

Employment and growth: the emergence of a new normal

By Polina Vlasenko, PhD

A long-accepted link between unemployment and economic growth is now being questioned, with important implications for the economy.

Economists, politicians, and the media often talk about the economy as if it is a single unit and all aspects of it move in the same way. But the economy includes many different parts. For economists, “the economy” stands for economic output, typically measured by gross domestic product, or GDP. But for most other people, the critical consideration in the economy is not GDP, but jobs and incomes.

Most economic policies, from adjustments to interest rates to increases in government spending, are aimed at boosting the growth of GDP. The connection with jobs (employment) has long been assumed to be automatic—when GDP rises, the number of jobs should increase with about the same speed and vigor. This indeed used to be the case. But it may no longer hold true. Here we will describe the evidence that the link between economic growth and jobs may be changing, and we will discuss what it means for the future.

Okun’s law—a link between growth and unemployment

A connection between economic growth and unemployment has long been known to economists: When the economy is growing and production expands, the unemployment rate tends to fall. This relationship was first formalized by an American economist, Arthur M. Okun, in 1962. He studied the link between the growth rate of output and the change in the unemployment rate. He

concluded, based on the data available at the time, that for the unemployment rate to fall by 1 percentage point, say, from 6 percent to 5 percent, the economy’s output had to grow about 3 percent. This relationship became known as Okun’s law.

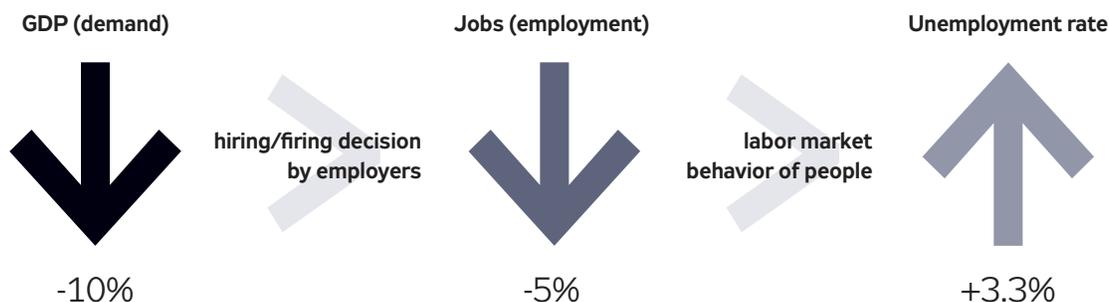
Chart 1 illustrates, with a hypothetical example, why the change in the unemployment rate tends to be smaller than the change in output. The example shows what would happen if demand (and thus GDP) fell by 10 percent. (Note that this is an implausibly large decrease in GDP; the U.S. economy has not experienced an output drop of such magnitude since the Great Depression in the 1930s.)

Faced with falling demand for their products, companies seek to cut production. But a 10-percent drop in demand does not translate to a 10-percent reduction in jobs. Typically, employers first cut the hours of their workers. Only if that is not enough do they lay off people, but they let go far less than 10 percent of them. This is because employers justifiably believe that the demand slowdown may be temporary. If so, they would need to increase their workforce again soon. It is cheaper and easier to retain employees in a time of slow demand than to have to find and train new people again. Because of this, employment falls by only 5 percent.

Once companies shed 5 percent of their jobs, the unemployment rate would rise, but it would go up less than 5 percentage points because of the behavior of people in the labor market. When people are laid off, some drop out of the labor force and are no longer counted among the unemployed. Some might go back to school to finish their education (data show that this is especially likely for younger people). Others might despair of their chances

Chart 1. How Okun's Law works: a hypothetical example

A fall in demand translates into a reduction in jobs, which in turn leads to higher unemployment rate. But the magnitude of the effect diminishes with every step.



Change in GDP is about three times as large as the change in the unemployment rate

of finding a job and stop looking for one, or they might decide to retire early. Neither of these categories (full-time students or discouraged workers) are counted in the unemployment rate. So the unemployment rate goes up a bit less than the 5 percent decline in employment—perhaps by only 3.3 percentage points.

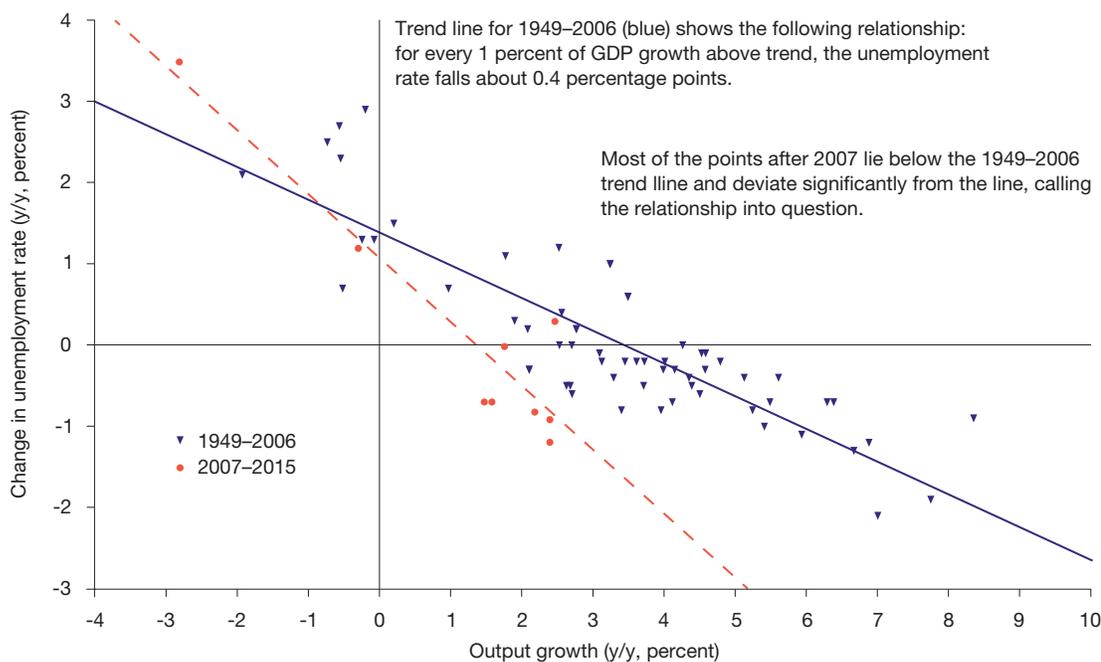
Overall, if the unemployment rate was, say, 5 percent, and the 10-percent fall in demand happened as described above, the unemployment rate would rise to 8.3 percent (5 + 3.3). Looking at data like these, Arthur Okun saw his 1-to-3 relationship: For the unemployment rate to rise by 1 percentage point, output has to fall by 10/3.3, or about 3 percent.

As more data became available over the years, a number of economists replicated Okun's research, and by the 1990s, the consensus in the profession was that the link in Okun's law was not 1 to 3, but rather 1 to 2.5: For the unemployment rate to fall by one percentage point, output has to grow about 2.5 percent. Or, conversely, when output falls by 1 percent, the unemployment rate tends to rise by about 0.4 percentage points.

Chart 2 illustrates this relationship. Every point on the chart corresponds to a year between 1949 and 2015. Its position reflects how fast GDP was growing that year (horizontal axis) and how much the unemployment rate changed (vertical axis). The blue trend line on the chart shows the historical Okun's law relationship: For every 1 percent of GDP growth, the unemployment rate fell about 0.4 percent.

The red dots on the chart correspond to the years of the Great Recession and its aftermath, 2007–2015. The important thing to note is that the red dots deviate from the blue trend line significantly, and all but one lie below it, suggesting slower growth in output than would be implied by the changes in unemployment. A deviation from trend that persists for eight years calls the historical relationship into question. And one does not need to be a statistician to see that unemployment was behaving in an unusual way during the Great Recession.

Chart 2. Illustrating Okun's Law.



Note: Annual data from 1949–2015. Output growth is the y/y percent change in real GDP.

Source: Bureau of Economic Analysis, Bureau of Labor Statistics (FRED).

The recession calls past relationships into question

The events surrounding the Great Recession and the slow recovery afterward called Okun's law into question.

From the start of the recession in December 2007 to its worst point in June 2009, GDP fell 4.2 percent in the U.S. During the same time, the unemployment rate climbed from 5 percent to 9.5 percent and continued to rise for another four months, ultimately reaching 10 percent in October 2009. The ultimate increase in the unemployment rate was 5 percentage points, larger than the fall in GDP. But Okun's law, based on the data prior to the Great Recession, suggests that the movement in the unemployment rate should have been smaller than the change in GDP. Applying the Okun's law 1-to-2.5 relationship, the 4.2-percent drop in GDP should have increased the unemployment rate to nearly 7 percent, not as high as 10 percent.

The recovery was equally puzzling. Once the recession ended in June 2009, GDP grew 7 percent over the first three years of the recovery, or about 2.3 percent a year. Had Okun's law worked as it did historically, such an

increase in GDP would have reduced the unemployment rate by 2.8 percentage points ($7/2.5$), a little under a 1 percentage point reduction per year. So three years into the recovery, in July 2012, the unemployment rate would have been about 6.7 percent (9.5 percent in June 2009 minus the 2.8 percent improvement due to GDP growth). But in reality, in the middle of 2012, unemployment was still above 8 percent.

All this called the Okun's law relationship into question. And this question is an important one. Okun's law is the link between output growth, which can be affected by policies, and unemployment and jobs, which are important for people. If the link no longer works like it used to, then economic policies aimed at stimulating GDP will not translate to job growth the way they used to. This has profound implications.

A new shift for Okun's law

Even if one suspected a change in Okun's law during the Great Recession, more data were needed to confirm it, using modern scientific methods. Several researchers who investigated this were forced to conclude that the evidence for a change was insufficient. The most recent such study (<http://www.imf.org/external/np/res/seminars/2012/arc/pdf/BLL.pdf>) was done in 2012, and it indeed did not have sufficient data to draw a firm conclusion.

But with several more years of data, we are now in a better position than earlier researchers to investigate the possibility of a change in the long-standing Okun's law relationship. Applying advanced statistical techniques to the data depicted on Chart 2, we found a high probability that the link between output growth and the unemployment rate captured by Okun's law altered around 2005.

Our results indicate that after 2005, two significant changes occurred: The growth trend of GDP slowed considerably, and the unemployment rate became more responsive to changes in GDP. The magnitude of this is summarized in Table 1. Prior to 2005, GDP grew on average by 3.5 percent a year. After 2005, that growth trend slowed to 1.6 percent. And the increased sensitivity of the unemployment rate to GDP means that after 2005, the unemployment rate could be expected to rise much more in recessions than it used to. It also means that when the unemployment rate falls during recoveries, economic growth will be subdued, as we have seen in the past few years.

In short, the Okun's law link between the unemployment rate and output appears to have shifted. Before 2005, the relationship was 1-to-2.5. Since then, however, it appears to have a new 1-to-1.4 ratio: For unemployment to fall by 1 percentage point, economic output has to grow only 1.4 percent above the trend rather than the 2.5 percent seen before 2005.

As even more data become available in the future, these conclusions will be refined. But even now we can say with a reasonable degree of certainty that the connection between output growth and unemployment is not what it used to be.

The new employment landscape

The link between output growth and the unemployment rate captured by Okun's law results from a combination of the employment decisions by companies in the face of changing demand and the labor-market decisions of people in the face of changing employment (this is illustrated in Chart 1). Which of these two linkages altered when Okun's law shifted in 2005?

The behavior of people in the labor market does not appear to have changed. Both before and after 2005, a 1-percent reduction in the number of jobs has led the unemployment rate to rise by about 0.75 percentage points.

By looking at the data about jobs and unemployment separately, we find that the behavior of companies took a different turn. Prior to 2005, when faced with a drop in demand, companies tended to reduce employment by about half the size of the drop—the value that was used in Chart 1. But after 2005, it appears that companies have been reducing employment by 95 percent of the fall in demand they face.

Table 1. Okun's law changes after 2005

	Prior to 2005	After 2005
Average GDP growth	3.5% per year	1.6% per year
When GDP falls by 1 percent	Unemployment rate grows 0.4 percentage points	Unemployment rate grows 0.7 percentage points
For unemployment rate to fall by 1 percentage point	GDP has to grow 2.5 percent above the trend	GDP has to grow 1.4 percent above the trend

This new behavior of companies implies that it is no longer difficult or time-consuming for them to find suitable employees. (See AIER Research Brief, March 2016, <https://www.aier.org/research/drop-job-related-moves-suggests-more-efficient-economy>.) The difficulty of finding new employees once prevented companies from laying off people as soon as they saw any slowdown in demand. But since they now appear to lay off people much more readily in an economic slowdown, employers must believe that recruiting new people will not be a problem once the economy starts growing again.

One other reason may contribute to the change in company behavior. The Great Recession was accompanied by a significant structural reallocation in the U.S. economy. Such structural recessions affect employment in distinctive ways, described in more detail in AIER's research study, "The Changing Nature of Recessions" (<https://www.aier.org/research/changing-nature-recessions>).

In structural recessions, the mix of goods and services produced by the economy changes significantly and permanently. For example, even today, fewer houses are being built than in 2005. Very likely, there are fewer mortgage origination officers and real estate agents today than there were in 2005. In the face of the housing crisis, companies in housing-related sectors could very well foresee that the crisis would change the industry forever. Therefore, there was no benefit to retaining their existing employees. And besides, many of these companies went out of business, so keeping their employees was not an option, anyway.

In structural recessions the increase in the unemployment rate may match closely the fall in GDP, as was the case in the latest recession. If future recessions tend to be predominantly structural, they will bring larger increases in unemployment than used to be the case.

Lessons to learn (What does this mean for me?)

Data we have to date suggest that the link between output growth and unemployment, traditionally captured by the Okun's law, may have changed around 2005. As more data become available in the future, this conclusion may be modified or strengthened. But some implications are already worth noting.

The growth trend of GDP has slowed significantly in the past several years. Expecting GDP growth in excess of 3-4 percent, which was fairly common before 2005, is too optimistic going forward.

It appears that companies lay off workers in the face of GDP fluctuations much more readily than they used to. The wisdom of doing so may be debatable, but this behavior is likely to continue. Expect employers to be willing to lay off people in tough economic times. Ensure that you have sufficient savings to get through such a situation, should it happen to you.

Finally, policymakers should take note of the change in Okun's law. Policies aimed at influencing GDP growth will now have a different effect on jobs than they used to. And jobs, not GDP growth, is what people care most about. ☺

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