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WELLS FARGO SECURITIES

Economics Group

Special Commentary

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Do Wages Still Matter for Inflation?

Executive Summary

Wage growth has garnered increasing attention in the heavily watched monthly employment reports. The scrutiny reflects the emphasis many Fed officials have placed on the critical link between slack in the labor market and inflation. With wages accounting for a significant share of costs in most industries, it makes intuitive sense that rising labor costs would soon develop into higher inflation. The reality, however, is that wage growth tells us little about future inflation. If anything, the relationship runs the other way, with inflation leading wage growth.

The limited influence of wage growth on inflation reflects the changing structure of the U.S. economy. Technology is making it easier than ever for consumers to compare prices, intensifying price competition. At the same time, globalization has diminished the role of the domestic labor market with a larger share of goods consumed imported from overseas. Finally, the inability of many firms to adjust prices frequently generates the need to set prices in anticipation of future costs, making inflation expectations a more significant driver of inflation than wages.

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Watching Wages for Signs of Inflation

The PCE deflator has only briefly brushed the Fed's 2 percent target since the start of the expansion (Figure 1). Nevertheless, most FOMC members remain confident that inflation will move higher from here. In the Committee's most recent economic projections published in June, the median estimate for where inflation would end the year was 1.6 percent and 1.7 percent for headline and core inflation, respectively, while both measures were projected to end 2018 at 2.0 percent (Figure 2). Although those estimates will likely come down a tick or two following recent months' softness, the path remains upward and is a key factor in the Committee's baseline outlook to further raise interest rates over the next year.

Figure 1

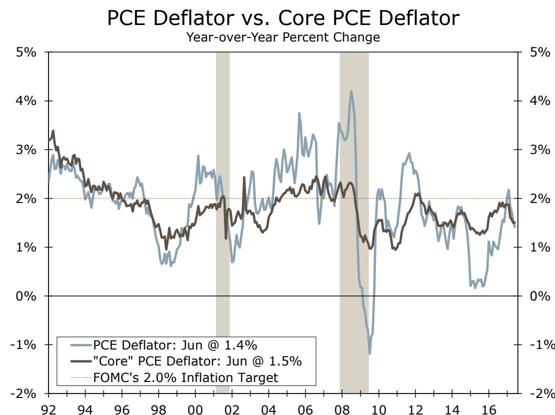
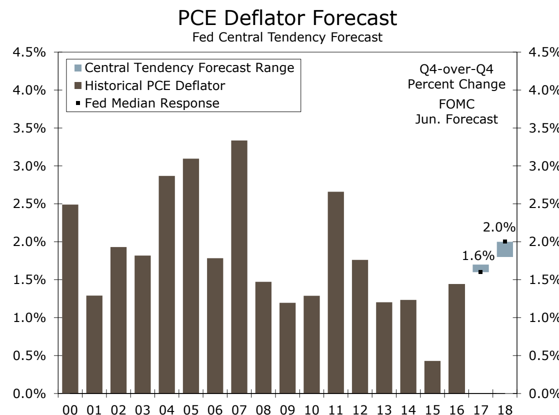


Figure 2



Source: U.S. Department of Commerce, Federal Reserve Board and Wells Fargo Securities

This report is available on wellsfargo.com/economics and on Bloomberg WFRE.

The unemployment rate has fallen below many estimates of full employment, while inflation has remained stubbornly below 2 percent.

The FOMC's confidence that inflation will head higher over the next year and a half hinges critically on the assumption that as resource slack is absorbed, upward pressure on prices follows. While resources include both labor and capital, the link between slack in the labor market and inflation garners more widespread attention. As unemployment declines, firms need to pay higher wages to attract and retain workers, and those costs in turn generate the need to raise prices. Over the past couple of years, the unemployment rate has fallen to where it is now below many estimates of full employment, while inflation—headline or core—has remained stubbornly below 2 percent. The result has been to closely watch wage growth as a sign of future inflation.

Wage growth has remained frustratingly low for workers and policymakers alike. After increasing only about 2 percent a year in the early years of the expansion, average hourly earnings began to strengthen in 2015. The uptrend has fizzled by multiple wage measures this year, however, and wage growth remains weak by historic standards (Figure 3). There are some signs that higher pay may be in the offing. Job openings are at an all-time high, underemployment is shrinking, and the share of small businesses raising compensation is hovering near cycle highs (Figure 4). But even if we see stronger wage growth, will it lead to more inflation?

Figure 3

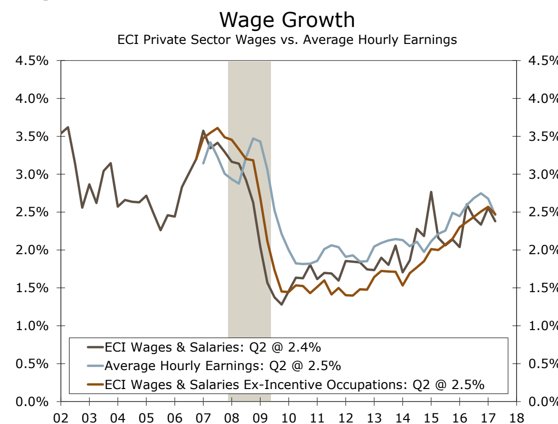
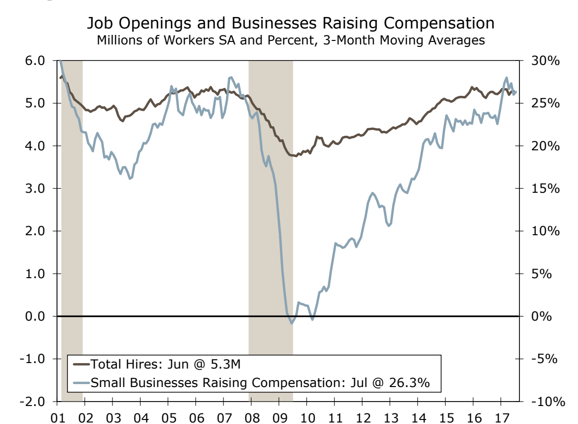


Figure 4



Source: U.S. Dept. of Labor, National Federation of Independent Businesses and Wells Fargo Securities

Wages as a Driver of Inflation: Not What It Used to Be

The impact of labor costs on inflation has diminished in recent decades.

The relationship between labor market slack and inflation, known as the Phillips Curve, has had its share of critics over the years as it appeared to break down completely (as in the 1970s) or at the very least weaken in recent decades.[1] Nevertheless, Fed Chair Janet Yellen has made comments over the years indicating she is a subscriber of the Phillips Curve and that short-run fluctuations in labor market slack affect inflation.[2] As indicated in the most recent FOMC meeting minutes, however, doubts seem to be emerging among more FOMC members about the link between labor market slack, wages and inflation. Research by Federal Reserve economists has found that the impact of labor costs on inflation has diminished in recent decades.[3]

A simple regression of our own shows that an increase in wages is associated with a smaller rise in inflation than in previous decades. For this we look at the "nominal" component of wage growth, or average hourly earnings growth minus labor productivity since productivity drives real wages. While a one percentage point rise in the year-over-year rate of productivity-adjusted average hourly earnings was consistent with a 0.4 percentage point rise in CPI inflation from 1985 to

[1] **IMF (2013). "The Dog that Didn't Bark: Has Inflation Been Muzzled or Was it Just Sleeping?" World Economic Outlook, April, pp. 79-85.**
[2] **See for example "Inflation Dynamics and Monetary Policy" (Sep. 24, 2015) or "Semiannual Monetary Report to Congress" (Jul. 12, 2017).**
[3] **Peneva, Ekaterina V. and Jeremy B. Rudd (2015). "The Passthrough of Labor Costs to Price Inflation," Finance and Economics Discussion Series 2015-042. Washington: Board of Governors of the Federal Reserve System, http://dx.doi.org/10.17016/FEDS.2015.042.**

2000, that relationship has fallen by half since 2000.[4] Moreover, when determining if in recent decades changes in wage growth cause changes in inflation and are not simply associated with these, we find no statistically significant support. If anything, inflation drives wage growth.[5]

Domestic Labor Costs Only Part of the Story

For most businesses, labor represents a sizable share of costs. This is particularly true for service-sector industries, where labor compensation accounts for at least 30 percent and often more than half of input costs. Why then do wages provide so little information about inflation if labor is such a big input cost? Labor conditions have increasingly taken a backseat in inflation dynamics in recent years as the U.S. economy has evolved. Technology has changed the way consumers shop and the way in which businesses offer goods and services. At the same time, globalization has opened up new sources of labor beyond the domestic workforce. And while workers may think about future inflation when negotiating wages, businesses are also thinking about future inflation when setting prices.

Technology: Holding Down Costs and Facilitating Price Competition

Technology seems to have infiltrated every corner of life so it is not a leap to believe it has affected inflation. Technological improvements have always held down inflation by improving the production processes or lowering the input costs of existing goods and services. By making it cheaper to produce products, firms can raise margins without increasing prices. It's tough to argue, however, that technology in this way is playing a bigger role today in holding down inflation given the weak rate of productivity growth in the last decade.

Margins for retailers have held up over the past decade as the shift to online sales has limited the need for costly brick and mortar stores.

Instead, competitive forces unleashed by new technology have been pointed to as a recent factor holding down prices. The internet has made it easier than ever for consumers to compare prices of goods and services. Nowhere though has competition been more intense than in the retail sector as e-commerce has grown to nearly 10 percent of sales. Yet while increased competition should pressure margins, margins for retailers have held up over the past decade as the shift to online sales has limited the need for costly brick and mortar stores (Figure 5). The upshot is prices for core consumer goods have been falling for the better part of the past 15 years (Figure 6).

Figure 5

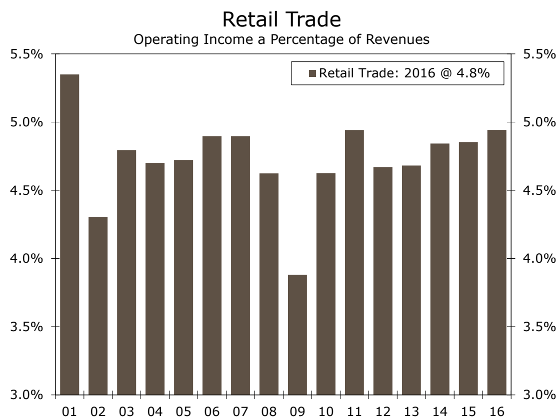
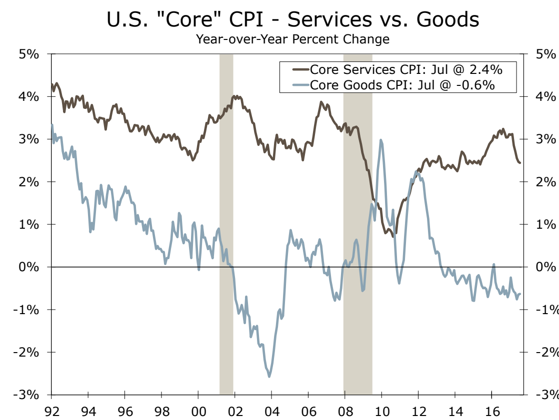


Figure 6



Source: U.S. Department of Commerce, U.S. Department of Labor and Wells Fargo Securities

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[4] An OLS regression using the quarterly year-over-year change in productivity-adjusted average hourly earnings as an explanatory variable for the year-over-year change in CPI inflation from 1985-2000 produces a coefficient of 0.392 which is statistically significant at the 1 percent level. Since 2001, the coefficient has declined to 0.165 and is significant at the 10 percent level. More details of econometric results available on request.

[5]A Granger-Causality test of productivity-adjusted average hourly earnings and CPI from 1985 to 2017:Q2 to see if wages "Granger-cause" inflation is statistically insignificant (p-value of 0.883). CPI inflation "Granger-causes" wage growth at a 10 percent significance level (p-value 0.067). More details of econometric results available on request.

The service sector has not been immune to competitive pressures either. The recent drop in the cost of cell phone services offers a relevant example. However, part of the decline since the start of the year is traceable to quality adjustments made by the Bureau of Labor Statistics (BLS). When the quality of a product improves, the BLS imputes the value of the improvement and downwardly adjusts the product "price" to account for the fact that while the listed price may be unchanged or higher, consumers are getting a better product.

Globalization: Not Just a U.S. Labor Market

The decline in core consumer goods prices has coincided with increasing global trade.

Of course, the decline in core consumer goods prices has coincided with increasing global trade. The start of the North American Free Trade Agreement (NAFTA) in 1994 and China's entrance to the World Trade Organization in 2001 both opened up significant sources of global labor. In 1992, only about one-third of U.S. consumer goods were imported from overseas, but that share has grown to about 55 percent today (Figure 7). Although goods only account for one quarter of the core CPI, global price dynamics have had a significant, albeit small, impact on U.S. inflation.[6] With foreign-made goods accounting for a larger share of consumption, the cyclical state of the U.S. labor market has lost importance in price setting.

Figure 7

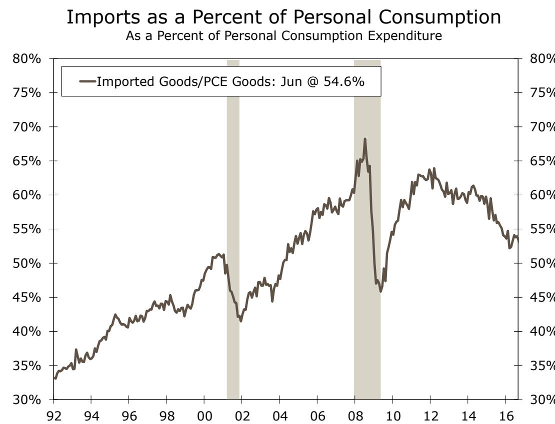
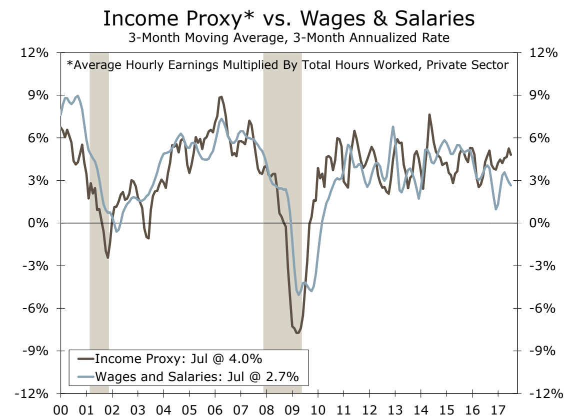


Figure 8



Source: U.S. Department of Commerce, U.S. Department of Labor and Wells Fargo Securities

Expectations: Firms Get Ahead of Cost Pressures

Inflation expectations are a significant driver of realized inflation.

Inflation expectations play a more crucial role for inflation than wages. Expectations of future inflation affect firms' decisions in price setting. As price changes can be costly in their own right, many businesses change prices infrequently. The stickiness of prices generates the need for businesses to make assumptions about future costs, including labor.[7] As a result, price changes can precede wage growth, rather than wage growth leading to inflation. While a Granger-Causality test as previously noted shows wages do not drive inflation, the same test shows that inflation expectations are a significant driver of realized inflation.[8]

Conclusion: Don't Look to Wages for Early Signs of Inflation

The payroll figures and unemployment rate have typically been the focus of the closely-watched Employment Situation report each month, but increasingly those figures have taken a backseat to average hourly earnings. Market participants have been closely watching wage growth for signs of inflation in order to anticipate future policy decisions by the FOMC. Despite the emphasis placed on labor market conditions as a as a driver of inflation, average hourly earnings contain little

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[6] See "Global Effects on U.S. Consumer Price Inflation", Aug.9, 2016 and available on request.
[7] Bryan, Michael F. and Brent Meyer. (2010). "Are Some Prices in the CPI More Forward Looking than Others? We Think So." Federal Reserve Bank of Atlanta Economic Commentary, No. 2010-2.
[8] A Granger-Causality test of CPI inflation and short-term inflation expectations using the University of Michigan Consumer Sentiment survey from 1985 to 2017:Q2 to see if expectations "Granger-cause" CPI inflation is statistically significant at the 5 percent level (p-value of 0.011). Similarly, longer-run expectations "Granger-cause" CPI inflation at the 5 percent significance level (p-value of 0.020).

information about inflation. Changes in wage costs are often already anticipated by businesses, meaning there is not much new information contained in them from an inflation perspective. Moreover, the ability and need to raise prices has been altered by technology and globalization, making the state of the domestic labor market less important.

We continue to watch wage growth as a source of household income and, therefore, spending power. In conjunction with aggregate hours worked, average hourly earnings remain a useful guide of near-term income for consumers (Figure 8). As a signal of future inflation, however, the emphasis on wage growth appears misplaced.

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