Everybody Works: Gender, Age and Economic Activity

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Introduction

Researchers interested in the nature of economic activity by age developed the National Transfer Accounts (NTA) project, to disaggregate national accounts by age. NTA research has been instrumental in developing our understanding of the generational economy – how people produce, consume, share and save resources across age groups. Through the efforts of an international network of researchers, we now have a set of age profiles of economic activity which shows the commonalities and differences across many nations in solving the basic problem of the life course: periods of dependency at the beginning and end of life where we produce less than we consume (Lee and Mason, 2010).

A natural extension of this work is to add gender as a characteristic of interest. How do age patterns of production, consumption, sharing and saving differ by gender? Who is sharing with whom and what are the gender implications for different dependency support systems? Disaggregating national accounts by age and gender would only give us a partial answer to these questions. Researchers have long pointed out the limitations of national income and how it excludes those activities in which women have traditionally specialized, such as caring for dependents within the household (Waring, 1999). These activities, though vital to households and society, are not monetized so their value is not part of national income. Simply disaggregating NTA profiles, which are based on national income, by gender without adding household-based production would give a very misleading picture of gendered economic contributions.

Fortunately, there is a deep literature on estimating household production and integrating it into national accounts (Abraham and Mackie, 2005). This paper is a first step in combining the research on household production with National Transfer Accounts research on the age shape of economic activity. The result is a complete set of age profiles of economic activity by gender that includes both market-based and household production. We will present results for the United States in 2009 in this paper. Our long-term goal for this project is the incorporation of both gender and household-based production as a vital piece of all future research on the generational economy. Incorporating gender in this way gives a complete picture of the economic contributions of men and women, young and old.

Data and Methods

The methodology has two distinct parts: 1. estimating national accounts-based NTA age profiles by gender, and 2. estimating the same set of accounts based on household production.

      1.   NTA age profiles by gender.

The methodology of the National Transfer Accounts project to disaggregate national accounts by age is well developed (www.ntaccounts.org) and has been implemented in over 30 different countries. It is discussed thoroughly in Lee and Mason (2010) with technical documentation in Mason, Lee, et al. (2009). A brief overview is given here, noting the data sources for the US case that will be presented in the paper and additional methods for separating the age profiles by sex.

An age profile is a smoothed schedule of age-specific means for a particular economic activity, scaled proportionally by the same factor across age and sex so that the population total matches the national accounts aggregate value for that activity. NTA estimates age profiles for consumption (public and private), production (labor income, public and private asset income), and transfers (public and private).

Consumption and income data come mostly from the Consumer Expenditure Survey (CEX), the Current Population Survey (CPS), and government sources. Consumption includes private consumption imputed to individuals within each household,[1] as well as publicly provided consumption of education, health care, and other public services. Labor income includes wages, salaries, fringe benefits, and a portion of self-employment income. The rest of self-employment income, along with returns to capital and imputed rent are included in private asset income. Public asset income is allocated based on taxes.[2] Where survey data are used to get an age profile, information on the subject's sex is also available in the survey, to allow for the estimation of separate profiles by sex. Government data are generally available for men and women separately.

The difference between income and consumption is made up by public and private transfers or saving/dis-saving: those with an income surplus transfer it to others or save it while those with an income deficit must receive transfers or dis-save by going into debt or selling assets. Public transfers are public benefits (cash and in-kind) and taxes, estimated using government data on benefit recipients or CPS or CEX data on benefits received and taxes paid. Private transfers consist of inter-household transfers, estimated from survey data, and intra-household transfers between co-resident household members, imputed within each household based on an assumed equal sharing model.[3] Saving is the final balancing item, equal to the household's total income and transfers less consumption. This amount is assigned to the household head, by assumption. The household structure, including information on headship, comes from the CEX.

2. Household production age profiles by gender.

The methodology for estimating total household production follows, for the most part, that worked out by Landefeld et al. (2009), which follows National Research Council methodology recommendations (Abraham and Mackie, 2005). Using data from the American Time Use Survey for 2009, productive activities not included in national income are identified. These activities meet the "third party criterion": can you pay someone else to do it for you (Reid, 1934)? We group these activities as shown in Table 1 and impute a wage to each group of activities.[4] For a group of activities, the average wage is found for the industry codes given in the second column. In addition, the average industry wages are modified by an adjustment factor meant to take into account the relative efficiencies between household production

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[1] A variety of methods are used for imputations in the US case. Consumption other than health and education is allocated in proportion to equivalent adults consumption (EAC) weights equal to .4 for ages 0–4, rising linearly thereafter until 1.0 at age 20, and 1.0 thereafter. Males and females have identical weights by age. Private education expenditures other than post-secondary are allocated with regression models, which will include sex to allow for different age patterns by sex to appear if they exist in the data. Post-secondary private education age profiles come from National Center for Education Statistics (NCES), which separates some statistics out by sex. Health consumption is estimated using specialized surveys such as the Medical Expenditure Panel Survey and the National Nursing Home Survey, which give information on the sex of survey respondents.
[2] In the US context, public asset income is negative, representing mostly interest payments on the national debt.
[3] A unitary model is assumed: all of those with surplus income within the household share the same proportion of surplus with those in the household who require transfers.
[4] Table 1 follows Landefeld et al. (2009) but we are experimenting with alternate classifications.

and market production, as recommended in a review of household production estimation methods (Abraham and Mackie, 2005). The factors are less than one for activities in which market producers probably have specialized equipment and skills that household producers do not.

Table 1. Wage imputation and quality adjustment factors by time use activity

Time Use Activity	Census 2007 Industry Codes for Specialist Wage[5]	Quality Adjustment
Cooking (food and drink preparation)	Food services and drinking places (8680-8690), Restaurants and other food services (8680)	0.75
Cleaning	Janitorial Services (56172)	0.75
Laundry (includes sewing and clothing repair)	Drycleaning and laundry services (9070)	0.75
Household repair and maintenance	Personal and household goods repair and maintenance (8880)	0.75
Lawn & garden	Landscaping services (7770)	0.75
Household management (includes finances, scheduling, coordinating)	Accounting, tax preparation, bookkeeping, and payroll services (7280), Administrative and Support Services (7580-7780)	0.75
Shopping	Leisure and hospitality (8560-8690)	1
Childcare	Child day care services (8470)	1
Eldercare and care outside the home (includes volunteering)	Individual and family services (8370)	1
Travel	Leisure and hospitality (8560-8690)	1

Once we identify household production activities and impute their wage, we then have the same situation as for NTA age profiles of labor income described above. We take mean values by age and sex and smooth them across age for the completed age profile of household production.[6] From this, we estimate the age profile of those consuming that production. For age-targeted care activities (childcare or eldercare), the time produced is divided equally among those in the target age group. For general activities within the household (cleaning, maintenance, etc.), the time produced is divided equally among all household members.

Once we have estimates for household production and consumption, we know who has a household production surplus and who has a deficit. We assume the equal sharing model as for NTA intra-household transfers described above to estimate giving and receiving of transfers.

Finally, just as returns to capital appear as part of NTA, there is a capital component to household production: the returns to household capital used in household production. This is the flow of services of consumer durables which, to be consistent with national accounts, should be incorporated in both consumption and asset income associated with household production. Estimates of this flow will be included in the paper if specialized estimates from the Bureau of Economic Analysis are available.

Preliminary Results

Preliminary results for consumption and labor income are shown in Figure 1. The top row shows per capita age profiles for the time use-based accounts, labeled "household production." The next row of

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[5] An average of classifications is used if multiple codes are given.
[6] We skip the NTA step of adjusting to national accounts because there is no one established set of national household production estimates.

figures shows per capita age profiles for national accounts-based NTA, labeled "national income." The bottom row combines both accounts into a representation of the total economy.

Following down the blue lines for production, where males are plotted with a solid line and females with a dotted line, we see clear evidence of gender specialization even in such a recent year – women are producing much more than men in the household (panel a), and men much more in the market (panel b). When the accounts are combined, however, the sexes look much more similar. Men in the peak earning years are still producing more in total, but at oldest ages where market production falls, women are still producing much more than men in the household. Following the red lines for consumption, the differences are much less obvious and men and women look very similar.[7]

The graphs on the right-hand column, in green, show the lifecycle deficit, consumption minus production. If that amount is positive, the person needs to receive transfers or asset income, go into debt or dis-save. If the amount is negative, that represents surplus that can be transferred to others or saved. Women generate large surpluses in household production but none at all from the perspective of national accounts. Bringing both household and market production together in the bottom panel, men still generate more surplus overall than women, but the differences are much less pronounced. Clearly, an accurate representation of men's and women's productive activities is only possible with the inclusion of household production.

The final paper will discuss these results in much greater detail. It will also include age profiles of transfer activity and asset-based transactions. Sensitivity analyses will also be shown, demonstrating how sensitive the final results are to different wage imputation schemes and activity classifications.

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[7] Within different types of consumption, there are larger differences between men and women which cancel each other out in the total. For example, in national-accounts based NTA age profiles, women consume more health care and education, but men consume more general consumption such as food, clothing, and entertainment. These differences will be discussed in the paper.

Figure 1. Per capita production, consumption and lifecycle deficit (consumption minus production), by age and gender, United States 2009 (2009 US$).

a. Accounts based on Household Production

b. Accounts based on National Income (NTA)

c. Combined Accounts
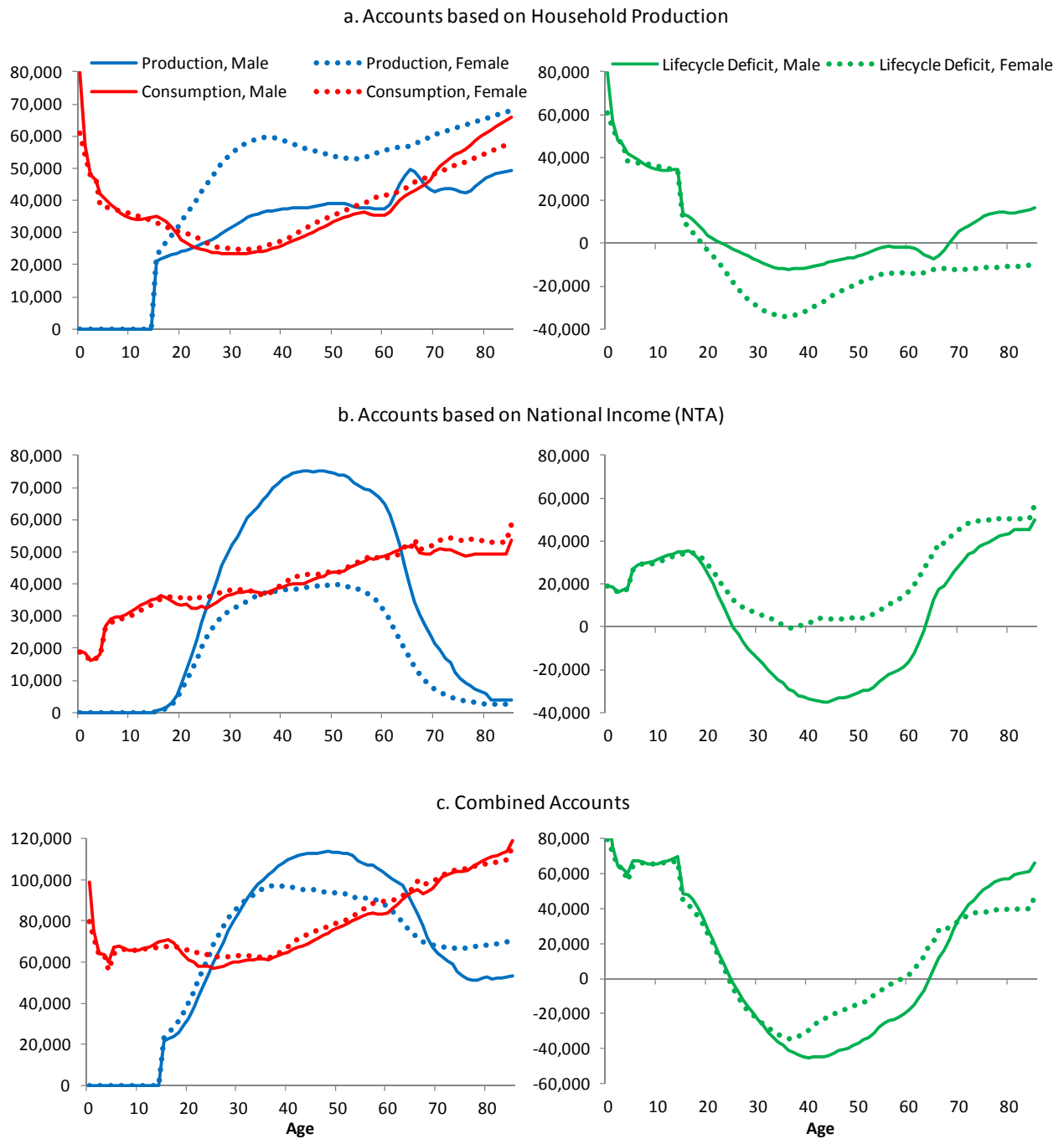
Notes:

The final age category is 85+. The "production" line plotted for panel b. is labor income (wages and benefits plus self-employment income).