

ECONOMIC ANALYSIS

Whites of Inflation's Eyes in Powell's Crosshairs

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- **Factors that pre-date the crisis such as globalization, innovation, demographics and productivity explain bulk of persistent undershooting of the inflation target**
- **Although there is a more tenuous relationship between labor market slack and wages, some further tightening could help lift prices above the 2% target in the medium-run**
- **Empirical evidence confirms positive relationship between expansionary fiscal policy and inflation**
- **Balance between structural headwinds and fiscal impetus suggests modest overshooting of 2% target in short-run**

Notwithstanding a few quantitative easing naysayers, inflationary fears over the past eight years have been predominantly biased to the downside. The Fed downplayed the undershooting for years given their hardened belief in the relationship between wage pressures and labor market slack, leading to a nontrivial gap between the committee's forward guidance and market expectations. Explaining the low inflationary environment has ranged from blaming cell phone contract pricing to prescription drugs to the Fed. For example, Yellen, in her 2017 mid-year press conference, stressed that the unexpectedly low inflation readings were related to a "huge decline in cell telephone service plan prices, some declines in prescription drugs." Others have argued that the failure to raise benchmark rates sooner has depressed inflation expectations and in turn kept a lid on actual inflation. Neel Kashkari even questioned the Fed's policies and lack of success returning inflation to the committee's target, saying that:

If I am correct that the Fed's own actions are an important factor driving surprisingly low inflation and falling inflation expectations...My preference would be not to raise rates again until we actually hit 2 percent core PCE inflation on a 12-month basis

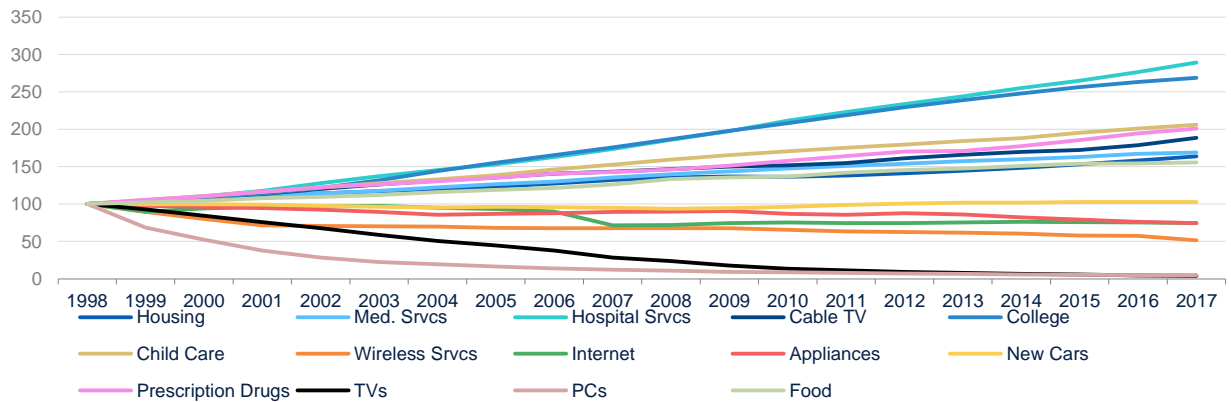
However, expectations have quickly adjusted to the upside, leading to questions about the potential risk of looming inflationary pressures. While expansionary fiscal policy or acquiescent monetary policy pose a substantial risk to long-term inflation stability, structural changes and a weakened relationship between wages and the unemployment rate (UR), among other factors, will likely contain any price pressures, suggesting only moderately higher average inflation in the medium-term.

Structural factors and the failure to reach 2% target

While hindsight may lend credit to the explanations for why inflation has remained low, recent changes to fiscal policy, stronger domestic and global growth, and trade policy suggest risks to inflation may be tilting to the upside. In terms of more fundamental explanations, there is also evidence that technological innovations, downward pressures on tradables

from globalization, a lower cost online retail model and productivity gains in some key industries have made it challenging to reach the 2% target. For example, consumer prices for television sets and computers, two obvious categories that have been influenced by all of these trends, are now 96 percent and 95 percent lower than in 1998. Technology oriented services such as wireless telephone and internet have also declined from 20 years ago, but at only by a fraction of the pace of goods, about one-half and three-fourths respectively. Conversely, general services, medical services, education, and cable and satellite TV services, childcare and shelter prices are, on average, twice as high as they were 20 years. Although there has been a threat to globalization and trade from the current populist movements in North America and Europe, thus far, there is little evidence of a material shift in trade policies, suggesting that the bifurcation of tradables and services will continue. This gap could also increase if some sectors experience a significant decline in competition resulting from ineffective or excessive regulation.

Figure 1. Consumer Prices, 1998=100



Source: BBVA Research & BLS

Research also suggests an ageing population can counteract cyclical inflationary pressures related to tight labor markets, all things equal. In fact, in the U.S., the share of the workforce that is older than 55 has nearly doubled since 1996 and is projected to continue increasing throughout the next decade. Research suggests that outdated skill sets and less innovative management reduce idea (patent) creation. Moreover, a large share of occupations for which productivity declines with age - approximately 50% of current occupations in Europe- lowers labor productivity, factor accumulation and TFP. ¹

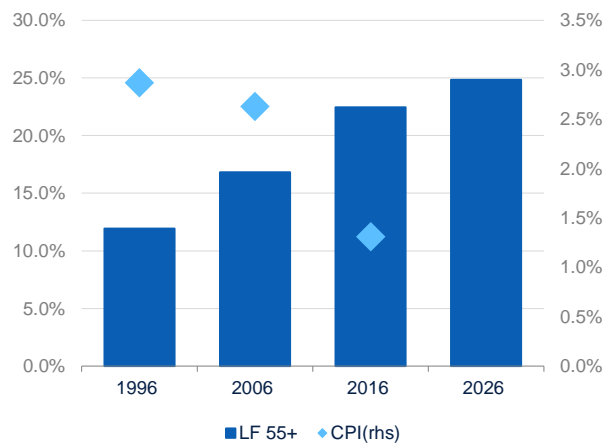
In fact, our results, based on a panel regression for the UK, Canada and the U.S show that a one percent increase in the dependency ratio produces a 1.8 percent decrease in labor productivity; for the U.S. that relationship is even stronger with every one percent increase in the dependency ratio producing a 2.8% decline in productivity. Current estimates are for the dependency ratio in the U.S. to rise by 8% in 2018-2024, implying a 14.4% reduction in productivity over that period. As a result, wages are likely to face substantial headwinds due to the lower productive capacity of the labor force, unless

1: <https://www.imf.org/en/Publications/WP/Issues/2016/12/31/The-Impact-of-Workforce-Aging-on-European-Productivity-44450>

technological progress increases significantly. Capital investment could also suffer, as savings rates decline, further reducing the capital-to-labor ratio and aggregate productivity.²

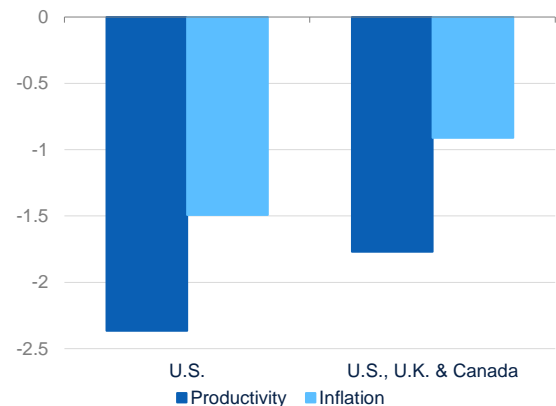
With respect to the demand-side, there is ample evidence of a negative (disinflationary) relationship between aging and inflation. Research based on the eight U.S. BEA designated regions found that “young and old populations have opposite impacts on inflation: the former exert inflationary pressure while the latter exert deflationary pressure.” A related analysis of OECD countries suggested that both young and old positively influence inflation due their impact on the demand-side, which tends to be larger than their working-age peers, as savings tends to remain low with this group. However, other factors related to public burdens associated with aging populations and productivity produced lower inflationary influence than the youngest cohorts. In fact, using the same methodology to the aforementioned panel regression we find that inflation is also negatively impacted by a rising dependency ratio. In the case of the U.S., a one percent rise in the dependency ratio produces a 1.5% reduction in inflation.³

Figure 2. Share of Labor Force 55 and Older and CPU, % and year-over-year %



Source: BBVA Research and BLS

Figure 3. Dependency Ratio and Productivity and Inflation Elasticity, %



Source: BBVA Research

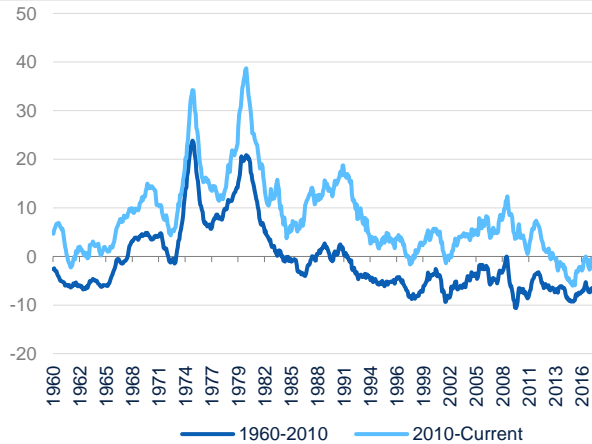
Furthermore, when looking at the contributions of major components to the personal consumption expenditure index there appears to be several other structural factors influencing trend inflation. A factor analysis of 18 independent components of personal consumer expenditures, prior to 2010 and after, shows that the components that explain a majority of the common trend in inflation have decelerated, particularly for services such as health care, recreation, transportation and finance, and contracted for energy commodities and clothing. In fact, if the factor loadings from the estimation after 2010 are applied to historic data, the results suggest that current inflation is slightly above or at trend, implying the upside to any upcoming inflationary upsurge would be modest compared to past increases. Moreover, removing the volatile energy component from the estimation produces a similar result with current inflation at its common trend at or slightly below the Fed’s 2% target. It seems, based on the results, that the majority of factors that could support higher inflation are

2: https://www.bbva.com/wp-content/uploads/2016/08/160804_US_ProductivityGrowth.pdf
 3: <https://www.soa.org/research-reports/2016/2016-investigating-population-aging-deflating/>

determined exogenously. The two areas that remain potential sources of higher inflation are healthcare and education, yet both sectors face growing regulatory and policy-related pressures to contain rising costs.

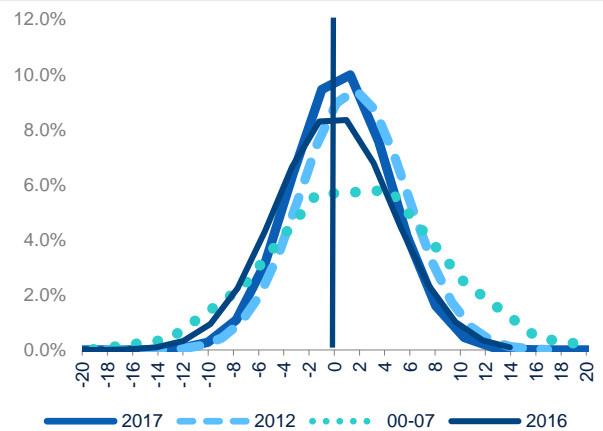
The shift in trend inflation has also led to a downshift in distribution of prices. The median year-over-year inflation rate for over 85 components has shifted from 2.8% between 1985 and 2000, to 0.7% in 2017, underlying the downward overall drift in most inflation categories. Moreover, the volatility has declined, as reflected by a drop in the standard deviation from 5.3% to 3.9% in 2017. The lower variance underlies convergence to a lower more stable price level. Lifting inflation significantly above the current 2% level, which some policy makers have suggested, could be extremely difficult and risky assuming that doing so would require unanchoring current expectations and most likely require fiscal support.

Figure 4. 18-Component PCE Trend Estimate, normalized values



Source: BBVA Research

Figure 5. CPI Inflation Normalized Price Distribution, %



Source: BBVA Research

The zero lower bound, the Phillips curve and inflation

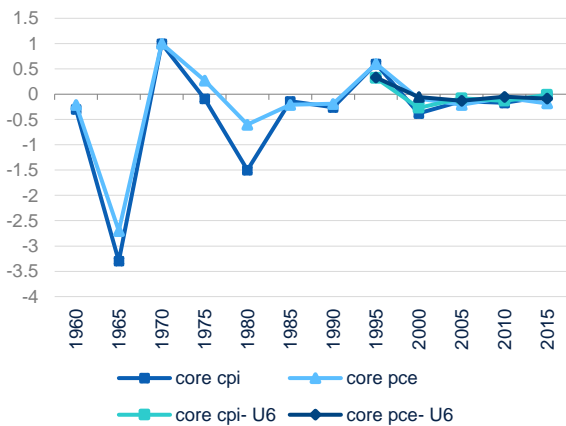
That being said, the current low stable inflationary conditions should not be taken for granted given that monetary policy has remained accommodative for almost a decade. Moreover, labor markets continue tightening, increasing the potential for an abrupt adjustment in wages. However, the relationship between wages and the tightness of the labor market (known as the Phillips curve) has also appeared to have weakened over time.

Based on the results of 5-year rolling regressions between the unemployment rate and wages, we found that this relationship has been diminishing significantly since 2005 and was effectively zero in 2010-2015. Although the relationship strengthened after 2015, to a point where a 1% decrease in the UR boosts wages by one-quarter percent, the impact that a tightening labor market has on wages is about 60% lower than it was prior to 2000. This result holds when observing the Phillips curve relationship across expansion cycles also, as a one percent change in the UR produced only a 0.02% increase in the year-over-year growth rate of nominal wages during the current expansion cycle, as opposed to past cycles for which the average impact was around 0.6%. More importantly, the links between changes in the unemployment

rate and core inflation have also become more tenuous; since 2000 a one percent decrease in the unemployment rate only produce about a 0.1% response in inflation.

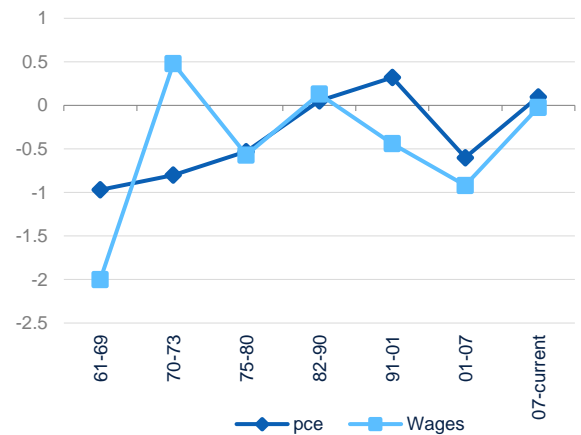
Today’s “flat” Phillips curve suggests a promising tradeoff between employment and inflation. That is, the monetary authority could significantly cut the unemployment rate with a slightly higher inflation rate. One problem for the low inflation rate, however, is that the combination of a low inflation rate and a low interest rate would limit the central bank’s arsenal when adverse economic shocks hit the economy and increase the risk of the economy overheating. During economic recessions, the central bank needs to cut the interest rate to inject liquidity into the economy and encourage investment. Since the interest rate has to be nonnegative, low interest rates like those that we experienced in the last few years would not allow the central bank to boost the economy through this channel and significantly restrict its capability during economic crisis. Since the current run of economic expansion has lasted nine years, central bankers realize that they may have to raise the interest rate without having an above-target inflation rate. In addition, the central bank is also interested in returning money and credit markets to more normal conditions where the cost of money is determined free of intervention. The normalization of interest rates and the central bank’s balance sheet has to be implemented at a gradual pace so the economy is allowed to absorb higher interest rates without derailing the expansion.

Figure 6. 5-Year Rolling Phillips Curve*



Source: BBVA Research
*Based on time-restricted linear regressions

Figure 7. Phillips Curve Relationship and Economic Cycles*



Source: BBVA Research
*Based on cycle-restricted linear regressions

Fiscal policy: just what the inflation naysayers ordered

Recent increase of inflation expectations in the financial market brought the thought of so-called “Neo-Fisherism” under the spot light. The idea that the central bank can guide the public’s inflation expectation by firmly raising policy rate is derived from the Fisher equation, which says the nominal interest rate is the sum of the real interest rate and the rate of inflation. Since the real interest rate is determined by real (non-monetary) factors in the economy, the public will expect the inflation rate to increase if the central bank normalizes the interest rate in a hawkish manner. Recent data on bond yields seem to suggest that market participants gradually rule out the once-popular long-run scenario of low-growth and

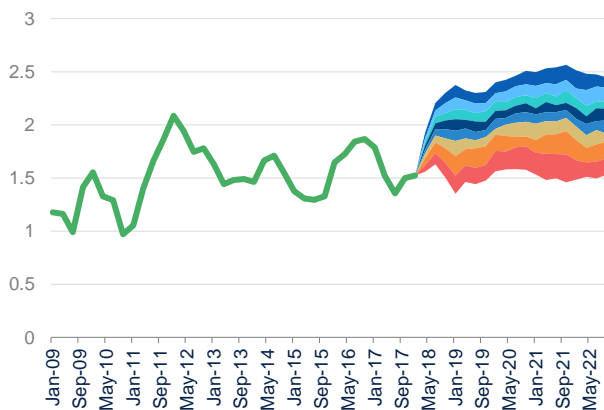
low-inflation, while the increasing market volatility illustrates diverging ideas on the future of the economy. Hence, the new inflation data will play a critical role in shaping the path of inflation expectations.

The problem of inflation expectations is further complicated by the boost in government spending. On the one hand, more than \$400 billion spent in 5 years will stimulate the economy and spur higher inflation. The budget deal itself may not be big enough to generate uncontrollable inflation rates; however, the effects could be amplified by the tax reform enacted in the 4Q17 and by the evolution of the current business cycle.

To measure the effect of the recent budget deal on the economy, we model the government spending shocks in the workhorse DSGE model developed by Smets and Wouters (2007). The effect of the additional government spending on inflation rate will be 0.05%, 0.09%, and 0.04% in the first three years, and therefore should not be a significant source of inflation growth. However, it is worth noting that the DSGE model assumes a Taylor-type rule for the monetary policy. If the Fed softens its stance on interest rate hikes, we would expect higher inflation estimates.⁴

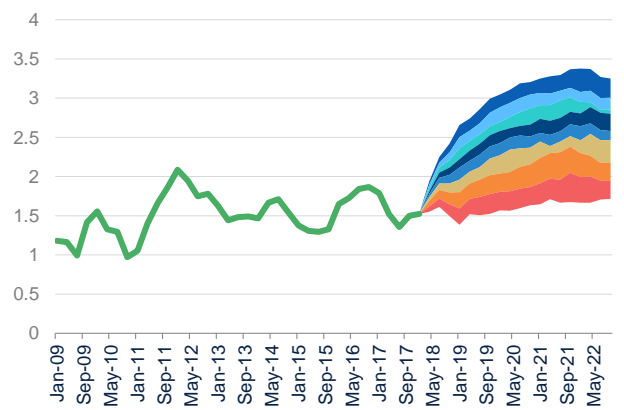
A time-series analysis offers similar conclusions, with the fiscal shock producing moderately persistent increases in inflation in the medium-term. In fact, the model, which includes core personal consumption expenditures (PCE), interest rates, the unemployment rate gap and U.S. federal budget deficits as a share of GDP, projects a median inflation rates of 2.1% and 2.4% in 2019 and 2020, respectively; prior to the budget deal and tax reform median projections were 1.9% and 2.0%. At the higher end of the distribution (90th percentile), average core inflation in 2019 and 2020 is 2.8% and 3.1%. With the added tailwinds from fiscal policy, it also appears that the downside scenario remains remote, as the lower end of the distribution averages around 1.7% core PCE inflation.

Figure 7. Core PCE Pre-Tax & Budget Deal Simulation, year-over-year %



Source: BBVA Research

Figure 8. Core PCE Pre-Tax & Budget Deal Simulation, year-over-year %



Source: BBVA Research

In terms of our baseline scenario, we anticipate that the countervailing forces related to the structural headwinds will offset some the inflationary pressures from expansionary fiscal policy. That being said, both the time-series estimates and

4: http://dept.ku.edu/~empirics/Emp-Coffee/smets-wouters_aer07.pdf

DSGE results confirm the upward bias to the outlook. Furthermore, the small or positive output gap and tight labor market conditions suggests any demand-side stimulus will be inflationary. As a result, our baseline assumes core PCE growth of 1.9% and 2.3% in 2018 and 2019, respectively. Thereafter inflation trends towards the longer-term target of around 2.0%.

Overshooting 2% target likely, yet adverse scenario remains remote

As a result of the rise in inflation and slightly higher short-term growth outlook, we expect a total of four 25bp hikes for the year. However, this temporary shock to inflation should not substantially alter the course of monetary policy. In fact, even with the slightly higher inflation outlook, prices remain within the symmetric target of the Fed (1.5%-2.5%), suggesting that the Fed will not have to be overly aggressive. In addition, although we expect the natural interest rate to edge upward, this should happen at a slow pace, giving the Fed plenty of space to normalize policy without needing to become restrictive. Moreover, the slight overshooting of inflation will be welcome news for the FOMC members advocating for inflation-level targeting or nominal GDP targeting, as this scenario will bring conditions closer to the objectives and thresholds associated with those policies. Although growth is expected to remain above potential in the short-run, we do not expect the current policies to alter neutral nominal interest rates, suggesting the Fed will target a rate close to 3%. With this in mind, our baseline assumes only two additional 25bp rate increases in 2019.

With little spare capacity for monetary policy easing or fiscal expansion in the next crisis and given a narrow output gap, limited slack in the labor market, and rising debt and deficits, there is the potential for more adverse scenarios to surface, including stagflation or debt-deflation. Although the probability remains low, current forecasts are for fiscal deficits to reach all-time highs in a non-wartime expansionary cycle. As a result, total nonfinancial domestic (public, nonfinancial corporate and household) debt-to-GDP ratios are expected to rise to 250% by 2020. The substantial leverage, limited capacity for a fiscal or monetary response could create the conditions for which the probability of a stagnation-type scenario could grow.

Similarly, the narrow output gaps and favorable current demand-side conditions suggest that the increase federal expenditures could have outsized impact on inflation rather than growth. With weak productivity growth, slowing labor force participation and lower returns to capital there is the potential for a stagflation-type scenario similar to the 1980s. The probability of seeing this scenario materialize is remote, given the structural headwinds to inflation. That being said, the factors that contributed to this environment — lapses in monetary effectiveness, supply-side shocks, among other, contributed to this environment— could arise if current policy makers fall victim to their own optimistic growth targets. Avoiding the pressures of political cycles that wrongly discount the short-term above the long-term will be the only way to avoid trending toward either extremely costly scenario.

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