Distributional Estimates in the U.S. National Accounts

Integrating Micro and Macro Data

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Objective

▪ Produce distributional estimates (by quintile) fully consistent with the national accounts

▪ Estimates can be used to examine:
  ▪ Dispersion in saving rate by quintile
  ▪ Average propensity to consume by quintile
  ▪ Relationship to aggregate demand

▪ Will be seen largely as a supplement to the aggregate statistics produced by the BEA
Previous Work


- Recommendation 4: National statistical offices should “give more prominence to the distribution of income, consumption, and wealth.”
- “…Developing distributional measures of full [national account] income is, however, a formidable task. The most difficult challenge is to allocate to various groups those income flows that have been imputed at the macro level...for example, imputed rents from own-occupied housing.” (pg. 136)

- The Organization for Economic Cooperation and Development (OECD) created an “expert group” (2010 – present) to examine the feasibility of constructing such estimates
CPS Household Money Income vs. NIPA Personal Income

Real 2009 Dollars*

Flagship statistics produced by the Commerce Department

Stagnant household income over past decade

Personal income has grown

*Both series deflated by PCE price index

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CPS Household Money Income vs. NIPA Personal Income: Indexed

Divergent trends, beginning around year 2000

Index, 1990 = 100

Year


Real per capita Personal Income
Real Median CPS Household Income
Within transfer receipts, Medicare and Medicaid have grown the fastest.
BLS Consumer Expenditure Survey vs. NIPA Personal Consumption Expenditures

Flagship statistics produced by BEA and BLS

Real 2009 Dollars

Year

Real per capita PCE

Real Mean CE Total Expenditures*

*Based on Consumer Units (CU)
BLS Consumer Expenditure Survey vs. NIPA Personal Consumption Expenditures: Indexed

Index, 1990 = 100

- PCE has grown at a faster rate

Year


Real per capita PCE
Real Mean CE Total Expenditures*

*Based on Consumer Units (CU)
### Comparison of Income Metrics

<table>
<thead>
<tr>
<th>Income Component</th>
<th>CPS Household Money Income*</th>
<th>NIPA Personal Income</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Labor Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wages and salaries</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Farm and proprietorship income</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Employer contributions to gov't social insurance</td>
<td>X</td>
<td>✓</td>
</tr>
<tr>
<td>Employer-provided fringe benefits</td>
<td>X</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Property Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest and dividends</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Imputed interest and dividends</td>
<td>X</td>
<td>✓</td>
</tr>
<tr>
<td>Rents, royalties, estates, trusts, etc.</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Imputed rent for owner-occupied homes</td>
<td>X</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Transfer Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government cash transfers</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Medicare + Medicaid government transfers</td>
<td>X</td>
<td>✓</td>
</tr>
<tr>
<td>Retirement income</td>
<td>✓</td>
<td>✓ / X**</td>
</tr>
<tr>
<td>Cash transfers from other households</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>Unrealized capital gains</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Realized capital gains</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

*In addition to the official money income concept, the Census Bureau constructs several alternative definitions of income that include some of the excluded income components listed in the table above.

**The NIPAs measure pensions on either an accrual basis (defined benefit) or employer contributions (defined contribution) and are treated as a form of compensation. Pension disbursements are not considered part of personal income.
## Comparison of Consumption Expenditure Metrics

<table>
<thead>
<tr>
<th>Consumption Expenditure Component</th>
<th>BLS Consumer Expenditure Survey (CE)</th>
<th>NIPA Personal Consumption Expenditure (PCE)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Durable Goods</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used motor vehicles</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>Net purchases of used motor vehicles</td>
<td>X</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Nondurable Goods</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food produced and consumed on farms</td>
<td>X</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Services</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imputed rent, owner-occupied housing</td>
<td>X</td>
<td>✓</td>
</tr>
<tr>
<td>Expenses of owner-occupied housing (mortgage interest, repairs, maintenance, etc.)</td>
<td>✓</td>
<td>X (considered an intermediate good)</td>
</tr>
<tr>
<td>Financial services</td>
<td>✓</td>
<td>✓ (broader definition than the CE)</td>
</tr>
<tr>
<td>Imputed financial services</td>
<td>X</td>
<td>✓</td>
</tr>
<tr>
<td>Out-of-pocket health care</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Gov’t expenditures on behalf of households (e.g. Medicaid, Medicare, energy assistance, etc.)</td>
<td>X</td>
<td>✓ (embedded in data)</td>
</tr>
<tr>
<td>Insurance</td>
<td>✓ (premiums paid)</td>
<td>✓ (net-cost and expenses)</td>
</tr>
<tr>
<td>Cash transfers to other households</td>
<td>✓</td>
<td>X</td>
</tr>
</tbody>
</table>
Micro Data Availability

- No single data source contains all necessary information to construct NIPA income and NIPA consumption expenditures at the household level

➔ Multiple data sources must be used:
  - Current Population Survey (CPS)
  - Consumer Expenditure Survey (CE)
  - Internal Revenue Service – Statistics of Income (IRS-SOI)
Methodology: Integrating Micro and Macro Data

- Adjust NIPA aggregates (scope adjustment)
  - Remove NPISHs
  - Remove population not covered by micro data:
    - Institutionalized, decedents, residents stationed abroad, and military stationed on post
- Scale micro aggregates to scope-adjusted NIPA totals
- Calculate NIPA income and consumption expenditure for each household
  - Impute missing information using indicator variables
  - Statistically match data by household
- Rank/classify households by income quintile
Coverage Ratio: Income

Coverage Ratio*

*Coverage ratio is based on micro aggregates and scope-adjusted NIPA aggregates

Wages and Salaries
Social Security
SNAP Benefits
Workers' Compensation

Good Coverage

Poor Coverage
Coverage Ratio: Consumption Expenditures

Good Coverage

Coverage Ratio*

*Coverage ratio is based on micro aggregates and scope-adjusted NIPA aggregates
Linking Micro to Macro Data: Personal Income

- Personal Income contains over 75 components
  - **Direct Match: 54%**
    - E.g. wages and salaries, Social Security, SNAP benefits
  - **Partial Match: 12%**
    - E.g. Military medical insurance, Alaska dividend, WIC food benefits
  - **No Match: 34%**
    - E.g. Imputed interest and dividends
    - Indicator variables are constructed to impute values
      - For example, household savings (as reported in the CE) is used to distribute imputed interest
PCE contains over 200 components

- **Direct Match: 79%**
  - E.g. Food and beverages, clothing, furniture, new vehicles

- **Partial Match: 14%**
  - E.g. Health services, food produced and consumed on farms, net purchases of used vehicles

- **No Match: 7%**
  - E.g. Imputed interest, financial services
Income Quintiles: CPS Household Money Income vs. NIPA Household Income

Recall, major differences include:
• CPS includes pension disbursements, NIPA does not
• NIPA includes Medicare and Medicaid transfers, CPS does not
• NIPA includes imputed interest and dividends, CPS does not
• The NIPA estimates are adjusted to remove institutionalized households and NPISHs

Percent of Total Income, Year = 2010

*Results based on McCully (2014)
The distribution of NIPA consumption expenditures is flatter than the CE.

*Quintiles based on a pre-tax money income concept

**Results based on McCully (2014)
Consumption expenditures show less inequality than income

Current Dollars, Year = 2010

**Results based on McCully (2014)**

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Questions for the Committee

1. Is it feasible, given the current data constraints, to fully adhere to the national account concept of income and consumption?

2. Will the large number of imputations decrease the level of confidence data users have in the results?

3. Should realized capital gains be included; recorded as a transfer between households?
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