Data Details Supporting

"Wage Stagnation"

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This paper evaluates the claim that wages have stagnated in the last 45 years. Aside from politicians and pundits, even respectable sources such as the Pew Research Center headlines proclaim, "For most U.S. workers, real wages have barely budged in decades."[1]

The claim for stagnated wages is based on average hourly earnings of production and non-supervisory employees from the Bureau of Labor Statistics' Current Employment Survey. This metric peaked in October 1972 at $23.82 in 2018 dollars and was only $22.94 in September of 2018, a decline of 3.7%.

Average hourly earnings are calculated by dividing total payrolls by total employment in non-supervisory and production jobs. They are, as properly indicated in their title, average earnings, not wages. Obviously, wages are included, but average hourly earnings also includes salaries for individuals who are not supervisors and overtime and piecework pay. As average earnings, they include the effects of overtime and other premium pay. There is no general statistical series for pure wages alone.

Production and non-supervisory workers constitute about 70.8 percent of all employees, up from 68.2 percent in 1972.[2] In 2006, BLS also began publishing average hourly earnings for all employees. Since then the average hourly earnings for the two measures have grown and almost exactly the same rate, differing by only 0.10 percent across the entire overlap period.[3] Neither of these measures capture the earnings of the self-employed, which make up about 6.3 percent of the earners in the economy. Self-employed constituted 8.5 percent of the labor force in 1972 and now make up only 6.3 percent.[4]

Living Standards

Real earnings have been adjusted for inflation by the Consumer Price Index for All Urban Consumers (CPI-U) with the intent of measuring changes in the living standard that that an hour's worth of will purchase. Nominal average hourly earnings rose from $4.01 in 1972 to $22.94 in 2018, a 472% increase, but CPI-U, the official adjustment for inflation, rose by 494%, creating the reported decline in real average hourly earnings.

The claim of stagnation in real average hourly earnings is not consistent with our personal experience and with other data that show a significantly higher standard of living in 2017 compared with 1972.

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[1] Drew Desilver, "For most U.S. workers, real wages have barely budged in decades," Pew Research Center, August 7, 2018, http://www.pewresearch.org/fact-tank/2018/08/07/for-most-us-workers-real-wages-have-barely-budged-for-decades/ . This report is more balanced than most, but it still misses many key points documented in this analysis.

[2] Calculated from Production and Nonsupervisory Employees and All Employees, Current Employment Survey, Bureau of Labor Statistics, https://data.bls.gov/PDQWeb/ce

[3] Calculated from Average Hourly Earnings: Production and Nonsupervisory Employees and All Employees, Current Employment Survey, Bureau of Labor Statistics, https://data.bls.gov/PDQWeb/ce

[4] Calculated from Employed and Self-employed, Current Population Survey, Bureau of Labor Statistics, https://www.bls.gov/webapps/legacy/cpsatab9.htm

Table 1 summarizes a number of these critical indicators of wellbeing. Note that many of these are not annual assessments, so the table provides the closest dates available for comparing 1972 with 2017.

Table 1: Indicators of wellbeing

	Assorted indicators of wellbeing						
		Approximately 1972		Approximately 2017		Level	Percent
	Indicator of wellbeing	Year	Level	Year	Level	Change	Change
1	Life expectancy (years at birth)	1972	71.5	2017	78.6	7.1	9.9%
2	Percent self-reporting "poor health"	1984	5.9	2013	4.7	(1.2)	-20.3%
3	Percent spending a night in the hospital in last year	1984	12.5	2013	10.7	(1.8)	-14.4%
4	Percent of homes with two or more rooms per person	1973	54.0	2017	72.1	18.1	33.5%
5	Percent of homes with two bathrooms	1973	18.6	2017	55.9	37.3	200.5%
6	Percent of homes with central air conditioning	1973	16.8	2017	69.4	52.6	313.1%
7	Percent of homes with a dishwasher	1973	42.6	2017	71.7	29.1	68.3%
8	Assets per household, 1982-84 dollars	1972	14,893	2016	40,540	25,647	172.2%
9	Percent of adult population with 4-year college degee	1972	12.20	2017	34.15	21.95	179.9%
10	Average age of car on the road (years)	1972	6.4	2016	11.6	5.2	81.3%
11	Fatalities per 100 million vehicle miles traveled	1972	4.46	2016	1.18	(3.28)	-73.5%

***Sources**:*

1. Center for Disease Control, National Center for Health Statistics, Life Expectancy Table 15, https://www.cdc.gov/nchs/hus/contents2017.htm#015, updated 11/28/18 release.

2. Census Bureau, Survey of Income and Program Participation, https://www.census.gov/programs-surveys/sipp/data/datasets.html, Current Population Reports, Household Economic Studies, Series P-70, No. 26, Extended Measures of Well-Being: Selected Data from the 1984 Survey of Income and Program Participation, Health Status and Medical Services Utilization: 2013, Current Population Reports, August 2018, P70-153

4~7. U.S. Census Bureau and U.S. Department of Housing and Urban Development, Annual Housing Survey: 1973, Current Housing Reports Series H-150-70A, Washington, July 1975. American Housing Survey, table creator: https://www.census.gov/programs-surveys/ahs/data/interactive/ahstablecreator.html#?s_areas=a00000&s_year=n2017&s_tableName=Table1&s_byGroup1=a1&s_byGroup2=a1&s_filterGroup1=t1&s_filterGroup2=g1&s_show=Saccessed , October 7, 2018.

8. Robert B. Avery, Gregory E. Elliehausen, Glenn B. Canner, Thomas A. Gustafson, Survey of Consumer Finances 1983: A Second Report, Federal Reserve Bulletin, December 1984, pp. 857-868. Jesse Bricker, Lisa J. Dettling, Alice Henriques, JoanneW. Hsu, Lindsay Jacobs, Kevin B. Moore, Sarah Pack, John Sabelhaus, Jeffrey Thompson, and Richard A.Windle, Changes in U.S. Family Finances from 2013 to 2016: Evidence from the Survey of Consumer Finances, Federal Reserve Bulletin, September 2017 Vol. 103, No.

3. Adjustment to common 1982-84 real-dollar base by author.

9. https://www.statista.com/statistics/184272/educational-attainment-of-college-diploma-or-higher-by-gender/

10. http://www.autonews.com/article/20161122/RETAIL05/161129973/average-age-of-vehicles-on-road-hits-11.6-years. 1972 interpolated from 2002 with 9.6 years and validated with anecdotal information.

11. https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812451 and https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/810944 and related.

While most homes had at least one television in 1972, only half of those were color. Today, almost all are color with high definition with flat screens attached to cable or satellites.[5]

In 2017, the average consumer unit applied 12.9 percent of its total spending to food. That was a reduction of 5.3 percentage points from 1972-3. In 2017, they not only spent a smaller percentage of their budget on food, they were also buying a higher quality of food – more fresh fruits and vegetables out of local season and more prepared foods, many of them rather exotic. The 5.3 percentage point reduction in food expenditures freed up an average of $3,185 per consumer unit to be spent on other things.[6]

Total Compensation

The average hourly earnings data do not include the benefits that most workers get – the employer's contribution to Social Security and Medicare, health insurance, life insurance, and retirement benefits such as 401-K's. These benefits now constitute about 30 percent of total compensation and have been growing somewhat faster than base wages and salaries.

In 2004, the BLS began publishing data on Employer Cost of Employee Compensation (ECEC), which provides data on both base earnings and benefits. Before that, the only reliable data on comprehensive compensation payments by employers were the aggregates in the National income and Product Accounts (NIPA). Between 1972 and 2004, NIPA-based benefits grew from 12.6 percent to 19.3 percent of total compensation.

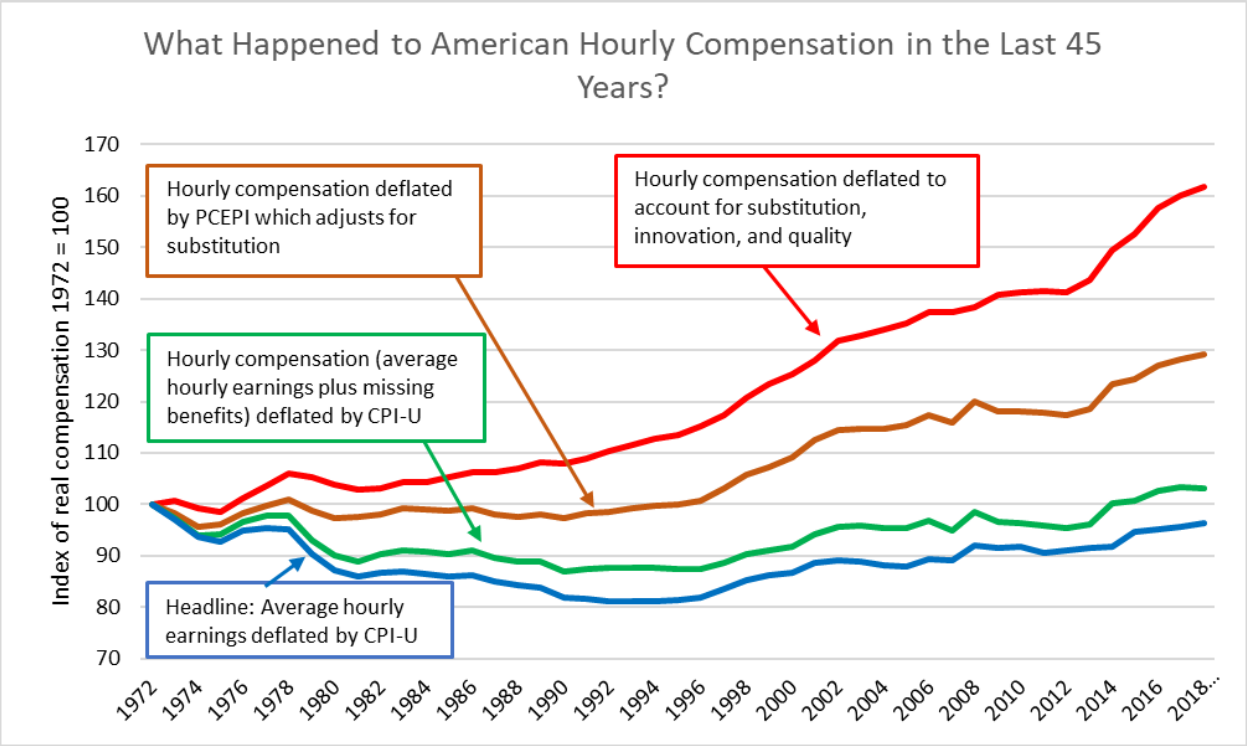
In this analysis, we add estimates of benefits from the aggregates in the NIPA through 2003 and from the ECEC after that. Note that the benefits percentage in the NIPA is somewhat smaller than the 30 percent cited earlier, which is from the ECEC. The reason for the difference is that the NIPA and the average hourly earnings include overtime, other premium pay, and regular performance-based additions to base, whereas the ECEC counts those as benefits. The difference is only in where they are placed. Neither set of data involves any double counting or significant missing items.

The bottom two lines in Figure 1 show average hourly earnings and total compensation, which includes wages, salaries, and benefits. Both have been adjusted for inflation using the Consumer Price Index for all Urban Consumers (CPI-U). Note that by including benefits, total compensation increased 6.7 percent more over the 45-year periods than did average hourly earnings alone.

[5] University of Texas Law School, https://tarltonapps.law.utexas.edu/exhibits/mason_&_associates/documents/timeline.pdf

[6] Eva Jacobs and Stephanie Shipp, "How family spending has changed in the U.S.," *Monthly Labor Review,* March 1990, pp. 20-27. Bureau of Labor Statistics, https://data.bls.gov/PDQWeb/cx, accessed, October 8, 2018. Before 1984, the consumer unit was defined as a family with a single earner. To avoid overstating the change, the authors computed the change from 1972-73 to 1984 (on the old definition) and the change from 1984 (on the new definition) to 2017 separately and combined them.

Figure 1: Trends of compensation indicators



Sources: Average hourly earnings, Bureau of Labor Statistics, https://data.bls.gov/PDQWeb/ce. Hourly compensation, 1972-2003: Average hourly earnings, Bureau of Labor Statistics, https://data.bls.gov/PDQWeb/ce, with ratio addition of benefits from Bureau of Economic Analysis, Table 1.10. Gross Domestic Income by Type of Income, August 29, 2018; 2004-2017: Employer Cost for Employee Compensation, Bureau of Labor Statistics, https://data.bls.gov/PDQWeb/cm. Adjustments for inflation by author using CPI-U, Bureau of Labor Statistics, https://data.bls.gov/PDQWeb/cu; PCEPI, Bureau for Economic Analysis, https://fred.stlouisfed.org; and research quantity-innovation index from Bruce D. Meyer and James X. Sullivan on CPI Bias from: "Winning the War on Poverty from the Great Society to the Great Recession," NBER Working Paper 18718, http://www.nber.org/papers/w18718.

Inflation Adjustment

The CPI-U measures prices change for a fixed market basket of goods and services. It is regularly revised to add new items and to apply more up-to-date consumption weights to the priced items. However, the revised weights are "linked in" so that they do not directly affect the index, but they do affect the weights of price changes going forward. By design, the CPI-U is the upper bound of a true cost of living index and inherently overstates the effects of inflation on the standard of living. These features are well known to price economists and statisticians, including those who assemble the CPI.

The overstatement arises from two different biases – substitution and new-item biases.

Substitution bias occurs because the CPI (and most other price indexes) maintain fixed market basket weights and do not adequately reflect the fact that as relative prices, tastes, and product features

change, consumers will modify their consumption patterns in ways that give them greater satisfaction at lower cost. For example, if airfare prices rise more slowly that the cost of transportation by private automobile, some people will substitute air travel for car travel, increasing their satisfaction and utility. Yet, the CPI will continue to give the larger price increases of automobile travel the same weight that overstates its important in consumption.

Using a Fisher chained ideal index formula, the Personal Consumption Expenditure Price Index (PCEPI) index eliminates – both in theory and practice – most of this type of bias. The PCEPI is a natural byproduct of the CPI combined with personal consumption expenditures from NIPA. It has been used in an increasing number of applications, including evaluating the Federal Reserve inflation target. An almost identical index, the Chained Consumer Price Index for All Urban Consumers (C-CPI-U) has also been adopted for escalating the income tax brackets. The second-from-the-top line in Figure 1 applies the PCEPI to total consumption. By reducing the substitution bias, it demonstrates that real compensation has risen by at least 29.2 percent since 1972.

New-item bias can result when something new is introduced into the market. It occurs because prices indexes can miss or over-estimate the price change that accompanies a new version of an existing item replacing an older version, or a never-before-seen type of product is being introduced, or goods and services being combined in new ways, or new types of outlets selling the same products but at different prices or bundled with different levels of service. This bias is especially difficult to avoid when the new item is both better and at a lower price.

Unlike the substitution bias, which is a feature of the formula selected for the price index, new-item bias arises because it is inherently difficult to capture the price change associated with a new product. Once the cell phone was put into the index, all of its future price changes were captured. But there were two problems. One, was the 14 -year delay from its apperance in the market to being included in the index. As a result, much of the normal price decline from leading-edge novelty to widely used commodity was missed. That long delay can be avoided, and new CPI procedures have sharply reduced that problem for other new items.

But the more intractable, and probably larger, problem is that the very act of introducing the new product has no effect on the CPI. When our phones can replace GPS devices in our cars, avoid trips to the post office, access information formerly available only at a research university library, and thousands of other functions, the prices for associated items in the price index should actually decline, but it is very difficult to identify and measure those price-reducing effects of a new product.

We see the smart phone effects daily, but some of the more dramatic effects are elsewhere. Proton pump inhibitor drugs have eliminated the need for surgery to treat stomach ulcers. New cardiology treatments have replaced open-chest surgery with micro laparoscopic procedures. These and other changes have greatly improved heart outcomes, often at lower total cost.

Price economists have conducted dozens of studies over the years that measure these new-product effects more completely, but the nature and size of the work means that most of the studies have focused on a limited range of items in specific time periods. Many of them have resulted in adoption of improved procedures in the CPI. Those improvements affect the index going forward only because the CPI has never been revised to reflect new methods. BLS, however, does calculate and publish a research

series (CPI-U-RS) that revises historical indexes back to 1977, incorporating improved official methods to the extent possible.

Many of the analyses use methods and data, however, that cannot be replicated in the operational creation of a monthly CPI. Bruce Meyer and James Sullivan have synthesized the research from 52 different studies to create minimum-bias indexes that adjust for both the substitution and new-product biases.[7] Using their results to account more fully for both substitution and new product effects shows that average hourly compensation has risen by 61.8%

[7] Bruce D. Meyer and James X. Sullivan on CPI Bias from: "Winning the War on Poverty from the Great Society to the Great Recession," NBER Working Paper 18718, June 2013, http://www.nber.org/papers/w18718. The authors have extended their estimates through 2017 using their recommended go-forward adjustments and re-validating them.