Whiskey and Gunpowder
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Critiques of the Federal Inflation Rate

Greg's Note: Fred Sheehan's back to analyze the government's calculation of the Consumer Price Index. Apparently they've invented -- and perfected -- a "New Math." Sounds interesting. Can we believe the CPI numbers the gov't cranks out? Seems like we can't. What are the implications of faulty CPI calculations? Fred goes into more detail below. Please send any responses to your old-mathed editor here: greg@whiskeyandgunpowder.com

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"The Government's New Math: 3.5% - 5.1% = 1935"

Inflation is like the proverbial elephant in the parlor. The idiom gains texture since this elephant is trumpeting and charging with tusks pointed at the butler's abdomen. Other than bad economists who write seductively about substitution and a hundred other gimmicks, does anyone really believe their costs are only going up at 2% annual rate? When Fed board members publicly debate whether the Federal Reserve should target a 1.5% or 2.0% inflation rate, do *they believe* they can dictate such precision? Do they believe the government Consumer Price Inflation numbers? Do they really have any idea of what constitutes inflation?

Skeptics may fall in two broad categories: those who want to know how the CPI calculations distort inflation, and, those who simply know inflation is understated. The latter category is too busy leveraging up and making money, so it neither needs to know nor wants to understand the shenanigans. It plugs in some arbitrary inflation figure of around 10% and gets back to work.

Markets (and most everything else in life) are driven by what is believed to be true, not by what is true. A more realistic calculation of inflation shows this is the sixth consecutive year of contraction. In 2005, house inflation was understated by 2.4% (see below). The Boskin Commission's geometric calculation understated inflation by 2.7% (see below). Adding the tw 2.4% + 2.7% = 5.1%. Real GDP growth in 2005 was 3.5%. Thus, the economy contracted 1.6% in 2005 - *before* considering the quality adjustments for cars, medical care, clothes, computers, television sets, microwave ovens, washing machines, clothes dryers, and on and on it goes until we arrive at - college textbooks. Substituting what is for what *is believed:* how would the Body Politic in the U.S. have acted (borrowed and spent, bought stocks and bonds) if it was understood all along the U.S. never emerged from the 2001 recession?

Recession is defined, by-and-large, as a certain amount of quarters of negative "real" growth (e.g., two consecutive quarters). Real growth is calculated by subtracting the CPI from the "nominal" Gross Domestic Product. "Nominal" is the figure without adjusting for prices. (Assume the entire economy is orange juice. The price of orange juice rises 6% in 2007. There is no change in the amount of orange juice produced or bought. Therefore, the nominal GDP rises from $100 to $106 - 6.0%. The "real" GDP eliminates the 6% inflation; thus, the real GDP in 2007 remains at $100 - a 0% change.) If inflation is higher than the nominal GDP, then "real" GDP is negative and the economy contracted during the period (e.g., the orange-juice market collapsed.)

If it is commonly understood the real GDP has been negative almost every quarter since 2001, then the average, struggling middle-class household would not be so confused by why budgetary serenity seems always beyond its reach.

Assuming that is more than enough information for private-equity investors, we will move on. In fact, LBO financings may incorporate these premises. If they presume inflation is double the 5% borrowing rate, the excessive leveraging looks reasonable. For instance, debt payments exceed the rental income on the purchase of Sam Zell's Equity Properties. This looks like lunacy, but may appear a foresighted speculation if rents rise 10% to 15% a year with 5% fixed debt payments.

Most everyone would at least acknowledge the government cannot measure inflation. Even the definitive Boskin Report says s "[T]he problem [with] focusing on the "average" or "representative" consumer [is that] different consumers have tastes and time costs.") Faced with such a problem the Commission then ignored the enigma and never mentioned it again. Obviously, we all buy different things and pay for different services. Not so obviously, the CPI calculation does not compare the changes in prices from one period to the next; it regularly strips out items whose prices are rising (in March, milk and cheese were AWOL); it reduces the proportion allotted to more expensive items (steak) and raises the weight of less expensive substitutes (chicken) and - the CPI is not meant to measure the change of prices.

This is the most important grievance with the Bureau of Labor Statistics (BLS), which makes the calculations. The CPI does not measure what anything actually costs us; it does not measure how many dollars we must hand to the gas attendant at the filling station. By not doing so, it fails to acknowledge that a dollar spent is a dollar that cannot be saved, invested or spent on something else. By claiming that quality adjustments translates a shirt that cost $60 at the cash register into the "$50" typed into the CPI model, it misses the point that the consumer either could not afford to buy the shirt or, did so, but fell deeper into credit-card debt. The Consumer Price Index is a fantasy that blends with minds hooked on video games, iPods, reality TV and the unreality of Donald Trump wrestling in Las Vegas along with midgets and drooling devils. Or, maybe that was reality. The very existence of Donald Trump may be the definitive example of both inflation and miscalculation.

These modifications of price measurements are there for anyone to read in Bureau of Labor Statistics papers. The BLS website is superficially a treasure trove of data, but stamina and stubbornness are required to make head, if not tail, of calculations. The intention here is to demonstrate the CPI number vastly understates price inflation. This does not require an across-the-board analysis, which is the patriotic duty of some trained statistician to produce. Instead, we will concentrate on two calculations: houses and substitution bias.

Funny games with the inflation figures have a long history. Stephen Roach reviewed his participation in a Morgan Stanley *Global: Daily Economic Commentary:* "After the quadrupling of oil prices in 1973, the redoubtable Arthur Burns, Fed chairman and renowned business-cycle scholar, called his staff together and demanded they present him with a CPI stripped of energy costs [Burns' rationale was the blazing Yom Kipper War, over which the Fed had no control.] Statistics had triumphed again. We had surgically removed the diseased side of the CPI, enabling the Fed to focus on that portion of inflation that it could - and should - control. Alas, it didn't turn out to be quite that simple. A few months later, Burns called us back again and noted an alarming pick-up in the rate of food inflation. Weather conditions had turned severe and the Fed chairman was particularly distraught over the disappearance of the anchovies off the coast of Peru - a development that he felt long held the key to agricultural price cycles.

But the Fed can't react to weather Burns argued. So he instructed us to take food out of the CPI, as well. And, of course, we did."

One of Burns's major works was "Prosperity without Inflation," published in 1957. Unable to accomplish that feat as Fed chairman, he went on to produce inflation without prosperity. Burns reputation suffers for his political motivations but his qualifications as an economist are not in question. This is to our misfortune. The August 27, 1973 edition of *Time* magazine quoted a far more able economist: "Chicago housewife Jean Salmon" told *Time,* "I don't understand what's happening. It seems to me that when one raises his prices, the other raises his in turn. It's a vicious cycle."

This was not the first time the Consumer Price Index was mangled in the interests of national unity. During World War II, the CPI managed to look benign. Given that wage-and-price controls inhibited markups, this was as it should be. Given that black-market transactions were common, prices were rising much faster than disclosed. This put the government in a fix - to record real price changes, it would then acknowledge a good portion of Americans were breaking the law. So, the statisticians performed their bureaucratic duty by recording the legal ceiling of prices. They published a CPI figure that was probably in keeping with the statistical practices of America's wartime ally, Uncle Joe Stalin.

In Burns's defense, he reported two figures: the traditional figure and a second that exempts food and energy - which are still recited each month today. The Bureau of Labor Statistics' current operations are more covert. It makes "adjustments" that have gone on for so long, are so removed from actual prices, are so immersed in theoretical studies pig-piling for status at government seminars, and are so encumbered by political motivations, that their relation to reality is accidental.

Since the CPI does not intend to measure the change of the price of goods and services, we should blame ourselves for pretending it does so. However, the government makes no effort to remind the taxpayers its measurement is theoretical. All of the reinterpreted prices are in the government's favor: that is, they understate inflation. These civil servants (who, it is often forgotten, work for and are paid by the People) might miscalculate now and then. That is the human condition, and errors in calculations should be expected. But when all the calculations work towards the understatement of inflation, the burden of innocence falls on the BLS.

A reinterpretation already mentioned: In 2005, the change in the cost of purchasing a house rose 3.1% - according to the BLS. According to OFHEO, another government agency, house prices rose by 13.3% in 2005. (According to the National Association of Realtors, a non-government source, but also not a disinterested party, prices rose 12.9%. Choose your poison.) Houses accounted for 23% of the CPI. Substituting the OFHEO price change, the CPI was understated by 2.4%. This is just houses.

CPI as a cost-of-living measurement is meaningless to both LBO funds and housewife Jean Salmon. (One might wonder how this decision was made. That is beyond the purpose here. For those interested, Messrs. Johnson, Reed and Stewart, employees at the BLS, presented a paper in June 2005, "What Has Happened To Price Measurement Since the Boskin Report?" which might be read in conjunction with the Boskin Report. This probably will not enlighten the reader since a vacuous circularity develops in which the *BLS Handbook of Methods* is trumpeted as the authority and this requires no explanation.)

It is clear, whether a handbook existed in 1973 or not, that Arthur Burns was not interested in a cost-of-*goods* index: why in the world did it matter to Jean Salmon whether the Fed controlled the anchovies that supposedly caused the rise of grocery prices?

An additional complication, or rather, a first complication, was the BLS' decision to stop looking over Jean Salmon's shoulder in 1978. Before this date, "the basic component index for, say, refrigerators in the San Francisco area was the change in the average price of a matched sample of refrigerators in this city in the two months." (Triplett) Afterwards, the BLS started using probability methods to perform "random samplings of varieties and quality levels [which] precluded continued average use of averages of prices." (Triplett reports very few countries outside the U.S. use such sampling - compare cross-border inflation rates at your peril.)

Even at this early juncture of abstraction, the index had strayed from the prices themselves. They were derived from models constructed by math whizzes at the BLS. In the real world, we can see the consequences of faulty derivative modeling such as portfolio insurance performance in the 1987, stock-market crash. Since there is no market-clearing mechanism for the CPI, the compounding of errors magnifies the distortions. In the words of a man who faced market-clearing mechanisms every day, Edward C. Johnson II, father of the current chairman of Fidelity Investments, "[Y]ou can't get complicated anywhere in this business without getting lost; each complication begets ten others and so on." So true. The exploration that led to geometric averaging was caused by the 1979 sampling methods. These caused "formula bias." Once hatched, the sampling has created a Frankenstein's monster.

The Boskin Report is as good a place as any to introduce recent legerdemain since it definitively answers questions of motivation. The Consumer Price Index is of great interest to the government. It is a cornerstone to central planning. Its greatest import is probably adjustments to Social Security checks each year. The payments are increased annually at the rate of inflation, that is - the government's CPI calculation. In 1983, Alan Greenspan headed a commission that purportedly "solved" the impending social security crisis. The commission's recommendations delayed insolvency for a few years, but Social Security was again in crisis by the early 1900s.

Senator Moynihan ranted about social security causing deficits "as far as the eye could see." Then the worm crawled out of his hole, so to speak. Federal Reserve Chairman Alan Greenspan testified before the Senate and House Budget Committee on January 10, 1995. He told the Committee the inflation rate was probably overestimated by 0.5% to 1.5%.

This was a godsend. Imagine being able to cut benefits when the Congressional constituencies would never know it happened! The Boskin Commission was duly formed. Michael Boskin was the right man for the job. He had served as chairman of the President's Council of Economic Advisers (CEA) from 1989 to 1993, a post formerly held by such government functionaries as Arthur Burns and Alan Greenspan. The Boskin Commission found that inflation was overstated by 1.1%. Several recommendations were made by the Commission to the Budget Committee. These were instituted with great efficiency by the Bureau of Labor Statistics. Too much efficiency.

There was no pretense on the Boskin Commission's part that its mandate was other than to reduce the CPI rate. The "Boskin Commission Report" is on the Social Security website (www.socialsecurity.gov) under "Reports and Studies." A synopsis of the Commission's mandate precedes the Report: "The Advisory Commission To Study The Consumer Price Index" (aka The Boskin Commission) was appointed by the Senate Finance Committee to study the role of the CPI in government benefit programs and to make recommendations for any needed changes in the CPI." The report is then sub-titled: "Toward A More Accurate Measure Of The Cost Of Living"

Note the objective was not to improve - or even address - the accuracy of the change in prices. The only purpose was to measure the influence of the CPI on the cost of government programs.

Witnesses to the charade agree that the mandate went further - it was not an objective study of how government price calculations affected programs, but intended to reduce government costs. Greg Mankiw, Chairman of George Bush's Council of Economic Advisers from 2001-2003 said at the time "the debate about the CPI was really a political debate about how, and by how much, to cut real entitlements." Barry Bosworth of the Brookings Institute called the revised CPI an " 'immaculate conception' version of deficit reduction in which spending is cut without Congress taking the blame." ("The Politics of Immaculate Conception," *The Brookings Review,* Spring 1997, pages 43-44)

Jack Triplett of the Brookings Institute extended the argument: "...What I liked least about the Commission Report was exactly what made it so influential - its guesstimate of 1.1 percentage points of bias....The Commission (and others that have followed) used ad hoc reasoning to come up with a number.... But this seemingly so precise 1.1 percent number caught the eyes not only of the press and the politicians, but also of economists in the U.S. and in other countries. Jacob Ryten wrote right after the report: '...for the first time ever, a blue ribbon commission dared give a number for the estimate of total bias and detailed each of the contributing factors.' Without the guesstimates, the Commission Report was just another dry, academic study to be perused by professionals....Without the guesstimates, the report would likely have had little impact. Conversations with Committee members suggest that some, at least, were ill at ease themselves with guesstimates, but I take it they felt in their mandate from the Senate Finance Committee compelled them to brew one....My personal preference is to resist the seductive blandishments of politics and politicians..."

Triplett went on to chide the Report as succumbing "to the lure of political statements in its choice of language to describe the effect of CPI measurement errors on Social Security expenditures....Professionals at any rate, should understand that improving the accuracy of the CPI is not the same thing as improving the basis for allocation to the dependent population...." And what have the spineless wonders wrought? Richard Karn, author of *Emerging Trends Report,* calculates Social Security checks would have been 43% higher in 2006 without the change to geometric averaging.

The findings of the Boskin Commission have done much more than decrease annual government-reported consumer price inflation by 1.0%. One simple change reduces the Consumer Price Index by around 50%. (The CPI is measured quarterly. The effect varies, according to the base rate. The numbers used here are annualized percentages that are extrapolated from the quarterly figures.). If this arbitrary change had not been made, today's bond yields would be lower than government-reported, consumer-price inflation. We might then infer that today's bond yields would be quite a bit higher without government adjustments.

Before the Boskin Commission, period-to-period CPI changes were calculated arithmetically. The Boskin Commission recommended they be calculated geometrically. The change was made to account for "substitution effects". (An example of how these differ: The price of a hog rises from $100 to $161 over five years. The "annualized" rise - this is the geometric calculation - is 10% a year. The change each year - the arithmetic calculation - is a little over 12% each year: 61 divided by 5.) John Williams, who has reconstructed and made the comparison, calculates the geometric figure reduces the CPI by about 2.7% annually. (He is author of the monthly publication *Shadow Government Statistics: Analysis Behind and Beyond Government Economic Reporting,* which accomplishes what its title suggests.) Other papers roaming around the Internet estimate the geometric reduction at between 2.5% to 3.0%.

To review: adding Williams' 2.7% New Math calculation to the 2.4% understatement for house prices, the CPI in 2005 was understated by 5.1%. The Bureau of Economic Analysis claims real GDP was 3.5%. If the 5.1% had been subtracted in 2005, the economy would have officially contracted by 1.7%. The stock market might be at a quite different level just now. By historical analogy, the sixth year of the Depression was the third year of the New Deal - 1935. Retirees living on Social security checks today may just think it is 1935.

It is worth recalling that the economy functions exactly the same whether the BLS had used the arithmetic or geometric methodology. (That is, leaving aside how a higher reported inflation rate changes consumption and market behavior, as well as the wardrobe of retirees.) This and other changes are not of the real world, but exist in an abstract, mathematician's universe.

Triplett writes: "It is merely a mechanical fact that an unweighted arithmetic mean of positive quantities will be greater than an unweighted geometric mean. The difference between the two is not evidence of substitution bias. No inference... can be drawn from the fact that the geometric mean basic component gives a lower estimate of price change than the arithmetic mean, since this will always be the case..."

Triplett goes on to explain the mathematical leaps of faith in employing the geometric averaging. This involves an understanding of an "index for average prices" (RAP), an "average price ratio" (APR) the "Laspreyres price index", "the Cobb-Douglas behavior", "the well-known Konus substitution," "the famous Stigler Committee on price indexes in 1961" and, of course, the even more famous Reinsdorf paper of 1993 that nearly overshadowed the O.J. trial. This author, being less equipped than many readers to enter the dialogue, will push on to alternative explanations. But first, note how divorced from comprehension are the arguments about proper index measurements. Without the specialized knowledge, even the best equipped are intimidated from getting into such a debate over government calculations of any stripe - GDP, National Income and Product Accounts and productivity calculations are incomprehensible. Thus, they become impossible to refute, since no one other than a specialist would understand the debate. One must rely on common sense.

According to Triplett: the BLS "produced some long and complicated analyses" of which "some economists seized on... apparent parallel[s]" to adopt the geometric. Triplett does not say so, but it is not difficult to infer that said economists stayed up past their bedtime. They probably thought Laspreyes and Konus played goalie for the New York Rangers before the love-in commenced.

The substitution effect itself is, you may have guessed, complicated. There are three levels, of which we will only discuss the first: upper level substitution bias. This is the only one of the three incorporated into current CPI calculations. However - there is a problem. Triplett writes the BLS did not understand the application of the formula, their grasp of first vs. second level is fuzzy, but we will go no further than Triplett's comment: "Classifications are kernels of economic statistics, [they] are vital to economic analysis because the way the data are grouped limits the analysis that can be done with them. It is accordingly surprising how little attention economists pay to their classifications - unlike biologists, who understand that the classifications need to be done according to theory."

The economists (at least, that's what Triplett calls them) also seem a most incurious lot. "Upper level substitution" is the type of substitution in response to the relative change among the *components* of the CPI. Now, what component has changed the most in price over the past few years? Energy receives the vote here.

The Energy Information Agency website shows that from March 1999 to March 2005 the price of gasoline at the gas pump doubled, from $1.01 to $2.04. The amount of gasoline delivered to gas stations rose from 8.4 to 9.0 million barrels a week. From March 2005 to August 2006, the price of gasoline rose by 50% - from $2.04 to $3.08. Consumers, whose real decisions obviously are not considered in the matter of "substitution bias," increased their consumption - gasoline deliveries rose from 9.0 to 9.7 million barrels a week.

The Boskin Commission provided a similar example of substitution: "For example, if a ten percent increase in the price of granny smith apples were associated with a ten percent reduction in the quantity purchased, geometric means would be the appropriate way to capture the market response. If there were no quantity change associated with the price increase then arithmetic means would be appropriate."

Purists will note the Boskin example is of a lower-level substitution, but the example is of how a consumer supposedly substitutes when prices rise. The Boskin Commission and Bureau of Labor Statistics were not interested in real price changes outside the BLS cafeteria. Stooped, elderly ladies substitute cat food for chicken. To compensate for their impoverishment, another substitution is proposed: all federal-government mathematicians, statisticians, crank theorists and economists were short-changed a tour in basic training. To remedy this deficiency - off to Baghdad they go, attired with rifles and helmets. The return flight reserved for the overtaxed National Guard.

Regards,
Fred Sheehan