Devonshire Research Group, LLC

Consensus of the Contrarians

The Alternate Macro Economic View

April 2017

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Executive summary

A wide variety of Price Indices are used to adjust for the effects of Inflation on the economy. These adjustments are widely applied to derive a number of common measures and underlie many critical economic and asset management concepts

- Price Indices: the Consumer Price Index (CPI), the Producer Price Index, the GDP Deflator
- Economic concepts: the Standard of Living, Real Income and Output, Real Economic Growth
- Asset Management concepts: Real Interest Rates, the Risk-Free Rate of Return, the Cost of Capital
- *Conclusion: These indices and concepts are intimately commingled which is leading to a wide ranging divergence between reality, published government statistics and the assumptions used for investment decisions*

A rising tide of Contrarians is arguing that Inflation is understated by the Price Indices chosen by U.S. government agencies in numerous ways for complex reasons

- The CPI fails to measure a simple basket of goods that consumers typically purchase "out-of-pocket"
- The weights in the official baskets shift over time in ways that mute the impact of higher priced products
- Price increases attributed to quality improvements (hedonic adjustments) are subjective and overstated
- U.S. government agencies have incentives to downplay CPI increases to lower cost-of-living payments, reduce borrowing costs, and increase apparent real economic growth
- *Conclusion: The Consensus of Contrarians is growing, shared across several independent critics and supported by concerns among many that official statistics paint on overly optimistic picture of the U.S. economy*

To the extent that the Contrarians are correct, the implications for the U.S. economy and for investors are profound

- The Standard of Living may be far more difficult for many Americans to maintain than published statistics suggest
- Real Economic Growth may be flatter or actually negative, suggesting a prolonged 21st century recession, not recovery
- Real Interest Rates, already seen at historic lows, may be strongly negative making Fixed Income returns unattractive
- The Cost of Capital most commonly used to measure investment returns may be far too low
- *Conclusion: The Consensus of Contrarians suggests that many investors are using incorrect assumptions in their asset allocation models and investment decisions. Capital preservation is compromised, portfolio allocations are distorted and return performance is overstated. The broader effect on capital markets is likely profound and complicated*

The evolution of the orthodox view of inflation measurement

A brief history of the Consumer Price Index (and its relatives)

	1913 – 1975	1975 – 2005	2005 – Future
Applications/issues	▪ Wage escalation contracts ▪ Agricultural price supports ▪ Real GNP measurement	▪ CPI-W: Cost of living adjustments for Social Security. Also for Supplemental Security Income, Military Retirement, Civil Service Retirement, Railroad Retirement ▪ CPI-U: Tax bracket indexing, TIPS adjustments ▪ Implicit GDP price deflator: NIPA	▪ Housing crisis and QE interventions raise inflation fears ▪ Real interest rates plummet with ZIRP/NIRP monetary policy ▪ Real cost of capital in investor portfolio models may be wildly understated

Providers	▪ Federal Reserve Board
	▪ Department of Labor
	▪ Department of Agriculture
	▪ Department of Commerce
	▪ NBER
		▪ Bureau of Labor Statistics
		    ▪ CPI-W, wage earner
		    ▪ CPI-U, urban consumers
		    ▪ PPI
		▪ Bureau of Economic Analysis
		    ▪ Implicit GDP deflator
			▪ Chapwood Index
			▪ Shadowstats
			▪ Consumer Purchasing Power Index (CPPI)

Milestones	▪ Survey of Current Business: first issue in 1921 reports on WWI price indices ▪ Simon Kuznets develop first US “real GDP” measures in 1930s ▪ Stigler Commission first made policy recommendations in1961	▪ The Boskin Commission proposed sweeping changes to the CPI in 1996 ▪ The Schultze Commission in 2002 affirmed Boskin findings argued for expanded hedonics	▪ John Williams publishes the first contrarian view of CPI and real GDP growth in 2006 ▪ The Chapwood Index publishes first independent index starting in 2012 and using a diverse basket of 500 items
	Information for contract negotiation	Widespread adoption as a government policy lever	Debates over policy effectiveness and investor rates of return

Origin of the CPI was as a tool to adjust wage increases

The Consumer Price Index was initiated during World War I (which the U.S. joined in 1917) and was later estimated back to 1913. Due to the war, prices were rising rapidly as the government was pouring money into shipbuilding centers, this made it essential to have an index for calculating cost-of-living adjustments for wages.

Note: 92 different industrial centers in 1917–1919, in 1919 the Bureau of Labor Statistics began publication of separate indexes for 32 cities; cation of a national index, the U.S. city average began in 1921, and indexes were estimated back to 1913 using records of food prices
Source: Inflationdata.com

SURVEY OF CURRENT BUSINESS

JULY 1, 1921

Volume 1, Number 1

Table 3.—PRICE INDEX NUMBERS.

Based on Government data.

[Base year in bold-faced type.]

Year and Month.	Federal Reserve Board.[1]							Department of Labor.		Department of Agriculture.	
	Goods produced.	Imported.	Exported.	Raw material.	Producers' goods.	Consumers' goods.	All commodities.	Wholesale.	Retail.	Farm Prices.[2]	
	72 quotations.	18 quotations.	39 quotations.	39 quotations.	31 quotations.	20 quotations.	90 quotations.	All commodities.	Food.	Crops.	Live stock.
1913 monthly average	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
1914 monthly average								100	102	108	103
1915 monthly average								101	101	111	95
1916 monthly average								124	114	123	111
1917 monthly average								176	146	206	164
1918 monthly average								196	167	226	192
1919 monthly average	208	174	214	208	198	207	206	212	186	236	198
1920 monthly average	237	191	227	235	237	230	233	243	203	244	168

Numerous judgements are applied in the methods used for price index construction - they obstruct important trade-offs

Index design elements	Orthodox consensus		Contrarian challenges
How to construct the consumer basket	Allow for substitution across and within categories	↔	Keep the basket constant (no "chicken for steak" substitution)
How to calculate changes	Tornqvist method (geometric means)	↔	Laspeyres method (arithmetic means)
What to measure	Cost of Living	↔	Cost of Goods
What index base	Constant utility/satisfaction	↔	Constant cost
How to assess quality changes ("hedonics")	Progressive quality improvement requires downward price adjustment	↔	Quality deterioration is possible ("reverse hedonics")
How to gather data	Specification of items	↔	Unit value
How to value technological progress	New functions improve life with disruptive new abundances	↔	New functions create low marginal value surpluses, new expenditures/obligations
How to value consumer control	Durables as a stream of services with neutrally variable delivery models	↔	Mandates, forced obsolescence, loss of ownership control never considered

As the US Government developed a stronger interest in inflation, its incentives rose to steer CPI outcomes downward

Panel Sees a Corrected Price Index as Deficit-Cutter

By ROBERT D. HERSHEY Jr.

The New York Times, September 15, 1995

WASHINGTON, Sept. 14— Opening an arcane but politically painless door to budget balancing, a bipartisan Congressional panel has calculated that the Consumer Price Index overstates inflation and that a correction of that bias could reduce the Federal deficit by $634 billion over the next 10 years...

Speaker Newt Gingrich, Republican of Georgia, suggested this week that fixing the index, with its implications for lower spending and higher revenue, would provide significant maneuvering room for budget negotiators. The plan that has passed the Republican-controlled Congress assumes a modest downward C.P.I. adjustment of two-tenths of a point, with conferees rejecting a six-tenths of a point House adjustment in favor of the smaller one endorsed by the Senate.

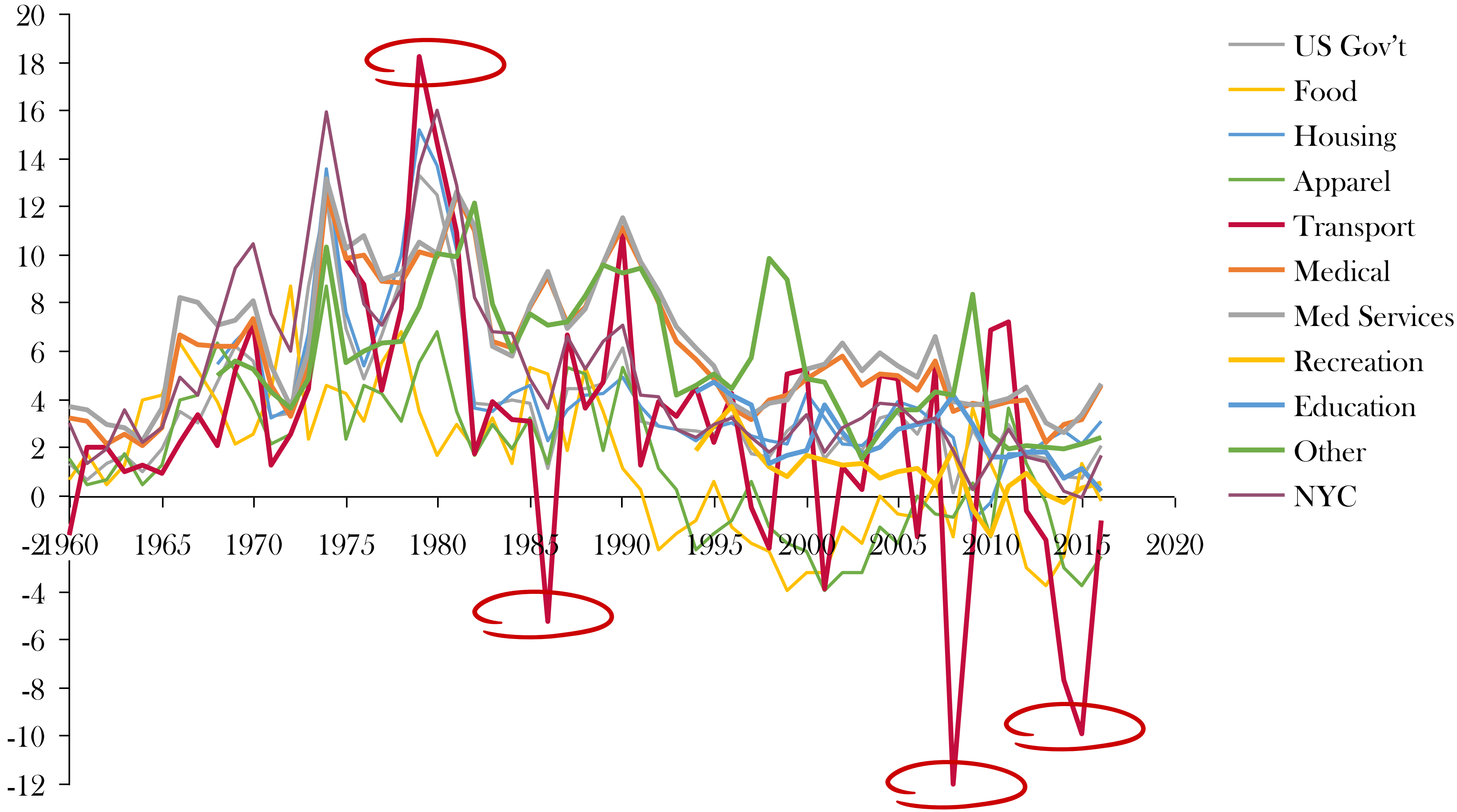
Alan Greenspan, chairman of the Federal Reserve, is among the other Government officials who have spoken optimistically about financial benefits of a more accurate index.

The panel's chairman, Michael Boskin, a Stanford University economics professor and former Bush Administration official, said, "Obviously, if the size of the bias we identify continued, Congressional Budget Office projections show quite striking implications for deficits and the national debt."

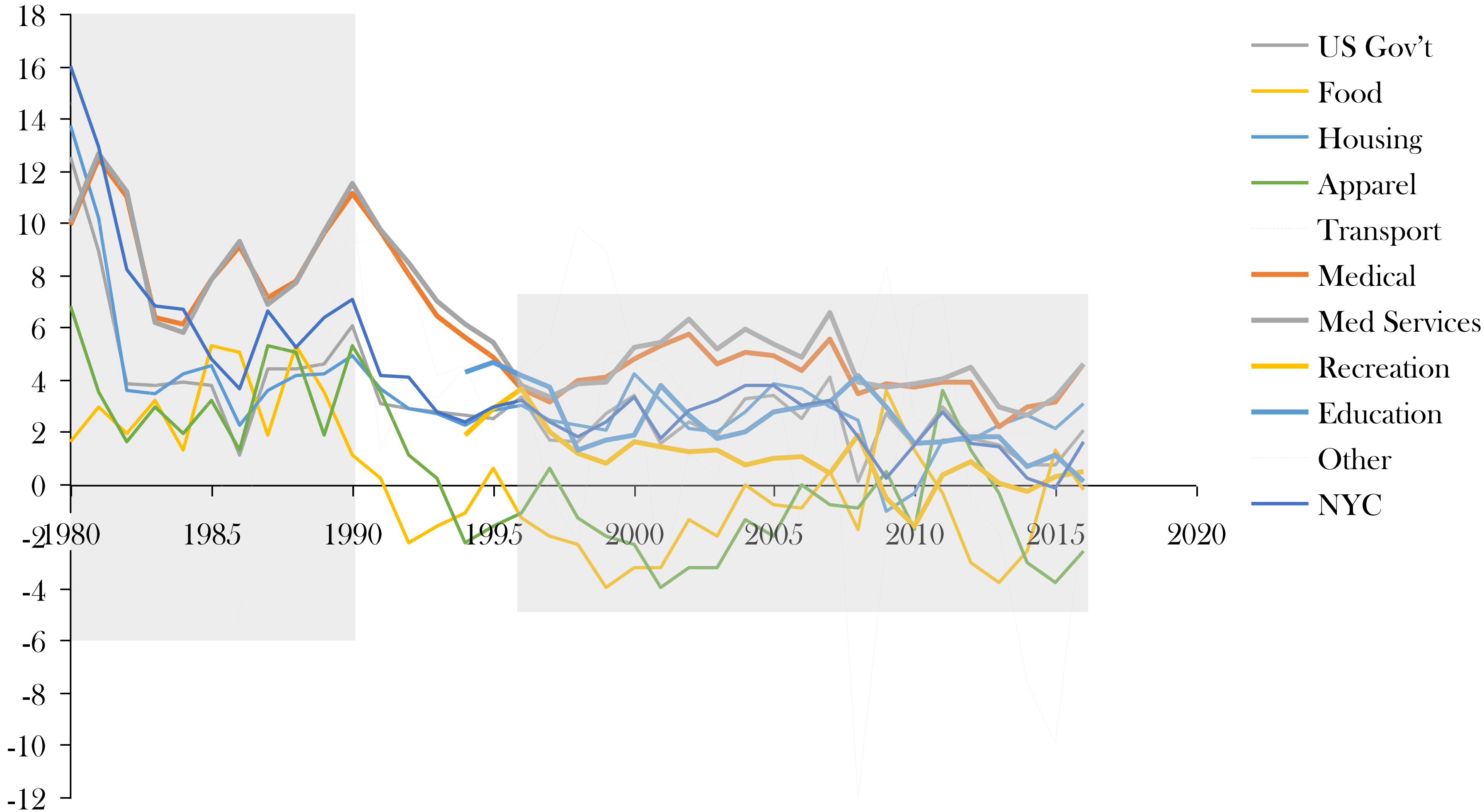
Dr. Boskin said in a telephone interview that about two-thirds of the impact would be on outlays and about one-third on revenue.

Inflation reporting is less a measure of purchasing power (and therefore a financial tool), and increasingly a process of affecting macro-economic policies (and therefore a policy lever)

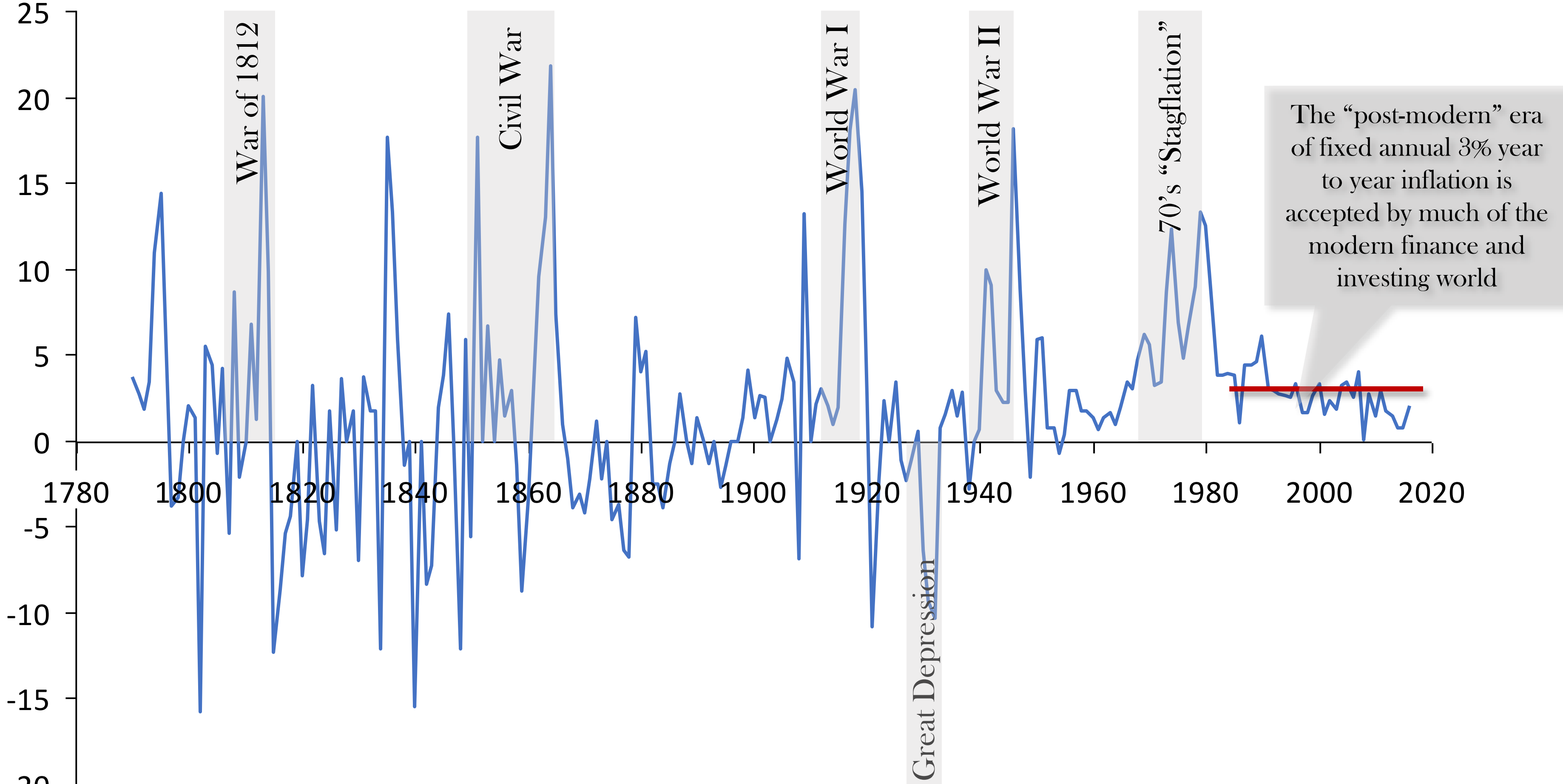
In recent decades, the transportation/energy component had seen wide fluctuations, echoing oil crises, oil subsidy programs



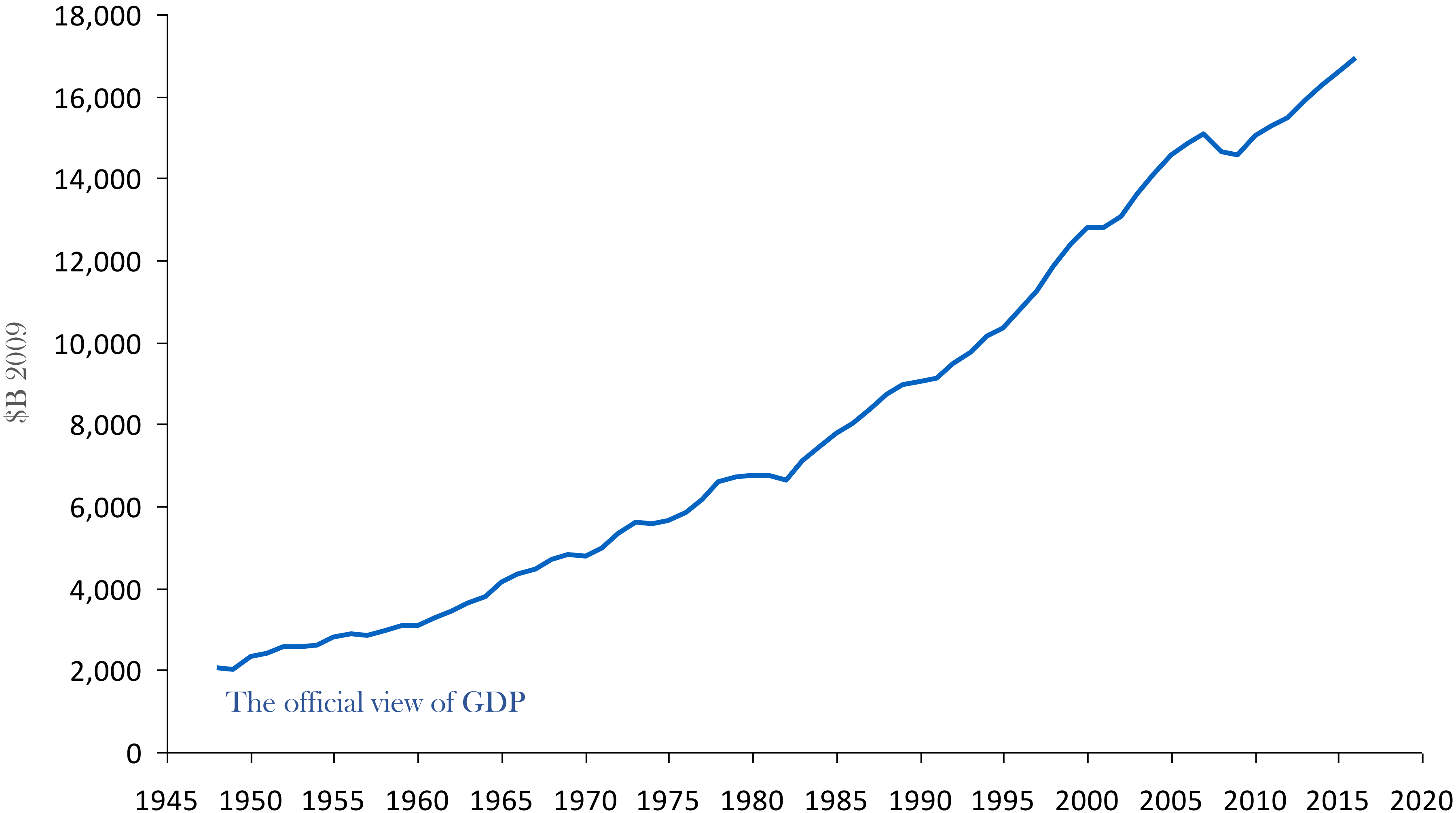
If you treat "transportation" and "other" as exceptional assets, follow only US gov't stats, the modern investment age has the feel of stability



Viewed from a longer perspective, the rate of inflation, once volatile from year to year, "flattened" out to the "accepted" 3% / year…



...and real economic growth, while moderating, has continued its upward trend



Source: Shadowstats real GDP growth data and DRG analysis

The contrarian view

The Contrarian view of CPI returns to fundamentals: what is the Consumer Price Index?

Constant "Standard-of-Living"

- An evolving basket of goods illustrative of an expected average quality of life

+

Measure of "Out-of-Pocket" Expenses

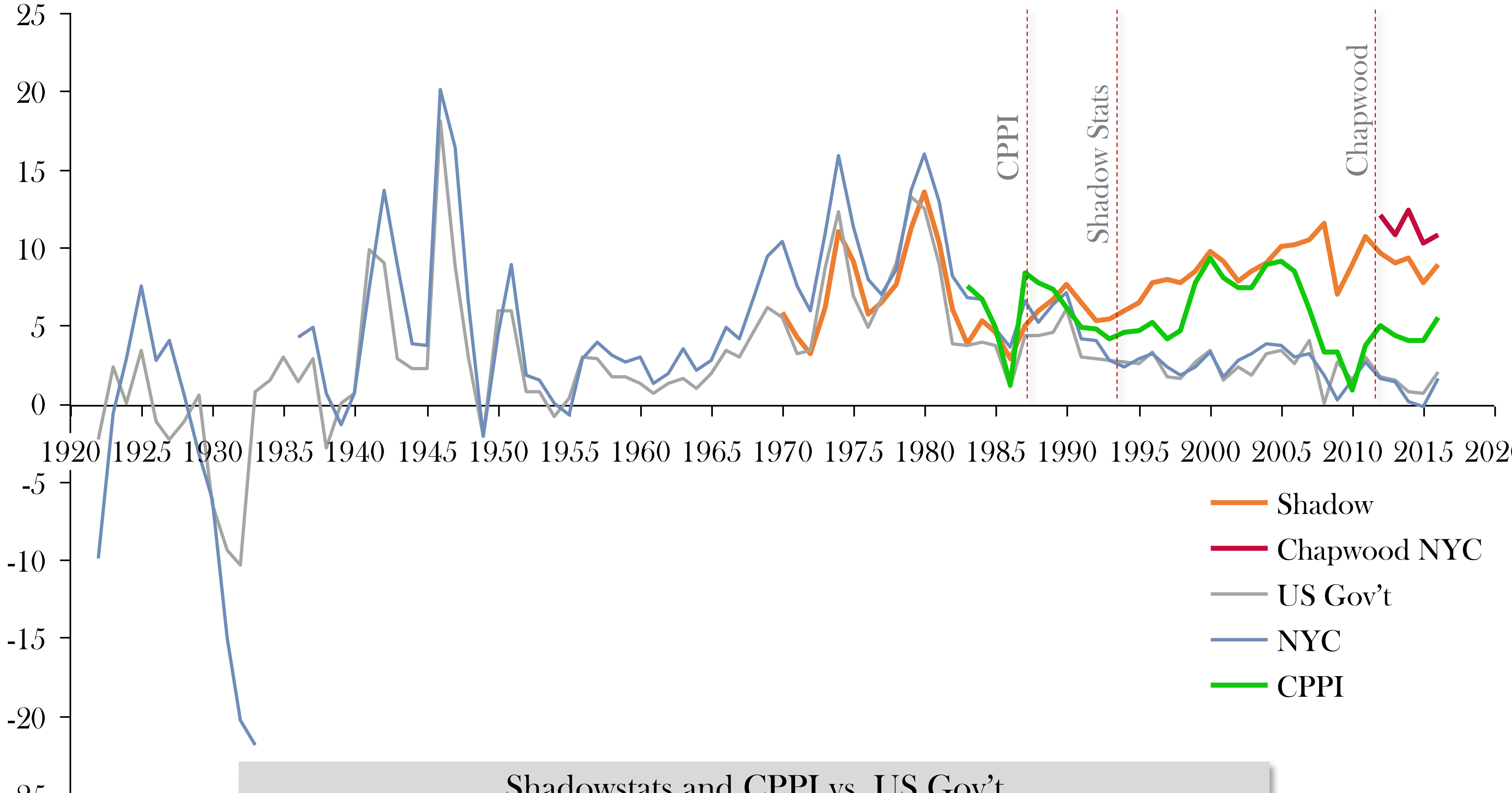
- A reasonable approximation for the expenses incurred by working middle class

=

Basis against which salary increases are benchmarked

- Rational index against which gov't wages are adjusted
- Industrial salaries, minimum, union wages adjusted to reflect this rate increase

When did the "Contrarian Inflationistas" estimates diverge from the mainstream time series from the Bureau of Labor Statistics?



Shadowstats and CPPI vs. US Gov't
Chapwood vs. NYC Urban Bureau of Labor Statistics

The Shadowstats Index: introduced in August 2006

PUBLIC COMMENT ON INFLATION MEASUREMENT

May 15, 2012

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Consumer Price Index Has Been Reconfigured Since Early-1980s So As to Understate Inflation versus Common Experience

CPI no longer measures the cost of maintaining a constant standard of living.

CPI no longer measures full inflation for out-of-pocket expenditure.

With the misused cover of academic theory, politicians forced significant underreporting of official inflation, so as to cut annual cost-of-living adjustments to Social Security, etc.

Use of the CPI to adjust retirement benefits, private income or to set investment goals impairs the ability of retirees, income earners and investors to stay ahead of inflation.

Understated inflation used in estimating inflation-adjusted growth has created the illusion of recovery in reported GDP.

The SGS-Alternate Consumer Inflation Measure adjusts on an additive basis for the cumulative impact on the annual inflation rate of various methodological changes made by the BLS (the series is not recalculated). Over the decades, the BLS has altered the meaning of the CPI from being a measure of the cost of living needed to maintain a constant standard of living, to something that neither reflects the constant-standard-of-living concept nor measures adequately most of what consumers view as out-of-pocket expenditures.

The Chapwood Index: first publication used 2012 price inflation

The Chapwood Index Methodology

Financial experts at Chapwood Investments, LLC have spent the past 4 years engaged in groundbreaking research that uncovers the real cost of living percentage increase for every major metropolitan area in the United States.

Numerous organizations have struggled to reveal inaccuracies in the government Consumer Price Index (CPI) methodology by calculating alternative inflation rates.

No one, until now, has ever attempted to objectively determine the real cost of living percentage increase without the influence of the flawed government model.

Over two years, we collected data from friends and associates across the country on over 4,000 items to see what they spent money on in their daily lives. We then narrowed these items down to the top 500 most frequently used and relevant items. Those items became the basis of the Chapwood Index.

Some items in the Chapwood index include

•Health Insurance	•Verizon FIOS	•Postage	•Life insurance
•Mortgage	•Dish TV	•Envelopes	•Water hose spray
•Rent	•Cell Phone Cover	•Home association dues	•Set of Allen wrenches
•Electricity	•Car Phone Charger	•Water Delivery	•Pay Per View Rental
•Water & Sewer	•iPhone service	•Clocks	•Bed Sheets-Queen
•Gas Bill	•Blackberry service	•Newspaper Delivery	•Space Heater
•Car Loan Payments	•Lawn Service	•Washing Machine	•Pool accessories
•Car Lease Payments	•Pool Service	•Costco membership	•Iron
•Internet	•Bluetooth	•Dish towel	•Ironing board
•AT&T U-verse	•Pest Control	•Plumbing emergency	•Set of glasses

The Now and Futures CPPI: component based reconstruction back dated to 1983

Hedonics, substitution bias, geometric weighting, cost of living

The BLS CPI is not a cost of living index, where a certain standard of living is maintained and measured, but rather measures price changes via a market basket approach. It was originally designed to be much closer to measuring a stable & consistent standard of living, but has drifted towards a market basket based index starting around 1968 with Medicare and continuing with the housing OER adjustments in 1982 and the Boskin Commission recommendations in 1996-1999, etc.

…it no longer measures real inflation via BLS best efforts, but rather measures what people spend as they change their buying habits when they can no longer afford their previous standard of living for whatever reasons. In spite of that, the BLS continues to assert that the CPI measures inflation

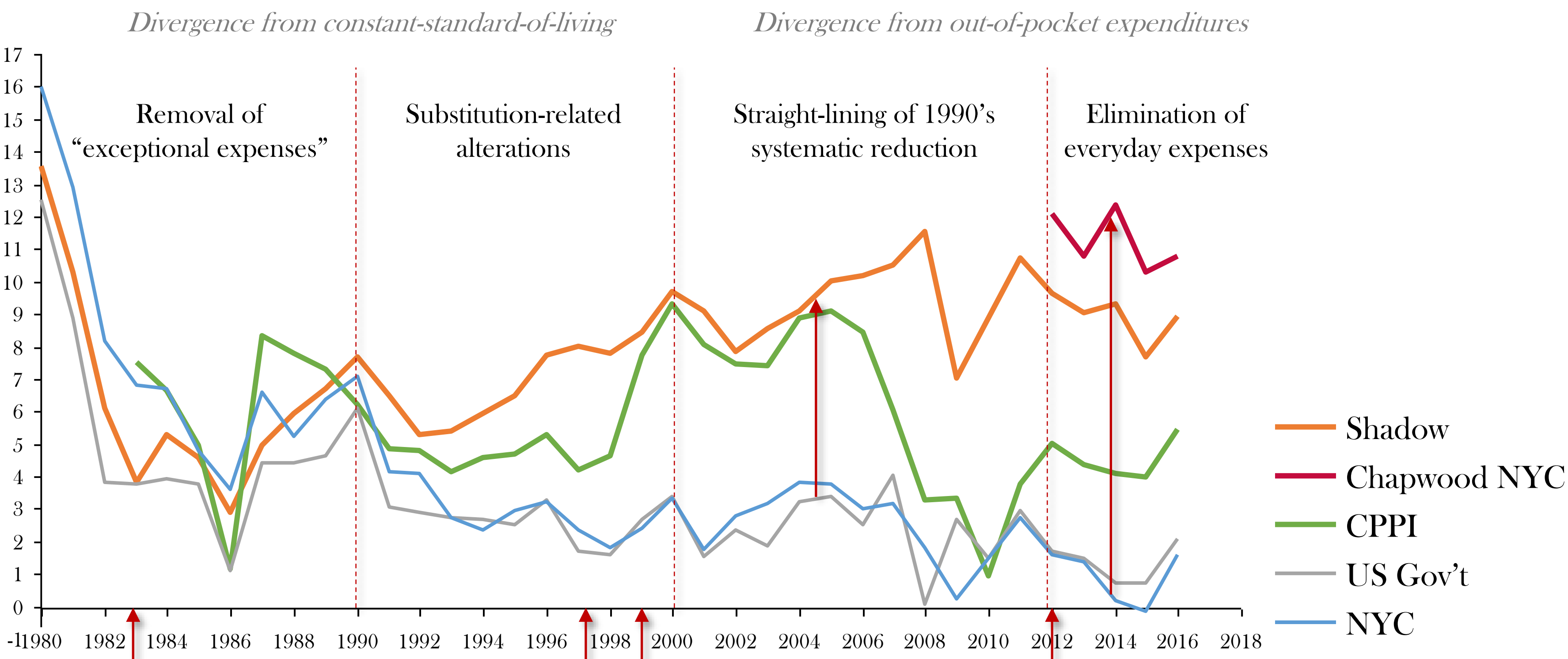
While a case can be made for any of the Boskin adjustments, especially hedonics (including reverse hedonics), substitution and geometric weighting should not apply if one is trying to measure true changes in a stable standard of living or a cost of living index, aka a real and complete measure of inflation.
Also note that the BLS estimates that the CPI is affected by the Boskin related changes by about 1.1% as of 1999. We believe that it is substantially higher now (2012).

"Hidden" inflation is rampant in the calculation of the BLS inflation figures given over-reliance on substitution, and decreased quality

The exclusion of taxes, and absence of reverse hedonics, including quality losses from the age of globalization (plastic used more prevalently where metal and wood were used in consumer products, furniture, etc.)

CPPI is described as a top-down components based derivation of CPI from macro-economic pricing data

Why the emerging disparity? Numerous arguments claim that the CPI has undergone intentional algorithmic, measurement changes



In 1983, the government CPI rose roughly 12% and the government modified the CPI calculation to save money. In order to save money on salary increases and entitlement benefits, which are tied to CPI, the government changed their calculation of the CPI to reflect a much lower number. -Chapwood

The Boskin Commission Report, December 4, 1996

The statistic underwent another reconfiguration in 1995/96 with the Boskin Commission. These changes made the CPI an even worse indication of the real cost of living increase. –Chapwood
In the early-1990s, political Washington moved to change the nature of the CPI. The contention was that the CPI overstated inflation (it did not allow substitution of less-expensive hamburger for more-expensive steak). Both sides of the aisle and the financial media touted the benefits of a "more-accurate" CPI, one that would allow the substitution of goods and services. –Shadow Stats

Economic Report of the President Report

A final reason for the slowing of reported price indexes has been methodological changes to both the CPI and the indexes used in the national income accounts. In general, these changes have reduced the measured rate of inflation. For the CPI, methodological changes made from 1995 through 1998 reduced the rate of inflation by about 0.44 percentage point. Changes to be introduced in 1999 and 2000 will reduce it by an additional 0.24 percentage point.

No one, until now, has ever attempted to objectively determine the real cost of living percentage increase without the influence of the flawed government model.

Over two years, we collected data from friends and associates across the country on over 4,000 items to see what they spent money on in their daily lives. We then narrowed these items down to the top 500 most frequently used and relevant items. Those items became the basis of the Chapwood Index.

The CPI no longer tracks Standard-of-Living, and Out-of-Pocket Expenses, yet is still used to benchmark salary increases

✗ Constant "Standard-of-Living"

\+

✗ Measure of "Out-of-Pocket" Expenses

=

✓ Basis against which salary increases are benchmarked

Boskin
- Claimed back/forward bias
  - "New product bias"
  - "Quality change" bias
  - "Outlet bias" adjustment
  - "Substitution bias"

"Hedonic adjustments"

"Chicken not steak"

Stigler
- Over sample / "flooding"
  - Over-measure 80k SKUs

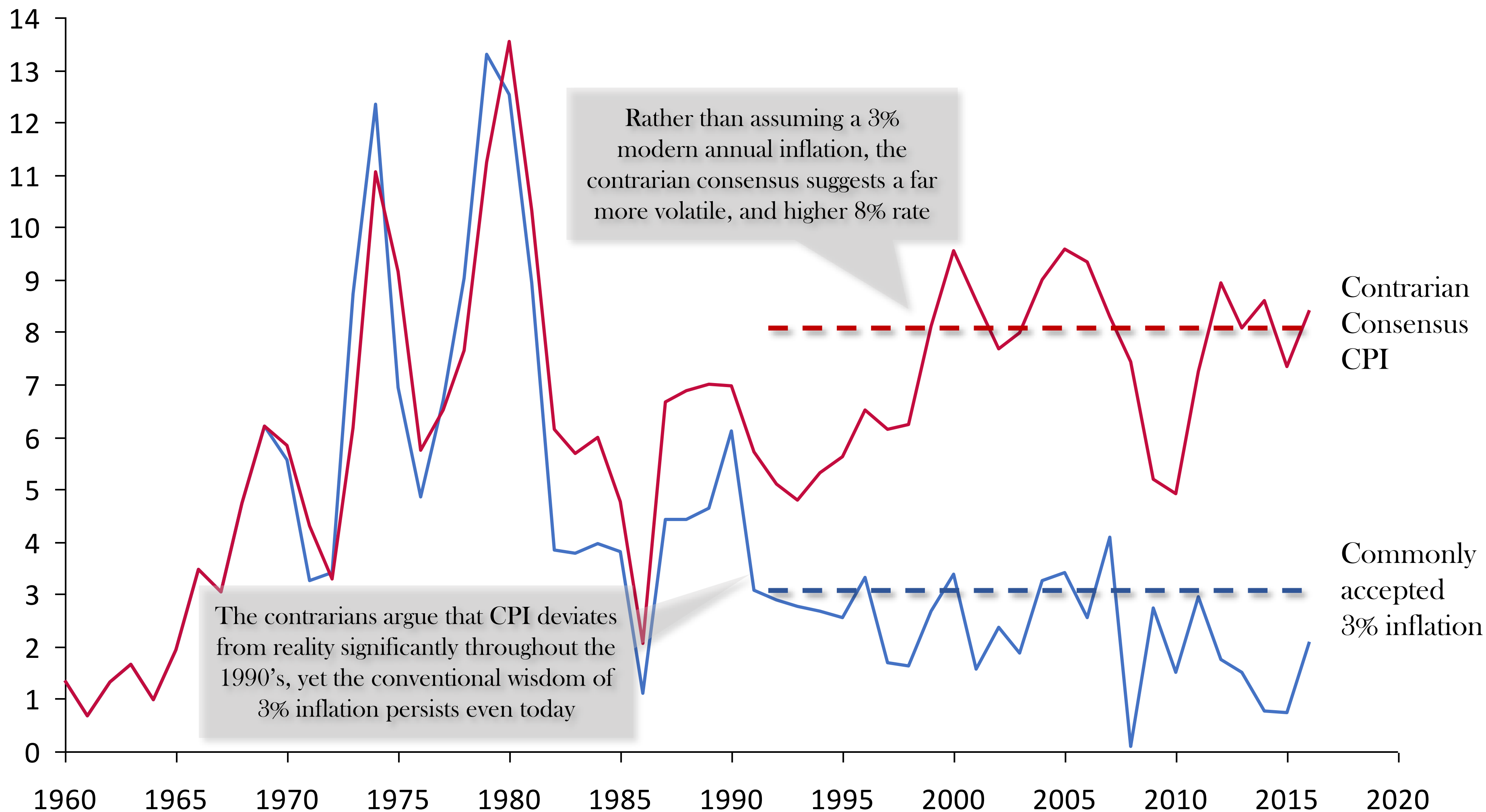
"Lots of bananas"

Post-Stigler
- "Exceptional" adjustments
  - Eliminate taxes
  - Eliminate energy
  - Eliminate food

Greenspan
- One-time adjustments
  - One-time 3 yr 0.44% adj. — *1995-1998*
  - Down-smooth 0.24% — *1999-2000*

Wage to standard-of-living inflation likely dramatically understated, still over-measured, meaning lower purchasing parity, dramatic annual reduction in quality of life

The Consensus of Contrarians places the CPI at closer to 8% annual inflation, not the "post-modern" accepted rate of 3%



Source: US Gov't vs. consensus of CPPI, Shadow Stats, and Chapwood

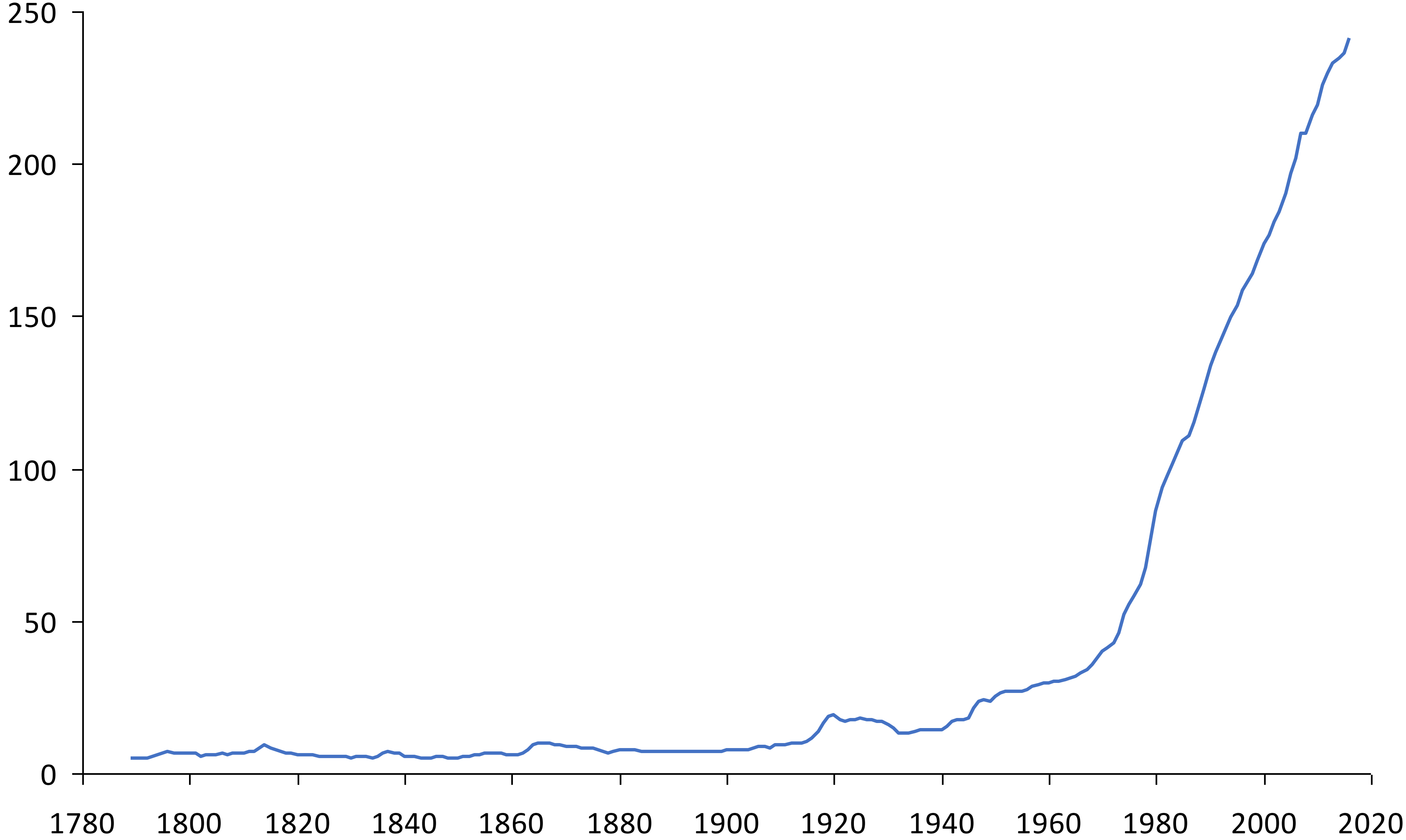
The implications for investors

If you claim a lower CPI than in practice, you don't adjust wages upwards as appropriate, so you save money

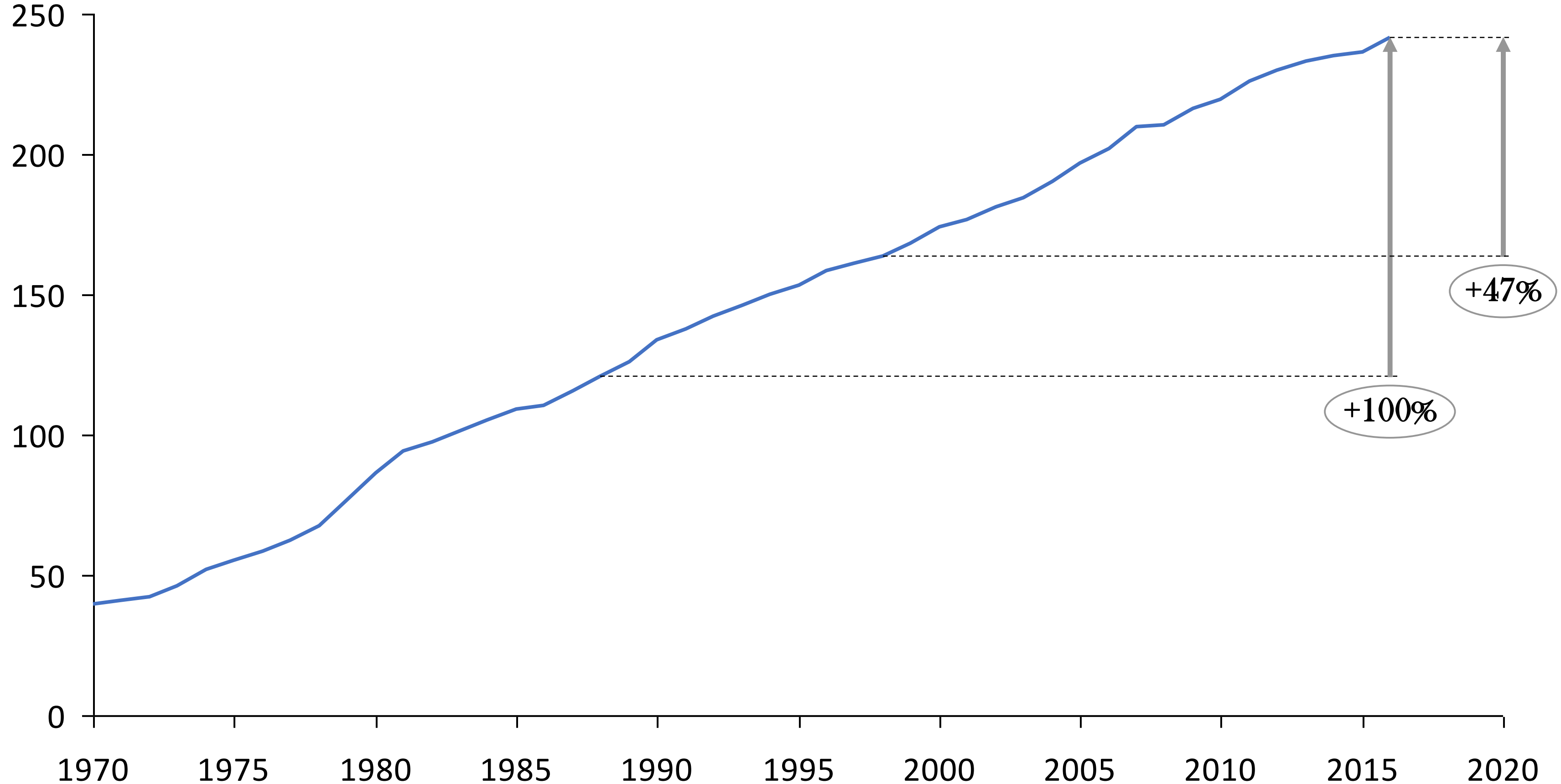
It is estimated that between 1996 and 2006, this reconfiguration of the CPI saved the US government over \$680 billion.

\- Chapwood

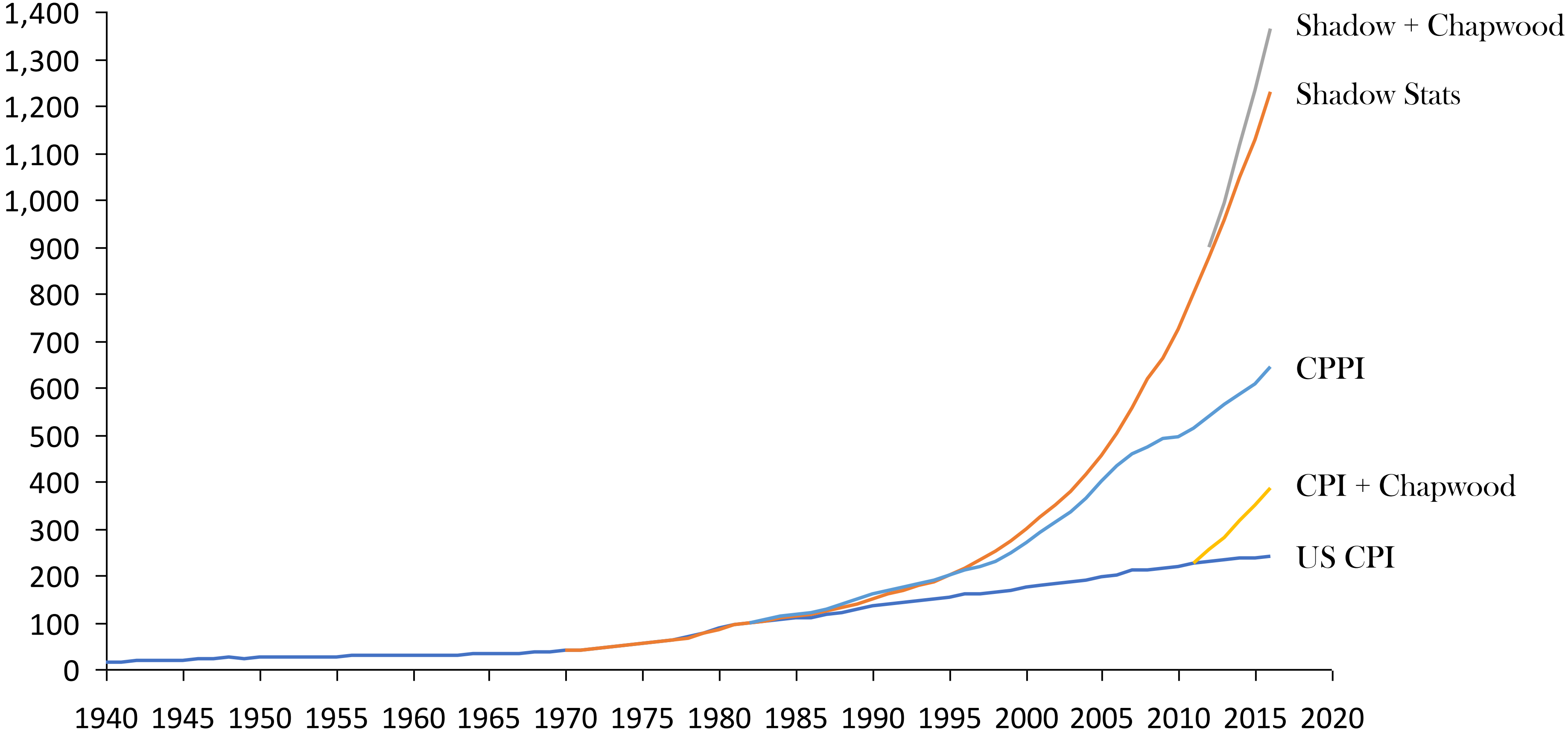
Reminder: total cumulative inflation measuring a "fixed bag" of "standard quality of life" over time – this is the official BLS view



Cumulative inflation since 1970: official view suggests prices have doubled since the late 80's, and +47% since late 90's

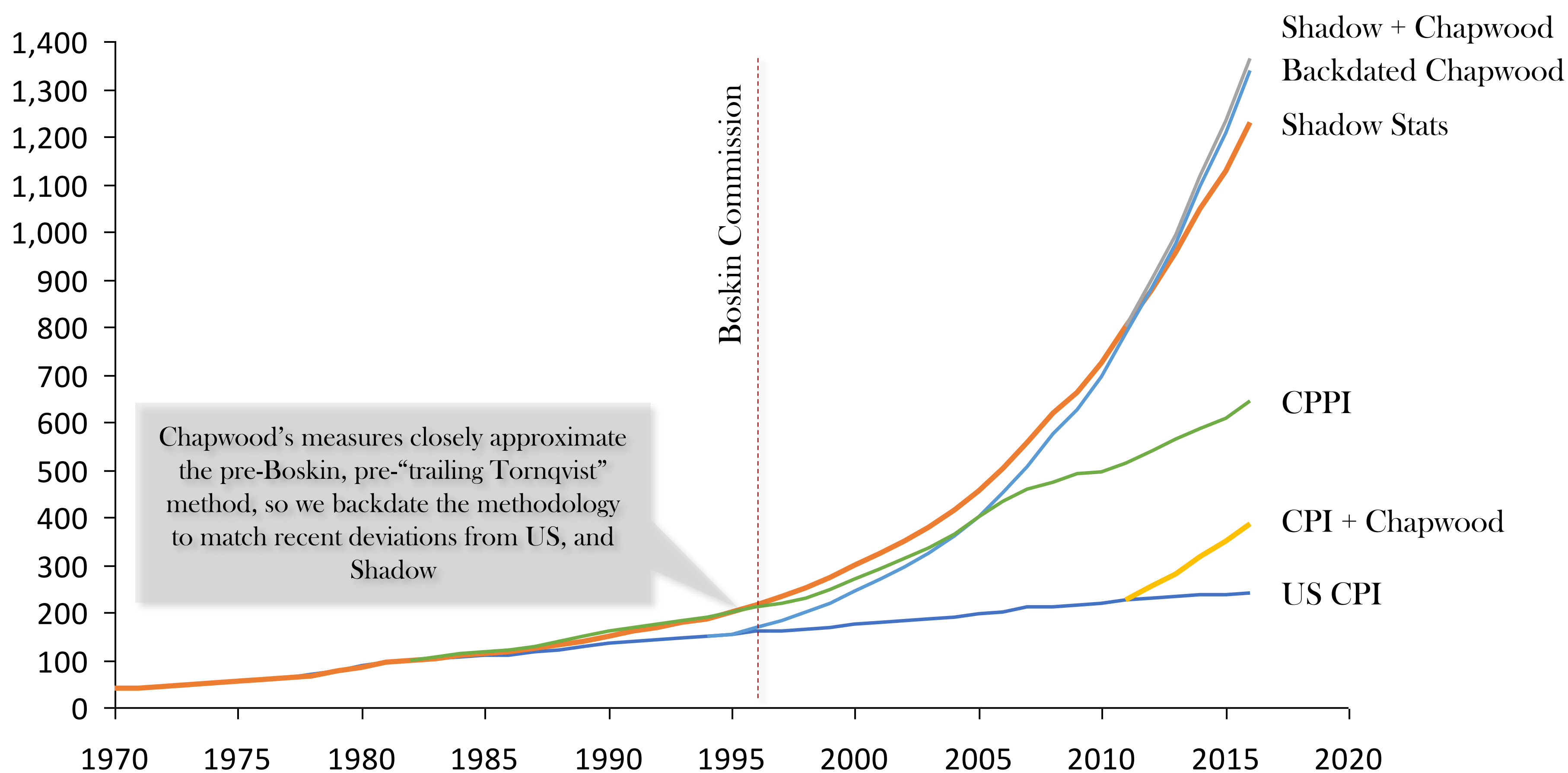


The contrarian views of Shadow Stats, CPPI and Chapwood of total cumulative inflation since 1940 are even more bleak



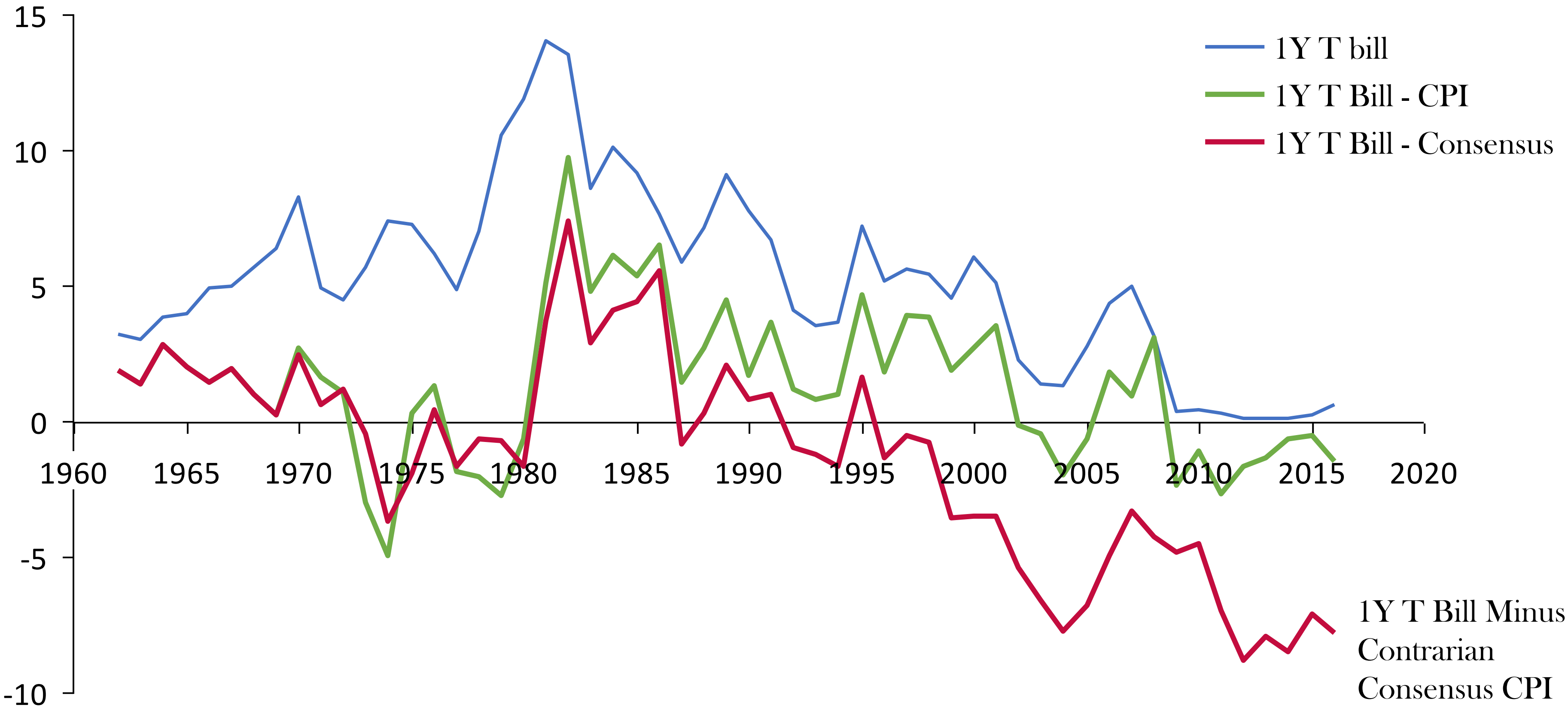
The discrepancy suggests a 4-5x less purchasing power today that the "official" view

The contrarian views of total cumulative inflation suggest 5-20x less purchasing power now than in 1970



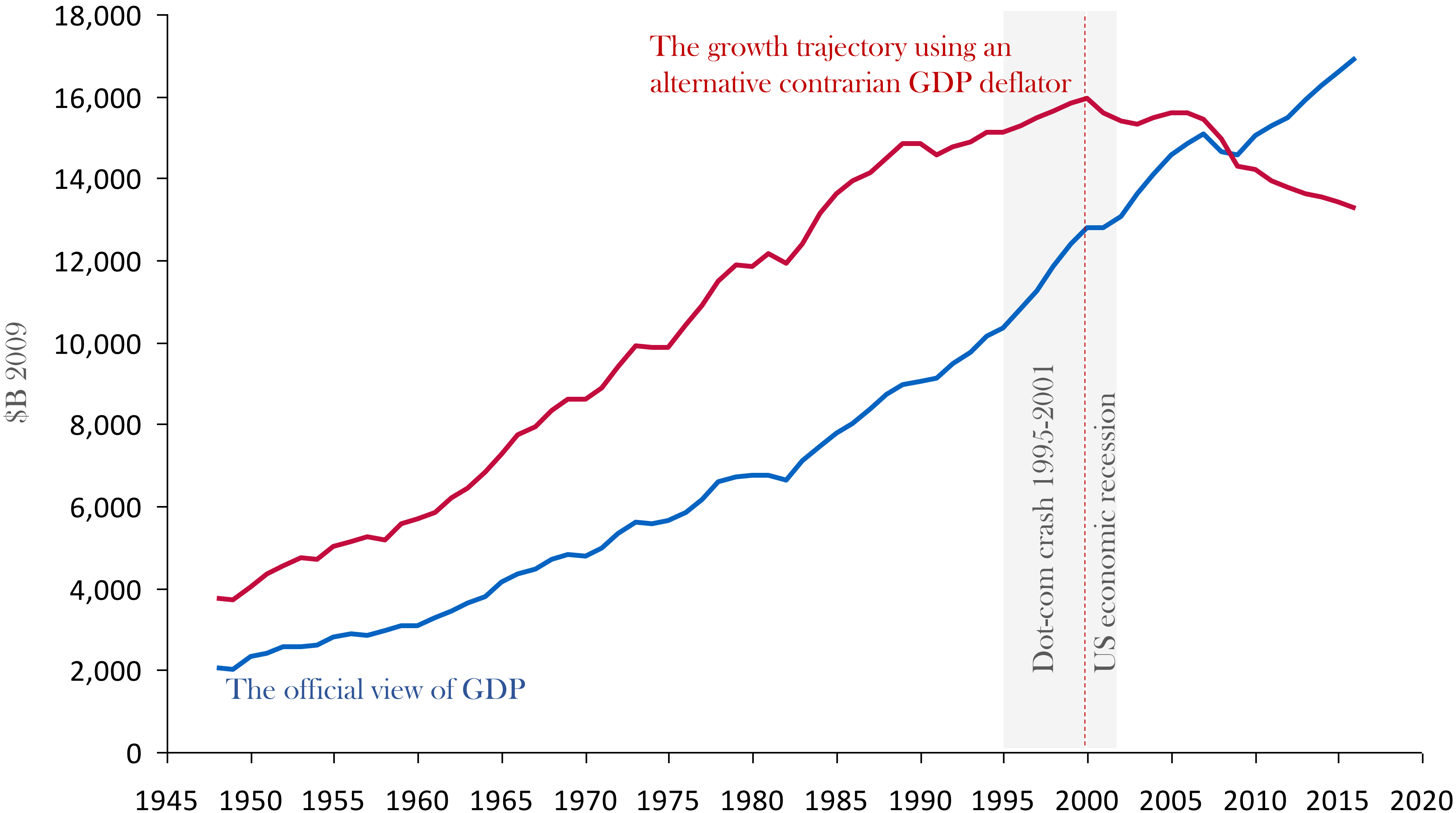
This is a wide discrepancy – but both Chapwood and Shadow's rate of change suggest a higher rate of growth

Implications for investing: what is the true “risk-free” rate of return, if inflation adjusted treasuries lose 7-8% purchasing power annually?



How many billions of retirement, pension, institutional assets are currently managed against the treasury risk-free rate of return, unwittingly losing 7-8% / year in purchasing power?

Implications for real GDP: the contrarians suggests the US economy never recovered fully after the dot-com bubble and ’01 recession



Source: BEA, Shadowstats real GDP growth data and DRG analysis

Implications and conclusions

US official CPI calculation is governed, and possibly distorted, by numerous and complex technical decisions

Inflation reporting is less a measure of purchasing power (and therefore a financial tool), and increasingly a process of affecting macro-economic policies (and therefore a policy lever)

Real gross domestic product (GDP) measures, yield curves, and treasury issued inflation protected securities (e.g. TIPS), government and union / minimum wages all rely on official US inflation indices that are subject to these distortions

Most financial, wealth management models rely on a price stability assumption and default to 3% inflation input – what would happen to these models if the true value was closer to 7-11%?

If we re-compute a purchasing power CPI, de-sensationalize contrarian reporting, and remain disinterested with modern economic policies, we arrive at a 7-9% practical CPI rate over the past decade

This has profound implications on reported vs. actual standard of living, and might explain the rapid appreciation of American consumer debt, potential reduction in perceived vs. reported quality of life, not to mention unexpected political trends

Post-1990 inflation of 7-9%, not 3% would also suggest near "bubble-like" conditions exist across many consumer sectors; the traditional housing / food / transportation / consumer non-durables lifestyle may be growing harder to sustain

Expect low-cost consumer non-durable, consumables, food, housing, clothing, retail to continue to exhibit strong cost pressure and consolidation incentives – or a macro-recession causing a major "inflation adjustment black swan event"

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Thank you

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