Mitchell's Musings 8-10-15: What Can We Reasonably Ask?

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Robert Lawrence of the Peterson Institute posted a video which purports to resolve the issue of why real wages have lagged productivity since the 1970s.[1] He starts with a chart showing a gap opening up between average hourly wages of production and nonsupervisory workers deflated by the Consumer Price Index (CPI) and output per hour (productivity) as measured by the U.S. Bureau of Labor Statistics (BLS). In steps he adjusts the real wage series by adding in employees other than nonsupervisory workers, taking account of benefits received by workers (which are not included in the average hourly earnings series) and noting that the price index used to deflate the output numerator in "output per hour" differs from the CPI and that the former rises slower than the latter starting in the 1970s. So if you use wages and benefits for all workers and if you deflate those wages by the deflator for output rather than by the CPI, the puzzle disappears except for the period after the Great Recession.

It's worth noting that there is no law of the universe that says that real wages (however measured) must rise with productivity (however measured). The idea that the two series should be linked derives from the observation that they appeared to be moving together after World War II as an empirical matter. Furthermore, there seemed to be two notions that there should be a linkage beyond the mere empirical observation. To explore the proposition, let's represent the idea in the abstract:

Let W = a measure of nominal wages, P = a general price index, Y = a broad measure of national output in nominal terms, and L = labor hours. Saying real wages rise with productivity is equivalent to saying:

$W/P = s(Y/P)/L$, i.e., the real (deflated) wage (W/P) is proportionate to real (deflated) output (Y/P) divided by labor hours input L and where s is a coefficient of proportionality.

Note that you can rearrange these terms to become $s = WL/Y$, i.e., s turns out to be labor's relative share of national output. So the assumption that real wages rise with productivity is another way of saying that labor's relative share of national output is constant. Note, for later reference, that this rearrangement is entirely in nominal dollar terms; there is no price index involved.

Some observers see (or saw) a moral element in having real wages rise with productivity; some see (or saw) a moral element in labor's relative share being a constant. In the former case, there seems to a Puritan Ethic-type morality behind the idea that the way workers get ahead is through producing more. Work harder and you will advance! In the latter case, perhaps it is just seen as fair that labor and capital each share proportionally as the economy grows. I am not saying that these are good ways to look at the relationship; only that there is a certain appeal to the concept from various moral angles.

There is also an historic link to the history of wage-price controls and guidelines and the real wage-productivity relationship. We can also rearrange our starting equation as:

$P = (1/s)[WL/(Y/P)]$, where the term in brackets [ ] is the average wage cost of a unit of real output or what is called "unit labor costs." If s is a constant, so is 1/s, and the revised equation says that prices are proportionate to unit labor costs. An interpretation is that firms use some kind of markup pricing when aggregated so that if you can set (or limit) the rise of unit labor costs, you can set (or limit) the rate of

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[1]http://blogs.piie.com/realtime/?p=5132. Joshua W. Mitchell alerted me to this source.

inflation. Control wages, the nominal element in unit labor costs, and you can control prices. Crudely, your guideline for nominal wage increases should be your target rate of inflation plus the expected long-term rise in productivity. Such rules were used in the Kennedy-Johnson wage-price guideposts program and the Nixon-era wage-price controls.

Note that there is nothing about wage equality or inequality involved in these notions. And it is more or less assumed that W is an aggregate measure (an average wage of everyone) and that if some element of pay comes in the form of benefits, it is included in W. Similarly, it is more or less assumed that P is a general measure of prices and that it is used both to deflate output and to deflate wages. Since P is an average, nothing precludes some prices from rising faster than others. Since W is an average, nothing precludes particular wages, say for certain occupations or groups, from rising faster than others.

The idea that real wages either should, or do, rise with productivity in the abstract doesn't deal with inequality of wage growth *within* the workforce and certainly includes payment for labor in the form of benefits. So let's take a look in the chart below at the BLS data set that most closely adheres to the broad concept. Such a data set can be found in the various series connected to output-per-hour (productivity). The price index used to deflate wages (which include benefits and pay for all workers) is the Consumer Price Index. The broadest sector available is the "business" sector which is essentially all private business plus government enterprises that are quasi-commercial such as the Postal Service, transit operators, etc.
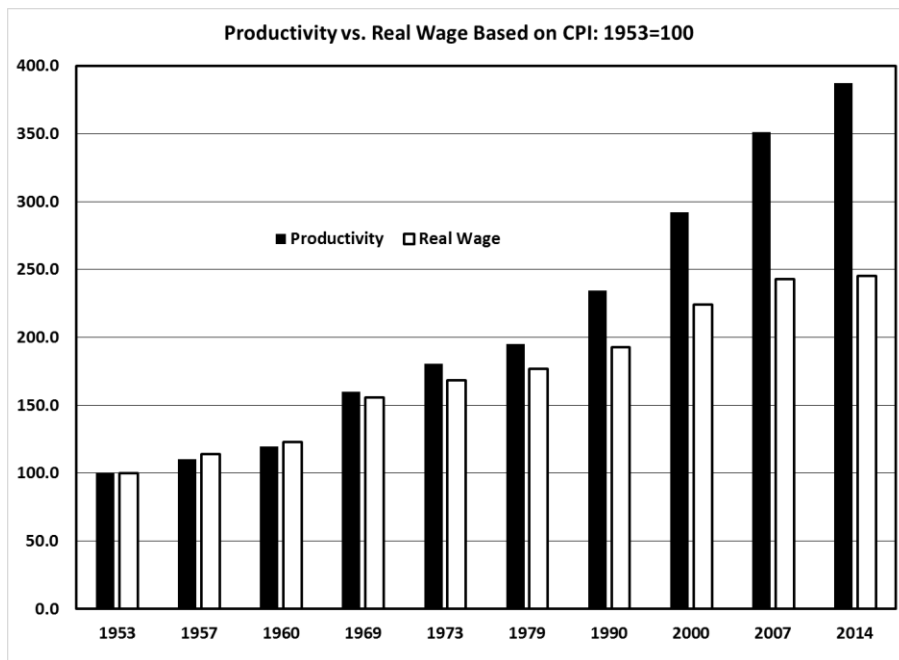

It is well known that productivity, as measured by BLS, has a cyclical component so the chart above uses business cycle peaks (except for the latest available year, 2014) to adjust for such effects.[2] The real wage and the productivity measures do seems to diverge starting in the 1970s, although pinning down the

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[2]We start the chart in 1953 to avoid effects of World War II wage-price controls and Korean War controls. There was a double-dip recession after 1979 so we skip the middle "peak" of that episode on the chart. Otherwise, peaks are based on NBER business-cycle dating.

precise year in which the divergence occurred would be difficult since the two data series never moved precisely in lock step.
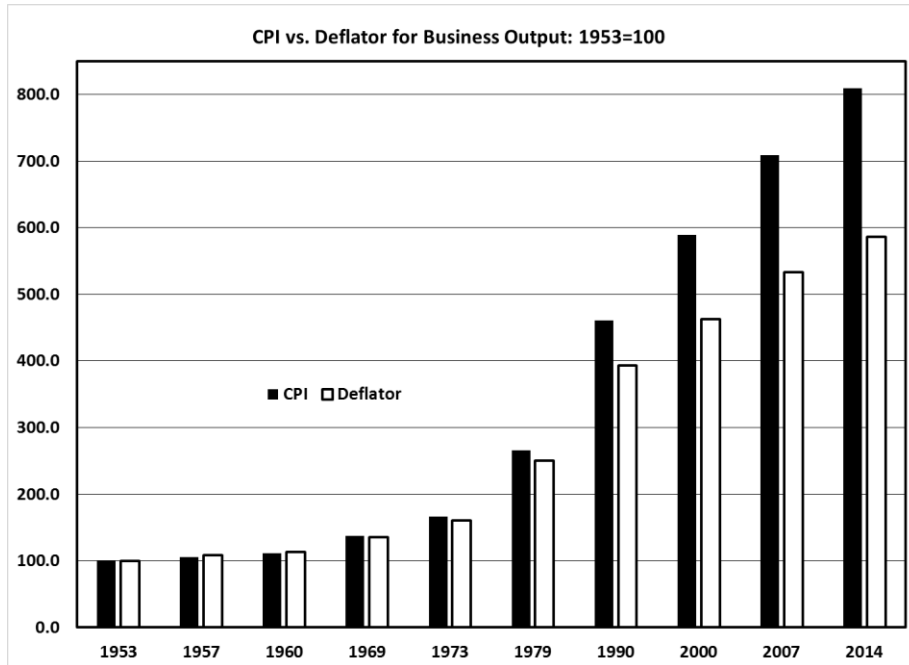
It's also true, as Lawrence noted, that much of the divergence seems to be based on the faster growth of the CPI relative to the deflator used for determining real output, as can be seen on the chart above. However, Lawrence seems to take the two indexes to be "true" for their different purposes. That is, the CPI is supposed to be truly a valid measure of worker consumption over the decades while the deflator used to turn nominal output into real output is truly valid for that purpose.

But there are problems in assuming, particularly over long periods, that abstract concepts of worker welfare or estimates of aggregations of the diverse outputs of a complicated economy in real terms are somehow uniquely defined. Consider the CPI. It has undergone various methodological changes over the period shown on the charts. Yet, because it is used for indexing in legally-enforceable contracts, BLS never revises it retroactively since that would upset its consistent history. Instead, one methodological version is spliced onto the previous version going forward.[3]

For example, during the 1970s, the BLS measure of housing costs was determined by a methodology that gave heavy weight to (mortgage) interest rates. Before the 1970s, such rates did not fluctuate much but then, in part because of a pickup in inflation, the rates began to move. Eventually, a different methodology base on rental equivalents of owner-occupied housing was installed, but not retroactively.

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[3]The version of the CPI used in the real wage series is actually an amalgam of two versions of the CPI. The index up to 1978 is based on the Consumer Price Index for all urban consumers (CPI-U) and so is not retroactively revised. The trend from 1978-2014 is based on the Consumer Price Index research series (CPI-U-RS) and so uses a different methodology. (See BLS media release USDL 15-1056, June 4, 2015.)

And there have been other such changes, especially with regard to substitution effects and quality adjustments.

The deflator used for output by BLS is really part of the national income accounts. There, too, methodology has changed over time, but unlike the CPI, such changes are often incorporated retroactively back to arbitrary dates. And the methodological changes introduced, while they are aimed at actual theoretical problems, are typically chosen from a set of reasonable approaches. Put another way, there are alternatives which might have been chosen that would have produced different results.

In short, it is hard to say when you look at the divergence between the official measure of real wages and the official measure of productivity, what the question(s) should be. Saying the divergence is largely due to workers' typical consumption baskets somehow systematically differing from the output basket starting in the 1970s assumes that we have the "right" price indexes for both of the baskets. But maybe productivity isn't growing as fast as the official measure suggests. If the "true" price index is more like the CPI and less like the official deflator, measured productivity would rise more slowly. It all depends on how much faith you have that we have the right price indexes.

We can, however, take the abstract concept that real wages should, or do, or used to, rise with productivity and get rid of the uncertain price index element entirely. As we noted above, that concept is equivalent to saying that labor's relative share of output – at least adjusted for the business cycle – is more or less constant. Labor's share and output can be measured in nominal terms; no price index is required. We don't have to worry about price index methodology. So let's look at the share over time.
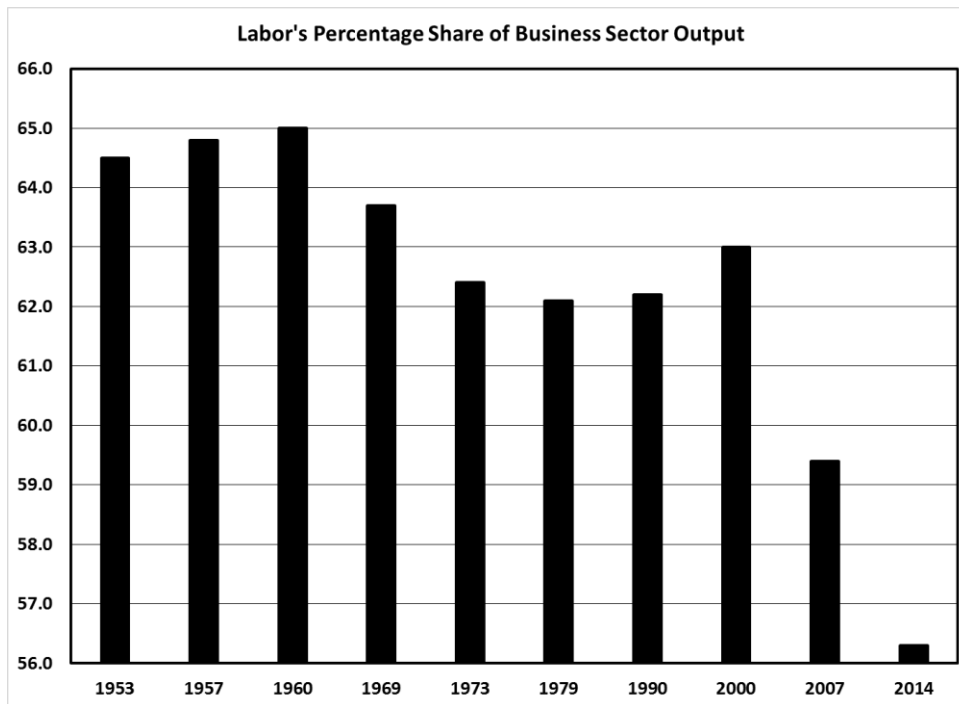
As the chart above shows, the share seems to have started slipping in the 1960s. It flattened in the 1980s and staged a partial comeback in the 1990s. (Did high tech and finance sector pay hikes during the dot-com boom cause the partial reversal?) Then labor's relative share declined, notably starting BEFORE the Great Recession took effect, and continued to decline thereafter.

In short, if I had to choose a research project based on these observations, I wouldn't focus on why worker consumption basket prices differed from output basket prices – because there are too many iffy methodological adjustments in our price indexes. I would instead focus on an issue that doesn't depend on price indexes at all. What explains the movement, adjusted for the business cycle, of labor's relative share? Why did it start to decline in the 1960s? What gave it a temporary partial boost in the 1990s? And what happened to the share after the end of the dot-com boom?