

# The Productivity to Paycheck Gap: 2019 Update

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September 2019

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## Acknowledgements

The author thanks Josh Bivens and Sarah Rawlins.

# Executive Summary

This is an update of an earlier paper that examined the gap between productivity growth and median wage growth. The paper makes several adjustments to the most commonly cited productivity data, productivity in the non-farm business sector, to get a productivity measure that is directly comparable to wage growth. It also adjusts for differences between the growth in total compensation growth (wages and benefits) and wages, to determine the extent to which the typical worker's pay has lagged productivity growth.

The paper shows:

- The period since 2005 has seen extraordinarily weak productivity growth even in the standard non-farm business sector, with an average growth rate of just 1.3 percent;
- By contrast, the real wage of the typical worker increased at just a 0.3 percent annual rate over this period, a full percentage point less than the annual rate of growth of productivity in the non-farm business sector;
- Economy-wide productivity growth has been just 1.0 percent annually, the lowest on record for any substantial period of time;
- On a net basis, productivity growth has averaged 0.8 percent over this period, leaving a gap of 0.5 percentage points in the rate of adjusted productivity growth and the rate of real wage growth;
- The deflator for net domestic product and the Consumer Price Index increased at roughly the same pace over this period, so a gap between the two cannot help explain real wage growth lagging productivity growth since 2005;
- There was no change in the profit share of corporate income in the period from 2005 to 2018, so a shift from wages to profits does not explain the gap between adjusted productivity growth and real wage growth.
- The nonwage share of compensation actually fell slightly over this period, so that the gap between adjusted productivity growth and the growth rate of real compensation is actually 0.5 percentage points annually. This means that if the typical worker's compensation had kept up with productivity growth over the last 13 years, it would be more than 8.0 percent higher today. For a full-year, full-time worker at the median wage, this would mean a boost to annual compensation of more than \$3,500 a year.

# Introduction

The gap between productivity growth and the pay of the typical worker is now widely recognized. Real wages used to rise roughly in step with productivity growth, but since 1979 there has been a sharp divergence between productivity growth and the pay of the median worker.

This is an update of a 2007 paper examining the extent to which the trends that had been in place prior to 2007 have persisted over the last decade. (Baker, 2007).<sup>1</sup> At that time, relatively little of the gap was explained by a shift from wages to profits. Most of the gap between productivity growth and the wages of the median worker was explained by an upward redistribution of wage income. Part of the gap was also due to a rising nonwage share of compensation and technical issues in defining productivity.

The period since 2005 is an unusual period since it includes the Great Recession, as well as a slowdown in productivity growth that began in 2005. This paper examines how patterns in distribution changed over this period.

## The Post-2005 Story: Weak Productivity Growth

In contrast to the prior quarter century, the story of weak real growth in the years since 2005 is mostly a story of weak productivity growth, rather than primarily an issue of upward redistribution. The first column in **Table 1** gives annual rates of productivity growth for the nonfarm business sector (the most widely used measure) through various periods in the postwar era, and a set of adjustments to the most commonly cited nonfarm productivity measure. The periods are defined by changes in productivity trends that do not correspond directly to business cycles.

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<sup>1</sup> Baker (2007).

**TABLE 1****Annual Rates of Productivity Growth**

(percent)

|           | <b>Nonfarm<br/>Business<br/>Sector</b> | <b>ALL</b> | <b>ALL-<br/>NET</b> | <b>CPI<br/>Deflator</b> | <b>Median<br/>Wage</b> | <b>Median<br/>Compensation</b> |
|-----------|--|------------|---------------------|-------------------------|------------------------|--------------------------------|
| 1948–1973 | 2.8%                                   | 2.8%       | 2.7%                | 3.0%                    | 2.2%                   | 2.5%                           |
| 1973–2018 | 1.8%                                   | 1.5%       | 1.3%                | 1.1%                    | 0.2%                   | 0.4%                           |
| 1973–1979 | 1.2%                                   | 1.1%       | 0.9%                | 0.5%                    | -0.3%                  | 0.3%                           |
| 1979–1995 | 1.5%                                   | 1.4%       | 1.2%                | 1.0%                    | 0.0%                   | 0.2%                           |
| 1995–2005 | 3.0%                                   | 2.5%       | 2.3%                | 2.0%                    | 1.0%                   | 1.0%                           |
| 2005–2018 | 1.3%                                   | 1.0%       | 0.8%                | 0.8%                    | 0.3%                   | 0.2%                           |

Source: National Income and Products Accounts, tables 1.9.5, 1.7.3, 1.7.4, 1.12,<sup>2</sup> and Economic Policy Institute.<sup>3</sup>

As can be seen in Table 1, there is a sharp slowdown in the period since 2005. Productivity growth in the nonfarm business sector has averaged just 1.3 percent annually in these years. This is a sharp slowdown from the period 1995 to 2005 when productivity growth in the sector averaged 3.0 percent annually. It is even slower than the 1.5 percent rate in the years from 1979 to 1995, although it slightly exceeds the 1.2 percent pace from 1973 to 1979, when the economy was hit by two major oil shocks.

While this slowing in productivity growth is the most obvious explanation for the weak real wage growth of the last 13 years, it is necessary to make a series of adjustments to the productivity growth rate for the nonfarm business sector to make it directly comparable to real wage growth. These adjustments are explained below.

## Economy-Wide Productivity

The nonfarm business sector accounted for just above 77 percent of the economy in 2018.<sup>4</sup> The other sectors are the farm business sector, which accounts for approximately 0.5 percent of GDP; the household and nonprofit sector, which accounts for a bit less than 12 percent of GDP; and, the government sector, which accounts for just under 11 percent of GDP. While there are serious measurement problems with productivity data for these sectors, measured productivity growth in these sectors is less than in the nonfarm business sector. As a result, economy-wide productivity has

<sup>2</sup> Bureau of Economic Analysis (2019).

<sup>3</sup> Economic Policy Institute (2019).

<sup>4</sup> Bureau of Economic Analysis (2019a).

averaged just 1.0 percent in the years from 2005 to 2018, which is shown in the second column of Table 1.

## Net Domestic Product Versus Gross Domestic Product

Productivity is a measure of the rate of growth of gross output per unit of labor input, or GDP per hour of labor. However, depreciation is not available to be consumed either by labor or the owners of capital. This means that if we want to look at relative shares, we should use a measure of productivity growth that is based on net output, or NDP, rather than gross output. Since the depreciation share of output has been rising during this period, net productivity growth averaged 0.2 percentage points less since 2005 than productivity growth measured using gross output.<sup>5</sup> This pulls down average productivity growth to 0.8 percent over this period. This is shown in column three of Table 1.

## Prices Indices: NDP Deflator and Consumer Price Index

The next adjustment involves using a common deflator for output and wages. It is standard to use the Consumer Price Index (CPI) for deflating wages, while output is measured using the GDP deflator, or in this case the NDP deflator. Since the CPI generally shows a higher rate of inflation than the NDP deflator, we would get a gap between productivity growth and real wage growth, even if workers got their share of productivity growth, simply due to a difference in deflators.

Part of this story is completely mechanical. The NDP deflator is a chained index, which adjusts quantities every quarter. The CPI is a fixed-weight index, which tracks the same bundle of goods and services through time. While there are circumstances under which each type of index is appropriate, in general, a fixed weight index will show a higher rate of inflation than a chained index. This means that we would expect a lower measured rate of inflation in the NDP deflator even if it was mostly tracking the same goods and services as the CPI.

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<sup>5</sup> Bureau of Economic Analysis (2019b).

However, the other factor in the difference is that the NDP deflator includes a different mix of goods and services than the CPI. Most importantly, NDP includes investment goods. For most of the last four decades, the price of investment goods has been rising slower than the price of consumption goods. This has been noted as a “terms of trade” issue in Bivens and Mishel (2015) and elsewhere. It is not clear that any importance can be attached to it.

A closer examination suggests that the difference in inflation rates is simply a statistical artifact with no distributional significance. This point can be seen clearly if we recognize that categorizing an item as an investment good is an arbitrary accounting procedure. Items that are expected to last more than one year are counted as investment goods and treated as part of final output. If they are expected to last less than one year, they are treated as intermediate goods which don’t directly appear in GDP. The value-added in intermediate goods is only picked up in GDP when it is sold as final output as either consumption, investment, government expenditures, or net exports.<sup>6</sup>

If the price of intermediate goods falls relative to consumption goods, and the decline was not passed on in output prices, it would appear as a shift in distribution to profits. The same story would apply to investment goods, with the reduction in relative prices leading to lower levels of depreciation. (This should be picked up in the capital consumption adjustment, insofar as it is not reflected in accounting profits.) This means that any shift from wages to profits would already be picked up in shares of income. There is nothing additional to add on as a result of the difference in investment and consumption deflators.<sup>7</sup>

As a practical matter, it turns out that the difference in deflators matters little over the period from 2005 to 2018. The gap averages 0.05 percentage points over these years, with CPI inflation averaging 1.97 percent annually, compared to average inflation of 1.92 percent for the NDP deflator. (Investment is a relatively small share of net domestic product since depreciation accounts for the bulk of investment.)

This leaves a net productivity growth figure, using a CPI deflator of 0.8 percent annually (shown in column 4). The growth of the median wage over this period averaged 0.3 percent annually (column 5), implying an average gap of 0.5 percentage points.

There is one last adjustment needed to compare the growth in labor compensation to productivity growth over this period. There was a modest increase in the share of wages in labor compensation

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<sup>6</sup> Intermediate goods will get counted as part of a change in inventories at the end of a quarter or year.

<sup>7</sup> It is worth mentioning that investment deflators have been subject to large revisions in the last three decades. The major problem is that computers and other forms of information technology have undergone enormous improvements in speed and other areas of performance during this period, but it is not clear how much these improvements have benefited the typical user. If a business has a computer that, on a technical basis, hugely outperforms the computer it used ten years ago, but it only uses it for the same set of tasks, how large of a gain is this to the business?

between 2005 and 2018, with the wage share rising from 80.6 percent of compensation in 2005 to 81.4 percent in 2018. This means that labor compensation rose roughly 0.1 percentage point slower from 2005 to 2018 than wages, or approximately 0.2 percent annually, as shown in column 6.

This leaves a gap of 0.6 percentage points between the adjusted rate of productivity growth and the growth rate of median compensation. That is slightly less than the average gap of 0.7 percentage points in the years from 1973 to 2018 but is still considerable. Nonetheless, weak productivity growth has clearly been an important factor in the slow wage growth since 2005. Even if workers had gotten their share of adjusted productivity growth, annual wage growth of 0.8 percent is not much progress.

Nonetheless, if workers had seen compensation growth in line with productivity growth over the last 13 years, their pay would be more than 8.0 percent higher today. For a full-year, full-time worker getting the median wage, this difference would come to \$3,100 a year. In other words, ordinary workers have paid a considerable price for the rise in inequality since 2005.

## Comparisons with Prior Periods

The 0.2 percent average gain in labor compensation over the last 13 years is equal to the annual rate of increase in the prior productivity slowdown from 1979 to 1995. That period was associated with slightly faster growth in inequality, as the adjusted annual rate of productivity growth was 1.0 percent during those years, compared with 0.8 percent in the more recent period.

The period from 1973 to 1979 was only slightly better for most workers, with a 0.3 percent annual rate of real compensation growth. However, the weak gains of compensation growth in that period were not due to upward redistribution. The United States saw a serious worsening of its terms of trade during that six-year period, primarily due to a sharp jump in world oil prices.

This can be clearly seen in the change in the relationship between quantity commanded GDP and GDP. In 1973, quantity commanded GDP was 2.3 percent higher than GDP. In 1979, it was just 0.5 percent higher. This deterioration of 1.8 percentage points over six years can more than fully explain the 0.2 percentage point gap between the rate of adjusted productivity growth and the rate of labor compensation growth.<sup>8</sup>

The upward redistribution in the last 13 years has been within the wage distribution, as there was actually a small decline in the profit share of net corporate income from 23.6 percent in 2005 to 23.5

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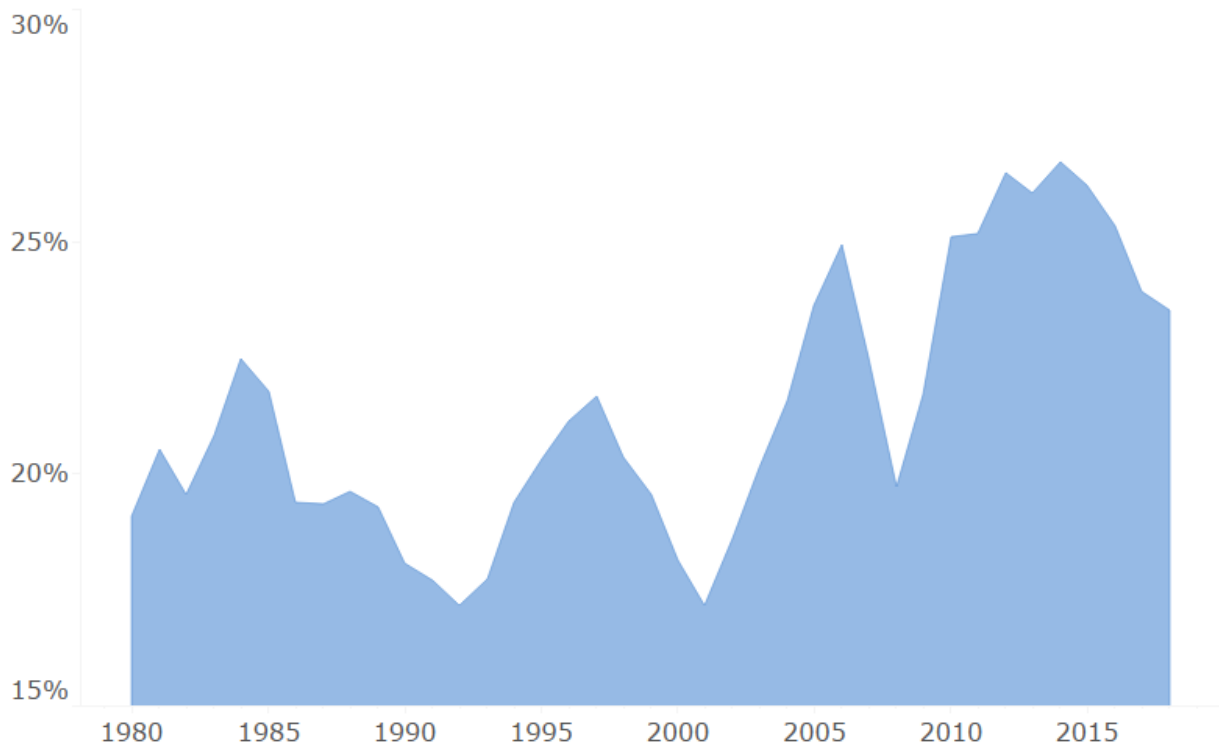
<sup>8</sup> Bureau of Economic Analysis (2019c). Table 1.8.6, line 7 and line 1.



percent in 2018. This is shown in **Figure 1**.<sup>9</sup> By contrast, high-end wages substantially outpaced median wage growth, with wages at the 90th percentile rising at an average annual rate of 1.1 percent, and wages at the 95th percentile rising at an average annual rate of 1.3 percent (Economic Policy Institute, 2019.)

**FIGURE 1**

**Profit Share of Net Corporate Income, 1980–2018**



Sources: Bureau of Economic Analysis, Table 1.14

There is an important issue with the measure of profits in the housing bubble years, from 2002 to 2006. The financial sector was recording large profits on loans that subsequently went bad and led to large losses in the Great Recession. In this sense, much of the profit recorded in these years by the financial industry was not real.<sup>10</sup> If the losses incurred by the financial sector in the years 2008–2010 are deducted from industry profits in the years 2002–2006, then it is not clear that there was a substantial increase in profit shares in these years. (The losses from bad loans were several hundred

<sup>9</sup> Bureau of Economic Analysis (2019d). The profit share is calculated by taking net operating surplus (Table 1.14, Line 8) and dividing by the sum of net operating surplus and labor compensation (Table 1.14, Line 4).

<sup>10</sup> Imagine that companies were recording sales on a large scale to entirely fictitious entities. Profits would be booked when the sales were recorded, but years later, when the companies had to acknowledge the nonpayment from the fictitious entities, they would show large losses. Would we say there was a shift from labor to capital when companies add the sales to fictitious entities on their books?

billions of dollars, enough to subtract 1.0-2.0 percentage points from profit shares in the bubble years if these losses are counted against profits in these years.)

The treatment of financial industry profits in the housing bubble years is important for how we view the increase in profit shares in the last two decades. If we accept the profit data as published, then the rise in profit shares preceded the Great Recession. This is a shift that needs to be explained, although it does now appear that it is being reversed as labor has strengthened. The profit share fell by 3.2 percentage points from 2014 to 2018.

Alternatively, if we say that financial industry profits recorded in these years were phony profits, then the redistribution from labor to capital is essentially a story of the Great Recession, with little noticeable increase in profits in prior years. In that case, the cause is most obviously one of a weak labor market resulting from high unemployment, with the effect amplified by lower unionization rates and reduced labor market protections. In any case, if the labor market remains strong and labor continues to gain shares, this issue may be moot in terms of the longer-term distributional story.

There is one other distributional issue that is slightly below the surface here. The rise in nonwage compensation in the years from 1973 to 2018 is almost entirely due to rising health care spending. For purposes of this analysis, this increase is treated as being equivalent to wages.<sup>11</sup> In 1973, per person health care spending in the United States was near the top for wealthy countries in the OECD, but it was not hugely out of line with spending in the other countries. By 2018, per person spending in the United States was more than twice the average for other wealthy countries.

The United States does not have obvious benefits to show for this increase in relative spending in terms of health care outcomes (Anderson, et al, 2003).<sup>12</sup> The main difference is that the same services cost twice as much in the United States as in other countries. Insofar as workers in the United States are paying more for health care, but not getting additional benefits for this spending, this is effectively a redistribution from workers to the health care sector.

It is worth noting that the nonwage share of compensation actually fell slightly over the last 13 years. This is partly due to reduced employer coverage and partly due to a slowing in the rate of growth of health care services.

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<sup>11</sup> In the analysis, it is assumed that the nonwage compensation for the median worker is equal to the average ratio of nonwage compensation to total compensation. This is a simplifying assumption, which certainly is not exactly right over the whole period. There are trends that go in opposite directions. The cost of employer-provided health insurance rises rapidly relative to the median wage. On the side, the percentage of workers receiving near the median wage who have employer-provided health insurance has been declining, especially in the last two decades.

<sup>12</sup> Anderson (2003).

## Conclusion

There has been weak growth in wages and labor compensation over the years from 2005 to 2018. Much of this weakness can be attributed to slow productivity growth. Productivity growth over this period has been slower than at any other sustained period for as long as we have data. However, upward redistribution of income has also contributed to slow wage growth for the median worker. The upward redistribution was to high-end wage earners, as the profit share of net corporate income declined very slightly over this period.

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