

Historical patterns of unpaid work in Europe: NTTA results by age and gender

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Abstract

This paper presents an analysis of the age patterns of production, consumption, and net transfers in the form of unpaid work by gender *over time*. Using the National Time Transfer Accounts (NTTA) methodology, we briefly analyse complete historical results for several European countries. Our main aim is to introduce historical NTTA results, which are freely available to the public for further usage on the AGENTA database. The results of our analysis show that the evolution of age patterns over time differed between men and women, and was highly affected by different demographic trends, as well as by the specific institutional background of each country. Our findings indicate that despite the differences in age patterns over time and across countries, two main characteristics of these patterns did not change: i.e. transfers of unpaid work flowed first from women to men, and second from the working-age population to children and – to a lesser extent – to the elderly.

1 Introduction

The well-being of societies and individuals relies greatly on the system of inter-generational exchange, which consists of transfers among different generations: i.e. across the young, working-age, and elderly populations. Private and public transfers (such as private cash transfers from parents to their children, or public pensions and education) are often mediated by the market, and are therefore called market

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transfers. Levels of intergenerational support in the form of market transfers are very high in European countries (Lee and Mason 2011; Istenič et al. 2017), but these transfers are always complemented by another form of economic production: namely, unpaid work. Large amounts of unpaid work (such as cleaning, cooking, shopping, care, and voluntary work) are transferred within the private sphere of the home, and are therefore referred to as private non-market transfers.

The inclusion of household production when analysing the age patterns of economic activity is justified by the considerable amount of time spent on unpaid household labour, and the value produced by these activities (Goldschmidt-Clermont and Pagnossin-Aligisakis 1995; Giannelli et al. 2011; Miranda 2011; Altintas and Sullivan 2016). In addition, as Gershuny (2011) has argued, the conventional GDP measure takes a view of labour that is too narrow to accurately reflect cross-country differences and historical changes in economic activity. Since household production is mostly carried out by women, the calculation of the value of unpaid work is crucial for efforts to make women's total economic contributions more visible. Folbre (2008) demonstrated that this issue is particularly salient in the case of labour devoted to childrearing. In EU countries, the elderly are supported mainly by public transfers, whereas children are mainly supported by private non-market transfers (Gál et al. 2016; Hammer et al. 2018). Therefore, neglecting age-specific private non-market transfers can result in distorted inferences being made about public policy issues, such as the pension system.

Despite their importance and size, private non-market transfers tend to be an overlooked part of the economy, mainly because they are invisible in the official statistics. The System of National Accounts – which provides a basis for the analysis of economic activities – essentially neglects unpaid work, and the Household Satellite Accounts captures unpaid work in aggregate terms only (Ironmonger 1996; Holloway et al. 2002; Soupourmas and Ironmonger 2002; Ahmad and Koh 2011). However, to gain deeper insights into the patterns of unpaid work at different stages of life, disaggregated data are required. Adding the gender and the age dimension is essential for understanding the intergenerational resource reallocation patterns of different economies. In this paper, we apply the National Time Transfer Accounts (NTTA) methodology, which provides a conceptual and a statistical basis for the calculation of the production and the consumption of unpaid work, as well as of net non-market transfers by age and gender (Donehower 2014). The main novelty of our research is that we present full accounts over time for six European countries.

Shifts in female employment, the timing of childbearing, and family and household structures also affect the age patterns of the production and the consumption of unpaid work and private non-market transfers for both genders. Therefore, the main aim of this research paper is to describe historical differences in gender-specific patterns of unpaid work, and in gender-specific provisions of private non-market transfers. In order to observe recent shifts in the variables of interest, disaggregation by one-year age groups is necessary. We present full accounts of comparative historical NTTA results for the following European countries: Denmark, Germany,

Italy, the Netherlands, Spain, and the UK. Please note that our focus is on countries with longer time series (the Netherlands and the UK). Thus, we introduce European historical NTTA accounts that are freely available to the public for further usage on the AGENTA database.¹

We start this paper with a short description of recent demographic and economic changes in the European countries in our sample, followed by a discussion of past research related to the paper's topic. Next, we explain the data and the methods used. After presenting our results on the production and the consumption of unpaid work, and on the net private non-market transfer amounts, we present our conclusions.

2 Background

Demographic and economic changes that have occurred in the last few decades have had a profound impact on how people allocate their time to different daily activities. Consequently, how much unpaid work people produce, consume, and transfer has changed at both the aggregate and the individual level (i.e. at the *per capita* level for each age group). In this section, we point out the main trends that have contributed to the changes in individuals' time allocation decisions in Europe.

In many industrialised countries, family dynamics have undergone significant changes. By the end of the 20th century, the once-prevailing 'male breadwinner–female caregiver' household model had declined in importance in European countries. Until that time, a lack of public policies aimed at helping parents combine work and family led to a system in which the burdens of paid and unpaid work were unequally distributed between men and women. In line with traditional gender ideology, men were dominant in the labour market, while women typically performed a disproportionately large share of unpaid work. Thus, levels of female participation in the labour market were far below current levels (Haas 2005; OECD 2018).

The emergence and spread of new household models – such as the 'one-and-a-half earner model' (i.e. the man working full time and the woman working part time) and other types of dual-breadwinner models (Lewis 2001) have led to increases in women's labour market participation and employment rates. Eurostat data (Eurostat 2016a) indicate that from 1993 onwards, the employment rates of women aged 20–64 have risen in all of the observed countries, with the smallest increase being reported in Denmark (three percentage points), where female employment rates are among the highest in Europe; and the largest increases being reported in Spain and the Netherlands (22.6 and 17.3 percentage points, respectively).²

¹ <http://dataexplorer.wittgensteincentre.org/shiny/nta/>

² In 1993, the female employment rate was 69.6% in Denmark, 33.8% in Spain, and 53.5% in the Netherlands.

These increases in female employment rates can be attributed to the implementation of numerous public policies, and to changing attitudes towards women. In recent decades, European countries have introduced initiatives on gender equality, working-time regulations, and public policies aimed at helping parents reconcile family and work life (Pascall and Lewis 2004). Flexible working arrangements, stronger social security systems, increased provision of childcare and elderly care services, parental leave benefits, and family and child allowances are among the public policies and programs that have given families more freedom to choose how they participate in paid and unpaid work (Lewis et al. 2008; Saraceno and Keck 2008).

In Europe, fertility rates have declined and families have become smaller in size (Apps and Rees 2005). It has been posited that the active participation of women in the labour market has influenced couples' decisions about the number of children they want to have; and that, conversely, lower fertility rates have led women to increase their participation in the labour market. Furthermore, many couples are delaying having children until later in life. The average ages of women at first birth and at subsequent births have increased in all the analysed European countries in the last few decades (Eurostat 2016b).

The implication of these trends is that the amount of time women spend on unpaid work has been declining (Kan et al. 2011). Spending more time at work has limited the time women have available for other activities, including performing unpaid work. It is also probable that women have lowered their domestic standards because they are tired after spending long hours in paid employment. Other factors appear to have contributed to the changing patterns of unpaid work as well, such as improvements in the efficiency of housework equipment, and the increased ability to outsource unpaid work activities as a result of having a higher disposable income (Dex 2009). As women decide to spend more time in paid employment and less time in unpaid work, the need for men to take a more active role in unpaid work has grown. Thus, it appears that the gender gap in the production of unpaid work is becoming smaller over time (Kan et al. 2011).

A large number of historical time use studies (cf. Apps and Rees 2005; Kan et al. 2011; Gimenez-Nadal and Sevilla 2012; Altintas and Sullivan 2016) have analysed the effects of the above-mentioned trends on unpaid work and its components in the European context, but have neglected the age dimension (or use very broad age groups and/or limited age boundaries). The concept of observing unpaid work across more narrow age groups using NTTA methodology is rather new in the academic literature, but is gaining increasing attention (Kluge 2014; Hammer et al. 2015; Gál et al. 2015; Zannella 2015; Rentería et al. 2016). However, historical analysis in the NTTA context has lagged behind. A limited branch of research (Zagheni et al. 2015) has included the age dimension of gender-specific historical estimates, but focused only on the evolution of production patterns. We keep the gender aspect over time, and go one step further by exploring the historical changes not only in production patterns, but in complete age patterns of consumption and net transfers in the form of unpaid work.

3 Data and methodology

3.1 Data

We used several datasets to compute the age- and gender-specific profiles of production, consumption, and net transfers in the form of unpaid work. The Multinational Time Use Survey dataset (MTUS) served as our main source of historical time use data. MTUS contains cross-nationally harmonised data on how people allocate their time among different activities in a given day. Currently, the collection includes nationally representative micro-data from more than 20 – mainly European – countries (for more details about MTUS data collection, see Fisher and Gershuny (2016)). Based on data from the MTUS database, we estimated the production of unpaid work for the following countries and years: Denmark (1987, 2001), Germany (1992, 2001), Italy (1988, 2002), the Netherlands (1975, 1980, 1985, 1990, 1995, 2000, 2005), Spain (2003, 2010), and the United Kingdom (1974, 1983, 1987, 1995, 2001, 2005).

Depending on which time periods they cover and which countries they include, we used four additional datasets to estimate the age profiles of consumption and net transfers of unpaid work. We drew our data for the 1990s from the EU Statistics on Income and Living Conditions (EU-SILC) or the European Community Household Panel (ECHP), and created older age profiles (from the mid-1970s to around 1990) using data from the Integrated Public Use Microdata Series (IPUMS) or the Labour Force Survey (LFS).

3.2 Methodological approach

We followed the NTTA methodology based on Donehower (2014) and Vargha et al. (2015), and applied additional methodological steps to account for the specifics of the MTUS data. In this section, we present only the general NTTA methodology; a detailed description of the specific methodological steps we used for the MTUS data is presented in the AGENTA NTTA manual (Vargha et al. 2016).

The MTUS dataset contains harmonised data and includes variables (i.e. daily activities) that are defined identically in all time use surveys for all countries. Therefore, the first step was to identify the daily activities that we would categorise as unpaid work. We split total unpaid work into two parts: childcare and housework. Childcare consists of the following activities: physical or medical childcare; teaching, reading, talking to, or playing with a child; helping a child with homework; supervision; childcare-related travel; and other childcare activities. Housework consists of all other unpaid work activities, such as cooking, domestic work (cleaning, doing laundry, etc.), pet care, adult care, voluntary work, gardening, and domestic travel. After defining which activities are considered unpaid work, the next step was to estimate the age profiles of production. As the MTUS dataset

contains information on time use, age, and gender for all respondents, we were able to calculate the average production of unpaid work for each age and gender directly from the MTUS micro-data (following the standard NTTA assumption that unpaid work equals zero for children under age 10).

MTUS provides information about the producers of unpaid work only, and not about the consumers who are the beneficiaries of household production. To estimate consumption by age and gender, we relied on several assumptions and allocated the total household production of unpaid work among the household members. We assumed that all housework produced in a specific household was allocated equally among all household members, while childcare was allocated only among children (who are the beneficiaries of childcare services). If there were more children in one household, total household childcare production was not allocated equally among them, but was instead divided into different shares based on the equivalence scale generated separately for each country.

As we mentioned above, the consumption profiles were not estimated from the MTUS dataset, but from one of the other surveys (EU-SILC, ECHP, IPUMS, or LFS). We chose this approach because the MTUS database provides data on the respondents, but does not contain information about all of the household members. Thus, we were unable to calculate the total household production, or to allocate it among the household members in order to estimate their consumption, using the MTUS data alone. Meanwhile, the four surveys contain information on the full household structure (i.e. data about the age and the gender of all household members), but do not include information on the time use of individuals. To overcome these gaps in the data, we first imputed production averages (estimated from the MTUS) to one of the four surveys based on three characteristics of individuals: age, gender, and household type.³ Thus, all household members of a specific age, gender, and household type were assigned an average level of production of unpaid work. We could then calculate the total household production, and allocate it among all household members in order to measure consumption by age and gender.

The final step was to calculate the age profiles of net transfers as the difference between consumption and production at each age, and for both genders. If a person's consumption of unpaid work was higher than his/her production, the gap was filled by receiving net transfers from others, and the value of net transfers was therefore positive. If, on the other hand, a person produced more than s/he consumed, s/he could transfer the surplus of produced unpaid work to other individuals, and the value of net transfers was therefore negative.

³ Household types were defined according to different combinations of the following characteristics: gender of the respondent, household size, number of children in the household, and the age of the youngest person in the household.

4 Results

In the following section, we present historical estimates of the age profiles of unpaid work for Denmark, Germany, Italy, the Netherlands, Spain, and the UK. The observed time period is different for each country, depending on the availability of time use data. For most categories of unpaid work, we present the results for the Netherlands and the UK (for which the analysis was possible for the longest time period, of around 30 years), as well as the findings for other selected countries. The results for all of the countries can be accessed on the AGENTA project webpage.

4.1 Production

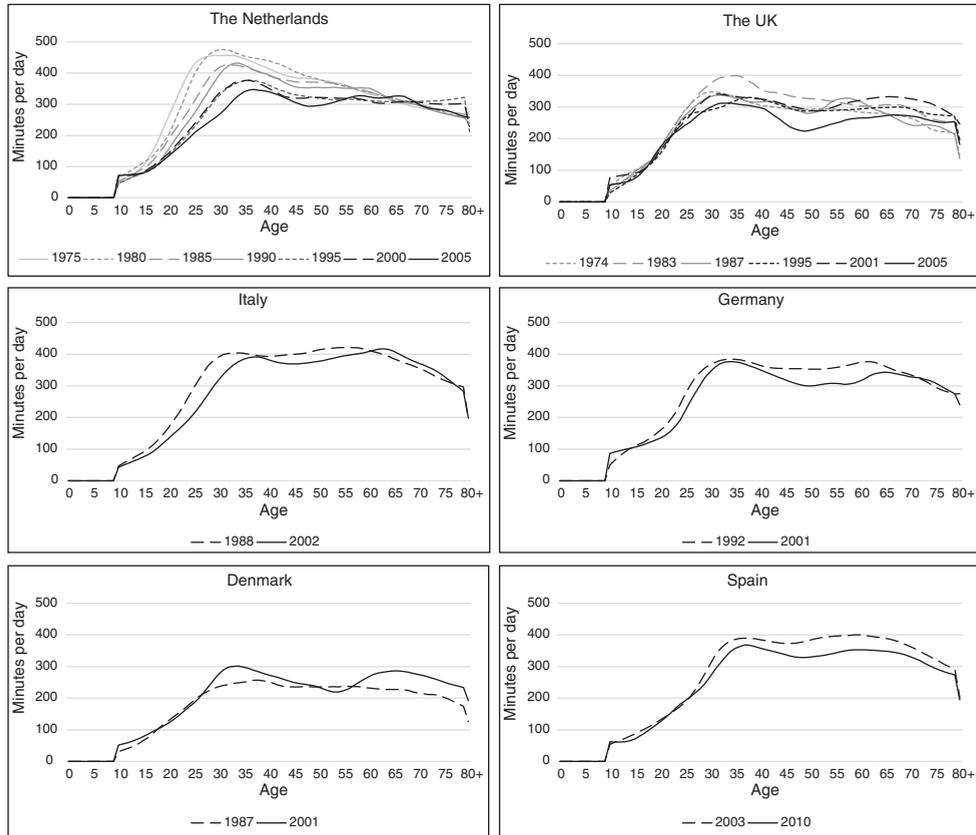
Our NTTA results reveal that the changes in production patterns over time differed substantially between men and women. Over the past few decades, as new employment opportunities and flexible work arrangements increasingly allowed women to participate in the labour market, women reduced the time they spent on unpaid work (Figure 1). Compared to the initial levels, production of unpaid work declined over the study period for almost all of the age groups in the analysed countries, except in Denmark during 1987 and 2001. This finding is in line with the results of previous studies of time use surveys, which showed that the amount of time women devote to unpaid work has declined continuously (Kan et al. 2011; Altintas and Sullivan 2016).

Figure 1 shows that among Dutch women, the number of minutes per day they spent doing unpaid work declined sharply, especially around the peak childbearing ages. For example, the time Dutch women devoted to unpaid work at age 26 decreased from 441 minutes in 1975 to 219 minutes in 2005. These results were expected, as in recent decades, the female employment rate has increased more in the Netherlands than in most other European countries (from 53.5% in 1993 to 70.8% in 2015) (Eurostat 2016b). The introduction of new work, family, and taxation policies in the Netherlands resulted in large increases in female part-time employment (Pascall and Lewis 2004), and, conversely, in sharp declines in the amounts of unpaid work women – and especially women of working ages – were performing.

Due to different combinations of institutional factors, social norms, and attitudes, the decreasing trend in unpaid work production has varied considerably across countries. While the Netherlands experienced a gradual decline in production starting in the 1970s, the trend in the UK over the same period was not continuous (see also Zagheni et al. (2015)). Furthermore, the decreasing trend in levels of unpaid work in Italy was characterised by a shift of the age profile to the right (explained in more detail below).

Figure 2 shows that as women were spending less time on unpaid work, men were starting to compensate for this decline by spending more time on unpaid

Figure 1:
Production of unpaid work, women, the Netherlands (1975–2005), the UK (1974–2005), Italy (1988–2002), Germany (1992–2001), Denmark (1987–2001), and Spain (2003–2010)^a

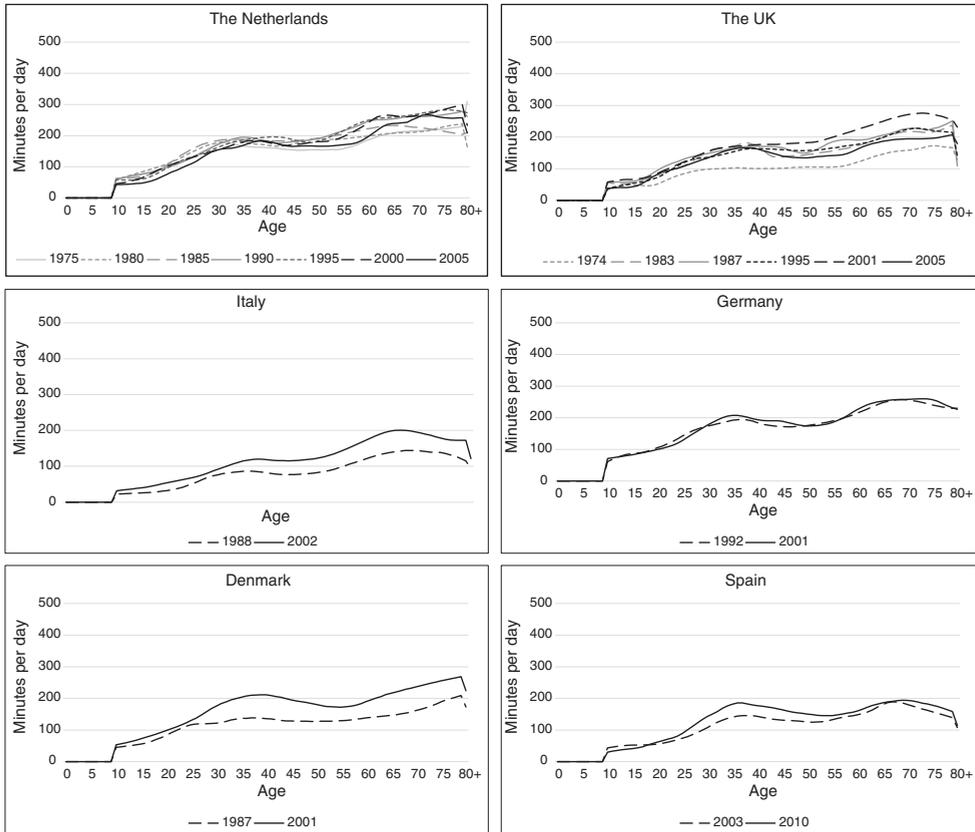


Note: ^aThe historical evolution of production patterns and the corresponding trends in unpaid work in the Netherlands and in the UK have been previously discussed by Zagheni et al. (2015).

Source: Multinational Time Use Study; Eurostat; Authors' own calculations.

work activities in general. The upward trend was most pronounced in Italy, where, on average, the time men at age 65 devoted to household activities increased by 60 minutes; and in Denmark, where the time men at age 40 spent on household activities increased by 75 minutes. However, this increasing trend was not observed in all countries and in all age groups. The increases were largest among men at ages when men usually become fathers (e.g. in Denmark and Spain) and at retirement ages (e.g. Italy). This finding implies that men were devoting more time to childcare activities and were more active in the production of unpaid work after retirement

Figure 2:
Production of unpaid work, men, the Netherlands (1975–2005), the UK (1974–2005),
Italy (1988–2002), Germany (1992–2001), Denmark (1987–2001), and Spain
(2003–2010)



Source: Multinational Time Use Study; Eurostat; Authors' own calculations.

than they were in the past. One exception is Germany, where men did not become more involved in unpaid work to compensate for the decline in female production. Furthermore, in the UK and in the Netherlands, it seems that the upward trend levelled off at the turn of the century.

The redistribution of unpaid work responsibilities between men and women implies that there is a trend towards gender convergence: i.e. because women have been performing less and men have been performing more unpaid work than in the past, the gap between male and female production has been getting smaller over time (see also Altintas and Sullivan 2016). However, in our study period, the

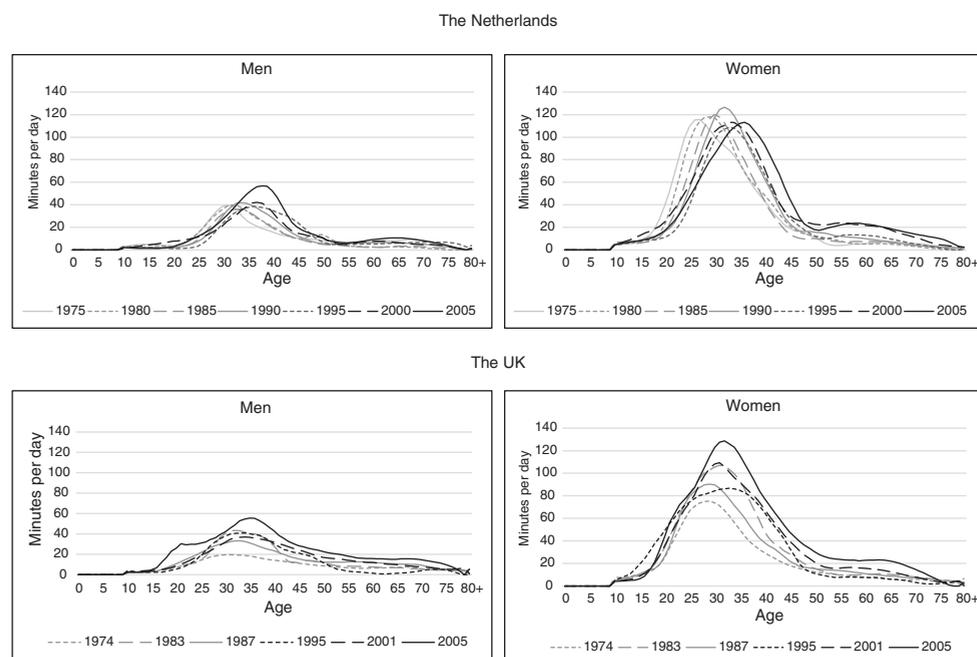
decrease among women at working ages was greater than the increase among men. Thus, it appears that gender differences persist, and remain extremely large in some countries. For example, in Italy in 2002, women aged 30 to 60 spent an average of 3.5 to five more hours per day on unpaid work than their male counterparts. The Italian gender gap is among the largest in Europe, and is driven by the very large amounts of unpaid work performed by women on the one hand, and the very small amounts of unpaid work performed by men on the other. People are much more likely in Italy than in most other European countries to be religious, family-oriented, and committed to traditional gender roles. Additionally, after Italian women have children, many never return to the labour market due to labour market rigidities and the lack of state support for working mothers. It thus appears that there is a strong division of labour in Italy, with women being expected to be responsible for the majority of unpaid work (Anxo et al. 2007; Vargha et al. 2015; Zannella 2015).

Another trend in production patterns has arisen as a result of recent changes in the timing of lifetime events. In many industrialised countries, young adults have been spending more time in education and have been entering the labour market at higher ages than in the past, and have thus been delaying parenthood (Sobotka 2010). Because the production of unpaid work (especially in the form of childcare) is highly affected by the birth of children, the phenomenon of delayed parenthood is clearly visible in our age profiles. Over time, the age profiles of childcare production have moved to higher ages, and the age profiles of total unpaid work production have moved to higher ages as well.

In Figure 3, the shift of childcare age profiles to later ages is presented for the Netherlands. In the observed time period, the peak moved to the right for both men (by around seven years) and women (by around nine years), which is in line with the increasing average age of Dutch women at childbirth (Eurostat 2016b). However, this pattern was not observed in all of the analysed countries. In most countries, the shift was more pronounced for women and was less pronounced (or was not visible at all) for men. Furthermore, although men were spending more time on childcare than in the past, childcare remained highly gender-segregated. In all of the analysed countries, mothers were still spending around two to three times more time taking care of their children than fathers.

As Figure 3 shows, parents have been investing increasing amounts time in the development of their children. This trend was most pronounced in the UK for both genders and at almost all ages, and even included large increases in the grandparenting years. In the Netherlands, the average amount of time spent on childcare among women aged 20–50 increased slightly over time (the age profile became somewhat wider), even though the peak of the age profile did not increase among working-age women. The increase among working-age Dutch men was more obvious. Moreover, there were relatively large increases in the grandparenting years among both women and men.

Figure 3:
Childcare production, men and women, the Netherlands (1975–2005) and the UK (1974–2005)



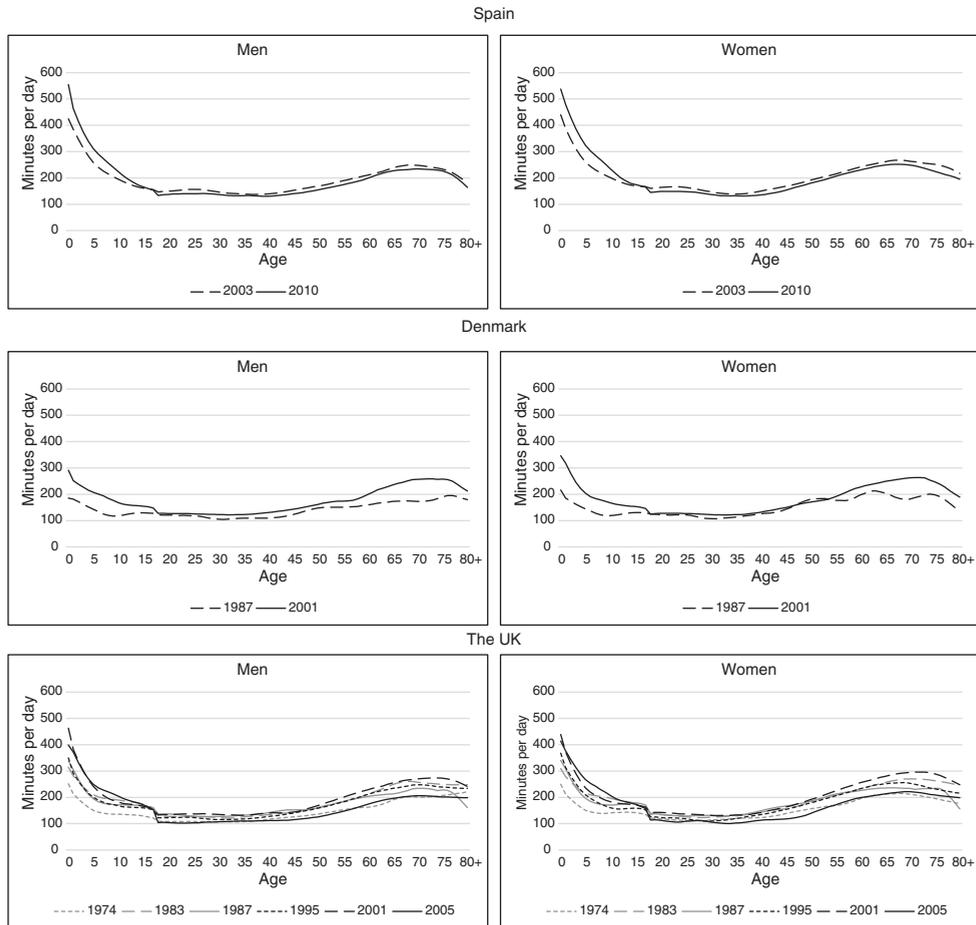
Source: Multinational Time Use Study; Eurostat; Authors' own calculations.

4.2 Consumption

In addition to being producers of unpaid work, household members are consumers of unpaid work. Figure 4 shows male and female age profiles of consumption of unpaid work for Spain, Denmark, and the UK.

In contrast to the production levels, the consumption levels were very similar among men and women, with differences arising only because of differences in household structures. Furthermore, age patterns of consumption did not vary greatly across countries and over time. In all of the observed countries, the shape of the age profile of consumption did not change significantly over time: i.e. consumption levels remained highest at young ages (mainly due to high levels of consumption of childcare services) and lowest from around the twenties to the fifties. It is at these ages that people tend to become parents, and that large shares of the unpaid work people perform are consumed by their children rather than by themselves.

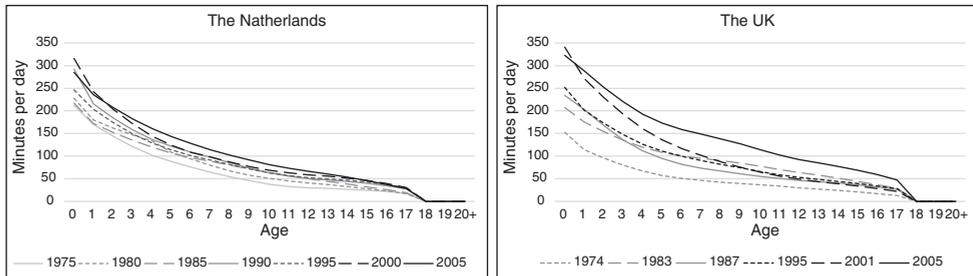
Figure 4:
Consumption of unpaid work, men and women, Spain (2003–2010), Denmark (1987–2001), and the UK (1974–2005)



Source: Multinational Time Use Study; Eurostat; EU Statistics on Income and Living Conditions; European Community Household Panel; Integrated Public Use Microdata Series; Labour Force Survey; Authors' own calculations.

The most important change in the age patterns of consumption occurred among children: i.e. per capita consumption at young ages increased over time (see Figure 5). This means that over time, parents were devoting more time to each of their children, which led to an increase in per capita human capital investment in children. Since parents in the UK were having fewer children (the total fertility rate dropped from 1.92 to 1.76 between 1974 and 2005, according to Eurostat (2018)) even as they were spending more time on childcare, per capita consumption of

Figure 5:
Childcare consumption, the Netherlands (1975–2005) and the UK (1974–2005)



Source: Multinational Time Use Study; Eurostat; EU Statistics on Income and Living Conditions; European Community Household Panel; Integrated Public Use Microdata Series; Labour Force Survey; Authors' own calculations.

childcare in the UK increased considerably (for a discussion of the relationship between fertility and human capital investments in the form of childcare, see Vargha and Donehower (forthcoming)). In the Netherlands, fertility also decreased between 1975 and 1995, but it increased somewhat up to the 2000s. Nonetheless, per capita consumption of childcare in the Netherlands increased steadily over time.

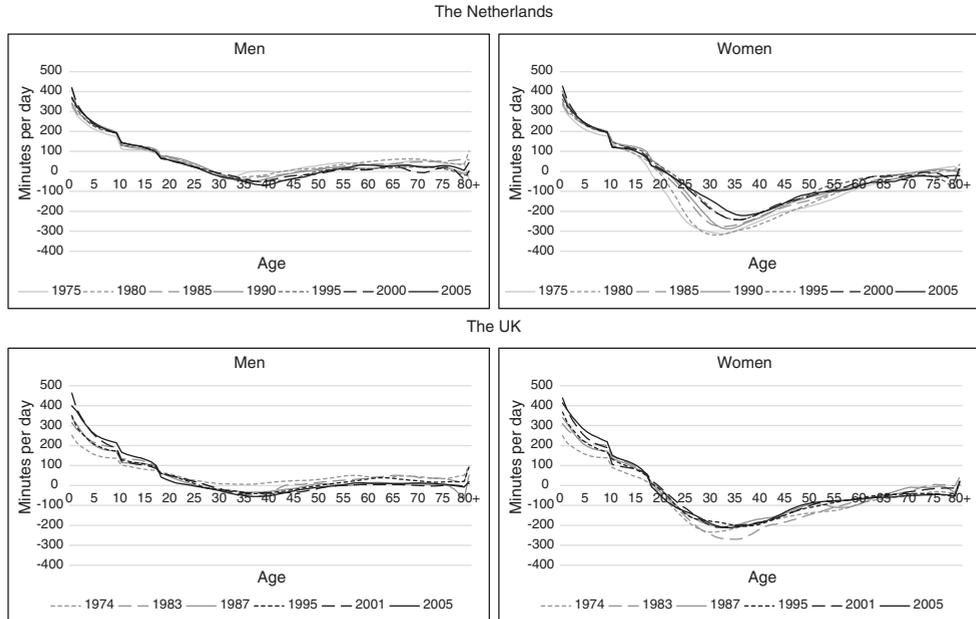
In contrast, Figure 4 shows that there were no clear changes in consumption patterns among the working-age and elderly populations. In general, consumption at working ages was rather constant, with only small changes over time. Figure 4 illustrates this pattern for the UK over a 31-year period, showing that even though there were small year-by-year changes in the consumption of unpaid work among the working-age population, the level of overall change was negligible. A similar pattern was observed in the other countries studied.

Historical changes in consumption patterns at old ages differed across countries. Our findings indicate that the main factor that drove consumption changes among the elderly in each country was the change in production levels. If the elderly remained active in retirement and dedicated some of their extra free time to unpaid work (i.e. if they performed more work), then they could also consume more at these ages. For example, men and women in Denmark intensified their participation in unpaid work at retirement ages, and this trend was accompanied by higher consumption levels among the elderly.

4.3 Net transfers

Net transfers represent the difference between consumption and production at each age. As such, many trends that can be observed for production and consumption can also be seen in the age profiles of net transfers. Typically, net transfers are positive for young and elderly people who are not able to support their total

Figure 6:
Net transfers of unpaid work, men and women, the Netherlands (1975–2005) and the UK (1974–2005)



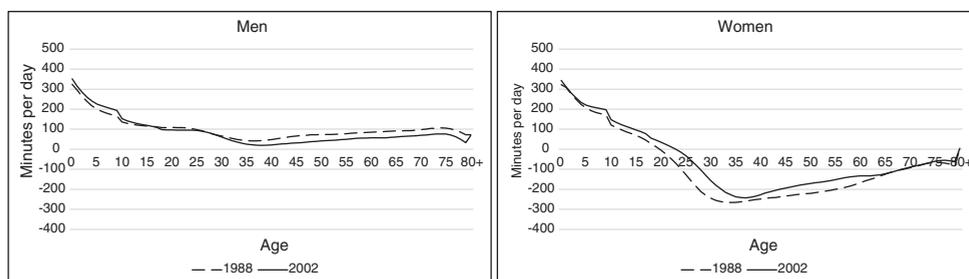
Source: Multinational Time Use Study; Eurostat; EU Statistics on Income and Living Conditions; European Community Household Panel; Labour Force Survey; Authors' own calculations.

consumption solely through their own production. In contrast, working-age people usually produce more unpaid work than they consume, and are thus able to transfer a portion of the unpaid work they produce to others; mainly to their children. Their net transfers are typically positive.

Because the production of children under age 10 equals zero or is very low, the age patterns of net transfers for children closely follow the age patterns of consumption. In all of the analysed European countries, the consumption levels of children have increased over time, but their production levels have been rather constant. Therefore, over time, children have been receiving increasing transfer amounts to satisfy their consumption needs. Figure 6 shows this trend for the Netherlands and the UK.

In their parenthood years, Dutch and British men transferred more and Dutch and British women transferred less in the form of unpaid work at the end than at the beginning of the observed time period. Thus, the gap in the amounts of unpaid work men and women were transferring to others was getting smaller over time. These results are in line with findings on the gender convergence in production levels, and apply not only to trends in the Netherlands and the UK, but to developments in other European countries. Another shift in production trends can be seen in the age

Figure 7:
Net transfers of unpaid work, men and women, Italy (1988–2002)



Source: Multinational Time Use Study; Eurostat; EU Statistics on Income and Living Conditions; European Community Household Panel; Labour Force Survey; Authors' own calculations.

profiles for the Netherlands, which indicate that the negative peak of net transfers for both men and women moved to the right due to delayed parenthood.

Changes in net transfers at older ages varied across countries. In general, among older women, the amounts of unpaid work transferred decreased slightly over the observed time period, or did not change significantly. Older men, by contrast, generally remained net recipients of transfers. However, in most of the observed countries, the transfer amounts older men received declined over the study period. This finding could be partly attributable to the development of public facilities for the elderly.

Italy stands out as the country where men remained net recipients of transfers even in their parenthood years, when people usually become net givers. However, Figure 7 reveals that their level of dependency on transfers from others decreased over time. Italy was also unusual in another way: even though their production levels decreased over time, women in Italy were still transferring much more unpaid work than women in other European countries, especially at old ages. This pattern in Italy is likely attributable to the persistence of traditional gender norms and the level of government support received by the elderly. We expected to find that familial transfer amounts were larger in countries where government support was weak and public facilities for the elderly were in limited supply. This was indeed the case in Italy, where families have long borne the primary responsibility for their elderly relatives, both by law and by tradition (Bettio and Verashchagina 2012). While similar levels of unpaid work transfers were observed in Spain, the levels were found to be much lower in the other analysed countries.

Despite these differences between countries, two main characteristics of the age patterns of net transfers did not change in the observed countries over time: i.e. transfers of unpaid work flowed first from women to men, and second from the working-age population to children and – to a lesser extent – to the elderly. While children were becoming more dependent on non-monetary transfers in the form of

unpaid work, older people were becoming less dependent on these transfers in most of the analysed countries.

5 Conclusions

How time is allocated among different daily activities, and especially between paid and unpaid work activities, differs greatly between men and women and across age groups. The aim of our paper was to present publicly available historical NTTA estimates for six European countries. The analysis included the age and the gender dimension. It extended previous research by analysing changes over time not only in the age patterns of production, but of consumption and net transfers in the form of unpaid work.

Over the past half-century, gender differences in the production of unpaid work have become smaller. As women spent more time participating in the labour market, the amount of time they spent performing unpaid work decreased. Meanwhile, men started devoting more of their time to unpaid work. We found only one exception to this pattern: namely, in Germany, where this trend was ambiguous. Our results also indicated that the first peak in the production age profile shifted to higher ages, in line with the tendency in European countries to postpone the birth of children. This shift was shown to be more pronounced for women than for men.

The age patterns of consumption were found to be very similar across countries and between women and men. Historical NTTA estimates showed that consumption patterns did not change significantly over time. The largest change was observed for children, because their consumption levels have increased over time. This finding implies that parental investment in children's human capital has been growing over time.

As levels of consumption and of production differed by age, net transfers emerged to fill this gap. Historical data on the evolution of net transfers show that due to increasing consumption, net transfers at young ages have also been increasing. We discovered that at parenthood ages, women were transferring less and men were transferring more of their unpaid work production than they were in the past. The negative peak of the age profiles shifted to higher ages as young people increasingly decided to delay parenthood. We also found that over our study period, older people became less dependent on net transfers, but that at these ages, men were still more likely than women to be net recipients, while women were still more likely than men to be net givers.

Although the amounts of unpaid work that were transferred changed over the study period, the direction of these transfers remained the same. First, unlike in the market economy, net transfers of unpaid work flowed from women to men. Second, transfers flowed from working-age people to their children (who were becoming more dependent on transfers of unpaid work over time), as well as to the elderly (who were becoming less dependent on these transfers over time).

One of the main advantages of using the NTTA results was that doing so allowed us to estimate the consumption of unpaid work, which was not reported in the time use surveys. However, in order to estimate the time consumed, we needed to assume that all of the adult members of the household consumed the same amount of unpaid services produced. Another limitation of our results is that we needed to impute the time devoted to unpaid household activities using information from databases, rather than from time use surveys. These auxiliary databases were selected based on their availability in the specific year and country. It should also be noted that the NTTA age profiles were age- and gender-specific averages. While estimating the confidence intervals of the estimates might have provided us with some additional insights, this would have been difficult to do using only one-year age groups, which are needed to show historical differences in the amounts of time allocated to unpaid work. Finally, as the consumption age profiles mainly reflected differences in the household structure over time, changes in the household structure may explain differences in both the consumption and the production of unpaid work over time. Thus, future research should attempt to isolate the effect of changes in the household structure, and to analyse how these changes affect the historical NTTA results.

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