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## Counting Women's Work: Measuring the gendered economy in the market and at home

Through the ages, women have specialized in the unpaid work of raising children, maintaining households, and caring for others, while men have been more likely to earn wages in the market (Watkins et al. 1987). As fertility rates have declined, however, women have joined the labor force outside the home in growing numbers. Understanding how women's economic roles are changing and how and why they may change in the future is crucial for understanding the economic effects of changes in population age structure. It is also vital for improving gender equality, ensuring the wellbeing of children and other family members, and maintaining a healthy rate of economic growth.

Initiated in 2004, the National Transfer Accounts (NTA) project adds the dimension of age to national economic statistics. The tools developed by NTA help policymakers understand the *generational economy*—how people at every age produce, consume, and save resources and how resources are transferred among age groups, both by families and by governments. This type of analysis shows how changes in population age structure are affecting economic growth, the wellbeing of all age groups, and the sustainability of public and private systems that transfer resources between generations (Lee and Mason 2011).

Since 2010, many research teams within the NTA network have been expanding this analysis to include an understanding of the *gendered economy*, taking account of the full economic role of women. Why is this work important? Because just as the *generational economy* is affected by demographic change, so the *gendered economy* is deeply affected by changes in population age structure and growth rates. Conversely, an understanding of the economic roles of women in the home, including care for children and the elderly, is crucial for a full understanding of the economic and social effects of demographic change.

## NTA gender research in Europe

NTA country teams in Europe are part of the AGENTA project, which aims to explain the past and forecast the future of taxes and public transfers in the light of demographic change in the European Union (EU). A central component focuses on the gender-specific production and consumption of goods and services—both in the household and in the marketplace—using publicly available, harmonized data for EU countries. Funding is provided from the European Union’s Seventh Framework Programme for research, technological development, and demonstration under grant agreement no. 613247 (2014-2017).

The European accounts contain age- and sex-specific data on production and consumption, expressed in time as well as monetary terms. By subtracting production from consumption, age by age, net time transfers are also calculated. Such transfers show how much household service an age group gives or receives on an average day.

Estimates have been completed for 17 European countries—Austria, Belgium, Bulgaria, Denmark, Estonia, Finland, France, Germany, Italy, Latvia, Lithuania, Netherlands, Poland, Slovenia, Spain, Sweden, and the United Kingdom. Comparative calculations cover recent years and also go back as far as the 1970s where data are available.

These results show that household services, such as cooking, shopping, cleaning, and personal care, are an important component of transfers between the sexes and between generations. Women provide more household services than they receive throughout their lives, starting at age 20. In fact, they produce a huge surplus in the household economy. In contrast, men are net beneficiaries for most of their lives, although the main beneficiaries are children.

There are important country-specific variations. In Italy, men at every age are net recipients of the care and household services provided by women. In Sweden, by contrast, men provide more care and services than they receive from their mid-20s to their mid-50s. These and other results are accessible through the AGENTA Data Explorer at <http://witt.null2.net/shiny/agenta/>.

Two international initiatives within the NTA network provide new insights into women’s changing economic roles—the Counting Women’s Work (CWW) project, which supports analysis in nine low- and middle-income countries around the world plus the United States (US), and the AGENTA project, which is looking at the gendered economy, among other issues, in 26 countries of Europe (see box at left). In addition, several national NTA teams in Asia are adding considerations of gender to their research objectives, with support from the United Nations Population Program (UNFPA).

This issue of the *NTA Bulletin* focuses primarily on Counting Women’s Work. Funded jointly by the William and Flora Hewlett Foundation and the International Development Research Centre of Canada, CWW currently supports research on the economic role of women in Colombia, Costa Rica, Ghana, India, Kenya, Mexico, Senegal, South Africa, Vietnam, and the US. The project is coordinated by the University of California, Berkeley, the Development Policy Research Unit at the University of Cape Town, and the East-West Center.

### Improving the measurement of economic activity

Adding a consideration of gender to NTA’s economic analysis involves two new research initiatives—disaggregating by sex the economic flows that NTA already measures, and creating National Time Transfer Accounts (NTTA), which measure the production, consumption, and transfer of unpaid care and household services in the same framework as NTA. For the present, this work focuses primarily on production—the labor income earned by women and men in the marketplace plus the monetary value of the time contributed by women and men to the maintenance and wellbeing of their families.

The market value of labor income can be assessed from wages and other forms of remuneration. Following NTA methodology,

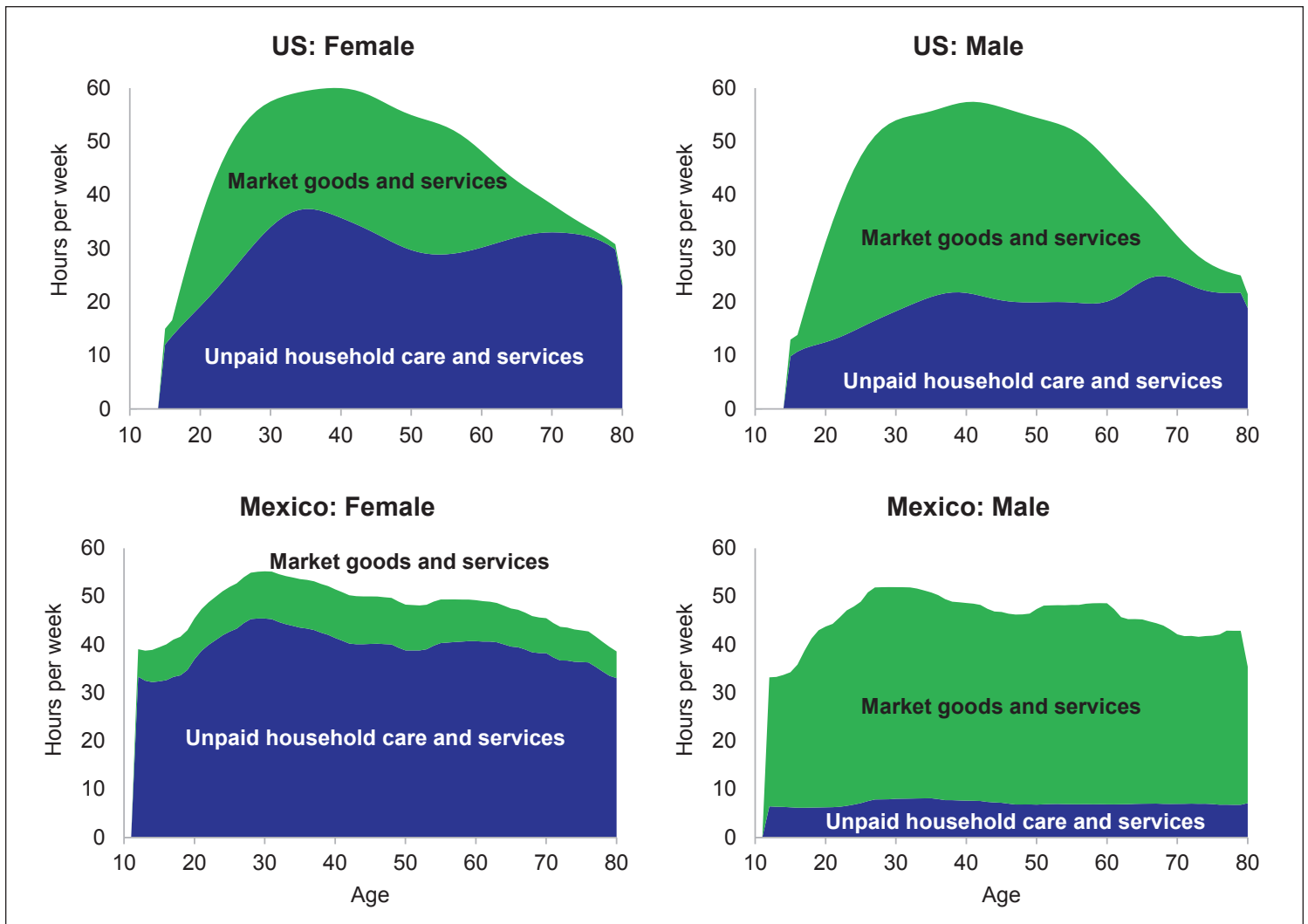
labor income is defined comprehensively to include the salary paid to an employee, employer-provided benefits, taxes paid to the government by employers on behalf of employees, the proportion of self-employment income that is a return to labor, and the estimated value of unpaid family labor that results in products or services for the marketplace.

NTA estimates also include the unpaid household production of *goods* consumed by household members. *Services* that are produced and consumed within the household are not included in standard measures of economic activity, however, and are thus not covered by NTA or national accounting. As a practical matter, this distinction can be difficult. For example, the value of the labor required to grow food in a family garden is included in national accounting, even if the food is eaten by the family, but the labor required to cook the food is not. This omission results in a significant underestimation of women’s economic role because a great deal of the activity that is left out of traditional estimates is performed by women.

Figure 1 illustrates the three categories of activity that are normally included in economic measures and the one category that is left out. A great deal of traditional “women’s work,” which falls in the lower right-hand box in Figure 1, remains invisible in economic monitoring systems and thus outside of the realm of economic analysis and policy development (Waring 1999).

**Figure 1. Current national accounting methodology includes the production of goods and services in the market and the production of goods, but not the provision of care and services, within households.**

	Goods	Services
Sold in the marketplace	Included	Included
Produced and consumed in the household	Included	Not included



**Figure 2. Women spend more time than men on unpaid care and household services in every country analyzed so far, including the United States and Mexico.**

*Source:* Calculated by CWW country research teams. US data are from the American Time Use Survey of 2009. Mexico data are from the Time Use Module of the 2002 National Household Income and Expenditure Survey.

*Note:* Areas represent smoothed average age schedules to age 80+. For the US, time-use data are available for ages 15+, for Mexico for ages 10+. The green area includes time spent on wage work, work for household-owned farms or businesses producing goods to sell or for the household to consume, and work-related activities such as commuting and looking for work. The blue area includes time spent on unpaid care, housework, and household maintenance and management.

### Finding the work that is overlooked in government accounts

CWW and other gender research projects within NTA are measuring this fourth type of activity—the household production of services. As defined here, these services include the time spent on, or value produced by, unpaid care of children, elders, or other family or community members plus many forms of housework—such as cooking, cleaning, doing laundry, gardening, caring for pets, shopping, and general household management and maintenance.

Although household services such as maintaining homes and raising children are commonly referred to as “women’s work,” these jobs are done, to varying extents, by both men and women. Even in a “modern” society such as the US, however, the provision of household services is largely the responsibility of women, while men spend more time on work in the marketplace (Figure 2). In a more traditional society such as Mexico, the difference between women and men in the balance between household services and market work is much larger.

Estimates of the unpaid provision of services within households are based on a long-standing methodology (Abraham and Mackie 2005) combined with NTA methods to disaggregate production by age (United Nations 2013) and now by sex (Donehower 2014). To add in the household services and care that are not included in national accounting (the bottom right box in Figure 1), analysis begins with time-use surveys that measure the amount of time household members spend on a range of activities. To be included in this analysis, activities must satisfy a “third-party criterion,”

meaning that one could pay someone else to perform them (Reid 1934). Cooking, cleaning, and caring for children meet this criterion, but sleeping, eating, sports, and leisure do not and are thus not included in these estimates.

Reliance on time-use surveys can present a limitation, however. Up-to-date, nationally representative surveys of time use within households are not available for some countries, and the way time-use surveys are conducted can be inconsistent from one country to the next.

Among different types of time-use survey, many consider time-diary surveys the “gold standard.” In these surveys, respondents are asked to note down their activities over a period of time (usually 24 hours). Then their activities are coded into groups using a classification scheme, most commonly the International Classification of Activities for Time-Use Statistics (ICATUS), maintained by the United Nations. Other types of time-use survey are based on interviews, asking respondents how much time they spent on particular activities. If enough activities are included and if the time-use questions are sufficiently detailed, activity-based time-use data can sometimes serve the same purpose as a time-diary survey. There is currently interest in developing new modes of time-use data collection using mobile technology such as smartphones or other internet-enabled devices. The “gold standard” may be quite different five years from now.

While many time-use surveys try to account for the common phenomenon of “multi-tasking,” such as when a woman cooks dinner and looks after young children at the same time, they do so in very different ways. For this reason, NTA does not incorporate multi-tasking in comparative estimates but rather only uses the data on primary activities. If a survey records more than one simultaneous activity but none is designated as primary, the time unit is divided equally across all of the activities. For example, if a woman cooks dinner and looks after children for one hour, NTA

allocates 30 minutes to each activity. This preserves the 24-hour time constraint and is in accordance with current research on multi-tasking that finds no particular productivity gains compared to doing single tasks only.

The next step is to attribute a monetary value to the time spent providing care and household services. This is done by multiplying the time spent on each household task by the average wage for the same type of work in the market. Thus if the average wage for a cook in a particular country is US\$10 per hour and a woman spends one hour every day of the week cooking for her family, then her cooking will be valued at US\$70 per week. This “replacement wage” is calculated without deducting income or payroll tax, as the focus is on valuing the full cost of the service were someone to purchase it in the marketplace.

The choice of method for assigning a wage to any particular task is a contentious issue, and there are many arguments for why a particular method may result in too high or too low a value. The replacement method, as described here, seems appropriate for the Counting Women’s Work project because it is most in keeping with the accounting framework used by NTA.

Note also that the contribution of unpaid family workers who labor for a family farm or business to produce goods or services for the market is already included in NTA market-based estimates. For example, if a woman spends one hour cooking food at home and sells the food in the village market, then her labor is already counted as part of national income. By contrast, if the woman cooks food that is eaten by her family, her labor is invisible in traditional economic estimates.

For general household activities, consumption of unpaid household services is estimated by observing the amount of labor provided and dividing it equally among all household members. Thus consumption of cooking, cleaning, and other types of housework is divided equally among all members of the household. If a woman

spends one hour cooking dinner for a family of four, for example, each member of the family (including the woman herself) is said to consume 15 minutes of cooking labor.

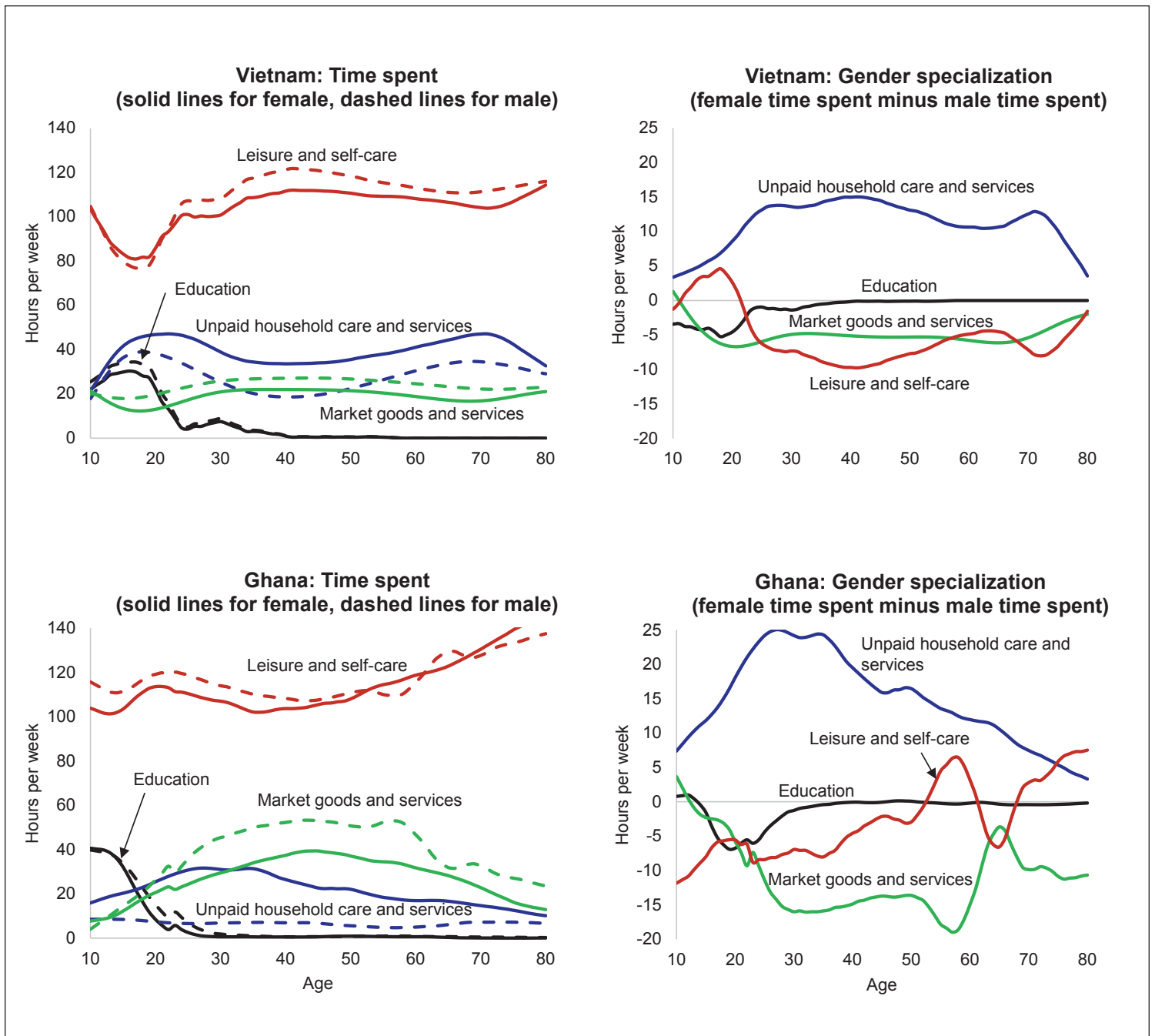
The consumption of care is attributed to household members based on their age. For example, childcare time is allocated to household children, with more to younger children than to older children, and time spent in eldercare is allocated to the elderly in the household. The current NTA methodology is not sufficient to detect much of the gender difference in consumption within each age group, so for the present, consumption of goods and services, either purchased in the market or provided within the household, is categorized by age but not by sex.

### Comparing how women and men use time

To illustrate “who is doing what” in two quite different economies, Figure 3 uses data from time-use surveys in Vietnam and Ghana that show how men, women, boys, and girls spend their time over a period of one week. The graphs begin at age 10 because 10 is the youngest age included in the time-use surveys on which this analysis is based. They end at age 80.

The two graphs on the left show the average hours per week spent on four types of activity as solid lines for women and dashed lines for men. In addition to market production and unpaid household care and services, the activities included are education (class time plus time spent studying outside of school hours) and the remainder, which is leisure and self-care, with sleep being the largest sub-component. These four activities add up to the total time available in a week.

The graphs on the right show the differences between women’s and men’s time spent on each type of activity. We see similar overall patterns in both countries—women specialize in unpaid household care and services, men spend more time than women on market production, and boys and young men spend more time on



**Figure 3. Time spent on four activities by age and sex, Vietnam 2015 and Ghana 2009. In both countries, women spend more time working in the household, and men spend more time working in the market, but the differences are larger in Ghana.**

Source: Calculated by CWW country research teams. Vietnam data are from the Vietnam Time-Use Survey of 2015. Ghana data are from the Ghana Time-Use Survey of 2009.

Note: Lines represent smoothed average age schedules for ages 10–80+. In both countries, 10 is the youngest age group covered by time-use surveys.

education than girls and young women. For most age groups, men also have more time for leisure and self-care than women.

These patterns are similar across all the countries covered so far in NTA analysis of time-use data, with the exception of education. In the US and many European

countries, girls and young women are spending more time on education than their male counterparts.

Looking at differences between Ghana and Vietnam, gender differences in economic life are greater in Ghana. In the graphs on the right, the distance of a line either above

or below zero indicates how much more time women spend on a particular activity than men or vice versa. For example, at age 30 women in Vietnam spend 14 hours per week more than men providing family care and services, while in Ghana 30-year-old women provide 24 hours more care

and services than men do. In Vietnam, 30-year-old men do five hours more market work per week than women, while 30-year-old men in Ghana work 16 hours more than women in the market.

Some of the differences in time use between Vietnam and Ghana may be due to the higher fertility level in Ghana. As of 2015–2020, Ghanaian women have an average of 3.95 children each, while women in Vietnam have only 1.95 children on average (United Nations 2015). In Ghana, young women are thus probably spending more time on activities related to raising children. The question of how much gender specialization in household and market work is driven by fertility and how much may be due to other factors is an important topic for future research.

### **Giving household work a monetary value**

Thus far, the discussion has looked at production in units of time only. The next step is to translate time use into the monetary units that provide the basis for understanding an economy.

Figure 4 shows the results of such an analysis for Senegal, with time units on the left and monetary units on the right. Following NTA methodology, per capita production of market goods and services is based on wages earned in the labor force, the labor portion of entrepreneurial income, and household production of goods and services sold on the market.

As in Ghana, this figure demonstrates a great deal of gender specialization in terms of time spent on market production versus unpaid household care and services. In terms of time, Senegalese women are doing 87 percent of all household work, but only 34 percent of all market work.

Estimates of the monetary value of women's and men's work are shown on the right. Because of differences in men's and women's occupations and wages, women earn less than men for the same amount of time spent working. Although women do 34 percent of the market work in terms of time, for example, they earn only 30 percent

of the market-based labor income. Also, hours spent on traditional “women's work” in the household are given a very low monetary value because this type of work earns very low wages in the market. As a result, Senegalese women spend 68 percent of their total work time on unpaid household care and services, but this is only valued at 50 percent of their total work in monetary terms.

The information presented in Figure 4 indicates that a large amount of economic activity would be missed if only the market work shown in the top graphs were considered. This has implications not only for gender inequality, but also for understanding the true cost of children. Analysis limited to the market goods and services consumed by children underestimates their costs by a great deal.

The middle graph on the left, which shows unpaid care and housework in terms of time, reveals very high consumption of time by young children. A comparison of the three graphs on the right, which depict consumption in monetary terms, shows that a child in the first two years of life consumes about 9 percent more in unpaid care than in market goods and services. In other words, when the value of family care is added to the cost of purchased goods and services, the “costs” of a young child more than double. This means that fertility decline results in greater cost savings than would otherwise be apparent, enlarging the “demographic dividend”—the economic benefits that arise from changes in population age structure due to declining fertility.

The time dividend that accrues with changes in population age structure may eventually become a tax if the care needs of the elderly increase with population aging. So far, however, CWW estimates of time use have found little evidence of a high demand for eldercare. Verifying this conclusion against other data will be an important area for future research.

In terms of time, the largest gender gap in total work, shown in the bottom graph on the left, occurs in the late 20s. Women age 25–29 work, on average, 21 hours

more per week than do men in the same age group. And the middle graph on the left shows that most of this “extra” work is unpaid care and household services. In fact, the middle graph shows that girls age 10 are already spending 15 hours per week on unpaid care and housework. By age 18, their contribution has gone up to more than 30 hours per week, and it remains at this level for nearly 30 years.

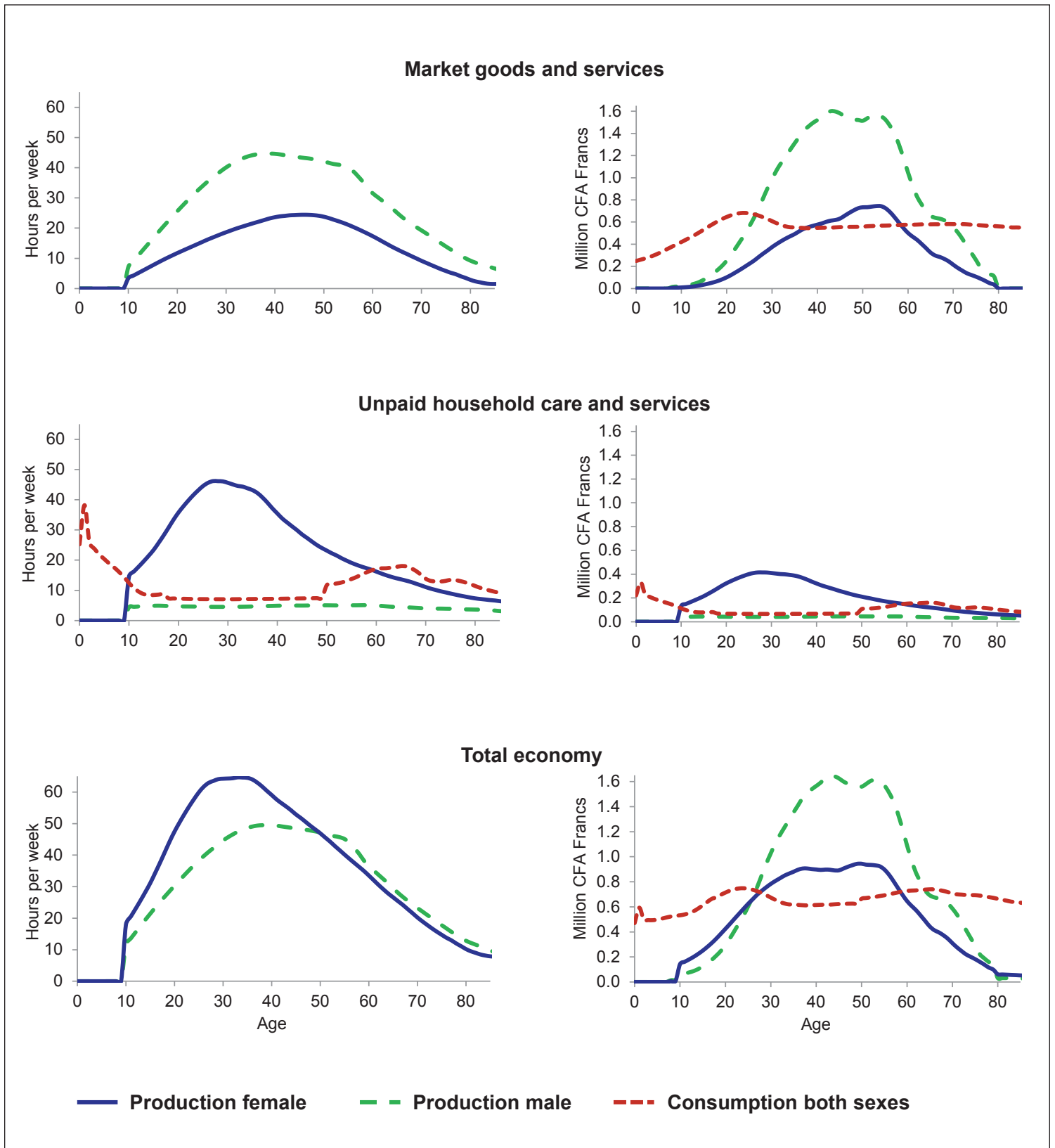
In monetary terms, as shown in the bottom graph on the right, women earn considerably less than men for much of their lives, based largely on their much lower wages and lower participation in market work. Women “earn” more than men in their teens and early 20s, however, based almost entirely on their contribution to unpaid care and housework.

### **Some implications for policymakers**

These illustrative examples demonstrate how the NTA/CWW framework makes it possible to quantify many aspects of gender inequality—the difference between men and women in market work and wages, the potential barrier that household responsibilities represent to women's education and participation in market work, the excess total work time that most women spend relative to men, and the “hidden” costs of children.

Such results have important policy implications for countries at widely different stages of economic development. Policymakers in Ghana, for example, are concerned about improving educational outcomes for girls, but work responsibilities may be detracting from the time girls have available for education. Teenage boys spend more time than girls in market work—the average is 14 hours per week for 15-year-old boys compared with 12 hours per week for 15-year-old girls (Figure 3). Fifteen-year-old girls, however, spend an additional 20 hours per week on unpaid care and housework, while 15-year-old boys spend only 8 hours.

Combining both types of activity, girls are working 10 hours a week longer than



**Figure 4. Age profiles of production (by sex) and consumption (single sex) for market goods and services, household care and services, and both combined, in time units on the left and monetary units on the right, Senegal, 2011.**

Source: Calculated by CWW country research team for Senegal from the 2011 l'Enquête de suivi de la pauvreté au Sénégal (ESPS).

Note: It is not possible to estimate the consumption of market goods and services in terms of time because the time spent producing each market product or service cannot be calculated from current data, so consumption estimates do not appear in the first and third graphs on the left-hand side of the figure. Current methodology is not sufficient to detect much of the gender difference in consumption within each age group, so consumption of goods and services, either purchased in the market or provided within the household, is broken down by age but not by sex.

boys. Not surprisingly, 15-year-old girls spend less time on education than boys do. And the difference between boys' and girls' time spent on education becomes greater with every passing year of adolescence and remains large throughout the early 20s.

As in Ghana, 15-year-old girls in Senegal work an average of 10 hours more per week than boys do, including both market work and care and housework (Figure 4). And the difference in hours worked grows larger for every year of age through the mid-20s.

This comparison suggests that young women have less time than men to devote to education, and this, among other factors, can affect their income-earning potential throughout their lives. Clearly, a policymaker or advocate wishing to encourage teenage girls to continue their education would do well to address the responsibilities for housework that take up so much of these girls' time.

Policymakers in rapidly developing countries of Asia have another concern. In countries such as Vietnam, plummeting fertility levels will lead to a shrinking working-age population over the next few decades. Solutions might include raising fertility or encouraging more women to join the workforce. But how could this be done?

Vietnamese women have, on average, fewer than two children each, and their average market work never exceeds 22 hours per week at any age. But working-

age women in Vietnam provide long hours of care and household services, peaking at 47 hours per week at age 21 and remaining above 35 hours per week until age 35. Policies to encourage women to increase either their fertility or their participation in the market economy need to address this burden of housework, for example, by providing subsidized daycare for working mothers.

Today, NTA research teams are undertaking new analyses and expanding studies of production and consumption by sex to a larger group of countries. The lack of nationally representative time-use surveys in some countries represents an impediment to this important work, however. The methodology for conducting time-use surveys also needs to be standardized to facilitate cross-country comparisons.

This situation may be getting better. The Data2X project, which started in 2012, is designed to improve the quality, availability, and use of gender data around the world (Data2X 2016). Data2X is an initiative of the United Nations Foundation, implemented with support from the William and Flora Hewlett Foundation and the Bill & Melinda Gates Foundation. With more and better information on women's economic roles, including surveys of time use within households, CWW and other gender research within NTA will be able to provide new insights to support the design and implementation of programs that help women and their families.

## Further reading

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