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SUMMARY

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Average Wage Growth and Related Economic Trends in 2022

The economy in 2022 has been marked by high inflation and a tight labor market. While year-over-year average hourly earnings growth has reached some of the highest levels seen in decades in *nominal* (not adjusted for inflation) terms, it still has not kept pace with inflation. This is a potentially concerning trend because increases in *real* (inflation adjusted) wages are a proxy for an improving standard of living for workers. When real wage growth is negative, as it has been since 2021, workers experience a net loss in purchasing power, despite any nominal wage gains.

One driver of increasing nominal wages over the course of 2021 and 2022 has been a tight labor market, which has been characterized by low unemployment and plentiful job openings. The ratio of unemployed workers to job openings has been less than one since early 2021, indicating that there are more job openings than unemployed workers. This is caused, in part, by a smaller labor force as a percentage of the population. The labor force participation rate remains roughly one percentage point below its pre-pandemic level and has been relatively stagnant throughout 2022. Given the low supply of labor, many employers have increased nominal wages at relatively high rates in order to attract workers. However, nominal wage growth has begun to slow. An additional sign of some loosening in the labor market is that the ratio of unemployed workers to job openings has been leveling off in recent months and has even begun to increase. Nonetheless, the ratio remains low, indicating that even if the labor market is starting to loosen, it is still quite tight.

Economists have debated the extent to which rising nominal wages could be contributing to inflationary pressures. Some have even warned of a possible forthcoming wage-price spiral in which workers cause inflation to rise by demanding wage increases that meet their expectations of future inflation. While most data suggests that the United States is not in imminent danger of entering a wage-price spiral, there is some indication that recent nominal wage growth, coupled with a recent slowdown in productivity growth, could be a contributing factor to inflation. The relationship of wage growth to productivity is important in this context. Increases in wages that occur in tandem with increases in labor productivity are generally viewed as more sustainable than those that do not. Productivity increases allow for more goods and services to be produced using the same amount of labor. Therefore, businesses can increase output and revenues without necessarily raising prices. In this case, a corresponding wage increase would not be expected to fuel high inflation. However, in such a case where wage growth outstrips productivity growth, workers are being paid more than they add to their employers' output and revenue. This causes employers' costs to increase, which can result in increasing prices if businesses pass through their higher prices to customers. To this point in the current wage growth trend, real wage growth remains below labor productivity growth. However, labor productivity growth has recently become negative, which could create other economic challenges if the trend continues.

Labor market dynamics and inflation have and will continue to play a major role in wage trends. Central to how labor market tightness and inflation may change in the coming months is the implementation of policy decisions, notably Federal Reserve (Fed) decisions on raising interest rates. The Fed has been consistently increasing rates since March 2022 in an effort to reduce inflation, but the unemployment rate—which can potentially rise when interest rates do—has nonetheless remained quite low, similar to the lowest levels seen in previous expansions. The unemployment rate stability alone is not necessarily a definitive sign that the interest rate increases are not causing labor market conditions to loosen, though. One potential indication of labor market loosening is that nominal wage growth appears to have peaked (even though it is still at a relatively high level). It is unclear how much the Fed would potentially continue to raise interest rates in order to bring inflation down. What nominal and real wage growth will look like on the other side of this period of sustained high inflation will likely depend on how long it takes inflation to fall and how higher interest rates affect unemployment. While the Fed maintains that it will be able to lower inflation with only moderate impacts to the labor market, skeptics project that the Fed's actions could result in a recession with more severe consequences for employment and wage growth.

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Introduction

Wages, and specifically if and how they grow relative to prices, are important to the overall functioning of the economy. Wage growth is often cited as a proxy measure of economic conditions and standard of living. If wages are growing, aggregate demand (total spending) is generally expected to be strong and economic conditions therefore robust. If, over time, wages rise faster than prices do—known as inflation in the case of increasing prices and deflation in the case of decreasing prices—then workers can afford more and better goods and services, thereby increasing their standard of living. However, if wages rise too quickly, that can potentially cause inflation under certain market conditions. As a result, if and by how much wages grow can have important policy implications for a wide array of issues.

In 2022, wages rose quickly, but so did prices. Year-over-year average hourly earnings growth reached some of the highest levels seen in decades in *nominal* (i.e., not adjusted for inflation) terms, and yet it did not keep pace with inflation, so *real* wages (i.e., wages adjusted for inflation) have fallen.[1] While some commentators are concerned about falling real wages and the potential that this could lower standards of living, others are concerned that the relatively high wage growth seen over the past year could be contributing to inflationary pressures in the economy. This report examines these issues by considering recent wage trends in the context of inflation and the labor market. The report then considers potential future paths of wage growth and what each one might mean for economic conditions in the coming months and years.

Data Used in This Report

Colloquially, people may refer to terms such as *wages*, *earnings*, *compensation*, *pay*, or *income* to mean the money they receive from their jobs. However, statistical agencies such as the Bureau of Labor Statistics (BLS), Census Bureau, and Bureau of Economic Analysis (BEA) make distinctions among such terms.[2]

For the purposes of this report, wage trends will be analyzed using the BLS Current Employment Statistics (CES) Survey average hourly earnings measure. The CES is a monthly survey of businesses and government agencies that gathers establishment employment information, including wages. In this context, *earnings* is defined as the gross actual returns to employees excluding benefits, irregular bonuses, retroactive items, and payroll taxes. CES is an establishment survey, meaning that workers who do not work for establishments are not included. Excluded workers include proprietors, the unincorporated self-employed, unpaid volunteer or family employees, domestic employees, and military personnel.[3] CES average hourly earnings is perhaps one of the most widely used wage series. It is the wage series included in BLS's monthly jobs report and serves as a Principal Federal Economic Indicator—a series designated by the Office of Management and Budget and subject to rules established in its Statistical Policy Directive No. 3.[4]

[1] As this report considers only average wage growth, the discussion does not include the differences in nominal and real wage growth across the wage distribution. The losses to wages from inflation will differ across this distribution. For example, according to the Federal Reserve Bank of Atlanta's Wage Growth Tracker, average nominal wage growth has been notably higher in the first wage quartile (one of four equal groups into which a population can be divided) than the other quartiles in 2022, meaning that real wage growth would also be relatively higher. Average nominal wage growth in the first wage quartile averaged about 6.6% between January and September 2022 while overall wage growth averaged about 5%. See Federal Reserve Bank of Atlanta, "Wage Growth Tracker," https://www.atlantafed.org/chcs/wage-growth-tracker.

[2] For a more detailed discussion of wage and related measurements and their associated methodologies, see [new wage metrics report].

[3] BLS, "Technical Notes for the Current Employment Statistics Survey," https://www.bls.gov/web/empsit/cestn.htm; BLS, "Handbook of Methods: Current Employment Statistics," https://www.bls.gov/opub/hom/ces/home.htm; and BLS, "CES Frequently Asked Questions," https://www.bls.gov/web/empsit/cesfaq.htm.

[4] BLS, "Economy at a Glance," https://www.bls.gov/eag/abouteag.htm. For information about Principal Federal Economic Indicators, see BEA, "Glossary: Principal Economic Indicators," https://www.bea.gov/help/glossary/

How Are Wages Determined?

Wages and employment are broadly determined by the pool of available workers (or the supply of labor), the needs of employers (the demand for labor), and institutions (both formal and informal rules) governing labor markets.[5] Employers seek to hire a certain number of workers in order to produce their goods or services. Depending on how many workers are available, employers may decide to adjust wages to attract workers. From the perspective of workers, wages generally need to be high enough that they prefer being employed to being unemployed. The higher the wage level, the more workers will want jobs but the fewer workers employers will be able to hire. In the short term, some of the main determinants of wages are the price level and the state of the labor market.[6] In the long term, one of the main determinants of wages is productivity.[7] These determinants are discussed in more detail in subsequent sections.

Wage Growth and the Economy

This section examines wages in the context of broader economic trends. In particular, it looks at the interactions among wage growth, inflation, productivity, and labor market tightness. A discussion of potential future trends follows.

Trends in Wage Growth

Nominal Wage Growth

In the economic cycle preceding the COVID-19 pandemic, nominal average wages trended downward in the wake of the 2007-2009 recession and then upward as the economy continued its recovery and expansion. Prior to the onset of the pandemic, nominal wage growth was at roughly the same level as early 2009, when the recession-related decline began (see **Figure 2**).

Average Wages and the Composition of Employment During COVID-19

Given that the CES measure is an average of all wages, the composition of the workforce at any given time can affect the average wage notably. For example, at the height of the COVID-19 pandemic in April 2020, the unemployment rate increased by 10.3 percentage points in one month to 14.7%, the highest rate of unemployment

principal-economic-indicators; and Office of Management and Budget, ""Statistical Policy Directive No. 3: Compilation, Release, and Evaluation of Principal Federal Economic Indicators," 84 *Federal Register* 14682-14684, April 11, 2019.

[5] For detailed information on the factors affecting wage trends, see CRS Report R45090, *Real Wage Trends, 1979 to 2019*, by Sarah A. Donovan and David H. Bradley. Per this report, *labor market institutions* is defined as "the set of formal and informal rules that govern compensation, and include the minimum wage, the strength and structure of labor unions, and employment practices that affect workers' ability to bargain over compensation."

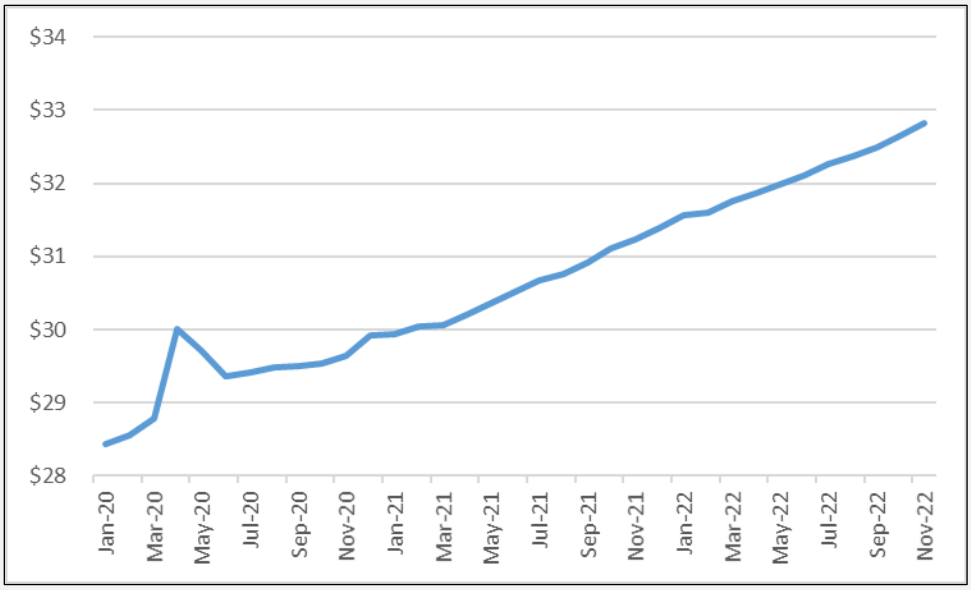
[6] Olivier Blanchard and David R. Johnson, "Chapter 6: The Labor Market," in *Macroeconomics*, 6th ed. (Pearson Education, 2013), pp. 111-132.

[7] In economic theory, wages are equal to the marginal product of labor—the added production from the last worker hired. In other words, employers set wages for workers based on how much those workers individually produce. This theory assumes a number of conditions, including perfect competition, perfect skill-matching, no transaction or transition costs, and perfect information, among others. In practice, these conditions generally do not hold. Instead, frictions in labor markets result in wages that at any given time may deviate from the marginal product of labor. Nevertheless, the forces described by this theory explain how over longer periods of time, wages are largely determined by worker productivity.

in the United States since the Great Depression.[8] In such a circumstance, many would assume that wages would decrease. However, average *hourly* wages increased by about 1.22% month over month in April 2020, the largest increase in the history of the series (see **Figure 1**), despite a 23.9% annualized decrease in *total* nonfarm wages and salaries in the first quarter of 2020.[9] This occurred, in part, because a disproportionate amount of the workers who lost their jobs were on the lower end of the wage distribution, thereby pushing up the average when these workers were no longer in the distribution.[10] Wage growth is often considered to be a sign of increasing well-being for workers, but that was not the case across the labor force in April 2020. The large increase in overall unemployment and significant losses in employment in industries that employ a large amount of lower-wage workers, such as leisure and hospitality (46% decrease in April 2020 in leisure and hospitality as compared to a 13.6% decrease for total nonfarm employment),[11] all pointed to worsening conditions in the labor market for workers.

Figure 1. Average Hourly Earnings

January 2020 to November 2022



Source: BLS. "Current Employment Statistics Survey."

The pandemic created a huge upheaval in the economy. By most measures, 2020 briefly saw the worst labor market since the Great Depression. The intensity of the impacts from the pandemic on the labor market quickly dissipated, however, resulting in an unusual amount of volatility in economic data. As described in the text box above, the increase and decrease in wages in the first several months of the pandemic were an artifice of the data related to the changing composition of the employed. However, wage growth continued to increase thereafter, although growth has begun leveling off in recent months. One of the notable differences in **Figure 2** between all employees, which includes management, and only production and nonsupervisory employees is

[8] BLS, "Current Population Survey," https://www.bls.gov/cps/.

[9] BLS, "Current Employment Statistics," https://www.bls.gov/ces/ (BLS began publishing data for the current average hourly earnings series in 2006); and BEA, "Regional Data," Table SQINC7N Wages and Salaries by NAICS Industry, https://apps.bea.gov/iTable/iTable.cfm?reqid=70.

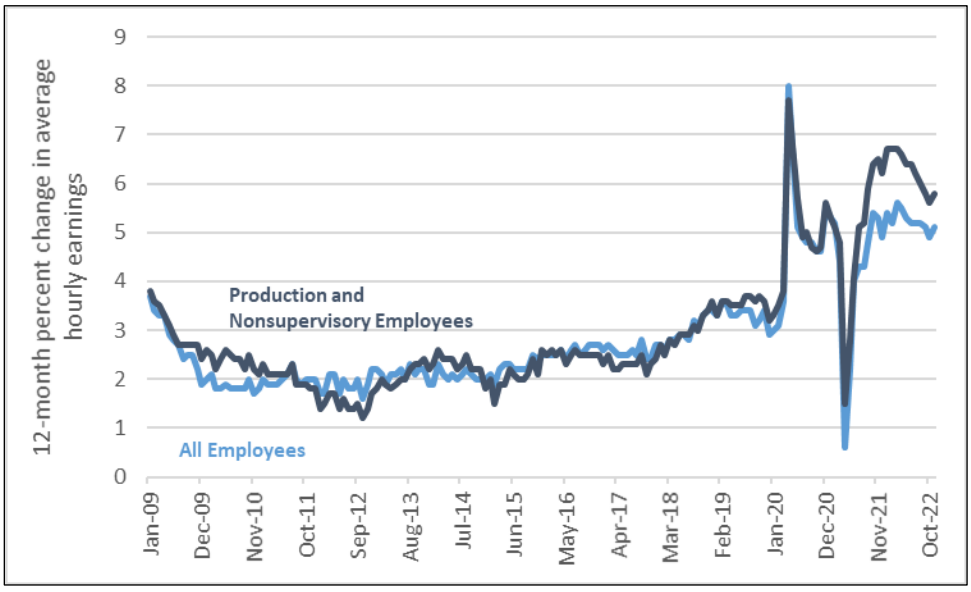
[10] BLS, "Real Hourly Earnings up 7.5 Percent for Year Ending April 2020, Reflecting Loss of Lower-Paying Jobs," May 18, 2020, https://www.bls.gov/opub/ted/2020/real-hourly-earnings-up-7-point-5-percent-for-year-ending-april-2020-reflecting-loss-of-lower-paying-jobs.htm.

[11] BLS, "Current Employment Statistics."

that the latter has experienced higher wage growth in 2021 and 2022 than the former has.[12] Prior to the pandemic, wages for all employees and production and nonsupervisory employees tracked fairly closely, with no distinguishable pattern of either being higher than the other. This pattern may indicate relatively high demand for, or low supply of, production and nonsupervisory employees, or both. While wage growth for production and nonsupervisory employees has dropped more so than for all employees in recent months, the gap between the two is still larger than at any time in the expansion following the 2007-2009 recession. Both groups also still show higher nominal wage growth than at any point in the prior expansion, likely as a result of a tight labor market, which is discussed in more detail in a subsequent section.

Figure 2. Nominal Average Wage Growth

January 2009 to November 2022



Source: BLS. "Current Employment Statistics Survey."

Notes: Data are seasonally adjusted. The rapid deceleration in wage growth in April 2021 is largely owing to a phenomenon known as *base effects*. Wage growth for a particular month in the figure is measured as the percent change since the base month a year earlier. Thus, the figure for April 2021 is small because wages were relatively high in the base month (i.e., April 2020), as discussed in the text box above.

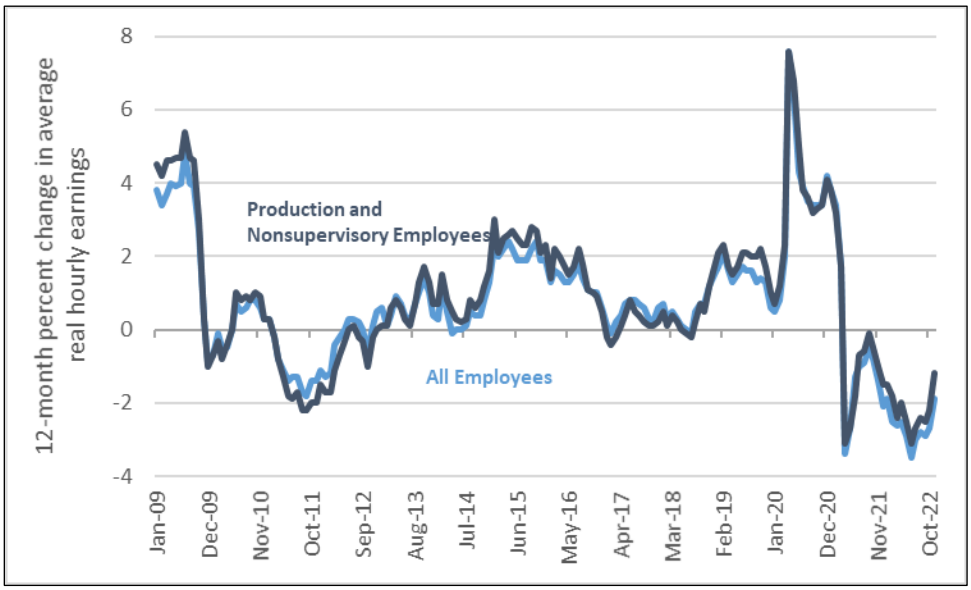
Real Wage Growth

The wage growth story changes significantly when viewing real wage growth instead of nominal wage growth. Even with high nominal wage growth, inflation has been higher still, meaning that workers have been experiencing a net loss in purchasing power. As shown in **Figure 3**, in real terms, wages have actually been decreasing (real wage growth has been negative) beginning in 2021 and continuing throughout 2022. The dynamic between wages and inflation is explored further in the following sections.

[12] BLS defines *production and nonsupervisory employees* as production and related employees in manufacturing and mining and logging, construction workers in construction, and nonsupervisory employees in private service-providing industries. *All employees* covers all private sector employees. See BLS, *Handbook of Methods*, https://www.bls.gov/opub/hom/ces/concepts.htm.

Figure 3. Real Average Wage Growth

January 2009 to November 2022



Source: BLS. "Current Employment Statistics Survey."

Notes: Data are seasonally adjusted.

Wages and Labor Market Tightness: Unmet Labor Demand

A main driver of increasing nominal wages in 2021 and 2022 has been labor market tightness.[13] A tight labor market describes one in which jobs are relatively plentiful and available workers relatively scarce. In such a scenario (which is typically associated with economic expansion), businesses may be expanding and looking to hire more workers. In this situation, unemployment is low, meaning there are relatively low numbers of workers available. Workers who are available are more likely to have more than one employment option, generally putting workers in a stronger bargaining position. Given the situation, employers may be willing to pay higher wages in order to attract workers.

Labor market tightness is often illustrated by comparing the number of unemployed workers to the number of job openings in the labor market. **Figure 4** shows a declining ratio of unemployed workers to job openings in the economy, which suggests that available workers are becoming increasingly scarce. This ratio has been less than one since early 2021, indicating that there are more job openings than unemployed workers. This reflects, in part, a smaller labor force as a percentage of the population. The labor force participation rate—the percentage of the civilian non-institutional population that is either working or actively looking for work—remains roughly one percentage point below its pre-pandemic level and has been relatively stagnant throughout 2022.[14] Given the low participation and current scarcity of workers, many employers have increased nominal wages at relatively high rates in order to attract workers.

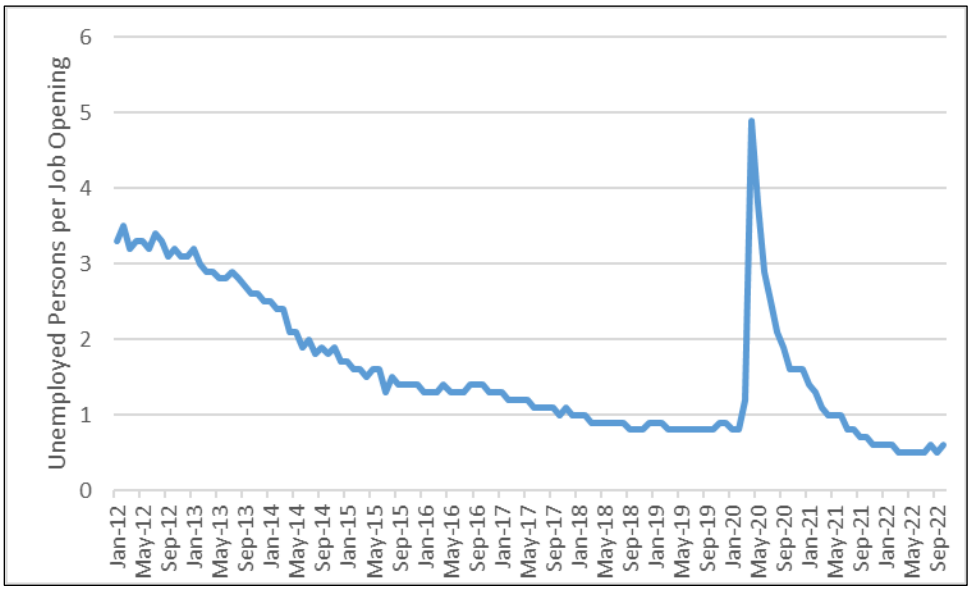
[13] For example, see Romain Duval, Myrto Oikonomou, and Marina M. Tavares, "Tight Jobs Market Is a Boon for Workers But Could Add to Inflation Risks," International Monetary Fund (IMF), March 31, 2022, https://www.imf.org/en/Blogs/Articles/2022/03/31/tight-jobs-market-is-a-boon-for-workers-but-could-add-to-inflation-risks; and Harry J. Holzer, "Tight Labor Markets and Wage Growth in the Current Economy," Brookings Institution, April 13, 2022, https://www.brookings.edu/research/tight-labor-markets-and-wage-growth-in-the-current-economy/.

[14] BLS, "Current Population Survey."

Like nominal wage growth, the ratio of unemployed workers to job openings has been leveling off in recent months. Most recently, it has increased, resulting from a leveling off in unemployed persons and a decrease in job openings. Nonetheless, the ratio remains low, indicating that even if the labor market is starting to loosen, it is still quite tight.

Figure 4. Unemployed Persons per Job Opening Ratio

January 2012 to October 2022



Source: BLS, "Job Openings and Labor Turnover Survey."

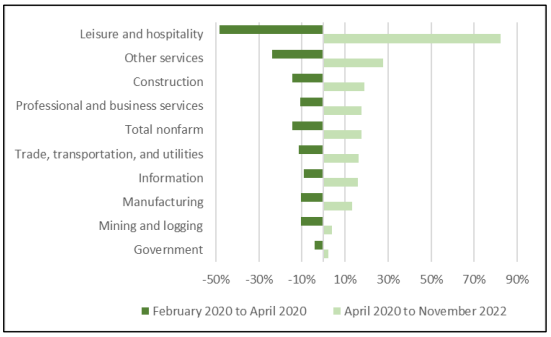
Notes: Data are seasonally adjusted.

The increases in wages and employment have been more notable in certain sectors, such as leisure and hospitality, than others (**Figure 5**). Leisure and hospitality saw a very large decrease in employment at the height of the pandemic, when in-person activities were significantly curtailed. Leisure and hospitality subsequently added a higher percentage of jobs since the pandemic low as compared to other sectors.[15] In total, this has resulted in above-average wage growth in this sector as leisure and hospitality businesses try to fill the large vacancies created during the pandemic. Over much of 2021 and 2022, real wage growth in the leisure and hospitality sector has been positive, as shown in **Figure 6**. Like overall wage growth, wage growth in this sector has begun to decelerate, perhaps indicating some loosening of conditions.

[15] BLS, "Leisure and Hospitality Projected to Mostly Recover Pandemic-Driven Employment Losses," October 17, 2022, https://www.bls.gov/opub/ted/2022/leisure-and-hospitality-projected-to-mostly-recover-pandemic-driven-employment-losses.htm.

Figure 5. Change in Employment Across Sectors

February 2020 to November 2022

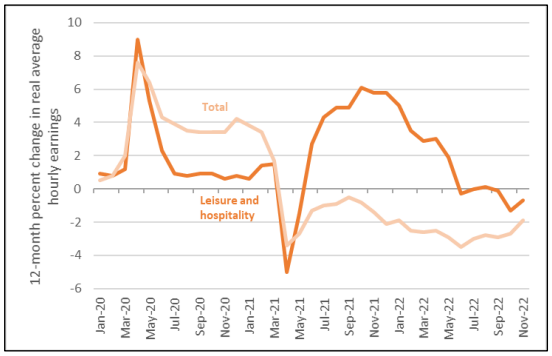


Source: CRS calculations using BLS CES data.

Notes: Underlying employment data are seasonally adjusted. April 2020 used as a comparison point because unemployment peaked in that month.

Figure 6. Leisure and Hospitality Real Wage Growth

January 2020 to November 2022



Source: BLS, CES.

Notes: Data are seasonally adjusted.

Wages and Inflation

There is a phenomenon in economics known as the *wage-price spiral*.[16] A wage-price spiral is said to occur when expectations of inflation become embedded in decisionmaking on the part of workers, who demand higher wages to compensate themselves for perceived future price increases in a way that creates more inflation, creating a cycle that results in persistently increasing inflation.[17] Wages are generally set in nominal terms, a dollar amount. When setting and bargaining wages, employers and workers (to the extent that they have bargaining power) are considering the prices they think they will face in the future. If employers think they will be able to get more money for their products or services in coming months or years, they may be willing to pay higher wages. If employees think things will cost more in the future, they may seek higher wages. To the extent that workers have bargaining power and are able to negotiate higher pay, the costs of businesses will increase as a result, causing those businesses to increase the prices of their products in order to cover those increased costs (assuming businesses do not reduce profit margins instead). Workers see that prices have increased, fulfilling their expectations and therefore further embedding expectations that prices will continue to increase. This self-fulfilling prophecy can prove difficult to break. Current high inflation and roughly a year of high nominal wage growth has some spectators worried that the United States could be on the verge of a wage-price spiral or that, at the very least, rising wages are playing some role in high inflation.[18]

[16] A consensus on a precise definition of *wage-price spiral* does not exist among economists. To some extent, the debate about whether or not the United States is experiencing a wage-price spiral will depend upon the definitions used. See Jorge Alvarez et al., *Wage-Price Spirals: What Is the Historical Evidence?*, IMF, November 2022, p. 6, https://www.imf.org/en/Publications/WP/Issues/2022/11/11/Wage-Price-Spirals-What-is-the-Historical-Evidence-525073.

[17] A wage-price spiral is only one reason why businesses might increase prices.

[18] For example, see Jason Furman, "America's Wage-Price Persistence Must Be Stopped," August 2, 2022, https://www.project-syndicate.org/commentary/inflation-wage-price-spiral-requires-fed-tightening-by-jason-furman-2022-08.

Whether the United States is currently in a wage-price spiral cannot be answered simply by determining if wages have been growing or declining. In the current high-inflation environment, the rate of change in wages matters. In the classic wage-price spiral example, workers are trying to have their wages outpace inflation, so some real wage gains would be expected, but this has not happened. Given the fairly persistent reduction in real wages in 2022, it is unlikely that the United States is currently experiencing a wage-price spiral.[19] Although workers have taken advantage of a tight labor market to increase their wage demands, that for a majority of workers real wages have not increased could indicate several things. It is possible that workers may not have fully anticipated inflation, but it could also be evidence of frictions in the labor market such as a mismatch in bargaining power or a lag in the wage response to tight labor market conditions.[20]

A look at larger labor market and macroeconomic conditions could help to determine if the United States may likely enter a wage-price spiral in the near term. On the one hand, cost-of-living adjustments and other automatic wage indexation is not prevalent in the United States, based on historical comparisons, and some literature suggests that the pass-through of wages to inflation has declined over time.[21] Thus, wages would not be expected to automatically adjust to the price level (meaning wages increases could be lower and less frequent than with indexation) and any increases in wages may structurally result in less inflation than in the past. On the other hand, U.S. labor markets have been fairly tight in recent months (although there are some indications it may be loosening). Workers typically have more bargaining power in a tight labor market than in a loose one, thus enabling them to either more quickly renegotiate higher wages or negotiate more significant wage increases than they would have been able to in a looser market.

Even if the United States has not, to this point, experienced a wage-price spiral, it is possible, although not necessarily likely, that it will enter one. One metric economists may consider when determining the likelihood of a future wage-price spiral is inflation expectations. As noted above, for a wage-price spiral to take hold, workers would likely need to bargain for wage increases that outpace inflation. If workers' expectations of inflation remain low and stable, then wage growth would be less likely to lead to a wage-price spiral. The evidence here is mixed. According to the Federal Reserve's Survey of Consumer Finance, the median one-year-ahead expected inflation rate rose significantly in 2021, although it has decreased for the past couple of months. On the other hand, the median three-year-ahead expected inflation rate has remained relatively anchored throughout 2021 and 2022.[22] A recent Federal Reserve Bank of San Francisco working paper found the role of inflation expectations in wage changes to have increased over the course of the pandemic, with a one-to-one relationship between the increase in expected inflation and resultant

[19] John Bluedorn, "Wage-Price Spiral Risks Appear Contained Despite High Inflation," IMF, October 5, 2022, https://www.imf.org/en/Blogs/Articles/2022/10/05/wage-price-spiral-risks-appear-contained-despite-high-inflation.

[20] Nominal wages adjusting slowly to economic conditions is a phenomenon coined "sticky wages." Wages are typically more sticky in the downward direction than upward direction (nominal wages do not typically fall, even during recessions) but often do display some stickiness in the upward direction as well. See Renee Haltom, *Sticky Wages*, Federal Reserve Bank of Richmond, 2013, https://www.richmondfed.org/~/media/richmondfedorg/publications/research/econ_focus/2013/q1/pdf/jargon_alert.pdf.

[21] Frederic Boissay et al., *Are Major Advanced Economies on the Verge of a Wage-Price Spiral?*, Bank of International Settlements, May 4, 2022, p. 3, https://www.bis.org/publ/bisbull53.pdf; and IMF, *United States: 2022 Article IV Consultation*, July 12, 2022, p. 19, https://www.imf.org/en/Publications/CR/Issues/2022/07/12/United-States-2022-Article-IV-Consultation-Press-Release-Staff-Report-and-Statement-by-the-520659.

[22] Federal Reserve Bank of New York Center for Microeconomic Data, "Survey of Consumer Expectations," https://www.newyorkfed.org/microeconomics/sce#/inflexp-1.

increase in wages currently.[23] All told, if expectations do become unambiguously unanchored, a wage-price spiral could occur.

The Relationship Between Wages and Productivity

Another metric that economists often look to in order to parse the effects of wage growth is productivity. A central long-term determinant of real wages in the economy is real labor productivity. Labor productivity is a measure of output produced by a unit of labor over a specified period of time. Productivity increases allow for more goods and services to be produced using the same amount of labor. In theory, an increase in productivity in theory results in an increase in wages, all else equal. For example, if a worker generates $10 of revenue per hour, the employer may be willing to paid up to $10 per hour. If that worker becomes more productive and generates $11 of revenue per hour, the employer's willingness to pay may increase to up to $11 as well. Therefore, increases in real wages that occur in tandem with increases in labor productivity are generally viewed as more sustainable than those that are not tied to productivity. Since productivity increases allow for increased output (and revenue) per unit of labor, a corresponding real wage increase would not be expected to push up inflation. Rather, productivity helps increase business profits without raising prices. Wages can rise only to a certain point, however, because if real wage growth outstrips productivity growth, workers are being paid more than they add to their employers' output and revenue. This increases employers' costs, which may result in increasing prices.

Figure 7 below shows the trends in labor productivity and real average hourly earnings growth over the past few years. The two series fluctuate from quarter to quarter, but wage growth has generally been slower than productivity growth, meaning that, in real terms, wage gains have typically been associated with productivity gains of greater value.

Both real wage and productivity growth have been consistently negative in 2022. While real wage declines have been deeper than productivity declines—and therefore not of immediate concern in terms of fueling inflation—declining productivity is, by itself, a concern for future wages. The extent to which this trend may continue is not certain, however. There is generally some evidence to suggest that labor productivity increases during recessions as workers boost their output during recession out of necessity or concern for being laid off, some of which would likely be reversed during an expansion.[24] During the height of the pandemic, employment decreased rapidly and then increased at a slower pace. Some of the factors temporarily holding back job growth had to do with the nature of the public health crisis. During this time, some workers were required to work harder, longer, or with fewer coworkers, resulting in increased productivity.[25] As the economy has recovered and added jobs at a relatively rapid clip, productivity would naturally decrease, all else equal—more workers means that each worker can work less intensively.[26]

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[23] Oscar Jorda, *Inflation and Wage Growth Since the Pandemic*, Federal Reserve Bank of San Francisco, September 2022, https://www.frbsf.org/wp-content/uploads/sites/4/wp2022-17.pdf.

[24] Yabor Ivanchev, *Does the Productivity of Individual Workers Increase During Recessions?*, BLS, June 2014, https://www.bls.gov/opub/mlr/2014/beyond-bls/does-the-productivity-of-individual-workers-increase-during-recessions.htm.

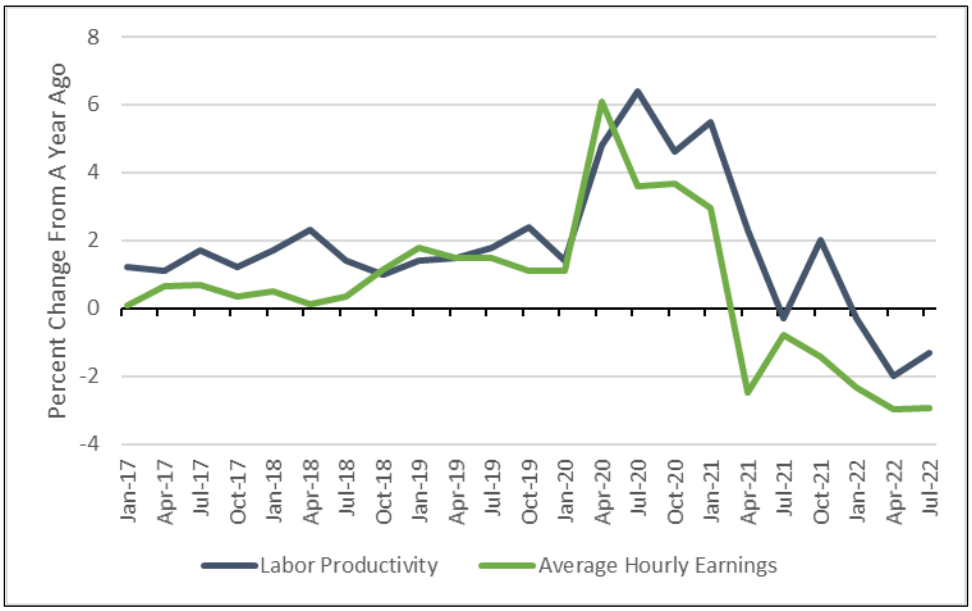
[25] There has been research suggesting that the increase in productivity at the height of the pandemic was the result of changes in the composition of the workforce. See Jay Stewart, *Why Was Labor Productivity Growth So High During the COVID-19 Pandemic? The Role of Labor Composition*, BLS, January 25, 2022, https://www.bls.gov/osmr/research-papers/2022/pdf/ec220010.pdf.

[26] Other factors can change apart from employment that would affect productivity in such a scenario, such as labor-enhancing capital investments, for example.

However, some factors affecting business operations and the labor force have proven longer lasting and could result in a downward shift in productivity growth trends. Such factors include supply chain issues, health factors, low labor force participation, and the changing nature of work. The evidence as to which forces are having the greater effects is mixed.[27]

Figure 7. Labor Productivity and Real Wage Growth

Q1 2017 to Q3 2022



Source: CRS calculations using BLS productivity and CES data.

Notes: Labor productivity is measured using real output per hour. Data are seasonally adjusted.

[27] Jason Furman and Wilson Powell III, "Record US Productivity Slump in First Half of 2022 Risks Higher Inflation and Unemployment," Peterson Institute for International Economics, August 9, 2022, https://www.piie.com/blogs/realtime-economic-issues-watch/record-us-productivity-slump-first-half-2022-risks-higher.

The Productivity-Pay Gap

The trend over the past few years of productivity growth outpacing real wage growth is not a new phenomenon, and it has been the subject of much research. There is a debate among economists about the so-called productivity-pay gap. Most economists agree that until the 1970s, productivity and pay trends were closely correlated. However, there is disagreement about whether productivity and pay trends began to diverge at that point, with productivity growing faster than real wages. Much of the disagreement comes down to methodology for analyzing these trends. There are several different measures of productivity, pay, and inflation that can be used in determining trends in productivity and pay, and as such, trends across different methodologies may differ.[28] For example, BLS found that across sectors and industries, much of the productivity-pay gap could be explained by using an output deflator as opposed to the consumer price index to calculate real compensation.[29] Nonetheless, many measures do find a gap. Explanations for this gap are wide-ranging, including changes to the way employers compensate their employees, globalization, and increasing wage inequality.[30]

Outlook in the Near-Term

As described in this report, labor market dynamics and inflation have and will continue to play a major role in short-term wage trends. Certain policy decisions may be central to how the labor market and inflation may change in the coming months, notably Federal Reserve (Fed) decisions on interest rates.[31] The Fed has a congressional mandate to maintain price stability (generally interpreted to mean low inflation) and maximum employment to the extent possible. Economists typically view a tradeoff between these two goals, the theory being that increasing demand increases employment and makes price increases more likely. Conversely, reducing inflation may be achieved by decreasing demand, which may decrease employment. The strength of this relationship has not been steady over time, however.[32] The Fed's main tool to affect employment and inflation is the federal funds rate, a short-term interest rate used by banks.[33] Rising interest rates work to lower demand in the economy, which should lower inflation but may also lower

[28] For a discussion of methodological choices when approaching this issue, see Michael R. Strain, "The Link Between Wages and Productivity Is Strong," 2019, https://www.aspeninstitute.org/wp-content/uploads/2019/01/3.2-Pgs.-168-179-The-Link-Between-Wages-and-Productivity-is-Strong.pdf. The author endorses a specific methodology, and there are other arguments for using a wide array of measures.

[29] This was not the case across all industries, and BLS noted that decreasing labor share of income—the share of income going to workers as opposed to other factors of production, such as capital—was also a major explanatory variable, and the dominant one in some industries. See Michael Brill et al., *Understanding the Labor Productivity and Compensation Gap*, BLS, June 2017, https://www.bls.gov/opub/btn/volume-6/pdf/understanding-the-labor-productivity-and-compensation-gap.pdf.

[30] For example, see Cyrill Schwellnus, Andreas Kappeler, and Pierre-Alain Pionnier, "Decoupling of Wages from Productivity," Organization for Economic Cooperation and Development, January 31, 2017, https://www.oecd-ilibrary.org/economics/decoupling-of-wages-from-productivity_d4764493-en; and Richard G. Anderson, "How Well Do Wages Follow Productivity Growth?," Federal Reserve Bank of St. Louis, 2007, https://files.stlouisfed.org/files/htdocs/publications/es/07/ES0707.pdf.

[31] The Biden Administration has also undertaken initiatives to reduce supply chain pressures, which could also work to lower inflation. See CRS Insight IN11927, *Summary of Selected Biden Administration Actions on Supply Chains*, by Lida R. Weinstock; and CRS Insight IN11926, *Supply Disruptions and the U.S. Economy*, by Marc Labonte and Lida R. Weinstock.

[32] For example, see Kristie M. Engemann, "What Is the Phillips Curve (and Why Has It Flattened)?," Federal Reserve Bank of St. Louis, January 14, 2020, https://www.stlouisfed.org/open-vault/2020/january/what-is-phillips-curve-why-flattened.

[33] The Federal Reserve targets one specific interest rate, the federal funds rate, which in turn affects other interest rates throughout the economy. For more information on the Federal Reserve and monetary policy, see CRS In Focus IF11751, *Introduction to U.S. Economy: Monetary Policy*, by Marc Labonte; and CRS Insight IN11979, *Rising Interest Rates: Economic and Policy Implications*, by Marc Labonte.

wage growth. As total demand in the economy (which can be thought of as total spending in the economy) falls, businesses tend to lose revenue and may lay-off workers as a result. As unemployment increases with the decrease in demand for workers, those workers who stay employed may demand smaller raises, and those who are unemployed may be willing to accept lower wages than they previously would have in order to gain employment. In such a scenario, in theory, nominal wage growth unequivocally slows, and potentially becomes negative, depending on the severity of the situation. Real wage growth would be expected to slow as well, but could instead rise if falling demand causes inflation to fall faster than nominal wage growth.

In response to high inflation, the Fed has undertaken a series of interest rate hikes and says it anticipates continuing to do so in the coming months. At the November 2022 Federal Open Market Committee meeting, Fed Chair Jerome Powell indicated that the Fed is "taking forceful steps to moderate demand so that it comes into better alignment with supply. Our overarching focus is using our tools to bring inflation back down to our 2 percent goal and to keep longer-term inflation expectations well anchored. Reducing inflation is likely to require a sustained period of below-trend growth and some softening of labor market conditions. Restoring price stability is essential to set the stage for achieving maximum employment and stable prices in the longer run."[34]

What will actually happen moving forward is not certain. The Fed has been consistently increasing rates since March 2022, but the unemployment rate nonetheless has remained quite low at 3.7% in October 2022, similar to before the pandemic-induced recession. There are some indicators that the labor market has begun to cool, however. As discussed previously, the jobs openings rate is down from highs earlier in the year and the quits rate is also down from highs late in 2021, although both remain higher than they were prior to the pandemic. So perhaps the labor market is loosening, but for the time being it remains tight. This could indicate that nominal wage growth has peaked, even though it is still relatively high.[35]

It is unclear how much the Fed may decide to raise interest rates or how long it may keep them elevated to try to bring inflation down. What nominal and real wage growth will look like on the other side of this period of sustained high inflation will likely depend on the answers to these questions. While nominal wage growth is likely to slow as the Fed tackles inflation, it is not clear that this drop in nominal wage growth would result in a drop in real wage growth. If the Fed is able to successfully lower inflation without causing a sustained drop in nominal wages (negative nominal growth), then real wage growth would be higher as a result, even if nominal wage growth ends up lower than it is currently.

As of December 2022, the Fed projected that the appropriate monetary policy path would involve its target rate peaking at 5.1% in 2023 (as of December 2022, the target range is 4.25%-4.5%) and unemployment increasing to 4.6% in 2023 and 2024 before falling again.[36] These projections show fairly modest increases in unemployment. Therefore, the effects on nominal wages may also be fairly moderate—with gains to real wages over a relatively short horizon—if the projections hold. However, the Fed's assessment that the labor market is currently tight enough that inflation can be lowered without triggering a recession and resulting in more severe employment losses is

[34] Board of Governors of the Federal Reserve System, *Transcript of Chair Powell's Press Conference*, November 2, 2022, https://www.federalreserve.gov/mediacenter/files/FOMCpresconf20221102.pdf.

[35] Karen Dynan and Wilson Powell III, "US Wage Growth Has Likely Passed Its Peak and Is Slowing Despite Strong Demand for Workers," Peterson Institute for International Economics, June 3, 2022, https://www.piie.com/research/piie-charts/us-wage-growth-has-likely-passed-its-peak-and-slowing-despite-strong-demand.

[36] Board of Governors of the Federal Reserve System, "Summary of Economic Projections," December 14, 2022, https://www.federalreserve.gov/monetarypolicy/fomcprojtabl20221214.htm.

not a view shared by all economists. Many economists forecast a recession in the coming months. For example, the October 2022 *Wall Street Journal* Economic Forecasting Survey—a survey of roughly 70 private sector economists—shows the average respondent estimates the probability of recession within the year beginning in October 2022 to be 63%. Currently, such a recession is forecasted to be relatively short, with the average forecast projecting moderate but not severe job losses with unemployment peaking at 4.75% in mid-2024.[37] Of note, these projected unemployment increases are still very low based on historical recessions. Unemployment has never peaked at below 5% in the wake of a recession in the history of the series (going back to 1948). At this point, most forecasted scenarios would likely mean some real wage growth losses in the near term but likely gains over the mid-term. However, the path forward is highly uncertain, and the path for real wages will depend on the persistence of inflation and the severity of any future downturn.

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[37] Harriet Torry and Anthony DeBarros, "Economists Now Expect Recession, Job Losses by Next Year," *Wall Street Journal*, October 16, 2022, https://www.wsj.com/articles/economists-now-expect-a-recession-job-losses-by-next-year-11665859869.