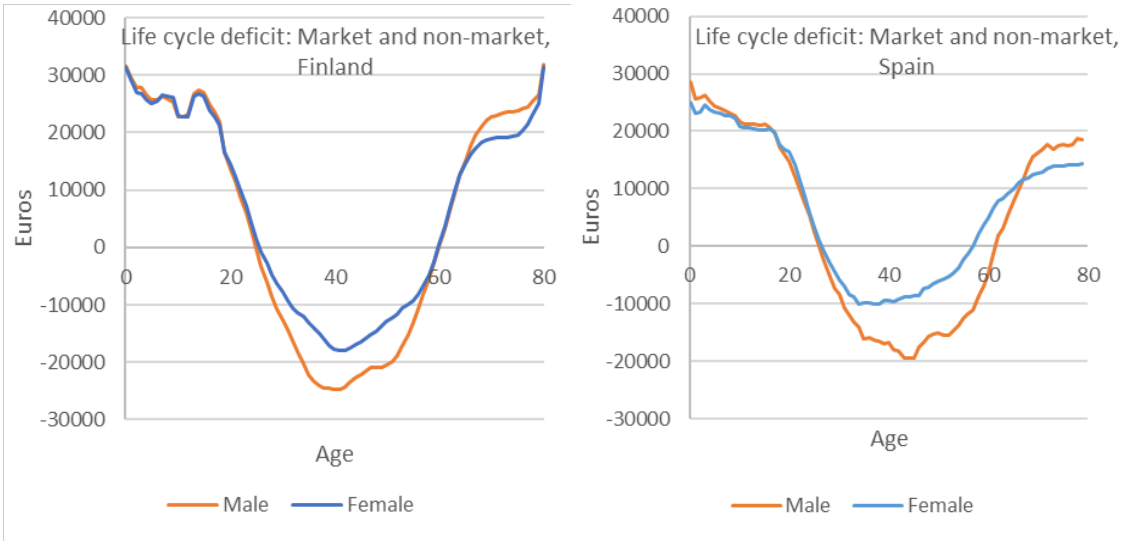
LCD for the youngest increases significantly, as they hardly produce (from age 16 in the market and 10 in the household) while they do consume. In particular, they are the main consumers of household production, as recipients of care.

For working-age population, women present the biggest changes in total LCD regarding standard NTA results. Thanks to their high production of household activities, women's surplus starts at earlier ages and lasts longer, besides being clearly bigger. For men, in turn, changes are almost negligible. The same pattern repeats in both countries.

Finally, in the case of the elderly, gender differences are also appreciated. The total LCD results are clearly higher than market LCD for men over age 65, while it declines for women.

Overall, our results reveal the significant role of women as welfare producers in society, basically through non-market activities. The gender gap observed for LCD (the difference between consumption and production) markedly shrinks when considering the non-market activities, even though these are valued at the minimum wage.

Figure 10 Total life cycle deficit (market and non-market production) by gender in Finland and Spain (2010)



Sources: Authors' calculations from Time Use Survey 2009–2010, Official Statistics of Finland and Time Use Survey 2009-2010, National Statistics Institute for Spain.

4.3 Adding up market and non-market lifecycle deficit

In this section we aim to evaluate how the consideration of non-market activities would change the picture regarding the conventional way of looking exclusively to market activities. In particular, we consider together both market and non-

market lifecycle deficit, using three broad age groups according to the three main stages of the economic lifecycle : 1) young age (0-24) typically presenting a deficit (as their consumption exceeds their labor income); middle age (25-64), mainly showing a surplus; and old age (65+), again with a deficit. Table 2 shows the average market, non-market ant total lifecycle deficit for the three age groups, distinguishing by sex.

Table 2 Average market, non-market and total lifecycle deficit (LCD) by age and gender in Finland, euros per capita (2010)

FINLAND											
market LCD				non market LCD				total LCD			
	Male	Female	Both sexes		Male	Female	Both sexes		Male	Female	Both sexes
All ages	1012	7369	4250	All ages	1495	-1278	0	All ages	2507	6092	4250
0-24	14949	15636	15285	0-24	6895	6171	6496	0-24	21845	21807	21781
25-64	-12489	-3442	-8004	25-64	-1107	-5183	-3162	25-64	-13596	-8625	-11166
65+	23602	24391	24062	65+	250	-1357	-987	65+	23853	23033	23075
SPAIN											
market LCD				non market LCD				total LCD			
	Male	Female	Both sexes		Male	Female	Both sexes		Male	Female	Both sexes
All ages	-1290	6433	2628	All ages	1786	-1734	0	All ages	497	4698	2628
0-24	12952	13899	13413	0-24	6857	5414	6154	0-24	19809	19312	19567
25-64	-11619	41	-5829	25-64	-439	-4907	-2658	25-64	-12058	-4867	-8487
65+	14429	15697	15157	65+	1549	-1518	-212	65+	15978	14179	14945

Sources: Authors' calculations from Time Use Survey 2009–2010, Official Statistics of Finland and Time Use Survey 2009-2010, National Statistics Institute for Spain.

The market lifecycle deficit shows the expected sign for the three age groups in the two countries, although interesting differences by sex are observed. In both countries, men and women show similar LCD for the young and the old age groups. However, for the middle age group, Spanish women present a small deficit, while men show a big surplus. In Finland, although differences by sex also exist, they are lower, and middle-age women have a surplus as men.

Another interesting difference between the two countries refers to the LCD presented by the young and the elderly. In Finland, old people show a LCD much higher than the young both for men and women. However, in Spain the differences between those two age groups are narrower for both sexes. This difference is probably explained by the shape of consumption profiles in both countries. While in Spain the consumption profiles remains stable for the old age (or even decrease), in Finland it increases sharply at the end of the life, mainly driven by public consumption (see Figures 6 and 7).

Previous studies from Finland have found that income transfers to young people were higher than to the elderly in 1990. By 2006, there were no differences between transfers to the old and to the young, while at the same time the size of the lifecycle deficit had increased. From this, it is possible to conclude that investments in education, day care and family policy have previously been greater

than in health care, care for the elderly and pensions (Riihelä, Vaittinen and Vanne, 2014).

When combining market and non-market activities, total LCD does not change regarding market LCD, as non-market LCD is null by definition (it is not possible to save or dissave non-market outputs). However, it differs both by age and gender. Indeed, adding non-market activities to the calculus of LCD smooths out gender differences. This is mainly due to the higher surplus generated by women in non-market activities. As Table 2 shows, women only present a deficit in the younger age group, while for the rest and on average, they produce more than they consume. Interestingly, their total surplus for non-market activities results higher than the obtained by men in market activities. In contrast, men only have a surplus in non-market activities in the middle-age group, which in any case is clearly below the corresponding of women of the same age.

The surplus of middle-aged women is mostly due to unpaid work, especially in Spain (where working-age women even show a small deficit). In contrast, market activities are the most important in determining the surplus of men in this age group. In the case of the young, they show the highest LCD for non-market activities, revealing the huge amount of transfers received mainly from their parents, mostly in care. Indeed they also show a LCD in market activities as long as their participation in labor market is very low. There are not significant differences in both countries for this age group.

For people at retirement age, women show similar non-market LCD in both countries. Men, in contrast, present a striking difference: in Finland they roughly produce the same as they consume, while in Spain their deficit is considerably high (and very similar to the surplus of women in the same age group). Because different generations live mostly in different households, unpaid work of older women benefits mainly men living in the same household.

Overall, when considering both market and non-market activities to obtain the LCD, interesting differences are appreciated between Finland and Spain. On the one hand, Spain shows a larger gender gap: the surplus for middle ages is much higher in Finland, basically due to the higher female participation in the labour market. On the other hand, the old age group in Finland shows a higher LCD than the young, while the situation in Spain is just the opposite. In particular, the average LCD for the young results 30% higher than for the elderly (24% for male and 36% for female) in Spain. This is explained by two different factors. First, the higher consumption profile for the elderly in Finland (Figures 6 and 7). Second, due to the late emancipation patterns of the Spanish youth, together with their lower employment rates.

5. Discussion

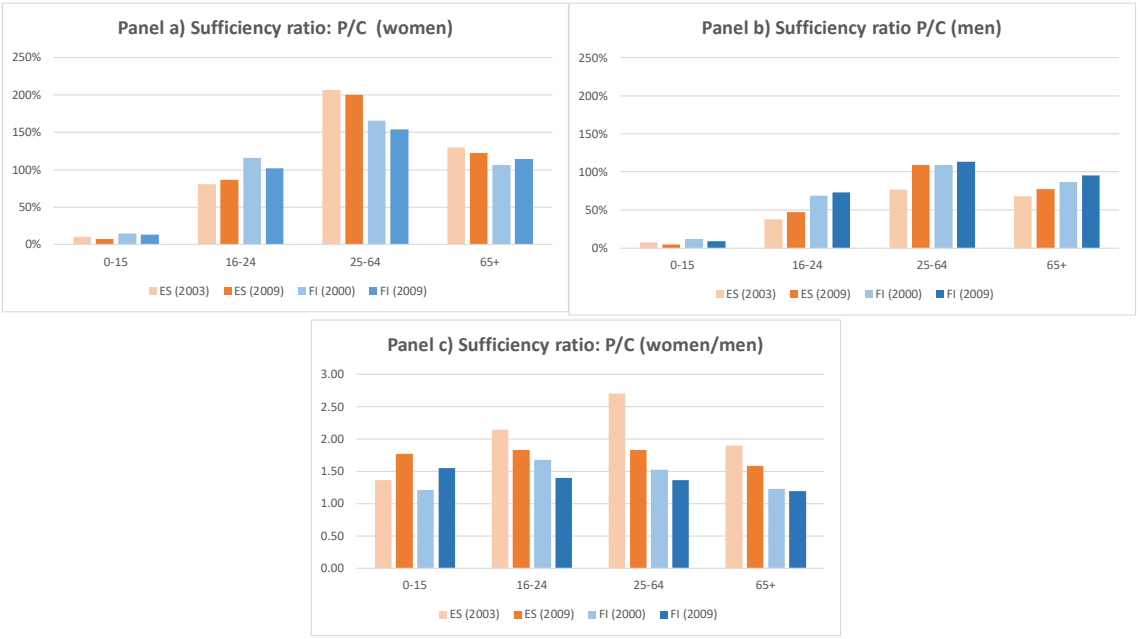
Our results indicate that a thorough consideration of wellbeing along the lifecycle requires to take into account both market and non-market provision. This permits to have a deeper consideration of women's role in resource allocation and hence on gender inequality. This analysis is crucial to prepare societies to face the ageing process already in place. The ageing process will exert an increasing pressure on the so-called sandwich generation who will bear taxes to maintain the compromised transfers to growing cohorts of elders, while needs at the same time provide for the needs of shrinking cohorts of youngsters, whose human capital is nevertheless decisive to face future challenges.

In this section, we summarize the estimates obtained building indicators to measure the contribution to non-market economy along the life cycle and across genders. We start showing the results obtained for Finland and Spain around years 2000 and 2010 and then compare those to the other countries involved in the WELTRANSIM project to highlight the role of welfare models. As shown in previous sections, the estimates presented in this report allow computing a wide range of indicators including time and monetized values. In order to compare the estimates obtained for Finland and Spain to those obtained in the AGENTA project we stick, first to the data available in this data set that offers production and consumption. Second, we elaborate estimates of time magnitudes in order to avoid differences due to the monetization assumptions.

For our purpose we design an indicator that measures for each age group and gender, their contribution to non-market production in relation to their non-market consumption, measuring how "sufficient" they are. The results by age group and sex are shown in Figure 11 for the two years estimated in Finland and Spain.

The Figure indicates substantial differences across and within countries and along time. The first two panels (a and b) show the indicator for women and men in the two years observed in both countries. First, as expected, women show a stronger sufficiency indicator at all ages (even for young children) and in both countries and periods. This is particularly true in Spain, probably due to the still lower participation in the labor market of Spanish women. Nevertheless, the evolution of time seems to be narrowing differences between men and women. During the first decade of this century, men increased their sufficiency in all age groups except the younger children. The time trends in women are not so clear. Young children decrease their sufficiency in both countries. The young decrease their sufficiency in Finland while it increases in Spain, probably due to the high young unemployment rates. Adult women have a clear decreasing trend in sufficiency (in correspondence to the increase in males), while this is not so clear in the case of Finland: Sufficiency decreases during working ages but increases for age 65+. As a result of those trends the gender gap in sufficiency (panel c) is decreasing along time for all the age groups, except for the youngest.

Figure 11. Sufficiency indicator: Non-market production (P) / non-market consumption (C) in Finland and Spain

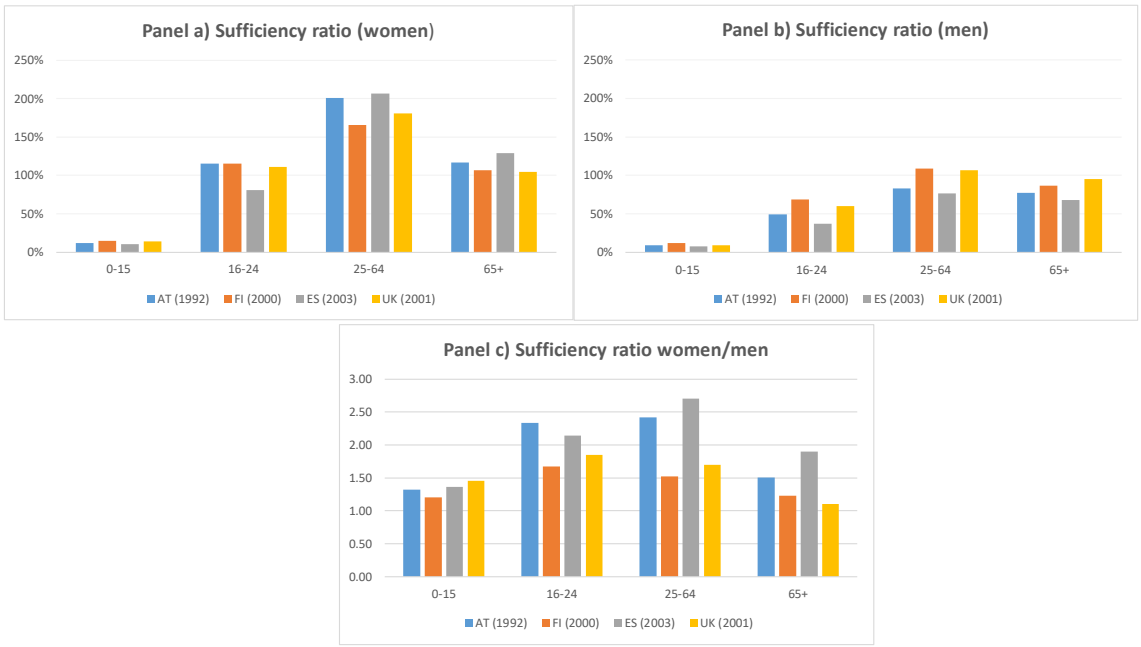


Sources: Authors' calculations from Time Use Survey 2009–2010, Official Statistics of Finland and Time Use Survey 2009-2010, National Statistics Institute for Spain.

The differences observed between Finland and Spain are probably related to the role of the welfare state. In the Nordic countries, there have been long-lasting efforts to promote equality. The rise in the labour force participation of women involves a reorganisation of work so that tasks that women traditionally performed at home have been transferred to the labour market. Moreover, the public sector is large and the work of the care sector has traditionally been organised within public sector functions. As the level of education of women in Finland has increased and participation in the labor market became more common, in part due to family policies, women have been employed to a large extent specifically in the public sector service professions. By contrast, the Mediterranean welfare model has not made such efforts in policies oriented to gender equality. In Spain, most care activities are still mainly carried out inside the family, and female participation in labor market is considerably lower than in Central and Northern Europe.

Figure 12 shows the same estimates for Finland and Spain around the beginning of the century compared to those obtained in AGENTA for Austria and the UK. These four countries were chosen in the WELTRANSIM project as representatives of the four welfare models (Nordic, Mediterranean, Conservative and Liberal). The results for Austria are less comparable as they correspond to the year 1992.

Figure 12. The sufficiency indicator (P/C) and the welfare models (Austria, Finland, Spain and UK)



Sources: Authors' calculations from Time Use Survey 2009–2010, Official Statistics of Finland and Time Use Survey 2009-2010, National Statistics Institute for Spain.

The first two panels (a and b) show the level of the sufficiency indicator for women and men for the four countries along the life cycle. As in Finland and Spain, women also show a stronger sufficiency indicator at all ages in Austria and the UK. Spanish women show the higher ratio, except for ages 16-24, probably due to the high young unemployment rate and late emancipation in this country. Interestingly, Austria, the representative of the conservative model, follows Spain in women's sufficiency. For adult women, Finland shows the lowest sufficiency, confirming the role of the strong welfare state model in this country while the UK women are in the middle. The patterns for men are the opposite, as expected. As a result, the gender gap (panel c) is the highest for Spain, followed by Austria, the UK and Finland (for working age population). There are deviations from this general pattern for the young, probably reflecting employment and emancipation patterns, and for the old: Finish elderly men are more sufficient than those in the UK.

Further research is needed to confirm the trends observed and to deeply investigate the causes in order to design better policies that accompany the sandwich generation in protecting the elderly and the youngest in facing the ageing process.

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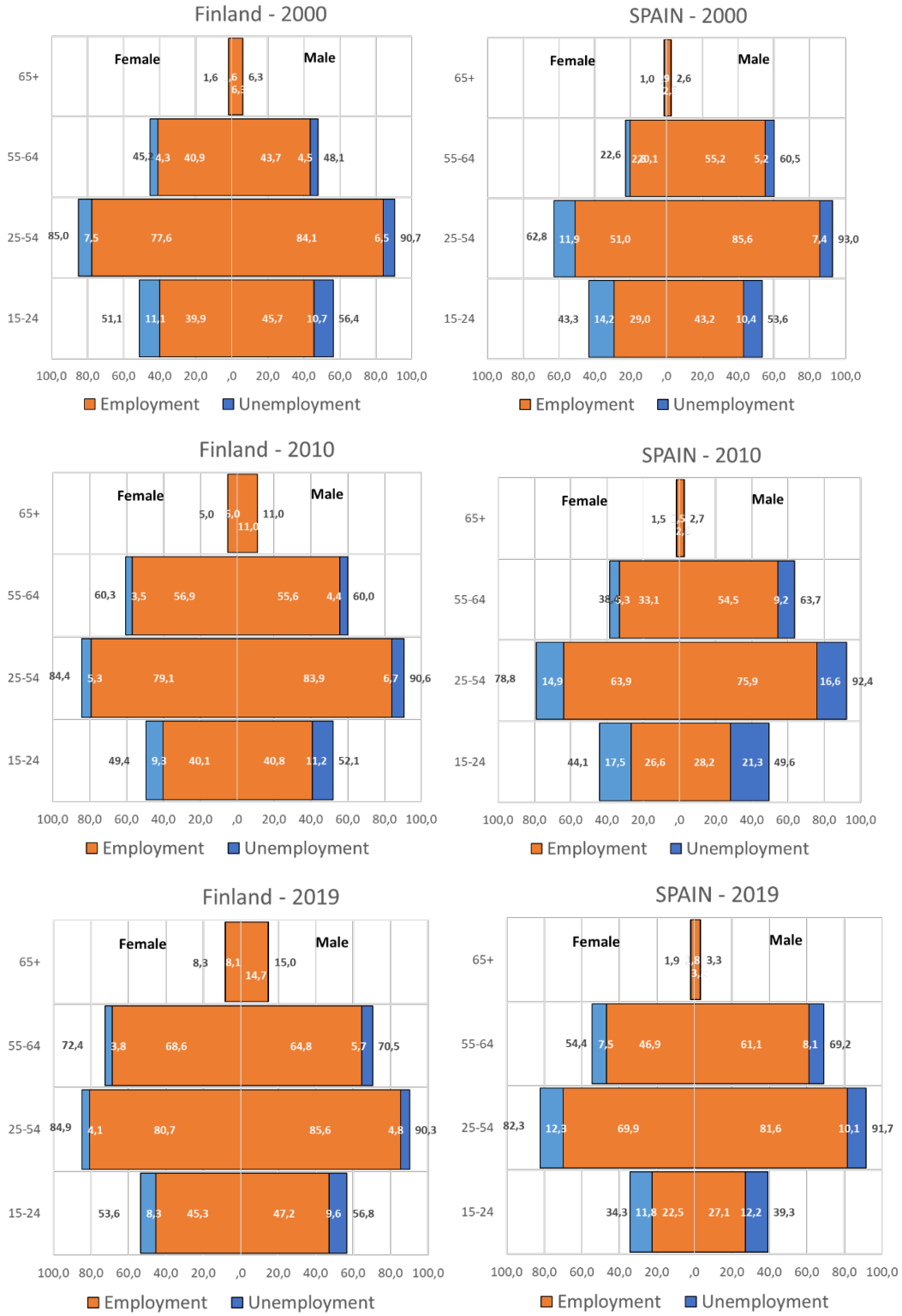
Appendix I. Labor market and gender in Finland and Spain

Figure A.I Employment and unemployment by age and gender in Finland and Spain



Source:OECD.

Appendix II. NTTA Data in Austria, Finland, Spain and the UK

We use NTTA estimations provided by AGENTA for 25 EU countries in different years according to data availability. We are particularly interested in data for two countries (Austria and UK), to complement the analysis we have made for Finland and Spain. This way, we can compare countries representing the different welfare states models in Europe.

Table A.II.1 summarizes the NTTA data availability in AGENTA for these four countries. Estimations provided are based on two different harmonized datasets built by Eurostat from national time use surveys. First, HETUS is harmonized prior to data collection, and hence it provides data at high level of comparability. MTUS contain ex-post harmonized surveys, which limits comparability. Although NTTA age profiles based on HETUS are the best choice for cross-country comparisons, in the case of Austria only estimations from MTUS are available.

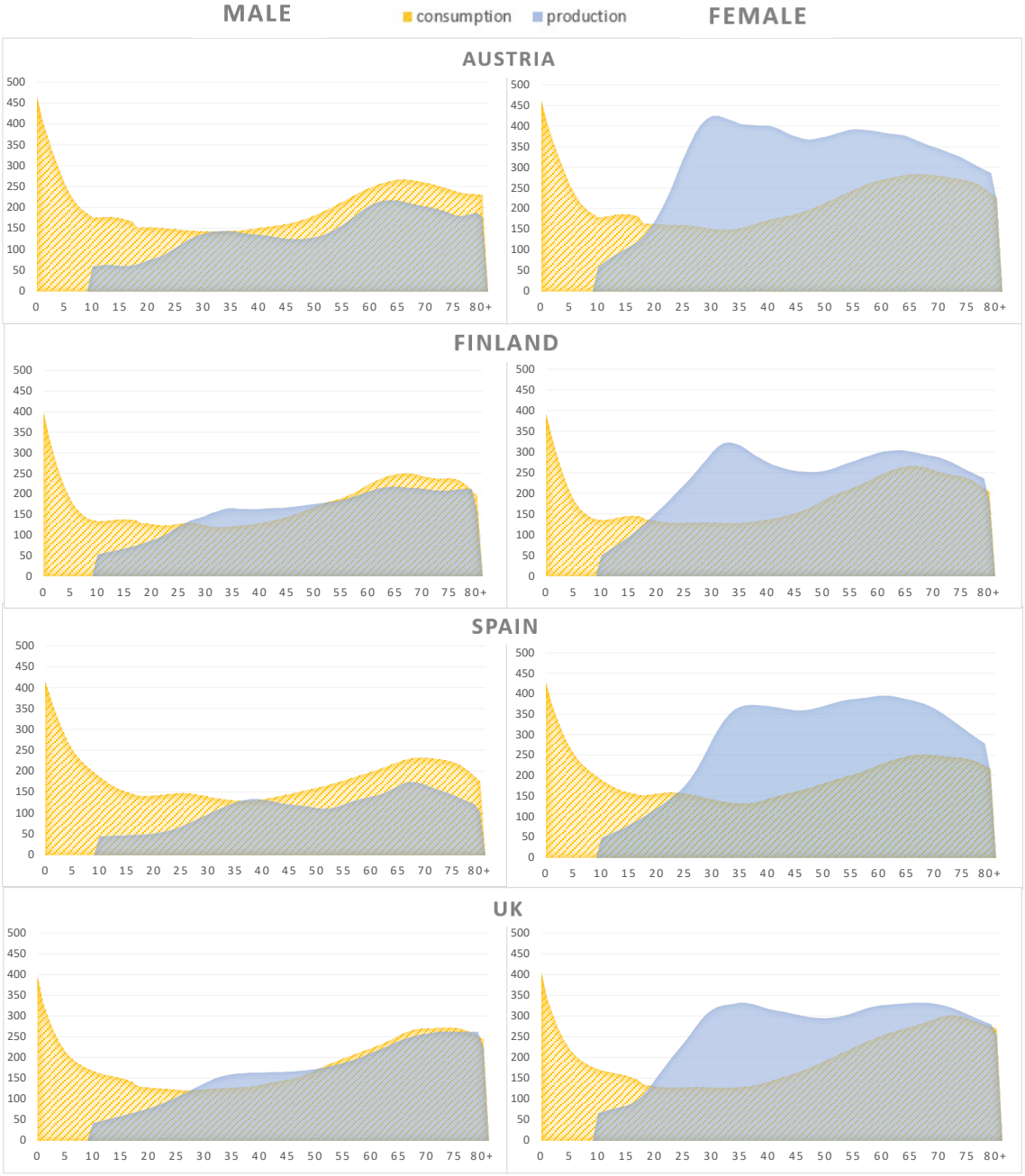
Table A.II.1. NTTA estimations provided by AGENTA project

	MTUS	HETUS
Austria	1992	NA
Finland	NA	2000
Spain	2003, 2010	2003
UK	1974, 1983, 1987, 1995, 2001, 2005	2002

Note: HETUS year refers to data in units of time. AGENTA provides also these profiles in monetary terms, in this case referred always to year 2002.
Source: Authors' elaboration from data availability in http://dataexplorer.wittgensteincentre.org/nta/

NTTA dataset estimated in AGENTA provides age profiles of production and consumption of non-market activities. These estimations are very valuable to know about the real allocation of resources in the economy (going further the market production usually measured in national accounts and NTA). However, they do not provide information on the actual transfers of time activities among ages, as do not contain information about the non-market activities received (inflows) and given (outflows) at each age. Even though, AGENTA data allows for the estimation of some interesting indicators which allow observing differences by sex and age in the production and consumption of resources produced aside the market. In order to make a cross-country comparison, we selected the only year available for Austria (1992), estimated from MTUS; while for the other three countries we opted for the estimations based in HETUS in similar years (2000 for Finland, 2001 for the UK and 2003 for Spain). In all the cases, we used the estimations measured in time units (to avoid problems of comparability with Austria). Figure A.II.1 shows the age profiles of production of non-market activities for the four countries.

Figure A.II.1. Per capita age profiles of non-market production and consumption (in minutes per day)



Source: Authors' elaboration from AGENTA data (http://dataexplorer.wittgensteincentre.org/nta/)

We have also obtained the average per capita production and consumption of non-market activities by broad age groups: children (0-15), young (16-24), adults (25-64) and old-age (65+), both for men and women separately. Then, we estimated the *sufficiency i*ndicator, defined as the ratio between production and consumption of non-market activities for each age group and sex. A sufficiency over 100% indicates that the corresponding age group and sex produce more non-market activities than they produce, hence being a net donor of time. On the contrary, a

sufficiency below 100% indicates that that age group and sex are a net receiver of this kind of activities. Table A.II.2 show the results.

Table A.II.2. Sufficiency indicator (production/consumption of non-market activities) according to AGENTA data

	AT (1992)	FI (2000)	ES (2003)	UK (2001)
MALE				
0-15	9%	12%	8%	9%
16-24	49%	69%	38%	60%
25-64	83%	109%	77%	106%
65+	78%	87%	68%	95%
FEMALE				
0-15	12%	15%	10%	14%
16-24	116%	116%	81%	111%
25-64	201%	166%	207%	181%
65+	117%	107%	129%	105%

Source: Authors' elaboration from AGENTA data (http://dataexplorer.wittgensteincentre.org/nta/)