The 2009 revision to the trimmed mean PCE inflation series

With the release of quarterly national accounts data for Q2 of 2009 and monthly personal consumption expenditures data for June 2009 the Bureau of Economic Analysis (BEA) incorporated the results of its latest comprehensive revision to the US national income and product accounts. As part of the revision, BEA reorganized its underlying data on component-level PCE prices and quantities, the data that are used in constructing the trimmed mean PCE inflation rate.

In some cases, the reorganization took components which had, over the years, dwindled in importance, and aggregated them into higher-level components. For example, prior to the revision, the BEA's underlying detail data contained separate series for "men's luggage" and "women's luggage". Those have now been combined into one series.

A more substantive change involves the treatment of the expenditures of (and prices paid by) the economy's non-profit sector. PCE has always included spending on consumption by both households and the non-profit sector. As part of the comprehensive revision, BEA has now separated out the activity of the non-profit sector into its own set of series. For example, prior to the revision the broad PCE component "health care services" included purchases of those services by households and the net output of those services by non-profits serving the household sector. Now, those two sorts of activities are recorded in two separate series.

The data used in the construction of the trimmed mean—prior to the comprehensive revision—consisted of 186 component series, going back to January 1977. The 186 series represented the finest degree of disaggregation extending back that far in time. Post-revision, a comparably disaggregated set of components going back to 1977 now consists of 178 series, one of which is final consumption expenditures of the non-profit sector on behalf of households.
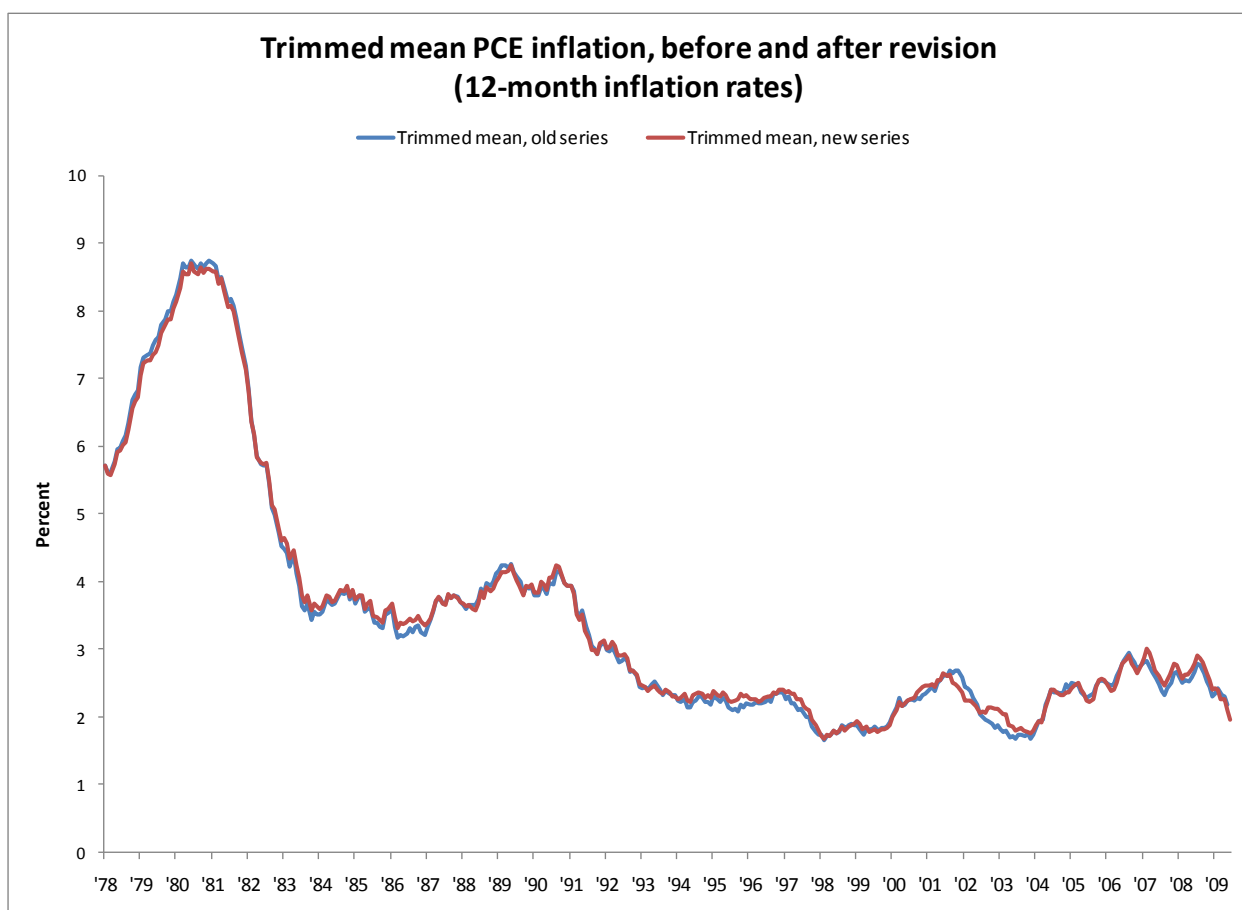
Given the resulting change in the number of underlying series and their definitions, it seemed appropriate to re-examine certain aspects of the calculation of the trimmed mean. In particular, the trimming proportions which we use every month to calculate the trimmed mean were derived using the pre-revision set of 186 series over a sample that ran from January 1977 to December 2004.[1] Those trimming proportions—dropping 19.4% from the lower tail of the distribution of monthly price changes and 25.4% from the upper tail—were optimal, in the sense of producing a trimmed mean inflation rate that hewed closely to the trend in overall PCE inflation. But, that optimality was contingent on both the set of component series and the sample period. Whether those proportions would remain optimal for the new component series—and over a sample extending through mid-2009—was unclear.

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[1] A complete description of those data and derivations, and a list of the 186 original series, can be found in "Trimmed Mean PCE Inflation," Federal Reserve Bank of Dallas Working Paper 0506, available online at http://dallasfed.org/research/papers/2005/wp0506.pdf.

Following the same methodology used to derive the original trimming proportions, but applied to the 178 post-revision series over the sample period January 1977-June 2009, we calculated a new set of optimal trimming proportions.[2] Those turn out to be 24% trimming from the lower tail and 31% trimming from the upper tail.[3] We then used those new trimming proportions, and the new underlying data series, to re-calculate the **entire history** of the trimmed mean inflation rate.

As it turns out, though, the effect of this revision is fairly small. The following chart plots the original, pre-revision trimmed mean together with the new, post-revision version. The series shown are 12-month inflation rates. Considering the many reasons why the two series might differ—not only the change to the trimming proportions and the re-definitions of the underlying series, but also more run-of-the-mill revisions to the underlying price and quantity data—the coincidence between the two series is rather striking.


Trimmed mean PCE inflation, before and after revision
(12-month inflation rates)

— Trimmed mean, old series   — Trimmed mean, new series

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[2] As was the case in 2004, we again faced a trade-off between the length of the data series available and the degree of disaggregation—one can have a longer series with a coarsely disaggregated set of components or a shorter series with a finely disaggregated set. For example, a series that began in 1987 could have over 200 disaggregated components. Now, as then, we opted to balance that trade-off with a series going back to 1977, the earliest date from which price indices for personal computers and software are available.

[3] Trimming proportions were restricted to whole number values. The gain from allowing fractional trimming proportions appears small, while the restriction to whole numbers may facilitate communication of the results.

As a result, the relationship between the trimmed mean, headline PCE inflation, and inflation in PCE excluding food and energy, is much the same as it was prior to the revision. The chart below shows 12-month inflation rates for the new trimmed mean, headline PCE, and PCE ex food and energy.[4]

A complete list of the 178 components that now go into the construction of the trimmed mean is given on the next several pages, along with their average expenditure weights over the last five years. Weights are given in percent and—solely for the purposes of the table—rounded to one decimal place. Thus, entries of 0.0% indicate that a component's weight rounds to less than 0.1% of PCE. The ordering of the components is the same as in BEA's underlying detail tables: durable goods (1–41), nondurable goods (42–91), services (92–177), and spending by the nonprofit sector (178).

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**PCE inflation: trimmed mean, headline, ex food & energy
(12-month inflation rates)**

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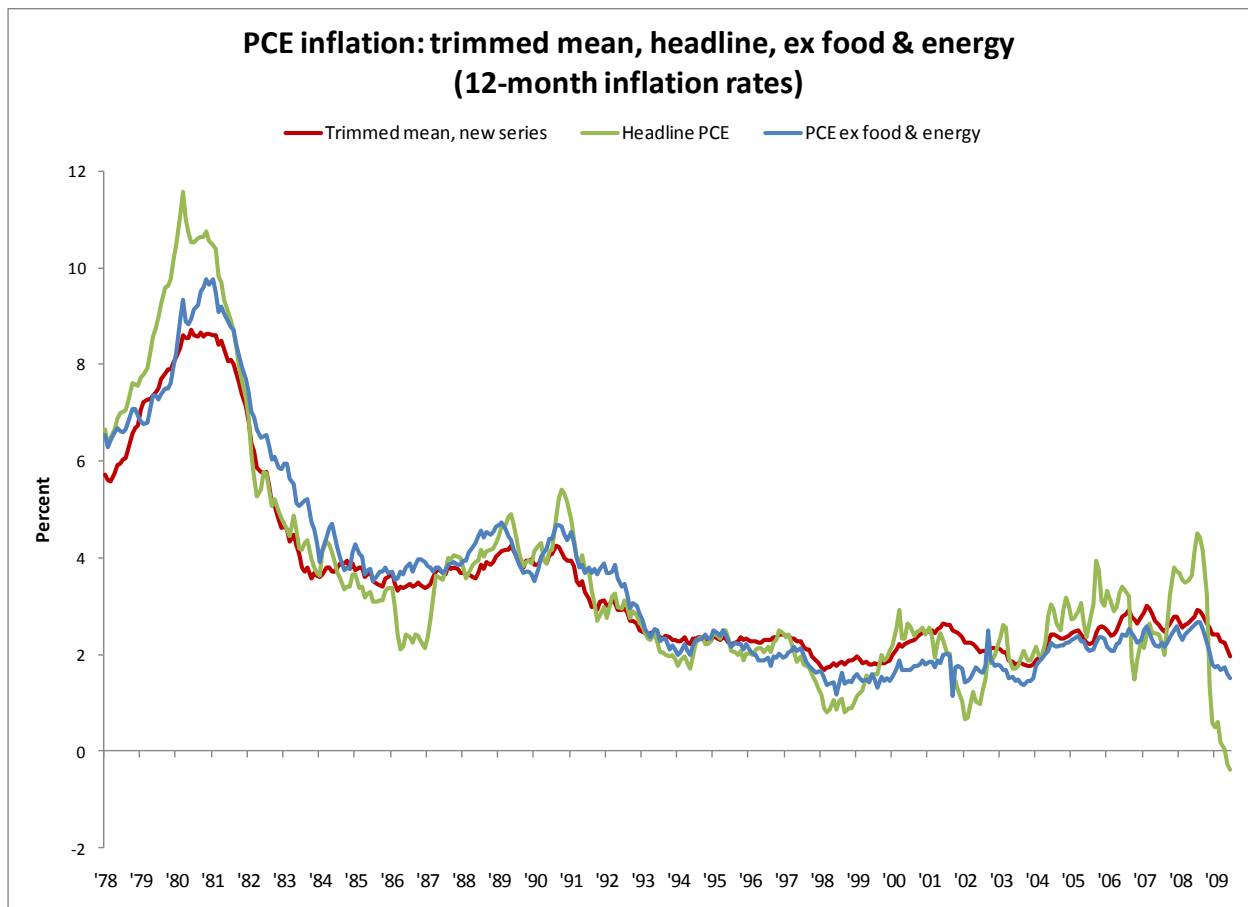
[4] Note that as part of the BEA's revision to the PCE data, PCE excluding food and energy—the conventional notion of "core PCE"—now includes food services, i.e., dining out. Previously, these services had been excluded from core PCE along with other food items. Historically, food services have only rarely been excluded from the trimmed mean.

	Component	Expenditure weight
1	New Domestic Autos	0.6%
2	New Foreign Autos	0.4%
3	New Light Trucks	1.4%
4	Used Autos	0.5%
5	Used Light Trucks	0.6%
6	Tires	0.2%
7	Accessories & Parts	0.3%
8	Furniture	1.0%
9	Clock/Lamp/Lighting Fixture/Other Household Decorative Items	0.3%
10	Carpets & Other Floor Coverings	0.2%
11	Window Coverings	0.1%
12	Major Household Appliances	0.4%
13	Small Electric Household Appliances	0.1%
14	Dishes and Flatware	0.3%
15	Non-Electric Cookware & Tableware	0.2%
16	Tools, Hardware & Supplies	0.2%
17	Outdoor Equipment & Supplies	0.0%
18	Televisions	0.3%
19	Other Video Equipment	0.2%
20	Audio Equipment	0.3%
21	Prerecorded/Blank Audio Disc/Tape/Digital Files/Download	0.2%
22	Video Cassettes & Discs, Blank & Prerecorded	0.2%
23	Photographic Equipment	0.0%
24	Personal Computers & Peripheral Equipment	0.5%
25	Computer Software & Accessories	0.2%
26	Calculators/Typewriters/Other Info Processing Equipment	0.0%
27	Sporting Equipment, Supplies, Guns & Ammunition	0.6%
28	Motorcycles	0.2%
29	Bicycles & Accessories	0.0%
30	Pleasure Boats	0.2%
31	Pleasure Aircraft	0.0%
32	Other Recreational Vehicles	0.2%
33	Recreational Books	0.3%
34	Musical Instruments	0.1%
35	Jewelry	0.6%
36	Watches	0.1%
37	Therapeutic Medical Equipment	0.2%
38	Corrective Eyeglasses & Contact Lenses	0.2%

39	Educational Books	0.1%
40	Luggage & Similar Personal Items	0.2%
41	Telephone & Facsimile Equipment	0.1%
42	Cereals	0.3%
43	Bakery Products	0.8%
44	Beef and Veal	0.4%
45	Pork	0.2%
46	Other Meats	0.2%
47	Poultry	0.5%
48	Fish and Seafood	0.1%
49	Fresh Milk	0.2%
50	Processed Dairy Products	0.4%
51	Eggs	0.1%
52	Fats and Oils	0.1%
53	Fresh Fruit	0.3%
54	Fresh Vegetables	0.4%
55	Processed Fruits & Vegetables	0.2%
56	Sugar and Sweets	0.4%
57	Food Products, Not Elsewhere Classified	1.1%
58	Coffee, Tea & Other Beverage Materials	0.1%
59	Mineral Waters, Soft Drinks & Vegetable Juices	0.7%
60	Spirits	0.3%
61	Wine	0.2%
62	Beer	0.6%
63	Food Produced & Consumed on Farms	0.0%
64	Women's & Girls' Clothing	1.7%
65	Men's & Boys' Clothing	1.0%
66	Children's & Infants' Clothing	0.1%
67	Clothing Materials	0.1%
68	Standard Clothing Issued to Military Personnel	0.0%
69	Shoes & Other Footwear	0.6%
70	Gasoline & Other Motor Fuel	3.2%
71	Lubricants & Fluids	0.1%
72	Fuel Oil	0.2%
73	Other Fuels	0.0%
74	Prescription Drugs	2.5%
75	Nonprescription Drugs	0.3%
76	Other Medical Products	0.0%
77	Games, Toys & Hobbies	0.5%
78	Pets & Related Products	0.4%

79	Flowers, Seeds & Potted Plants	0.3%
80	Film & Photographic Supplies	0.0%
81	Household Cleaning Products	0.4%
82	Household Paper Products	0.4%
83	Household Linens	0.3%
84	Sewing Items	0.0%
85	Miscellaneous Household Products	0.1%
86	Hair/Dental/Shave/Miscellaneous Personal Care Prods ex Electric Products	0.5%
87	Cosmetic/Perfumes/Bath/Nail Preparations & Implements	0.3%
88	Electric Appliances for Personal Care	0.0%
89	Tobacco	0.8%
90	Newspapers & Periodicals	0.5%
91	Stationery & Miscellaneous Printed Materials	0.3%
92	Tenant-Occupied Mobile Homes	0.1%
93	Tenant-Occupied Stationary Homes	3.0%
94	Tenant Landlord Durables	0.1%
95	Owner-Occupied Mobile Homes	0.3%
96	Owner-Occupied Stationary Homes	11.5%
97	Rental Value of Farm Dwellings	0.2%
98	Group Housing	0.0%
99	Water Supply & Sewage Maintenance	0.6%
100	Garbage & Trash Collection	0.2%
101	Electricity	1.5%
102	Natural Gas	0.6%
103	Physician Services	3.8%
104	Dental Services	1.0%
105	Paramedical Services	2.5%
106	Nonprofit Hospitals' Services to Households	4.4%
107	Proprietary Hospitals	0.8%
108	Government Hospitals	1.3%
109	Nursing Homes	1.3%
110	Motor Vehicle Maintenance & Repair	1.7%
111	Motor Vehicle Leasing	0.4%
112	Motor Vehicle Rental	0.1%
113	Parking Fees & Tolls	0.2%
114	Railway Transportation	0.0%
115	Intercity Buses	0.0%
116	Taxicabs	0.0%
117	Intercity Mass Transit	0.2%
118	Other Road Transportation Service	0.1%

119	Air Transportation	0.5%
120	Water Transportation	0.0%
121	Membership Clubs & Participant Sports Centers	0.3%
122	Amusement Parks, Campgrounds & Related Recreational Services	0.4%
123	Motion Picture Theaters	0.1%
124	Live Entertainment, ex Sports	0.2%
125	Spectator Sports	0.2%
126	Museums & Libraries	0.1%
127	Audio-Video, Photographic & Info Processing Services	1.0%
128	Casino Gambling	0.8%
129	Lotteries	0.2%
130	Pari-Mutuel Net Receipts	0.1%
131	Veterinary & Other Services for Pets	0.2%
132	Package Tours	0.1%
133	Maintenance & Repair of Recreational Vehicles & Sports Equipment	0.1%
134	Elementary & Secondary School Lunches	0.1%
135	Higher Education School Lunches	0.1%
136	Other Purchased Meals	4.2%
137	Alcohol in Purchased Meals	0.7%
138	Food Supplied to Civilians	0.1%
139	Food Supplied to Military	0.0%
140	Hotels and Motels	0.6%
141	Housing at Schools	0.2%
142	Commercial Banks	0.8%
143	Other Depository Institutions & Regulated Investment Companies	1.3%
144	Pension Funds	0.4%
145	Financial Service Charges, Fees & Commissions	2.5%
146	Life Insurance	0.9%
147	Net Household Insurance	0.1%
148	Net Health Insurance	1.6%
149	Net Motor Vehicle & Other Transportation Insurance	0.6%
150	Communication	2.2%
151	Proprietary & Public Higher Education	0.8%
152	Nonprofit Private Higher Education Services to Households	0.5%
153	Elementary & Secondary Schools	0.3%
154	Day Care & Nursery Schools	0.1%
155	Commercial & Vocational Schools	0.4%
156	Legal Services	1.0%
157	Tax Preparation & Other Related Services	0.2%
158	Employment Agency Services	0.0%

159	Other Personal Business Services	0.1%
160	Labor Organization Dues	0.1%
161	Professional Association Dues	0.1%
162	Funeral & Burial Services	0.2%
163	Hairdressing Salons & Personal Grooming Establishments	0.5%
164	Miscellaneous Personal Care Services	0.5%
165	Laundry & Dry Cleaning Services	0.1%
166	Clothing Repair, Rental & Alterations	0.1%
167	Repair & Hire of Footwear	0.0%
168	Child Care	0.3%
169	Social Assistance	0.9%
170	Social Advocacy & Civic & Social Organizations	0.2%
171	Religious Organizations' Services to Households	0.1%
172	Sales Receipts: Foundations/Grant Making/Giving Services to Household	0.0%
173	Domestic Services	0.3%
174	Moving, Storage & Freight Services	0.2%
175	Repair of Furniture, Furnishings & Floor Coverings	0.0%
176	Repair of Household Appliances	0.0%
177	Other Household Services	0.1%
178	Final Consumption Expenditures of Nonprofit Institutions Serving Households	2.6%