Macroeconomic Advisers

The PCE as Reference Index for an Inflation Objective at the Fed

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PCE Price Index and the Fed's Inflation Objective

- **Two roles for measures of inflation at the Fed**

- **The vision and details of an explicit objective**

- **Criteria for selecting an inflation measure**

- **Core vs headline as focus of monetary policymaking**

- **Some key issues relative to CPI and PCE:**
  - Imputes prices
  - Revisions
  - Public familiarity

Two Roles for Inflation Measures at the Fed

- **Monitoring inflation performance**
  - Want the best measure of "true" inflation ("welfare costs")
  - Want to trust high frequency as well as year-over-year data
  - Can look at a variety of different measures

- **Setting an implicit or explicit inflation objective**
  - Need to identify a single index as principal focus
  - Who is focus of communication strategy (markets or public/Congress)?
  - Understandable to public (not too manipulated)

- **Specialization and division of labor**
  - BEA is about measurement and FOMC is about monetary policy
    - BEA is about measuring nominal, real GDP, not about COL index
  - A role for interaction: a Fed wish list for the PCE ?

Debate about an Inflation Objective at the Fed

- ## The "vision" of an explicit inflation objective
  - A medium or long-term objective within context of dual mandate
  - Differentiated from rhetoric (practice?) abroad with IT regimes
    - Hierarchical mandate vs dual mandate
    - Explicit vs implicit dual mandates
  - Wide range of views: full fledged IT, status quo, middle way

- ## The details:
  - Reference index
  - Core vs headline
  - Level
  - Range
  - Horizon

The Key Issue in the Debate

- **Is this about communication (only) or (also) policy?**
  - Bernanke: just communication
  - Kohn: inevitably also about policy

- **Kohn: Can you make one objective explicit without altering relative response to inflation and output?**
  - Frame issue in terms of Taylor rule
  - Inevitably raise parameter on inflation relative to output gap?
  - Trade-off less volatile inflation for more volatile output?
  - But Committee likes way it has balanced its objectives

- **Bernanke: the lesson from "The Great Moderation"**
  - Anchoring inflation expectations reduced volatility in inflation <u>and</u> output
  - Can't just look at Taylor rule, also a change in inflation dynamics
  - Anchored inflation dynamics do some of the work of policymakers

Two Tracks on Communication Strategy

- **The explicit inflation objective track**

- **The forecast track: information @ FOMC's forecast**
  - More timely and more frequent (four times vs two times a year)
  - More detail (perhaps about the central tendency policy path)
  - Longer horizon (to provide information about objectives, r*)
  - More qualitative discussion of forecast numbers (tell a story)

- **Two tracks parallel and interconnected!**
  - Decision on one track could affect decision on the other
  - Forecast track could substitute for explicit inflation objective
  - Inflation measures could differ in the two tracks!
    - Likely to continue to focus on core PCE in forecast
    - Objective could be for headline and even could be based on CPI

Criteria for Selecting a Reference Index

- **Bias**

- **Coverage/scope**

- **Weighting**

- -

- **Understandable/familiar to public**

- -

- **Inclusion of imputed prices**

- **Subject to revision**

Overall vs Core Inflation

- **Long-run inflation objective vs monitoring range**
  - No distinction between core and headline for LR inflation objective
  - Hence use headline inflation: the more comprehensive measure
  - Use core for monitoring ST success with achieving LT objective

- **The case for core**
  - Inflation dynamics and forecasting: a better forecast of trend
  - Monetary policy: look through direct effects of supply shocks
    - Let bygones be bygones
    - Alternative would require excess volatility in real variables

- **Core vs other measures that adjust for near-term volatility**
  - Degree of "manipulation" that can be explained to public
  - Also need to be careful about different trends, comfort zones

Forecasting PCE: Core vs Trimmed Mean

Dependent Variable: Headline PCE
Method: Least Squares
Date: 11/03/06   Time: 10:36
Sample (adjusted): 1979Q1 2006Q3
Included observations: 111 after adjustments
Newey-West HAC Standard Errors & Covariance (lag truncation=4)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.418398	0.525526	-0.796151	0.4277
Core PCE (-4)	-0.680252	0.412688	-1.648343	0.1022
Dallas Trimmed (-4)	1.815541	0.518516	3.501417	0.0007

R-squared	0.784886	Mean dependent var	3.582376
Adjusted R-squared	0.780902	S.D. dependent var	2.354146
S.E. of regression	1.101925	Akaike info criterion	3.058650
Sum squared resid	131.1379	Schwarz criterion	3.131881
Log likelihood	-166.7551	F-statistic	197.0298
Durbin-Watson stat	0.179523	Prob(F-statistic)	0.000000

Forecasting Core: Lagged Core vs Trimmed Mean

Dependent Variable: Core PCE
Method: Least Squares
Date: 11/03/06   Time: 10:24
Sample (adjusted): 1979Q1 2006Q3
Included observations: 111 after adjustments
Newey-West HAC Standard Errors & Covariance (lag truncation=4)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.266223	0.301146	-0.884033	0.3786
Core PCE (-4)	-0.030928	0.229608	-0.134698	0.8931
Dallas Trimmed (-4)	1.090931	0.290238	3.758740	0.0003

R-squared	0.921582	Mean dependent var		3.532239
Adjusted R-squared	0.920130	S.D. dependent var		2.124811
S.E. of regression	0.600498	Akaike info criterion		1.844540
Sum squared resid	38.94454	Schwarz criterion		1.917770
Log likelihood	-99.37194	F-statistic		634.6216
Durbin-Watson stat	0.237233	Prob(F-statistic)		0.000000

Forecasting Core: Lagged Core vs Trimmed Mean

Dependent Variable: Core PCE
Method: Least Squares
Date: 11/03/06   Time: 10:33
Sample (adjusted): 1990Q1 2006Q3
Included observations: 67 after adjustments
Newey-West HAC Standard Errors & Covariance (lag truncation=3)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.225104	0.373940	-0.601979	0.5493
Core PCE (-4)	0.315336	0.205211	1.536641	0.1293
Dallas Trimmed (-4)	0.695263	0.330545	2.103381	0.0394

R-squared	0.824658	Mean dependent var	2.241192
Adjusted R-squared	0.819179	S.D. dependent var	0.857083
S.E. of regression	0.364458	Akaike info criterion	0.862935
Sum squared resid	8.501119	Schwarz criterion	0.961652
Log likelihood	-25.90831	F-statistic	150.5005
Durbin-Watson stat	0.517528	Prob(F-statistic)	0.000000

Revisions and Monetary Policy

- **Richard Fisher, November 2, 2006:**

   "In retrospect [because of faulty data] the real funds rate turned out to be lower than what was deemed appropriate at the time and was held lower longer than it should have been. In this case, poor data led to policy action that amplified speculative activity in housing and other markets. The point is that we need to continue to develop and work with better data."
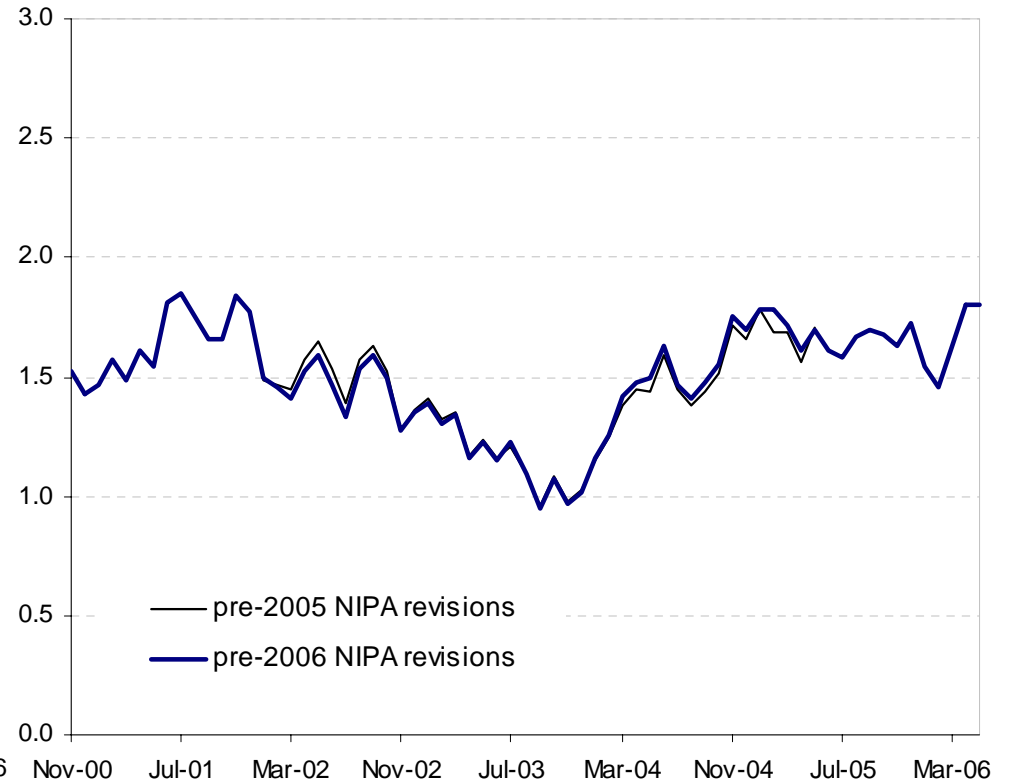
Are Revisions an Advantage or Disadvantage?

- **Recent revisions**
  - The July 2005 revisions
    - From near the middle of the comfort zone
    - To upper end or beyond for last 1½ years
  - The July 2006 revisions
    - More marginal further upward revision

- **Are revisions an advantage or disadvantage?**
  - Can convert "good" policy into a mistake
  - But isn't it better to eventually have better data?
  - Revisions are an advantage for best measure
  - But what about as a focal point for inflation objective
  - But prefer methodology that limits need for revisions

2005 NIPA Revisions

Core PCE
12 month rate
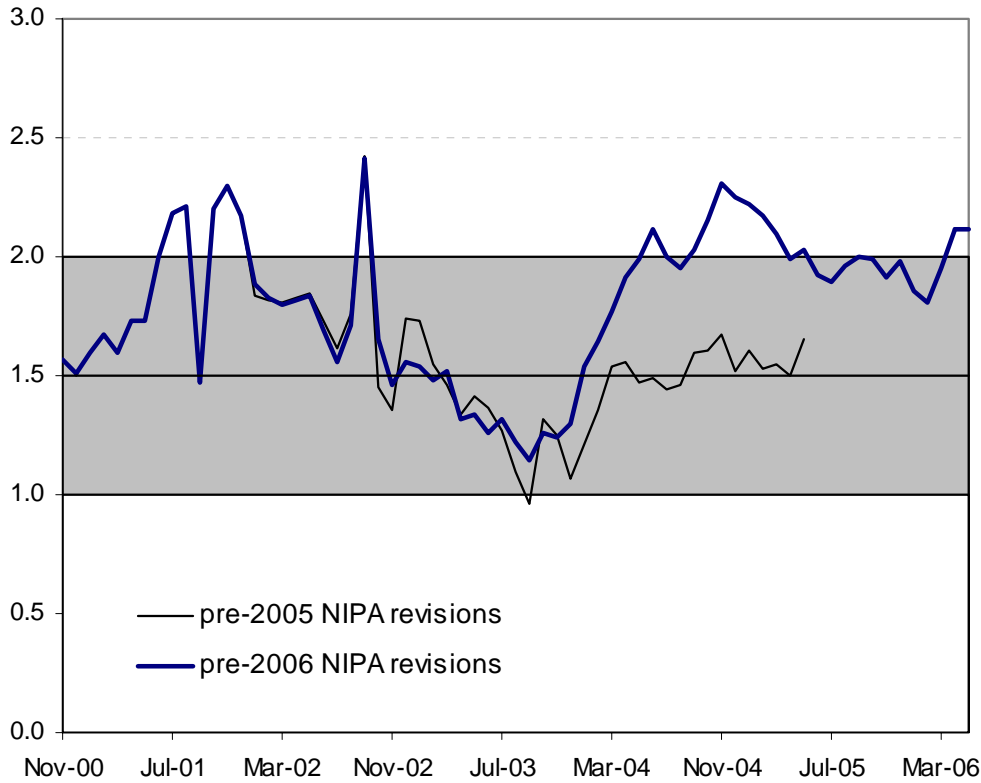
Market Based Core PCE
12 month rate

A Calibrated Taylor Rule

$$iff_t = rff^* + \pi_t - 1.75(u_t - u_t^*) + 0.5\,(\pi_t - \pi^*)$$

Federal Funds Rate

$u^* = 5.0$

$\pi^* = 2.0$

$r^* = 2.25$

π = core CPI inflation over previous year


Legend:
— Predicted Using Core CPI
— Actual /LHM Forecast
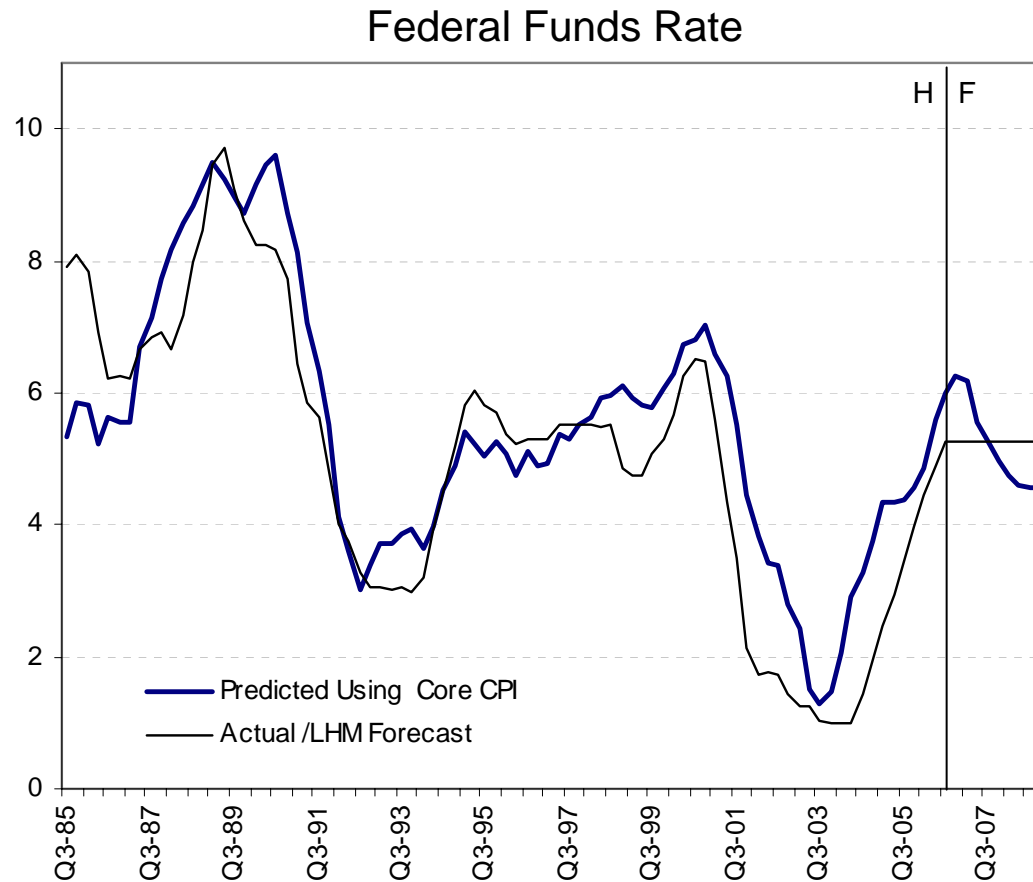
Is Including Imputed Prices an Advantage?

- **Advantage is that it permits wider coverage**

- **Disadvantage to extent we do not know how to measure**
  - Reduced confidence in inflation readings
  - Especially when movements affected by imputed prices

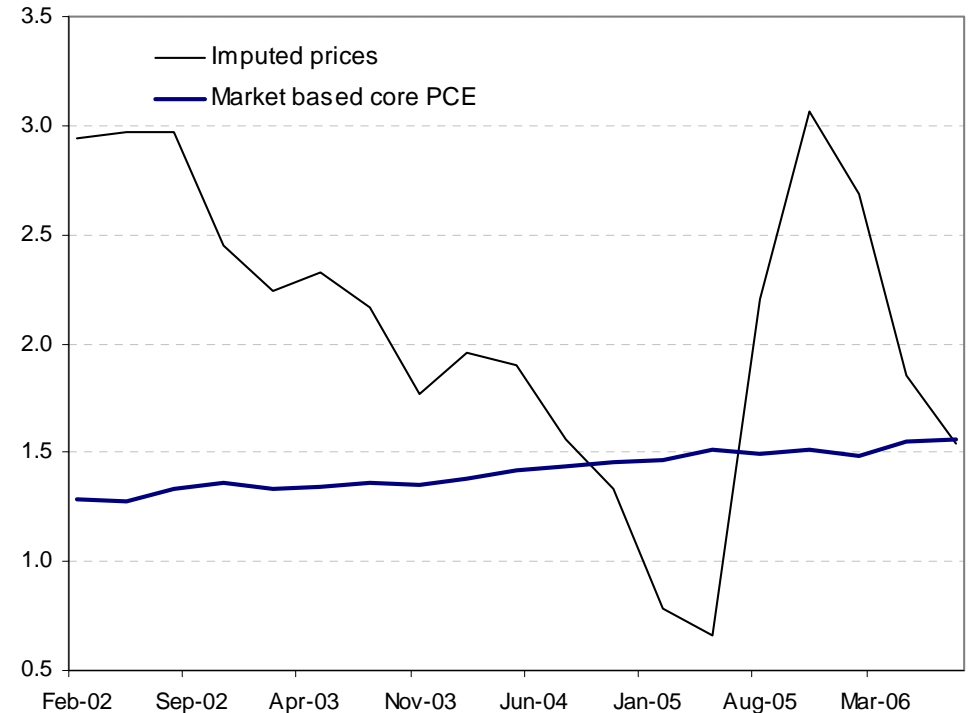- **Disadvantage to extent adds to high frequency noise**

Imputed Prices:* A Basis for Skepticism?
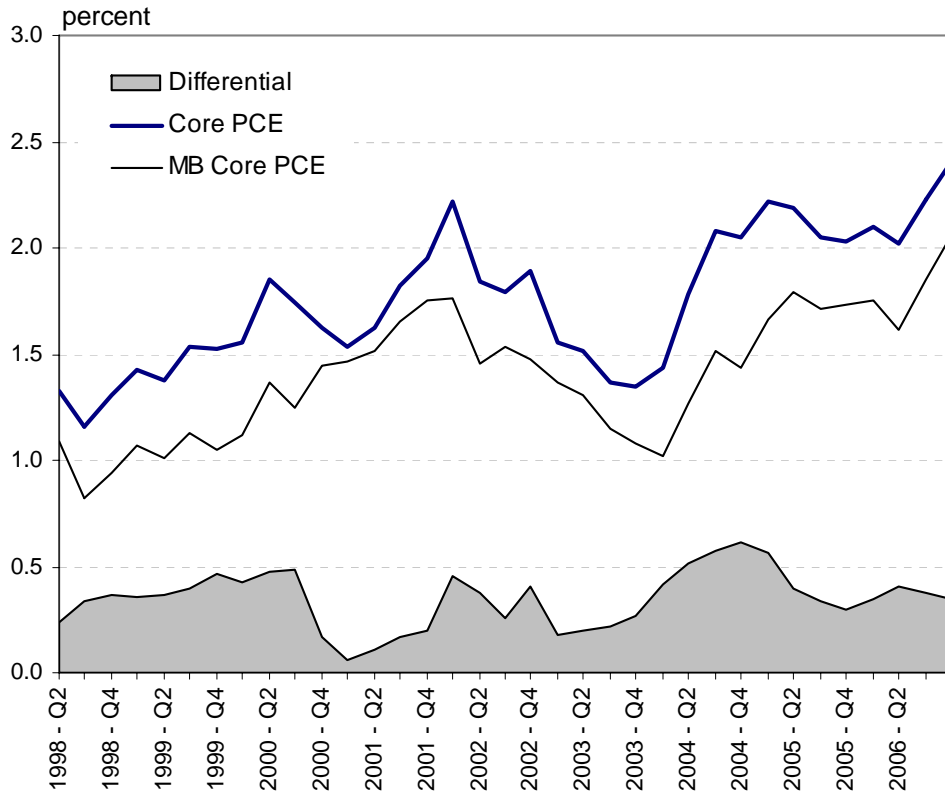
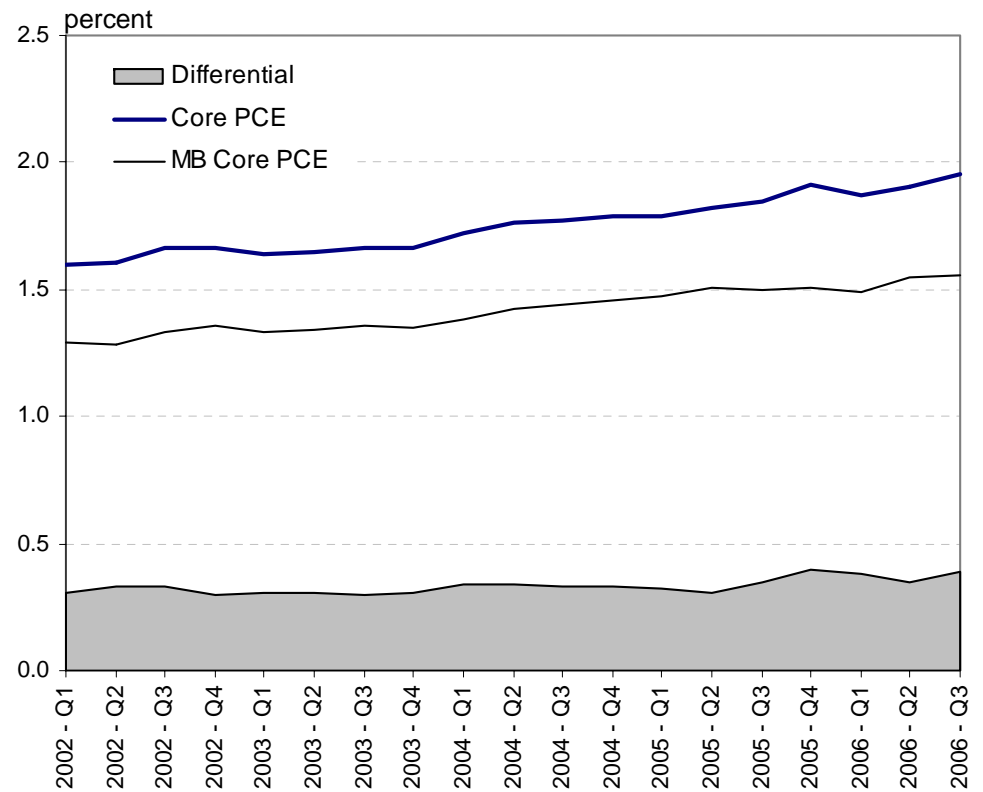### 1 Quarter Growth Rates, annualized
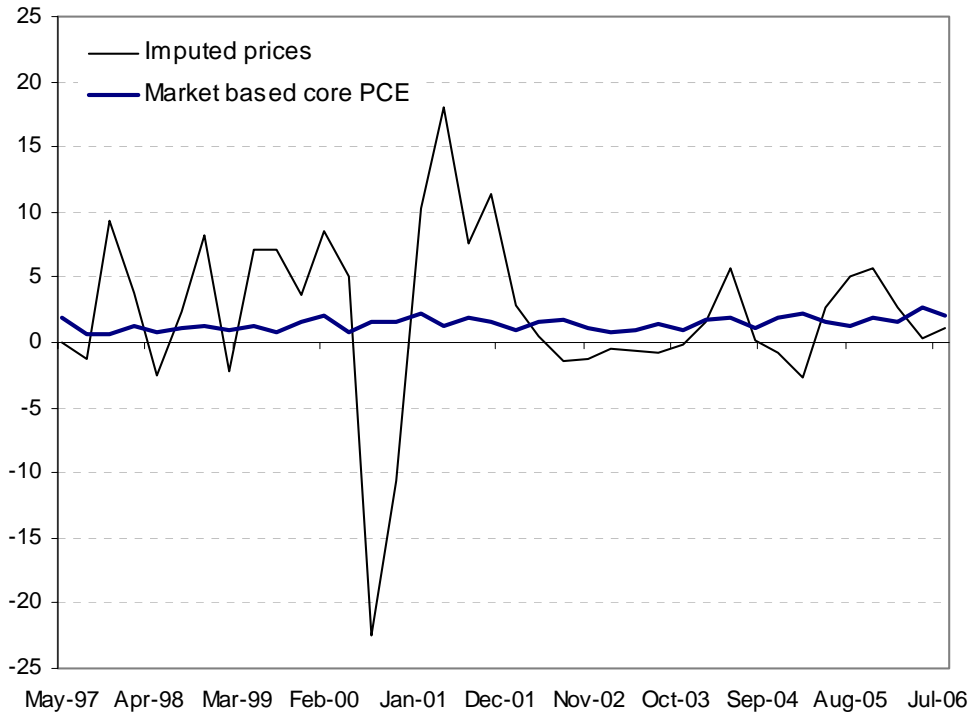
5 Year Rates, annualized

*Imputed Prices for services furnished without payment by financial intermediaries except life insurance carriers

Differentials Between Market-Based and Core

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A Fed Wish List for PCE?

- **Useful for interaction between BEA and Fed staff**

- **Issue # 1: transparency and documentation**
  - Especially in relation to the imputed prices
  - Should be able to reproduce your results

- **Issue # 2: reducing need to revise imputed prices**

- **Issue # 3: Synchronizing revision cycle between BEA and BLS (re PPI sub-indexes)**

- **There is a longer list of suggested changes: just ask!**

The Bottom Line: Trade-offs

- **Pro PCE**
  - Better measure of overall inflation
  - More consistent time series for inflation
  - This is the index that the FOMC has been focusing on

- **Pro CPI**
  - Simple to explain, familiar to public, used for indexation
  - Not subject to revisions

- **Core PCE for FOMC forecast, headline CPI for objective?**
  - Makes use of the best properties of each index
  - But requires keeping two sets of books
 - Would require constant focus on differentials

Inflation Differentials

- **Desirable to focus on more than one index in practice**

- **Think of corresponding ranges for CPI and PCE**

- **Reflects in part differences in inflation bias**
  - CPI inflation bias = 0.9 pp (Lebow and Rudd, 2003)
  - PCE inflation bias = 0.5 pp (upper level bias, weighting)
  - NOT the same as differential between two measures

- **The evolution of the PCE/CPI differential**
  - For some time, viewed as about ½ pp
  - Affected by energy price and OER via different weights
  - Net of these two considerations, 0.2 pp since 1996

Differentials

Headline & Core PCE Inflation
5 year rate, ann.
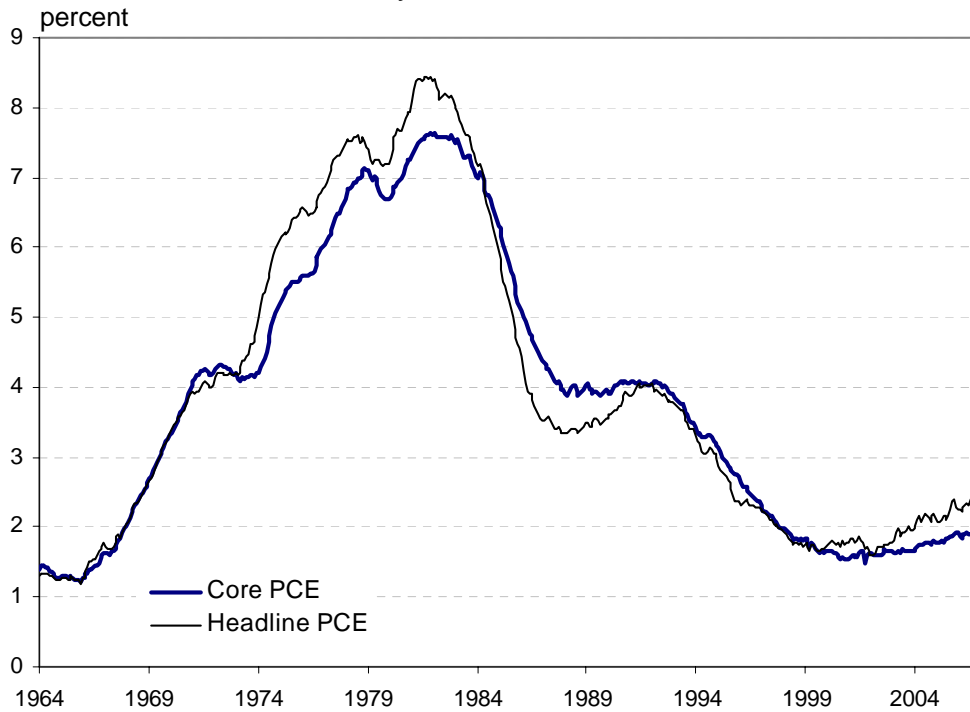
Core CPI* less Core PCE
5 year rate, ann.

*research series