



## The Longbrake Letter\*

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March, 2016

### **I. Recession Watch — Continues, But Near-Term Risks Have Abated**

In last month's letter I announced the start of a "*Recession Watch*." I was explicit that a watch only means that the possibility of recession has increased, not that it is necessarily likely to occur any time soon.

I pointed out that traditional recession measures, based on real economic activity, indicated about a 25 percent probability of a recession commencing within a few months, but emphasized that this probability had been stable at that level for the past four years.

However, last month an alternative recession indicator, based on financial markets activity and conditions, was signaling a 50 percent recession probability. That was because global financial conditions had tightened considerably and an element of panic prevailed.

Tight financial conditions can become self-fulfilling if they prompt extreme defensive behaviors that set negative feedbacks and contagion into motion. The potential for escalation depends upon two factors. First, the probability of escalation is correlated with the severity of fundamental imbalances that exist in the real economy and in financial markets. Second, policymakers may be able to soothe markets with actual or implied statements of intended response or they may take specific actions, either or both of which defuse market anxiety and foster de-escalation. It goes without saying that policymakers are more likely to be successful in stabilizing markets if fundamental imbalances are not extreme.

It is fact that over the last month markets have stabilized and financial conditions have eased considerably. In fact, eager risk-taking is once again in vogue. Does this mean that fundamental imbalances have dissipated or, alternatively, does credit go to policymakers? Nothing of real consequence has occurred

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to change the existence or magnitude of most of the global imbalances in the last month. However, it is plausible, even likely, that markets overreacted and inflated the expected consequences stemming from correction of the imbalances. Optimists were ready to take advantage of extreme oversold market conditions and all they needed to swing into action was policy reassurance. And that is what happened.

While perhaps a bit of a simplification, the catalysts for the global market crisis were the collapse in commodity prices, a tightening U.S. monetary policy, a strengthening dollar, and excessive debt leverage, particularly in dollar-denominated liabilities, in emerging economies. The key policy change, which catalyzed market stabilization and the return of optimism and risk taking, was the implied reversal of an expectation of tighter U.S. monetary policy. The Federal Open Market Committee (FOMC) raised the federal funds rate by 25 basis points in December, the first increase in seven years, and signaled its intent to raise the federal funds rate by a further 100 basis points during 2016. During the financial crisis, the market priced out all rate increases during 2016. Although there was no official endorsement by the FOMC of such an outcome, members did not discourage the view that U.S. monetary policy would be easier in 2016 than implied in the December FOMC policy statement and economic projections. At its January meeting, the FOMC signaled its concern about global financial and economic conditions. At its March meeting it reaffirmed that concern and reduced projected increases in the federal funds rate during 2016 from 100 basis points to 50.

Prospects of easier U.S. monetary policy prompted a weakening in the value of the dollar. The trade-weighted value of the dollar fell 2.2 percent from January to February and fell a further 2.0 percent by March 11, for a total decline of 4.2 percent. A weaker dollar had an immediate and dramatically favorable effect on emerging market debt. This was followed by a reversal in prices of key commodities from the oversold levels reached during the panic. This reversal was helpful to many emerging economies which depend to a substantial degree on exports of commodities.

In Europe policymakers have made some progress in containing the politically-volatile issue of immigration and the ECB has implemented aggressive policies which will help prop up fragile European banks, particularly those in Italy.

So, the risk of U.S. and global recession, at least as measured by financial conditions, has declined considerably in the last month. But imbalances remain and for the most part policy has bought time rather than contributing to the unwinding of imbalances.

Reflecting upon the events of the last few weeks, it's difficult to discern where the U.S. and global economies may be headed in coming months and just how fragile global financial markets really are. Part of the difficulty in assessing prospects has to do with the unprecedented intervention of central banks in all major developed economies in engaging in quantitative easing and forcing down interest rates. There is absolutely no historical experience to draw from. Academic theories are supportive of the policies that have been undertaken. But, the theories may turn out to be deeply flawed or flat out misguided. It's a huge bet, so the consequences could be quite dire if the bet turns sour.

Long-term market watchers are mystified at the recent strength of the U.S. stock market which has now reached a decidedly overbought position. Technical analysis indicates that there is little of substance in the traditional sense, such as earnings prospects, supporting the current level of prices. What seems to be supporting stock prices and optimism is belief that monetary policy will cure all that ails the economy. In recent months this belief has wavered twice or three times if you go back to late 2014. During each of these

three market swoons, the FOMC has stepped in with soothing words that implied easier monetary policy and the market has quickly recovered. This monetary policy “put” (previously known as the Greenspan “put,” the Bernanke “put,” and now, perhaps, the Yellen “put”) and its periodic reiteration has become the primary driver of asset prices rather than underlying economic fundamentals. If it turns out that recent monetary policy is all about vacuous and unrealizable promises of better days to come rather than real substantive medicine, which will heal and strengthen the economy, at some point market participants’ faith will not only waver but disappear. This is the bear scenario that a few expect inevitably lies somewhere in the future. We can hope that the bears are extreme pessimists who have misjudged what is going on. But, prudence argues for caution and vigilance and avoiding getting caught up in group think and uncritical faith in the power of monetary authorities to fix what ails the world.

My “*Recession Watch*” continues, but as of this time an actual recession does not appear to be an imminent threat.

## II. Forecasting Is Challenging in Times Such as These

Forecasting is never easy as the rather dismal history of forecasting accuracy demonstrates. Think about how inaccurate the economic projections of members of the FOMC have been.

At times like we have experienced in recent months, forecasting becomes even more difficult because of the interaction of financial market developments with decisions being made in the real economy and attempts by policymakers to influence outcomes. The feedback loops are complex. Psychology and sentiment take on much larger roles in shaping decisions and responses. And, in this age of social media and highly integrated global markets, new developments and responses ripple through markets and economies at lightning speed and can have significant impacts.

We know from experience that sentiment and emotion have the potential to alter behaviors in ways that become self-fulfilling. In other words, if people expect recession and act in anticipatory ways by curtailing hiring, investing, and spending, there is no doubt the economy will slow. And, as it slows that can spawn negative feedback loops that reinforce downward momentum.

But, the severity of impacts of sentiment and emotion on economic activity depend importantly on whether there are fundamental and significant imbalances extant in the economy.

We can look back at history for guidance. During the housing bubble easy credit and speculative fever drove housing prices far above levels consistent with household incomes. This was an unsustainable imbalance. This relationship was statistically obvious but market-sentiment ignored hard data and fed on emotion, driving prices ever higher. That is until it became obvious that the housing bubble was really a confidence game. Once that realization began to sink it, sentiment changed abruptly, market turmoil ensued, stock prices collapses, and major companies failed. The sentiment change, when it finally arrived, fed severe contagion that led to the Great Recession. Had not significant imbalances, both real and financial, been in place, the change in sentiment would not have prompted such a severe response.

Here is the point. Sentiment oscillates between optimism and pessimism. Integrated global markets and real-time media communications accelerate and amplify the impacts of sentiment changes on financial

markets. Whether this leads then to significant impacts in the real economy depends upon the existence of imbalances and the severity of those imbalances.

Thus, in attempting to understand whether recent pessimism and turbulence in global financial markets is the harbinger of worse to come in the global economies, in other words recession, one needs to consider whether imbalances have been building in real economic activity and the severity of these imbalances.

### III. Distinguishing Short-Term Cyclical Oscillations and Long-Term Global Mega Trends

Although policy is supposed to focus on achieving long-run outcomes, such as full employment and price stability, policy strategies tend to attempt to manage short-term phenomena such as the unemployment and inflation rates. This bias is epitomized by the FOMC's repeated insistence that monetary policy is data dependent. Of course, the data-dependent terminology is intended to be inclusive of both current developments and long-run possibilities, but in practice short-run considerations, reinforced by political and media pressures, weigh more heavily in shaping policy responses.

However, when policy focuses on moderating short-term cyclical oscillations without consideration of longer-term consequences, there is risk that longer-term outcomes will end up being worse rather than better. Short-term gain; long-term consequences. The recent policy actions of the FOMC and the ECB contributed importantly to stabilizing global financial markets and, at least in the short run this is a desirable outcome. However, we will not know for a very long time whether these recent policy actions reinforced and perhaps exacerbated long run consequences of easy monetary policy and a low interest-rate regime.

For example, holding interest rates at a very low level for an extended period of time with the intent to stimulate spending and investment may also protect inefficient firms from the rigors of competition and inhibit innovation. The consequence would be a systematic decline in the potential real rate of growth in the economy over time.

### IV. Global Imbalances

While the U.S. economy has been growing gradually, employment and output gaps have been shrinking, and nonfinancial debt leverage has been stable since the Great Recession, as I discussed in the ***February Longbrake Letter***, a variety of financial, social and political imbalances have been building elsewhere in the world.

From a current perspective, which is one of serenity and optimism, rather than the turbulent markets driven by extreme pessimism that existed a few weeks ago, it would be tempting to conclude that global imbalances are not all that significant. However, a transitory change in market sentiment from extreme pessimism to optimism does nothing to change the existence of fundamental global imbalances. All are still in place. Some are gradually worsening. Policy actions have diminished short-run risks for others without necessarily establishing effective programs to unwind the imbalances over the longer run.

We know from experience that imbalances ultimately are unsustainable and correct. Usually the experience of correction is not gradual but abrupt and turbulent.

We also know from experience that policy and psychology can delay correction of imbalances and contribute to making them even worse. We are now experiencing one of those interludes during which policy actions have favorably impacted psychology and have helped diminish concern about the potential consequences of building imbalances.

And, unfortunately, we also know from experience that amplitudes of bubbles tend to be symmetric which means that small imbalances will have limited disruptive impacts when they correct but the disruptive consequences of large imbalances will be much more significant.

Great cataclysms involve the relative simultaneous tipping over and correction of multiple imbalances. Such clustering is almost never anticipated because various imbalances are often viewed as discrete and unrelated. Perhaps the general loss of confidence stemming from an initial disruption in one relatively inconsequential sector becomes a catalyst that triggers doubt more pervasively elsewhere, followed by further seemingly unrelated disruptions that cluster together. This is why Thomas Friedman's musings about "What If" deserve serious attention.

With the possible exception of growing income inequality and substantial decline in productivity, serious imbalances are not evident in the U.S. economy. That and the U.S. economy's relatively limited international exposure underpin the optimistic view that the U.S. economy will continue to forge ahead, just as it did during the last emerging markets meltdown that occurred in 1997-98. Recent U.S. data reports have been more upbeat and market psychology has reversed from pessimism to optimism.

Current global imbalances appear to be most severe in emerging economies. But, there are also imbalances in China, Japan, Europe and elsewhere which bear continued close watching. I explored several imbalances in detail in the *February Longbrake Letter*. In the following paragraphs I include brief updates for each one.

## 1. Emerging Market Economies — Key to Potential Severity of Global Challenges

Credit creation can accelerate and raise economic growth. But too much credit can lead to misallocation of capital and to credit booms and bubbles. Emerging market economies were the focus of the most recent credit boom and now find themselves in the early stages of the unwinding of that boom. This may be the most troublesome global imbalance currently.

Total debt in the global economy has risen tremendously since the global financial crisis of 2007-08. This has been especially true in emerging markets economies. And, much of the explosion in debt has been dollar-denominated. Private credit as a percentage of GDP has risen from 75 percent in 2009 to 125 percent in 2015. BIS data pegs dollar-denominated debt of non-bank borrowers in emerging economies at a whopping \$3.3 trillion, a truly massive stock of debt relative to the overall size of these economies.

Panic that gripped global financial markets in early 2016 focused to a large extent on unwinding excessive debt leverage in emerging economies. The crisis was prompted by two factors — first, by the strong dollar and a large amount of dollar-denominated debt and, second, by falling commodity prices

which crushed debt servicing capacity.

Market sentiment has now reversed and markets have stabilized. The reversal in sentiment was the direct result of a decline in the value of the dollar which, in turn, was spurred by the Federal Reserve's decision to tighten U.S. monetary policy at a much slower pace during 2016 contrary to what it had telegraphed in December. This is a perceived policy palliative. The stark reality remains that debt deleveraging in emerging markets economies still has a long ways to go. However, in fairness, buying time to enable orderly deleveraging could prove to be helpful in the long run.

Nonetheless, too much has been expected of monetary policy. A more balanced policy regime is needed, which would include structural reforms to remove impediments to growth in emerging market economies. There is little evidence to indicate that policymakers intend to pursue a more balanced long-term policy regime.

## 2. China — Muddling Through

China's economy is undergoing a necessary transition from hyper growth fueled by investments in infrastructure and exports to more sustainable growth driven by internal consumption. Many emerging markets economies benefited enormously from China's investment boom, particularly those countries in which exports of commodities have been an outsized portion of overall economic activity.

There is ample evidence that Chinese policymakers are pursuing a predominantly muddle-through strategy. The articulated official strategy, however, is that China is rooting out speculation in financial markets and pursuing action to downsize and restructure unprofitable state-owned enterprises. In other words, the rhetoric claims that policymakers are focused on economic transformation. But, simultaneously infrastructure spending has increased recently as reflected by a huge increase in bank loans in January. Reform while simultaneously pursuing additional investment stimulus are seemingly inconsistent policies but reflect the intent of policymakers to move forward with economic restructuring but at a modest pace that maintains economic and social stability.

Powerful vested interests in China's Communist Party are blocking economic transition. Many party officials have benefitted handsomely from the old economic model. Attempts of these party officials to maintain the status quo pose a significant political threat to President Xi's power. So, it is hardly surprising that President Xi has ramped up the anti-corruption investigations. It is primarily about consolidating his political power and eliminating opposition. However, political infighting is probably having negative impacts on economic growth. Until President Xi feels comfortable that he has consolidated his political position, a muddle through strategy will likely persist.

Just as China's burst of investment-driven growth fueled a global credit boom and rapid growth in emerging markets economies in recent years, China's march toward much slower growth in coming years will have negative consequences for global growth.

### 3. Japan — Is Abenomics Failing?

Three years ago, Prime Minister Shinzo Abe announced economy policy reforms, now known as Abenomics, intended to end Japan's two-decade long economic malaise. The results to date have been uninspiring. Real GDP grew 0.0 percent in 2014 and was growth was only a slightly better 0.5 percent in 2015. Forecast GDP growth is 0.7 percent and 0.6 percent in 2016 and 2017, respectively.

Abenomics has three components, or arrows. They encompass monetary policy, fiscal policy and structural reforms.

Monetary policy is the most visible arrow and has involved an extremely aggressive program of quantitative easing with the Bank of Japan buying government debt and other types of Japanese securities with the objective of lifting Japan out of persistent deflation and achieving a 2 percent annual rate of inflation. This initiative, when originally implemented, had the desired effect of weakening the value of the yen and boosting corporate profits. The hope was that these developments in turn would stimulate an increase in business investment, increases in employee wage rates and higher inflation expectations. The policy has been directionally successful but inflation expectations remain well short of the 2 percent target.

Other than depressing the value of the yen, attainment of the other monetary policy objectives was a "confidence game," as one observer has put it. What that means is that quantitative easing by itself was relatively powerless to change corporate investment or employee wage increase decisions. Whether businesses made those choices depended upon whether they believed that inflation would rise and increase profits. It should surprise no one that business leaders were hesitant to take anticipatory action, preferring to wait to see what developed before taking more aggressive action.

Both inflation and economic growth have been very disappointing. This should not come as a surprise given that both the Japanese population and labor force is shrinking rapidly. These forces are inherently deflationary, which means that monetary policy objectives were at odds with strong natural headwinds.

Unfortunately, the recent decision of the Bank of Japan to implement negative interest rates was announced in an awkward manner. In the matter of a few hours what remained of the fragile confidence game was destroyed. Rightly or wrongly, the market quickly reached the judgment that the Bank of Japan had no effective policy and was acting in desperation. In the wake of this policy decision, the Nikkei stock average plummeted with bank stocks leading the way and the value of the yen soared. In a matter of a few days much of the benefits of quantitative easing were erased with little prospect of reversal.

Fiscal policy, the second arrow, probably has had a moderate favorable impact but one that doesn't appear to have been very consequential.

And the third arrow, structural reforms, has had limited impact to date on employment participation and productivity. Theoretically, the potential for significant impact exists, but implementation of structural reforms has occurred very slowly and for the most part those actions that have been taken have been of little consequence.

Looking ahead, prospects for the Japanese economy are dismal. Union wage increases in 2016 are likely to average 1.7 percent compared to 2.4 percent in 2015. In addition, Prime Minister Abe's popularity is eroding and with it his political standing to govern.

Is Abenomics failing? Unfortunately, the answer increasingly appears to be “Yes.”

#### 4. European Union — Political Centrifugal Forces Continue to Build Slowly

Europe is beset by many challenges. At the heart of Europe’s difficulties is the common currency, the euro, which prevents member countries from addressing economic problems through individually structured monetary policies. A successful currency union requires relatively unimpeded fiscal transfer mechanisms to ease and correct economic imbalances among member countries. In addition, debt mutualization, providing for the support of individual country indebtedness by other member countries, is an essential ingredient of a successful currency union. The European Union’s (EU) governance structure provides for very limited fiscal transfers and there is no shared support of debt except under severely onerous bail-out conditions which force fiscal austerity and depress economic activity in those countries unfortunate enough to require bailout.

Open borders is another feature of the EU that was intended to promote economic activity by permitting the free flows of people, goods, and services among members without restriction. This ideal of a free-market economy did not reckon with the severe immigration crisis stemming from the breakdown in political stability in the Middle East and parts of Africa, which has now engulfed Europe. The flood of refugees coupled with economic weakness in many member countries is fostering a building political backlash that is weakening political stability in many member countries and undermining a key construct of the EU.

Most observers agree that the flaws in the EU’s governance and monetary structures and economic and social pressures are slowly eroding the stability of the EU’s political stability.

To date a muddle-through political approach to defusing successive crises coupled with commitment of dominant centrist political parties to sustaining the European Project has held the EU together. ECB president Mario Draghi’s commitment to do whatever it takes to preserve the euro so far has defused the potential for financial markets to force confrontation with difficult issues.

As is the case for Japan, Europe’s monetary policy is more of a confidence game than one that will unequivocally boost economic growth and inflation. The ECB recently increased negative interest rates on deposits, added substantially to the amount and type of asset purchases and announced new long-term lending facilities at negative interest rates for member banks. Market reaction initially was similar to the vote of no confidence that markets delivered to the Bank of Japan. However, this initial reaction reversed a day later with a more favorable “optimistic, wait-and-see” view. However, there is growing market commentary about the ECB being “out of bullets.” So, if it turns out that the latest ramping up of monetary policy ease in Europe is no more successful than previous efforts, the confidence game may be over in Europe just as it is over in Japan.

As time passes nationalism is building and slowly eroding the political foundation that holds the EU together. And, centrist political parties are losing ground steadily to euroskeptic parties on the left and the right.

There are no real initiatives underway to counter the centrifugal forces that are tearing the EU apart gradually. Increasingly, individual countries are seeking to protect their own interests and have limited interest in cooperating with other members to solve problems. Thus, it is probably only a matter of time

before a great upheaval occurs that drastically changes how the EU is structured.

Thanks to a weaker euro, plunging prices of commodities, and easing credit conditions, most EU members have eked out a bit of growth over the last two years. These developments have been sufficient to overcome for the time being the contractionary impact of fiscal austerity and contributed to a false sense of optimism. But, in the long-run, limited or negative population growth in many member countries, high-debt-to-GDP ratios, and barely discernible productivity gains will lock in mediocre economic growth. Low growth and low inflation will continue to elevate the potential for debt crises in individual EU members. Greece's most recent bailout probably will fail because its economy continues its multi-year decline. Italy, the third largest EU economy, as discussed in the next section, has an undercapitalized banking system saddled with a large amount of nonperforming loans.

## 5. European Banks Under Increasing Pressure

Prices of European bank stocks plunged early in the year but have recovered in recent weeks thanks to a weaker U.S. dollar and the actions of the ECB. There are multiple reasons — all bad — for the initial plunge in prices.

Negative interest rates are squeezing profitability. The ECB's negative interest-rate policy was supposed to encourage banks to lend rather than letting excess funds remain idle on the books of the ECB. There is little substantive evidence to date indicating the policy's objective is being met. Credit growth remains miniscule. As unwelcome as negative interest rates might be, the expected returns on risky loans are simply insufficient. Thus, it appears that the major accomplishment of the negative interest-rate policy is to depress bank profitability.

New EU regulations requiring creditor and depositor bail-ins heightens risk for bank stockholders.

Crumbling prices of commodities and weakening economies in emerging markets are increasing the potential for significant negative surprises. A weaker dollar and rebounding commodity prices have reduced risks, at least for the time being.

Overall any weakening of the EU economy will elevate the risk of owning banking shares. And, unfortunately, elevated perceptions of risk can become self-fulfilling to the extent that credit conditions tighten and lending activity slows.

## 6. Italy — Potential Banking Crisis; Constitutional Referendum

Italy's moribund economy has experienced little growth for several years. In addition, Italy's banks are stuffed with a large amount of nonperforming loans. Rather than recognizing losses, which would require substantial capital injections, a policy of "pretend and extend" has been pursued. Problems of this sort can persist for long periods of time providing that depositors and creditors do not create a liquidity crisis by withdrawing funds. ECB president Mario Draghi took this risk off the table several years ago by promising to do whatever it takes to save the euro. This effectively eliminated risk and Italian interest rates declined across the board.

At the beginning of 2016 the depositor bail-in regulations of the EU Bank Recovery and Resolution Directive were extended to include depositors as well as bondholders. Implementation of these resolution regulations threatens to unravel market complacency about the potential for creditors and uninsured depositors in Italian banks to realize losses.

To make matters worse, many Italian creditors, who could end up being “bailed in,” are small retail customers who were enticed into investing in higher yielding debt in lieu of deposits.

The potential ugly scenario is that complacency could be replaced by panic. A run on one or more banks would ensue and creditors and depositors would be forced to absorb losses. This would be politically devastating to Prime Minister Renzi. The popularity of Renzi’s Democratic Party has already fallen from 40 percent to 31 percent of the electorate over the last year.

Italy’s banks need to be recapitalized and nonperforming loans need to be liquidated. The question is where recapitalization funds would come from. Under existing rules the Italian government is not permitted to directly fund recapitalization. Even if this were not the case and the government provided the funds, doing so would push an already much too high government-debt-to-GDP ratio much higher. The ECB was bought the Italian banking system additional time by providing a liquidity solution. Italian banks can now borrow long-term funds from the ECB at negative rates of interest. This will boost Italian bank profitability but more importantly will stave off depositor and creditor runs. What it will not do is solve Italian banks’ nonperforming loan and undercapitalization problems.

But there is more. Renzi pushed a constitutional amendment through parliament last year that would change governance rules with the intent to create a more stable central government. The Italian electorate must vote to approve this constitutional change. The referendum is scheduled for the fall of 2016. Right now polls indicate that the proposed change would be approved. But, if there is a banking crisis before the vote occurs, all bets about the outcome are off. Then, if Renzi loses the referendum, it is probable that he would be forced to resign and political chaos could engulf the Italian government.

Given the recent actions of the ECB, such a scenario now has a very low probability of occurring. But it is indicative of fragility and how important ongoing stability depends upon the maintenance of confidence.

## **7. Potential European Sovereign Debt Bail-In**

A proposal has emerged recently in Germany that would bail-in sovereign debt bondholders to cover losses before funds from the European Stability Mechanism could be used. This proposal probably won’t become official EU policy any time soon, if ever. However, it doesn’t have to be policy for the idea to create damage. The damage is uncertainty about the possibility of bail-in, which elevates sovereign debt bondholder risk. The consequence would be higher interest rates for weaker sovereign credits, thereby undoing some of the “good” accomplished in lowering interest rates on sovereign debt by Mario Draghi’s promise to do whatever it takes to preserve the euro.

While such ideas are not likely to become policy any time soon, they are indicative of the worry that abounds in Germany that it will be forced to bear losses others created. It is an indirect acknowledgement by the Germans that the benefits of its EU membership might one day be overwhelmed by Germany being forced to absorb other countries’ losses.

To date, financial markets do not appear to have paid any real attention to this proposal.

## 8. U.K. — European Membership Referendum

On February 19, 2016, U.K. Prime Minister, David Cameron, and European Council President, Donald Tusk, announced that the U.K. and the European Council had reached an agreement on a “special status” for the U.K. within the EU.

Cameron called a cabinet meeting the next day and scheduled a long-promised public referendum on U.K. membership in the EU for June 23, 2016. He said he would support a “Yes” vote, but six cabinet members indicated they would campaign for a “No” vote. The battle is now joined with the fate of the U.K.’s membership in the EU squarely on the table.

Regardless of the outcome of the vote, the deal weakens the EU and makes the long-term goal of substantive European political and economic integration highly unlikely. The deal is yet another attempt to salvage the European Project in the face of growing nationalism and preservation of sovereign rights in many EU member countries.

If a “No” vote prevails, it would have serious economic consequences for the U.K. and could bring Scottish secession back into play. The Scottish National Party and a preponderance of the Scottish electorate wish to remain in the EU.

The betting is that when it comes down to the wire, a “Yes” vote will carry the day, just as it did for the Scottish independence referendum. This sentiment is based primarily on overwhelming logic that the U.K. would suffer enormously economically if it leaves the EU. But, in an era of growing nationalism and populism and increasing paranoia about the perceived consequences of immigration, it is far from certain that hard logic will prevail.

## V. What Accounts for the Slowdown in Economic Growth and Low Interest Rates?

In spite of aggressive monetary activism across the globe, economic growth in virtually every country is gradually trending downward. Interest rates, too, have been trending lower and negative rates on longer-term government obligations, unimaginable until they actually began to occur, are a feature of many developed economies.

As I have frequently explained, potential economic growth is driven by labor growth and productivity. It is established fact that as economies mature and society grows wealthier, population growth slows and in some countries population growth even turns negative. This is Japan’s fundamental economic problem and it bedevils many European countries as well.

But, potential economic growth is shrinking more than slowing population growth alone can explain. That means that productivity must also be declining. And indeed that is the case in virtually all developed economies. When a phenomenon is widespread and persists, it cannot be dismissed as a temporary cyclical

aberration. Increasingly, it is apparent that low productivity is here to stay. What is less clear is the linkage between low productivity and low interest rates, but because the two phenomena are occurring in lockstep, this implies that a linkage exists.

Nominal interest rates are the sum of the real (or natural) rate of interest, a premium to compensate for inflation and a premium to compensate for risk. According to economic theory both slower labor force growth and lower productivity depress the natural rate of interest. However, since the natural rate of interest is unobservable, the empirical relationships between slower labor force growth and lower productivity and the natural rate of interest are uncertain.

But, nominal interest rates are also very low today because of persistently low inflation. Economic theory posits that inflation should rise once economic output exceeds its potential, regardless of the level of potential output. It is a tenet of faith held by many economists and policymakers that inflation can be pushed to at least 2 percent once the economy is operating at or above full capacity. It is also a tenet of faith that policymakers can prevent inflation from going above 2 percent for any length of time through monetary policy actions.

Inflation in all developed countries has been persistently below the nominal 2 percent target. Aggressive monetary policy actions have been unsuccessful to date in driving inflation up to the target, although a credible argument can be made that absent such monetary policy actions economic growth and nominal inflation would have been a lot lower.

Persistent low productivity and the failure of policy to stimulate economic growth and attain the nominal inflation target of 2 percent have forced many economists to search for explanations, although many other economists believe the old relationships still prevail and that inflation will re-emerge once slack has been purged from the economy and that it is only a matter of time before this occurs.

## **1. Aggregate Supply Exceeds Aggregate Demand — Secular Stagnation — A Demand-Side Phenomenon**

But what if the reason for persistent low inflation is that developed economies are unable to achieve full capacity, that is, they are unable to eliminate the output gap except for short periods of time.

Essentially this is what Larry Summers posited in his speech to a meeting of the International Monetary Fund in October 2013 when he described the phenomenon of *secular stagnation*

as structurally-weak economic growth that results in a persistent deficiency in aggregate demand relative to aggregate supply.

Summers posited that the U.S. economy has been in a state of secular stagnation for approximately 15 years. Secular stagnation characterizes an economy in which aggregate demand is insufficient to eliminate an output gap.

According to Summers, the demand deficiency stems from declining population growth, falling investment demand, and an excess of intended savings. This leads to a negative equilibrium rate of interest that equates savings and investment at full employment. But, because nominal interest rates cannot fall below

zero (at least not very much), equilibrium cannot be achieved and the economy becomes stuck in a slow growth mode with low inflation or deflation, which monetary policy is unable to remedy.

The traditional response to an output gap is to stimulate the economy through fiscal and monetary policies. After initial stimulus during the Great Recession, fiscal policy has not been used in any particularly intentional way to address the output gap. Now, the political feasibility to do so no longer exists. And, with the substantial increase in the federal-public-debt-to-GDP ratio the ability to use fiscal policy to stimulate aggregate demand during the next recession appears to be limited.

Thus, the entire weight of policy intervention has come to rest upon monetary policy. Monetary policy since the Great Recession had provided liquidity and depressed interest rates. This was supposed to stimulate investment in productive assets, thereby increasing aggregate demand.

However, what if much of this monetary stimulus actually goes into financial engineering and price speculation in existing assets instead? Clearly monetary policy has boosted asset prices and created wealth. Increased wealth has spurred additional consumer spending. The financial services and wealth management industries have flourished and created jobs. All of these developments have helped close the output gap. Monetary policy has been successful. Or, has it?

## **2. Aggregate Supply Exceeds Aggregate Demand — Secular Stagnation — A Supply-Side Phenomenon**

According to Alvin Hansen, the economist who originally coined the term “*secular stagnation*” in the 1930s, structurally-weak economic growth is a supply-side phenomenon rather than a demand-side phenomenon, which is driven by depressed population and productivity growth.

There is no dispute between Hansen and Summers about the role of slowing population growth and the accompanying decline in investment. The difference in explanations is one of whether a depressed or negative real rate of interest leads to lower productivity or whether other factors are responsible for driving down productivity. In other words, is lower productivity a cause or consequence of secular stagnation?

It is difficult to disentangle drivers of supply and demand because of dynamic interaction. However, we can observe outcomes and the outcomes we are observing are low and persistent productivity and interest rates.

## **3. Consequences of Secular Stagnation**

In a world in which secular stagnation is the dominant overarching economic paradigm, traditional monetary policy intervention to lower interest rates and increase liquidity fosters a credit boom and transitory increase in aggregate demand with the following consequences:

- Low or negative interest rates crowd out low return, risky investments in productive assets; inefficient companies are protected from the rigors of competition; price speculation in existing assets is encouraged

- Sustained low interest rates that are expected to be stable for a long period of time encourage investment in risk assets through debt leverage
- Productivity slows because of diminished investment in new riskier productive assets and the failure to purge inefficient firms
- Growth in real economic activity, GDP, slows
- Incomes rise less rapidly along with slower economic growth and this, in turn, depresses the rate of consumption growth
- A persistent output gap, interrupted only for brief intervals by credit-fueled speculative activity, places unrelenting downward pressure on inflation
- Speculation drives up the prices of existing financial and real assets to levels inconsistent with their intrinsic cash flows
- Asset price speculation benefits the rich and drives income and wealth inequality gaps higher
- Low productivity penalizes the poor by holding down wage increases

#### 4. Key Drivers of Low Equilibrium Interest Rates (Bank Credit Analyst)<sup>1</sup>

The *Bank Credit Analyst* expects interest rates to remain low for a considerable period of time and offers several reasons for that conclusion.

**Slower Supply-Side Growth** — because of slowing global population growth and lower productivity, global potential economic growth has fallen 1.4 percentage points since the onset of the Great Recession.

**Shift to Services** — service oriented industries tend to be less capital intensive; less investment spending also reduces corporate borrowing requirements.

**Demographics and Capital Spending** — the equilibrium rate of interest (natural rate) is determined by the marginal demand for capital spending and the marginal desire of households to save; a lower level of capital spending relative to GDP puts downward pressure on the equilibrium rate of interest. Because global population growth is slowing, the amount of new investment spending needed to maintain a constant capital to GDP ratio is falling over time. Almost no dollar increase in capital spending is likely to occur for the next 25 years.

**Supply-Side Effect of Reduced Capital Expenditures** — less capital spending depresses productivity growth. The benefits of information and communications technology have diminished for most major developed economies.

**Demographics and Consumer Spending** — as populations age, per-capita spending declines. In other words, consumer spending growth will slow more than population growth.

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<sup>1</sup>McClellan, Mark. “Secular Stagnation and the Medium-Term Outlook for Bonds,” *The Bank Credit Analyst*, March 2016, Vol. 67, No. 9.

**End of the Debt Supercycle** — up to a point debt leverage can accelerate investment spending and economic growth, but beyond that point increasing debt servicing requirements can depress the rate of economic growth. Debt-to-GDP ratios in many countries have approached or exceeded the leverage limit that accelerates growth.

**Shift in Income Distribution Toward the Wealthy** — wealthy individuals have a higher saving rate. As wealth inequality grows, consumption spending is depressed and saving increases. This drives down investment and interest rates.

**Lower Inflation Expectations** — spending behavior depends upon expectations about future prices. As inflation expectations fall an increasing amount of spending is delayed with the effect that saving increases and interest rates are depressed.

**Other Factors** — glut of savings in emerging economies stemming from stimulating economic growth through infrastructure spending and exports; falling relative price of capital goods due to technological advances; lower public investment spending; rise in the required risk return on investment which forces the risk-free rate down by the same amount as the increase in the risk premium; and quantitative easing which creates scarcity of high-quality, longer-duration investments in an era of increased liquidity requirements for financial institutions.

## 5. Lower Interest Rates for Longer

Most economists have yet to embrace the view that interest rates are likely to remain near recent levels for an extended period of time. Forecasters generally project rates to rise over time as economic slack is eliminated and inflation reaches the target level of 2 percent. Over the last several years rates have not risen as expected. Indeed, they have actually continued to fall. This has not changed expectations that rates will eventually rise.

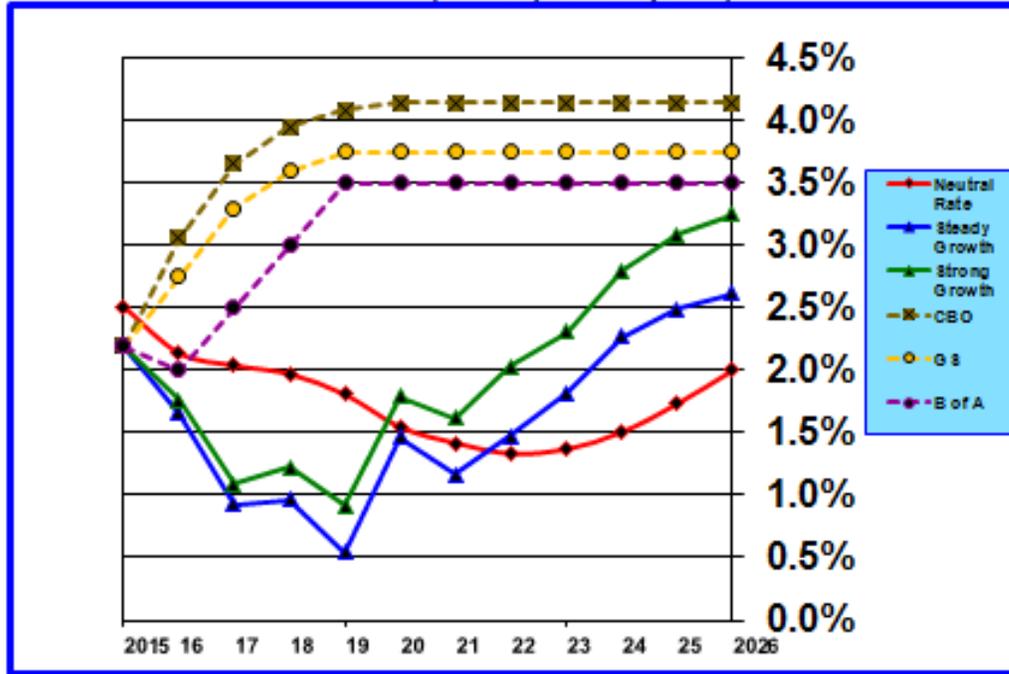
The underlying forecasting flaw may turn out to be that the natural rate of interest is much lower than it has been historically for all the reasons discussed above and that will not change as economic slack disappears. Other plausible reasons for interest rates to remain low for a very long time include the possibility that inflation remains well below the 2 percent target or the possibility that recession occurs and washes out the speculative excesses fostered by quantitative easing.

In my own econometric work, my rate projections are considerably below those of other forecasters. **Chart 1** shows forecasts for the 10-year U.S. Treasury Note for **B of A**, **GS**, **CBO**, and my “**Steady Growth**” and “**Strong Growth**” scenarios. The greatest forecast differences occur over the next five years, but even ten years from now my forecasts are 100 to 150 basis points lower than conventional forecasts.

Over the next five years my model forecasts that the 10-year yield will decline 122 basis points (see **Table 1**). Slowing labor force growth contributes 86 basis points to the decline. However, tighter labor market conditions raise the yield by 53 basis points. Thus, the total impact of changes in the labor market contributes 33 basis points to the decline. Rising productivity adds 15 basis points while easier financial conditions subtract 13 basis points. Collectively, all of these factors decrease the 10-year yield by 44 basis points. The remaining 78 basis points decline stems from my forecast that inflation will decline. However,

### CHART 1 – Ten-Year Treasury Yield

(annual percentage rate)



Page 1

Table 1  
Changes in 10-Year Treasury-Note Yield  
(Basis Points)

	Labor Growth	Labor Gap	Productivity	Inflation	Financial Conditions	Other	Total
2016-2020	-86	53	15	-78	-13	-13	-122
2021-2026	-2	-5	23	188	-14	-8	181
2016-2026	-88	48	37	110	-27	-21	59
Inflation Reaches 2.0% by end of 2020							
2016-2020	-86	53	15	133	-13	-13	88
2021-2026	-2	-5	23	-23	-14	-8	-29
2016-2026	-88	48	37	110	-27	-21	59

if I am wrong and inflation rises to 2.0 percent by the end of 2020, inflation would add 133 basis points to the 10-year yield rather than subtracting 78 basis points. This swing of 210 basis points would reverse the 122 basis points decline forecast by my model to an 88 basis points increase. So, if my model is unduly

pessimistic in its inflation forecast, a high likelihood remains that the 10-year yield will rise only modestly over the next five years.

After 2020, inflation in my model moves rapidly toward 2.0 percent, reaching that level by 2024. What is important to note is that even though my inflation forecast eventually matches that of others, the 10-year yield rises less than 100 basis points from its current level. Other forecasters expect the 10-year yield to rise 150 basis points or more and that is expected to occur within the next three years rather than in eight to ten years' time.

## VI. GDP

In January the Congressional Budget Office (**CBO**) updated its ten-year forecasts for key economic variables in conjunction with its annual projection of the federal deficit and the cumulative effects of the deficit over the next ten years with respect to forecast growth in GDP. In this section I discuss potential real GDP growth, forecast real GDP growth, both over the next few quarters as well as long-term trends over the next 10 years, and estimates of the output gap.

### 1. Potential Real GDP

**CBO's** estimate of potential real GDP is built from the bottom up and depends on assumptions about growth in total hours worked and productivity. Total hours worked depend on demographics, immigration, voluntary decisions to participate in the labor force, and the length of the work week, which is driven primarily by the mix of full-time and part-time jobs. While there is some uncertainty surrounding each of these assumptions, the range of uncertainty is fairly narrow. Assumptions about future productivity rely heavily on historical data and thus projections tend to mirror historical experience.

As can be seen in **Chart 2**, **CBO's** projections of potential real GDP growth have declined substantially over the last four years. However, there has been little change in the "out years" since 2013. That is because there have been no substantive changes in labor force growth assumptions or long-term productivity assumptions. The risk is that **CBO** is too optimistic about long-term productivity trends. Most other analysts have lowered expectations for future productivity growth based on the miserable recent performance of productivity.

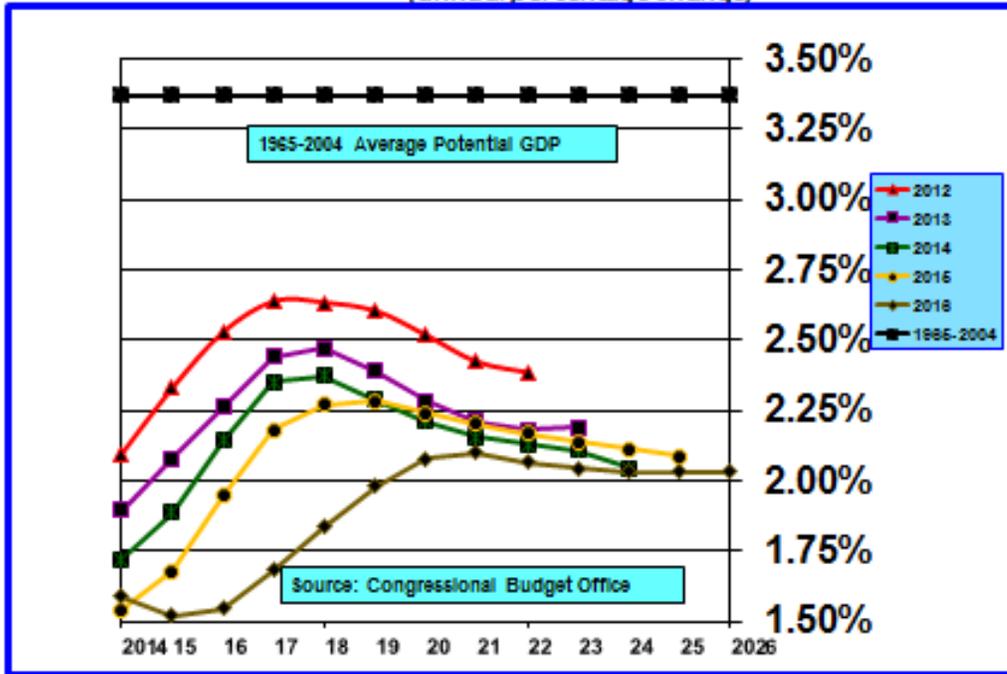
In its 2016 update, **CBO** decreased its cumulate estimate of potential GDP growth prior to the current year by 0.5 percent, which reduced the output gap by a similar amount. More importantly, **CBO** slashed its estimates of potential real GDP growth over the next four years. These revisions are due almost entirely to downward recalibration of productivity in the next few years.

**Chart 3** adds potential real GDP growth forecasts of others, including mine, to **CBO's** outlook.

Long-run estimates of potential real GDP growth range from 1.6 percent to 2.15 percent. There is a cluster of estimates between 1.7 percent and 1.8 percent that includes my "**Steady Growth**" scenario, the **FOMC's** low estimate and **B of A's** and **GS's** estimates. There is a second, higher, cluster between 2.05 percent and 2.15 percent that includes my "**Strong Growth**" scenario, the **FOMC's** high estimate

### CHART 2 – CBO Potential Real GDP Rate of Growth

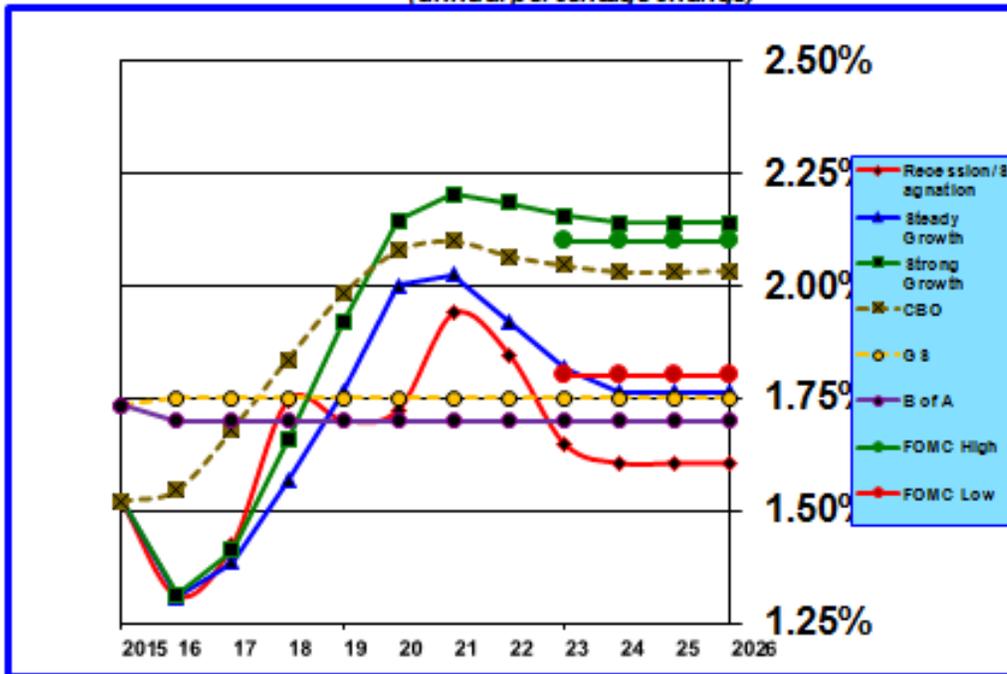
(annual percentage change)



Page 2

### CHART 3 – Potential Real GDP Growth

(annual percentage change)

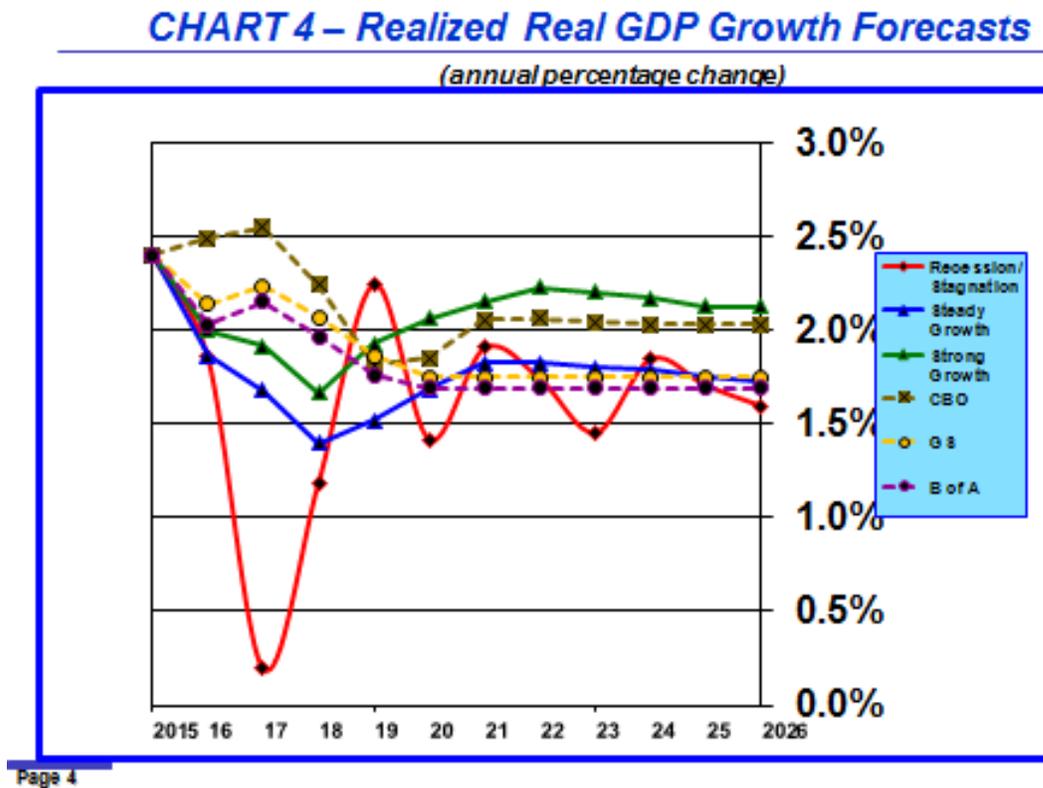


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and **CBO's** estimate. Based upon my analysis and that of others regarding the effects of demographic trends and policy actions on productivity, I would place my bets on the lower cluster of estimates.

## 2. Forecast Realized Real GDP Growth

**Chart 4** includes forecasts of realized real GDP growth, as opposed to potential GDP, over the next ten years.

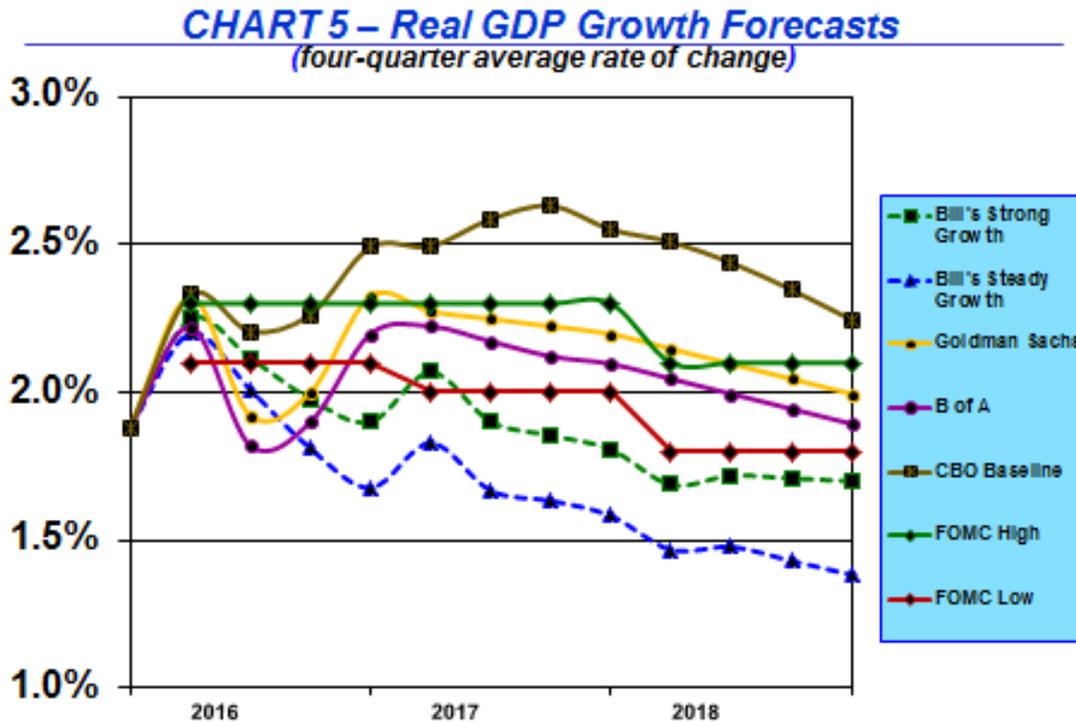


Tellingly, no forecast includes a year of growth above 3 percent. **CBO's** forecasts for 2016 and 2017 are slightly more optimistic than all the others, but the difference is not large. The most pessimistic forecast over the next five years from 2016-2020 is my “**Steady Growth**” scenario. Real growth averages 1.62 percent over this period in my estimate compared to 1.92 percent for **B of A**, 2.01 percent for **GS**, and 2.19 percent for **CBO**. My lower forecast results from both a slower growth in total hours worked and slower productivity gains.

After 2020, realized real GDP growth forecasts essentially differ little from potential real growth expectations. That is because all models assume the output gap either closes or is very small.

**Chart 5** shows quarterly real GDP growth projections from 2016 to 2018. All forecasts for the next three years are tightly clustered. All exhibit a slight deteriorating trend as time passes.

My “**Steady Growth**” scenario is on the pessimistic end of the spectrum for reasons mentioned above.



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CBO’s forecasts are at the optimistic end of the range. All other forecasts fall within the FOMC’s high and low estimates throughout the three-year period.

### 3. Progressive Downward Revision of Real GDP Growth Forecasts

As the reality of feeble productivity growth has become increasingly apparent and optimism has faded that this is merely a temporary phenomenon, forecasts have grudgingly and gradually cut their forecasts of future real GDP growth.

This downward progression in estimates is visible in **Table 2**, which records the quarterly updates of the FOMC’s projections for annual real GDP growth since December 2012. The pattern of progressive forecast downgrades is similar for others, so the FOMC really is no better nor no worse at forecasting than anyone else.

Perhaps we’ve all figured it out now and further forecast downgrades will not occur. This will depend upon the future course of productivity. Over the last five years productivity growth has averaged 0.38 percent annually; the record is a somewhat better 0.61 percent over the last three years. Embedded in forecasts of future real GDP growth over the next three years are assumptions about productivity growth — 0.96 percent in my “**Steady Growth**” scenario, 1.50 percent for **GS**, .70 percent for **B of A**, and 1.38 percent for **CBO**. All of these estimates, including mine, are above recent experience. The implication is obvious. If productivity does not increase as expected in coming quarters, actual real GDP growth will

**Table 2**  
**Economic Projections of Real GDP By Federal Reserve Board Member and Federal Reserve Bank Presidents, March 2016**

Real GDP %	Central Tendency					
	2014	2015	2016	2017	2018	Longer Run
2016 Mar			2.1 - 2.3	2.0 - 2.3	1.8 - 2.1	1.8 - 2.1
2015 Dec		2.1	2.3 - 2.5	2.0 - 2.3	1.8 - 2.2	1.8 - 2.2
Sep		2.0 - 2.3	2.2 - 2.6	2.0 - 2.4	1.8 - 2.2	1.8 - 2.2
June		1.8 - 2.0	2.4 - 2.7	2.1 - 2.5		2.0 - 2.3
Mar		2.3 - 2.7	2.3 - 2.7	2.0 - 2.4		2.0 - 2.3
2014 Dec	2.3 - 2.4	2.6 - 3.0	2.5 - 3.0	2.3 - 2.5		2.0 - 2.3
Sep	2.0 - 2.2	2.6 - 3.0	2.6 - 2.9	2.3 - 2.5		2.0 - 2.3
June	2.1 - 2.3	3.0 - 3.2	2.5 - 3.0			2.1 - 2.3
Mar	2.8 - 3.0	3.0 - 3.2	2.5 - 3.0			2.2 — 2.3
2013 Dec	2.8 - 3.2	3.0 - 3.4	2.5 - 3.2			2.2 - 2.4
Sep	2.9 - 3.1	3.0 - 3.5	2.5 - 3.3			2.2 - 2.5
June	3.0 - 3.5	2.9 - 3.6				2.3 - 2.5
Mar	2.9 - 3.4	2.9 - 3.7				2.3 - 2.5
2012 Dec	3.0 - 3.5	3.0 - 3.7				2.3 - 2.5

come in below forecasts and forecasters will be forced to shave future estimates of real GDP growth.

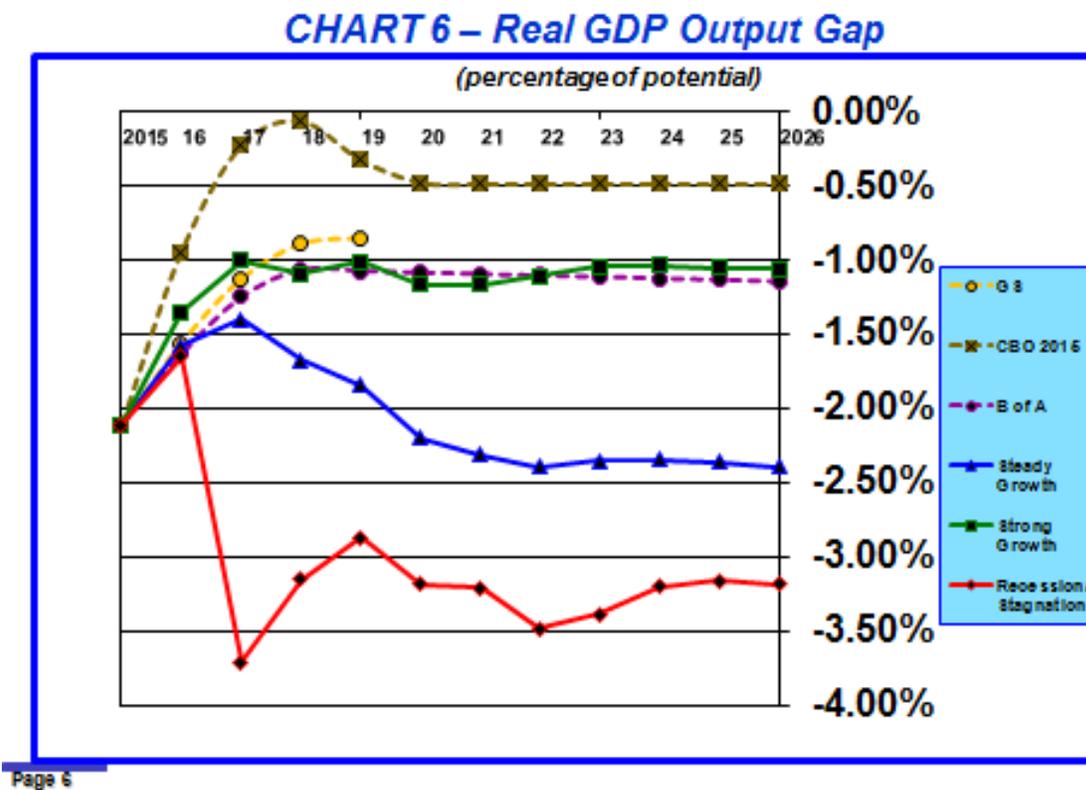
#### 4. 2016 Q1 Real GDP Forecast

We are nearing the end of the first quarter of 2016. Two months of preliminary data are available and economists are busily revising first quarter real GDP growth estimates.

**B of A's** original estimate was 2.0 percent, but its current working estimate is 1.7 percent. **GS's** working estimate is currently 2.4 percent. Both estimates are consistent with the recent trend level of real GDP growth.

### 5. Real GDP Output Gap

Forecasts of potential and actual real GDP enable calculation of the size of the output gap. That metric is shown in **Chart 6**. According to **CBO's** estimates of potential real GDP, the output gap in the fourth quarter of 2015 was 2.1 percent. All of the forecast output gaps shown in **Chart 6** use this as the baseline. It should be noted, however, that most other forecasters believe that the output gap is somewhat smaller currently, although none believes it has closed entirely. Forecasters generally do not publish their estimates of potential real GDP. Thus, estimates of the output gap attributable to **B of A** and **GS** in **Chart 6**, which are based on **CBO's** estimate of potential real GDP, probably overstate the output gaps **B of A** and **GS** are projecting. I do calculate independently my own estimates of both potential and realized real GDP, but I anchor my estimates of the output gap to **CBO's** fourth quarter 2015 output gap of 2.1 percent.



Generally, the consensus is that the output gap will close within the next one to two years. This expectation is supported by the current rate of unemployment, which is not materially different from **CBO's** estimate of **NAIRU** (non-accelerating inflation rate of unemployment).

Output gaps for **B of A** and **GS** in **Chart 6** do not close because both forecasters expect actual real GDP to grow more slowly than **CBO** expects, but in all cases, as explained above, the denominator of the output gap measure is **CBO's** estimate of potential real GDP.

In my “**Steady Growth**” scenario the output gap deteriorates after 2017 while the output gap in my “**Strong Growth**” scenario parallel’s the **B of A** and **GS** estimates. This deterioration occurs because

my estimate of growth in total hours worked is very weak between 2018 and 2020. This outcome results from the method I employ to estimate the length of the workweek in the future and that methodology may be flawed.

## VII. Employment

Payroll and household employment gains continue to be impressive. Employment participation has improved and both the U-3 and U-6 measures of unemployment indicate that little slack remains in the labor market. At long last there is evidence that wage rate growth is beginning to accelerate.

### 1. Employment Growth

February's employment situation report was surprisingly strong. The increase in payrolls in February was 242,000, which was well above the approximately 100,000 monthly gain necessary to maintain a stable unemployment rate. This compares to a monthly average of 252,000 over the last three months and the 2015 average monthly gain of 221,000. The 12-month rate of growth in payroll employment remains strong at an elevated level of 1.90 percent, although this is down somewhat from the peak rate of annual growth of 2.28 percent in February 2015.

Household employment grew 531,000 in February. Monthly estimates of household employment growth are very volatile so a better sense of trend can be gained by looking at average monthly changes in household employment over longer time periods. Over the past 12 months, monthly household employment growth has averaged 237,000 compared to 223,000 for payroll employment. This is not a consequential difference. Household employment has grown 1.92 percent over the past 12 months.

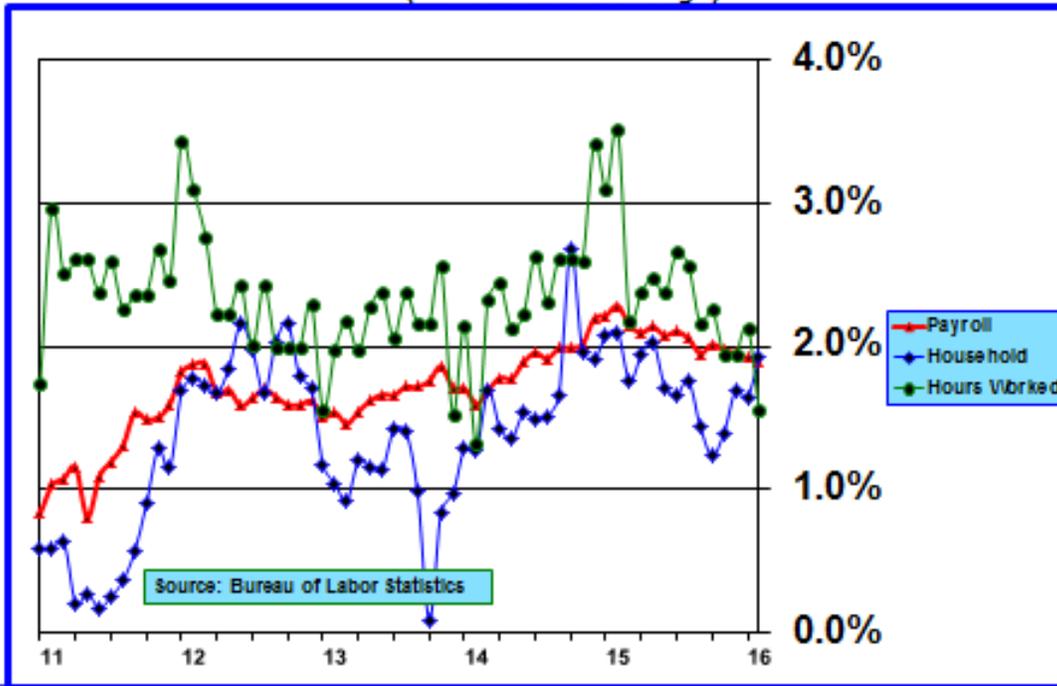
Growth in total hours worked by all employees decelerated from 2.13 percent in January to 1.55 percent in February. Because the way in which the Bureau of Labor Statistics reports the length of the workweek in tenths of hours, the February year-over-year growth rate may be understated.

**Chart 7** shows all measures of employment growth — payroll employment, household employment, and total hours worked. Probably the most important thing to notice in **Chart 7** is the convergence in the growth rates of total hours worked with those for payroll and household employment. This is an indicator of a mature labor market that is at or near full employment. Generally, in the early stages of recovery employers increase the length of the work week of existing workers before hiring new ones.

### 2. Employment Participation

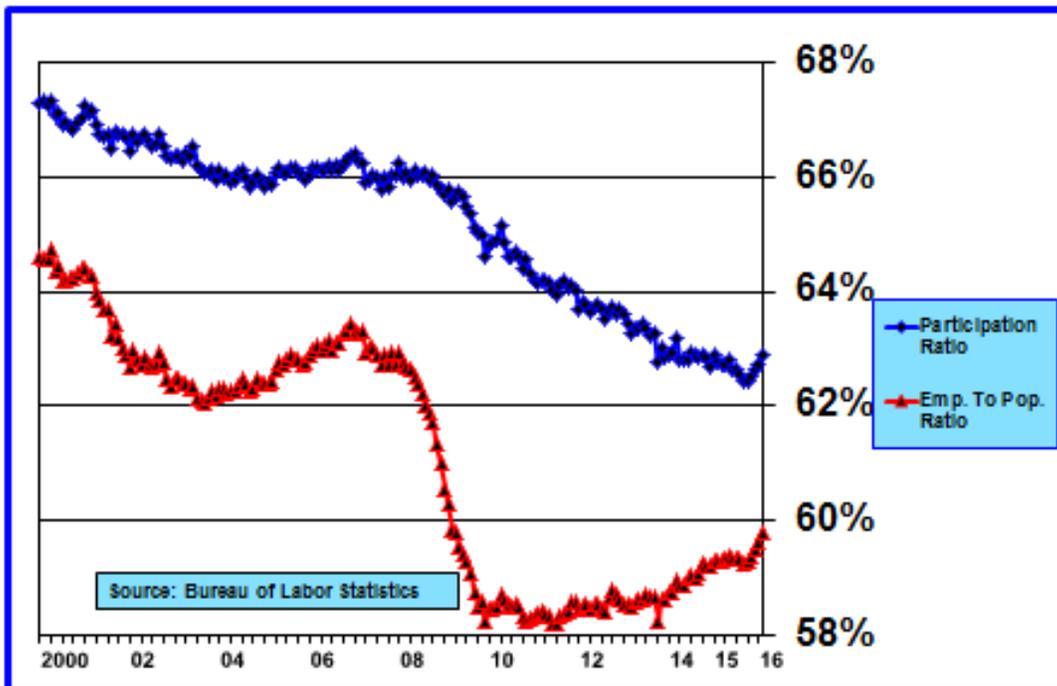
**Chart 8** shows the labor force participation rate and the eligible-employment-to-population ratio. The denominators of both measures are the total number of people eligible to work referred to as the population. The numerator of the eligible-employment-to-population ratio is the total number of people employed and unemployed who wish to be in the labor force. The numerator of the participation ratio only counts those who are employed.

**CHART 7 – Employment Growth**  
(annual rate of change)



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**CHART 8 – Labor-Force-Participation and Eligible-Employment-to-Population Ratios (U-3 Measure)**

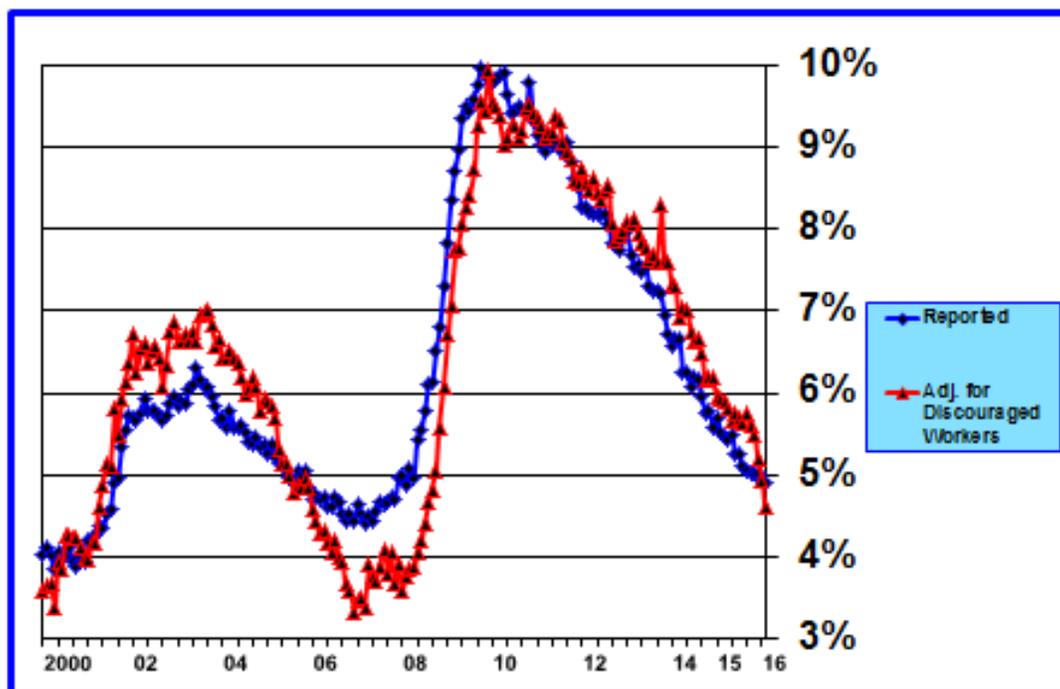


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The eligible-employment-to-population ratio plunged during the Great Recession and then stabilized for several years before beginning to rise in 2014. However, the participation rate continued a steady decline until just five months ago. The decline in the participation ratio is being driven by changing demographics which should continue to reduce participation by about 0.2 percent annually over the next ten years. However, the decline in the participation ratio during and immediately following the Great Recession was exacerbated by the exit of discouraged workers from the labor force. Because discouraged workers are not counted in the labor force there has been considerable debate about their numbers and whether they would reenter the labor force once the labor market tightened. The increase in the participation rate from 62.42 percent in September to 62.91 percent in February is fairly strong, yet circumstantial, evidence that discouraged workers are finally reentering the labor market.

Periodically I have included a chart in my commentary that compares the actual U-3 unemployment rate with an unemployment rate adjusted to include unreported discouraged workers (see **Chart 9**).

**CHART 9 – Reported Unemployment Rate & Adjusted for Discouraged Workers**



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There is a systematic relationship between the two unemployment rates over the labor market cycle. The adjusted unemployment rate exceeds the reported rate during times of high unemployment, but is much lower when unemployment is low and the labor market is tight. The difference between the two rates reflects workers who leave the labor force when times are tough but reenter when jobs are plentiful.

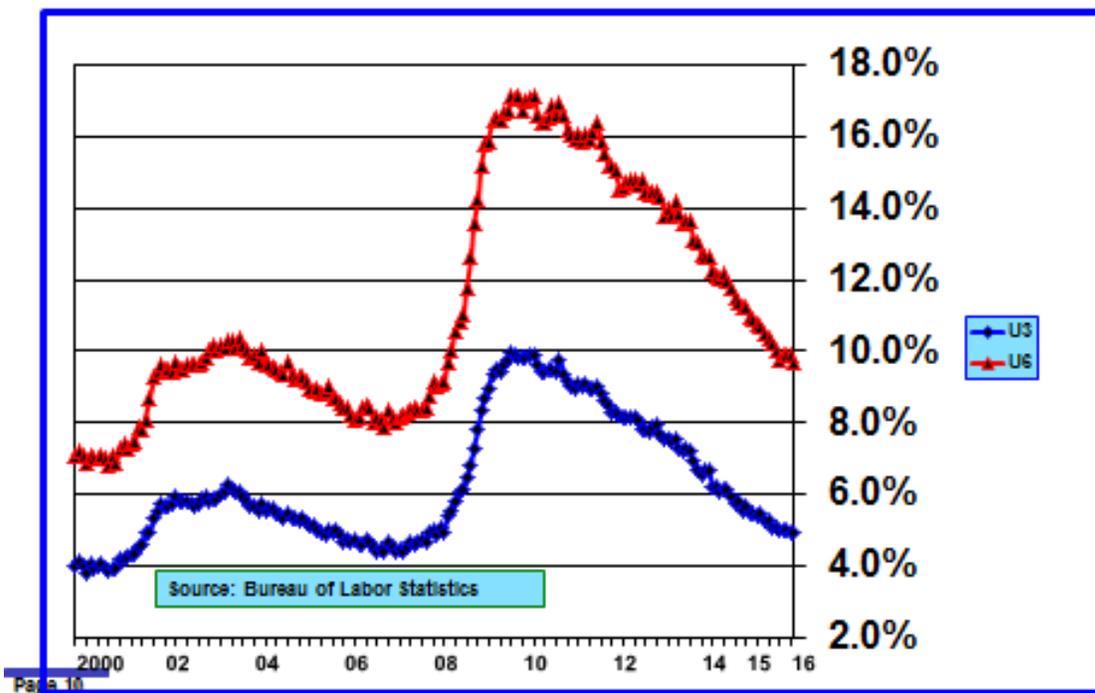
Since the end of the Great Recession, the adjusted unemployment rate has persistently exceeded the reported unemployment rate, implying that not only were there an abundance of discouraged workers, they were not re-entering the labor market as conditions improved. However, that has now changed over the last few months. Discouraged workers have returned to the labor force and the adjusted unemployment

measure (4.61 percent in February) is now lower than the reported U-3 unemployment rate (4.92 percent in February). **GS** believes there is still a small participation gap equal to about 0.2 percent.

### 3. Measures of Unemployment Reflect a Labor Market With a Modest Amount of Slack

As can be seen in **Chart 10**, the U-3 unemployment rate has fallen below 5.0 percent and nearly matches the level attained prior to the Great Recession. The February U-3 unemployment rate was 4.92 percent compared to **CBO's** full employment estimate of 4.85 percent.

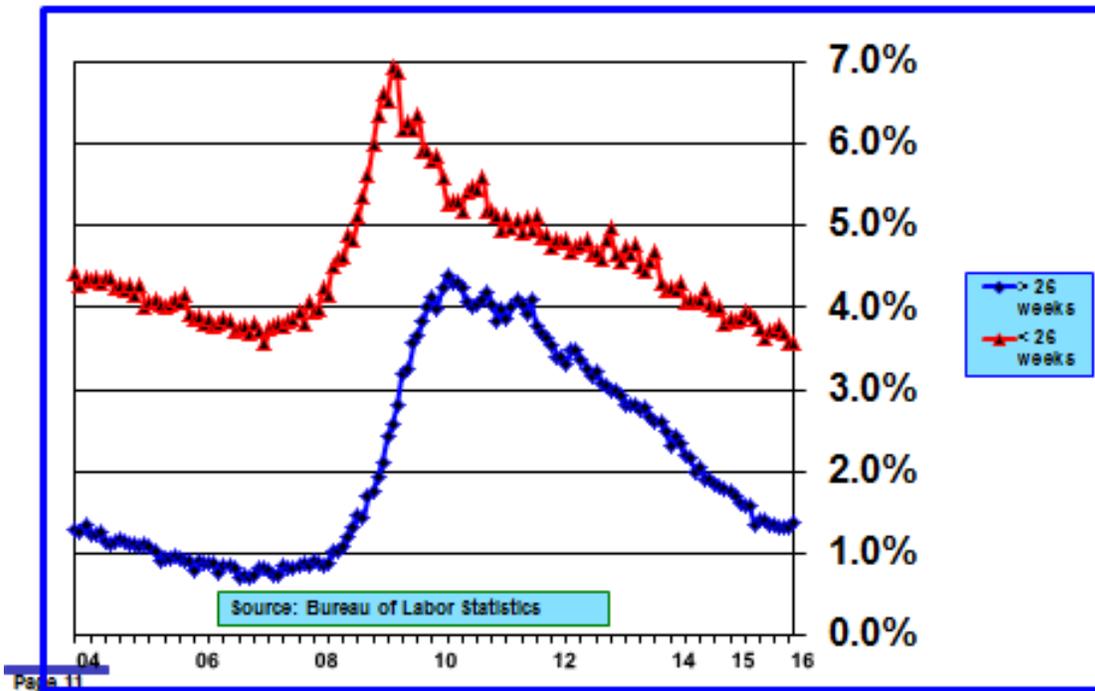
**CHART 10 – U-3 and U-6 Unemployment Rates**



The U-6 measure of unemployment, which adds those working part time who would prefer full-time employment and those marginally attached to the labor force to the U-3 measure, has fallen to 9.7 percent but is about 1.5 percentage points above the pre-Great Recession minimum. Both unemployment measures reflect a tightening labor market with a modest amount of remaining slack.

Long-term and short-term unemployment rates and also indicators of labor market tightness and are shown in **Chart 11**. The short-term unemployment has returned to the low level that prevailed prior to the Great Recession. The long-term unemployment rate has declined from over 4 percent in the aftermath of the Great Recession to about 1.3 percent currently. It is still about 0.4 to 0.5 percent above the low level reached just prior to the onset of the Great Recession.

**CHART 11 – LT (>26 weeks) and ST (<26 weeks)  
Unemployment Rates**



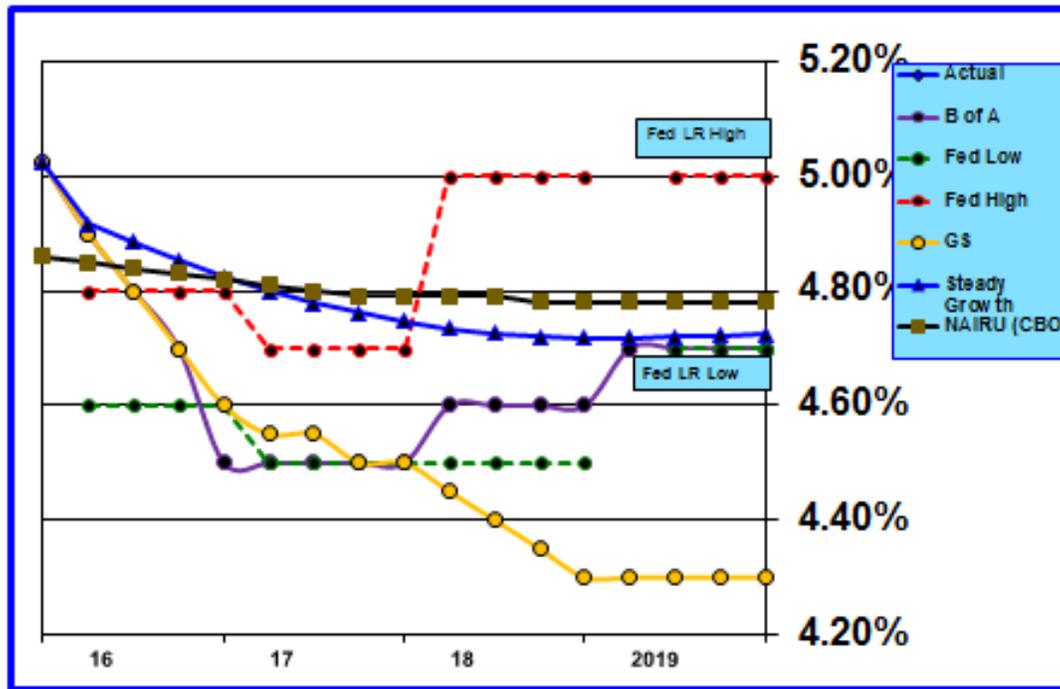
#### 4. Forecasts of the U-3 Unemployment Rate

Forecasters expect the labor market to continue to tighten which means that the unemployment rate will fall below the non-accelerating inflation rate of unemployment (NAIRU). While this is certainly welcome news after seven years a high unemployment, further declines in unemployment will result in a tight labor market. Scarcity of workers will drive wages higher. This is also a favorable development because it will increase worker spending power. But, as the term NAIRU implies, when unemployment falls below this level for any length of time not only do wages increase but inflation increases as well. For that reason, the FOMC will attempt to tweak monetary policy to maintain full employment but limit the potential for tight labor markets to foster inflation. The traditional monetary policy tool involves raising interest rates.

**Chart 12** shows unemployment rate forecasts for **B of A**, **GS**, **FOMC** high and low range, and my “**Steady Growth**” scenario. **CBO**’s estimate of NAIRU is also shown in **Chart 12**. All forecasts project that the unemployment rate will fall below NAIRU. **GS** is the most optimistic and anticipates that the unemployment rate will fall to 4.3 percent by 2019.

FOMC members haven’t been particularly prescient in projecting unemployment rates either, as can be seen in **Table 3**. One would think that over optimism on real GDP growth should have translated into optimism for a more rapid decline in the unemployment rate. But, FOMC members did not foresee the collapse in productivity, which has driven down real GDP growth. Neither did they fully anticipate the substantial decline in the labor force participation rate which has contributed to the much greater than expected decline in the unemployment rate. In fairness, other analysts did not anticipate these

**CHART 12 – NAIRU and Unemployment Rate Forecasts**  
(quarterly average)



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developments as well.

Estimates of long-term unemployment in **Table 3** are essentially the FOMC’s estimate of NAIRU. The FOMC’s estimates of the long-term equilibrium rate of full employment have been coming down over time and the level is currently similar to CBO’s estimate of NAIRU.

**CBO** reduced its estimate of NAIRU again when it updated its economic assumptions in January. **Chart 13** compares CBO’s estimates of NAIRU made in 2014, 2015, and 2016.

CBO’s reductions in NAIRU in both 2015 and again in 2016 increased the size of the historical measured employment gap considerably going back to 2012 with the consequence that it contributed to depressing my estimates of future inflation. My inflation model is sensitive to the size of the employment gap and an increase in the estimated size of the gap reduces the estimate of future inflation. As a result my projections of inflation remain below 2 percent for much longer than just about everyone else expects. If past relationships between inflation and the employment gap and other economic variables remain intact, then inflation will probably not rise as much or as soon as most expect. However, relationships can change in ways that make past experience undependable in anticipating future outcomes. In other words, my statistical model could be generating false projections. Who has the better forecast is unknowable, but my caution would be to worry about inflation turning out to be lower than most expect rather than being concerned that it might be a lot higher.

**Table 3**  
**Economic Projections of Unemployment Rate by Federal Reserve Board Members And**  
**Federal Reserve Bank Presidents, March 2016**

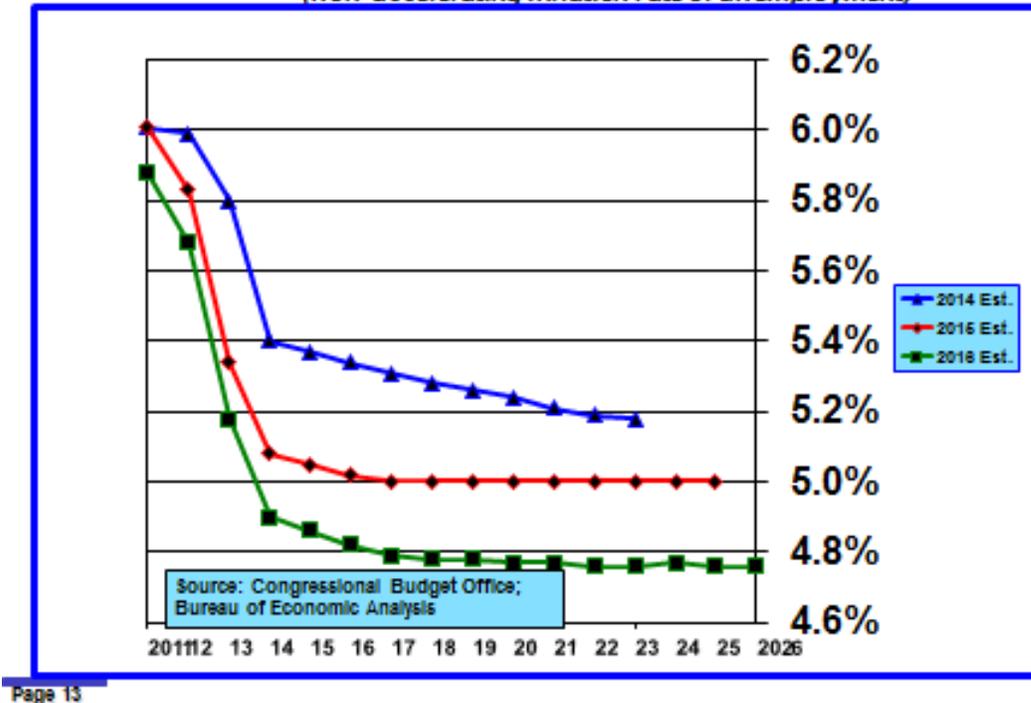
Unemp. Rate %	Central Tendency					
	2014	2015	2016	2017	2018	Longer Run
2016 Mar			4.6 - 4.8	4.5 - 4.7	4.5 - 5.0	4.7 - 5.0
2015 Dec		5.0	4.6 - 4.8	4.6 - 4.8	4.6 - 5.0	4.8 - 5.0
Sep		5.0 - 5.1	4.7 - 4.9	4.7 - 4.9	4.7 - 5.0	4.9 - 5.2
June		5.2 - 5.3	4.9 - 5.1	4.9 - 5.1		5.0 - 5.2
Mar		5.0 - 5.2	4.9 - 5.1	4.8 - 5.1		5.0 - 5.2
2014 Dec	5.8	5.2 - 5.3	5.0 - 5.2	4.9 - 5.3		5.2 - 5.5
Sep	5.9 - 6.0	5.4 - 5.6	5.1 - 5.4	4.9 - 5.3		5.2 - 5.5
June	6.0 - 6.1	5.4 - 5.7	5.1 - 5.5			5.2 - 5.5
Mar	6.1 - 6.3	5.6 - 5.9	5.2 - 5.6			5.2 - 5.6
2013 Dec	6.3 - 6.6	5.8 - 6.1	5.3 - 5.8			5.2 - 5.8
Sep	6.4 - 6.8	5.9 - 6.2	5.4 - 5.9			5.2 - 5.8
June	6.5 - 6.8	5.8 - 6.2				5.2 - 6.0
Mar	6.7 - 7.0	6.0 - 6.5				5.2 - 6.0
2012 Dec	6.8 - 7.3	6.0 - 6.6				5.2 - 6.0

## 5. Wage Growth Is Finally Discernible, But Still Weaker Than Expected

As the labor market approaches full employment, theory and past experience indicate that growth in wages should be accelerating. That is what is supposed to happen when excess supply disappears and demand is increasing. But acceleration in wage growth to date, although now visible, has been much weaker than experience suggests it should be.

For quite some time FOMC members have been expecting the rate of growth in wages to pick up and boost inflation. That has yet to happen convincingly. FOMC members are not the only ones with poor forecasting track records. Private sector economists have forecast acceleration in wage rate growth for some time now as the amount of slack in the labor market gradually declined. There is now evidence that wage growth is beginning to accelerate but increases remain smaller than experience suggests should be occurring given how little slack is left in the labor market.

**CHART 13 – CBO’s Estimate of NAIRU**  
*(non-accelerating inflation rate of unemployment)*



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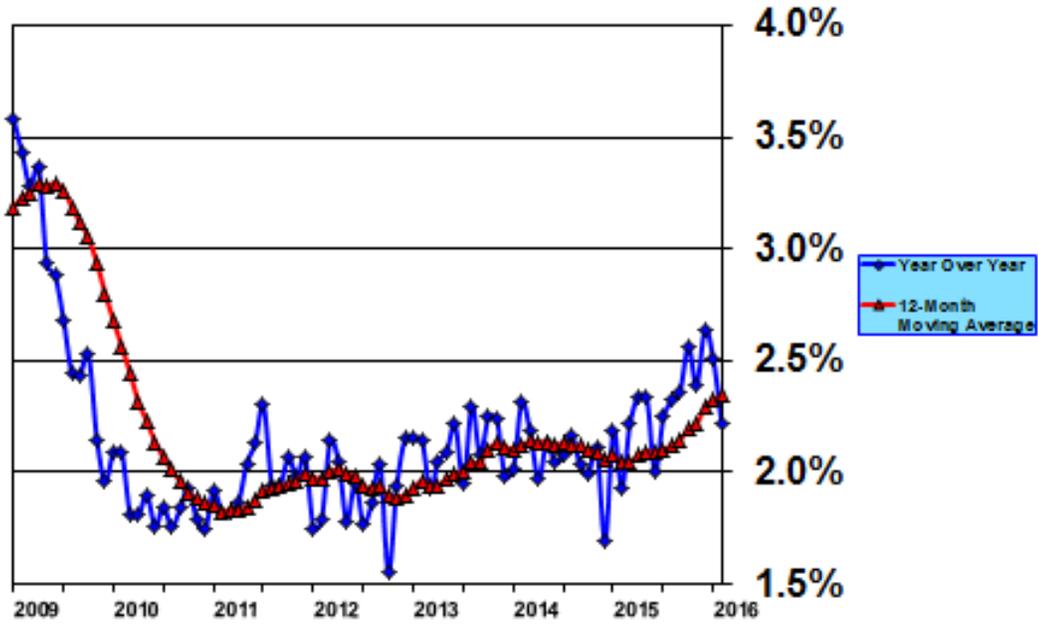
Growth in wages is an important measure of labor market strength. An increasing rate of growth is evidence of a strengthening labor market in which labor, particularly in scarcer job categories, is gaining more bargaining power.

There are two primary broad-based measures of labor compensation that provide information about compensation trends. Both are compiled by BLS. One is released monthly as part of the monthly labor situation report and includes both hourly and weekly wage rates for all workers, but includes no information about benefits which comprise approximately 30 percent of total compensation. The other, the employment cost index (ECI), is released quarterly and consists of wage and salary, benefits, and total compensation indices.

Although both sets of measures are highly correlated over time, because compilation methodologies differ for each set of measures percentage changes over fixed time periods will not necessarily be in sync. This is the case currently. Hourly wages of all employees are rising 2.35 percent annually currently compared to 2.04 percent a year ago (see **Chart 14**). Although it might be a statistical fluke, the February year-over-year change in the hourly wage rate of all employees fell below the 12-month moving average of 2.35 percent to 2.22 percent. So, based on this measure, wages are accelerating, but just barely.

Furthermore, if one looks at growth in average weekly earnings, which factors in the length of the workweek, rather than the hourly wage rate, growth in weekly wages for all employees has fallen from 2.43 percent a year ago to 2.25 percent in February 2016 (see **Chart 15**). This outcome reflects a modestly shorter average number of hours worked per week.

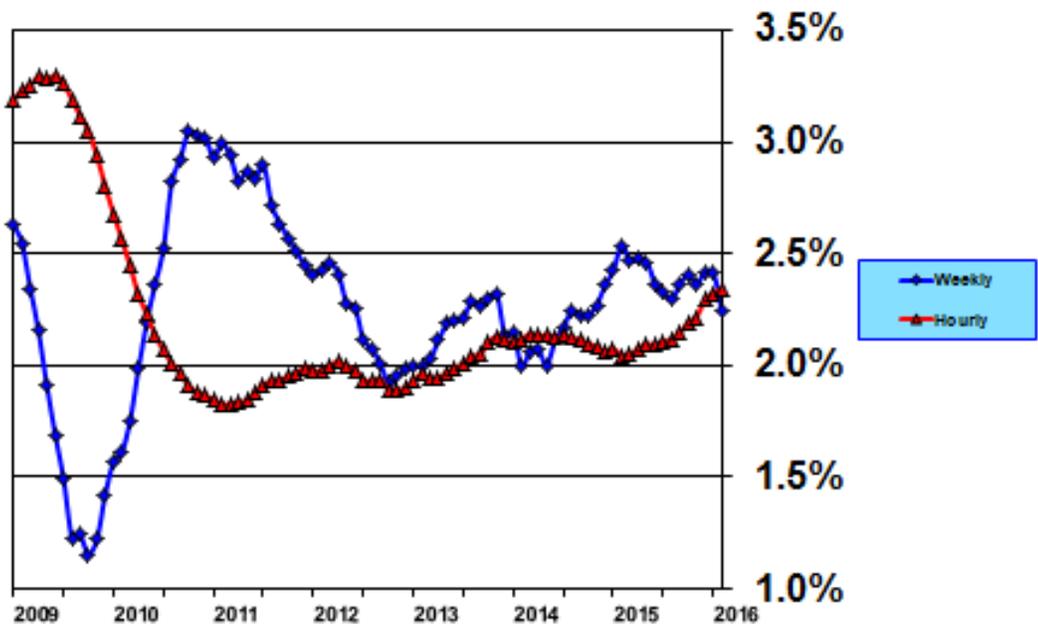
**CHART 14 – Hourly Wage Rate Growth – All Workers**  
(annual year over year and 12-month moving average rates of change)



Source: Bureau of Labor Statistics

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**CHART 15 – Hourly & Weekly Wage Rate Growth – All Workers**  
(annual year over year and 12-month moving average rates of change)

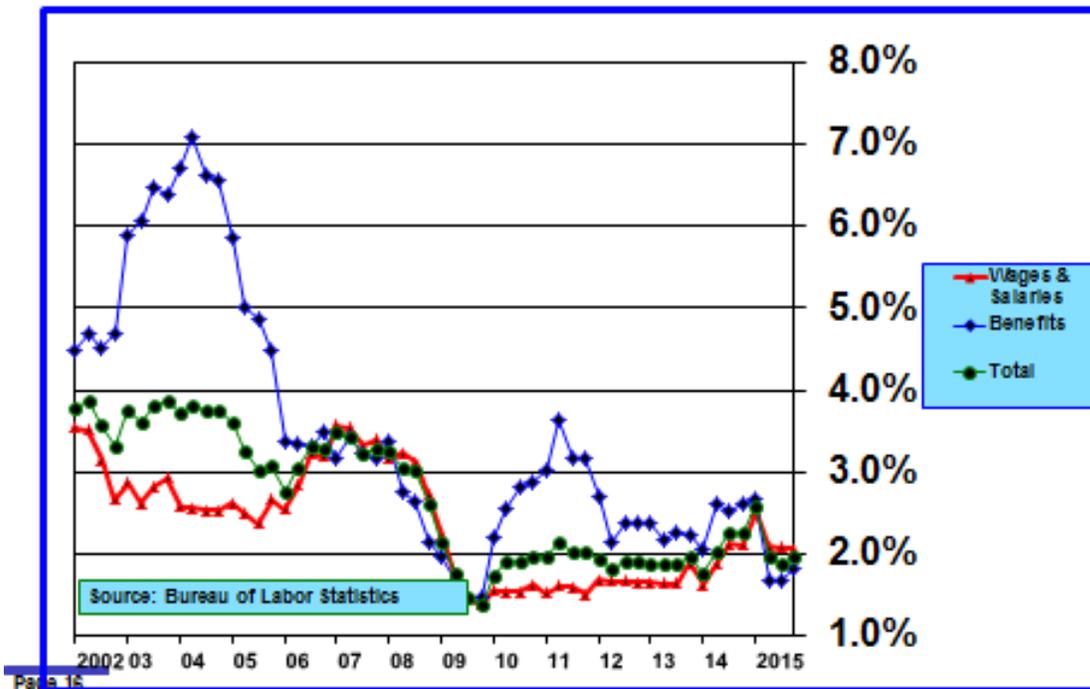


Source: Bureau of Labor Statistics

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In contrast to growth in average hourly wages of all employees, the growth rate in the wage and salary component of ECI in the fourth quarter of 2015 was 2.06 percent compared to 2.10 percent a year earlier (see **Chart 16**). So, one measure shows modest acceleration while the other shows none. The more comprehensive measure of ECI, which includes benefits, has declined from 2.25 percent a year ago to 1.95 percent in the fourth quarter of 2015. There's no convincing evidence yet in the ECI data that wages are accelerating.

**CHART 16 – Employment Cost Index**  
(annual rate of change)



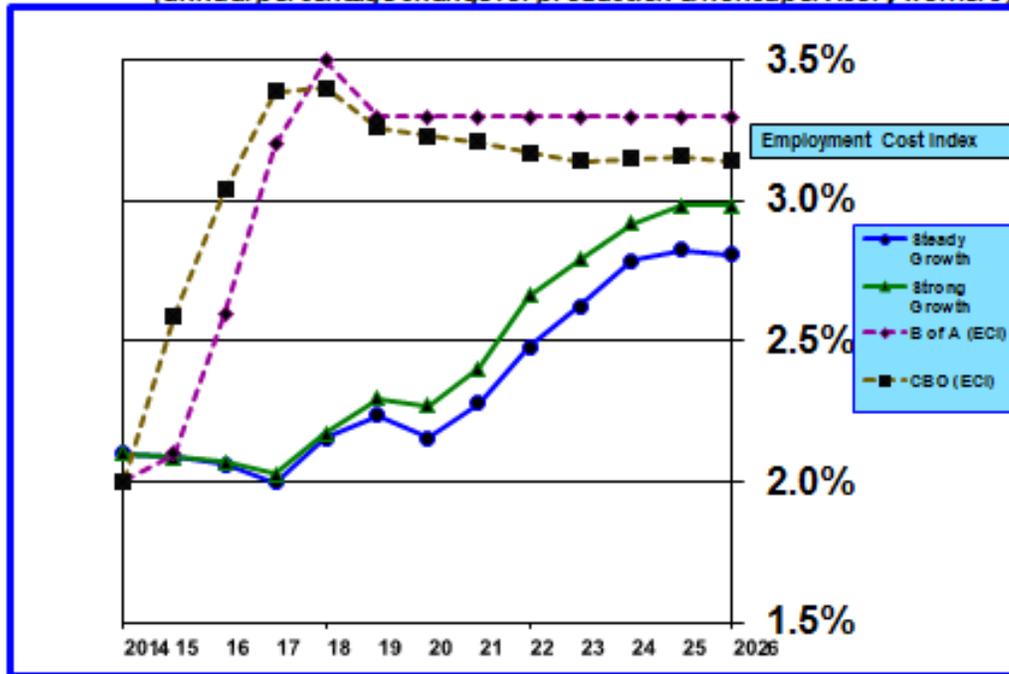
**Chart 17** shows my projections for wage growth for production and nonsupervisory workers over the next ten years and **CBO's** and **B of A's** projections for growth in the wage and salary component of ECI over the same time period. A couple of explanations are in order. First, the data series for all employees only began in 2006 while the data series for production and nonsupervisory workers to 1964. Thus, the data series for production and nonsupervisory workers contains a lot more historical information which is useful for constructing robust forecasts. In the long run growth rates in wages for all employees and for production and nonsupervisory workers are highly correlated.

Second, **CBO** and **B of A** forecast wage rate growth only for ECI. Although the methodologies for constructing these different wage data series differ, the directionality of all is highly correlated over time, even if the levels aren't precisely the same.

Thus, looking at **Chart 17**, the major takeaway is that I do not expect there to be significant upward pressure on the rate of increase in nominal wages for several years. In contrast most, and this is reflected in **B of A's** and **CBO's** forecasts for ECI wage and salary growth rates, expect wage growth to accelerate over the next three years and then stabilize. In the long run my wage rate forecasts converge upwards to

### CHART 17 – Hourly Wage Rate Forecasts

(annual percentage change for production & nonsupervisory workers)



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those of others, but it takes a long time for this to happen.

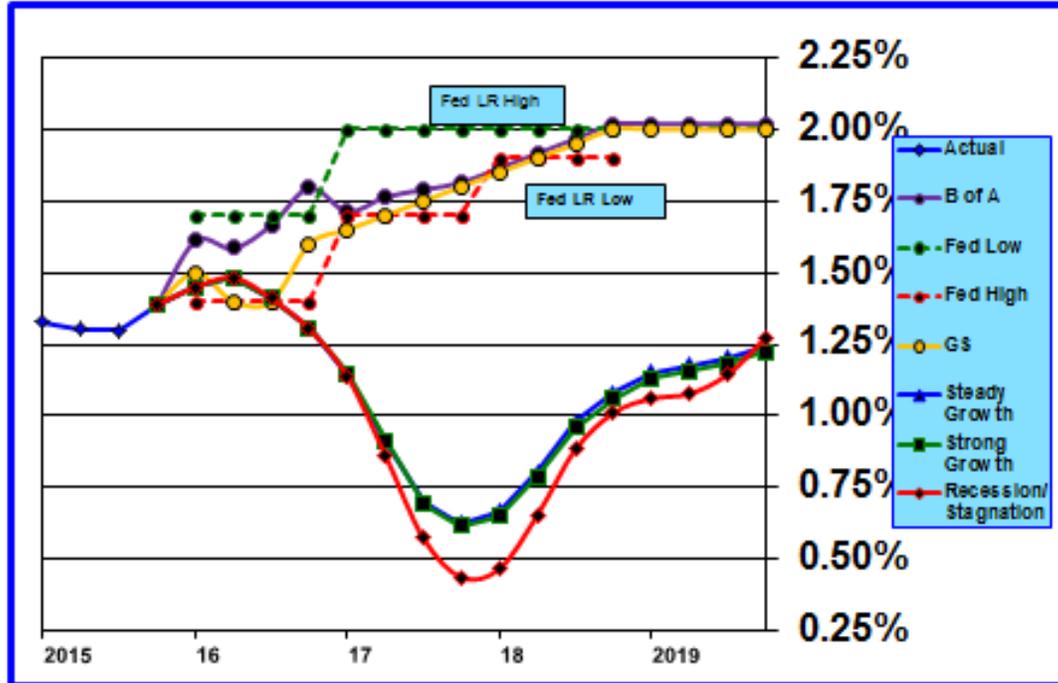
Who is right? That is unclear and time will give us the answer. However, based on the failure of wage rate growth to escalate much to date contrary to expectations, I would suggest that a little pessimism is in order. There is an important implication. If nominal wages do not rise as rapidly as most expect, nominal consumer spending will not grow as fast and upward pressure on inflation will be less. Stay tuned.

## VIII. Prospects for Inflation

Core PCE inflation was 1.67 percent in January and has now risen about 0.4 percent from its recent low of 1.26 percent last July. Total PCE inflation, which continues to be depressed by the plunge in oil prices and lower import prices, rebounded to 1.25 percent in January from levels below 1.0 percent that prevailed throughout 2015 (see **Chart 18**).

Compared to core PCE inflation, total PCE inflation is much more volatile and has been negative for short periods of time in the past. For that reason the FOMC prefers to focus policy deliberations on the core PCE inflation measure. Core PCE inflation remains below the FOMC’s target level of 2 percent.

**CHART 18 – Core PCE Inflation**  
(annual percentage rate)



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## 1. Core PCE Inflation Forecasts

As can be seen in **Table 4** (**Chart 18** shows historical core PCE price index data and data from **Table 4** in graphical form), forecasts of the core PCE inflation index indicate that inflation will change little during 2015. **B of A** and **GS** expect core PCE inflation to bottom out at 1.3 percent by the end of 2015 and then begin a very gradual rise, reaching 2.0 percent sometime during 2018. FOMC projections also reflect a gradual rise.

As can be seen in **Chart 18**, my inflation forecasts diverge considerably from the consensus, falling in the near-term rather than rising and taking much longer to rise to 2.0 percent (see **Chart 19**).

**Chart 19** shows longer run pathways for core PCE inflation for various economic scenarios. With the exception of my scenarios, others converge toward 2 percent over the next three years. Either this is serendipity or there is confidence that the FOMC will be able eventually to hit and maintain the 2 percent core PCE inflation target, even though the FOMC has rarely achieved this objective in the last 20 years and global headwinds to inflation are and are likely to continue to be very strong.

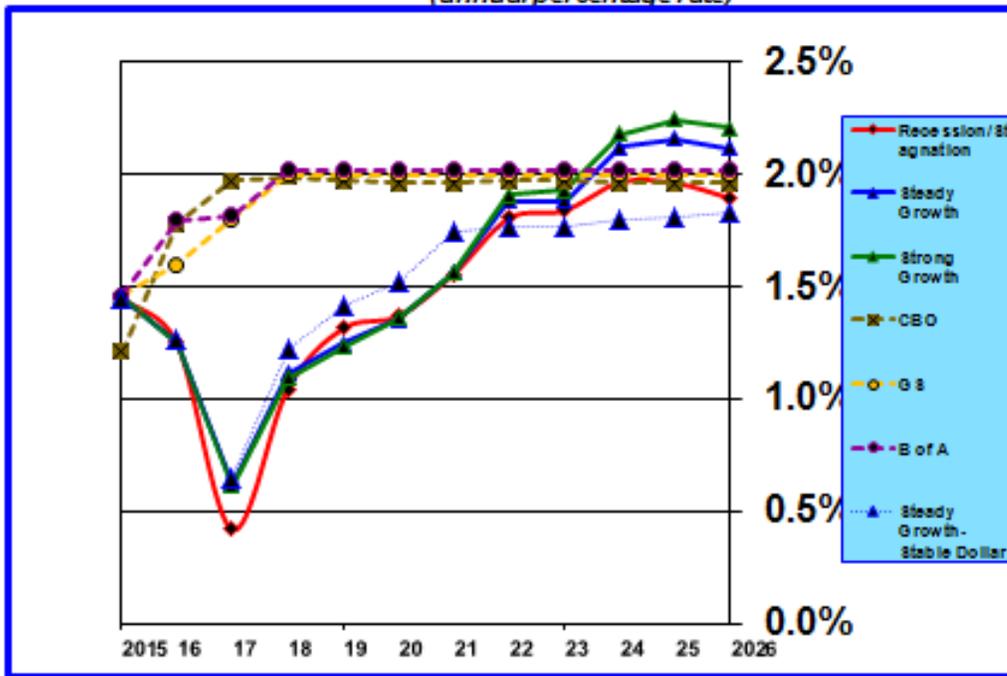
Naturally, the question arises as to why my forecasts deviate from the consensus to such a great extent in the next few years. It might be simply that my statistical analysis is methodologically unsound or that historical impacts of various economic variables on inflation have undergone a profound structural change. Or, it could be that my statistical analysis is capturing important drivers of inflation that others are ignoring.

**Table 4**  
**Core PCE Inflation Forecasts — B of A, GS, Bill’s “Steady Growth”, Bill’s “Strong Growth” and FOMC High and Low**

Core CPE	2013	2014	2015	2016	2017	2018	2019
B of A	1.54	1.37	1.46	1.8	1.8	2.0	2.0
GS	1.54	1.37	1.46	1.6	1.8	2.0	2.0
Bill’s Steady Growth	1.54	1.37	1.46	1.25	0.62	1.11	1.25
Stable Dollar				1.27	0.64	1.22	1.41
Bill’s Strong Growth	1.54	1.37	1.46	1.25	0.61	1.09	1.23
FOMC — High				1.7	2.0	2.0	
FOMC — Low				1.4	1.7	1.9	

**CHART 19 – Core PCE Inflation**

(annual percentage rate)



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Part of the explanation for the divergence lies in CBO’s data revisions in August and again in January which increased the size of estimated labor market slack considerably.

Another explanation has to do with the impact of changes in the value of the dollar on core PCE

inflation. Inflation changes by 8.6 basis points for each 1 percentage point change in the value of the dollar but the full impact is not realized for more than three years. Over the 18-month period from July 2014 and January 2018 the trade-weighted value of the dollar rose 25 percent. This would have a cumulative effect over several years of reducing inflation by over 200 basis points. And, the long lags account for the slow rise of core PCE inflation back to 2.0 percent shown in **Chart 19**. It is well understood that a stronger dollar decreases prices of imports and this filters into lower overall inflation over time. However, my statistical analysis suggests that the impact is considerably greater than other analysts believe based upon their own work.

**Table 5**  
**Changes in Core PCE — “Steady Growth” Scenario**  
**(Basis Points)**

	Labor Growth	Labor Gap	Productivity	Dollar	Total
2016-2020	-8	44	-19	-28	-10
2021-2026	2	4	2	68	76
2016-2026	-6	49	-17	40	67
2016-2020	-8	44	-19	-11	7
2021-2026	2	4	2	23	31
2016-2026	-6	49	-17	11	38

**Table 5**, which is based on my “**Steady Growth**” scenario, indicates that core PCE inflation will remain near recent levels over the next five years before rising to approximately 2.0 percent between 2021 and 2026. The small change in core PCE inflation by 2020 masks a sharp decline, due to the lagged impact of the strong dollar, which occurs in 2017, followed by a sharp rebound in 2018.

The bottom panel in **Table 5** shows the impact of the dollar on inflation is more muted if the value of the dollar remains constant at its February level going forward. This alternative forecast is also shown in **Chart 19**. This doesn’t change the near-term plunge in inflation which is already embedded because of the lagged impact of past increases in the value of the dollar.

## 2. Progression of FOMC Core and Total PCE Inflation Projections

Although it seems very unlikely that inflation will take a dive in the next two years as the “**Steady Growth**” scenario indicates, it does imply that expectations that inflation will increase will continue to be premature just as they have been for several years running. The perennial belief that higher inflation is just around the corner is quite evident in **Table 6**, which shows the historical progression of FOMC projections of core and total PCE inflation.

FOMC members have repeatedly marked to market near-term projections and extended the time frame

to reach the 2.0 percent target level. This has been accompanied by sincerely uttered excuses that there are transitory factors that have depressed inflation which will soon dissipate. By now I have become more than a little bit cynical about what I have come to regard as a belief system rather than serious analysis.

### **3. Are the Recent Increases in Core PCE Inflation Transitory or Indicative of a Sustained Trend Back to the FOMC's 2.0 Percent Target?**

Core PCE inflation has risen from 1.3 percent in October of last year to 1.7 percent in January, which is the most rapid rate of increase since February 2013; core CPI inflation has risen from 1.7 percent in June of last year to 2.4 percent in February. More recently commodity prices have rebounded sharply from their early February lows. And, the value of the dollar is now falling. These developments have prompted speculation that at long last inflation is headed up.

There are some statistical reasons for the recent increases that will wash out over time, but there are also some developments which may turn out to be sustained rather than temporary. For example, inflation was depressed a year ago by one-time reductions in healthcare reimbursements. This alone accounts for about 0.2 percent of the 0.4 percent increase in core PCE inflation. Housing price increases continue to surprise on the up side, reflecting ongoing scarcity of supply relative to demand. The effect of higher housing prices flows through to inflation measures through estimates of owners' equivalent rent, which accounts for a particularly large share of the CPI. Some of the recent increase in core inflation, however, may be transitory due to faulty seasonal adjustments that overstate inflation in the first half of the year and understate it in the second half of the year.

As discussed in the examination of inflation forecasts above, a tightening labor market should lead to acceleration in wage rate growth and that, in turn, should place upward pressure on inflation. And, if the dollar continues to weaken, this should eventually contribute to upward pressure on inflation as the prices of imports rise.

Many are now saying that the recent uptick in core inflation measures will be sustained and that the FOMC's 2.0 percent target will be reached within the next two to three years. A few are expressing concern that the FOMC is "behind the curve" and risks inflation breaking well above its 2.0 percent target.

So, what could alter the upward march of core inflation? For one thing, wage inflation seems likely to be moderate and take a long time to develop. This would delay increases in core inflation. Perhaps more importantly is that the global economy is still dominated by powerful deflationary forces. In our interlinked global economy it is hard to imagine how U.S. inflation can rise on a sustained basis when it is very low and not rising in other parts of the global economy.

### **4. Depressed Inflation Expectations — Noise or Truly Reflective of Market Expectations for Lower Inflation in the Future?**

When financial panic gripped global financial markets in January and February, the 10-year U.S. Treasury note yield fell from 2.27 percent on December 31, 2015 to 1.63 percent on February 11, 2016. Since then this yield has reversed only about 40 percent of the decline, rising to 1.88 percent on March 18, 2016. By

contrast, U.S. stock prices were slightly above their end of 2015 level on March 18, 2016.

It appears that the market has decided that interest rates will remain lower for longer. This is validated by the decline in inflation expectations embedded in market interest rates. The five-year forward yield for the five-year Treasury note was 1.8 percent in December and is now 1.6 percent. This yield is often interpreted as reflecting the market's long-term expectations for inflation. Obviously, this 0.2 percentage point decline is at odds with the 0.4 percentage point increase in core PCE inflation that occurred over approximately the same period of time.

Perhaps, however, other factors have depressed this measure of inflation expectations, which would mean that it is not necessarily a reliable indicator of future inflation. **GS** has cited three reasons that this may well be the case. First, limited liquidity and heightened demand, which have nothing to do with inflation expectations, may have depressed yields on this benchmark security. Second, the price of this security has tended to fluctuate in lockstep with the price of oil, which has been very volatile. The price of oil may be a poor indicator of general trends in inflation because fluctuations in its price are reflecting unique aspects of the dynamic interaction of supply and demand for oil.

Another reason that U.S. interest rates have not bounced back to pre-panic levels is that long-term interest rates for all developed economies have moved lower. In that sense lower U.S. interest rates have paralleled broader global developments. But that begs the question of why global interest rates have moved lower. Most would acknowledge that the reasons are slowing global growth and the existence of powerful deflationary forces. But by extension, can U.S. inflation really move higher on a sustained basis if the rest of the world is moving in the opposite direction? Perhaps the decline in inflation expectations embedded in U.S. Treasury security prices is not wholly due to non-germane factors.

## IX. Monetary Policy

Given that the labor market is nearing full employment, past experience indicates that the FOMC should be normalizing monetary policy and raising interest rates to a level that assures that inflation does not become unanchored. Such thinking was clearly behind the FOMC's decision in December to begin raising interest rates and was further telegraphed by the median projection of four additional 25 basis points increases during 2016. Most analysts bought into the FOMC's view, debating only whether there would be three or four increases. However, the market was of a different mind. Going into the new year, the forward yield curve indicated an expectation of only one to two increases.

Then the market was trashed in the early days of January by global panic in financial markets and all prospects rate increases disappeared entirely. Dismayed FOMC members began to utter soothing words and market panic abated. However, now that risk-on is the order of the day and the stock market appears to be seriously overbought, the forward yield curve is signaling only one 25 basis points increase at most during the remainder of 2016. The FOMC included dovish language in its February policy statement that aided the reemergence of optimism.

Then the FOMC surprised markets at its March meeting with the continuation of surprisingly dovish language, particularly with respect to inflation prospects, and reduced its median number of projected rate increases during 2016 from four to two.

**B of A** agrees with two rate moves and believes market expectations are unreasonably pessimistic. **GS** goes further and expects three rate increases. What is behind the concern of professional analysts and forecasters is the rapidly tightening labor market, some preliminary indications of acceleration in wage growth, and, importantly the 0.4 percent increase in core inflation in recent months. These views, of course, reject the worries of market bears that the underlying fundamentals of the global economy are fragile and the continued ability of monetary authorities to hold things together is tenuous.

To the FOMC's credit, part of its dovish policy statement language reemphasized its global concerns: "*However, global economic and financial developments continue to pose risks.*"

Also, the FOMC noted the recent uptick in inflation but did not express the kind of worry that many market participants expected: "*Inflation picked up in recent months; however, it continued to run below the Committee's 2 percent longer-run objective, partly reflecting declines in energy prices and in prices of non-energy imports. Market-based measures of inflation compensation remain low; survey-based measures of longer-term inflation expectations are little changed, on balance, in recent months.*" This statement really just stated known facts, but was interpreted by market participants to mean that the FOMC wasn't ready to accept the recent pickup in inflation as a defining reversal. Chair Yellen reinforced this view during her press conference by suggesting that some of the inflation components responsible for the recent uptick are volatile.

As can be seen in **Table 7**, which charts FOMC future federal funds rate projections quarterly from the fourth quarter of 2012 to the present, projections of future rates have fallen rather steadily over this entire time period.

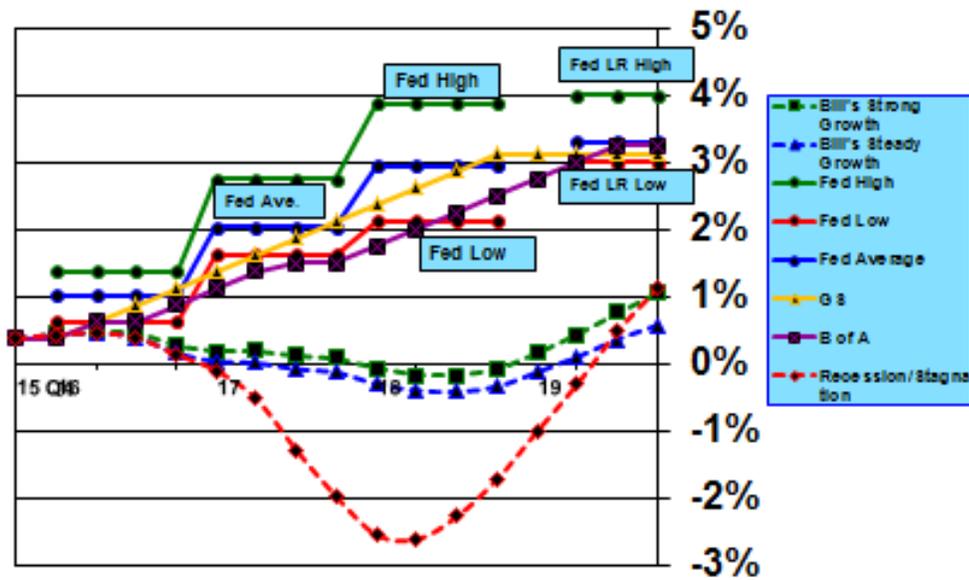
**Table 7** shows the average federal funds rate projections of the 19 FOMC members for the next several years. This is often referred to as the "dot plot" by market participants and is intended to convey a sense of when and how rapidly the FOMC is likely to raise the federal funds rate. Like its other projections, the FOMC's accuracy is lacking. The market has gotten used to this and although much attention is given to the "dot plot" market projections of future interest rates are lower for longer than those embedded in **Table 7**. However, expert analysts now believe the FOMC could be "behind the curve," which is to say that to allay the risk of higher than desired future inflation, the FOMC needs to be more aggressive in raising interest rates than indicated by its current projections.

One important takeaway in **Table 7** is that the long-run neutral equilibrium federal funds rate has been coming down. The average has fallen from 4.04 percent in December 2012 to 3.31 percent in March 2016, while the median has fallen from 4.0 percent to 3.25 percent over the same time period. This reflects the FOMC's acknowledgement that potential growth is likely to be much lower than it believed a few years ago and that the real rate of interest has declined in tandem. Simple math dictates, understanding that the FOMC has not deviated from its 2.0 percent inflation target during this entire period, that its estimate of the real rate of interest has declined from 2.0 percent to 1.25 percent.

**Chart 20** shows the quarterly progression in the federal funds rate from the present through 2019 implied by the FOMC's projections. It also shows forecasts for **B of A**, **GS**, and my three scenarios — "**Steady Growth**," "**Strong Growth**," and "**Recession/Stagnation**."

**Chart 21** shows similar forecasts for the federal funds rate on an annual basis through 2026. FOMC projections are not shown in **Chart 21**.

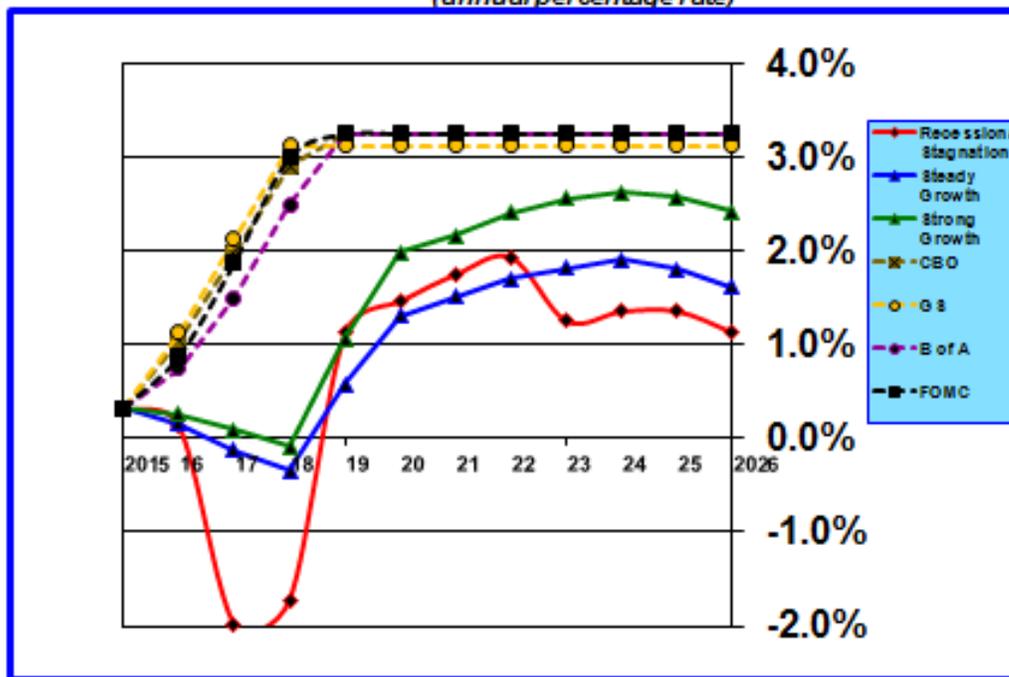
### CHART 20 – Federal Funds Rate Forecasts



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### CHART 21 – Federal Funds Rate Forecasts

(annual percentage rate)



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Generally, the FOMC and other forecasters are aligned in their outlooks. There is general agreement that the long-run equilibrium federal funds rate will be in a narrow range between 3.25 and 3.50 percent.

My forecasts continue to be outliers. They are driven by my expectation that inflation will remain lower for longer than others expect and also by an even smaller expected value for the real rate of interest than the 1.25 percent level now embraced by a majority of the FOMC. It certainly is tempting to dismiss my forecasts of future values of the federal funds rate as being unrealistically low, particularly if you believe that inflation will rise. I would simply point out that I have had similarly low forecasts for a very long time and during that time the market has come my way. This is not an argument that I am smarter than others or that I am particularly prescient. The point I would make, however, is that analysis and forecasting often is rooted in past experience and beliefs and this risks overlooking or discounting the importance of significant changes in how the global economy works.

**Table 6**  
**Economic Projections of Inflation By Federal Reserve Board Members And Federal Reserve Bank Presidents, March 2016**

Variable		Central Tendency					
		2014	2015	2016	2017	2018	Longer Run
PCE Inf. %	Mar			1.0 - 1.6	1.7 - 2.0	1.9 - 2.0	2.0
2015	Dec		0.4	1.2 - 1.7	1.8 - 2.0	1.9 - 2.0	2.0
	Sep		0.3 - 0.5	1.5 - 1.8	1.8 - 2.0	2.0	2.0
	June		0.6 - 0.8	1.6 - 1.9	1.9 - 2.0		2.0
	Mar		0.6 - 0.8	1.7 - 1.9	1.9 - 2.0		2.0
2014	Dec	1.2 - 1.3	1.0 - 1.6	1.7 - 2.0	1.8 - 2.0		2.0
	Sep	1.5 - 1.7	1.6 - 1.9	1.7 - 2.0	1.9 - 2.0		2.0
	June	1.5 - 1.7	1.5 - 2.0	1.6 - 2.0			2.0
	Mar	1.5 - 1.6	1.5 - 2.0	1.7 - 2.0			2.0
2013	Dec	1.4 - 1.6	1.5 - 2.0	1.7 - 2.0			2.0
	Sep	1.3 - 1.8	1.6 - 2.0	1.7 - 2.0			2.0
	June	1.4 - 2.0	1.6 - 2.0				2.0
	Mar	1.5 - 2.0	1.7 - 2.0				2.0
2012	Dec	1.5 - 2.0	1.7 - 2.0				2.0
Core PCE Inf. %	Mar			1.2 - 1.7	1.7 - 2.0	1.9 - 2.0	2.0
2015	Dec		1.3	1.4 - 1.7	1.7 - 2.0	1.9 - 2.0	2.0
	Sep		1.3 - 1.4	1.5 - 1.8	1.8 - 2.0	1.9 - 2.0	2.0
	June		1.3 - 1.4	1.6 - 1.9	1.9 - 2.0		
	Mar		1.3 - 1.4	1.5 - 1.9	1.8 - 2.0		
2014	Dec	1.5 - 1.6	1.5 - 1.8	1.7 - 2.0	1.8 - 2.0		
	Sep	1.5 - 1.6	1.6 - 1.9	1.8 - 2.0	1.9 - 2.0		
	June	1.5 - 1.6	1.6 - 2.0	1.7 - 2.0			
	Mar	1.4 - 1.6	1.7 - 2.0	1.8 - 2.0			
2013	Dec	1.4 - 1.6	1.6 - 2.0	1.8 - 2.0			
	Sep	1.5 - 1.7	1.7 - 2.0	1.9 - 2.0			
	June	1.5 - 1.8	1.7 - 2.0				
	Mar	1.6 - 2.0	1.8 - 2.1				
2012	Dec	1.6 - 2.0	1.8 - 2.0				

**Table 7**  
**Economic Projections of Federal Funds Rate By Federal Reserve Board Members And**  
**Federal Reserve Bank Presidents, March 2016**

Federal Funds Rate %	Central Tendency					
	2014	2015	2016	2017	2018	Longer Run
2016 Mar			1.02	2.04	2.95	3.31
2015 Dec		.35	1.29	2.41	3.16	3.41
Sep		.40	1.48	2.64	3.34	3.46
June		.57	1.75	3.00		3.65
Mar		.77	2.03	3.18		3.66
2014 Dec		.25	1.13	2.54	3.50	3.78
Sep		.29	1.40	2.81	3.67	3.78
June		.30	1.20	2.53		3.78
Mar		.30	1.13	2.42		3.88
2013 Dec		.34	1.06	2.18		3.88
Sep		.40	1.25	2.26		3.93
June		.43	1.34			4.01
Mar		.55	1.30			4.01
2012 Dec		.61	1.47			4.04

## APPENDIX

## Outlook — 2016 and Beyond — Forecast Summary for the U.S. and the Rest of the World, Highlights of Key Issues, and Identification of Risks

Observations about the 2016 U.S. and global economic outlook and risks to the outlook are listed below.

*Financial markets started the year off in ugly fashion with stock prices plunging in all global stock markets, prices of commodities in free fall, and long-term bond yields heading toward zero in many global markets. Concerns about slowing global growth and potential recession in the U.S. were amplified by unexpectedly weak data reports during the opening weeks of 2016. Consequently, many forecasters lowered their estimates of economic activity during 2016, but virtually none expected recession.*

*Market sentiment reversed rather abruptly in late February and recent data reports have generally been somewhat more upbeat. Thus, it is not at all surprising that recession fears have faded into the background. Nonetheless, the 2016 outlook generally remains less favorable than when forecasts were prepared in December 2015.*

### 1. U.S.

- **2016 real GDP Y/Y** growth projections range from 2.3% to 2.5%. The FOMC's central tendency Q4/Q4 projections range from 2.3% to 2.5%. (Q4/Q4 projections are highly dependent upon potential anomalies in Q4 data; therefore, Y/Y estimates, which average all four quarters, usually are more stable estimates.) Risks are tilted to the upside because of the substantial federal tax reductions and spending increases Congress enacted at the end of 2015.

*- B of A has reduced its estimate of 2016 year-over-year growth to 2.0% and GS has reduced its estimate to 2.1%; my estimates now range between 1.8% and 2.0%; the FOMC has reduced its 2016 Q4/Q4 estimate from 2.3%2.5% to 2.1%2.3%*

- **Real GDP output gap** will remain high, but will close rapidly during 2016 from about 2.6% to 2.0%. (*CBO revised potential GDP assumptions in January and this reduced the output gap from 2.6% to 2.1%; accordingly, the revised forecast is for the output gap to close to 1.5% during 2016*).
- **Potential structural rate of real GDP growth** has declined significantly in recent years. I expect potential growth to be about 1.4% in 2016. Long-term potential real GDP growth will edge up in coming years to between 1.8% and 2.1%.

*- I have lowered my estimate of potential growth in 2016 to 1.3%*

*? B of A reduced its estimate of long-term potential growth to 1.7%; GS's estimate is 1.75%; CBO's updated estimate is 2.0%; and the FOMC's central tendency range is 1.8%2.1%; my long-term range remains between 1.8% and 2.1%*

- **Productivity** should rise during 2016 as growth improves and investment increases, but should still fall well short of the historical 2.1% average.

*? Nonfarm productivity averaged 0.5% in 2015; the five-year average was 0.4%*

- **Employment** growth should slow considerably during 2016 as full employment is reached and slow growth in the labor force becomes binding; payroll growth should average 130,000 to 165,000 per month.
  - *Payroll employment increased an average of 207,000 over the first two months of 2016 due primarily to a rising participation rate*
- **Employment participation** will be relatively stable during 2016 as labor market conditions tighten and discouraged workers find jobs, offsetting the demographically-embedded decline stemming from retirements of baby boomers.
  - *Participation rose to 62.91% in February from 62.65% in December and from its low of 62.42% in September 2015*
  - ? *According to GS's estimate the remaining participation gap is about 0.1% to 0.2%; thus, if long-term participation is declining 0.25% annually and the participation gap closes by the end of 2016, the participation rate for the remainder of 2016 should stabilize near 62.9%*
- **Unemployment rate** should edge down to between 4.6% and 4.8%.
  - ? *Unemployment rate edged down to 4.92% in February slightly above the long-term structural rate of 4.85%, according to CBO*
  - ? *The overall full employment gap is about 0.3% (unemployment gap = 0.1% and participation gap = 0.2%)*
- **Nominal consumer disposable income**, measured on a Y/Y basis should slow as employment growth slows; this will be offset partially by an increase in average hourly wage rates; growth should be in a range of 2.2% to 2.5%.
  - *Disposable income growth in January ran 3.7% ahead of the year earlier level due to strong employment gains during the last year; growth is projected to fall to 2.6%2.7% by the end of 2016 provided that employment growth slows as expected*
- **Nominal consumer spending growth** on the Y/Y basis will be relatively stable in a range of 3.3% to 3.5%.
  - *While nominal spending growth over the past year as of January was rising at a 3.4% annual pace, nominal spending growth in 2016 will probably be considerably lower because the sharp decline in energy prices in early 2016 will depress total inflation; current 2016 growth estimates have fallen to a range of 3.1%3.2%*
  - *Growth in nominal retail sales has been much weaker than expected over the first two months of 2016*
  - ? *Consumer sentiment measures have edged down a bit over the first two months of 2016 — perhaps because the favorable effect of lower oil prices offset the unfavorable impact of lower stock prices, both of which have reversed in March; Evercore ISI's weekly company surveys have been edging down and have fallen from 50.8 to 49.1 over the last 12 months*
- **Household personal saving rate** will decline slightly as growth in spending exceeds growth in disposable income.
  - ? *The saving rate was 5.15% in January compared to the 2015 average rate of 5.10%*
- **Stock prices**, as measured by the S&P 500 average, should be between 5% higher or lower, reflecting the slowing growth in profits and rising short-term interest rates.

- + *Stock prices are up 0.3% since the beginning of the year*
- **Manufacturing** will continue to be weak with the PMI index just slightly above or below 50.
  - + *The PMI manufacturing index was 49.5 in February compared to 48.2 in January compared to 48.0 in December, indicating moderate ongoing contraction*
  - + *The PMI service index was 53.4 in February following an unexpected large decline to 53.5 in January from 55.8 in December*
  - + *The NFIB optimism index for small businesses fell to 92.9 in February from 93.9 in January and 95.2 in December, reflecting softer growth*
  - + *GS's business conditions index edged up to 40.4 in February after plunging to 39.9 in January from 48.6 in December, marking the 11th consecutive month below 50*
- **Business investment** spending growth should edge down slightly and be in a range of 2.0% to 3.5% as employment and consumer spending growth slows.
  - *GS expects business investment growth to be negative in the first quarter of 2016, reflecting energy investment cutbacks, and then rebound, rising 1.5% overall during 2016; an industry estimate forecasts somewhat lower growth of 1.0% in 2016*
- **Residential housing investment** should remain relatively strong in a range of 6% to 8%, but should edge down a bit from 2015's level; housing starts should rise 10% to 15%.
  - ? *Over the first two months of 2016 housing starts are 3.8% above 2015's average, but 16.1% above the first two months of 2015*
- **Residential housing prices** should rise more slowly in 2016 in a range of 2% to 4% in 2016.
  - ? *B of A recently raised its forecast of housing prices to increase 3.6% in 2016 instead of 1.8%*
- **Trade deficit** should rise in 2016 as the increase in the value of the dollar continues to depress exports and increase imports. The **dollar's value** on a trade-weighted basis should rise slightly.
  - + *The trade deficit has risen slightly over the last 12 months from 2.90% to 2.96%*
  - *The trade-weighted value of the dollar has fallen 1.0% since December and momentum appears to be slightly in the direction of greater weakness*
- **Monetary policy** — the Federal Reserve will raise the federal funds rate two to three times during 2016 in 25 basis point increments.
  - ? *The market currently expects 0.5 to 1.5 increases in the federal funds rate during 2016; B of A expects two increases and GS expects three increases during 2016; at its March meeting the FOMC revised its median estimate of the number of increases during 2016 from four to two*
- **Total inflation** measures (CPI and CPE) will rebound sharply in 2016 as the depressing effects of 2015's collapse in oil prices passes out of the indices.
  - + *CPI is on track to rise from 0.7% in 2015 to 1.4% in 2016; PCE is expected to rise from 0.7% to 1.1%*
- **Core PCE inflation** will be relatively stable in a range of 1.2% to 1.6%, reflecting global disinflationary trends offset somewhat by the closing U.S. employment and output gaps. Core PCE inflation will remain well below the FOMC's 2% objective at least through 2018 and perhaps much longer.
  - *Core PCE inflation forecasts have been raised to 1.6% to 1.8%; FOMC's March projection range for 2016 is 1.4% to 1.7%*

- The **10-year Treasury rate** is likely to fluctuate in a range between 2.25% and 2.75% in 2016. Faster than expected real GDP and employment growth would push the rate toward the top end of the range; greater than expected declines in inflation and/or heightened financial instability would push the rate toward the bottom end of the range.

*- The 10-year rate was 1.88% on March 18*

- **Fiscal policy** will have a positive impact on real GDP growth during both fiscal year and calendar year 2016, raising real GDP growth by 0.4 to 0.6%. The deficit as a percentage of nominal GDP will increase substantially from fiscal year 2015's level of 2.46% to a range of 3.25% to 3.50%. Stronger than expected growth would push the deficit toward the lower end of the range.
- **State and Local investment** spending growth should range between 1.5% and 2.0%.

## 2. Rest of the World

- **Global growth** is likely to improve to 3.4% in 2016 from 3.1% in 2015. Risks are tilted to the downside.

*- Global growth forecast has declined to 3.2% in 2016; risks are tilted toward further reductions*

- **European growth** will be positive but will likely fall short of the consensus 1.7% as the benefits of 2015's fall in the value of the euro wane and social and political disruptions occur.

*- European growth forecast has declined to 1.5% in 2016; risks are tilted toward further reductions*

- **European inflation** will rise from 2015's 0.1% but will probably fall short of the expected 0.9%.

*- Final 2015 European inflation was 0.0%; 2016 forecast has been reduced to -0.1%*

*- The ECB is slowing losing its battle to push inflation to 2.0% as reflected in market long-term inflation expectations, which have declined to 1.5%*

- **European financial markets** should be relatively stable with periodic episodes of volatility prompted by specific events.

*- European stock markets declined broadly in early 2016; bank stocks plunged 45% since their recent peak to a level not experienced in 30 years; however, stock prices rallied vigorously over the last month as panic subsided and the ECB ramped up monetary easing*

- **European political dysfunction, populism and nationalism** will continue to worsen gradually. Countries to watch closely include Greece, Spain, Italy and Portugal.

*+ Political fragmentation is worsening slowly; the immigration crisis is hollowing out centrist political parties*

*+ Spain's election was inconclusive and the four parties have yet to forge a governance arrangement*

*+ Italy's banking crisis has the potential to erupt and could derail Renzi's fall constitutional referendum — a no vote would force Renzi to resign and political instability would escalate; however, recent ECB monetary policy initiatives could buy additional time for Italian banks*

*+ Greece's third bailout is increasingly in jeopardy of failing; bond rates are rising; farmers are protesting tax and pension reforms*

- **U.K. growth** is expected to remain a solid 2.5% in 2016 compared to 2.4% in 2015; some risk to this outlook could evolve from the proposed referendum for the U.K. to leave the European Union.

*- U.K. growth forecast has declined to 2.0% in 2016*

*- Prime Minister Cameron reached an agreement with the EU responding to reforms the U.K. has demanded; Cameron has scheduled a referendum for June, which is expected to narrowly favor remaining in the EU*

- **China's GDP growth** will slow below 6.5% and could be as low as 6.0% by the end of 2016 as economic reforms are implemented and the shift to a consumer-focused economy gathers momentum.

*? China's 2016 GDP growth is forecast to be 6.6% but risks are tilted toward a lower outcome*

- **China's leadership** will continue to be slow in implementing **economic reforms** but financial and political stability will be maintained.

- **Japan's** economic policies will continue to fall short of achieving the 2.0% inflation target; inflation is expected to rise from 0.5% in 2015 to 1.0% in 2016. GDP growth will also continue to fall short of the policy target, but should rise from 0.7% in 2015 to 1.2% in 2016. Population decline and slow implementation of market reforms will continue to weigh heavily on both growth and inflation.

*- Japan's economy grew 0.5% in 2015; the 2016 growth forecast has been revised down to 0.7%*

*- Japanese markets responded very negatively to the Bank of Japan's attempts to ease monetary policy further*

*- Evidence is increasing that Abenomics is failing*

- **India** should continue to experience relatively strong real GDP growth in a range of to 6.0% to 7.0% in 2016.

- **Emerging market countries** should experience better growth in 2016 than in 2015 when falling prices for commodities depressed economic activity in many countries.

*- Further declines in the prices of commodities and capital outflows will depress growth in most emerging market economies in 2016*

- **Brazil, Russia, and Venezuela** will continue to struggle the consequences of the steep decline in the prices of commodities and particularly in the price of oil.

*+ Economic and political conditions continue to deteriorate in all three countries; escalation of political tensions and the potential for social disruption is greatest in Venezuela*

### 3. **Risks** — stated in the negative relative to the forecast.

- **U.S. potential real GDP growth** falls short or exceeds expectations; falling short is the more serious risk

*? Too early to determine; however, forecasts have been reduced slightly*

- **U.S. employment growth** is slower or faster than expected; slower growth is the more serious risk

*+ Employment growth over the first two months of 2016 has been faster than expected*

- **Employment participation rate** rises rather than remaining stable or falling modestly  
*+ The participation rate has risen so far in 2016*
- **U.S. hourly wage rate growth** falls from its 2015 level of 2.2% or rises much more rapidly than expected; falling wage growth is the more serious risk  
*- Risk not realized; average hourly wages of all employees have risen slightly from 2.30% in December to 2.35% in February (12-month moving average)*
- **US. Unemployment rate** falls less than expected  
*- Risk not realized*
- **U.S. productivity** remains below 1%  
*? Too early to determine*
- **Real U.S. consumer income and spending** increase less or more than expected; less than expected increases are the more serious risks  
*? Too early to determine; however, income is rising a little faster than forecast and spending is rising a little slower than forecast*
- **U.S. stock prices** fall more than or rise more than the expected range of -5% to +5%  
*- Risk not realized*
- **Growth in U.S. residential housing investment and housing starts** are less than or more than expected; below expectations is the more serious risk  
*? Too early to determine*
- **U.S. residential housing price increases** are less than expected  
*? Too early to determine*
- **U.S. private business investment** does not improve as much as or more than expected; falling short of expectations is the more serious risk  
*? Too early to determine*
- **Oil price declines** that occurred in 2015 trigger bankruptcies and cause tighter financial conditions with negative implications for economic activity and growth  
*+ Risk in process of being realized; however, market contagion has not occurred*
- **U.S. manufacturing growth** contracts or expands more than expected; contraction is the more serious risk  
*? Too early to determine*
- **U.S. trade deficit** does not widen as expected  
*? Too early to determine*
- **Value of the dollar** rises substantially  
*- Risk not realized; value of the dollar has declined*
- **U.S. monetary policy** spawns financial market uncertainty and contributes to financial instability  
*+ Risk was realized briefly at the beginning of the year but has abated due to less aggressive monetary policy and a weakening U.S. dollar*

- **U.S. inflation** falls, rather than remaining stable or rising as expected  
- *Risk not realized; inflation rising a bit more rapidly than expected*
- **U.S. interest rates** fall or rise more than expected  
+ *Risk realized; rates have fallen much more than expected*
- **U.S. fiscal policy** is more expansionary than expected  
? *Too early to determine*
- **Federal budget deficit** increases more than expected  
- *Risk not realized; deficit rising less rapidly than expected*
- **U.S. state and local spending** does not rise as fast as expected  
? *Too early to determine*
- **Global GDP growth** does not rise as fast as expected  
+ *Risk realized*
- **European growth** is considerably less than expected
- **ECB's** quantitative easing program is not successful in raising inflation and stimulating the European economy
- **Europe** — financial market turmoil reemerges  
+ *Risk realized*
- **Europe** — political instability and social unrest rises more than expected threatening survival of the Eurozone and the European Union  
+ *Risk realized*
- **Chinese** leaders have difficulty implementing *economic reforms*  
? *Too early to determine*
- **China's growth** slows more than expected  
? *Too early to determine*
- **Japan** — Abenomics and monetary policy are unsuccessful in raising inflation to the 2 percent target and economic growth continues to be below expectations  
+ *Risk realized*
- Severe and, of course, unexpected **natural disasters** occur, which negatively impact global growth

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