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**Economic Research Note**

# Getting a grip on the surprising strength of US wage growth

- **Wage growth has been extremely slow, yet much stronger than models would predict**
- **Psychological and institutional barriers to reducing nominal wages likely playing a role**
- **These "downward nominal rigidities" should actually also slow the rate at which wage growth recovers**

Average wage and salary growth—as measured by a number of different indicators—remains at or near all-time lows. Given that, it may sound strange to hear that wage growth is unusually high. The dissonance owes to the fact that the heretofore most successful models of wage inflation would predict ongoing declines in the pace of wage growth, given the still-large amount of labor market slack. In fact, those models would have predicted that wages would be exhibiting outright deflation at this point in the cycle. Resolving the mystery of the strength of wage growth may take us a long way toward understanding why consumer price inflation has not fallen as much as many, including Fed policymakers, had forecasted in recent years.

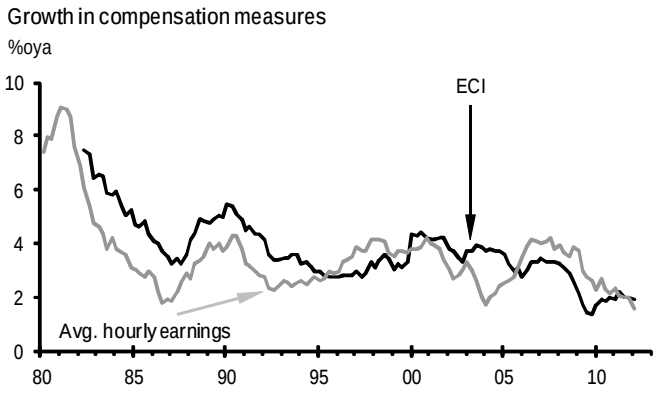
## A quick guide to wage inflation

For a more in-depth look at the development of modern inflation models, we refer the reader to "The case of the missing deflation," *GDW*, July 15, 2011. For present purposes we sketch out an abbreviated history. In the original Phillips curve, wage inflation (which we call w) was thought to be inversely related to the level of the unemployment rate, u, so that w = *a*-*b**u, where *a* and *b* are positive coefficients. The modern Phillips curve incorporates the notions of the natural unemployment rate, u*, and wage inflation expectations, Ew, and represents the wage inflation process as:

$w = Ew - b(u-u^*)$.

Wage expectations are assumed—with some empirical support—to be formed adaptively; that is, people expect the wage inflation that recently prevailed to continue on into the future. Or, calling recent wage inflation $w_{-1}$ then $Ew = w_{-1}$. Substituting this expression into the prior one and rearranging terms yields:

$w - w_{-1} = -b(u-u^*)$.





Note: forecast generated from model which regresses annualized wage growth on four lags of wage growth (coefficients constrained to sum to one) and the gap between the unemployment rate and CBO's natural rate estimate. The forecast begins in 1Q08.

In words, the *acceleration* of wages is inversely related to unemployment's deviation from its normal rate. Because unemployment is assumed to have been well above its normal rate over the past four years (an assumption we revisit below), one would expect wage growth not only to be low, but to be declining. Instead wage growth has been low, but it has been stable, at odds with the prevailing understanding of wage dynamics.

## Toward an explanation

One explanation for the discrepancy between the model and the data is that the natural unemployment rate, u*, could be higher than commonly thought. Because the natural rate is not directly observable, this is certainly a theoretical possibility. However, for this story to fully explain the recent stability of wage inflation, one would have to assume that the natural unemployment rate was in the 8%-9% range, an extremely high natural rate that is at odds with the microeconometric evidence that suggests a more modest move up in the natural rate (see our *Special Report* "Swing shift: better news from US labor demand and supply," March 28, 2012, or Ben Bernanke's March 26, 2012, speech "Recent Developments in the Labor Market").

A more plausible explanation, in our view, is that there exist downward nominal wage rigidities, which is economic jargon for the fact that workers strongly resist reductions in the dollar value of their wages. This observation may seem so obvious it doesn't warrant mentioning, but consider the fact that workers routinely experience real (inflation-adjusted) declines in their wages whenever consumer prices grow faster than wages. Since it is the real purchasing power of wages that affect workers' well-being, and not the dollar value, the resistance to nominal wage cuts, rather than real wage cuts, is puzzling from the perspective of economics (though perhaps not of psychology).

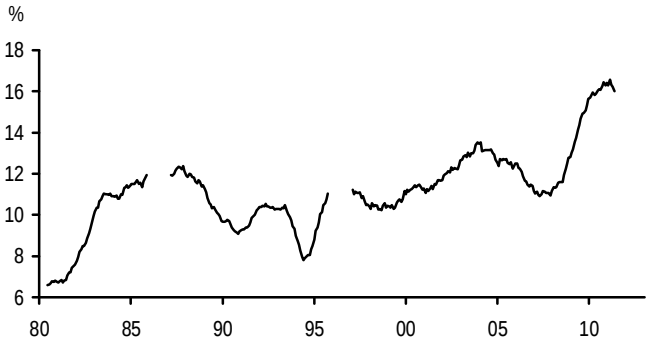
The modern familiarity with downward nominal wage rigidities dates back to research conducted in the 1980s, by, among others, now-Fed Vice Chair Yellen. In an update of this research, economists at the San Francisco Fed have found evidence that wage changes recently have been "bunched up" at zero. If zero were just another number, we would expect to find a bell-shaped distribution of wage changes around the mean with no spike at zero. Instead what we see is a bell curve censored from below at zero, with many workers experiencing no wage change. Since wage increases aren't similarly constrained at the upper tail, the result is positive average wage growth. A similar pattern can be seen in the University of Michigan survey questions about income expectations, and may explain why median expected income growth is near zero while realized mean income growth is closer to 2%. This downward nominal wage rigidity is likely preventing wages and unit labor costs from falling as much as predicted by models, and thus also preventing consumer price inflation from falling further.

## No churn, no burn

The strongest counter to the claim that downward nominal wage rigidities are preventing a further fall in inflation is the observation that while incumbent workers rarely accept wage cuts, wages for newly hired workers are much more flexible. This fact, combined with the massive amount of churn in the economy—the sum of job gains and losses at firms—should mean that businesses' overall wage bill is much more flexible than that of a given incumbent worker. Perhaps one reason the disinflationary consequences of this reasoning are not being experienced is the fact that in the current economy the amount of churn taking place has decreased: data from the Business Employment Dynamics survey reveal that it has gone down over the past two decades.

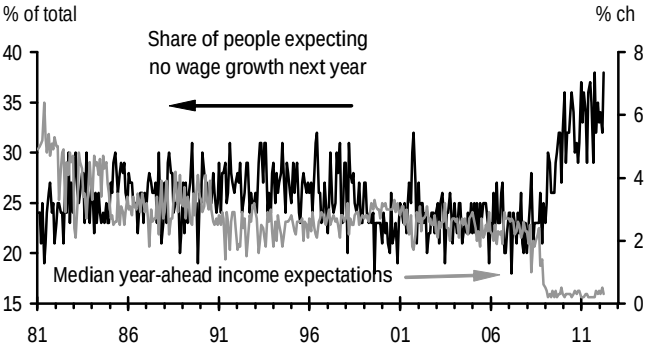
To the extent downward nominal rigidities are important, there are three implications for the outlook. The first observation—the one that motivated this discussion—is that further large declines in wage inflation and consumer price inflation are unlikely. Second, as the labor market recovers, wage inflation will increase only slowly (the mean of a censored distribution increases more slowly than that of an uncensored distribution). Third, because of this constraint on wage distributions, average wage gains (and aggregate consumption) will continue to increase faster than median or modal outcomes, thus aggregate economic growth should continue to occur alongside an economy that to the modal man on the street may feel unsatisfying.

Workers in same job over past year with no wage change




Source: Federal Reserve Bank of San Francisco

Income expectations




Churn: gross job gains plus gross job losses

% of employment, sa