



Distributional Estimates in the U.S. National Accounts

Integrating Micro and Macro Data

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Federal Economic Statistics Advisory Committee

Washington, DC

June 13, 2014



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

- Kuznets, S. 1955. “Economic Growth and Income Inequality.” *American Economic Review*, 3: 1-28.
- Goldsmith, S. 1955. “Income Distribution in the United States, 1950-53.” *Survey of Current Business*, 3: 14-28.
- Budd, E. and Radner, D. 1975. “The Bureau of Economic Analysis and Current Population Survey Size Distributions: Some Comparisons for 1964.” In *The Personal Distribution of Income and Wealth*, edited by James D. Smith, 339-559. NBER.
- Fixler, D. and Johnson, D. 2014. “Accounting for the Distribution of Income in the U.S. National Accounts.” In *Measuring Economic Sustainability and Progress*, edited by Jorgenson, D.W., Landefeld, S., and Schreyer, P. NBER (*forthcoming*).
- McCully, C. 2014. “Integration of Micro and Macro data on Consumer Income and Expenditure.” In *Measuring Economic Sustainability and Progress*, edited by Jorgenson, D.W., Landefeld, S., and Schreyer, P. NBER (*forthcoming*).

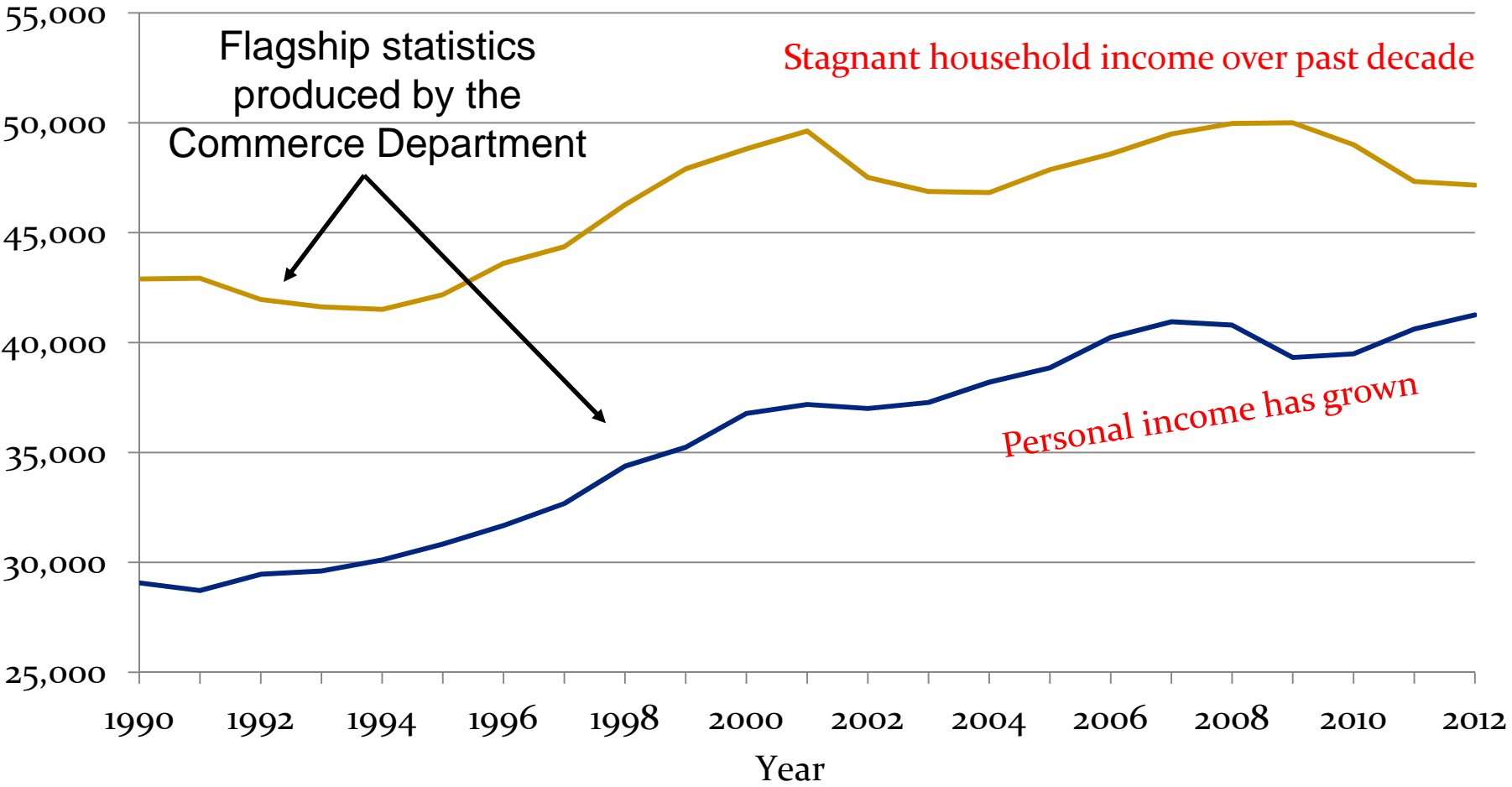
The slide features a blue header with the BEA logo in the top right corner. The logo consists of a stylized 'BEA' acronym above the text 'BUREAU OF ECONOMIC ANALYSIS' and 'U.S. DEPARTMENT OF COMMERCE'. The background of the header includes a bar chart with various numerical values and state names like 'New Hampshire', 'Rhode Island', 'Vermont', 'Massachusetts', 'Connecticut', 'New York', 'New Jersey', 'Delaware', 'Maryland', 'District of Columbia', and 'Virginia'.

International Effort

- Stiglitz-Sen-Fitoussi Report (2009):
 - 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*



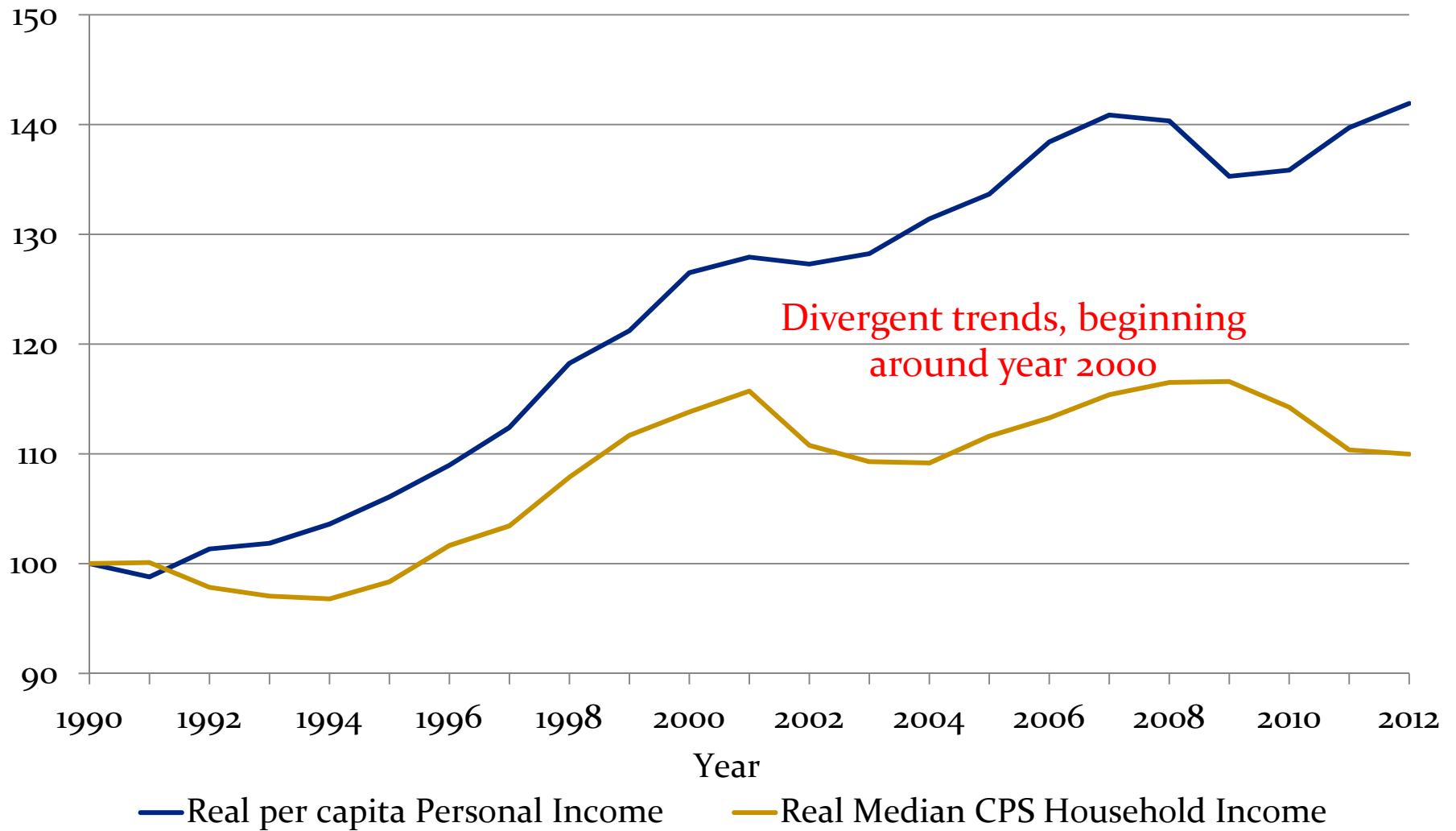
— Real per capita Personal Income — Real Median CPS Household Income

*Both series deflated by PCE price index

CPS Household Money Income vs. NIPA Personal Income: Indexed

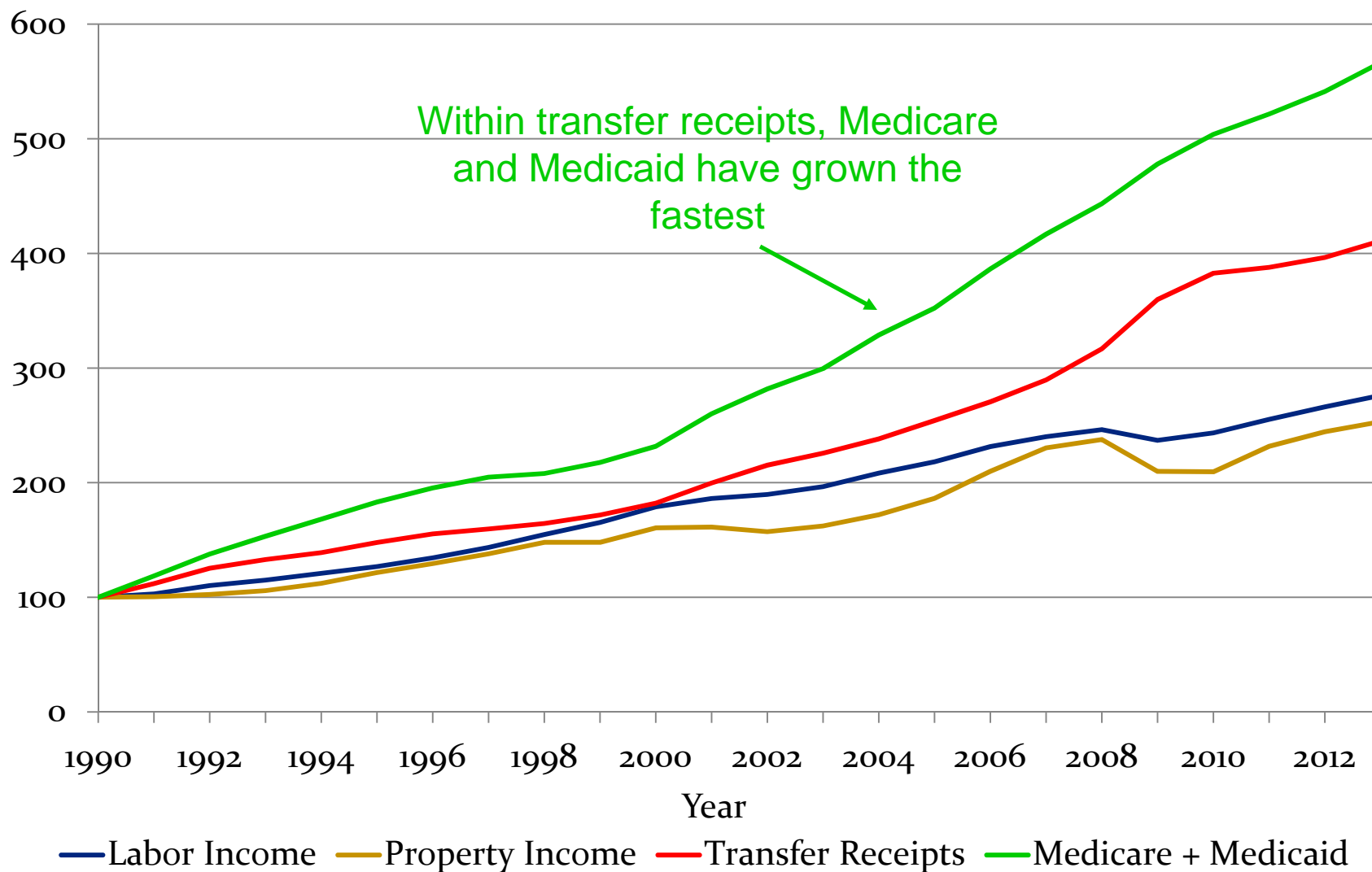


Index, 1990 = 100



Personal Income: Main Drivers of Growth

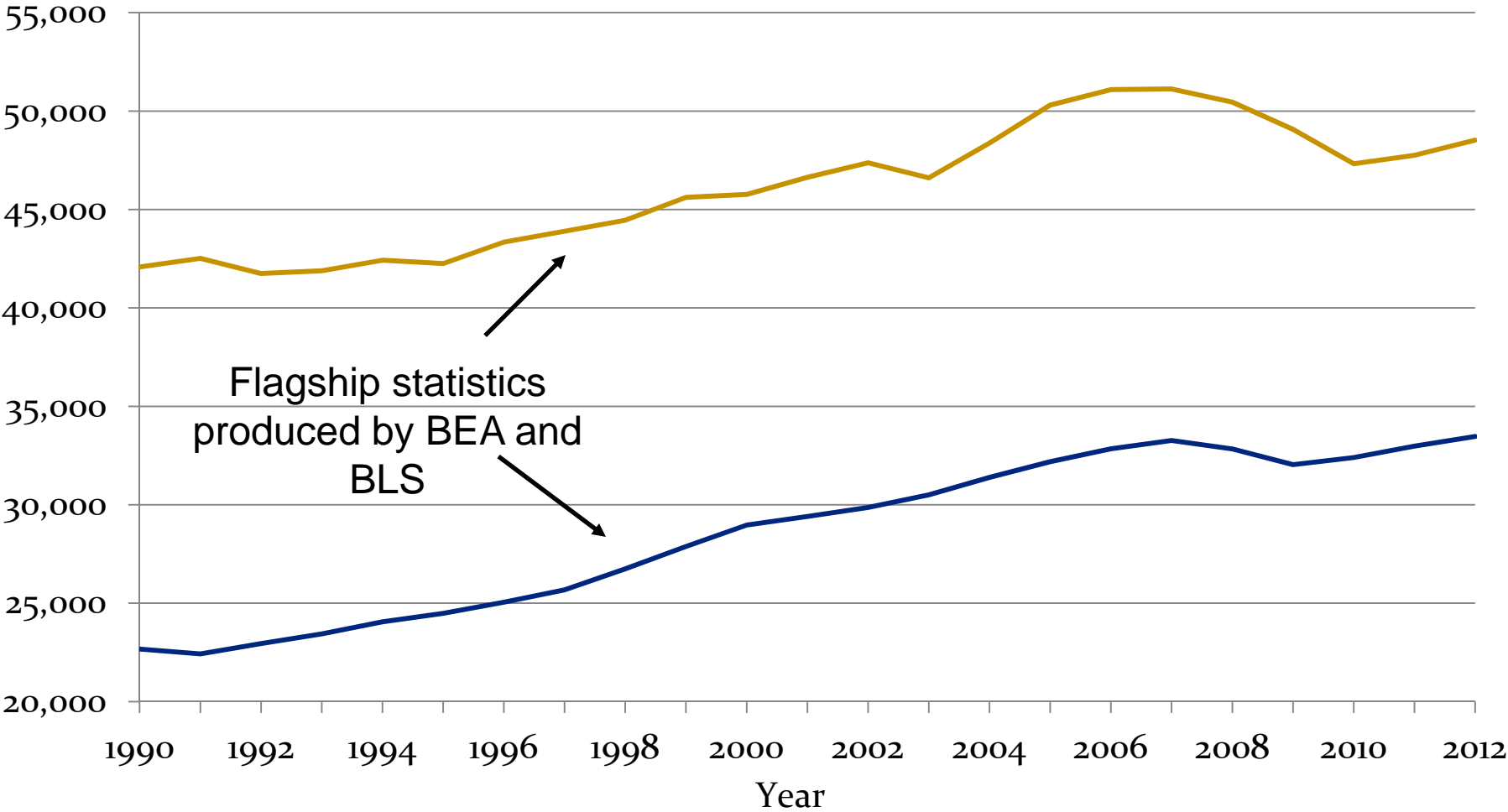
Index, 1990=100



BLS Consumer Expenditure Survey vs. NIPA Personal Consumption Expenditures

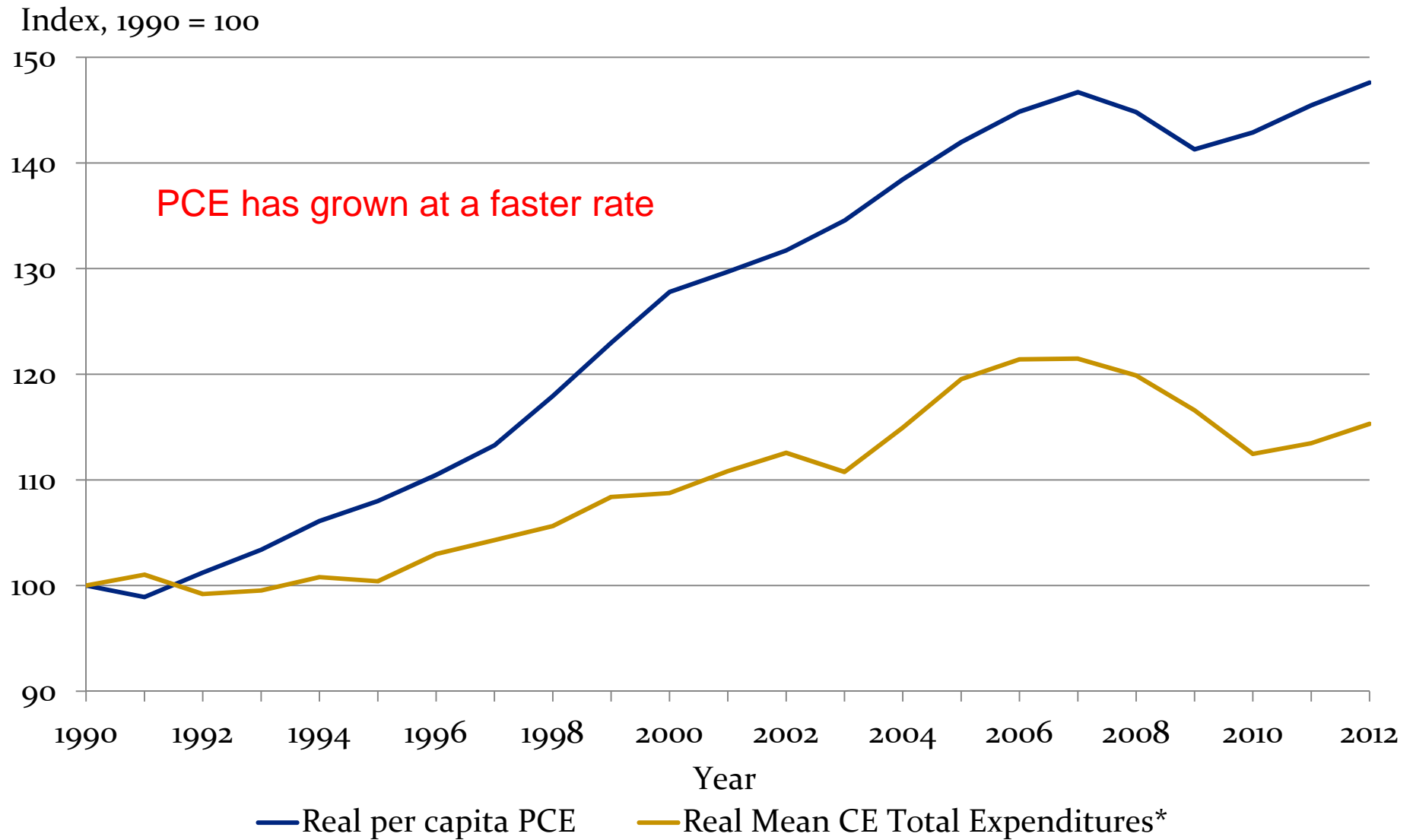


Real 2009 Dollars



— Real per capita PCE — Real Mean CE Total Expenditures*

BLS Consumer Expenditure Survey vs. NIPA Personal Consumption Expenditures: Indexed



Comparison of Income Metrics

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

*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

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



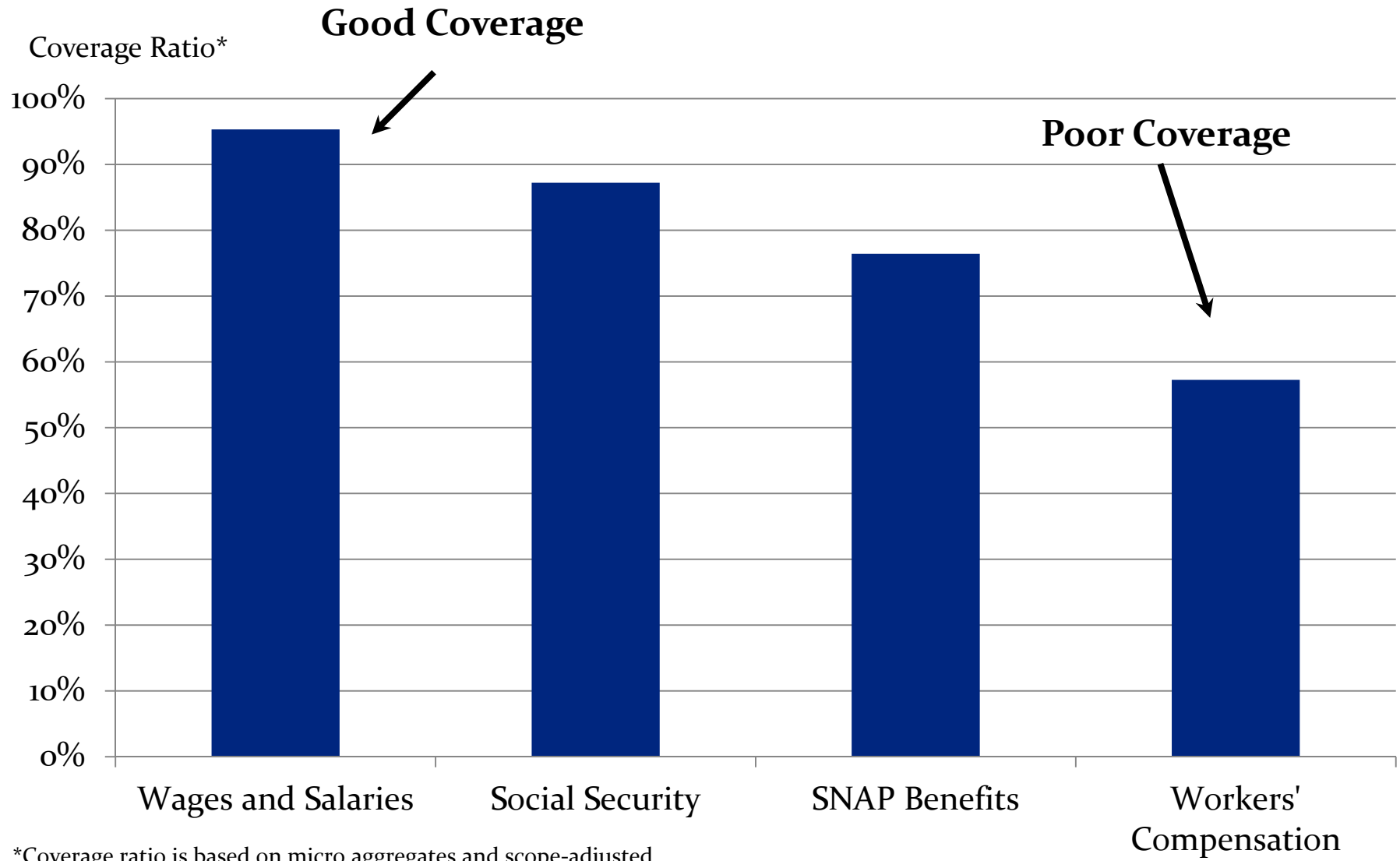
Micro Data Availability

- 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

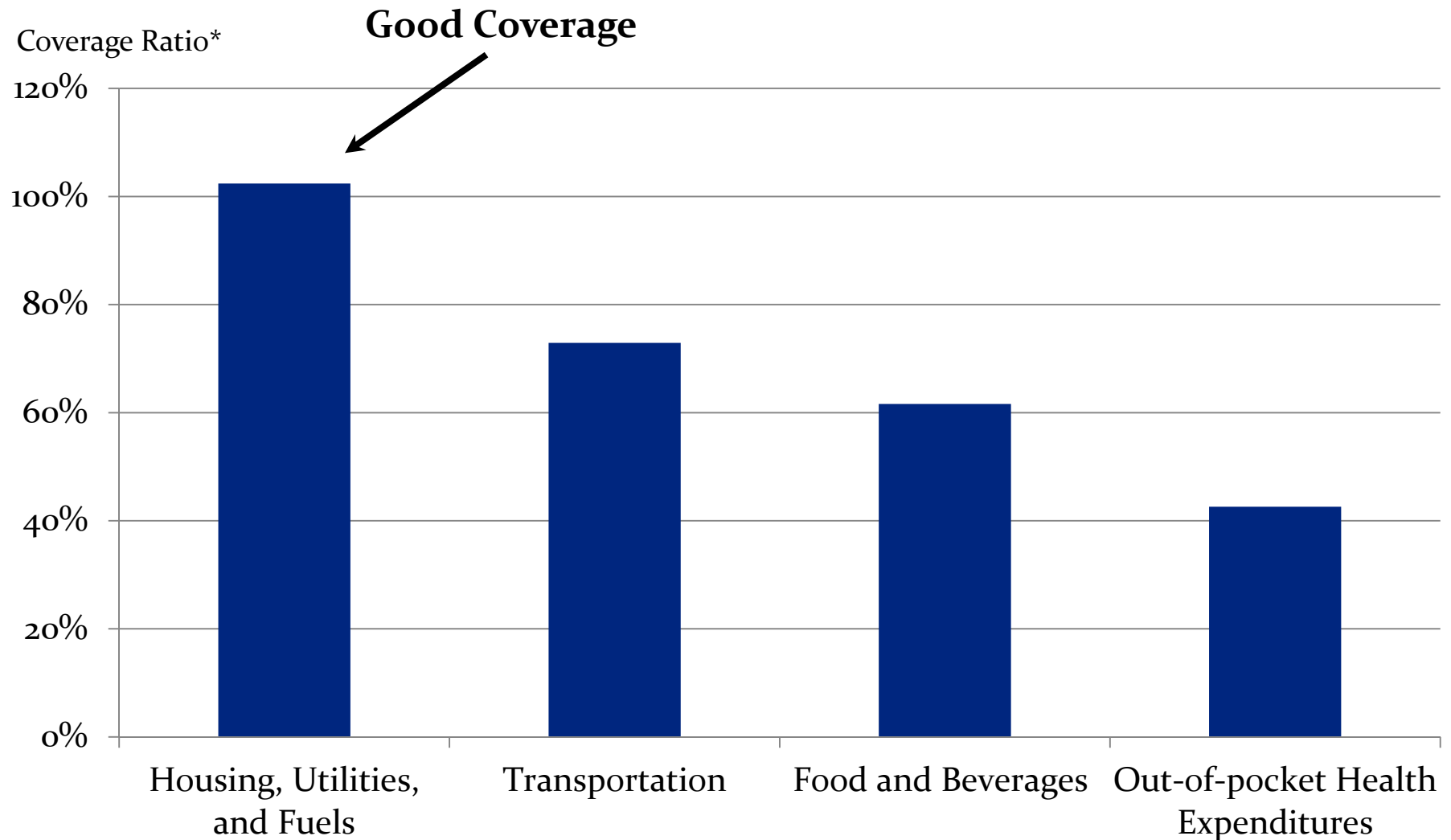
- Adjust NIPA aggregates (scope adjustment)
 - Remove NPISHs
 - Remove population not covered by micro data:
 - Institutionalized, decedents, residents stationed abroad, and military stationed on post
- Scale micro aggregates to scope-adjusted NIPA totals
- Calculate NIPA income and consumption expenditure 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 is based on micro aggregates and scope-adjusted NIPA aggregates
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Coverage Ratio: Consumption Expenditures



*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

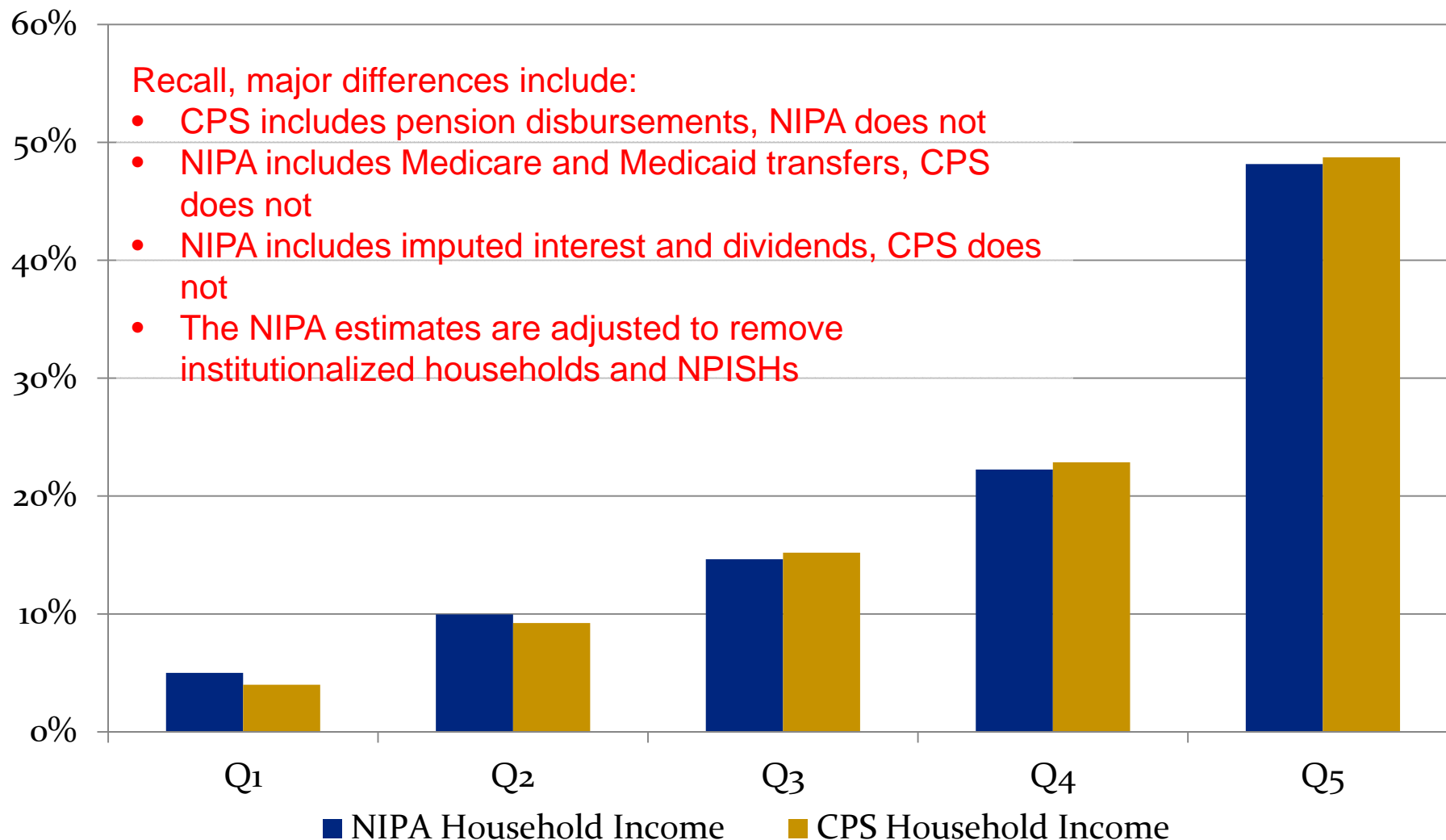


Linking Micro to Macro Data: Personal Consumption Expenditures

- 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

Percent of Total Income, Year = 2010



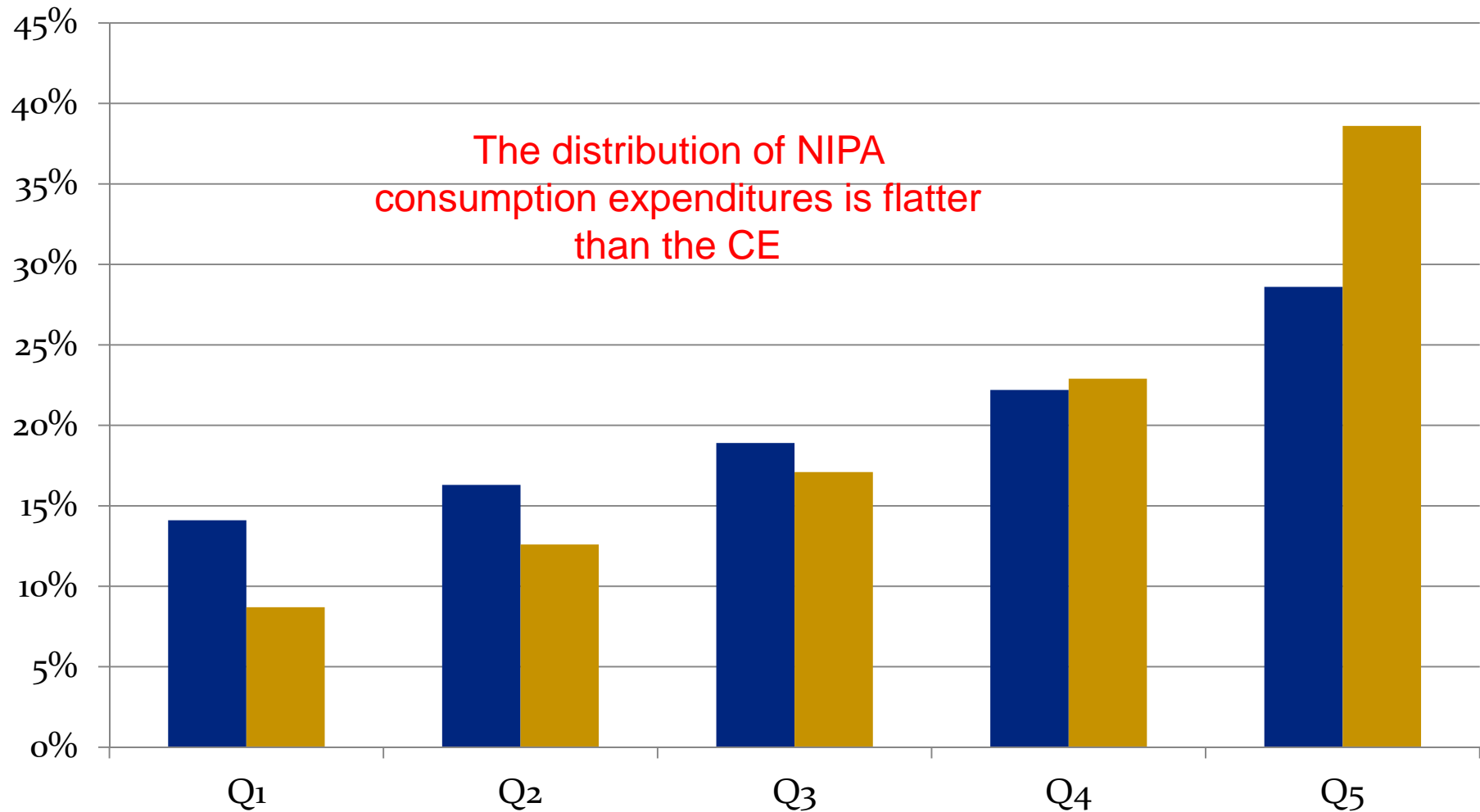
Recall, major differences include:

- 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

*Results based on McCully (2014)

Distribution of Consumption Expenditures: CE vs. PCE

Percent of Total Consumption, Year = 2010*

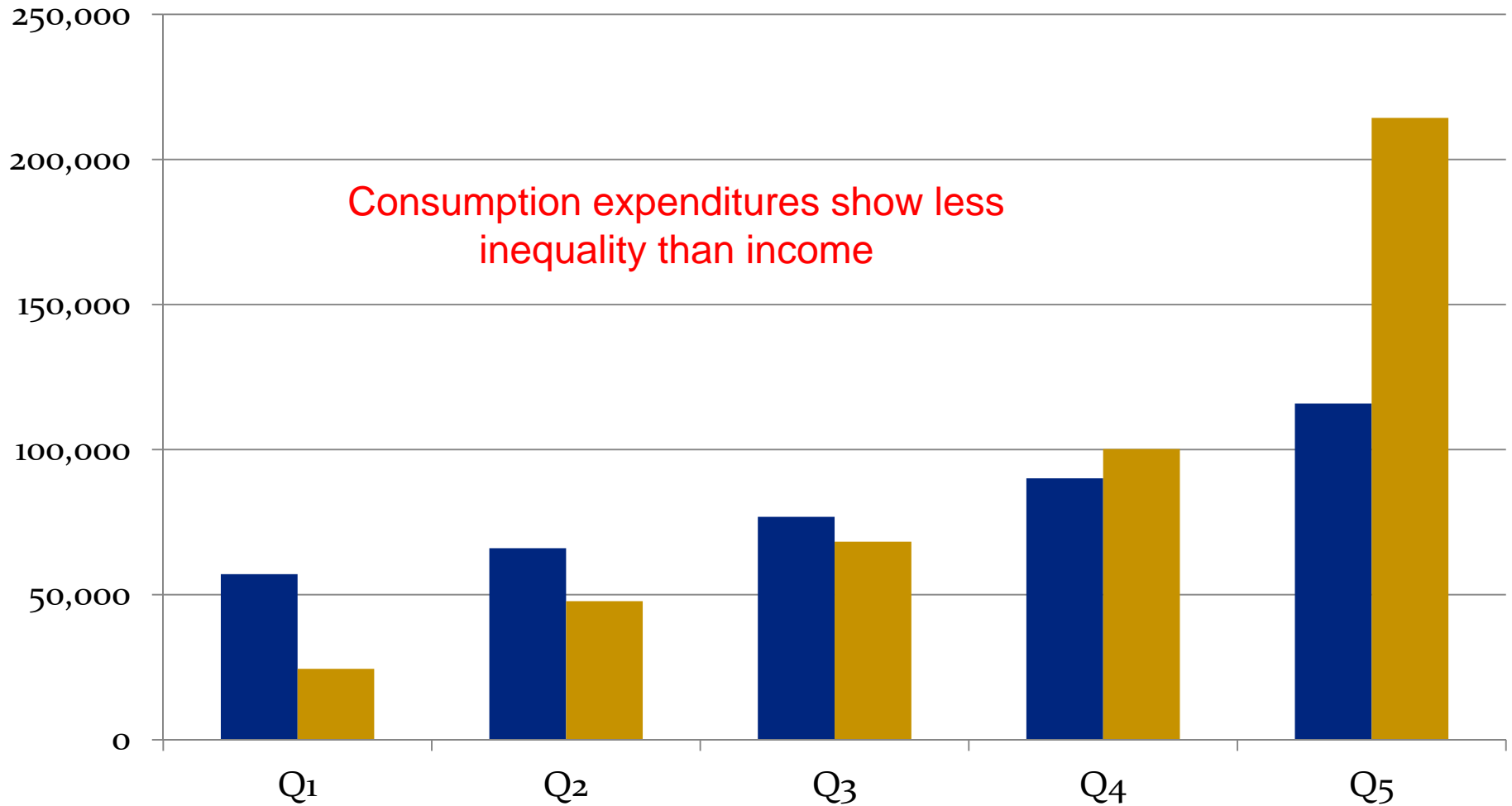


*Quintiles based on a pre-tax money income concept

**Results based on McCully (2014)

NIPA Disposable Income and Consumption Expenditures

Current Dollars, Year = 2010



**Results based on McCully (2014)

■ PCE ■ Disposable Household Income



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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