

Accounting for Nonmarket Production: A Prototype Satellite Account Using the American Time Use Survey

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1. Introduction

The American Time Use Survey (ATUS) conducted by the Bureau of Labor Statistics (BLS) fills a major gap in U.S. economic statistics. Labor time is one of the most important inputs into market and nonmarket production. A wide range of issues ranging from understanding consumer spending and the distribution of poverty to the rate of growth in output and productivity require a comprehensive view of production and the time devoted to productive activities. The ATUS will provide the first consistent and comprehensive time series on time use for the United States.

The importance of nonmarket production has been a recurring theme in the U.S. and international national accounts literature since the inception of national accounts. Simon Kuznets (1934) and a long-line of other economists that have worked on the accounts have acknowledged the importance of including household production. However, the challenges of producing a consistent up-to-date set of accounts useful to business and public economic policy officials have led most to follow Pigou (1932), who discouraged the measurement of household production and felt that national income should include only market goods and services that could “be brought directly or indirectly into relation with the measuring-rod of money.”

A recent National Research Council panel study, *Beyond the Market: Designing Nonmarket Accounts for the United States* (Abraham and Mackie 2005, hereafter referred to as *Beyond the Market*), argues that, given the developments in national accounting, the detailed data on wages, the data on nonmarket activities such as housing services, and the advent of the ATUS, nonmarket household production can be measured “with mild straining” indirectly with the measuring-rod of money.

This paper utilizes the new ATUS data with the harmonized time series database from the Multinational Time Use Study (MTUS) to update earlier “satellite account” estimates of household production. This paper highlights how supplemental household information can improve our understanding of such issues as overall economic growth and the impact of increasing women’s labor force participation, household production’s role in investment and other spending, and the role of household production over the business cycle.

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The paper also extends earlier work by exploring recommendations of *Beyond the Market*. Recommendations include the use of a quality-adjusted specialist wages for valuing nonmarket household services and the development of satellite accounts that provide quantities and prices for both inputs and outputs used in home production.

2. Satellite Accounts

One of the impediments to the development of nonmarket accounts was that the expansion of the accounts to include what were sometimes perceived as arbitrary and uncertain imputations for nonmarket activities would overburden the existing accounts and reduce their accuracy, credibility, and usefulness for analyzing, projecting, and managing market policies and activities. Two developments have helped to reduce such concerns. The first was the decision by the *System of National Accounts*—the international guidelines for national accounting—to recommend the use of satellite accounts for nonmarket activities rather than the expansion of existing accounts. Satellite accounts would allow for experimentation with changes in scope and measurement for national accounts in the form of supplementary accounts. These accounts would be consistent with and could be used with the existing national accounts without diminishing the usefulness of the core accounts.

A second and related school of thought that developed was that satellite accounts should be limited to production activities, or near-market activities, that can be substituted for, or contribute to, market activity. They also should be valued using proxies for market prices. In Pigou’s words, they should be valued indirectly “with the measuring-rod of money.” This decision removed normative measures of welfare and other subjective measurement issues where economic accountants have no comparative advantage from active debate. Focusing on production activities facilitated work moving forward on the more tractable components of estimating a set of household accounts.

All of these developments in thinking are included as recommendations in the National Research Council panel report *Beyond the Market*.

- Nonmarket estimates for household production should be developed in the form of satellite accounts and treated consistently with their market analogs in the national income and product accounts (NIPAs). (Recommendation 3.1)
- Household production satellite accounts should focus on the production of goods and services, including only those household activities that could be readily accomplished using market substitutes for household members’ time. (Recommendation 3.2) This is often referred to as the “third-person criterion,” the household production boundary proposed by Margret Reid (1934).
- Household production should be valued using replacement cost. For household time inputs to production this would be a replacement wage—the market wage of a specialist (e.g., plumber, cook, or accountant) adjusted for differences in skill and effort between home and market production. (Recommendation 3.4)

3. ATUS and Time Use Series Continuity

Many of the uses of household production accounts require time use series. With a time use series one can measure the effect of such developments as the shift from nonmarket to market production on economic growth, the effect of this shift on trends in consumer spending on durables, or the role of household production in buffering and reducing the volatility in total (market and nonmarket) production.

Over time, the ATUS, a survey that began in 2003, will produce a consistent time use series, which is a significant advantage over other periodic surveys conducted in the United Kingdom and other countries. For example, periodic samples that produce information on differences in work between employed and unemployed men and women can be used to estimate the effect of business cycles on total and household production. However, periodic samples cannot estimate the actual effect of prolonged unemployment on household production during a cyclical downturn (relative to the differences recorded between employed and the mainly transitionally-unemployed individuals during a non-recession survey year).

There were a number of time use surveys conducted in the United States including those conducted at the University of Michigan in 1965-66, 1975-76, and 1985 and at the University of Maryland in 1992-94 and 1998-99. These surveys used different sample designs and were of much smaller sample size than the ATUS survey. ATUS 2003 has a total response size of over 20,000 diary days while the response sizes of the earlier surveys ranged from 1,200 to 10,000.

The MTUS (2005) has pulled together all of the U.S. time use studies listed above as well as time use studies from 14 other countries into a harmonized data base. For the time series used in this paper, the MTUS database for 1965, 1975, and 1985 has been combined with the ATUS data for 2003 and 2004. Table 1 presents household production hours for seven definition-similar categories from the ATUS and past time use surveys as categorized by MTUS. The 2003 and 2004 ATUS activity data were aggregated generally following the MTUS documentation of its aggregation of 2003 ATUS data. However, following the recommendations of *Beyond the Market*, this study diverged from MTUS by excluding activities involving volunteer activities and personal care activities (see Appendix 1 for further information about the time use data used in this paper and for a complete mapping between the ATUS and the seven household production categories).

How much of the difference in the results from the various surveys is to cognitive factors, sample design, sample size, response rates, and potential reporting biases as opposed to economic factors such as the rising market opportunity cost of women's time is unknown.² However, one important factor in the increase in child care time (and corresponding decrease in other categories of time) may be the result of a special ATUS probe for child care that was intended to address the apparent underreporting of child care in earlier surveys.

² Under a grant from the Glaser Foundation, the Yale Program on Nonmarket Accounts is currently researching and sponsoring several papers analyzing time use surveys and their continuity. Their findings may provide more insight into some of these comparison issues.

MTUS data results may also vary from original studies based on the same surveys due to sample size and categorization of time. For instance, some of the original documentation or diaries are incomplete. In the case of the 1985 survey, detailed data from the phone and face-to-face interviews were unavailable in constructing the MTUS database, but the data from over 3,000 mail-back diaries were available. While the reconstructed sample is still a much higher sample than the 1965 and 1975 surveys, it is hard to determine nonresponse bias. Busier people who may have been unwilling to fill out a mail-back form could have agreed to an interview. Different categorizations of time by the MTUS harmonization process will also change the results presented here versus other analysis of time use surveys. For instance, travel is grouped individually in the MTUS database as opposed to allocating it across productive activities such as child care or shopping. However, this allocation of time should not change total nonmarket production hours.

Without additional information on the consistency among the time use surveys, for purposes of this paper we assume that aggregate hours for household production by population group are consistent and that the differences over time, for the most part, reflect economic and behavioral differences not differences due to cognitive, sample design, and other survey-related factors. We also make the heroic assumption, bolstered by the MTUS work, that hours across major categories are roughly consistent. Most of the estimates used for this paper are based on aggregate hours, but the specialist/replacement wage estimates (described below) use the distribution of household production hours across the seven activity types and will be affected by inconsistencies. Table 2 compares the time use surveys weighted by population composition, the same weights used in aggregating the household accounts presented in this paper.

4. Household Production Satellite Account Estimates, 1946-2004

The satellite estimates presented in this paper adjust the NIPA gross domestic product (GDP) to show households as producers and consumer durables as investment for production. These household production satellite accounts also incorporate a return to government capital related to household production.³

Similar adjustments have been shown in previous studies, including Landefeld and McCulla (2000).⁴ However, this study extends this work by (a) incorporating the new ATUS data, (b) narrowing the contribution of government capital to those types most related to household production, (c) examining the effect of satellite account on volatility, and (d) using alternative methods for valuing unpaid work, including quality-adjusted replacement wages as recommended by *Beyond the Market*.

4.1 Adjustments to NIPA GDP Accounts

³ Capital services are attributed to government capital stocks in roads.

⁴ See Eisner (1989), Jorgenson and Fraumeni (1987), Kendrick (1979), and Ruggles and Ruggles (1970) for other examples.

Table 3 and Table 4 compare the household production satellite accounts to the NIPA accounts and present the adjustments necessary to include household production in NIPA GDP. Figure 1 compares the year-to-year growth rates of NIPA GDP and household production GDP.

Household labor and capital. To maintain the double-entry national accounts, nonmarket household labor and capital are added both to the production side and to the income side, GDP and gross domestic income (GDI), respectively. These additions fully account for household production and household labor income. By recognizing households as part of production, the adjusted accounts also reclassify capital goods purchased by households, consumer durables, as investment.

Consistent with the NIPA accounts, the production side of the household accounts shows the output or services of nonmarket activities, and the income side shows the inputs—the incomes “paid” to labor and capital for their output. While the income side of the accounts is not shown here, the value of nonmarket household services is added to compensation of employees. The services of consumer durables are added to personal income receipts on assets.

To clarify the revised treatment of the household, the summary tables shown in Table 3 and Table 4 have slightly rearranged the order of GDP components from their presentation in the NIPAs. Investment in residential structures is moved from “gross business investment” and included in a new category “investment” under the renamed category “personal consumption expenditures and investment.” Purchases of consumer durables are also moved to the new investment category. The value of nonmarket household services and the services of consumer durables are added to services in personal consumption expenditures (PCE).

Other changes and adjustments. The other major change in the satellite accounts presented here is to include services of government capital related to household production, namely roads. Only half of the total services from government structures in “highways and streets” are included so as to exclude services provided for non-household production such as general business or government activities.⁵

4.2 Estimates and Their Impact on Growth, 1946-2004

Table 3 and Table 4 show the impacts to the existing GDP accounts between 1946 and 2004 by including household nonmarket services, services of consumer durables, and services of roads. The adjustments decrease GDP growth over the entire period from a 7.1 percent annual rate to a 6.8 percent annual rate.⁶ The flatter growth shows that market production grew at a faster rate as women entered the labor force and household

⁵ The 50 percent-share of government roads services is based roughly on car passenger mileage adjusted to exclude commuting to work, buses, and trucks as reported by the Census Bureau for 2000. Applying the same percentage for the entire 1946-2004 period is admittedly arbitrary.

⁶ Given the absence of output price data for household production and government capital services, no inflation-adjusted, real, estimates are used in this presentation.

production grew at a slower rate. In other words, the adjustments to the NIPA accounts increased GDP by 47 percent in 1946 and 27 percent in 2004. Including household production also decreases the volatility in GDP growth. The variance for NIPA GDP annual growth is 9.6 percentage points versus 8.0 percentage points in the satellite account.

While the adjustments to include household production change many component growth rates, the relative component contributions remain the same. PCE is still the largest contributor to GDP growth, followed by government, investment, and net exports.

Household nonmarket services. The household nonmarket services component is the largest adjustment to create the household production accounts. It is calculated by applying private household (housekeeper) compensation to the household production hours reported by time use surveys (as summarized in Table 1). Nonmarket hours are interpolated between survey years (1965-66, 1975-76, 1985, and 2003). Nonmarket hours per type of person are held at 1965 levels for 1946-1964, but aggregate household hours change over time as the composition of the 18 years or older population changes, the mix of employed men and women and not employed men and women. The composition change is because household production hours are aggregated by population categories (employed females, not employed females, employed males, and not employed males).⁷

Between 1946 and 2004, household nonmarket services grew at a 5.6 percent annual rate, 1.5 percentage points slower than NIPA GDP. Nonmarket services made up 42 percent of NIPA GDP in 1946 and 19 percent in 2004. This shift in sources of production reflects the increase in women's civilian labor force participation rates from 33 percent in 1948 to 60 percent in 2004. Men's civilian labor force participation rates over the same time period declined from 88 percent to 75 percent.⁸ The production shift also demonstrates the changing opportunity costs between market and nonmarket work. In 1946, the average compensation for household workers was 56 percent of the amount received by employed workers (\$1,413 vs. \$2,545). By 2004, this rate had dropped to 31 percent (\$16,464 vs. \$53,953).

Services of consumer durables. The inclusion of the services of consumer durables raises NIPA GDP by 5 percent in 1946 and by 7 percent in 2004, reflecting the increased reliance on technology and household appliances for household production as more labor hours shifted to the workplace. The household capital-labor ratio, as measured by the chained-dollar net stock of consumer durables per person engaged in household production, increased at an annual rate of 4.3 percent between 1946 and 2004.⁹ The capital-labor ratio for private nonresidential capital increased at an annual rate of only 1.9

⁷ Note that in all calculations of not employed persons, the measurements include Current Population Survey (CPS) definitions of both unemployed and persons not in the labor force.

⁸ Figures are based on CPS data published by BLS. Note that the data is for people 18 years and older as used in this paper.

⁹ People aged 18 years and older are used to estimate the number of people engaged in household production.

percent over the same time period. This substitution of capital for labor in household production also reflects the lower relative price change. Between 1946 and 2004, the price of consumer durables rose at a 1.7 percent annual rate compared to a 2.8 percent annual rate for private nonresidential capital.

Government capital. Including an additional return to government capital related to roads does not noticeably impact NIPA GDP. While net stocks in government “highways and streets” amounted to \$1.7 trillion in 2004, the annual growth rate between 1946 and 2004 for net stocks was 6.8 percent. This is the same rate of change as household production GDP. The investment returns to roads grew at an 8.0 percent annual rate but consisted of only 0.2 percent of GDP in 2004.

Income. Measures of income are also affected by the adjustments. Household production increased labor income by 78 percent in 1946 and by 33 percent in 2004. Using a broader measure of income to include income from consumer durable services, personal income grew at a 6.8 percent annual growth rate in the household production accounts compared to a 7.1 percent rate in the NIPAs.

Savings and investment. The levels of personal investment and personal saving significantly increase by including household production. However, the growth rate of private investment does not change from an annual rate of 7.4 percent. Consumer durables increased private investment by 51 percent in 1946 and 2004. Gross savings grew at an annual rate of 6.9 percent during the entire period in the household production accounts compared to 6.6 percent in the NIPAs.

The level of personal saving is higher in the satellite accounts due to the inclusion of consumer durables as investment, but both the NIPA and household production account saving rate have a downward trend. According to the NIPAs, personal saving as a percent of disposable personal income was 9.6 percent in 1946 and 1.8 percent in 2004. The adjusted accounts report a saving rate of 11.7 percent and 9.7 percent for the same time periods.

4.3 Estimates and Their Impact during Recent Years, 1985-2004

Overall, including nonmarket household production into NIPA GDP has little impact on the composition and growth of GDP. The larger effects are from the later sub-period 1985-2004.

NIPA GDP growth between 1985 and 2004 was 5.5 percent as compared to 5.2 percent when household production is included (see Table 7—“Existing” and “Housekeeper” columns). This reflects continued increases in women’s labor force participation. During this period, female labor force participation for women aged 18 years or more increased from 55 percent to 60 percent and average household production hours of women dropped from 32.4 to 30.8.

However, as illustrated in Table 5, the 1.6 hour reduction in average women's hours spent in household production is not purely the result of a higher percentage of women being employed. Household production hours of employed women stayed about the same while not employed women hours dropped over this period. If female employment was fixed to 2004 levels, the average household production hours would have dropped 0.9 hours, from 31.7 to 30.8 hours. Economic effects—such as the increasing opportunity cost per hour of nonmarket work, the rapid decline in the price of labor-saving household consumer durables and appliances, and quality of convenience goods such as pre-prepared food—help explain for the 0.9 hours of the reduction in average hours in household production. The change in employment levels only accounts for 0.6 hours of the reduction, from 31.4 to 30.8 hours.

According to NIPA data, the differential between the average hourly compensation of all workers as compared to household workers widened from \$7.75 to \$18.02 between 1985 and 2004 (see Table 6). The price of all consumer durables, including home computers and software dropped at a 0.3 percent annual rate during this period and the price of kitchen and other household appliances dropped at a 0.8 percent rate. Interestingly, the personal consumption expenditures price index for purchased meals increased faster (3.0 percent annual rate) than that of food purchased for consumption at home (2.5 percent annual rate). However, if one looks at the weighted cost of home meal production—using data from the NIPAs and the household satellite account and the prices for labor, purchased food, consumer durables, and housing services—it can be seen that the rising opportunity cost of nonmarket time results in the price index for food cooked at home to increase approximately 3.2-3.5 percent between 1985 and 2004, which is above the 3.0 percent rate of increase in restaurant meals (see Table 6).

The cost-based household production satellite account results can shed little light on the reduction in some types of household production hours for not employed women. One explanation for the decrease in not employed women cooking hours (11.6 to 7.3) might be increased productivity in household production (such as the increased variety and quality of packaged, pre-prepared, and frozen foods), but absent an output-based measure of household production this cannot be assessed.¹⁰

With the decline in men's labor force participation rates between 1985 and 2004 and the rise of household production hours of employed men, weighted average hours for men stayed about the same. Average household production hours for employed men rose (15.8 in 1985 and 17.0 in 2004) while the average of hours for men who were not employed dropped from 25.6 to 23.0 hours.

A final feature of the 1985-2004 results worth noting is the impact of household production on volatility. As noted above, for the entire 1946-2004 period counting household production reduces the volatility of nominal GDP as household production

¹⁰ Although productivity may explain part of the decline, much of it may be a demographic phenomena—the reduction in the number of children and clutter—in the home during this period. Based on data from the National Center for Health Statistics, the birth rate in 1985 was 15.8 per 1,000 people. In 2004, the birth rate was 14.0.

tends to be countercyclical. For the 1985-2004 period, however, counting household production raises measured volatility. The variance for GDP increases from 1.5 percentage points to 2.8 percentage points. This increase is the result of the increase in the sensitivity of the wages of household workers to cyclical downturns (see Figure 2). During the last downturn, the compensation of household workers dropped from a peak of \$7.83 per hour in 2000 to \$6.78 in 2002 before rebounding in 2003.

5. Alternative Estimates of Household Production Time Inputs

Table 7 presents alternative satellite account estimates based on different methods for valuing household time in 1985 and 2004. This table is organized as follows:

- Column 1 for each year and the growth rate is simply the NIPA GDP estimate.
- Column 2 is the satellite account estimate using the housekeeper wage for valuing household production time (the satellite account as presented above).
- Column 3 uses “specialist” wages for valuing each of the 7 categories of household production. For example, janitorial services wages are used for valuing cleaning time and household goods repair and maintenance wages are used for odd jobs time (see Appendix 2 for a complete listing).
- Column 4 uses judgmental approximations of quality-adjusted replacement cost as recommended in *Beyond the Market*. This approach recognizes that while the average person’s productivity in making toast may be equivalent to a professional chef, it is probably lower than that of a roofer in replacing a roof. For those types of work, the specialist wage should be adjusted to reflect the average person’s lower productivity (see Appendix 2 for quality adjustment factors).
- Column 5 shows the opportunity cost approach, which is estimated using the average wage for all workers. This method is not recommended by *Beyond the Market*. As they note, while there is a large consumption value in household production (which is why high-waged physicians’ work in the garden or cook for their guests), surveys consistently indicate that there is also a large positive consumption value in paid work that is not counted.¹¹
- Column 6 is for reference and simply shows what the satellite account would look like if the federal minimum wage was used to value household production time inputs.

The first feature that comes out of this comparison is that in measuring trend growth in production, the method used makes little difference. The growth rate for NIPA GDP over the 1985-2004 period was 5.5 percent. The alternative household production satellite account growth rates for all scenarios are 5.2 percent, except for the opportunity cost method, which was 5.3 percent.

In terms of levels, as might be expected, the highest level is produced by the opportunity cost measure, followed by the specialist, quality-adjusted specialist, housekeeper, and

¹¹ Note that this is a simplified method of opportunity cost given the distribution of household production hours. Low income households are more likely to have a higher amount of household production hours than high income households. A better opportunity cost wage would be appropriately weighted instead of a simple average.

minimum wage measure. Measured as share of NIPA GDP, the opportunity cost value of unpaid household product is 62 percent of GDP in 2004 as compared to 24 percent for the specialist, 20 percent for the quality-adjusted specialist, 19 percent for the housekeeper, and 12 percent for minimum wage.

Where the estimates do differ is in the volatility of overall GDP and the trend and volatility in unpaid household production. As illustrated in Figure 2, the opportunity cost measure based on the average wages of all workers rises much faster and with less volatility than the series based on lower-income housekeeper and minimum-wage workers.

6. Output-based Estimates

An important criterion of the double-entry national accounts, which is echoed in a *Beyond the Market* recommendation, is that:

“Nonmarket accounts should measure the value and quantity of outputs independently from the value and quantity of inputs whenever feasible.”
(Recommendation 1.3)

Without such estimates, it is not possible to measure contributions and sources of real economic growth from household production, improvements in the productivity of household production, and a number of other questions that nonmarket accounts could address. One difficulty in implementing this recommendation is the absence of data on household products, such as meals cooked, number of children cared for, loads of laundry, lawns mowed, decks built, and shopping trips taken. The other problem is the difficulty in finding an appropriate price for a near market equivalent.

The United Kingdom recently produced experimental output-based household production accounts. These innovative accounts point to the possibilities as well as the challenges in producing such accounts.

The largest single category of the U.K. household production output-based accounts is owner-occupied housing, which is measured by what is equivalent to owner-occupied housing services plus the unpaid household time spent on furnishing and maintenance. The owner-occupied housing services estimate in the U.K. is based on market-rent which is similar to the methodology used in NIPA GDP. The U.K. time use estimate for furnishing and maintenance is similar to a component of “odd jobs” presented in this paper. In other words, the U.K. category of owner-occupied housing is included in the satellite account estimate presented here, and the largest subcomponent, owner occupied rent, is already included in the NIPAs and valued separately for the income and product sides of the accounts. Thus, the largest of the eight components of the U.K. experimental estimates is not new information that is likely to help in analyzing changes in the productivity of household production, especially with respect to the major uses of household time, which include cooking, cleaning, shopping, and child care.

Another large category in the U.K. estimates is transportation. The source of data on household output is miles traveled by parties of individuals as reported in their National Travel Survey. The United States has some roughly similar data, but the challenge is in finding an appropriate near market price for these activities. The U.K. estimates use the per-mile price of a taxi booked in advance adjusted for the number of passengers. It is not clear that this is close enough to be an equivalent for household travel, and the use of such a price index for all household trips—rural, suburban, and urban—for the United States would produce a disproportionately large estimate for this category of time use.

The U.K. child care estimate is actually closer to a specialist-based input estimate than a market output-based estimate. The U.K. estimate is based on what appears to be a largely administratively-determined “child-care hour required” estimate multiplied by a live-in nanny’s wage. A preferable measure would be an estimate of actual hours of child care from a time use survey multiplied by the hourly fee for a licensed day care center. This would not only cover the labor costs associated with the child care provider, but the capital and intermediate inputs required by the market sector in producing child care.

Other time use categories valued by the U.K. estimates are nutrition and laundry. The U.K. is fortunate in having such data as price information from the “Eating Out” section of their National Food Survey, meal composition from a private survey, and average number of wash loads per household per week. Substantial research and data collection would probably be required to develop such quantity and price data for the United States.

7. Conclusions

The ATUS represents the opening of a new and exciting frontier in economic measurement. With time series data and the rich micro data set associated with the ATUS, it will be possible to more accurately measure time use and its impact on a number of important economic areas, such as the analysis of consumer demand for items ranging from consumer durables to health care. Other expansions that would be possible—with parallel expansions in related source data—include satellite input-output accounts for household production, independent measurements of the inputs and outputs of household production, the cyclical impact of household production, as well as the impact on poverty and other statistics of household production.

Finally, as the United States and other countries—partly through the work of such groups as the MTUS and the UN Delhi Group on Informal Sector Statistics—harmonize their accounting for household production, international comparisons of economic performance will be facilitated, especially for developing economies where nonmarket production is more prevalent.

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Figure 1. NIPA GDP and Household Production GDP Annual Growth Rate, 1946-2004

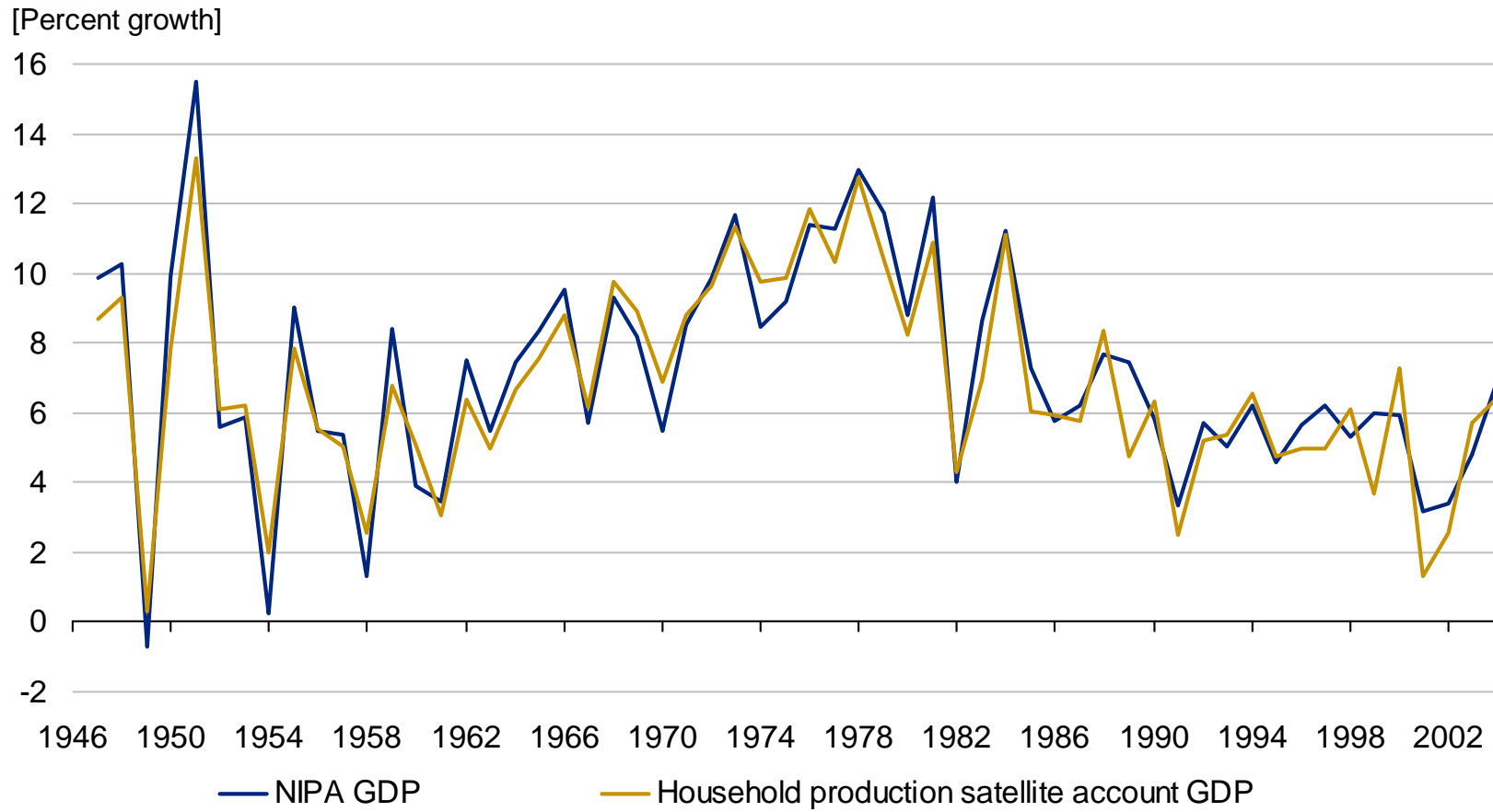


Figure 2. Hourly Compensation and Wage Rates for Selected Groups, 1946-2004

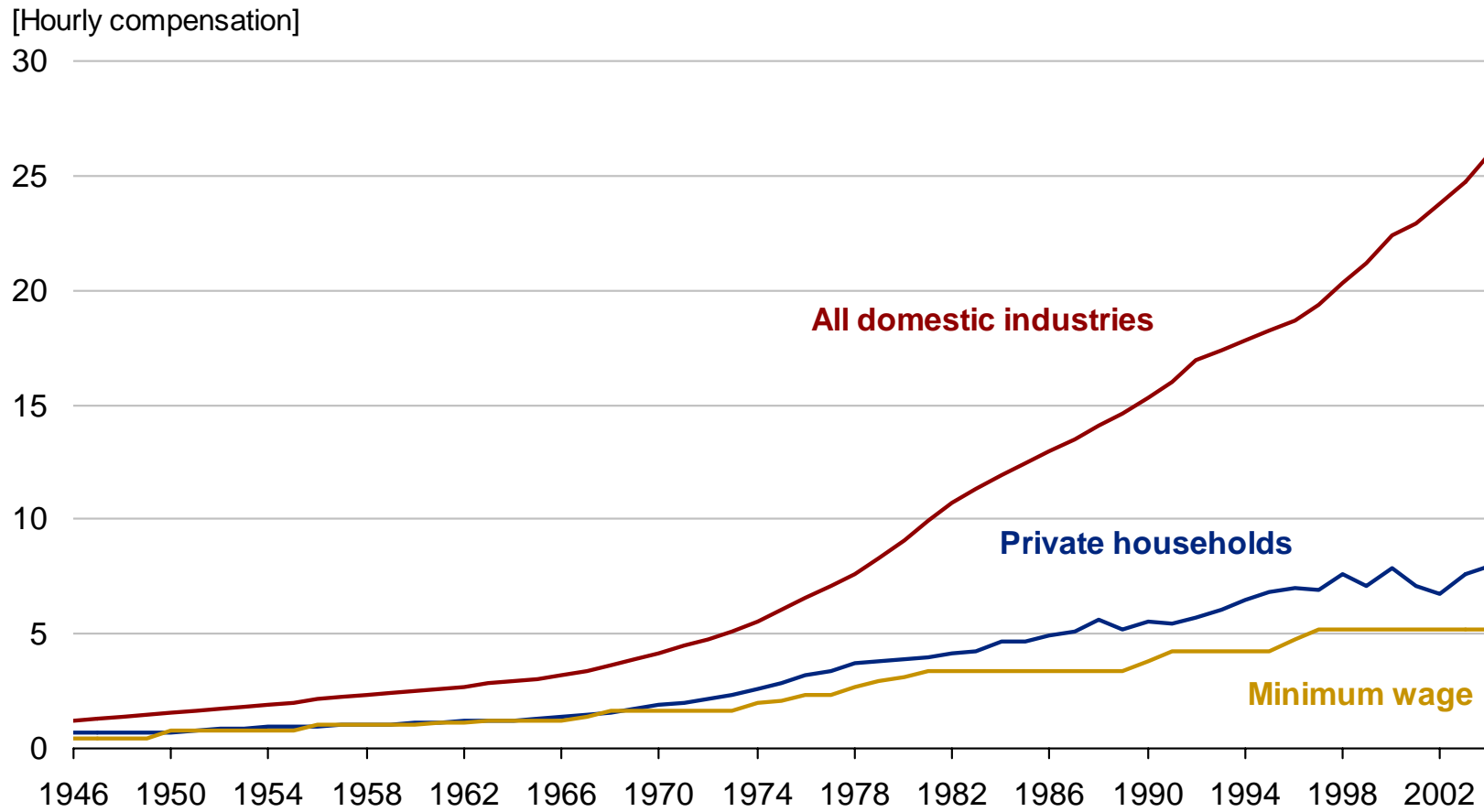


Table 1. Time Use Survey Comparison

[Hours per week]	Women										Men									
	Employed					Not employed					Employed					Not employed				
	MTUS			ATUS		MTUS			ATUS		MTUS			ATUS		MTUS			ATUS	
	1965	1975	1985	2003	2004	1965	1975	1985	2003	2004	1965	1975	1985	2003	2004	1965	1975	1985	2003	2004
Cooking	8.2	7.8	6.8	4.6	4.5	15.6	13.0	11.6	7.8	7.3	1.2	1.1	2.0	1.7	1.6	4.4	2.4	3.9	2.7	2.8
House work	7.4	6.4	7.1	5.9	5.5	14.0	11.9	11.6	9.8	9.9	1.1	1.4	3.8	2.1	2.3	4.4	5.0	8.5	4.0	4.0
Odd jobs	2.6	2.2	1.1	3.8	3.8	3.6	3.6	1.1	5.5	5.3	2.6	3.6	2.2	4.0	4.2	4.1	5.0	3.4	6.7	5.8
Gardening	0.2	0.1	0.7	0.7	0.8	0.5	0.6	0.9	1.5	1.4	0.2	0.1	0.7	1.6	1.4	0.5	0.8	1.7	3.0	3.1
Shopping	2.5	2.7	3.8	4.0	4.1	3.0	4.3	4.4	4.8	4.8	1.7	1.8	2.2	2.1	2.2	2.6	2.8	3.1	0.9	1.1
Child care	2.3	2.7	2.7	3.5	3.7	6.3	4.9	4.8	3.7	4.0	1.3	1.1	1.2	2.3	2.3	0.7	1.1	0.7	3.1	2.7
Travel	3.8	3.8	4.3	4.0	4.1	4.6	5.2	4.2	3.9	3.8	3.5	3.6	3.7	3.2	3.1	5.3	5.1	4.4	3.4	3.5
Total	27.0	25.8	26.4	26.6	26.5	47.5	43.6	38.7	37.0	36.5	11.6	12.9	15.8	17.0	17.0	22.0	22.4	25.6	23.7	23.0
Composition of labor	20	22	27	30	30	32	30	26	22	22	39	35	35	34	35	9	12	13	14	14
% of gender	38	43	51	57	57	62	57	49	43	43	81	74	73	71	71	19	26	27	29	29

Table 2. Time Use Survey Comparison – Weighted Averages by Population and Time Use Ranks

[Weighted average hours per week]	Women										Men									
	MTUS			ATUS		Rank [1=most]					MTUS			ATUS		Rank [1=most]				
	1965	1975	1985	2003	2004	1965	1975	1985	2003	2004	1965	1975	1985	2003	2004	1965	1975	1985	2003	2004
Cooking	12.8	10.8	9.2	6.0	5.7	1	1	2	2	2	1.8	1.5	2.5	1.9	1.9	3	5	4	6	5
House work	11.5	9.6	9.3	7.5	7.4	2	2	1	1	1	1.8	2.3	5.1	2.7	2.8	5	3	1	3	3
Odd jobs	3.2	3.0	1.1	4.5	4.4	5	6	6	3	4	2.9	4.0	2.5	4.8	4.6	2	2	3	1	1
Gardening	0.4	0.4	0.8	1.0	1.1	7	7	7	7	7	0.3	0.3	1.0	2.0	1.9	7	7	7	5	6
Shopping	2.8	3.6	4.1	4.4	4.4	6	5	4	4	3	1.8	2.0	2.5	1.8	1.9	4	4	5	7	7
Child care	4.8	3.9	3.7	3.6	3.8	3	4	5	6	6	1.2	1.1	1.1	2.5	2.4	6	6	6	4	4
Travel	4.3	4.6	4.3	4.0	4.0	4	3	3	5	5	3.9	4.0	3.9	3.3	3.3	1	1	2	2	2
Total	39.7	36.0	32.4	31.1	30.8						13.6	15.3	18.5	19.0	18.7					

[Weighted average hours per week]	Women & Men									
	MTUS			ATUS		Rank [1=most]				
	1965	1975	1985	2003	2004	1965	1975	1985	2003	2004
Cooking	7.5	6.4	6.0	4.0	3.9	1	1	2	3	3
House work	6.8	6.1	7.3	5.2	5.2	2	2	1	1	1
Odd jobs	3.1	3.5	1.8	4.7	4.5	4	4	6	2	2
Gardening	0.3	0.3	0.9	1.5	1.5	7	7	7	7	7
Shopping	2.4	2.9	3.3	3.1	3.2	6	5	4	5	5
Child care	3.0	2.6	2.4	3.1	3.1	5	6	5	6	6
Travel	4.1	4.3	4.1	3.6	3.6	3	3	3	4	4
Total	27.2	26.1	25.8	25.2	25.0					

Table 3. NIPA GDP and Household Production GDP Levels and Rates of Change, 1946 and 2004

[Billions of dollars]	NIPA measures				Household production satellite account measures			
	1946	2004	Average annual rate of change (%)	Contribution to GDP growth (%)	1946	2004	Average annual rate of change (%)	Contribution to GDP growth (%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gross domestic product	222.3	11,734.3	7.1	100	327.7	14,855.1	6.8	100
Personal consumption expenditures and investment	144.3	8,214.3	7.2	70	257.2	11,972.9	6.8	81
Personal consumption expenditures	144.3	8,214.3	7.2	70	233.6	10,311.3	6.7	69
Nondurables	82.7	2,368.3	6.0	20	82.7	2,368.3	6.0	16
Services	45.8	4,858.2	8.4	42	150.9	7,943.0	7.1	54
Housing	14.2	1,221.1	8.0	10	14.2	1,221.1	8.0	8
Services of consumer durables	0.0	0.0	n.a.	n.a.	11.4	865.3	7.8	6
Depreciation of consumer durables	0.0	0.0	n.a.	n.a.	9.6	701.8	7.7	5
Return to consumer durables	0.0	0.0	n.a.	n.a.	1.8	163.5	8.1	1
Nonmarket services	0.0	0.0	n.a.	n.a.	93.7	2,219.5	5.6	15
Other	31.6	3,637.1	8.5	31	31.6	3,637.1	8.5	25
Consumer durables	15.8	987.8	7.4	8	n.a.	n.a.	n.a.	n.a.
Investment	n.a.	n.a.	n.a.	n.a.	23.6	1,661.6	7.6	11
Residential	n.a.	n.a.	n.a.	n.a.	7.8	673.8	8.0	5
Consumer durables	n.a.	n.a.	n.a.	n.a.	15.8	987.8	7.4	7
Gross business investment	31.1	1,928.1	7.4	16	23.3	1,254.2	7.1	8
Nonresidential fixed investment	17.3	1,198.8	7.6	10	17.3	1,198.8	7.6	8
Change in business inventories	6.0	55.4	3.9	0	6.0	55.4	3.9	0
Residential	7.8	673.8	8.0	6	n.a.	n.a.	n.a.	n.a.
Net exports	7.2	-624.0	n.a.	-5	7.2	-624.0	n.a.	-4
Gov't consumption & investment with capital services	39.6	2,215.9	7.2	19	40.0	2,252.0	7.2	15
Government consumption exp. & gross investment	39.6	2,215.9	7.2	19	39.6	2,215.9	7.2	15
Services of government capital	0.0	0.0	n.a.	n.a.	0.4	36.1	8.0	0
Other Aggregates								
Labor income	119.6	6,687.6	7.2	57	213.3	8,907.1	6.6	60
Personal income	178.6	9,713.3	7.1	83	283.7	12,798.1	6.8	86
Personal savings	15.5	151.8	4.0	1	31.3	1,139.6	6.4	8
Private investment	31.1	1,928.1	7.4	16	46.9	2,915.8	7.4	20
Gross savings	38.4	1,572.0	6.6	13	54.2	2,559.8	6.9	17

Table 4. Impacts on Components, on NIPA GDP, and on Component Shares, 1946 and 2004

	Component incr. from adjust. (%)		Impact of adjust. on NIPA GDP (%)		Component shares of NIPA GDP (%)		Satellite components share of satellite GDP (%)	
	1946	2004	1946	2004	1946	2004	1946	2004
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gross domestic product	47	27	47	27	100	100	100	100
Personal consumption expenditures and investment	78	46	51	32	n.a.	n.a.	78	81
Personal consumption expenditures	62	26	40	18	65	70	71	69
Nondurables	0	0	0	0	37	20	25	16
Services	230	63	47	26	21	41	46	53
Housing	0	0	0	0	6	10	4	8
Services of consumer durables	n.a.	n.a.	5	7	n.a.	n.a.	3	6
Depreciation of consumer durables	0	0	4	6	n.a.	n.a.	3	5
Return to consumer durables	n.a.	n.a.	1	1	n.a.	n.a.	1	1
Nonmarket services	n.a.	n.a.	42	19	n.a.	n.a.	29	15
Other	0	0	0	0	14	31	10	24
Consumer durables *	0	0	-7	-8	7	8	n.a.	n.a.
Investment	n.a.	n.a.	11	14	n.a.	n.a.	7	11
Residential	0	0	4	6	n.a.	n.a.	2	5
Consumer durables	0	0	7	8	n.a.	n.a.	5	7
Gross business investment *	-25	-35	-4	-6	14	16	7	8
Nonresidential fixed investment	0	0	0	0	8	10	5	8
Change in business inventories	0	0	0	0	3	0	2	0
Residential *	0	0	-4	-6	4	6	n.a.	n.a.
Net exports	0	0	0	0	3	6	2	-4
Gov't consumption & investment with capital services	1	2	0	0	18	19	12	15
Government consumption exp. & gross investment	0	0	0	0	18	19	12	15
Services of government capital	n.a.	n.a.	0	0	n.a.	n.a.	0	0
Other Aggregates								
Household PCE and investment share of GDP	n.a.	n.a.	n.a.	n.a.	65	70	78	81
Private investment share of GDP	n.a.	n.a.	n.a.	n.a.	14	16	14	20
Household investment share of private investment	n.a.	n.a.	n.a.	n.a.	0	0	50	57
Nonmarket services & services of consumer durables share of PCE	n.a.	n.a.	n.a.	n.a.	0	0	45	30
Labor income share of national income (GDP)	n.a.	n.a.	n.a.	n.a.	54	57	65	60
Personal saving rate (% of personal income)	n.a.	n.a.	n.a.	n.a.	9	2	11	9
Personal saving rate (% of personal disposable income)	n.a.	n.a.	n.a.	n.a.	10	2	12	10
Personal saving as % of GDP	n.a.	n.a.	n.a.	n.a.	7	1	10	8
National saving rate (gross savings % of GDP)	n.a.	n.a.	n.a.	n.a.	17	13	17	17

* The apparent negative impacts of the adjustments are solely a result of the reclassification of residential and consumer durables.

Table 5. Female Household Production, 1985-2004

	1985	2004	Change	Abs. change
Percent of women				
Employed	51.2	57.1	6.0	6.0
Not employed	48.8	42.9	-6.0	6.0
Nonmarket labor hours per week				
Employed women	26.4	26.5	0.1	0.1
Not employed women	38.7	36.5	-2.1	2.1
Weighted average nonmarket labor hours per week				
Employed women	13.5	15.1	1.6	1.6
Not employed women	<u>18.9</u>	<u>15.7</u>	<u>-3.2</u>	<u>3.2</u>
Total	32.4	30.8	-1.6	4.8
<i>Employment status fixed to 2004 weights</i>				
Employed women	15.1	15.1	0.0	0.0
Not employed women	<u>16.6</u>	<u>15.7</u>	<u>-0.9</u>	<u>0.9</u>
Total	31.7	30.8	-0.9	0.9
<i>Percent of total change</i>			55	20
<i>Nonmarket labor hours fixed to 2004 levels</i>				
Employed women	13.5	15.1	1.6	1.6
Not employed women	<u>17.8</u>	<u>15.7</u>	<u>-2.2</u>	<u>2.2</u>
Total	31.4	30.8	-0.6	3.8
<i>Percent of total change</i>			37	78

Note: Numbers may not be additive due to rounding.

Table 6. Cooking Example – Restaurant vs. Home, 1985-2004

[Dollars in billions]	1985	2004	Growth	Share of expenses		Price used
				1985	2004	
Food price indexes						
Food purchased for off-premise consumption	69.0	109.5	2.5			
Purchased meals and beverages	63.9	111.5	3.0			
Labor						
Cooking hours per week	6.0	3.9	-2.3			
All household production hours per week	25.8	25.0	-0.2			
Cooking share of household production	23.2	15.5				
Cooking share of all hours in a week	3.6	2.3				
Average hourly compensation						
All workers	12.44	25.94	3.9			
Private households (housekeeper)	4.69	7.92	2.8			
Difference	7.75	18.02	4.5			
Capital						
Consumer durables services	359.3	865.3	4.7			
Net stock of consumer durables	1,284.9	3,578.0	5.5			
Return on consumer durables (services / net stock)	28.0	24.2	-0.8			
Housing services	412.7	1,221.1	5.9			
Net stock of residential capital	4,564.7	14,473.3	6.3			
Return on housing (services / net stock)	9.0	8.4	-0.4			
Expenses						
Food:						
Food purchased for off-premise consumption	310.5	688.4	4.3	17	28	Off-premise consumption growth
Labor:						
Annual cooking hours * private households compensation	1,459.4	1,590.8	0.5	78	65	All worker compensation growth
Capital:						
Cooking share of production hours * consumer durables services	83.4	134.0	2.5	4	5	Return on consumer durables growth
Cooking share of all hours * housing services	14.7	28.1	3.5	1	1	Return on housing growth
Total	1,867.9	2,441.3	1.4	100	100	
				3.5	3.2	Weighted average ¹

1. Share of total expenses multiplied by the price index indicated under "Price used."

Table 7. Household Production GDP Using Various Compensation Types for Nonmarket Labor, 1985-2004

[Billions of dollars]	Valuation approach :	1985						2004					
		Existing	House-keeper	Specialist	Quality-adj. specialist	Opportunity	Minimum wage	Existing	House-keeper	Specialist	Quality-adj. specialist	Opportunity	Minimum wage
Adjusted gross domestic product		4,220	5,701	5,913	5,726	7,494	5,391	11,734	14,855	15,504	15,033	19,909	14,080
Personal consumption expenditures and investment		2,909	4,354	4,565	4,378	6,146	4,043	8,888	11,973	12,622	12,151	17,027	11,197
Personal consumption expenditures		2,357	3,802	4,014	3,826	5,594	3,491	7,227	10,311	10,960	10,489	15,365	9,536
Nondurables		929	929	929	929	929	929	2,368	2,368	2,368	2,368	2,368	2,368
Services		1,428	2,873	3,085	2,897	4,666	2,562	4,858	7,943	8,592	8,121	12,997	7,168
Housing		413	413	413	413	413	413	1,221	1,221	1,221	1,221	1,221	1,221
Services of consumer durables		0	359	359	359	359	359	0	865	865	865	865	865
Nonmarket services		0	1,086	1,297	1,110	2,878	775	0	2,219	2,868	2,398	7,273	1,444
Other		1,015	1,015	1,015	1,015	1,015	1,015	3,637	3,637	3,637	3,637	3,637	3,637
Investment		552	552	552	552	552	552	1,662	1,662	1,662	1,662	1,662	1,662
Residential		188	188	188	188	188	188	674	674	674	674	674	674
Consumer durables		364	364	364	364	364	364	988	988	988	988	988	988
Gross business investment		548	548	548	548	548	548	1,254	1,254	1,254	1,254	1,254	1,254
Nonresidential fixed investment		526	526	526	526	526	526	1,199	1,199	1,199	1,199	1,199	1,199
Change in business inventories		22	22	22	22	22	22	55	55	55	55	55	55
Net exports		-115	-115	-115	-115	-115	-115	-624	-624	-624	-624	-624	-624
Adjusted government consumption and investment		879	915	915	915	915	915	2,216	2,252	2,252	2,252	2,252	2,252
Government consumption expenditures and gross investment		879	879	879	879	879	879	2,216	2,216	2,216	2,216	2,216	2,216
Plus: Services of government capital		0	36	36	36	36	36	0	36	36	36	36	36
Addenda:													
Share of NIPA ("Existing") GDP:													
Nonmarket services		0	26	31	26	68	18	0	19	24	20	62	12
PCE and household investment		69	103	108	104	146	96	76	102	108	104	145	95
Government capital services		0	1	1	1	1	1	0	0	0	0	0	0
Share of respective household production GDP:													
Nonmarket services		0	19	22	19	38	14	0	15	19	16	37	10
PCE and household investment		69	76	77	76	82	75	76	81	81	81	86	80
Government capital services		0	1	1	1	0	1	0	0	0	0	0	0

[Billions of dollars]	Valuation approach :	Growth, 1985-2004					
		Existing	House-keeper	Specialist	Quality-adj. specialist	Opportunity	Minimum wage
Adjusted gross domestic product		5.5	5.2	5.2	5.2	5.3	5.2
Personal consumption expenditures and investment		6.1	5.5	5.5	5.5	5.5	5.5
Personal consumption expenditures		6.1	5.4	5.4	5.5	5.5	5.4
Nondurables		5.1	5.1	5.1	5.1	5.1	5.1
Services		6.7	5.5	5.5	5.6	5.5	5.6
Housing		5.9	5.9	5.9	5.9	5.9	5.9
Services of consumer durables		n.a.	4.7	4.7	4.7	4.7	4.7
Nonmarket services		n.a.	3.8	4.3	4.1	5.0	3.3
Other		6.9	6.9	6.9	6.9	6.9	6.9
Investment		6.0	6.0	6.0	6.0	6.0	6.0
Residential		6.9	6.9	6.9	6.9	6.9	6.9
Consumer durables		5.4	5.4	5.4	5.4	5.4	5.4
Gross business investment		4.5	4.5	4.5	4.5	4.5	4.5
Nonresidential fixed investment		4.4	4.4	4.4	4.4	4.4	4.4
Change in business inventories		5.0	5.0	5.0	5.0	5.0	5.0
Net exports		9.3	9.3	9.3	9.3	9.3	9.3
Adjusted government consumption and investment		5.0	4.9	4.9	4.9	4.9	4.9
Government consumption expenditures and gross investment		5.0	5.0	5.0	5.0	5.0	5.0
Plus: Services of government capital		n.a.	0.0	0.0	0.0	0.0	0.0

Note: "Existing" (or NIPA) GDP accounts are reorganized to compare to the household production account scenarios shown in this table.

Appendix 1. Further Information on the MTUS Database and Categories

		MTUS					ATUS	
		1965-66 *	1975-76	1985	1992-93	1998-99	2003	2004
					NOT USED FOR PAPER	NOT USED FOR PAPER		
Total nonmarket hours								
Males	Employed	11.6	12.9	15.8	15.5	20.4	17.0	17.0
	NOT Employed	22.0	22.4	25.6	23.2	25.1	23.7	23.0
Females	Employed	27.0	25.8	26.4	22.8	27.7	26.6	26.5
	NOT Employed	47.5	43.6	38.7	34.8	39.4	37.0	36.5
Sample size used								
Males	Employed	890	829	1,385	2,419	374	6,292	4,119
	NOT Employed	159	237	485	842	97	2,145	1,571
Females	Employed	545	559	1,317	2,355	437	6,577	4,402
	NOT Employed	<u>745</u>	<u>741</u>	<u>1,056</u>	<u>1,686</u>	<u>180</u>	<u>4,470</u>	<u>3,073</u>
Total		2,339	2,366	4,243	7,302	1,088	19,484	13,165
Notes		Survey covered people aged 18-65. Data adjusted to include people 65+ based on data from the 65+ subgroup in the 1975-76 survey.	Consisted of four waves. This paper only uses data from the first wave which also had the highest response rate (72%).	Based primarily from mail-back sample from original survey. Detailed data from phone and face-to-face interviews unavailable.	Survey heavily biased toward the weekend. Individual activities such as cooking, house work, and child care much lower than the trend.	Small sample with much higher results than other surveys in most categories.	58% response rate for entire survey	57% response rate for entire survey

* The sample counts include the 361 from the 66+ subgroup in the 1975-76 survey used to adjust the data.

Mapping of ATUS to MTUS used in this paper

MTUS	ATUS Code	ATUS Description
Cooking (AV6)	02-02-01	Household Activities: Food and drink preparation
	02-02-02	Household Activities: Food presentation
	02-02-03	Household Activities: Kitchen and food clean-up
	02-02-99	Household Activities: Food and drink prep, presentation, and clean-up, n.e.c.
Housework (AV7)	02-01-01	Household Activities: Interior cleaning
	02-01-02	Household Activities: Laundry
	02-01-03	Household Activities: Sewing, repairing, and maintaining textiles
	02-03-01	Household Activities: Interior arrangement, decoration, and repairs
	02-03-99	Household Activities: Interior maintenance, repair, and decoration, n.e.c
02-04-01	Household Activities: Exterior cleaning	
Odd jobs (AV8)	02-01-04	Household Activities: Storing interior household items, including food
	02-01-99	Household Activities: Housework, n.e.c.
	02-03-02	Household Activities: Building and repairing furniture
	02-03-03	Household Activities: Heating and cooling
	02-04-02	Household Activities: Exterior repair, improvements, and decoration
	02-04-99	Household Activities: Exterior maintenance, repair, and decoration, n.e.c.
	02-05-02	Household Activities: Ponds, pools, and hot tubs
	02-06	Household Activities: Animals and pets
	02-07-01	Household Activities: Vehicle repair and maintenance (by self)
	02-07-99	Household Activities: Vehicles, n.e.c.
	02-08-01	Household Activities: Appliance and tool set-up, repair, and maintenance (by self)
	02-08-99	Household Activities: Appliance and tools, n.e.c.
	02-09-01	Household Activities: Financial management
	02-09-02	Household Activities: Household and personal organization and planning
	02-09-05	Household Activities: Home security
	02-09-99	Household Activities: Household management, n.e.c.
	02-99-99	Household Activities: Household activities, n.e.c.
	03-04	Caring For and Helping Household Members: Caring for household adults
	03-05	Caring For and Helping Household Members: Helping household adults
	04-01	Caring For and Helping Nonhousehold Members: Caring for and helping nonhousehold children
	04-02	Caring For and Helping Nonhousehold Members: Activities related to nonhousehold children's education
	04-03	Caring For and Helping Nonhousehold Members: Activities related to nonhousehold children's health
	04-04	Caring For and Helping Nonhousehold Members: Caring for nonhousehold adults
04-05	Caring For and Helping Nonhousehold Members: Helping nonhousehold adults	
04-99	Caring For and Helping Nonhousehold Members: Caring for and helping nonhousehold members, n.e.c.	
07-01-02	Consumer Purchases: Purchasing gas	
07-01-99	Consumer Purchases: Shopping, n.e.c.	
Gardening (AV9)	02-05-01	Household Activities: Lawn, garden, and houseplants
	02-05-99	Household Activities: Lawn and garden, n.e.c.

Source: Based on MTUS readme file for USA 2003 dated February 8, 2006.

Mapping of ATUS to MTUS used in this paper (con't)

MTUS	ATUS Code	ATUS Description
Shopping (AV10)	07-01-01	Consumer Purchases: Grocery shopping
	07-01-03	Consumer Purchases: Purchasing food (not groceries)
	07-01-04	Consumer Purchases: Shopping, except groceries, food, and gas
	07-01-05	Consumer Purchases: Waiting associated with shopping
	07-02	Consumer Purchases: Researching purchases
	07-03	Consumer Purchases: Security procedures related to consumer purchases
	07-99	Consumer Purchases: Consumer purchases, n.e.c.
	08-02	Professional and Personal Care Services: Financial services and banking
	09-01	Household Services: Household services (not done by self)
	09-02	Household Services: Home maintenance, repair, decoration, and construction (not done by self)
	09-03	Household Services: Pet services (not done by self, not vet)
	09-04	Household Services: Lawn and garden services (not done by self)
	09-05	Household Services: Vehicle maintenance and repair services (not done by self)
	09-99	Household Services: Household services, n.e.c.
	10-01	Government Services and Civic Obligations: Using government services
	10-03-01	Government Services and Civic Obligations: Waiting associated with using police/fire services
	10-03-02	Government Services and Civic Obligations: Waiting associated with obtaining licenses
	10-03-99	Government Services and Civic Obligations: Waiting associated with govt services or civic obligations, n.e.c.
	10-04	Government Services and Civic Obligations: Security procedures related to government services/civic obligations
	10-99	Government Services and Civic Obligations: Government services, n.e.c.
16-01-04	Telephone Calls: Telephone calls to/from salespeople	
16-01-06	Telephone Calls: Telephone calls to/from household services providers	
16-01-08	Telephone Calls: Telephone calls to/from government officials	
Child care (AV11)	03-01	Caring For and Helping Household Members: Caring for and helping household children
	03-02	Caring For and Helping Household Members: Activities related to household children's education
	03-03	Caring For and Helping Household Members: Activities related to household children's health
	03-99	Caring For and Helping Household Members: Caring for and helping household members, n.e.c.
	08-01	Professional and Personal Care Services: Childcare services
	16-01-07	Telephone Calls: Telephone calls to/from paid child or adult care providers
Travel (AV12)	17-02	Traveling: Travel related to household activities
	17-03	Traveling: Travel related to caring for and helping household members
	17-04	Traveling: Travel related to caring for and helping nonhousehold members
	17-07	Traveling: Travel related to consumer purchases
	17-08	Traveling: Travel related to using professional and personal care services
	17-09	Traveling: Travel related to using household services
	17-10	Traveling: Travel related to using government services and civic obligations

Other categories included by MTUS

Travel (AV12)	17-01	Traveling: Travel related to personal care
	17-11	Traveling: Travel related to eating and drinking
	17-14	Traveling: Travel related to religious/spiritual activities
	17-15	Traveling: Travel related to volunteer activities

Source: Based on MTUS readme file for USA 2003 dated February 8, 2006.

Note: For consistency in the treatment of household data and nonhousehold data, category 04_1_05 "Playing sports with nonhousehold children" is included in Odd jobs for this paper as opposed to Child care as in MTUS.

Appendix 2. Specialist Wage Rates and Quality Adjustments

Time use category	BLS Industry (CES-SIC)	Hourly wage 1985	BLS Industry (CES-NAICS)	Hourly wage 2004	Assumed quality adjustment
Cooking	Eating and drinking places	4.33	Food services and drinking places	7.84	75%
Cleaning	Hotels and motels	5.83	Janitorial services	9.51	80%
Odd jobs (average of hourly rates)	Miscellaneous repair services	7.92	Household goods repair and maintenance	14.82	70%
	Nursing and personal care facilities		Individual and family services		
	Accounting, auditing, and bookkeeping		Professional and business services		
Gardening	Landscape and horticultural services	7.56	Landscaping services	12.04	75%
Shopping	Hotels and motels	5.83	Leisure and hospitality	8.91	100%
Childcare	Child day care services	5.02	Child day care services	9.76	100%
Travel	Hotels and motels	5.83	Leisure and hospitality	8.91	100%