

Consumer Expenditure Survey Data Comparisons (Measurement Error *Continued*)

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Panel on Reviewing Redesign Options for the Consumer
Expenditure Surveys

CNSTAT

February 8, 2011 (edited 2-18-11)

Outline for Data Comparisons

- Why these are needed
- Comparison issues
- Comparisons to other data

Why Data Comparisons Are Needed

- 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

- Account for differences in content or concept
 - ▶ Can be reconciled
 - ▶ Cannot be reconciled
- Source of data
 - ▶ Household survey
 - ▶ Census
 - ▶ Administrative
 - ▶ Trade association publications

Comparisons: Other Data Sources

- Panel Study of Income Dynamics (PSID)
- Health and Retirement Survey Consumption and Activities Mail Survey (HRS-CAMS)
- American Life Panel (ALP)
- Medical Expenditure Panel Survey (MEPS)
- National Health Expenditure Accounts (NHEA)
- Residential Energy Consumption Survey (RECS)
- Survey of Consumer Finances (SCF)
- Current Population Survey (CPS)
- ACNielsen Homescan Survey
- 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: Li et al. (2010)
 - For comparable categories in 2003, PSID total spending 1% higher than CE total spending
 - CE spending higher than PSID
 - Housing (3%), Transportation (6%)
 - PSID spending higher than CE
 - Education (13%), Child care (26%), Health care (14%), Food (10%)

Comparable Expenditures: HRS-CAMS

- Health and Retirement Survey Consumption and Activities Mail Survey (HRS-CAMS)
 - ▶ Waves: 2001, 2003, 2005, 2007
 - ▶ Sample: respondents aged 51 and older and members of their household
 - ▶ Collection of data by mail
 - ▶ Comparable by subtracting CE personal insurance and pensions
 - ▶ Hurd and Rohwedder (2011) comparables

	CE/CAMS (ages 55+)
2001	0.867
2003	0.866
2005	0.960
2007	0.997

Authors note that earlier CAMS results likely to be too high. See Hurd and Rohwedder 2009

Comparable Expenditures: American Life Panel

- ALP financial crisis surveys
 - ▶ May 2009
 - ▶ Sample: all U.S. households
 - ▶ Global expenditures and balance edits
 - ▶ Comparable by subtracting CE personal insurance and pensions
 - ▶ Hurd and Rohwedder (2011)
- ALP Spending totals (April 2009-March 2010) to those from CE (2009)
 - ▶ CE aggregate total expenditures 4.5 percentage points higher than ALP

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 (2003) to 0.93 (1996) with most recent 0.71 (2006)
- 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 (2003) to 0.86 (1996) with more recent 0.74 (2006)
- Foster, *MLR* 2010

Comparison: Energy

- Residential Energy Consumption Survey (RECS)
 - ▶ 2001 and 2005
 - ▶ Sample: similar population to that for the CE but RECS in addition samples households on military bases but not barracks
- Household energy spending (Crain 2010)
- Results

CE/RECS	2001	2005
Total	1.09	1.07
Electricity	1.14	1.11
Natural gas	1.01	1.12
Fuel oil and LPG	0.99	0.71

Comparison: Income

- Current Population Survey
 - ▶ 2002 through 2009
 - ▶ Sample: similar to CE
 - ▶ Passero (2011)
- CPS defined before-tax money income
 - ▶ CE: income mapped to 2009 (as for publication)
- Results

CE/CPS	2003 (pre-imputation)	2004 (first year imputation)	2009
Wages and salaries	0.78	0.94	0.99
Social Security	0.79	0.93	0.90
Pensions and annuities	0.82	0.96	0.86
Non-farm	0.59	1.05	0.89
Total	0.75	0.91	0.94

Comparison: Liabilities

- Survey of Consumer Finances
 - ▶ 1992, 1995, 1998, 2002, 2004, 2007
 - ▶ Sample: same as CE but with oversampling of high income households
 - ▶ Johnson and Li (2009)
- Results for selected liabilities for year 2007

CE/SCF	Debt Payment	Debt Balance
Primary mortgage	0.87	0.78
Other mortgage	0.77	1.14
Vehicle	1.00	0.86
Credit card	0.72	0.73
Total	0.86	0.80

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
 - Garner, Passero, and McClelland, NBER Summer Workshop, July 2009

Examples of Other CE to PCE Comparison

- Houthakker and Taylor (1970)
- Slesnick (1992, 1998)
- Studies conducted by researchers at BEA (2003)
- Attanasio, Battistin, and Leicester (2006)
- Meyer and Sullivan (2009)

BLS CE to PCE Comparisons

- First conducted in 1987 by Gieseeman
- Use of internal data
- Use integrated CE data as neither Diary nor Interview reflects 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
- Aggregate expenditures
- Estimates use CU population weights

Source of Data: Apparel and Services

- CE Diary and Interview
 - ▶ 2009
 - ▶ All UCCs for Apparel and Services (not publication selection)
 - Diary
 - Interview
- Internal CE Division
- Results

Interview/Diary	2009
Apparel and Services	0.67

CE to PCE Basics

■ CE

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

■ PCE

- ▶ Establishment Census or 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 (can be identified with 2009 PCE new classification system)

■ 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

- Intra-sector household transactions, such as for used cars or used clothing are in scope for CE and out of scope for PCE
- PCE items partly out of scope for CE
 - ▶ Health Care Expenditures
 - ▶ Religious and Welfare
- Defined differently
 - ▶ Education expenditures
 - ▶ Life insurance and pension plans
 - ▶ Owner-occupied housing expenditures (publication)

Comparison Process

- Request PCE Bridge Table from Input-Output Group
 - ▶ Provides PCE components as published in greater detail than shown in published BEA tables
 - ▶ Represents what of total national output is apportioned to PCE (*see example*)
- Use highly detailed PCE data to inform decisions of assigning CE UCC categories to line-item published PCE categories
- Define comparables
 - ▶ In many instances, there is no perfect match between the CE and PCE items assigned to an aggregate category
 - ▶ In some cases, adjustments are made to published CE categories for greater comparability (e.g., imputed owner rent)

Amount of value added to total recreation estimate by factor, 1997 PCE

Factor	Value added <i>(millions of dollars)</i>	
Total	\$215,067	
Basic value		\$208,064
Wholesale margin		30
Transportation cost		76
Wholesale taxes		6,153
Retail margin		677
Retail taxes		68

Aggregation and allocation of receipts for recreation, 1997 I/O Accounts (*millions of dollars*)

Allocation of Production	Basic value	Whole. margin	Trans. cost	Comm & whole. taxes	Retail margin	Retail taxes	Purchasers' value
Exports of goods	1,400	30	78	0			1,508
Intermediate production	19,186	46	119	74	6	0	19,431
Travel & conference services	7,124	0	0	9			7,133
Real estate services	6,505	0	0	38			6,544
Legal, accounting, & insurance services	5	0	0	0			6
Communication & utility services	4,054	0	0	59			4,113
Rental & leasing of equipment	11,748	0	0	261			12,009
Repairs & maintenance costs	9,870	0	0	53			9,924
Government purchases & sales – Federal, state, local, foreign	-1,828	0	0	-284			-2,112
Net purchases & sales of foreigners	2,099	0	0	0			2,099
Change in inventories	44	1	1	0			45
Unspecified costs	41,497	5	13	565			42,080
Unallocated output	5,783	0	0	259			6,042

Aggregation and allocation of receipts for recreation, 1997 I/O Accounts – cont. (*millions of dollars*)

Allocation of Production	Basic value	Whole. margin	Trans. cost	Comm & whole. taxes	Retail margin	Retail taxes	Purchasers' value
PCE Sporting Equipment	602	0	0	5	0	0	607
PCE Sports Supplies, Incl. Ammo	48	1	3	0	41	4	97
PCE Fish & Seafood	78	0	5	0	28	2	113
PCE Food in Purchased Meals	452	0	0	33	0	0	486
PCE Alcohol in Purchased Meals	98	0	0	0	0	0	98
PCE Other Meats	129	0	0	0	0	0	129
PCE Toys, Dolls, & Games	16	0	0	0	0	0	16
PCE Electrical Repair	1,708	0	0	22	0	0	1,730
PCE Laundry & Garment Repair	230	0	0	12	0	0	242
PCE Beauty Shops & Health Clubs	6,557	0	0	169	0	0	6,726
PCE Commercial & Vocational Schools	1,742	0	0	1	0	0	1,743
PCE Elementary & Secondary Schools	832	0	0	0	0	0	832
PCE Miscellaneous Personal Services	15	0	0	0	0	0	15
PCE Bus	663	0	0	0	0	0	663
PCE Mass Transit Systems	7,686	0	0	0	0	0	7,686

Aggregation and allocation of receipts for recreation, 1997 I/O Accounts – cont. (*millions of dollars*)

Allocation of Production	Basic value	Whole. margin	Trans. cost	Comm & whole. taxes	Retail margin	Retail taxes	Purchasers' value
PCE Other Purchased Intercity Transportation	6,242	0	0	37	0	0	6,278
PCE Other Motor Vehicle Services	98	0	0	2	0	0	100
PCE Hotels & Motels	418	0	0	15	0	0	433
PCE Postage	16	0	0	0	0	0	16
PCE Household Operations Services, Not Elsewhere Classified (NEC)	4,105	0	0	74	0	0	4,179
PCE Professional Association Expenses	4,417	0	0	0	0	0	4,417
PCE Social Welfare	2,980	0	0	8	0	0	2,988
<i>PCE Recreation</i>	<i>208,064</i>	<i>30</i>	<i>76</i>	<i>6,153</i>	<i>677</i>	<i>68</i>	<i>215,067</i>
	354, 685	112	294	7,565	752	74	363,482

Reclassification of PCE Categories in 2002 Benchmark Releases

Pre-2009

- 2009 on
- 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

- 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 NPSH

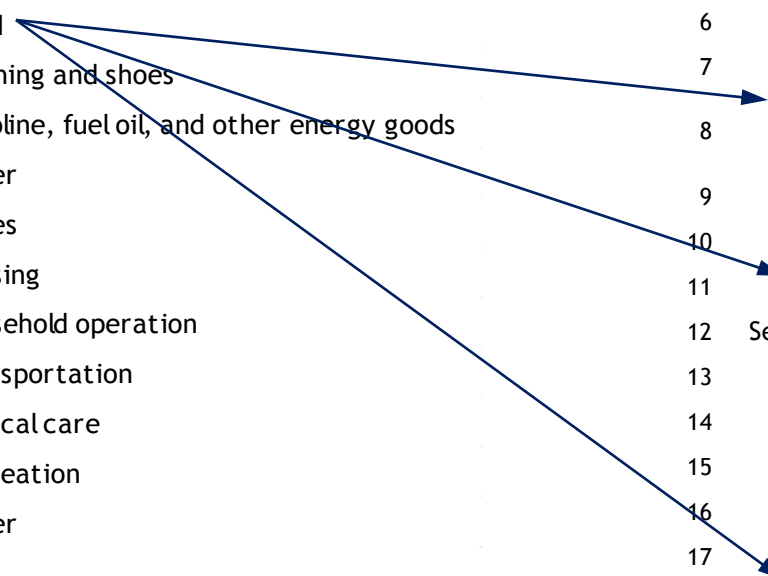
Reclassification of PCE categories in 2002 benchmark releases – cont.

Pre-2009

- 1 Durable goods
- 2 Motor vehicles and parts
- 3 Furniture and household equipment
- 4 Other
- 5 Nondurable goods
- 6 Food
- 7 Clothing and shoes
- 8 Gasoline, fuel oil, and other energy goods
- 9 Other
- 10 Services
- 11 Housing
- 12 Household operation
- 13 Transportation
- 14 Medical care
- 15 Recreation
- 16 Other

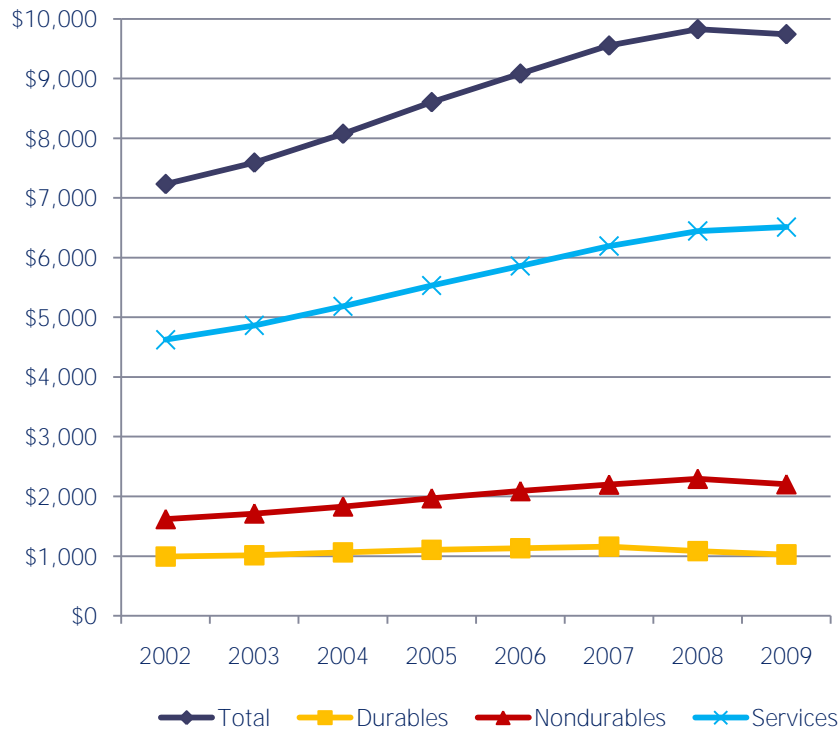
2009 on

- 1 Goods
- 2 Durable goods
- 3 Motor vehicles and parts
- 4 Furnishings and durable household equipment
- 5 Recreational goods and vehicles
- 6 Other durable goods
- 7 Nondurable goods
- 8 Food and beverages purchased for off-premise consumption
- 9 Clothing and footwear
- 10 Gasoline and other energy goods
- 11 Other non-durable goods
- 12 Services
- 13 Household consumption expenditures
- 14 Housing and utilities
- 15 Health care
- 16 Transportation services
- 17 Recreational services
- 18 Food services and accommodations
- 19 Financial services and insurance
- 20 Other services
- 21 Final consumption expenditures of nonprofit institutions serving households

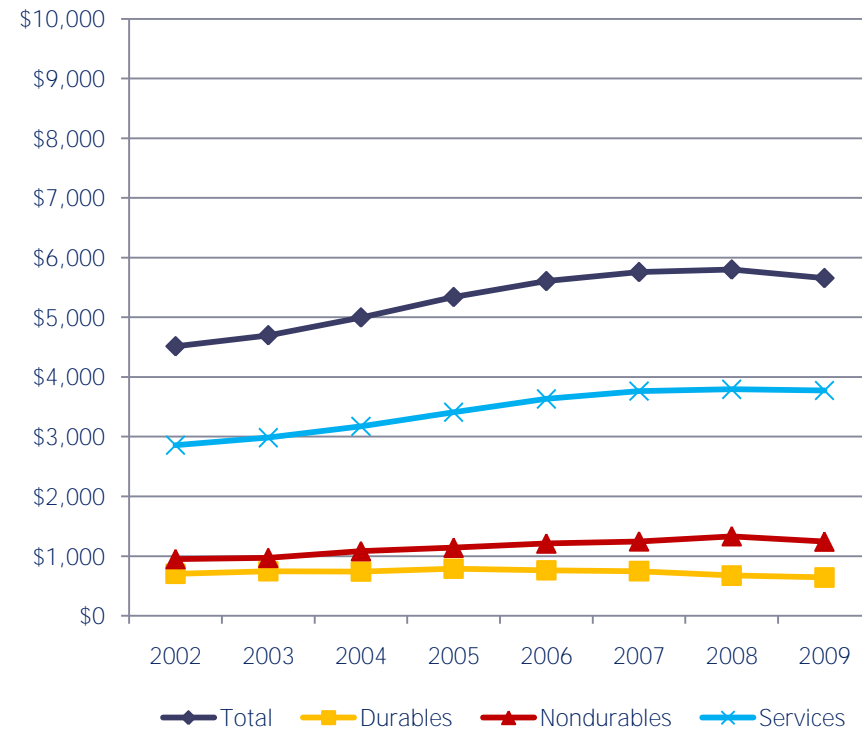


Aggregate expenditures for all item categories, PCE and CE, 2002-2009

PCE Aggregates

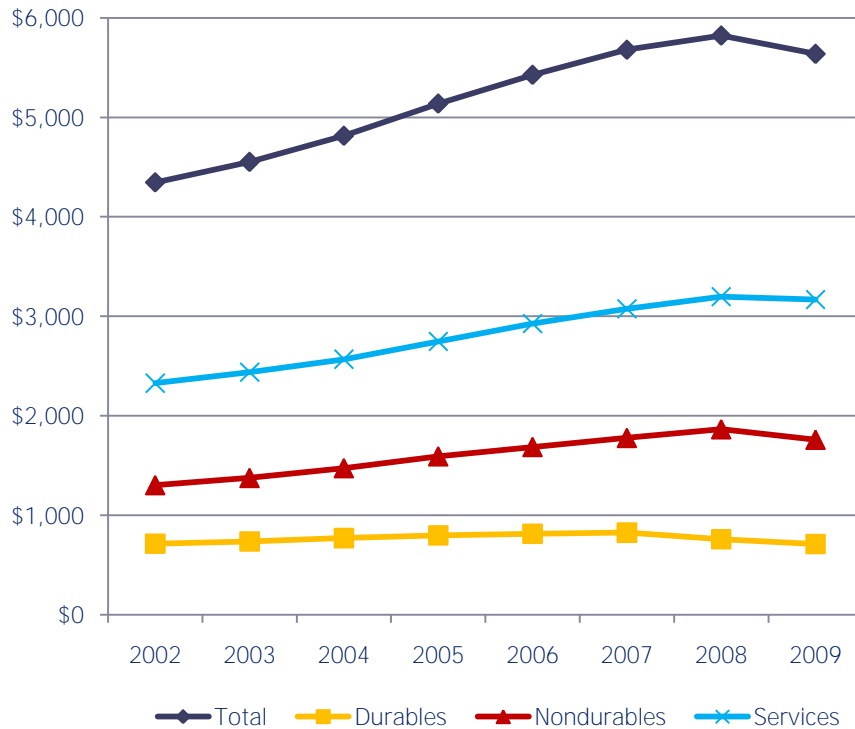


CE Aggregates

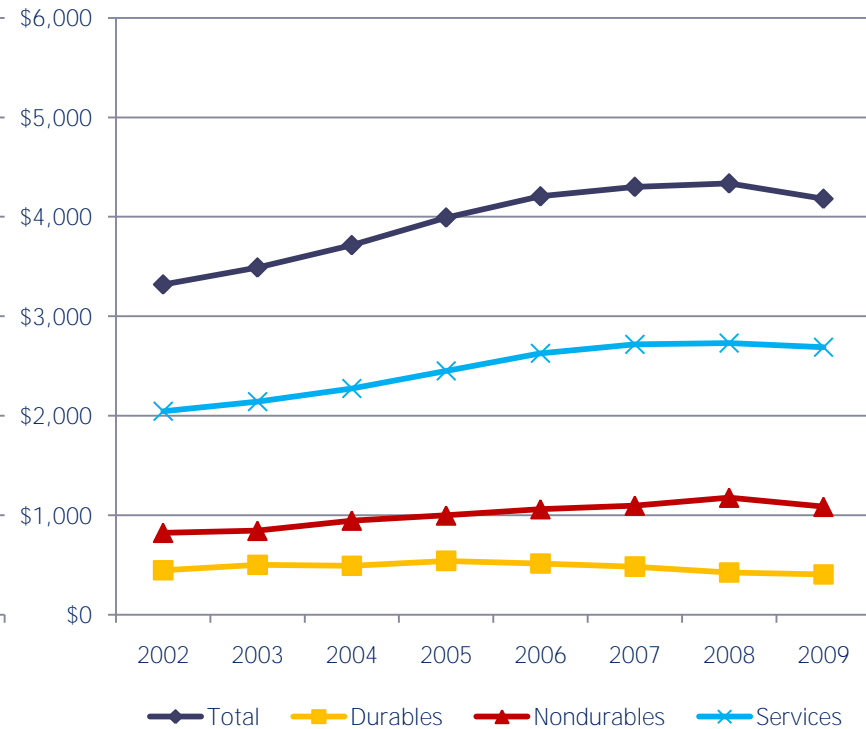


Aggregate expenditures for all "comparable" item categories, PCE and CE, 2002-2009

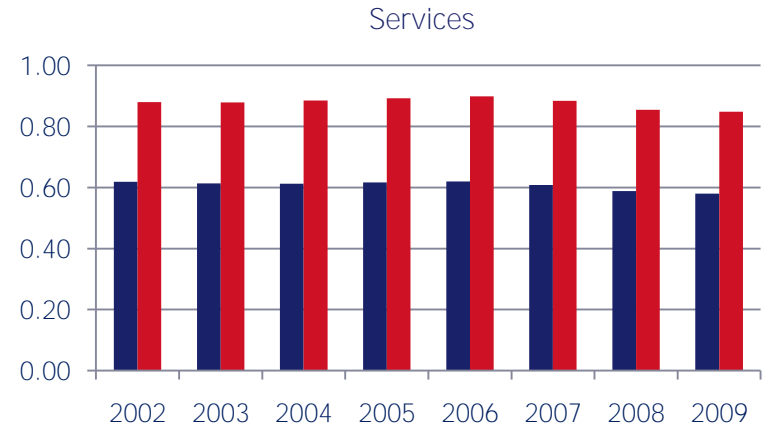
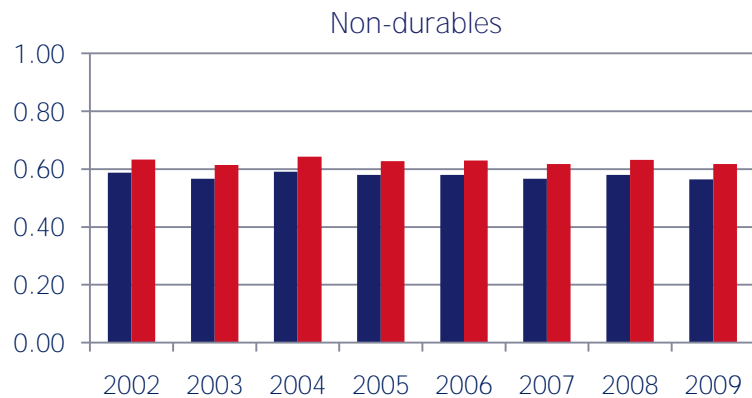
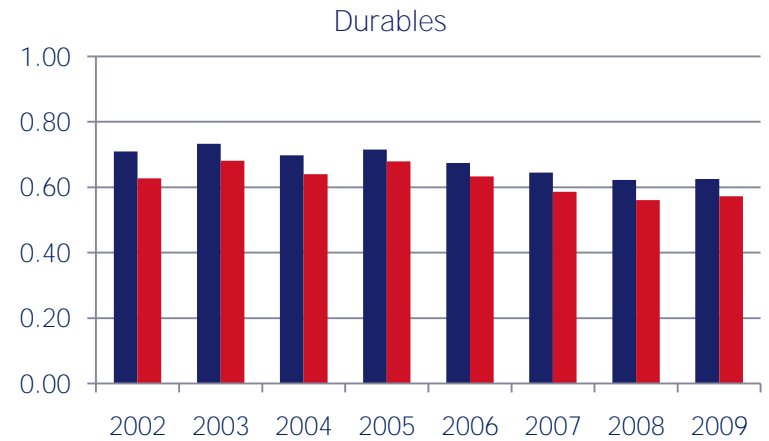
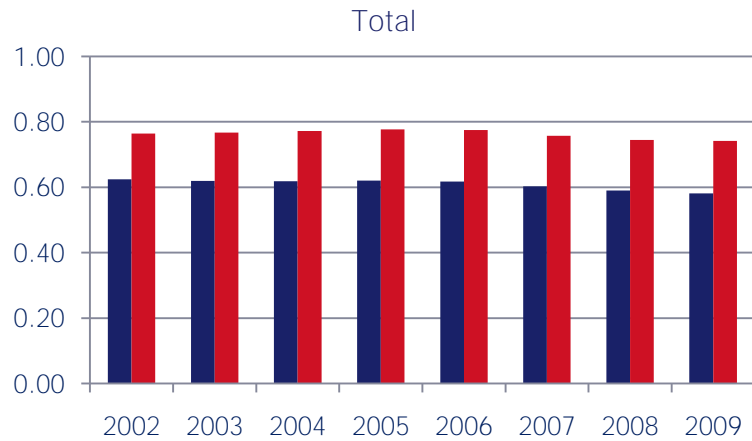
PCE "Comparable" Aggregates



CE "Comparable" Aggregates



CE/PCE Ratios



■ CE/PCE All ■ CE/PCE Comparable

■ CE/PCE All ■ CE/PCE Comparable

Current Research

- With other data sources
- Focus on CE/PCE
 - ▶ Further research into construction of CE categories comparable to detailed PCE table categories
 - ▶ Incorporation of new UCC items into CE-PCE concordance
 - ▶ 2007 benchmark PCE data not likely before 2012
- Joint BLS-BEA project: CE-CPI-PCE

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