

Robots And Automation Are Not The Cause Of Our Labor Market Troubles

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Employment growth [remains weak](#) in the United States. Many in the media happily encourage us to blame the growing use of robots, or automation more generally, for this situation. Their message is that we are just experiencing the consequences of technological progress and no one should want to fight that. However, that is just misdirection; the numbers make clear that it is corporate financial “wheelings and dealings,” not robots and automation, that is the primary cause of our current employment woes.

Productivity Trends

If robots or automation were holding back employment growth we should see rapidly rising rates of output per labor hour or what economists call productivity. In other words, the new technology would allow companies to greatly increase their production with the same number or even fewer hours of human labor. And, as a consequence, the demand for labor would slow, leading to weak employment growth.

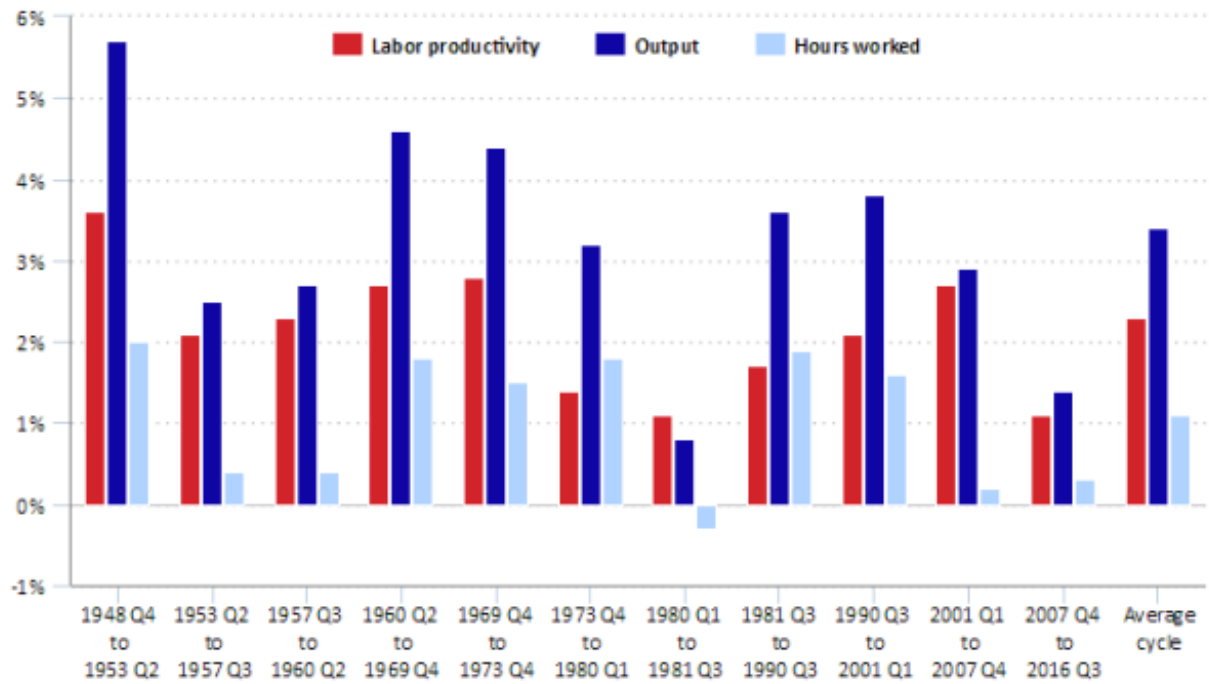
Here is how the Bureau of Labor Statistics (BLS) [explains](#) productivity:

Labor productivity is a measure of economic performance that compares the amount of goods and services produced (output) with the number of labor hours used in producing those goods and services. It is defined mathematically as real output per labor hour, and growth occurs when output increases faster than labor hours. . . . Technological advances, greater investment in machinery and equipment by businesses, increases in worker skill and experience, and other improvements to production can all lead to labor productivity growth.

The problem for those who want to blame our labor market woes on robots and automation is that US productivity gains have been historically weak, not strong, during this economic expansion.

[Chart 1](#) shows the growth in output, hours worked, and labor productivity (shown by the red bar) for the non-farm business sector over every business cycle starting in 1948, as well as for the average business cycle for the historical period. Of course, our current cycle is not yet over, and the data in this chart only take us through the 3rd quarter of 2016. But our current expansion is already the longest, and since productivity tends to fall the longer an expansion goes on, we are unlikely to see much of an improvement in the numbers over the rest of the cycle.

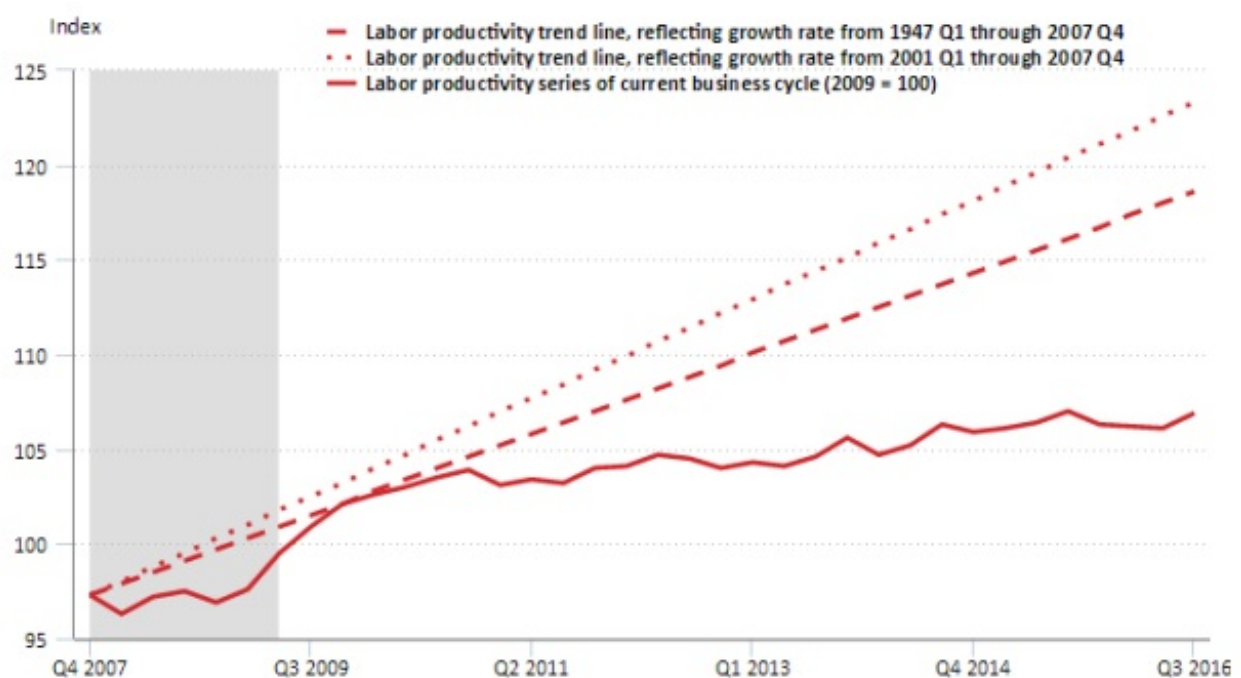
Chart 1. Labor productivity, output, and hours worked: average annual growth rates during business cycles, nonfarm business sector, 1948–2016



As we can see, the growth in labor productivity in the current business cycle, at 1.1 percent, is tied with the 1980-1981 cycle for the lowest rate of productivity growth for the entire historical period. Labor productivity growth for the average cycle is 2.3 percent. The current business cycle also has the second lowest rate of growth in output.

Chart 5 offers another way to appreciate how weak productivity growth has been during the current business cycle. It compares the growth in labor productivity over this cycle with the growth in productivity over the previous cycle (2001 to 2007) and the longer period 1947 to 2007.

Chart 5. Comparing the labor productivity series of the current business cycle with past trends: nonfarm business sector labor productivity, fourth quarter 2007 through third quarter 2016



Shaded area represents a recession as determined by the National Bureau of Economic Research. Click legend items to change data display. Hover over chart to view data. Source: U.S. Bureau of Labor Statistics.

In the words of the BLS:

Through most of the Great Recession, labor productivity lagged behind historical growth rates, but then it achieved above-average gains coming out of the recession and into the early quarters of the recovery. The U.S. economy actually caught up to the long-term historical trend (the dashed red line) in the fourth quarter of 2009, although it was still slightly behind the trend from the last cycle (the dotted red line) at that point. However, after 2010, productivity growth stagnated and a substantial deficit relative to historical trends developed over the next 5 years. By the third quarter of 2016, labor productivity in the current business cycle had grown at an average rate of just 1.1 percent, well below the long-term average rate of 2.3 percent from 1947 to 2007 and even further behind the 2.7 percent average rate over the cycle from 2001 to 2007.

In short, if robots or automation were replacing workers this would be reflected in strong productivity growth. In fact, we see quite the opposite: the weakest productivity growth for any business cycle in the post-1947 historical period.

While high productivity does not guarantee strong wage gains, workers normally find it easier to force business to boost wages when output per labor hour is significantly growing. Low productivity gains, on the other hand, normally translate into weak wage growth. And that is what we see today.

Chart 6 shows the growth in labor productivity, real hourly compensation, and the wage gap (difference between productivity and compensation) over the 1948 to 2016 period.

Chart 6. Wage gap, labor productivity, and real hourly compensation: average annual growth rates during business cycles, nonfarm business sector, 1948–2016



As we can see, the growth in real hourly compensation (shown by the gold bar) has been extremely weak this business cycle, growing by only 0.7 percent. As the BLS notes:

[This] is low by historical standards. The rate is lower than the average real hourly compensation growth rate of 1.7 percent observed during other business cycles. The rate is also below the rates of all other cycles, except for a brief six-quarter cycle in the early 1980s. Note also that the low growth rate of the current business cycle is a near-continuation of the similarly low growth rate of the early-2000s cycle (0.8 percent).

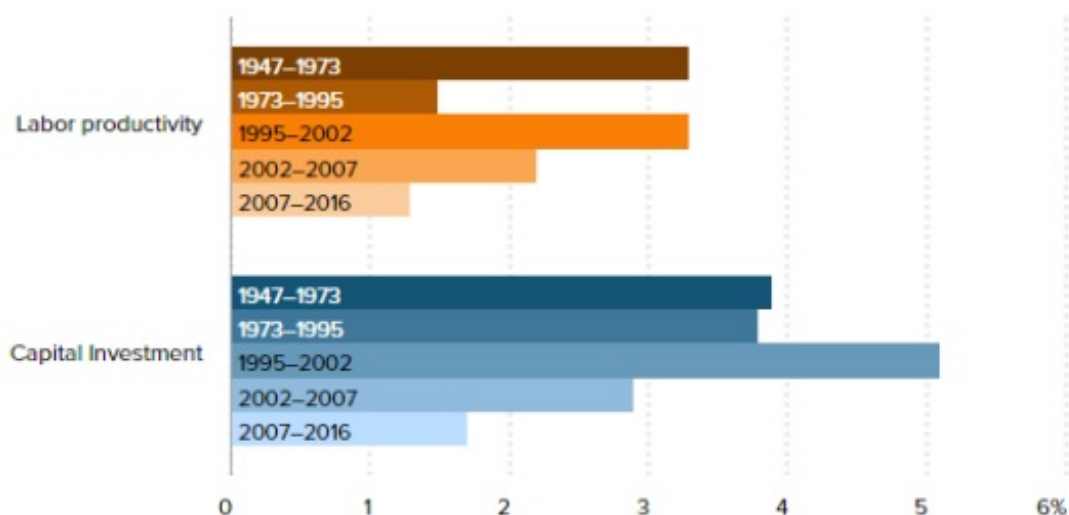
Behind The Scenes

For all the talk about technology, business investment has been weak, as illustrated in the [following charts](#) from

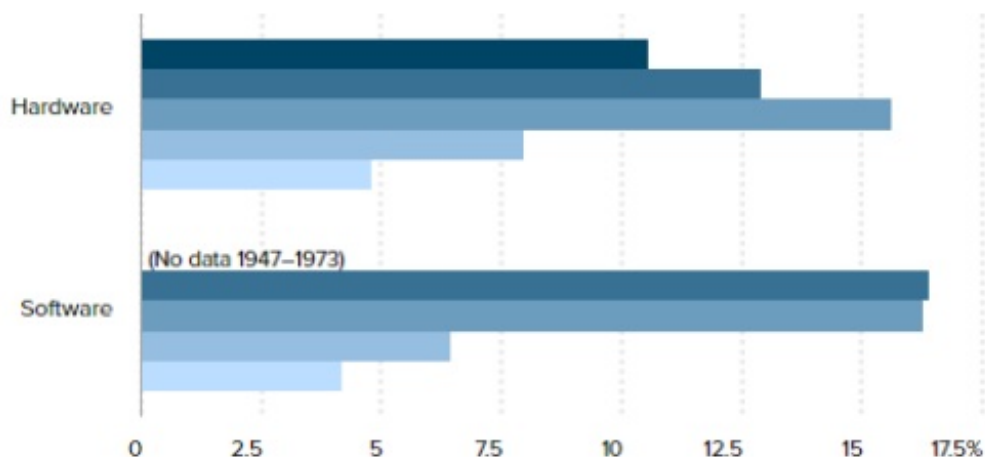
the Economic Policy Institute. Capital investment has been slow compared with past periods and the same is true for business investment in information technology equipment and software—the alleged drivers of technological innovation.

Average annual growth rate of labor productivity, capital, information equipment, and software, 1973–2016

Growth in labor productivity and the capital stock have decreased in recent periods



Capital investment in information technology has also slowed



Note: Using latest available data, 2016 measure includes data from 2015Q4–2016Q3.

Source: EPI analysis of [data \(xls\)](#) compiled by John Fernald of the Federal Reserve Bank of San Francisco

Economic Policy Institute

So, what are businesses doing with their ample profits? The answer is that they are using them to repurchase their own stock in order to boost stock prices (and managerial salaries) and to pay large dividends to their stockholders. In other words, engaging in financial transactions to enrich those at the top.

Figure 1, from [Yardeni Research](#), shows the annual dollar value (in billions) of stock buybacks, which is the repurchase of shares by the company that initially issued them, for S&P 500 listed firms over the years 1999 to

2016. Figure 2 shows annual dividend payouts for these same firms. Each has been substantial since 2003, although the period of the Great Recession did produce a steep short term dip.

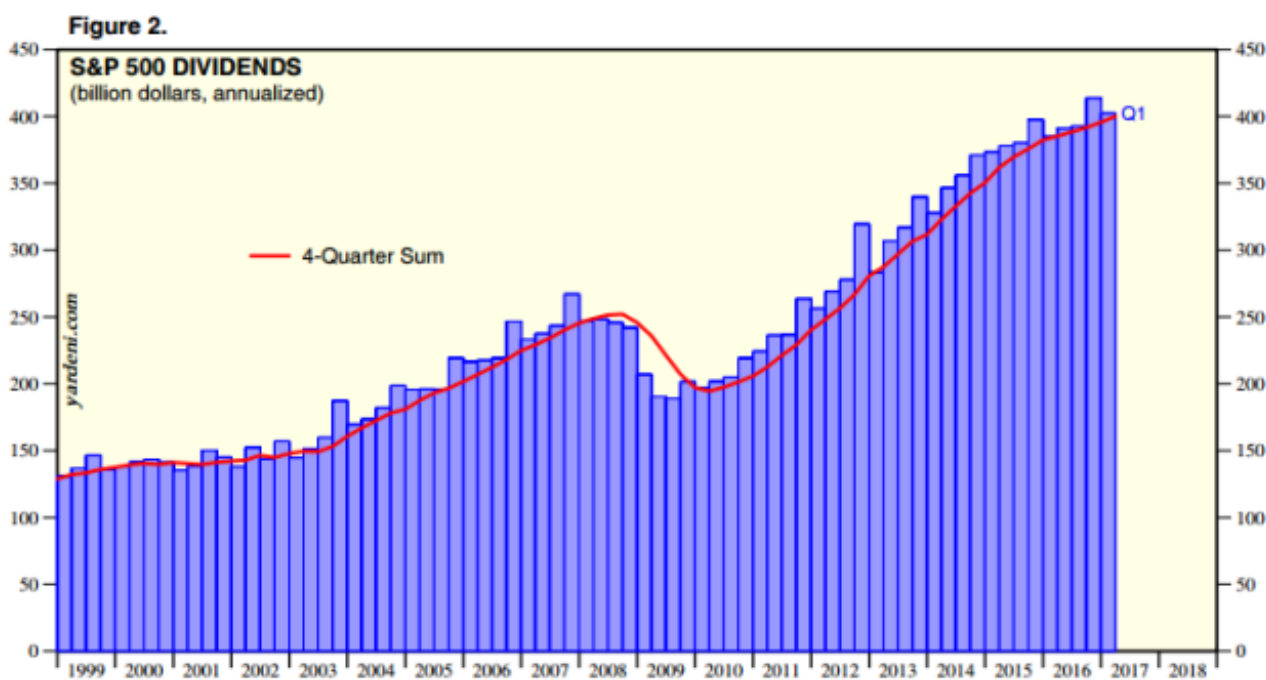
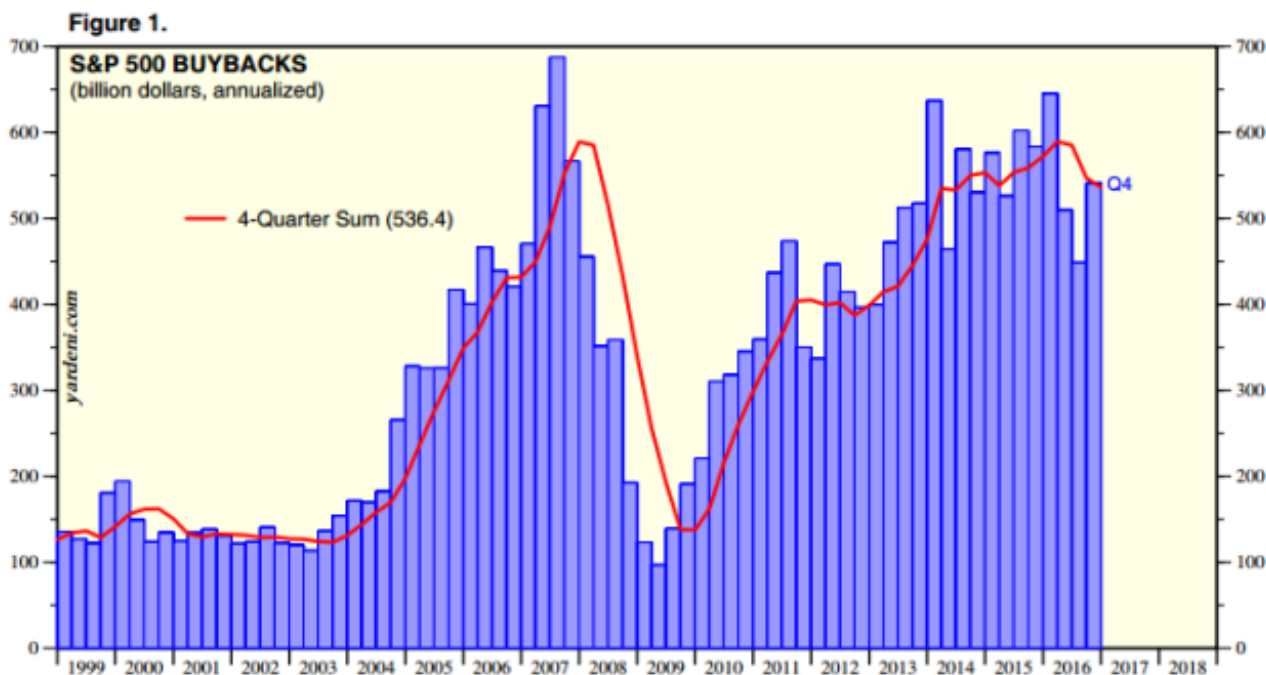
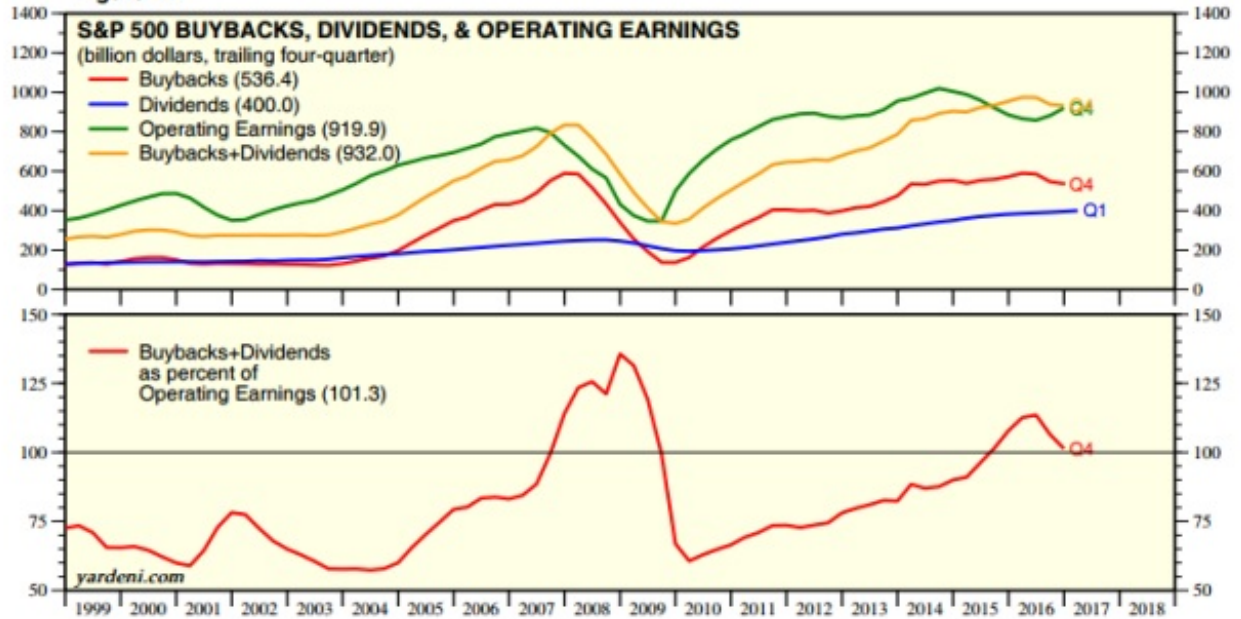


Figure 12, by showing the value of S&P 500 buybacks and dividends as a percent of operating earnings, illustrates just how substantial this financial activity has become. Operating earnings are a key measure of profitability and are calculated by subtracting direct business expenses—such as the cost of production, administration and marketing, depreciation, etc.—from revenues. What we see is that business spending on buybacks and dividends has actually been greater than total operating earnings for several years since 2007, including 2016.

Buybacks & Dividends as % of Operating Earnings

Figure 12.



In short, S&P 500 listed businesses are shoveling almost all their profits, and then some in many years, into financial dealings. No wonder real capital investment has been weak and productivity, wage, and employment growth slow. Forget that stuff about robots and automation.

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