

# Strengths and Weaknesses of the Consumer Expenditure Survey from a BLS Perspective

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# Outline

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- Background
- BLS Internal Review of CE
- Data Comparisons
  - ▶ To other data sources
  - ▶ CE to PCE
- Conclusion

# About BLS

- BLS is the principal fact-finding agency for the Federal Government in the broad field of labor economics and statistics
- Independent national statistical agency that
  - ▶ Collects,
  - ▶ Processes,
  - ▶ Analyzes, and
  - ▶ Disseminates
  - Essential statistical data to
    - American public
    - U.S. Congress
    - Federal agencies
    - State and local governments
    - Business
    - Labor

(<http://www.psb.bls.gov/whatisbls/strategic/mission.php>)

# From the BLS Mission Statement

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- **BLS data must be**
  - ▶ **Relevant** to current social and economic issues
  - ▶ **Timely** in reflecting today's rapidly changing economic conditions
  - ▶ **Accurate** and of consistently high statistical quality
  - ▶ **Impartial** in both subject matter and presentation
- *And must...*
  - ▶ Maintain respondent confidentiality
  - ▶ Be reliable

# Mission of the Consumer Expenditure Survey (CE)

- Produce and disseminate statistical data on
  - ▶ Consumer expenditures
  - ▶ Demographic information
  - ▶ Related data needed by
    - Consumer Price Index
    - Other public and private data users
- Design and manage the CE survey
- Provide education and assistance in the use of the data
- Conduct analytical studies

# Goals and Uses of CE Data

- Goals
  - ▶ Provide biennial data for Consumer Price Index (CPI) to revise expenditure weights
  - ▶ Detailed information about the spending patterns of different types of households
- Used by:
  - ▶ Bureau of Economic Analysis
  - ▶ Internal Revenue Service
  - ▶ Census Bureau
  - ▶ Department of Defense
  - ▶ New York City government
  - ▶ Other private and public researchers
- Potential future use
  - ▶ Alternative poverty thresholds (pending federal legislation)

# CE Scope and Coverage

- U.S. civilian non-institutionalized population
  - ▶ Nationwide survey designed to be representative
- Data from consumer units (CUs)
  - ▶ People living at one address who share living expenses or are related by blood, marriage, adoption, or other legal arrangement
  - ▶ Single person living alone or sharing a household with others but who is financially independent
  - ▶ Two or more persons living together who are financially dependent
- CUs are similar to households

# CE Data Collection

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- BLS contracts with the U.S. Census Bureau to collect data
- Two different surveys
  - ▶ Quarterly Interview
  - ▶ Diary
- Separate samples



# Data Collection: Interview

- Designed to obtain information about:
  - ▶ Large purchases (e.g., major appliances)
  - ▶ Purchases that occur regularly (e.g., monthly payments for rent and utilities)
  - ▶ Excludes expenditures for:
    - Housekeeping supplies
    - Personal care products
    - Non-prescription drugs
- Sample
  - ▶ About 7,000 CUs
  - ▶ Five consecutive quarters
  - ▶ Goal: to collect data over a year of spending
- Three-month recall period

# Data Collection: Diary

- Designed to collect information about:
  - ▶ Frequent purchases (e.g., food and personal care items)
  - ▶ Difficult to remember over longer periods of time (e.g., vending machine purchases)
  - ▶ Excludes expenditures for out-of-town trips
- Sample
  - ▶ About 7,000 CUs a year
  - ▶ CUs keep a diary for two consecutive one-week periods → 14,000 diaries a year

# Users: Data Access

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- Tables
- Public use data files
- Visiting researcher program
- Personal help
  - ▶ Phone
  - ▶ Email

# Publication Tables: “Integrated”

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- Neither survey collects the entire universe of expenditures
  - ▶ Some data are only collected in one instrument
  - ▶ Some data are collected in both; determine best source for use in publications
- Total and detailed expenditures published by income and other demographic variables
- Estimates use CU population weights

# BLS Internal Program Review

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- Purpose: to maintain high standards of data quality
- Focus: programs responsible for producing data
- Procedure: subject matter experts from other BLS programs examine issues such as
  - ▶ Data collection and quality
  - ▶ Data accessibility
  - ▶ Management processes
- Output: report of strengths, weaknesses and recommendations for further action

# CE Program Review: 2006-2008

## ■ Strengths

- ▶ Data access
  - Public use data
  - Outside researchers coming to BLS
- ▶ Production and planning tools\*
  - Database containing all development, research and production project plans
  - Web-based interface managing projects and reporting
  - Innovative methods for tracking multiple production processes
  - In-house training on how to use these tools
- ▶ Free microdata user workshops\*
  - Began: 2006
  - Next: July 29-31, 2009
- ▶ Regular interaction with users

*\*Recommended as BLS Best Practice*

# CE Program Review: Strengths (continued)

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- Program conducts research on issues affecting data quality
  - ▶ Declining response rates
  - ▶ Under-reporting
  - ▶ Increase in phone interviews versus person-to-person interviews

# CE Program Review: Weaknesses

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- Biases in estimates, due to:
  - ▶ Consumer unit non-participation
  - ▶ Item non-response
  - ▶ Measurement error
  - ▶ Conditioned under-reporting
    - “training” respondents to say “no”
- Timeliness of data release
- Jay will present more from the CE Program Review and plans to deal with weaknesses



# Data comparisons: Why needed?

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- Such comparisons provide:
  - ▶ A sense of degree and direction of possible survey errors, rather than an exact measure of bias
  - ▶ Specific estimates from other sources are not necessarily the “truth”
- Data comparisons are employed to:
  - ▶ Assess the cumulative effects of non-sampling errors on quality of CE data
  - ▶ Develop methodological studies to improve quality

# Comparisons: Issues

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- Account for differences in content or concept  
*(focus on components)*
  - ▶ can be reconciled
  - ▶ cannot be reconciled
- Source of data
  - ▶ Household survey
  - ▶ Census
  - ▶ Administrative
  - ▶ Trade association publications

# Comparisons: Other Data Sources

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- Panel Study of Income Dynamics (PSID)
- Health and Retirement Survey Consumption and Activities Mail Survey (HRS-CAMS)
- Medical Expenditure Panel Survey (MEPS)
- National Health Expenditure Accounts (NHEA)
- Economic Research Service (ERS-USDA) Food Data
- ACNielsen Homescan Survey
- Income and transfer comparisons
  - ▶ PSID, SIPP, CPS
- Personal Consumption Expenditures (PCE)

# Survey Covering All Expenditure Categories: PSID

- Panel Study of Income Dynamics (PSID)
  - ▶ 1999, 2001, 2003
  - ▶ Sample: all households and their members in panel
  - ▶ Collection of data by phone
  - ▶ Recent study: Charles et al. (2007)
    - For comparable categories in 2003, PSID total spending 1% higher than CE total spending
    - CE spending higher than PSID
      - Housing (3%), Transportation (7%)
    - PSID spending higher than CE
      - Education (13%), Child care (26%), Health care (14%), Food (10 %)

# Survey Covering All Expenditure Categories: HRS-CAMS

- Health and Retirement Survey Consumption and Activities Mail Survey (HRS-CAMS)
  - ▶ Waves: 2001, 2003, 2005
  - ▶ Sample: respondents aged 51 and older and members of their household
  - ▶ Collection of data by mail
  - ▶ Hurd and Rohwedder (2008)
    - For comparable categories (October 2000-September 2001), average spending was
      - 55-64 age group: 3.3% higher than CAMs
      - 65-74 age group: 12.0% higher than CE
      - 75 and over age group: 29.8% higher than CE

# Comparisons: Health Care

- Medical Expenditure Panel Survey (MEPS)
  - ▶ 1996-2006
  - ▶ Sample: same as CE
  - ▶ Results
    - Ratio of CE to MEPS total health care spending ranges from 0.68 to 0.93
- National Health Expenditure Accounts (NHEA)
  - ▶ 1996-2006
  - ▶ Sample: all persons who are residents in U.S. including military
  - ▶ Results
    - Ratios of CE to NHEA total health care spending range from 0.72 to 0.86
- Foster, forthcoming *MLR* 2009

# Comparisons: Food

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- Economic Research Service (ERS-USDA) Food Data
  - ▶ Food expenditures by families and individuals
  - ▶ ERS excludes food purchases with food stamps and WIC vouchers
- Internal BLS comparison with CE
  - ▶ CE excludes food purchases with food stamps
  - ▶ 2002 to 2007
  - ▶ CE to ERS aggregate expenditures average about 0.79

# CE and PCE Comparisons

- Definitions of populations and expenditures
  - Data sources and periodicity
  - Trends over time in levels and ratios
  - Example for total expenditures with adjustments for select differences
- Garner, Janini, Passero, Paszkiewicz, and Vendemia, *Monthly Labor Review*, September 2006



# Issues in Comparing CE and PCE

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- Populations
  - In PCE but out of scope for CE
  - In CE but out of scope for PCE
  - Partly out of scope for CE
    - ▶ Non-profit institutions serving households
    - ▶ Employer payments
- Components operationally defined differently

# Basics

## ■ CE

- ▶ Household Surveys
- ▶ Periodicity
  - Annual
  - Quarterly
  - Monthly
  - Weekly
- ▶ Expenditures
  - Value of goods and services purchased by consumers
  - Social Security contributions

## ■ PCE

- ▶ Establishment Surveys
- ▶ Periodicity
  - Benchmark (detailed)
  - Annual
  - Quarterly
  - Monthly
- ▶ Expenditures
  - Value of goods and services purchased by the personal sector (excludes intra-sector transactions)

# In PCE Out of Scope for CE

- Population
  - ▶ Employees of U.S. businesses working abroad and U.S. government and military personnel stationed abroad
  - ▶ Military living on-base in the U.S.
  - ▶ All persons in institutions and the homeless for whom expenditures are made
  - ▶ Non-profit institutions serving households
- Expenditures
  - ▶ Value of home production for own consumption on farms
  - ▶ Standard clothing issued to military
  - ▶ Services furnished without payment by financial intermediaries except life insurance carriers

# Further Differences

- PCE items partly out of scope for CE and partly defined differently
  - ▶ Health Care Expenditures
  - ▶ Religious and Welfare
  
- Defined differently
  - ▶ Education expenditures
  - ▶ Life insurance and pension plans
  - ▶ Owner-occupied housing expenditures

# Previous CE to PCE Comparison Studies

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- Houthakker and Taylor (1970)
- Slesnick (1992, 1998)
- Attanasio, Battistin, and Leicester (2006)
- Garner, Janini, Passero, Paszkiewicz, and Vendemia (2006)
- Meyer and Sullivan (2009)

# Update of 2006 BLS Study

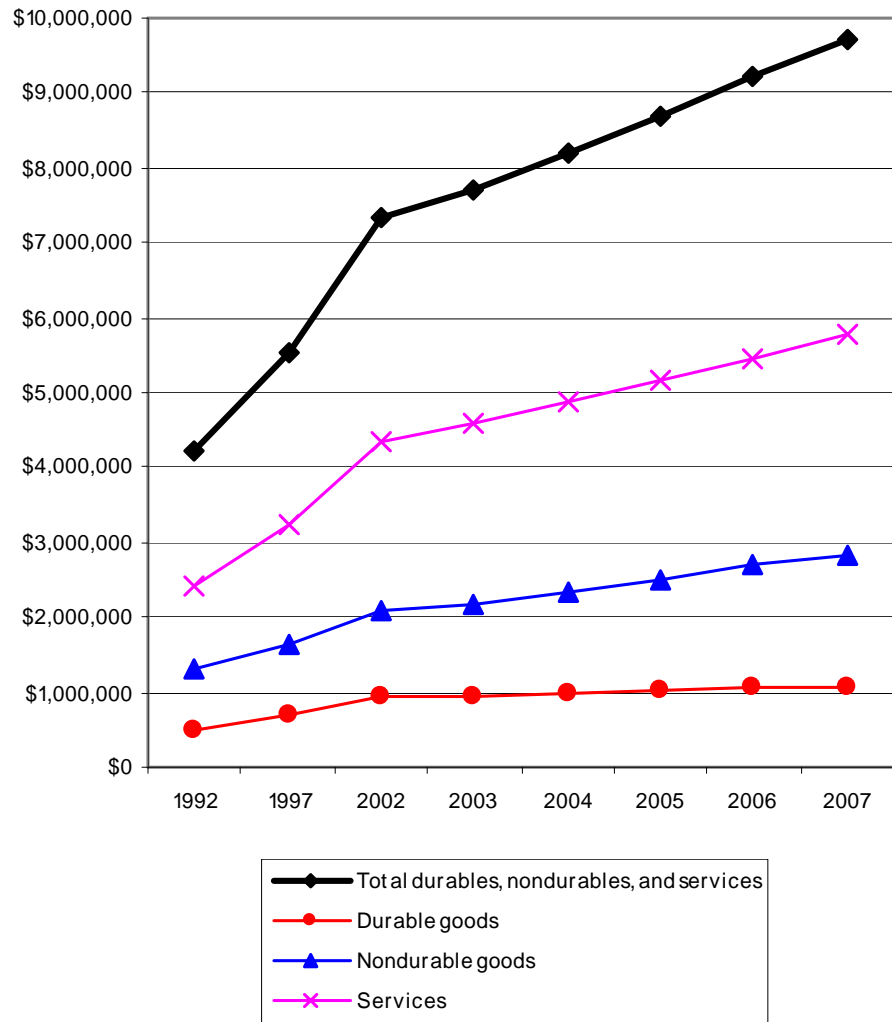
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- Total Expenditures
- Comparables
  - ▶ To compare CE and PCE data, CE items are grouped into PCE detailed categories
  - ▶ In many instances, there is no perfect match between the CE and PCE items assigned to an aggregate category
  - ▶ In some cases, adjustments were made to published CE categories for greater comparability

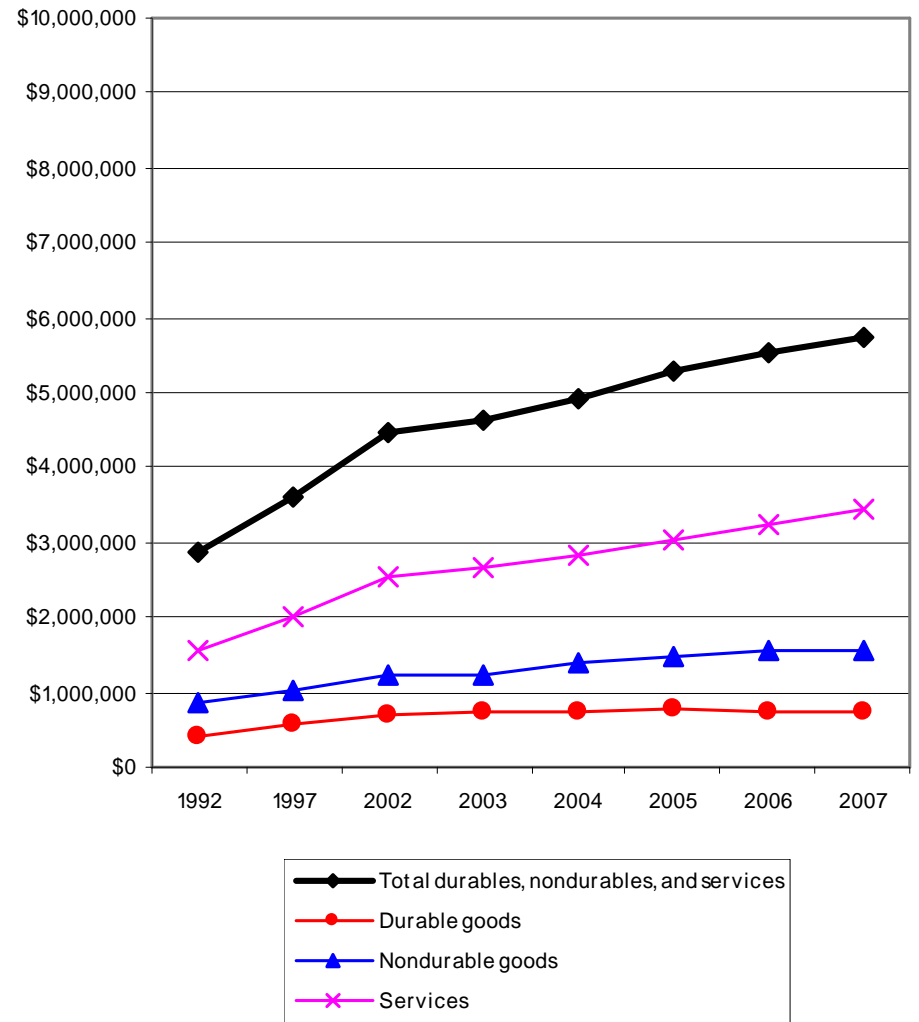
# 2007 Aggregate and Ratio Comparison

Source	All items (\$billions)	“Comparable” categories (\$billions/% of all items)
Consumer Expenditures	\$5,743	\$4,105 (0.71)
Personal Consumption Expenditures	\$9,710	\$5,066 (0.52)
<i>Ratio CE/PCE</i>	<i>0.59</i>	<i>0.81</i>

### PCE Aggregates: All



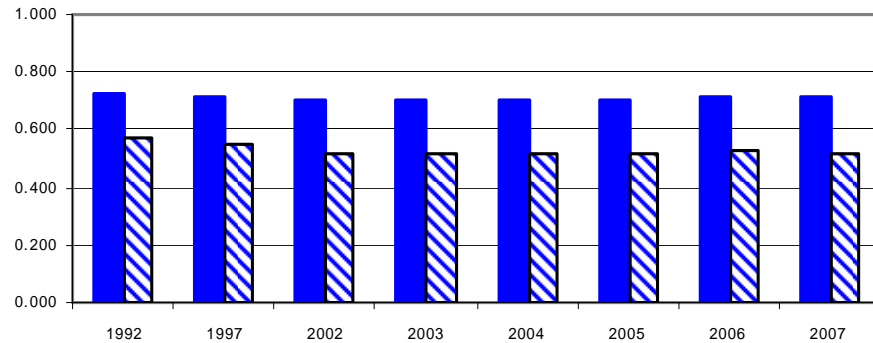
### CE Aggregates: All



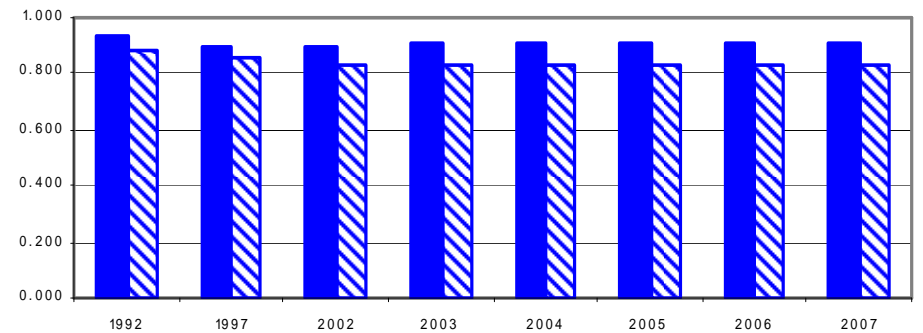


# Ratios of Expenditures of Comparables to Totals

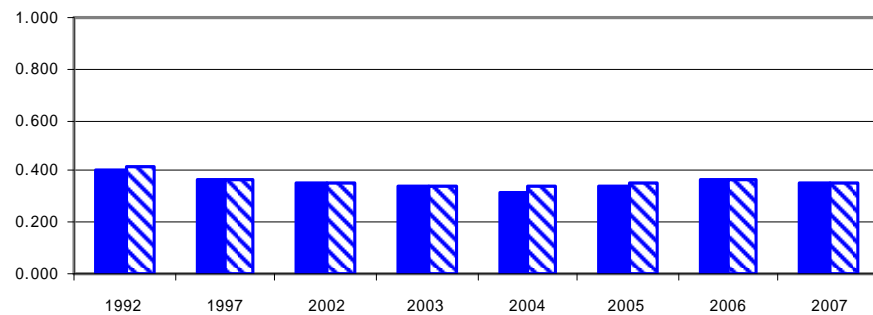
Durables, Nondurables, and Services



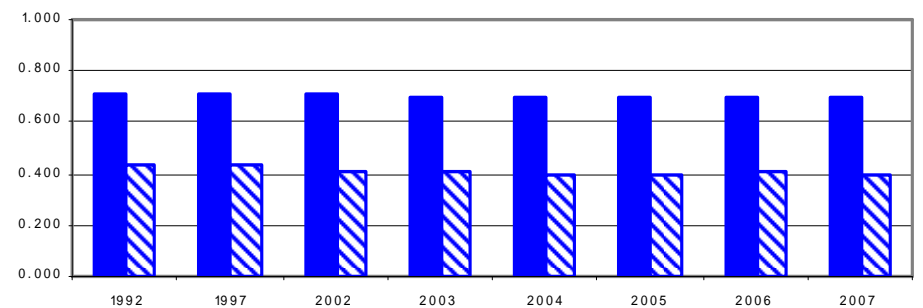
Non-durable Goods



Durable Goods



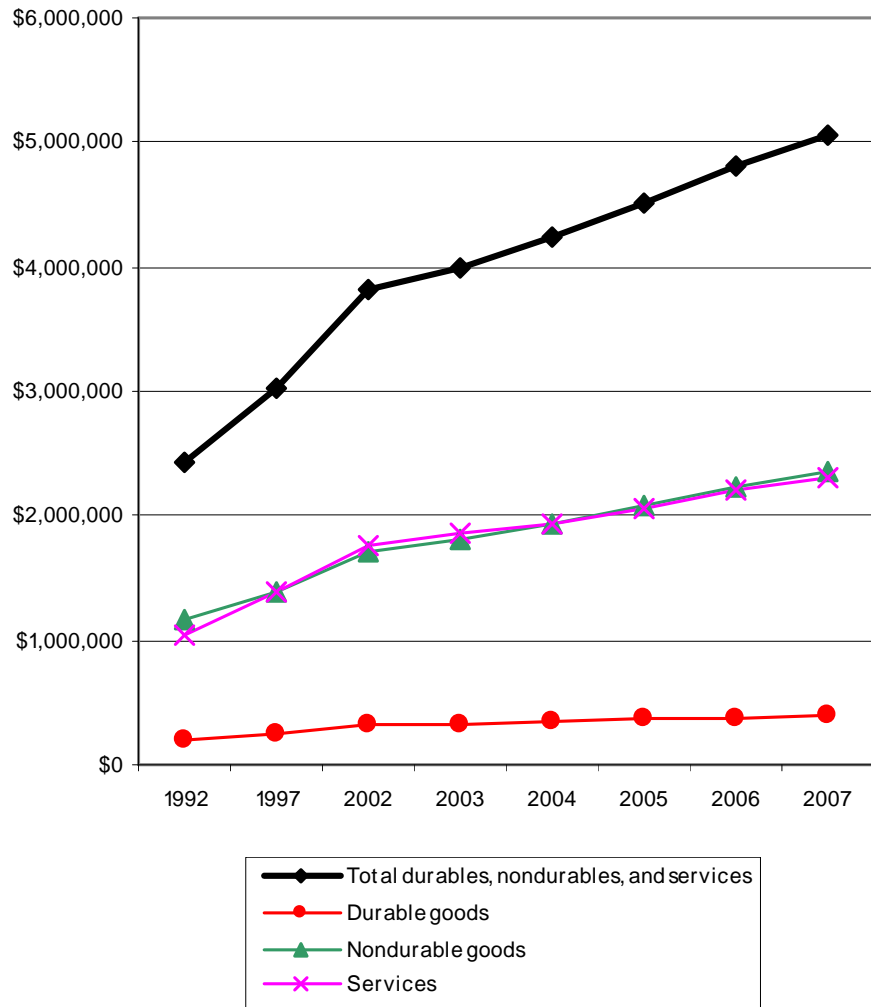
Services



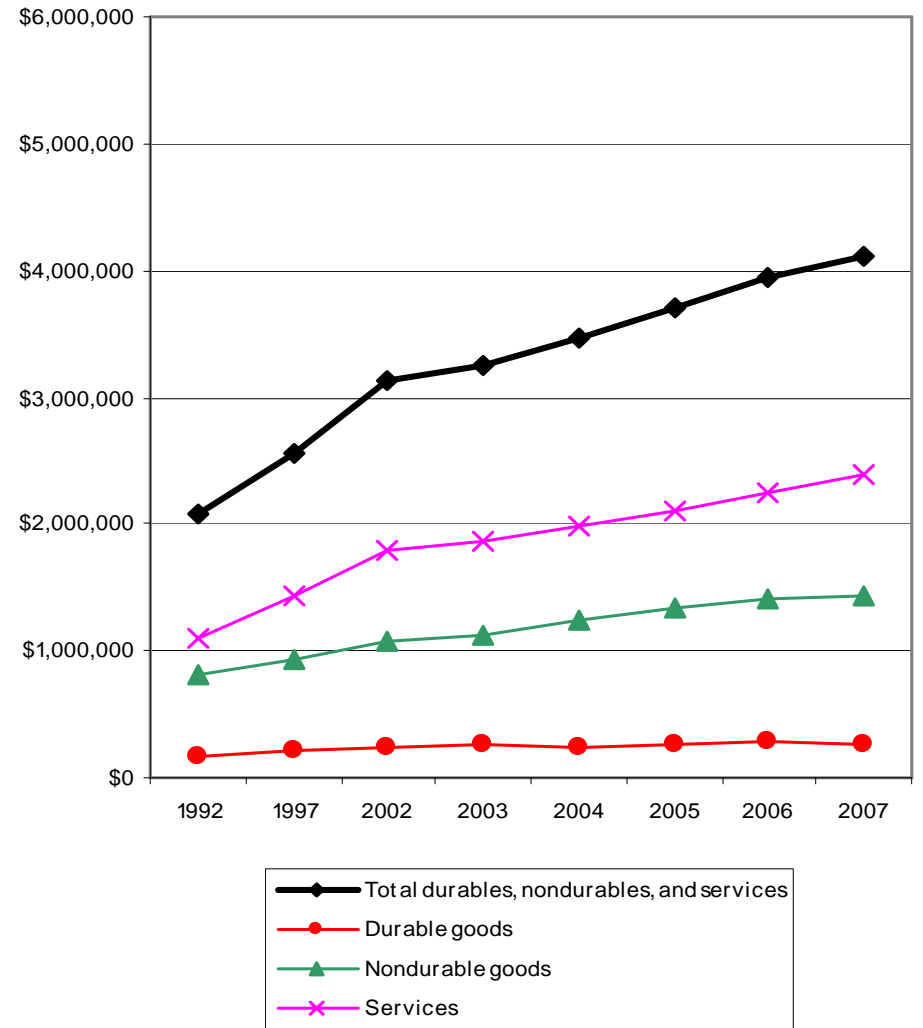
**CE: Solid blue**

**PCE: Stripped blue**

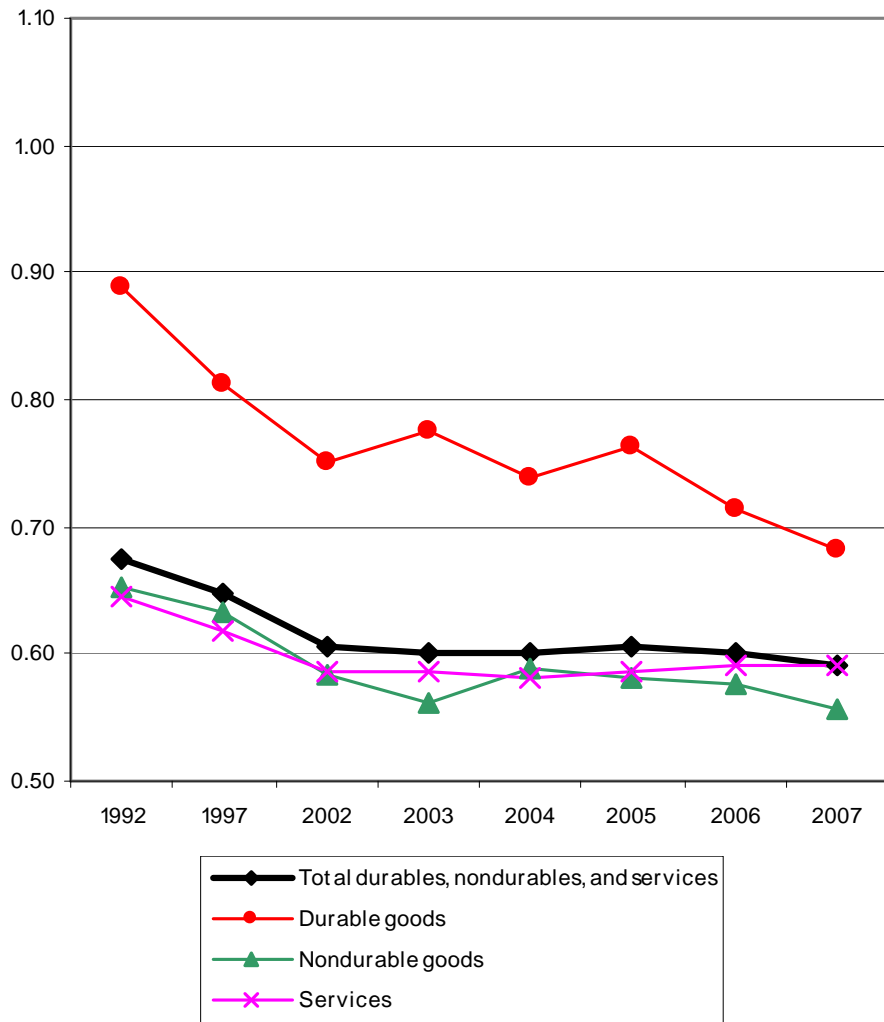
### PCE Aggregates: Comparables



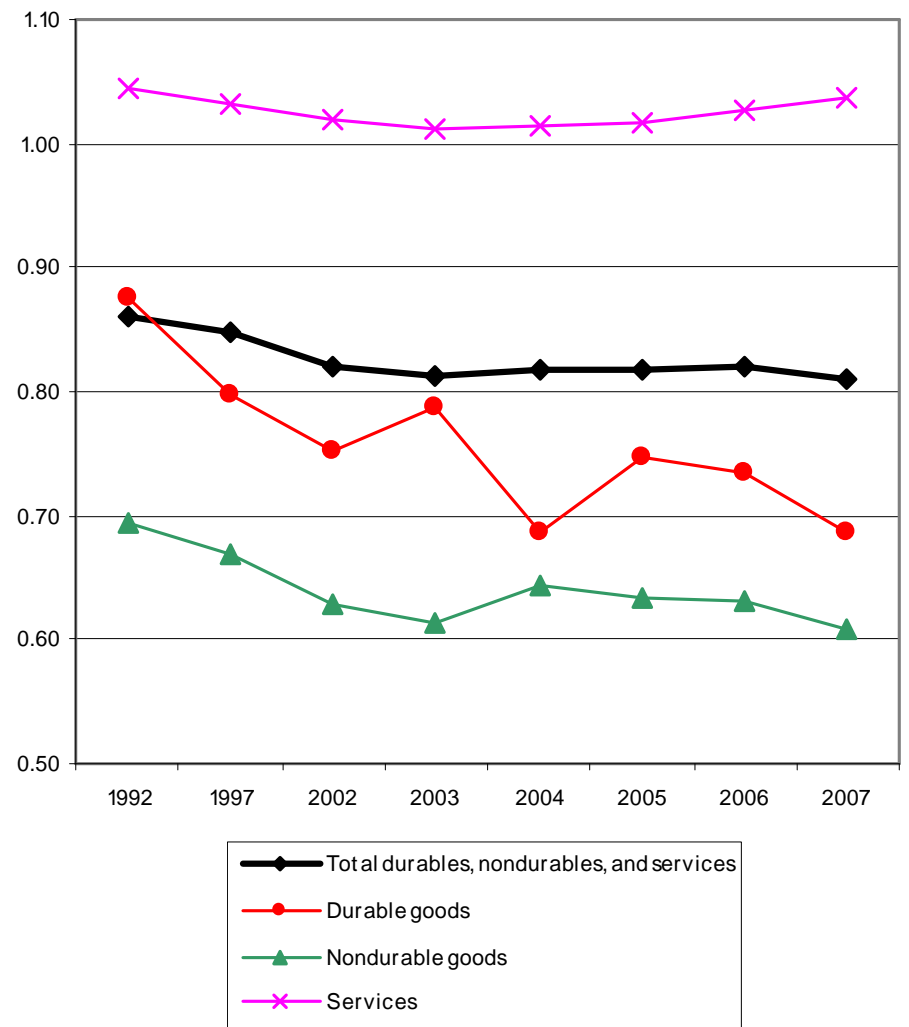
### CE Aggregates: Comparables



**CE/PCE Ratios: All**



**CE/PCE Ratios: Comparables**



# Future CE/PCE Comparisons

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- Comprehensive revision of the NIPA
  - ▶ July 2009
  - ▶ PCE
- Revise concordance of CE items to match new PCE classification structure
- Recalculate CE/PCE ratios incorporating 2002 benchmark PCE data

# PCE reclassification: What's new?

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- New structures for presenting PCE
  - ▶ Function – by type of expenditure
  - ▶ Product – by durability (Goods / Services)
- Full time series on new basis
  - ▶ 1929 Annually, 1947 Quarterly, 1959 Monthly
- No change in the production boundary
- McCully and Teensma, *Survey of Current Business*, May 2008

# PCE by function: Old to new

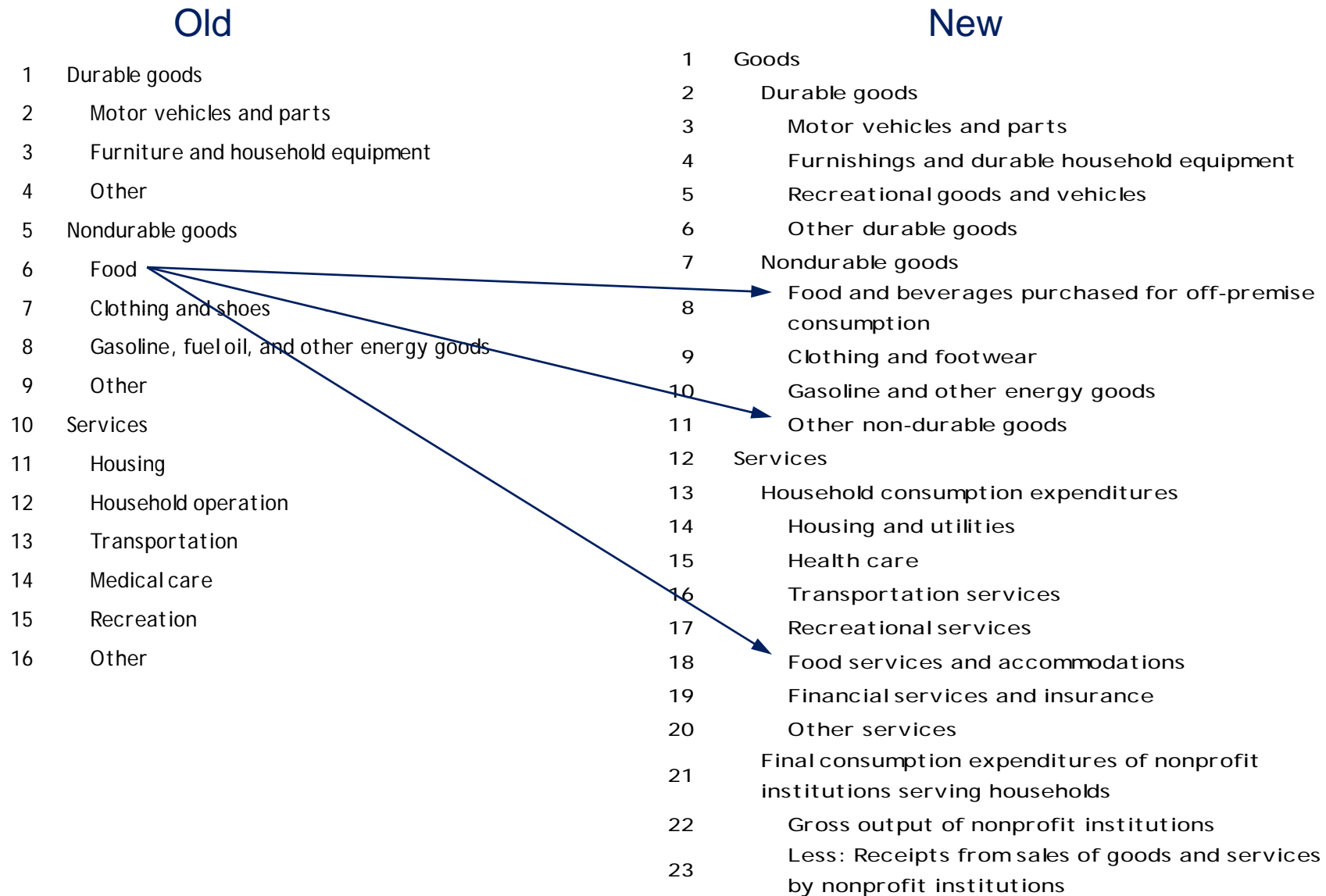
## Old

- 1 Personal consumption expenditures
- 2 Food and tobacco
- 3 Clothing, accessories, and jewelry
- 4 Personal care
- 5 Housing
- 6 Household operation
- 7 Medical care
- 8 Personal business
- 9 Transportation
- 10 Recreation
- 11 Education and research
- 12 Religious and welfare activities
- 13 Foreign travel and other, net

## New

- 1 Personal consumption expenditures
- 2 Household consumption expenditures
- 3 Food and beverages purchased for off-premise consumption
- 4 Clothing and footwear
- 5 Housing and utilities
- 6 Furnishings, household equipment and routine household maintenance
- 7 Health
- 8 Transportation
- 9 Communication
- 10 Recreation
- 11 Education
- 12 Food services and accommodations
- 13 Financial services and insurance
- 14 Other goods and services
- 15 Net foreign travel and expenditures abroad by U.S. residents
- 16 Final consumption expenditures of NPISH

# PCE by product: Old to new



# Conclusion

- CE expenditures compare favorably to expenditures from other household surveys
- CE data comparisons with outside sources will continue in the future
  - ▶ CE-PCE
  - ▶ CE-MEPS comparisons of medical care data
  - ▶ CE-CPS comparisons of income data
  - ▶ Resumption of comparisons of CE and Residential Energy Consumption Survey (RECS) data from Department of Energy
  - ▶ CE-American Community Survey (ACS) comparison of shelter and utilities data



# Conclusion

- Recent improvements include
  - ▶ Move to CAPI (2003 for Interview; 2004 for Diary)
  - ▶ Income imputation (began 2004)
    - CE/CPS total income
      - 2002-2003: 0.75
      - 2004-2006: 0.94
    - CE/CPS wages and salaries
      - 2002-2003: 0.78
      - 2004-2006: 0.97
  - ▶ Stabilized CE/PCE ratio  $>.81$  for comparable items beginning in 2002

# Conclusion: Data Quality

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- CE Program has significant strengths, but some data quality issues remain, e.g.,
  - ▶ Under-reporting
  - ▶ Measurement errors
- Next presentation: What CE has done and is doing to address these issues

# Contact Information

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