Patterns of Time Transfers between Generations and Genders

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Abstract

We use data from the Multinational Time Use Study to estimate time production, consumption and transfers in a comparative perspective. We produced profiles by age, sex, household composition and education. In households with young children, household work is generally higher for both men and women, across age groups. However, as children grow up, household production remains high for women, whereas it returns to almost pre-childbearing levels for men. The heterogeneity in time production by level of education is minimal for men in all the countries considered. For women, we observed a gradient by education virtually in all countries. Over time, women across all age groups have decreased the time dedicated to household production. Men have generally increased it. Delay in marriage and childbearing have led the peak in household production to shift to older age groups. Our analysis adds to the literature about gender inequality and intergenerational transfers.

INTRODUCTION

"Remember, that Time is Money" is a famous sentence that Benjamin Franklin wrote in 1748 in *Advice to a Young Tradesman*. The popular quote is often cited in discussions that entail the economic concept of opportunity cost. The quote is particularly relevant for this study that deals with "time transfers", that is transfers in the form of unpaid work.

Time is a valuable asset and a limited resource. The way we use our time depends on a number factors, including family choices, life course dynamics, and, more broadly, societal-level opportunities and constraints.

Time has always had an important role in the study of intergenerational exchange. Influential work by Simon Kuznets and Margaret Reid dates back to the 1930s. A few decades ago, the work of Gary Becker on the theory behind allocation of time has revived interest in time use. A large number of social scientists have delved into previously unexplored territories of time use research thanks also to the increasing availability of survey data collected via time use diaries.

The community of time use scholars has grown significantly. Results from time use data have had a strong impact on virtually all disciplines in the social sciences. Yet, time remains a slippery concept, one that is often undervalued or ignored.

The importance of time use has become clear within the international network of researchers in the National Transfers Accounts (NTA) project. One of the goals of the NTA project is to develop a system to measure economic flows across age groups. NTA members have initially developed methods to analyze monetary transfers. However, the same general concepts can be used to evaluate intergenerational transfers that do not involve monetary exchange.

In this study, we borrow the theoretical framework of the NTA project to evaluate transfers of time between generations and genders. Our work complements existing analyses carried out by NTA researchers, and extends their scope. In addition to evaluating production, consumption and transfers, by age and sex, we add additional dimensions, namely household structure and educational attainment. The results that we obtain have important implications not only for the academic world, but also for family policies.

In the next sections, we summarize the existing literature; we describe the methods that we propose; and we offer a map of time transfers by age and gender across a number of countries. We then extend the analysis by investigating trends over time and by evaluating two additional dimensions of heterogeneity: household structure and educational attainment. These two variables add to the standard demographic dimensions of age and sex, and offer insights into the complex relationships between time use, fertility choices and socio-economic status.

BACKGROUND

The transfer of time has always been an important part of intergenerational exchange. Time consumption and production as stand-alone concepts have been recognized and studied by scholars but relegated to being excluded from standard national accounts. From Kuznets' (1934) advocacy for the inclusion of household production and Becker's extensive work on time allocation within the household (starting with his 1965 *Economic Journal* article) to the new wave of household economics, time-use analysis has an extensive if overlooked history. The advancement of time-use data and renewed emphasis on understanding how time is reallocated among members of families and households lead us to focus on time transfers. These non-monetary transfers, and the demographic implications of their differentials by age and sex, are extraordinarily significant at both the household and national levels.

An updated framework, which augments traditional measures of national accounts with intergenerational monetary transfers, has revealed new ways to make international comparisons of economic activity and to understand public and private transfers across the life cycle. In this section, we explain some of these innovations and their implications, and introduce a corresponding measure for time transfers, a vital component of intergenerational exchange. Using time-use data, we elaborate on how time production and consumption are measures of economic activity across the life cycle and address their trends by age and sex for five European countries and the United States. The life cycle deficit and asymmetry between time use and production over sex and age groups is addressed in our final section.

National Transfer Accounts and the Economic Life Cycle

Similar to the traditional United Nations System of National Accounts (SNA), National Transfer Accounts (NTA) provide a standardized way of compiling national economic and financial data that allows for international comparisons of economic activity (Lee, Mason, Tung, Lai & Miller 2006; United Nations 2013). Developed by Lee et al. (2006), the National Transfer Accounts framework has the additional aim of understanding patterns of intergenerational monetary transfers, at various ages and over time (Lee & Mason 2011b). Using NTA, Lee and Mason (2011a) find similar patterns of production and consumption across the life cycle in both industrialized and developing nations. Deficits between labor income and consumption generally occur up through age 26 and again after age 60. These deficits are supported, at least in part, by surpluses gained after the mid-twenties and before age 60. Countries with an older population age structure, such as Germany, display a much higher deficit among the elderly than those with younger populations (Lee & Mason 2011a).

The surplus incurred by those in the working ages is insufficient to offset the deficits that occur at either end of the life cycle. For this reason, deficits are typically funded through a combination of public and private transfers, with national and regional variability. For children, monetary investment in their development occurs through both private and public transfers. Generally, much of their consumption in European countries comes from public transfers via spending on public education and health care. Typical approaches to funding the deficit among the elderly include asset-based reallocations in addition to private and public transfers. Patterns of support vary by regional character, namely cultural expectations surrounding familial ties, economic strength, and welfare structure (Lee & Mason 2011a).

Patterns of Intergenerational Monetary Transfers

In European and other Western countries, private transfers comprise approximately 25 percent of the Gross Domestic Product (GDP) (Lee & Donehower 2011). Evaluations of financial transfer flows have found that intergenerational monetary transfers typically move downward, from parent to child or grandparent to grandchild (Albertini, Kohli, & Vogel 2007; Attias-Donfut, Ogg, & Wolff 2005; Kohli 1999; Lee & Donehower 2011). The majority of monetary transfers flow from elder family members to children up to their early twenties. With the exception of select Asian countries, the elderly typically remain net givers through their seventies or longer (Lee & Donehower 2011).

This is not always through a direct transfer of funds. A study of public transfers to the elderly in Germany observed that pensions are often re-routed through the elderly to younger family members, particularly those who are unemployed or still attending school. (Kohli 1999). Parental financial resources, the needs of the child, and the frequency of contact are all strong determinants of monetary transfers. Other predictors include gender, health status, and the presence of grandchildren (Albertini et al. 2007; Kohli 2004; Schenk, Dykstra, & Maas 2010). In a study of the elderly in the United States, economic hardship appeared to decline with age, especially for those residing with adult children – an indirect form of private transfers (Mirowsky & Ross 1999).

Previous research has identified macro-level factors that influence patterns of intergenerational transfers: structural, institutional, and cultural (Kohli 2004). The structural prevalence of co-residence seems to influence intergenerational transfers indirectly. Private transfers take place via the sharing of housing, transportation, and other costs. In Southern European countries, financial transfers occur primarily through co-residence. Adult children remain in the parental home for longer periods of time, often until their own family formation, in contrast with Northern and Continental European countries where children typically form independent households before marriage. Monetary transfers may be less frequent but are more substantial in Southern European countries with high levels of familial co-residence. The opposite is true in Nordic and Continental European countries, characterized by more frequent transfers of smaller sums (Albertini et al. 2007; Albertini & Kohli 2012; Kohli 2004).

Cultural prescriptions surrounding one's responsibility towards family members affect patterns of intergenerational monetary transfers as well. These may include expectations about how much is appropriate to give, to whom, and for what period of time (Kohli 2004). Familial solidarity and financial support that characterize Southern European countries, such as Italy and Spain, appears to be a protective factor against individual financial hardship (Reher 1998).

The institutional makeup of a society seems to act as a motivating or limiting force in intergenerational transfers. Institutional influences include legal obligations surrounding familial financial support, the cost of education, and the structure of welfare regimes, among others (Kohli 2004). Albertini et al. (2007) find that among Nordic, Southern, and Continental European countries, regional differences in welfare regimes are related to the frequency and degree to which family members choose to financially support one another. Others observe an inverse relationship between the availability of public transfers within the welfare structure and private monetary transfers (Lee & Donehower 2011). In examining individual countries (instead of clusters), however, Schenk et al. (2010) do not find a connection between European welfare regimes and monetary transfers from parents to their children.

Monetary Transfers and Beyond: The Role of Time-use

Incorporating Household Production into National Income and Product Accounts

Financial transfers between generations, while useful in understanding intergenerational flows, is only one element of the complex intergenerational economy. Much of intergenerational exchange takes place within the home: time spent in caring for children and elders, cooking, gardening, cleaning and many of the other activities involved in maintaining a household that have traditionally been omitted from economic measures. More recently, interest in measuring the economic value of household production and its intergenerational movements has reemerged. Scholars have focused on developing and refining measures and methods with the goal of creating a more complete understanding of economic fluctuations by gender, household composition, and across the life cycle, giving value to the economic contributions that have largely been made by women.

Traditional measures of economic activity have not included nonmarket activities, such as household production, largely because of inadequate measures. Many economists, including the creator of GDP, Simon Kuznets (1934), agreed that without household production, economic indicators were incomplete. Due to a lack of accurate data on nonmarket activities, attempts at their inclusion were not made (Landefeld et al. 2009). In a landmark attempt to change the traditional economic view of households as consumers, Margaret Reid, in *The Economics of Household Production* (1934), defined household production as all activities, traditionally performed in the home, which could be carried out in the public sphere. This is known as the third party criterion and is used in measuring nonmarket activity today. This commonly accepted definition of household production encompasses activities such as cooking, housework, home improvement, odd jobs, gardening, shopping, child care, elder care, and travel (Landefeld et al. 2009).

It was not until 2005 that the concerns of Reid, Kuznets, and others about the incompleteness of market accounts without nonmarket production were actively addressed. The Panel to Study the Design of Nonmarket Accounts was tasked by the Committee of National Statistics (CNSTAT) with assessing and recommending methods for the inclusion of household production and other nonmarket activities in National Income and Product Accounts (NIPA). They recommended that nonmarket production be included as satellite accounts, existing alongside traditional economic measures and standardized so as to be comparable (Abraham & Mackie 2005). At the recommendation of Abraham and Mackie in *Beyond the Market: Designing Nonmarket Accounts for the United States* (2005), household production is measured by imputing wages for each activity by its average market value and at a certain percentage of replacement costs depending on the level of specialization (Abraham & Mackie 2005; Landefeld et al. 2009). The value of including household production in measuring market activity is both economic and social. It gives more accurate measurements of national production and economic growth at the same time while rectifying the inherent inequality in devaluing work traditionally performed by women.

Initial analyses of nonmarket satellite accounts find that hours spent on household activities have fluctuated for both women and men over the past fifty years. In the United States, unpaid work comprised 31 percent of NIPA GDP in 1965 and only 19 percent in 2004. While household production remained the same for employed women in the U.S. between 1985 and 2004, it decreased for women who were unemployed. The average number of hours spent on household production rose from 15.8 to 17.0 among employed men. U.S. men who were not employed saw a decrease in hours from 25.6 to 23.0 during this same period (Landefeld et al. 2009).

Household Production in the Generational Economy

Since the 2010 Global National Transfer Accounts conference, discussions have emerged around the incorporation of household production within the National Transfer Accounts framework. In studying the generational economy, researchers acknowledged that NTA profiles could not simply be disaggregated by gender without the addition of time accounts, or accounts of nonmarket activities. Without the inclusion of household production, surpluses in economic activity across the life cycle are disproportionately attributed to men and those who participate in market production. The incorporation of non-monetary transfers, termed National Time Transfer Accounts, gives a much fuller picture of the patterns of production and consumption of both women and men as well as intergenerational exchange (Donehower & Mejía-Guevara 2012; NTA 2013).

Patterns in intergenerational time transfers related to gender, age, and household composition have emerged in preliminary analyses, mostly of Western European countries and the United States. Between genders, the flow of nonmarket transfers tends to move from women to men. Profiles of household production show that women are the primary producers of household activity, incurring surpluses across the life cycle. Men typically

spend far less time than women on household production at all stages (Anxo et al. 2007; Apps & Rees 2005; Donehower & Mejía-Guevara 2012; Phananiramai 2011). A comparative study of nonmarket activity in Western Europe and the United States have found the gender gap to be widest in Italy, followed by France, the United States, and Sweden. This gender gap is most prominent after marriage and before age 59 (Anxo et al. 2007). A study of household production in Thailand finds that household production peaks at age 31 for Thai women, but remain relatively high between approximately ages 25 and 70 (Phananiramai 2011).

The relationship between household structure and household production is predominantly an inverted u-shape. For women, having children has the greatest impact on increasing household production, specifically caregiving activities. Studies have observed that, among women, time spent on unpaid work peaks when young children, ages 0 to 5, are in the home, after which market activity increases alongside a slight decrease in household production (Anxo et al. 2007; Apps & Rees 2005). The impact of household structure seems to have only a slight effect on levels of household production among men who maintain relatively high levels of market activity through pre-retirement. For men, household production also peaks when young children are in the home, but to a lesser degree than for women. Unpaid activity also increases for men later in life, after retirement, another point at which nonmarket activity rises among women who are married (Anxo et al. 2007; Apps & Rees 2005).

Generationally, there is a net downward flow in time transfers between parents and children (Albertini et al. 2007). In their study of European parents and their adult children, Albertini et al. (2007) find that, on average, older adults incur a surplus of 300 hours per year of household production in relation to their children. Giving support appears to be positively correlated with having grandchildren, higher socioeconomic status, living with a spouse or partner, being female, having more emotional closeness, and spending more time together (Albertini et al. 2007; Kim, Choi, Chatterjee, & Kim 2012). It is interesting to note that as hours of employment increase, caregiving support for elders decreases and is replaced by monetary assistance (Bonsang 2007).

As with monetary transfers, there are apparent cross-national differences in household production and transfers of time among European countries and the United States. Countries who display very small gender gaps in household production, such as Sweden, tend to have more robust support for parents with young children, including public childcare facilities, comprehensive parental leave, and other policies that pursue increased balance between family and paid work. In countries where childcare support is more limited, such as in Italy, or costly, as in the United States, the gender gap in household production becomes more prominent (Anxo et al. 2011).

There is some evidence of a significant correlation between regionally-based welfare regimes and the frequency and intensity of time transfers between adult children and their parents. The relationship remains significant even when controlling for socioeconomic status, health conditions, household composition, and co-residence. In the stronger welfare system of Nordic countries, there tends to be greater frequency in time transfers from

children to their elderly parents than in more conservative Continental and Southern European countries. The intensity of support in Southern Europe, however, is more substantial. It is likely we see this pattern because of household structure. The care responsibilities are more often shared among siblings in Northern Europe while the primary responsibility for care is given to the cohabitating sibling in Southern European countries, such as Spain and Italy (Albertini et al. 2007; Bonsang 2007). Public support of family care for the elderly through cash-for-care provision in Europe is limited and the support given to elders from family members is primarily administrative and household related. The exception is in Southern Europe where children provide more physical care for older parents. This is likely due to lesser availability and financial feasibility of care services for the elderly in Southern European countries (Brandt, Haberkern, & Szydlik 2009; Saraceno & Keck 2010).

TIME TRANSFERS OVER THE LIFE COURSE

Time use data

The availability of time use data has made the measurement of household production and intergenerational time transfers possible. Time use surveys ask respondents to record their primary and secondary activities, location, and other persons present for each time slot of a randomly assigned day. The diary includes non-market activities such as cooking, housework, odd jobs, gardening, shopping, childcare, eldercare and other forms of household production that meet the third party criterion and can be used in estimations of time transfer profiles.

The largest set of harmonized time-use micro data is the Multinational Time-use Study (MTUS), developed by Jonathan Gershuny and Sally Jones in the 1970s. Originally, the MTUS included 41 categories of activities and compared British, Canadian, and Dutch data with the 1965 Szalai Multinational Time Budget Study. Presently, the MTUS includes 69 daily activities and is comprised of more than 60 time-use datasets from 25 countries, including Italy, Spain, France, and Germany. Both the Harmonised European Time-use Survey (HETUS) and the American Time-use Survey (ATUS) have been incorporated into MTUS data. The availability of these data allow for comparative analyses of household production and consumption across the life cycle (Fisher & Gershuny 2013).

Time Production

The time dedicated to household production can be estimated directly from time use data. In this section, we show our estimates of age- and sex-specific profiles, obtained from MTUS data. First, we identify a set of unpaid productive activities that meet the "third party criterion" (Reid 1934). In other words, we selected activities which somebody else can potentially be hired to perform. These activities include childcare, housework, shopping, caregiving, cooking, washing, domestic travel and gardening. We estimated the average time dedicated to these activities by sex and age group, and use Friedman's

smoother (Friedman 1984) to obtain a smooth profile of time dedicated to unpaid productive activities by age.

Figure 1 presents profiles of time dedicated to domestic work, by age and sex, as calculated from MTUS data. Our focus is the comparative analysis of a sample of European countries: Austria, France, Italy, Germany, and Spain. Equivalent time production data for the United States is displayed for further comparison. There are some similar trends across countries, with notable differences among the magnitudes of gender gaps. Women spend much more time on domestic work than men at all ages. The gender gap is prominent at early ages (with the exception of the United States) and then widens during the mid-to-late 20s for each country addressed in Figure 1. This spread is magnified following major life events such as marriage and first births. The gaps typically narrow during years associated with retirement in each country.

Overall, United States and Germany exhibit the smallest gaps between hours spent on domestic work by men and women. The widest gaps are seen in Italy and Austria. This is largely attributable to childcare-related activities and the high rate of female take-up of post-birth parental leave policies. Time dedicated to unpaid work for Austrian women declines after child-rearing ages, while remaining at relatively high levels for Italian women. This is likely due to the former returning to the labor force at a greater rate. As the employment rate for Italian women continues to rise (Da Roit and Sabatinelli 2013), we might expect to see a similar trend emerge for Italian women, as their time spent on unpaid work decreases following child-rearing.

Within the harmonized data, the level of six hours per day occupied on domestic work represents a significant distinction between groups of countries. Unpaid work by women in Italy, Spain, and Austria is generally at or above six hours per day for most of their adult lives. On the other hand, women in France, Germany, and the United States are consistently below this threshold.

For the most part, men's hours spent on domestic work steadily increase as they grow older. This is not the case for men within the United States – their hours rise until the mid-30s and then level off. However, they also maintain the highest number of hours overall among this group.

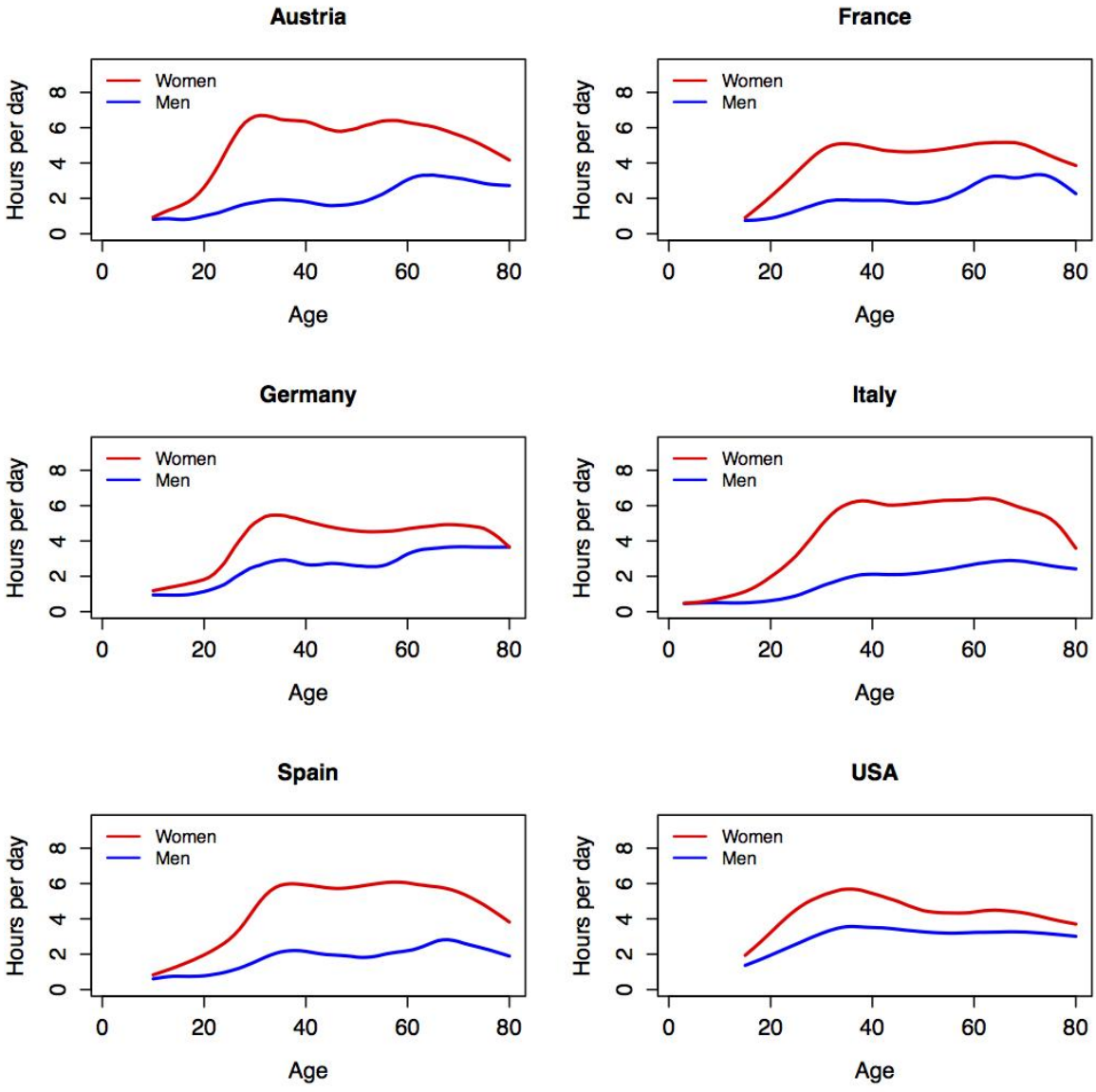

Figure 1: Estimated profiles of time dedicated to domestic work, by age and sex, for the following countries: Austria (1992, n=25,233), France (1998, n=15,441), Germany (2001, n=35,813), Italy (2002, n=51,206), Spain (2002, n=46,774), USA (2003, 72,922). Source: Own calculation on MTUS data.

Time Consumption

Measures of time consumption are not explicitly available from the MTUS data, so we use an indirect method in order to generate age-specific profiles. We assume that the overall time produced within the household is equal to the overall time consumed, and that time consumption does not vary by sex. We generate estimates of profiles of time consumption using an approach that has been widely used to evaluate consumption of market goods for individuals, by age, from aggregate household-level data (e.g. Mankiw and Weil 1989; Zagheni 2011). This method is based on a regression model with indicator variables for different age groups in the household. The overall consumption of time for household *j*, C_j, can be expressed as an additive function of time consumption for each member of the household:

$$C_j = \sum_{k=1}^{M} C_{jk} \quad (1)$$

where C_{jk} is the consumption of the *k*th member of the household *j*, and M is the household size. For each individual, consumption of time is considered a function of age. Thus, time consumption for an individual of age a can be expressed as $\beta\ (a)$. In a linear setting, each age group has its own parameter, so that:

$$C_{jk} = \beta(0)I(0)_k + \cdots + \beta(a)I(a)_k + \cdots + \beta(80)I(80)_k \quad (2)$$

where $I(a)_k$ is equal to 1 if the age of household member *k* is equal to a ; 0 otherwise. Combining equations (1) and (2), we obtain the following expression, with parameters that can be estimated using a linear regression model:

$$C_j = \beta(0)N_j(0) + \cdots + \beta(a)N_j(a) + \cdots + \beta(80)N_j(80) \quad (3)$$

where:
C_j = total time for domestic activities produced/consumed by household *j*
$N_j(a)$ = number of members of age a for household *j*
$\beta(a)$ = OLS parameter estimates that represent the effect of an additional person of age a on household time consumption/production.

The β coefficients in equation (3) can be interpreted as the demand for or consumption of time for the respective age groups. We smoothed the series of coefficients for each single age group using Friedman's smoother to obtain a smooth profile of time consumption by age and sex.

The difference between profiles of consumption and production gives a measure of the life cycle deficit for each age group and sex. Positive values for the life cycle deficit indicate that the person in the specific age group considered consumes more household time than he or she produces.

The European countries in our analysis have some similar trends for time consumption of unpaid domestic work over the life cycle. Figure 2 displays aggregate hours per day, and the trend lines for each country combine genders. We observe time consumption rising with age over all prime working years, followed by a general maximum in the early-60s. France's pattern of time consumption stands out, as its population has the lowest time consumption during their prime working years, but among the highest as they enter their 60s.

During these ages, individuals tend to be gradually reducing hours spent on waged work and transitioning to part-time work or retirement. As discussed earlier, elders receive support that is primarily administrative, medical, and household-related. The time consumption patterns here are strongly correlated with the onset of health and mobility issues that coincide with aging. For instance, home health care, accompaniment to medical appointments, transportation, and household tasks would all be categorized as time consumption for older respondents. We should expect these consumption profiles to be greater in those regions and countries where eldercare occurs more often in an intergenerational household rather than in public or private facilities.

In general, the analysis of time consumption for older households is sensitive to age effects and household structure. Upon retirement, time production and consumption both tend to be high. As health care needs or general infirmities become more prominent, some care or household tasks that were exchanged via time transfers in the past transition to the market, where others are hired to assist with or complete them. Furthermore, there are residual effects of differential life expectancy that must be investigated. Women are more likely to survive their husbands, spend more time in retirement, and live alone. If a gender gap exists within a household's time consumption and production, the death of the husband may change the time use of the surviving woman.

Lee and Mason (2011a) demonstrate the substantial downtrend in the ratio of labor income to consumption between ages 55 and 60; these individuals are relying on private dissaving, public transfers, and private transfers to fund their consumption. Figure 2 shows a sharp rise in time consumption in this age bracket, suggesting that this age group receives substantial non-monetary intra-household transfers as well. This can be interpreted to be part of a larger exchange scheme often observed in intergenerational households and family relationships.

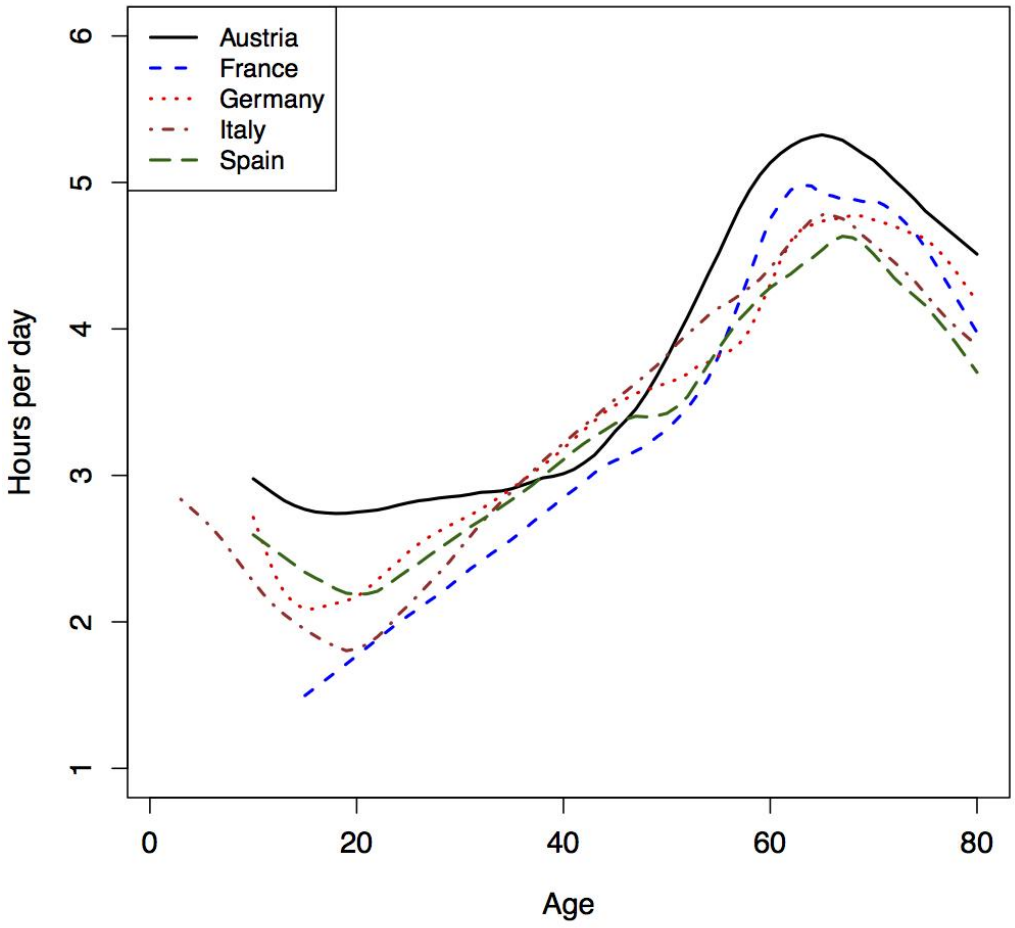

Figure 2: Estimated profiles of consumption of unpaid domestic work, by age, for the following countries: Austria (1992, n=25,233), France (1998, n=15,441), Germany (2001, n=35,813), Italy (2002, n=51,206), Spain (2002, n=46,774). Source: Own calculation on MTUS data.

The Life Cycle Deficit

The NTA framework discussed above has allowed researchers to quantify the gaps between consumption and labor income across the life cycle, as well as to examine the resulting surpluses and deficits. Public and private transfers supplement the deficits that occur at both ends of the life cycle. Lee and Mason (2011a) highlight the role of intergenerational monetary transfers and elaborate on how a country's population age structure affects the levels and direction of its deficit support.

The transfers that subsidize the ages before and after one's prime working years are comprised of both monetary and non-monetary sources. Time transfers complement monetary transfers in some circumstances and substitute for them in others. Their interaction is largely determined by the structural, institutional, and cultural factors as characterized by Kohli (2004), in addition to the prices of market alternatives to time production. Estimating time transfers then becomes a crucial element in the analysis of the intergenerational economy. Here we propose an analogous quantity for time use.

Each unit of time consumed has been produced by a non-market participant. Thus, any deficit, or difference between time consumption and time production, that persists over time must be recognized as a reallocation from one household member to another and/or from one generation to another. Private unpaid work by family members subsidizes some of the deficit, but is not shared equally among men and women or evenly distributed throughout one's life cycle. We noted earlier how, if household production is not accounted for, the life cycle reallocations are severely biased in favor of men and those who participate in waged work in general.

Figure 3 displays the trends, by gender and age, for the difference in time production and consumption among five European countries. Recall that the life cycle deficit is positive when time consumption is greater than time production. We observe a flow from women to men, and that this gender gap is the widest after conventional ages of marriage and child-rearing, up until age 59. The results for men are roughly clustered together over different ages, with the exception of German men in their prime working ages and above. Austrian men maintain the highest levels of time surplus within this group of countries. Overall, in terms of hours per day, men maintain a relative surplus over the life cycle, generally dipping during the prime work years – and also coinciding with major demographic events such as marriage and having children. The peak typically occurs during their 50s.

As previously discussed, these patterns vary by country and regional character as well. Women's time production is likely more elastic with respect to public policies related to childcare and eldercare. The deficit for French and German women narrows more rapidly

than for Spanish and Italian women. This may also represent a peak in the number of hours dedicated to support of grandchildren.

Women experience a striking trend toward a daily unpaid work deficit starting in their 20s and continuing well into their 30s. The difference between their time consumption and production diminishes as they return to the workforce. However, the deficit persists throughout their working years, only approaching some measure of balance in their 70s, if at all. This latter shift could be interpreted as a consequence of a woman's own retirement, joint household retirement, or even of entering widowhood if the male partner is a net consumer of time within the household.

The differential between men's and women's life cycle deficits is an important part of the investigation into time transfers. This is reinforced by results from Stancanelli and Van Soest (2012), who demonstrate the effect of the retirement of one partner in a couple on the time spent on home production activities of both partners. It is not surprising that own retirement, for example, significantly increases the husband's or wife's housework hours. But Stancanelli and Van Soest also show that the wife's retirement reduces the husband's home production by two hours per day, whereas the wife's time spent on home production does not significantly change upon the husband's retirement (2012).

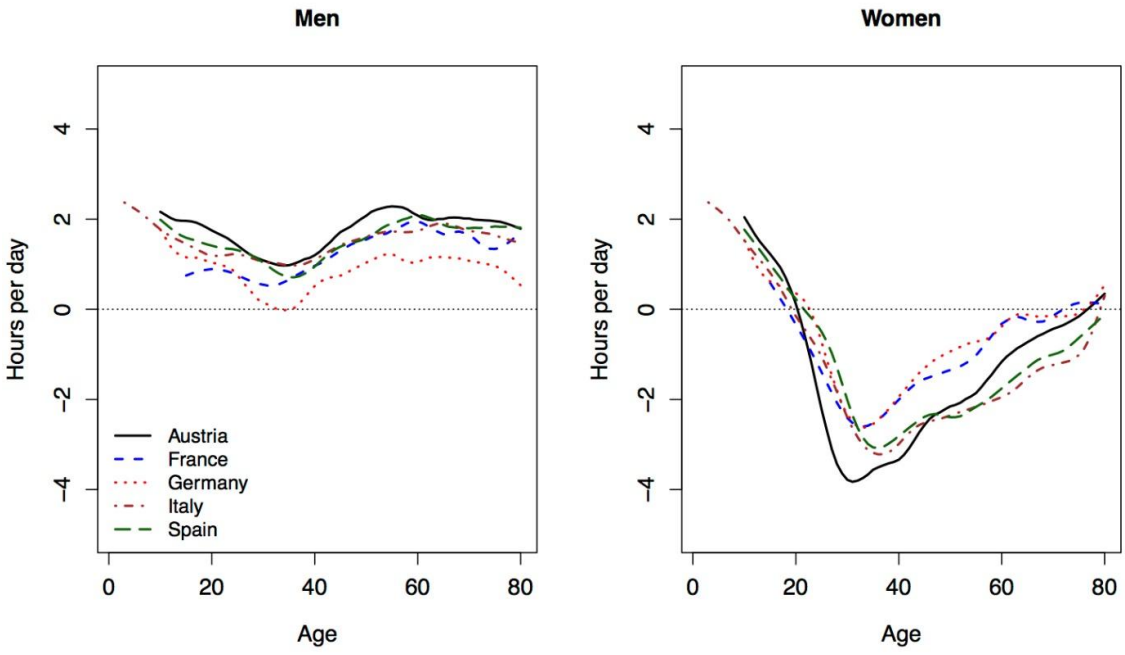

Figure 3: Estimated profiles of life cycle time deficit, by age and country, for Austria (1992, n=25,233), France (1998, n=15,441), Germany (2001, n=35,813), Italy (2002, n=51,206), Spain (2002, n=46,774). Source: Own calculation on MTUS data.

HETEROGENEITY IN HOUSEHOLD PRODUCTION OVER THE LIFE COURSE

In the previous sessions we introduced the system of National Transfer Accounts and we discussed how time use data can complement monetary accounts by adding the dimension of unpaid household work.

So far, our analysis has focused on the two most important demographic dimensions of intergenerational transfers: age and sex. These two variables account for most of the demographic variability in patterns of transfers. The analyses and methods that we described in the previous session represent the cornerstone of our approach to the study of transfers between generations and genders. Their relevance is paramount. However, there are additional sources of heterogeneity that we need to take into account in order understand patterns of time transfers and differences across countries.

Here we add household structure and education to the traditional dimensions of age and sex. Then we look at trends over time, for those countries for which we have data. Expanding the scope of our analysis is important because it allows us to improve our understanding of past trends and continuity with the present. It is also relevant to guide projections and extrapolations for the future. First, we will discuss heterogeneity in time production by household structure. This is particularly important to understand the role of fertility decisions on the allocation of time. Second, we will evaluate differentials by educational attainment. This is important for projections and policy.

Profiles by age, sex, and household structure

In this section, we add the dimension of household structure to the ones that we considered earlier: age and sex. In the previous sections, we showed that there are important differentials in time production by gender. A large portion of the differences between men and women is related to child-rearing and chores (Zagheni and Zannella 2013). Household composition can be used as a proxy for fertility levels. The analysis that we present in this section is indicative of the inter-relationships among fertility choices, gender inequality, labor force participation and time use.

Below replacement-level fertility rates in European countries have spurred interest in the interplay among women's market activity, household production, and fertility (Eurostat 2013). Apps and Rees (2005) find that while there is a negative correlation between women's labor force participation and fertility in three OECD countries, there is no significant difference in the family size of women who remain employed and those who do not, calling into question the assumed equal exchange of market activity and household activity. The authors suspect that we see this pattern because women who choose not to

remain employed, while young children are in the home, are limiting family size in preparation for a return to the labor market.

Variations in fertility levels in Europe may be attributable, at least in part, to family policies that affect women's and men's ability to maintain employment while caring for young children. Policies related to taxation, social security, and child care have the ability to create incentives or disincentives for parents, particularly women with young children, to continue in the labor market. Policies in Northern Europe tend to work toward a more egalitarian model, providing support that focuses on increasing women's labor force participation. Broadly speaking, Southern European family policies are less generous. Very limited public coverage exists for younger children, and with significant variations among regions and municipalities (Da Roit and Sabatinelli 2013).

France has developed family policies that encourage mother's employment while Germany's policies are more conservative and focused on supporting maternal leave, assuming a male breadwinner model. Those countries that have been able to retain relatively higher fertility seem to be those that have well-developed public childcare provisions for working parents. In fact, there is a positive relationship between fertility and women's labor force participation in countries that have individual, as opposed to joint taxation policies, and adequate child care facilities, instead of public cash assistance (Apps & Rees 2005; Neyer 2003).

There is some evidence of a relationship between the gender gap in household production and fertility choices. Studies in Italy and Switzerland have shown that couples who portray more egalitarian roles related to household production display an increased likelihood of having another child (Bernardi, Ryser, & Le Goff 2013; Mencarini & Tanturri 2004). Qualitative work of married and divorced couples have found that egalitarian roles did not necessarily lead to lower fertility, but ambiguity in roles did, likely in order to minimize conflicts over household production – namely caregiving (Matthews 1999).

Figures 4 and 5 show how household production changes with age, sex and household structure, for women and men, respectively, and for a number of European countries. We show profiles for households with no children less than 18 years old, households with at least 1 child less than 5 years old, and households with at least 1 child who is between 5 and 17 years old.

The two figures offer three important insights. First, having a young child (less than 5 years old) is associated with an increase in time production both for men and for women. However, the increase is substantially larger for women (often twice as much). Thus, the time requirements related to childbearing are quite skewed. Second, as the children grow up, the unpaid time dedicated to the household reverts, on average, to the level of no-child households for men. That is not the case for women, whose profiles of time production remain substantially above the no-child benchmark. Third, although the main trends are similar across countries, there are important differences. In Southern European countries, gender differences in time production are more pronounced. In Nordic countries like

Denmark, that are more egalitarian, profiles of time production of men and women are more similar to each other. Germany falls in between the two “extremes”.

The data that we presented cannot be used to make any causal statement about the relationship between fertility and home production. The figures provide a map of the relationship between time production and age, sex, and household composition. They reveal a correlation between cultural, institutional and labor market factors, and the profiles of time production. We cannot explain the direction of causality. We presented some macro-level descriptive findings that are intended to stimulate further research with longitudinal micro data.

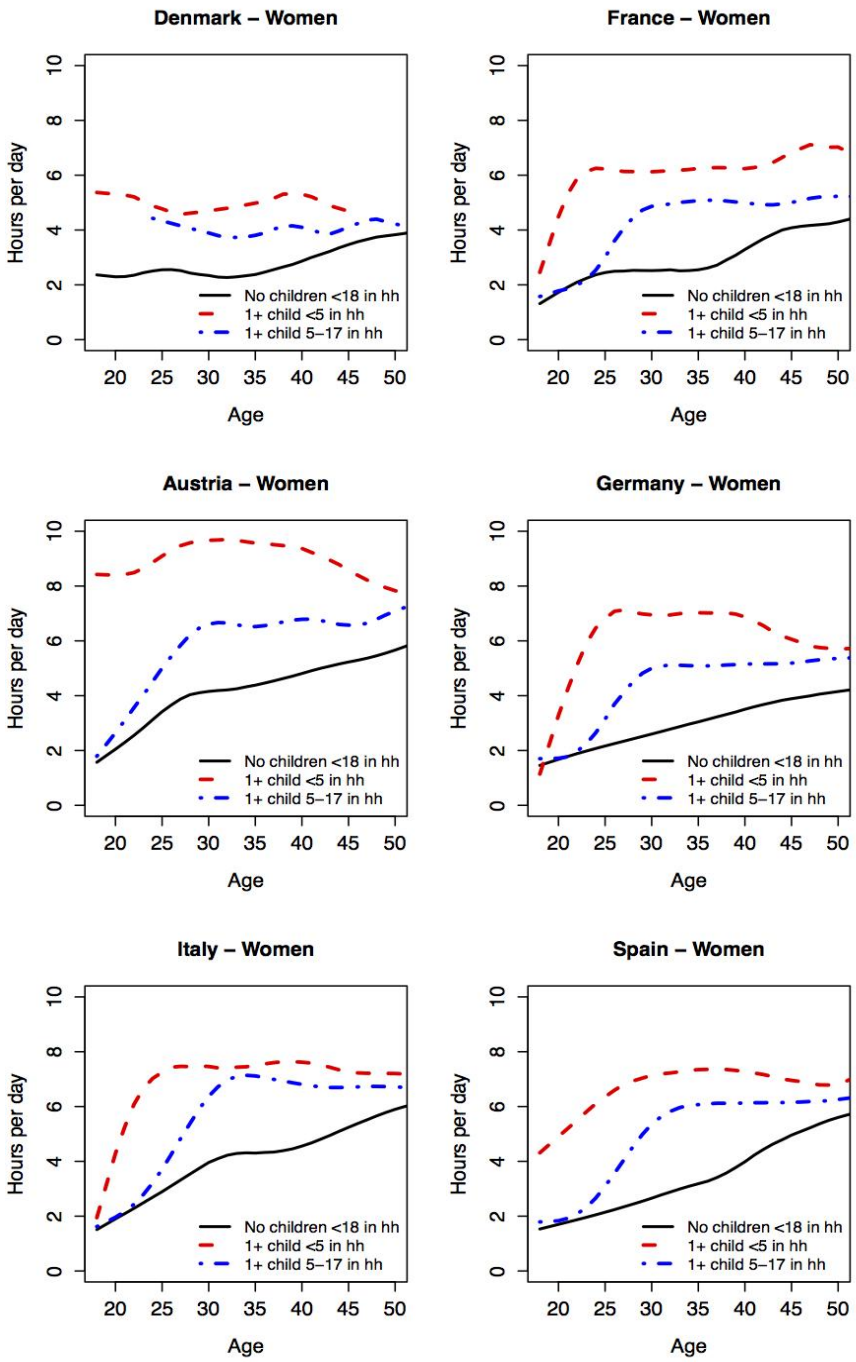

***Figure 4**: Women's profiles of time production by age, sex, and household structure in Denmark (1987), France (1998), Austria (1992), Germany (2001), Italy (2002) and Spain (2002). Source: own elaborations on MTUS data.*

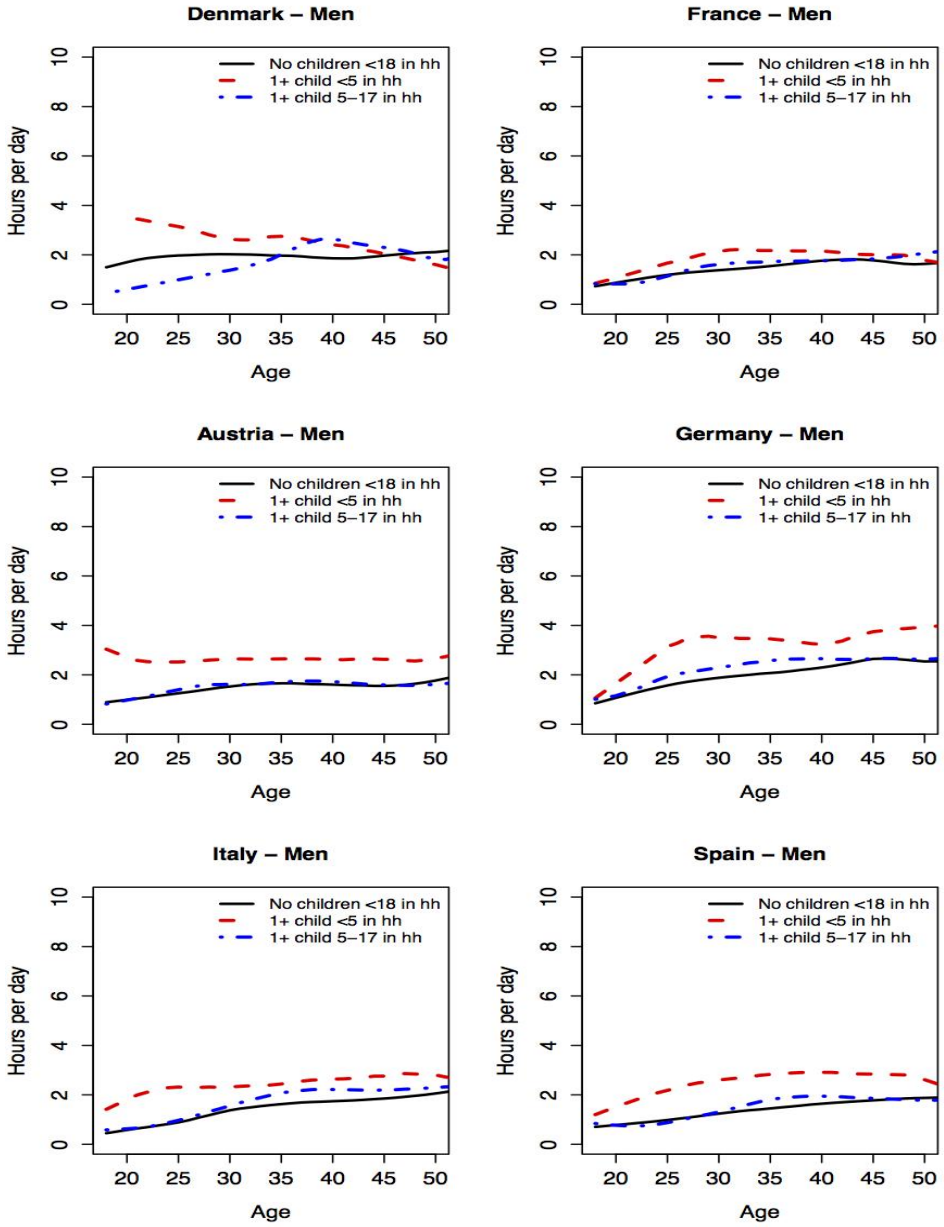

Figure 5: Men's profiles of time production by age, sex, and household structure in Denmark (1987), France (1998), Austria (1992), Germany (2001), Italy (2002) and Spain (2002). Source: own elaborations on MTUS data.

Profiles by age, sex and education

Educational attainment is an important dimension of heterogeneity by gender and across countries. It is important to consider education, partially because it is a proxy for socio-economic status, partially because it is correlated with labor market participation, and

partially because educational attainment has been changing, often in predictable ways, across countries. Thus, understanding the relationship between education and time use may be helpful to extrapolate trends for the future.

The multinational time use study (MTUS) carefully harmonized data on educational attainment across countries, thus adding a very valuable comparative dimension to the data set. We exploited the richness of the MTUS data to generate figures 6 and 7, which show profiles of time production by age, sex, and educational attainment for women and men, respectively. It is striking that there are only minor differences in the profiles of men: the variability by level of education is minimal for men in all countries considered. For women, on the contrary, we observed a gradient by education virtually in all countries. Women with secondary education or less spend more time in household production than women who have completed secondary education, across all age groups. Analogously, women who have completed secondary education spend more time in household production than women with education above secondary, across all age groups. The gradient in time production by education is more visible in Southern European countries, where the differences in profiles by education are substantial. At the opposite end of the spectrum, the differential is very minor or nonexistent in Denmark and Germany.

The relationship between education and household production may be partially explained in terms of economic reasons. Women with lower levels of education would receive, on average, lower wages in the market. Thus, the opportunity cost of home production would be lower. The same type of reasoning should hold for men as well. However, we do not observe any gradient for men. There are a number of social, institutional and normative factors at play that regulate the division of (paid and unpaid) labor within the household. In Southern Europe, the lower prevalence of dual-earner families, compared to Nordic countries only partially explains the sex differentials in household production. The combination of changes in the labor market together with the persistence of a number of social norms have led to an increased “time squeeze” for women (Sambt et al. 2014).

Across Europe and, more broadly across the globe, educational attainment has been increasing over time. The trend is expected to continue over the next decades (Lutz, Butz and KC 2014). If the relationship between education and time use persists, we expect that further improvements in women's educational attainment will lead to reductions in the gender gap in household (unpaid) production. Policies designed to increase levels of education may thus contribute, indirectly, to a more equitable gender distribution of housework, childcare and caregiving activities.

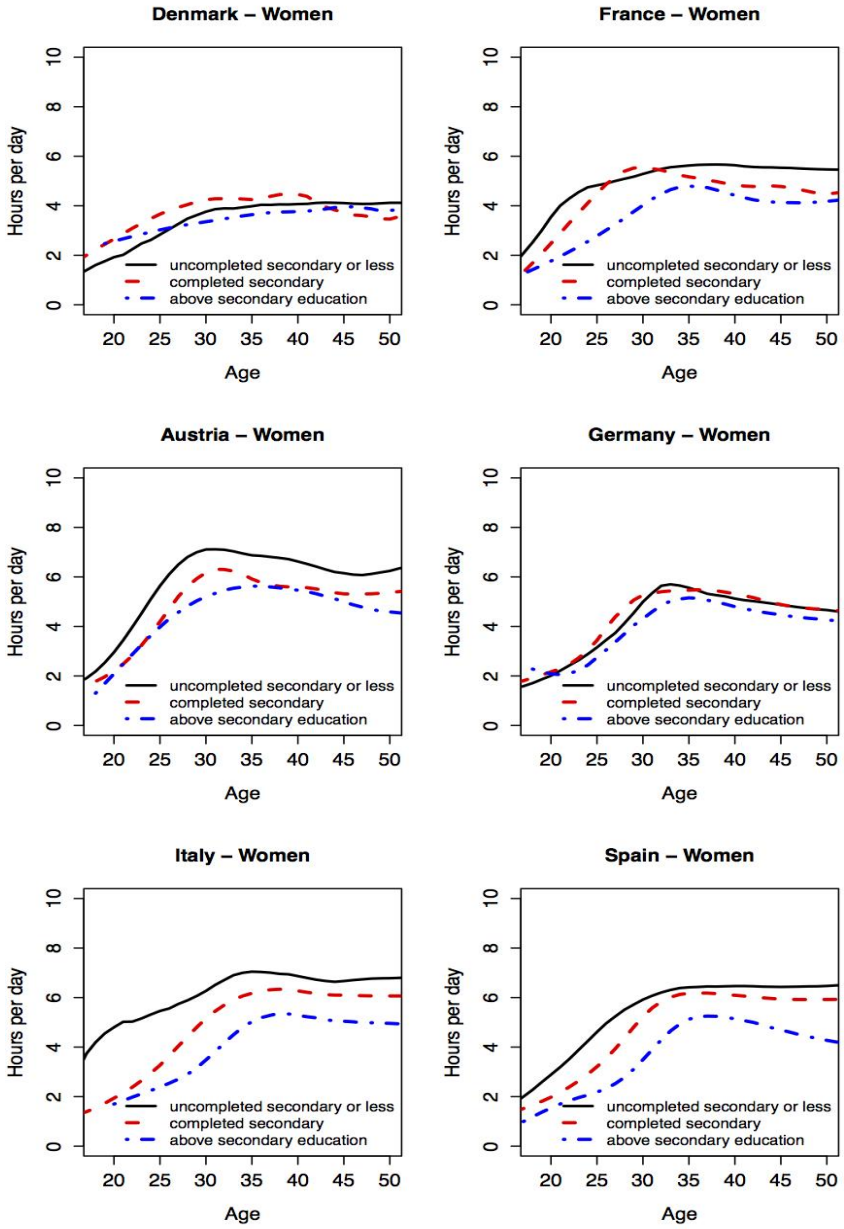

Figure 6: Women's profiles of time production by age, sex, and educational attainment in Denmark (1987), France (1998), Austria (1992), Germany (2001), Italy (2002) and Spain (2002). Source: own elaborations on MTUS data.

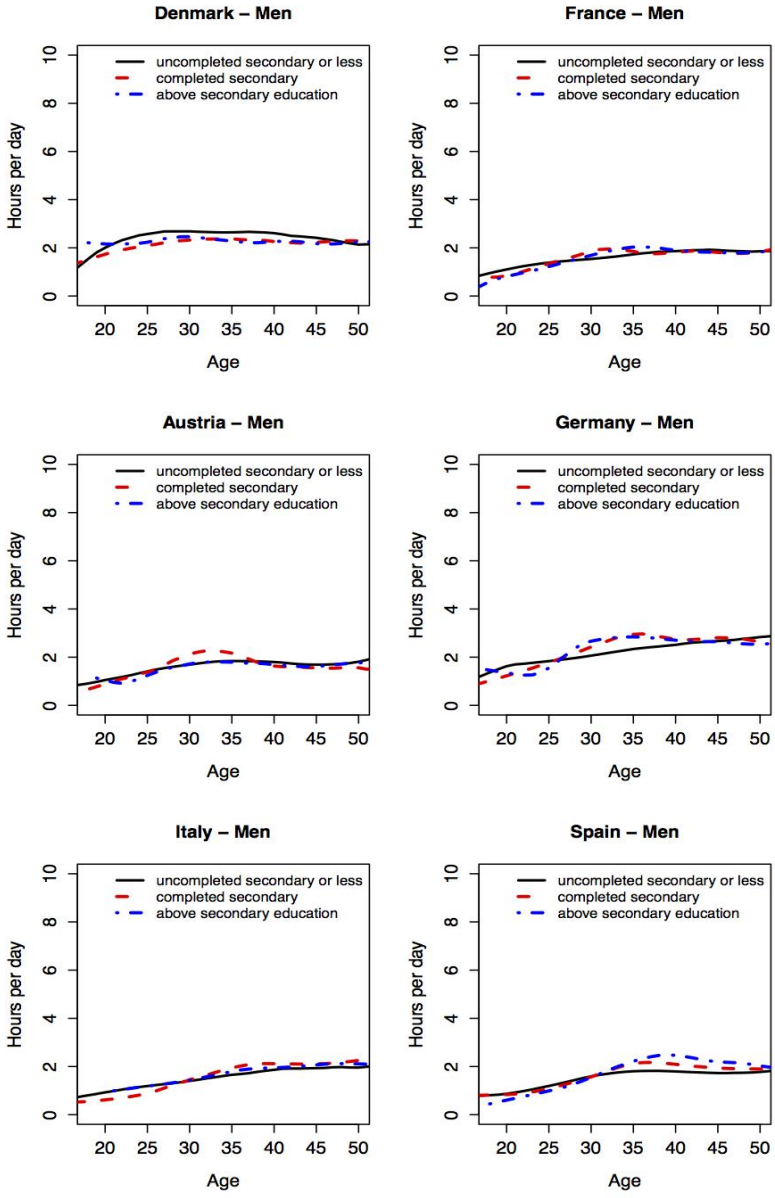

Figure 7: Men's profiles of time production by age, sex, and educational attainment in Denmark (1987), France (1998), Austria (1992), Germany (2001), Italy (2002) and Spain (2002). Source: own elaborations on MTUS data.

TRENDS OVER TIME

We have shown that the time that women dedicate to housework is in the order of 2 to 3 times larger than the time that men spend in household unpaid activities, across most countries and age groups. Gender differences in time spent doing housework are generally undisputed: there are a number of theories that attempt to explain these differences. From a microeconomic perspective, the division of labor should reflect maximization of efficiency

in the household, given the time budget of household members, and the opportunity cost of each individual. A gender perspective argues that the allocation of time between genders is not so much related to efficiency, but more about power relationships in terms of who brings resources to the household. From this perspective, housework does not have a neutral meaning. Instead, it contributes to defining roles and gender relations within the household (see, for instance, Bianchi et al. 2000).

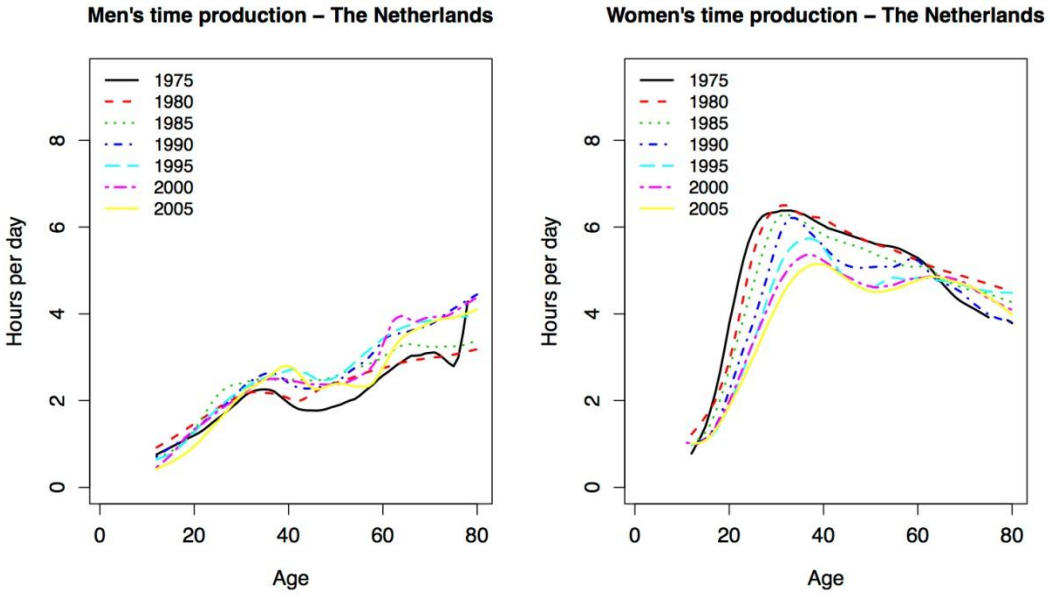

Figure 8: Profiles of age-specific household production over time, for men and women in the Netherlands. Source: own elaborations on MTUS data.

A key question is then how the allocation of time to housework, childcare and and caregiving activities has changed over time, against the backdrop of dramatic technological transformations, increase in women's labor force participation, and changes in social norms. Figures 8 and 9 show profiles of age-specific household production over time, for men and women in the Netherlands and the United Kingdom, respectively. The two figures show profiles that date back to the 1970s, and their gradual evolution over time. We chose the Netherlands and the United Kingdom because they are the only two countries in Europe for which we have data that span a few decades.

Figure 9: Profiles of age-specific household production over time, for men and women in the United Kingdom. Source: own elaborations on MTUS data.

Figures 8 and 9 reveal three important aspects of trends in time use, and highlight similarities and differences across the two countries. First, we observe that, over time, women across all age groups have decreased the time dedicated to household production. Men have generally increased the time dedicated to household production. This trend is particularly evident for the Netherlands and more nuanced for the United Kingdom. Second, time use is strongly affected by the restructuring of the life course. As both men and women delay marriage and childbearing, we observe that the peak in household production shifts to older ages. Third, we observe both continuity and change in the data. In the Netherlands, reductions in women's time production has been compensated only partially by increases in men's household production. Thus, overall the time dedicated to household work has been decreasing. In the United Kingdom, changes over time have been more modest. There, the overall time dedicated to household production has not changed significantly over the four decades considered.

The changing patterns of unpaid household work may be the result of changing social norms. For instance, activities like cooking or doing chores are more socially acceptable for men. At the same time, there are important structural forces at play. First, there are compositional changes in the population: as women's educational attainment has increased, and so has women's labor force participation, there has been an increasing demand for men to contribute more to household activities. At the same time, lower fertility, technological

improvements that have made housework more efficient, and the increasing availability of services that allow families to outsource household production, may have all contributed to lowering levels of household production.

CONCLUSIONS

In this study we have used an invaluable source of harmonized time use data, the Multinational Time Use Study, to analyze patterns of non-monetary transfers between generations and genders. The geographic focus of the analysis is Europe.

Our work stands on the premise that time is a valuable resource. Failing to account for transfers in the form of unpaid household work would lead to a biased picture of intergenerational transfers. With our research we made an attempt to give visibility to the work, typically confined behind domestic walls, that is often invisible, and, as such, deprived of value.

We used the same tools developed by the National Transfer Accounts project for the analysis of monetary transfers across the life cycle. We applied the concepts of life cycle production, consumption, deficits and transfers, in new and innovative ways, to the context of non-monetary transfers.

Our empirical analysis revealed important substantive results. We observed the existence of a gender gap in time production for all countries in our sample. Women spend more time on household production than men over the entire life course. The gender gap starts at young ages and is amplified by life course transitions like marriage and childbearing.

The life course approach to the study of intergenerational transfers shows the importance of life course transitions on time use. Having young children in the household is associated with a significant increase in time dedicated to household production, for both men and women. The spike in household production is transient for men: as the children grow up, the time dedicated to household production returns to pre-child level. For women, household production remains high even after their children grow up. This difference contributes to the widening gap in time production with age.

Level of education is an important source of heterogeneity in time use for women. We observed a gradient by education for women in virtually all countries. More highly educated women spend less time in household production. These women typically have higher employment rates and income: the opportunity cost to household production is generally higher for them. For men, the heterogeneity by level of education is minimal in all countries considered. Time production does not appear to be sensitive to educational attainment for men. This observation reveals the asymmetric nature of household

production by gender and the likely existence of power relations that go beyond market incentives and constraints.

Over time, women across all age groups have decreased the time dedicated to household production. This is probably related to changing women's labor force participation and social norms. Men have generally increased the time dedicated to household production. This trend is particularly evident for some countries, like the Netherlands, where the gender gap has been decreasing, and more nuanced for countries like the United Kingdom, where we observed more continuity over time. As young men are now more likely than in the past to perform activities, like chores and childcare, that were typically confined to women, we may expect that with the aging of populations, the gender balance may become more equally distributed as a result of compositional changes in the population. Besides changes in level, we observed, over time, a change in the shapes of production profiles by age. With the delay in marriage and childbearing, the peak in household production has shifted to older age groups.

Retirement is another important life course event that affects time use. Production and consumption of time rise with age over working years, reaching a peak in the early 60s.

Upon retirement, both consumption and production of unpaid household work are at high levels. Later in life, as people's health deteriorates, a number of activities like gardening or personal care are more likely to be purchased via the market.

Although so far we have discussed general trends, it is important to notice that there is substantial variability across countries. For instance, gender differences are larger in Southern Europe than in Nordic countries. Analogously, the variability by educational attainment is more evident in Southern Europe. Germany and Denmark exhibit the smallest gaps between hours spent on domestic work by men and women. The widest gaps are seen in Italy, Austria and Spain.

Probably the most striking empirical evidence from our research is that adult women in Italy, Spain and Austria spend 6 or more hours per day doing unpaid household work. This means that the effort required is in the order of a part-time or full-time job. The economic value of this work, if monetized, would be significant. If this work were outsourced to the market, it would generate a very large demand for labor. The value of household work goes beyond the monetary evaluation. There are important social benefits that result, either directly or indirectly, from household production. Our research has contributed to quantifying the size of this "unaccounted" work and the flows of unpaid resources between generations and genders.

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