The Longbrake Letter*

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June, 2016

I. Marking Time

Significant technological, economic, social and political trends are evolving both in the U.S. and globally. I have summarized the major trends in previous letters and commented upon the imbalances that are building. I will not repeat that litany in this letter.

We know that these trends will change our world over time in material ways. But knowing change is coming is not the same as knowing what the changes will be. We also know that forces of tradition and established political and social structure can contain change, often for a long time, but usually not forever. The evolving trends undermine the foundations of established institutions and power structures. Once fragility has become acute, often a triggering event is all that is needed to sweep the old away. It's easy to look backwards and reconstruct the evolutionary process of change. But when one is in the midst of such a process it is difficult to discern its parameters, how far it has progressed, and when a decisive and significant break with the past will occur.

It seems to me that we are in a period of time during which global imbalances continue to build but also one in which the establishment has been able to maintain control for the time being through a variety of policy palliatives. ***We are marking time***. This interlude could continue for a long time or it might move to the next act quickly because of a triggering event, such as a vote in the U.K. to leave the European Union.

By the time this month's letter is published we will know the outcome of the U.K. Brexit vote. All kinds of dire predictions have been made about the near-term and long-term U.K., European, and global consequences of a vote to "Leave." My guess is that the near-term consequences would be less dramatic than pessimists fear, but the inevitable rebalancing that is coming would be accelerated.by Brexit. If the

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vote is "Remain," this would not likely address or eliminate any of the imbalances. Such imbalances would continue to build and change inevitably would follow in due course, but later rather than sooner.

This month's letter also marks time by focusing primarily on recent U.S. economic developments in employment, inflation and monetary policy. The **Appendix** contains a detailed update of U.S. and global economic and political developments relative to expectations outlined in December 2015.

II. Rise of Global Populist Political Movements — Rejection of Established Political Elites

Developments in the U.S. and elsewhere in the world over the past several years are providing growing impetus to the forces of populism and nationalism, particularly in developed countries. Although the specific characteristics of these developments differ from country to country, they stem from consequences of economic policies that have had uneven impacts on individuals and from fragmentation of the established political order including increasing sectarian and religious conflicts and forced mass migrations of minority populations.

Growing income inequality and the hollowing out of the middle class in the U.S. has been a slowly evolving trend since 1980 but has accelerated in the aftermath of the Great Recession.

In Europe, differences in economic opportunity across member countries have been exacerbated by the absence of a robust fiscal transfer mechanism and the strictures imposed on member countries by the common currency — monetary policy cannot be used by individual members to ameliorate employment challenges. Thus, in low productivity countries, such as Spain, Portugal, and Italy, fiscal austerity and the absence of a robust fiscal transfer mechanism have forced a decline in the standard of living and exacerbated income inequality. This has fueled a resurgence in nationalism and given impetus to populist political movements.

Elsewhere in the world, income inequality has declined as many emerging nations experienced a substantial acceleration in growth due to increasingly efficient global financial markets that provided prodigious amounts of financing to emerging market economies. Cheap labor in emerging markets economies and China's sheer size and commitment to rapid growth through investment in export-oriented industries and infrastructure development have been powerful drivers of this growth. Now China is nearing the end of its ability to drive high growth and the spillover effects to emerging economies are already evident.

Economic theory is unambiguous in its embracement of the efficacy of open borders and free migration of people to boost economic growth and well-being. Relatively liberal immigration policies have fueled the U.S.'s economic growth and success over many decades. When the European Union (EU) was constituted a key component was the free movement of people without regard to national boundaries, which was embedded in the Schengen Agreement.

But, uncontrolled immigration has always encountered resistance, particularly in times of economic hardship because immigrants typically are willing to work for lower compensation. Resistance occurs because people fear they will lose their jobs and then there is also xenophobia — they are not like us. While immigration works to the overall benefit of the population collectively, it creates hardships for

individuals.

In the U.S. and Europe, economic stagnation has heightened angst about immigration and both developments have combined to drive increasingly broad-based political populist movements.

The failure of established political parties to step up to challenges threatening the way of life for many of its citizens has unleashed increasingly widespread popular anger and rejection of the political elite.

In the U.S., political analysts have been surprised by developments in this year's presidential election campaign. Mainstream Republicans did not expect Donald Trump to poll so strongly that he has now become the Republican Party's presumptive presidential nominee. Democratic leaders are surprised at the popular strength of Bernie Sanders, who is an avowed socialist.

On June 23, British voters will go to the polls to vote on whether to remain in the EU. Brexit would damage the U.K. economy and undermine the viability of the EU, but this truism may be insufficient to turn the populist tide of nationalism.

In Germany, The Alternative for Germany (AfD) political party is slowly gathering momentum and is like to poll well in the 2017 German national elections. Although the AfD is unlikely to capture sufficient votes to gain real power, its existence and its strong xenophobic message are fueling populism in Germany and impacting policy choices of mainstream German political parties.

Each of these major populist movements — Trump, Brexit, and AfD ascendency in Germany — has little probability of success. But all it would take would be for one of the three to prevail to have significant impact on the established global economic and political order. And, even if all three fail to gain traction in the short run, ongoing economic stagnation and inability of established political parties to respond to the significant challenges facing their nations will continue to fuel growing anger and buttress the influence of populist demagogic leaders.

Intellectuals can logically explain all the reasons that populist movements will create worse problems. Does Donald Trump really believe that enacting trade tariffs to combat China's unfair trade competition will have a good outcome? Whether he does or does not is of little consequence. This proposed policy is simply responding to the deep-seated anger of many Americans who have experienced declining living standards that China is a villain in their plight.

Populist movements are based on emotion, not reason. When the emotion turns to anger and that anger is widespread, the elements are in place to foster revolution. All that is needed is a spark and a leader. In a different era, Donald Trump would long since have been dismissed as a credible leader. But in an era of intense anger about what has happened to millions of Americans and in an era of intense partisanship in which neither major political party has focused on developing workable responses to improve living standards or opportunities, and in an era in which political inertia and paralysis is the order of the day, emotion trumps reason.

We are in a period of history in which there is great instability in the established global economic, social, and political order. History tells us that instability favors demagogic leaders who appeal to emotion rather than reason and that change will occur eventually, but all too often in an uncontrolled and disruptive manner. Eventually, a new stability will emerge, but from the vantage point of the present it is difficult to

discern what it might look like. One can hope that change comes from within rather than from without, that is via revolution. But history indicates that it is difficult to change the old order and typically the old order must be destroyed before the new one can take its place.

When I use the word "revolution" I am not suggesting that the U.S. democratic and constitutional governance system is in jeopardy, What I am suggesting, however, is that the existing political parties and how they function within our constitutional system is in jeopardy.

People are angry for a reason. The existing system is not meeting their needs. We have known this for a very long time through polling results which indicate that a growing number of Americans believes the country is on the wrong track. Patience has frayed; anger has built; circumstance has brought us Donald Trump. We may not end up with a Trump presidency, but regardless of that, we have reached the tipping point for American politics. Our political order will be different in the future and, I hope, will be one that will address effectively and forthrightly the challenges America faces. But, such an outcome is not a given and, therefore, nothing should be taken for granted.

III. U.S. Employment Developments

In the words of many analysts, May's employment report was "a shocker" — only 38,000 jobs were added, and the employment for the two prior months was revised downward by 59,000, bringing the monthly average gain in payroll employment during the first five months of 2016 to 116,000 compared to the monthly average of 229,000 during 2015. Offsetting this bad news, the U-3 unemployment rate plunged to a better than full-employment level of 4.69 percent, but for the wrong reasons — the labor force shrank 458,000. The much celebrated improvement in the participation rate, supposedly indicative of the return of discouraged workers to the labor force, evaporated.

Was this unexpected negative employment development simply statistical noise caused by the Verizon strike and sampling error, or did it reflect a decisive slowing in labor market momentum? Or, did it reflect an inevitable slowdown in employment growth to the underlying non-accelerating inflation rate of unemployment (NAIRU) of 85,000 to 100,000 monthly, as the labor market approached full employment? Obviously, the implications for the economy going forward depend upon which reason you believe is the more accurate one.

Other labor market indicators corroborate an emerging slowdown in employment growth. Manpower's employment survey, ISI's company survey of employment plans, and the Philadelphia Fed's employment indicator (lowest level since Great Recession) have all weakened in recent weeks. The Federal Reserve's **Labor Market Conditions Index** (LMCI), which is a compilation of 19 employment indicators and which is intended to be a broad measure of labor market health, declined to a worrisome -4.8 in May (lowest level since May 2009 just prior to the end of the Great Recession); however, Janet Yellen downplayed the significance of this development in the post-FOMC meeting news conference. **GS** also expressed concern that May's LMCI overstates the emerging negative trend. However, **GS's Labor Market Tracker** is also declining but remains at an above monthly trend level of 140,000 "payroll equivalents."

1. Employment Growth

Payroll employment increased 38,000 in May, bringing the monthly average over the first five months of 2016 to 150,000. The trend in the 12-month rate of growth in payroll employment is now slowing, down to 1.69 percent compared to 1.95 percent in 2015 and the peak rate of annual growth of 2.14 percent in March 2015.

Household employment rose 26,000 in May and now has averaged 97,000 monthly over the first five months of 2016 — about in line with the underlying non-accelerating inflation rate of unemployment. 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 190,000 compared to 200,000 for payroll employment. Household employment has grown 1.53 percent over the past 12 months compared to 1.69 percent growth in payroll employment.

Growth in total hours worked by all employees over the last year was 1.64 percent in May. Total hours worked, after growing much faster over the last several years are now growing at approximately the same rate as the other two measures of total employment.

Chart 1 shows all measures of employment growth — payroll employment, household employment, and total hours worked. Probably the most important things to notice in **Chart 1** are the convergence in the growth rates of total hours worked with those for payroll and household employment and the downward trend in growth of all three measures. This is indicative 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 resulting in total hours worked growth faster than the other two labor growth measures.

2. Employment Participation

Chart 2 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 employment 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.

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 six months ago. The downward trend in the participation ratio in recent years has been 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 62.59 percent in May is suggestive evidence that some discouraged workers have reentered the labor market in the last few months, but this development

CHART 1 – Employment Growth

(annual rate of change)

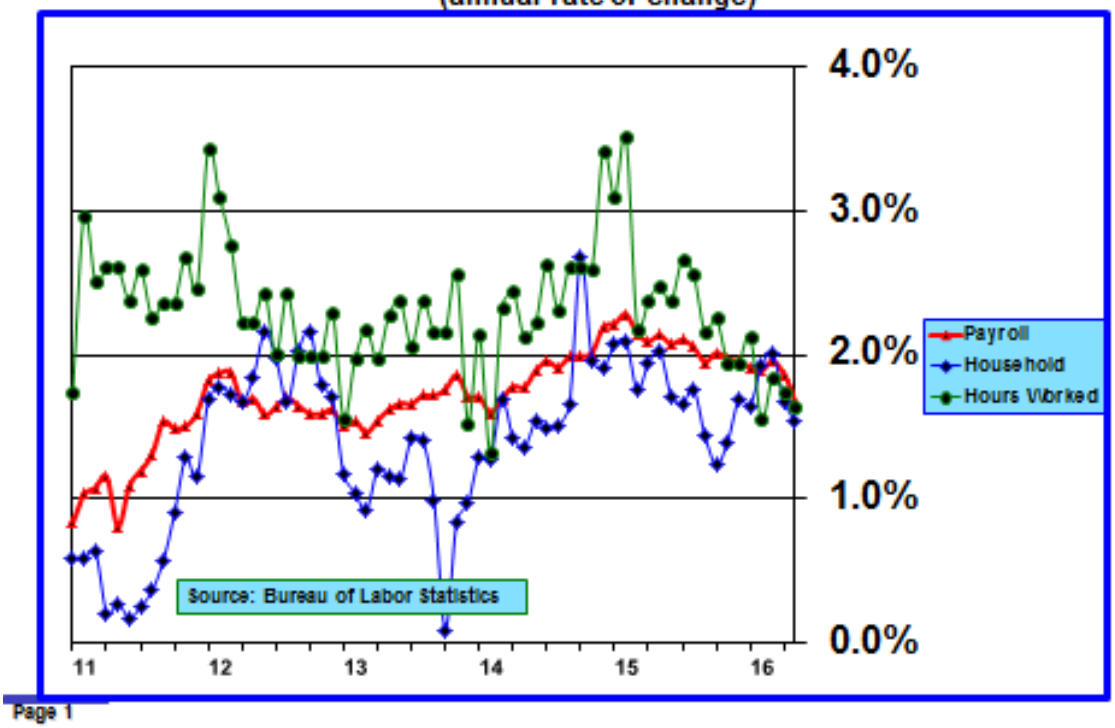
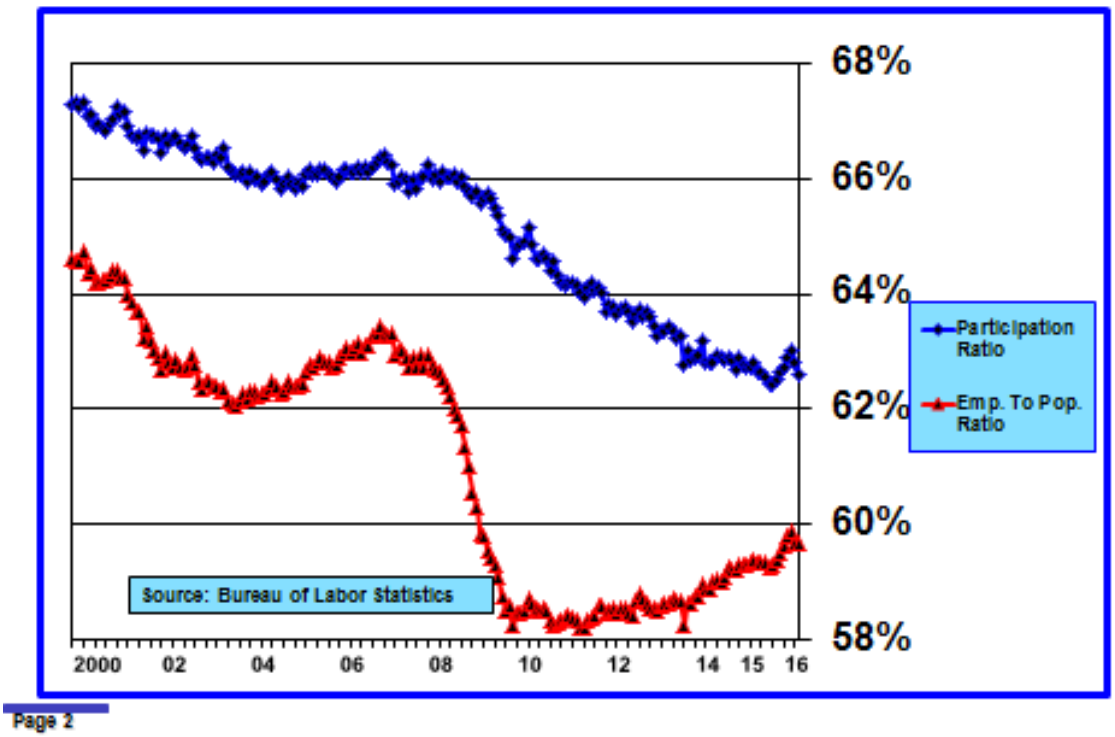


CHART 2 – Labor-Force-Participation and Eligible-Employment-to-Population Ratios (U-3 Measure)

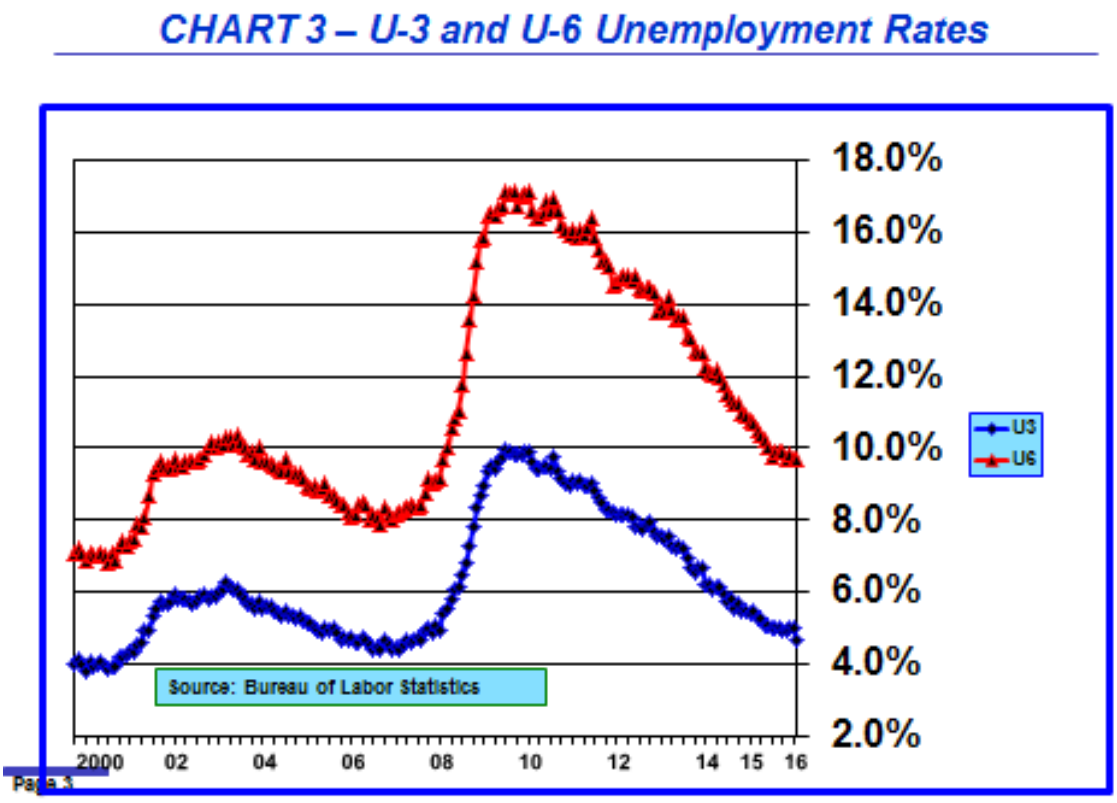


is not nearly as strong as it appeared to be earlier this year.

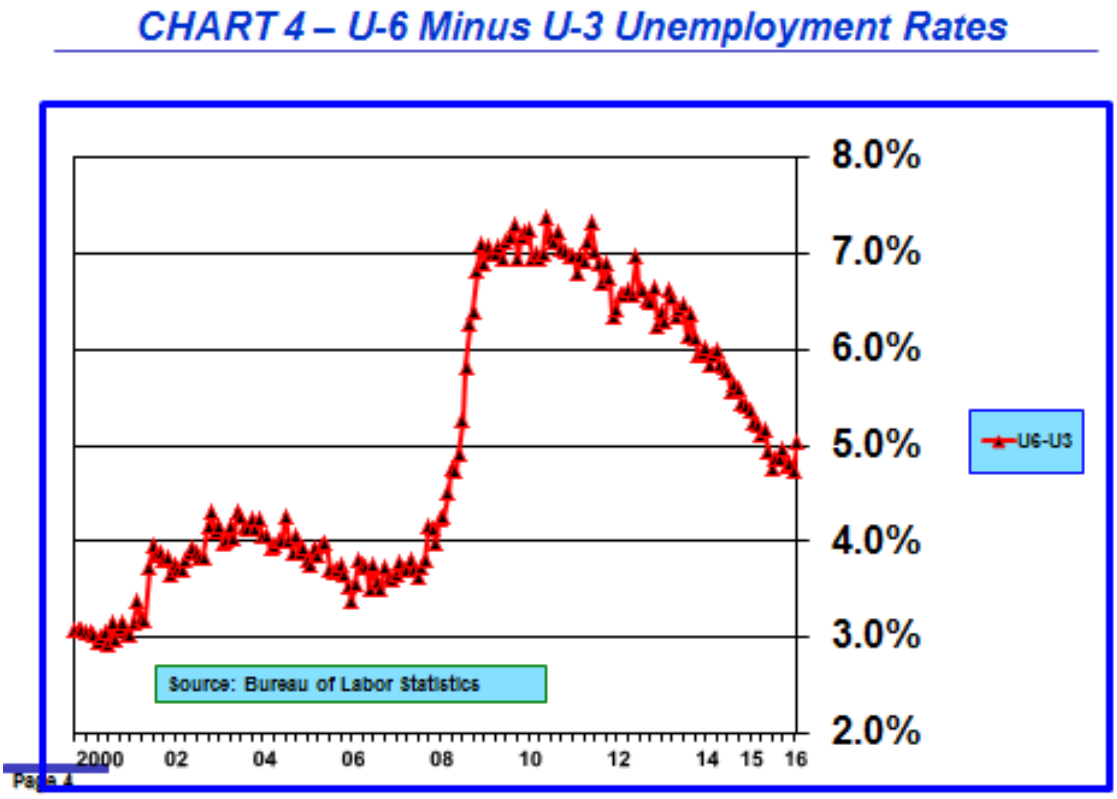
GS believes there is still a small participation gap equal to about 0.2 percent. **B of A** believes the participation gap is much larger, perhaps as large as a full percentage point. The difference between the two forecasters has to do with differences in assumptions about structural versus cyclical declines in the labor force. **B of A**'s analysis suggests that a fairly large employment gap still exists which means that upward pressure on wage increases should remain muted for the time being.

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

As can be seen in **Chart 3**, the U-3 unemployment rate has fallen to 4.69 percent and matches the level attained prior to the Great Recession. The May U-3 unemployment rate was slightly below **CBO**'s full employment (NAIRU) estimate of 4.84 percent.



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 9.73 percent but as can be seen in **Chart 4** is 0.8 percentage points above the pre-Great Recession 2005 difference between the U-3 and U-6 unemployment measures when the labor market was at full employment. The U-6 measure of unemployment has fallen 1.00 percent over the last 12 months compared to a 0.78 percent decline in the U-3 measure, which underscores an improving labor market. Both unemployment measures reflect a tightening labor market with a modest amount of remaining slack.

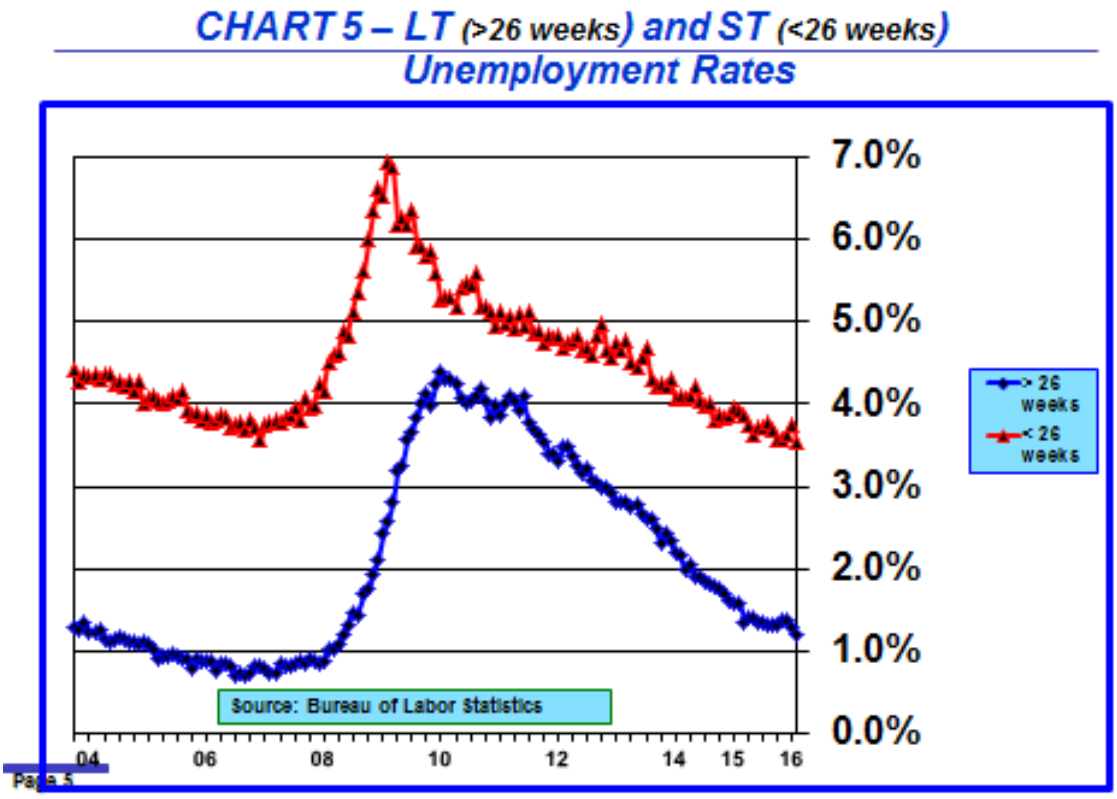


Long-term and short-term unemployment rates are also indicators of labor market tightness and are shown in **Chart 5**. The short-term unemployment has returned to the low level that prevailed prior to the Great Recession. The long-term unemployment rate has declined from over 4 percent in the aftermath of the Great Recession to about 1.2 percent currently. It is still about 0.2 to 0.3 percent above the low level reached just prior to the onset of the Great Recession.

4. Forecasts of the U-3 Unemployment Rate

Forecasters expect the labor market to continue to tighten. The U-3 unemployment has already fallen below **CBO**'s full-employment estimate of 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 worry about tweaking 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. While this worry is a prominent topic for FOMC members, offsetting worries about tepid growth in real GDP and fragility of international financial markets have resulted in the FOMC adopting a cautious, go slow approach to increasing interest rates.

Chart 6 shows U-3 unemployment rate forecasts for **B of A**, **GS, FOMC** high and low range, and my



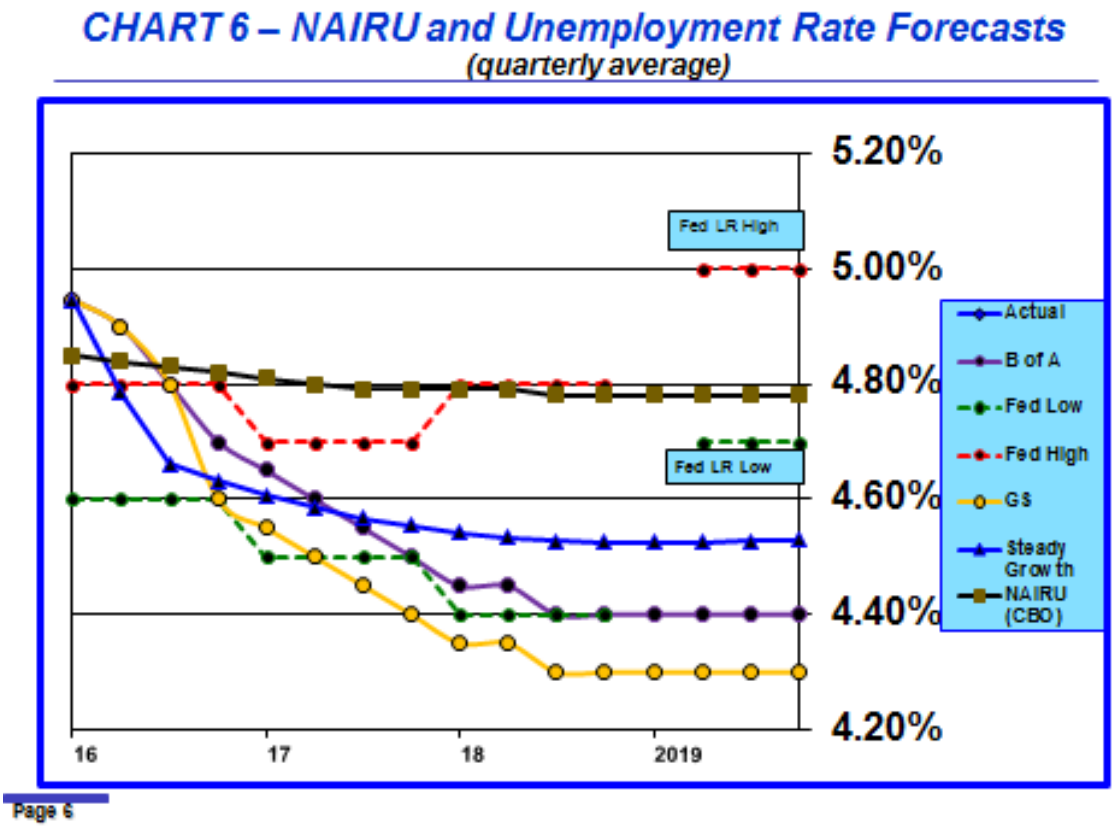
"**Steady Growth**" scenario. **CBO**'s estimate of NAIRU is also shown in **Chart 6**. All forecasts project that the unemployment rate will fall below NAIRU over the next three years. **GS** is the most optimistic and anticipates that the unemployment rate will fall to 4.3 percent by 2018.

Table 1 shows the FOMC's central tendency range for its unemployment rate projections prepared quarterly going back to December 2012. What clearly stands out is that the unemployment rate has improved more quickly and much more than FOMC members expected. Also, the long-run full-employment unemployment rate has declined significantly. These revised and more optimistic projections explain in part why the FOMC has been patient in raising interest rates. Increases in inflation only become a real threat when full employment is reached, which has occurred only recently based upon the U-3 unemployment rate. However, other labor market measures suggest that some slack still remains.

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. As the amount of slack in the labor market gradually declined, private sector economists began forecasting acceleration in wage rate growth, which repeatedly failed to materialize. Now evidence is finally emerging that wage growth is beginning to accelerate but increases remain smaller than experience suggests should be occurring given how little slack appears to be left in the labor market.

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 three primary broad-based measures of labor compensation that provide information about compensation trends. All 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. A second measure, the employment cost index (ECI), is released quarterly and consists of wage and salary, benefits, and total compensation indices. The third is also released quarterly as part of BLS's report on output, total hours worked, and productivity.

Although all three 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 2.40 percent annually currently compared to 2.10 percent a year ago (see **Chart 7**).

Table 1
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
	Actual	5.57%	5.01%				
2016	June			4.6 - 4.8	4.5 - 4.7	4.4 - 4.8	4.7 - 5.0
	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

However, 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 2.46 percent a year ago to 2.18 percent in May 2016 (see **Chart 8**). This outcome reflects a modestly shorter average number of hours worked per week. Disposable income depends upon growth in total weekly earnings rather than growth in the hourly wage rate. This means that deceleration in the growth rate in average weekly wages will depress growth in disposable income and correspondingly growth in consumer spending. Consumer spending growth was weak in the first quarter of 2016, but appears to have picked up a bit so far during the second quarter.

In contrast to acceleration in growth in average hourly wages of all employees, the growth rate in the wage and salary component of ECI in the first quarter of 2016 was 2.05 percent compared to 2.52 percent a year earlier (see **Chart 9**). Perhaps because this data point did not fit expectations, critics were quick to point out that if incentive compensation is eliminated from the calculation, base compensation is rising. Incentive compensation had an outsized impact in the first quarter of 2015 compared to the first quarter of

CHART 7 – Hourly Wage Rate Growth – All Workers

(annual year over year and 12-month moving average rates of change)

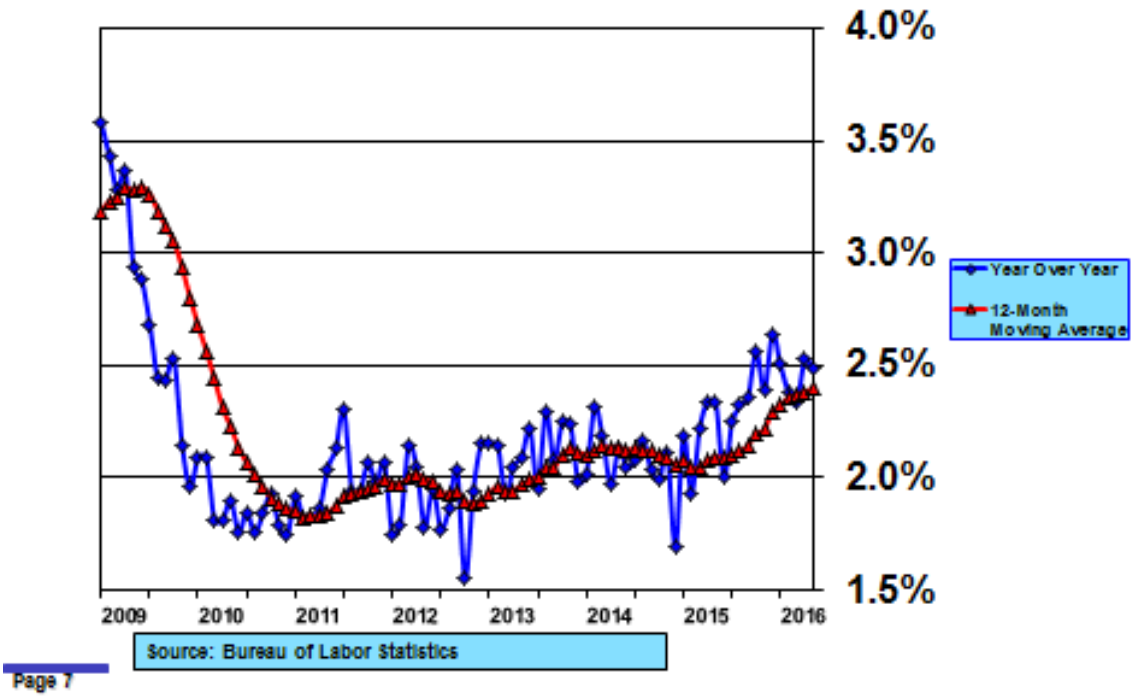


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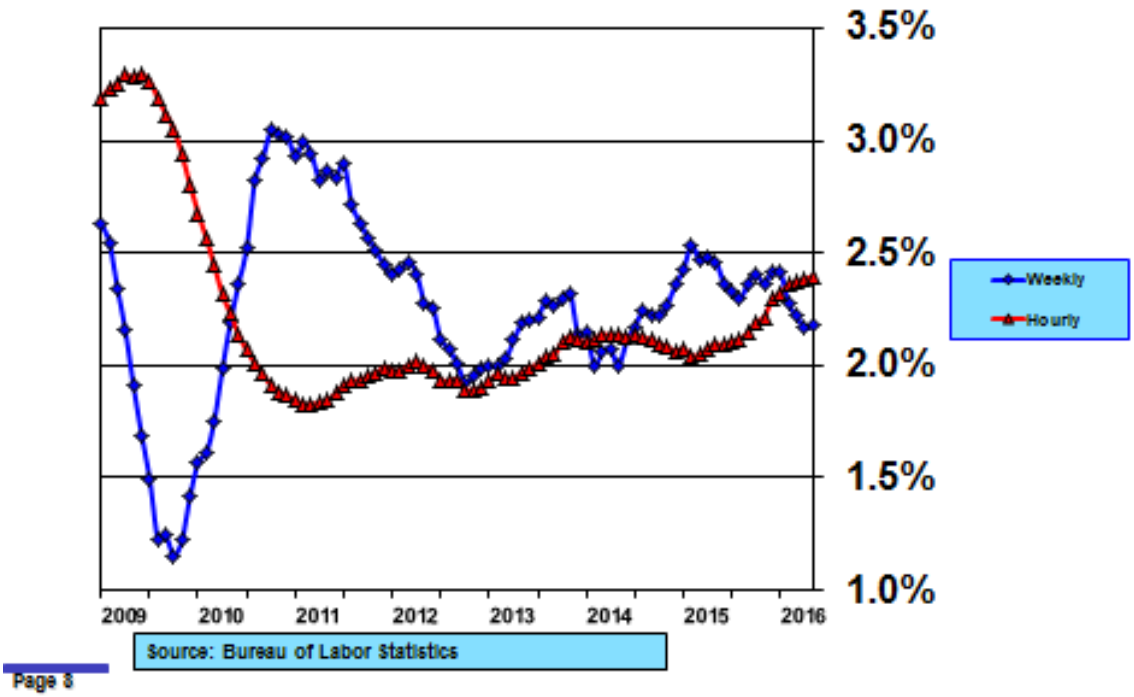
CHART 8 – Hourly & Weekly Wage Rate Growth – All Workers

(annual year over year and 12-month moving average rates of change)



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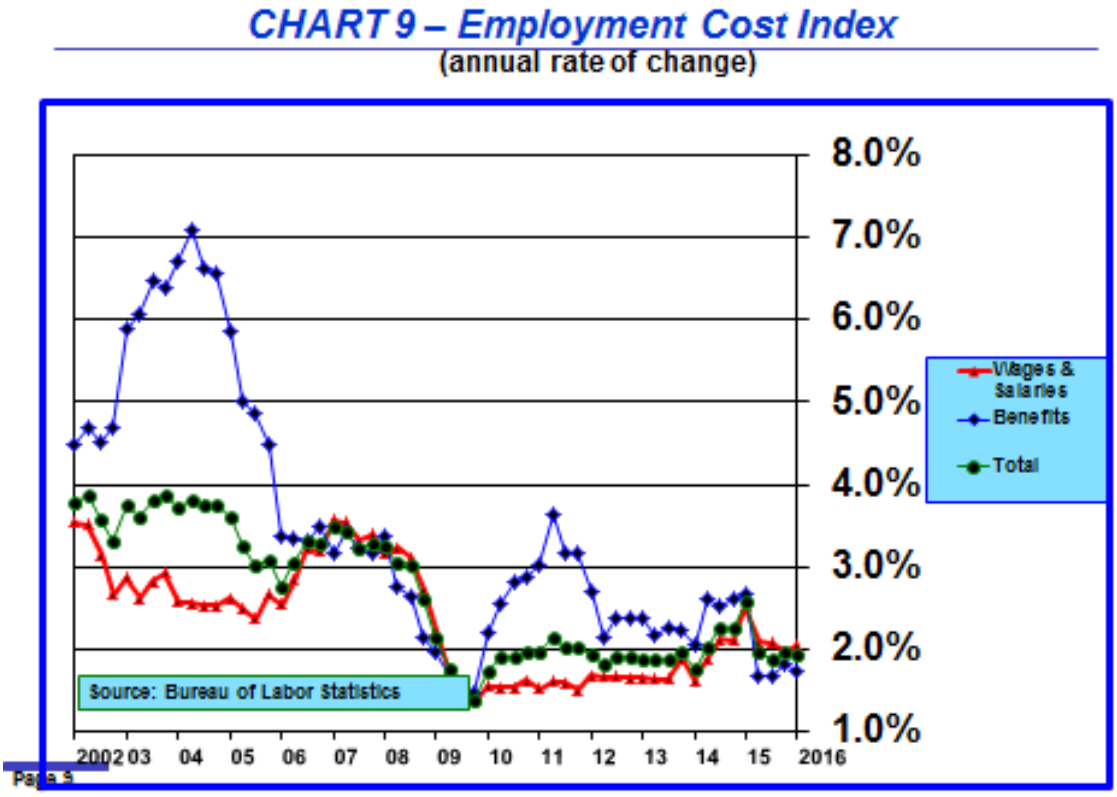
2016. Thus, there may be merit to this perspective because incentive compensation data are fragmentary in initial reports and subject to considerable revision over time. In any event, wages and salaries, net of incentive compensation, increased 2.5 percent year over year and at an annualized rate of 2.8 percent in the first quarter, which is more consistent with the story other compensations measures are telling.



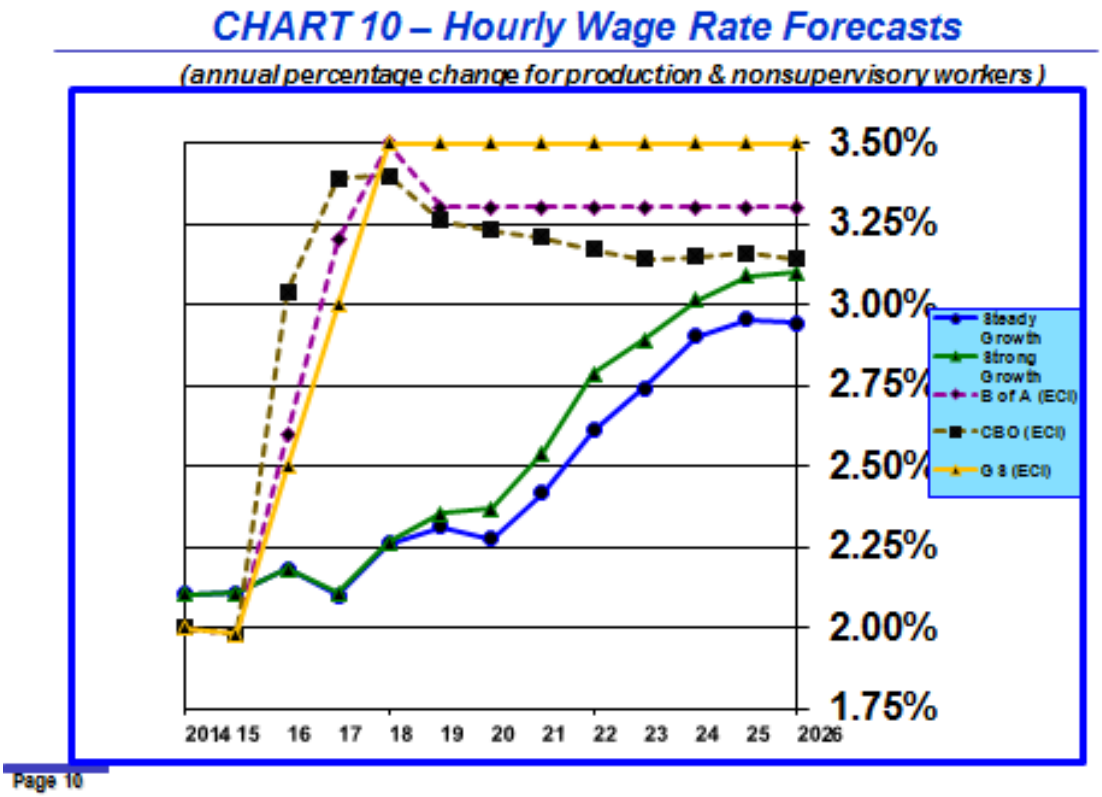
The more comprehensive measure of ECI, which includes benefits, also fell sharply from an annual rate of 2.57 percent in the first quarter of 2015 to 1.94 percent in the first quarter of 2016. Again, the unusual increase in incentive compensation in the first quarter of 2015 distorted the trend. However, incentive compensation probably cannot be blamed for the decrease in the growth rate of benefits from 2.67 percent in the first quarter of 2015 to 1.73 percent in the first quarter of 2016.

All-in-all the information contained in the ECI measure is mixed and hardly provides definitive evidence of rising employee compensation.

Other measures of wages indicate some upward pressure is developing. For example, **GS**'s wage tracker has risen to 2.5 percent. GS expects wage rates to rise over the next two years to a range of 3.0 percent to 3.5 percent and then stabilize at that level.

Chart 10 shows my projections for wage growth for production and nonsupervisory workers over the next ten years and **CBO**'s, **GS**'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 of details shown in **Chart 10** are in order.

First, the data series for all employees only began in 2006 while the data series for production and



nonsupervisory workers goes back 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**, **GS** 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.

Looking at **Chart 10**, which includes various forecasts of wage growth rates, the major takeaway for my forecasts 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, **GS**'s and **CBO**'s forecasts for ECI wage and salary growth rates, expect wage growth to accelerate over the next two years and then stabilize. In the long run my wage rate forecasts converge upwards to those of others, but it takes a long time for this to happen.

Who is right? That is unclear and we will have to wait for time to pass to 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. Contracting profit margins will increase employer reluctance to raise raises. Poor productivity gains could retard acceleration in wages. However, broad-based implementation of higher minimum wages will cut in the other direction.

Historically, there is very little correlation between rising wage rates and inflation. There is, however, a reverse relationship. Rising inflation influences wage rate acceleration. About 20 percent of the acceleration in inflation lifts wage rate growth within 12 months, with another 5 percent filtering into greater wage growth much later.

There are important forecasting implications of slower than expected acceleration in wage growth. 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. Also, there will be less need for the FOMC to raise interest rates to avert the buildup of inflationary pressures.

6. Summary

U.S. employment is nearing full employment. The U-3 unemployment rate of 4.7 percent is at full employment, but the U-6 rate is still about 0.8 percent away from full employment. However, according to a **GS** study, the Affordable Care Act might have raised the U-6 rate by 0.8 percent.[1] In the same study, GS found that when the labor market reaches full employment, employment growth slows, but not dramatically. In other words, cyclical momentum will continue to drive the unemployment rate down to a level below that of full employment. In that regard, the dismal May payroll report was not indicative necessarily of an abrupt slowdown in employment growth. It did reflect, however, a developing slowing in the rate of growth.

IV. Monetary Policymakers Are Grudgingly Accepting the Reality of Slow Potential Real Growth But Interest Rate Projections Remain Too High

As I have explained in past letters, potential real GDP growth depends upon growth in the **labor force**, which is primarily a function of population growth, and **productivity**.

1. Labor Force Growth

Labor force growth is relatively predictable years in advance, although there is some uncertainty based upon structural and cultural factors that influence labor force participation. For example, in recent years labor force participation for prime-age males in the U.S. has been weakening — a trend that might not yet have run its course. Labor force growth in the U.S. and elsewhere in the world has been slowing as population growth has slowed. And, in some countries, such as Japan, labor force growth is negative. This reduces potential growth.

[1] David Mericle. "US Daily: The Payrolls Slowdown: Supply or Demand?" Goldman Sachs Economic Research, June 9, 2016.

2. Productivity Gains

Until recently, it was generally taken for granted that technological advances and the broadening of educational opportunities to an ever greater share of the labor force would sustain **productivity gains** at historical levels. However, productivity data in the U.S. and other developed economies since 2005 do not validate this assumption.

In a recent blog post, James Pethokoukis of the American Enterprise Institute posted a chart, based on data prepared by the OECD, which compared annual productivity gains for two time periods and for two sets of countries. The time periods were 1995-2005 and 2005-2015. The two sets of countries were the U.S. and an average for 32 other countries.[2][3]

There are two stunning conclusions in **Table 2**. First, the decline in productivity over the last ten years has been substantial and persistent. Second, this phenomenon is not limited to the U.S. — it is global. The conclusion is unambiguous. Potential real economic growth is much lower today than it was prior to 2005.

Table 2
Productivity in the US and 32 Other OECD Countries: 1995-2005 Compared to 2005-2105

Productivity	1995-2005	2005-2015
US	2.2%	0.9%
OECD Average	2.1%	0.6%

When a change of this sort is so substantial, so persistent, and spread across many countries, it stands to reason that something has changed fundamentally and a return to a historical level of productivity is not a given. Or, in other words, a much lower rate of potential real growth will probably continue.

3. Possible Reasons for Global Productivity Collapse

Economists are scrambling to try to make sense of why productivity has collapsed. N. Gregory Mankiw, in a *New York Times* op-ed article, cited five possible reasons for the collapse in productivity.[4]

1. "**A statistical mirage**" — this is the mismeasurement argument posed primarily by **GS**, which I have summarized in previous letters. Mankiw asserts that there is "... *reason to doubt this is the whole story.*" He suggests that polling results which consistently indicate that a large percentage of Americans believe the "*country is on the wrong track*" do not support this line of argument.

2. "**A hangover from the crisis**" — because of the severity of the Great Recession and uncertainties about the strength in aggregate demand, businesses have been slow to increase investment and

[2] James Pethokoukis. "Why Can't the US Economy Escape the Slow-Growth Trap?" American Enterprise Institute, June 17, 2016. ***Figure 1.1***

[3] ***OECD Economic Surveys: United States***. June 2016.

[4] N. Gregory Mankiw. "***One Economic Sickness, Five Diagnoses***," The Upshot, *The New York Times*, June 17, 2016.

banks have been less willing to finance risky investments. Mankiw believes, however, that hangovers eventually go away and that will also occur in this case.

3. "**Secular stagnation**" — this is the explanation put forth by Larry Summers. Basically, productivity has declined because new investment demand has decreased due to "*... lower population growth, lower prices for capital goods and the nature of recent innovations, like the replacement of brick-and-mortar stores with retail websites.*" The overall consequence is that the economy is unable to generate sufficient demand to maintain full employment. Efforts by the monetary authority to stimulate investment by lowering interest rates result instead in asset price bubbles. Full employment is achieved temporarily until the asset price bubble bursts. However, the jobs created by asset price speculation do not contribute to productivity gains.

4. "**Slower innovation**" — this is the explanation popularized by Robert Gordon. Gordon argues that big-ticket innovations that had enormous positive impacts on productivity in the past are no longer occurring. Smartphones and social media are often cited as evidence of significant game changers. Certainly, these innovations have made day-to-day life easier, but have they really contributed to increasing output relative to input, which is what is necessary to create productivity gains? Gordon does not think so.

5. "**Policy missteps**" — there are different facets to this explanation but the common link is misguided government intervention in the marketplace. One line of argument, which Mankiw articulates, is that government fiscal policy, particularly in response to the Great Recession, had a strong negative effect on private investment spending. Another line of argument is that government regulatory policy, ranging from consumer protection to financial market stabilization, much of which is embodied in the much maligned Dodd-Frank Act, has weighed the economy down with nonproductive work and has discouraged risk taking.

To this list could be added manipulation of interest rates by central banks through the conduct of monetary policy, which helps sustain zombie companies and which has had a negative impact on the attractiveness of new investment.

Mankiw concludes: "*One sickness, five diagnoses. Unfortunately, I have no idea which one is right. The truth may well involve a bit of each.*"

So, Mankiw has thrown up his hands. Without a solid diagnosis of the reasons for the persistent decline in productivity, and one which is broadly shared, it will be difficult to forge policy responses and develop political support for them that would reverse the decline.

A related set of reasons for the global decline in productivity is contained in the OECD study and was summarized by James Pethoukis:

> "*Productivity growth has been sluggish since the Great Recession and had been slowing before it. This slowdown has touched nearly every industry. Although part of the slowdown may be related to weakness of investment related to the slow recovery of aggregate demand, structural issues also appear to be playing a role, including persistent declines in business dynamism (market entry and exit of firms) and signs of diminishing competitive pressures. Historically, young productive*

firms have been an important source of productivity growth, but start-up rates have been slowing for some time and have been especially low in the aftermath of the crisis, and failure rates of new firms have risen. This diminished dynamism appears to be associated with other trends such as population ageing, funding difficulties, reforms in 2005 to the personal bankruptcy code that made debt discharge more difficult, intellectual property rights that favor some established companies, the spread of state-level occupational licensing requirements, as well as zoning and land use restrictions that inhibit resources from flowing to their most productive use. There are also signs that market power is gradually intensifying on balance, restraining competitive forces that would otherwise translate productivity gains into broad-based improvements in household purchasing power."

4. Real Potential Growth Has Declined

Slowing **labor force growth** and much lower **productivity gains** have combined to reduce the potential real rate of growth. If U.S. productivity remains at the 0.9 percent average of the last ten years and if labor growth slows to CBO's forecasts of approximately 0.6 percent, potential real GDP growth will be 1.4 percent, which is quite a bit lower than the FOMC's long-term expected range of 1.8 to 2.0 percent. Implicitly, the FOMC's range assumes that productivity will recover to between 1.4 and 1.6 percent. So, if you are inclined toward a pessimistic view about the likelihood of improving productivity you should expect the FOMC and others to ratchet down their estimates of real potential growth over time.

5. Long-Term Natural (Neutral) Nominal Interest Rate and the Expected Level of Real Growth

When the FOMC began publishing its projections for the various economic variables several years ago, it included estimates of both the long-term real rate of GDP growth and the equilibrium nominal federal funds rate. As time has passed, the FOMC has reduced the projected values of both of these measures (see **Table 4** and **Table 8** below). It should be clear from the discussion above that as labor force growth and productivity decrease, potential real GDP also decreases.

But theory also posits that the nominal value of the long-run rate of interest should decline with decreases in both the labor force growth rate and productivity. Thus, decreases in labor force growth and productivity will result in declines in both potential real GDP growth and the long-term neutral nominal rate of interest. My econometric model provides estimates of the neutral rate and substantiates theoretical expectations.

Each 10 basis points change in productivity results in approximately an 8 basis points change in both the federal funds and 10-year Treasury rates. However, a 10 basis points change in the labor force growth rate has a 13 basis points impact on the federal funds rate but a smaller 7 basis points impact on the 10-year Treasury rate.

Values of the long-term neutral federal funds rate and the 10-year Treasury rate are shown in **Table 3** for various assumed values of labor force growth and productivity, along with the long-term potential real GDP growth rate implied by the assumed values of labor force growth and productivity.

The top panel of **Table 3** holds labor force growth constant at 0.6 percent annually and shows the impact on neutral federal funds and 10-year Treasury rates for assumed productivity values of 0.9, 1.4, and 1.6 percent. The only change in the bottom panel of **Table 3** is in the assumed value of labor force growth, which is raised to 0.8 percent.

Table 3
Long-Term Potential Real Rate of GDP Growth for Various Assumed Values of Labor Force Growth and Productivity and Corresponding Natural (Neutral) Interest Rates for Federal Funds and 10-Year Treasury Rates
(assumes nominal rate of inflation = 2.0%)

	Assumptions		
Potential Real GDP	1.40%	1.82%	1.99%
Productivity	.9%	1.4%	1.6%
Labor Force	.6%	.6%	.6%
	Neutral Rate		
Federal Funds	1.73%	2.12%	2.28%
10-Year Treasury	2.44%	2.85%	3.01%
	Assumptions		
Potential Real GDP	1.59%	2.01%	2.17%
Productivity	.9%	1.4%	1.6%
Labor Force	.8%	.8%	.8%
	Neutral Rate		
Federal Funds	1.98%	2.38%	2.53%
10-Year Treasury	2.59%	3.00%	3.16%

Collectively, FOMC members have steadily reduced the median estimate of the long-term nominal value of the federal funds rate from 4.25 percent to 3.00 percent at the recently concluded June meeting (see **Chart 13**). However, based upon my model, as shown in **Table 3,** my sense is that the FOMC's median projection for the federal funds rate is still much higher than is consistent with its estimate of long-term real GDP growth of 1.8 to 2.0 percent. My model indicates that a long-term nominal federal funds rate of 2.00 to 2.25 percent is a more likely level for the long-term neutral rate and it could be as low as 1.75 percent, if productivity remains at the dismal level of 0.9 percent that it has averaged over the last ten years.

V. U.S. Monetary Policy Objectives

U.S. monetary policy has **three goals — full employment**, **stable prices**, which has been interpreted to mean inflation averaging 2.0 percent annually, and **financial stability**. In the past little attention was paid to the third goal of financial stability until a financial crisis erupted. The famous Taylor Rule, which is intended to guide management of interest rates by the FOMC, includes measures of the output gap and the deviation of inflation from the policy target of 2.0 percent. It does not include any measure of financial stability. Moreover, the FOMC's policy statement does not explicitly recognize financial stability as a monetary policy goal: "*Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability.*" A close reading of the statutory mandate does include mention of financial stability, albeit in a somewhat convoluted way, which may explain why financial stability has not received the same policy emphasis as the employment and inflation goals.

Prior to the Great Recession, the FOMC gave little consideration to financial conditions in formulating monetary policy. This has gradually changed as the FOMC has increasingly recognized that U.S. monetary policy influences U.S. and global financial conditions and that, in turn, sustained changes in financial conditions have real impacts on economic activity. Yet, I do not sense that financial stability is yet a full equal to the other two monetary policy goals in FOMC deliberations and in the conduct of monetary policy.

When the FOMC raised its policy target for the federal funds rate in December 2015, there was no explicit mention of financial stability in its policy statement and only an indirect reference to "*. . . taking into account domestic and international developments.*" At the same meeting, the quarterly projections of economic variables revealed that the median expectation of FOMC members was for four 25 basis points increases of the federal funds rate during 2016.

Following the December FOMC meeting the market was trashed in the early days of January by global panic. Market expectations of further increases in the federal funds rate during 2016 disappeared entirely. Dismayed, FOMC members began to utter soothing words and by mid-February market panic abated. Risk-on sentiment returned driving stock prices back to pre-panic highs. However, interest rates did not rebound and the forward yield curve settled at a level signaling only one 25 basis points increase at most during the remainder of 2016. The FOMC included dovish language in its January policy statement that helped calm markets and aided the reemergence of optimism. At its March meeting the FOMC affirmed its more dovish stance by reducing the median number of expected 25 basis points increases in the federal funds rate during 2016 from four to two. The FOMC sharpened its language about international developments: "*. . . global economic and financial developments continue to pose risks.*" But the FOMC reverted to more indirect language in its April policy statement — "*The Committee continues to closely monitor . . . global economic and financial developments.*" There was no change in this language in the June FOMC statement.

Thus, it seems that while the FOMC has recognized that U.S. monetary policy impacts financial conditions and the functioning of domestic and international financial markets it has yet to incorporate systematically financial stability considerations into its monetary policy deliberations and policy formulation.

VI. U.S. Monetary Policy Developments — June FOMC Meeting

Commentary in the previous two sections provides the context for discussing recent monetary policy developments.

1. FOMC Monetary Policy Statement

In the **first paragraph** of its statement, the FOMC summarizes recent economic developments with particular emphasis on employment and inflation.

The **second paragraph** begins with a statement of monetary policy objectives and then articulates the Committee's expectations about evolving economic developments. In the past, the second paragraph included an assessment of the balance of risks, which was interpreted by market participants to signal whether the FOMC had a neutral, tightening, or loosening bias. More recently, the FOMC has emphasized that monetary policy is data dependent and dropped the balance of risks assessment from the second paragraph. There appears to be discomfort among some FOMC members with this change in approach as evidenced by the explicit mention in the April FOMC meeting minutes that the federal funds rate could be raised at the June meeting.

Specific monetary policy decisions reached at the meeting are summarized in the **third paragraph**.

The **fourth paragraph** is instructional. It describes what the FOMC considers in formulating monetary policy. It also states explicitly that adjustments in policy will be gradual and will depend on "... *the economic outlook as informed by incoming data*."

In the **final paragraph**, the FOMC states its balance sheet management strategy. This paragraph was added to the statement when the FOMC first began to engage in large scale asset purchases, otherwise known as quantitative easing. The wording of this paragraph has not changed for many months.

2. Economic Activity

In the June statement, the FOMC upgraded its assessment of overall economic activity, noting that consumer spending and housing were improving and that the drag from net exports was diminishing. However, the Committee observed that business investment remains "soft." It also noted that "... *the pace of improvement in the labor market has slowed* ... ."

Table 4 shows the FOMC's central tendency projections for real GDP growth for 2016, 2017, 2018, as well as the long-term potential real rate of GDP growth. GDP growth projections for both 2016 and 2017 were reduced and the upper bound of the range for long-term growth came down. What stands out in **Table 4** is the steady decline in projected growth over the last four years.

Table 4
Economic Projections of Real GDP By Federal Reserve Board Members And Federal Reserve Bank Presidents, March 2016

Real GDP %		Central Tendency					
		2014	2015	2016	2017	2018	Longer Run
	Actual	2.47	1.98				
2016	June			1.9 - 2.0	1.9 - 2.2	1.8 - 2.1	1.8 - 2.0
	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

3. Employment

As discussed in Section III, little slack remains in the labor market and there are nascent signs of firming compensation. If employment were the only policy goal, the FOMC's task to proceed in normalizing interest rates would be clear. In previous monetary policy tightening cycles, the FOMC has always moved more quickly to raise rates when the labor market tightened than it has so far in this cycle.

By pursuing a gradual tightening approach, the FOMC risks inflation overshooting the target of 2.0 percent. Of course, the target is intended to be an average over the cycle, not a ceiling. The fact is that inflation has been below the 2.0 percent target for an extended period of time. Nonetheless, some policymakers worry that if policy response is delayed too long the market consequence might be that inflation expectations become unanchored

FOMC projections of the U-3 unemployment rate are shown in **Table 1**. While the FOMC has

consistently overestimated expected real GDP growth, it has simultaneously underestimated the decline in the unemployment rate. While these errors would seem at first blush to be inconsistent, with the benefit of hindsight there have two drivers. One is that productivity has not recovered to higher levels as expected which explains why real GDP growth has not measured up to expectations. The other is that labor force participation has been much weaker than expected, resulting in a faster decline in the unemployment rate. Neither of these developments was anticipated. Earlier projections of real GDP growth and the unemployment rate were based on past experience of cyclical recovery patterns.

4. Inflation

In the June FOMC statement, the Committee acknowledged that inflation remains below its long-term target level, but suggested that this was due, at least in part, to "... *earlier declines in energy prices and in prices of non-energy imports.*" The Committee also acknowledged that "market-based" measures of inflation expectations have declined, but "survey-based" measures "*are little changed.*" The FOMC chose to ignore the May University of Michigan survey that found that consumer long-term inflation expectations decline to 2.3 percent from 2.5 percent. When Chairwoman Yellen was asked about this in the post-FOMC meeting press conference she was dismissive of the importance of this development, commenting that is was a preliminary number and inconsistent with other surveys.

As is shown in **Table 5**, the FOMC remains confident that both core and total PCE inflation will return to the 2.0 percent target level by 2017 or 2018 at the latest. Note that the FOMC has had to extend the time frame for achievement of the 2.0 percent target, but has not wavered from its conviction that the target will eventually be achieved.

Core PCE inflation was 1.61 percent in April and has now risen about 0.3 percent from its recent low of 1.31 percent last October. Total PCE inflation, which continues to be depressed by the plunge in oil prices and lower import prices, was 1.09 percent in April, up from the 0.66 percent rate of increase that prevailed at the end of 2015 (see **Chart 11**).

a. Core PCE Inflation Forecasts

As can be seen in **Table 6** (**Chart 11** shows historical core PCE price index data and data from **Table 6** in graphical form), forecasts of the core PCE inflation index indicate that inflation will increase modestly during 2016. Over the longer run, **B of A** and **GS** expect core PCE inflation to rise gradually, reaching 2.0 percent sometime during 2018. **B of A** recently revised its forecast to 2.3 percent in 2019, reflecting its belief that the FOMC will intentionally let inflation exceed the 2.0 percent target to assure that real GDP growth is sustained. FOMC projections also reflect a gradual rise.

In looking at **Chart 11,** it is very obvious that my forecasts for core PCE inflation differ substantially from those of other analysts and FOMC members. I make no claims to have a better forecasting model. Indeed, the forecasts of others are much more likely to occur. It might be simply that my statistical analysis is methodologically flawed or that historical impacts of various economic variables on inflation have undergone profound structural changes that my model has not captured. When I eliminate the effect of the dollar on inflation from my "Steady Growth" scenario forecast of core PCE inflation, my forecast is

Table 5
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. %	June			1.3 - 1.7	1.7 - 2.0	1.9 - 2.0	2.0
	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. %	June			1.6 - 1.8	1.7 - 2.0	1.9 - 2.0	2.0
	Mar			1.4 - 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				

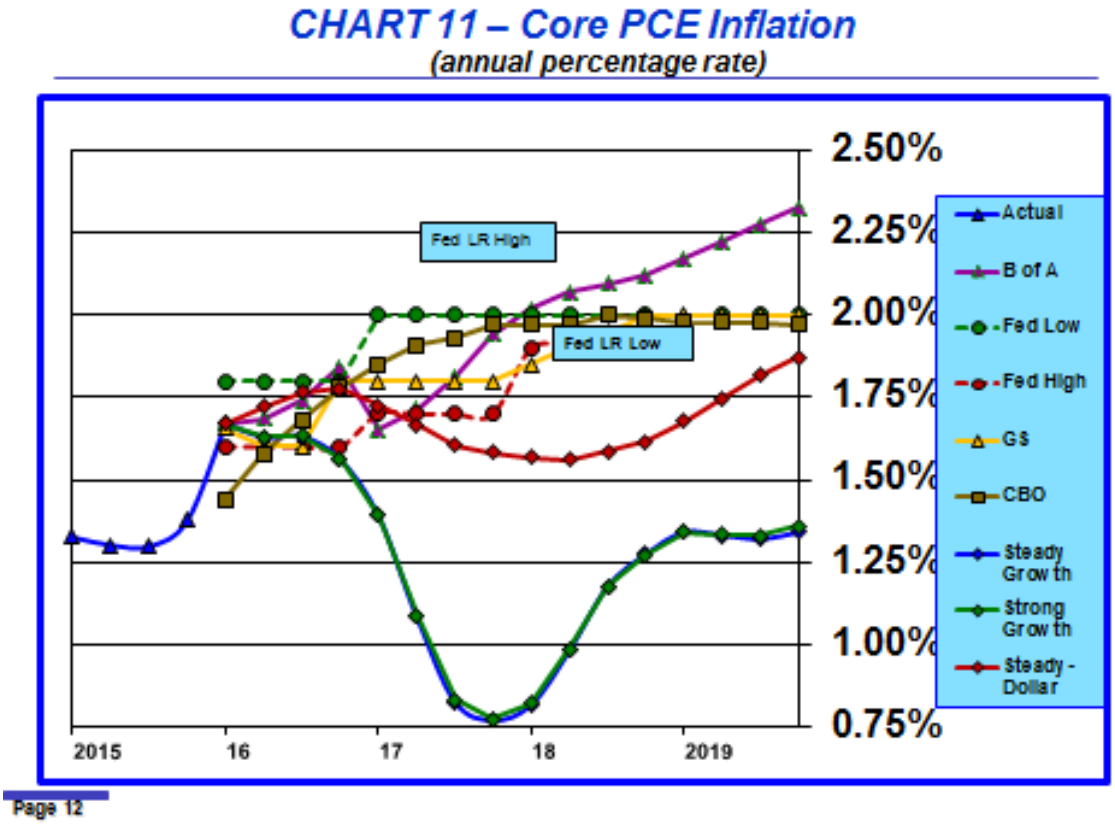


Table 6
Core PCE Inflation Forecasts — B of A, GS, Bill's "Steady Growth", Bill's "Strong Growth" and FOMC High and Low

Core CPE	2013	2014	2015	2016	2017	2018	2019
B of A	1.54	1.37	1.44	1.7	1.9	2.1	2.3
GS	1.54	1.37	1.44	1.7	1.8	2.0	2.0
Bill's Steady Growth	1.54	1.37	1.44	1.4	0.7	1.2	1.2
- Impact of Dollar	1.54	1.37	1.44	1.8	1.6	1.6	1.9
Bill's Strong Growth	1.54	1.37	1.44	1.4	0.7	1.2	1.2
FOMC - High				1.8	2.0	2.0	
FOMC - Low				1.6	1.7	1.9	

much closer to those of others. However, my core PCE inflation forecast still does not rise to 2.0 percent quite as quickly.

Table 7 shows contributions, based on my econometric model, of various economic variables to forecast core PCE inflation for two periods of time — 2016-2020 and 2021-2026. The starting point is the 1.61

percent rate that prevailed in April. By the end of 2020 core PCE inflation falls to 1.51 percent (1.93 percent when the effect of the dollar is omitted) as the positive impact of tight labor markets is more than offset by negative impulses from low productivity (depresses the equilibrium real rate of inflation as well as the measured level of inflation), a strong dollar (negative impact on U.S. manufacturing and lower import prices), and decelerating gains in housing prices, which is a proxy for the rent and owners equivalent rent components of the core PCE inflation index.

Table 7
Changes in Core PCE Inflation
(Basis Points)

	Labor Growth	Labor Gap	Productivity	Dollar	Housing Prices	Total
2016-2020	-12	73	-26	-31	-12	-9
2021-2026	3	7	-1	70	-1	78
2016-2026	-9	80	-27	39	-13	69

During the 2021 to 2026 period core inflation rises to 2.29 percent (2.01 percent when the effect of the dollar is omitted) and converges with most other forecasts which anticipate that core PCE inflation will match the FOMC's 2.0 percent target in the long run. The primary boost to inflation during this period comes from a weakening dollar.

b. 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 1.31 percent in October of last year to 1.61 percent in April. More recently commodity prices have rebounded sharply from their early February lows. And, the value of the dollar has fallen about 5.8 percent from its January high. These developments have prompted some mainstream forecasters to declare 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 upside, reflecting ongoing scarcity of housing 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 arguably overstate inflation in the first half of the year and understate it in the second half of the year.

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 and perhaps even exceeded. A few are expressing concern that the FOMC is "behind the curve" and risks inflation breaking well above its 2.0 percent target, especially because potential real GDP growth is so low.

So, what could alter the upward march of core inflation? For one thing, wage inflation is barely discernible and seems likely to be moderate and take a long time to develop. This would delay increases in core inflation. Owners equivalent rent could slow as housing affordability becomes more of an issue. Perhaps more importantly, 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.

c. 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 1.71 percent on June 21, 2016 (low for the year so far was 1.57 percent on June 16, 2016, the day after the June FOMC meeting). By contrast, U.S. stock prices are near their all-time high reached on May 21, 2015 (S and P 500 index was 2088.90 on June 21, 2016, compared to 2130.82 on May 21, 2015).

During the height of the panic earlier this year, the market decided that interest rates would remain lower for longer. This was validated by the decline in inflation expectations embedded in market interest rates. Although market sentiment oscillates from day to day, there has been a further decline in inflation expectations in recent days. The market now places less than a 50 percent probability on one 25 basis points increase in the federal funds rate during 2016. This probability does not exceed 50 percent until the spring of 2017.

Perhaps, however, other factors have depressed the market measure of inflation expectations, which would mean that it is not necessarily a reliable indicator of future inflation. **GS** has cited two reasons that this may well be the case. First, limited liquidity and heightened demand for inflation-protected Treasury securities, which have nothing to do with inflation expectations, may have depressed yields on the benchmark security relied on to tease out a measure of market-based inflation expectations. Second, the price of the benchmark 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. Many 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.

GS believes that the decline in the market-based measure of inflation expectations is mostly the result

of a decline in the inflation risk-premium rather than in an actual decline in the future expected rate of inflation. To the extent this is a valid conclusion it implies that the market expects inflation to remain relatively low for a long-period of time with little volatility around the long-term expected level.

5. Financial Conditions

Maintaining financial stability is a responsibility of the Federal Reserve. In this regard the Federal Reserve was tested repeatedly during the global financial crisis of 2008 and by most accounts responded effectively.

However, prior to the time of the financial crisis, the Federal Reserve regarded its lender of last resort role as just that. It was to respond and stabilize the financial system during times of crisis. Monitoring the fragility of the financial system and formulating monetary policy in an anticipatory manner to assure ongoing financial stability was not regarded as a primary function of monetary policy. That approach has changed in the aftermath of the global financial crisis but it still appears that the macroeconomic goal of maintaining financial system stability remains more one of reaction to developments.

That is not to say that there has been a lack of attention, but the focus has been primarily at the micro level — individual financial institutions — rather than at the macro level. The Dodd Frank Act mandated a comprehensive regulatory regime intended to assure financial strength and prudent management of individual financial institutions. Thus, financial institutions are now subject to more stringent capital and liquidity requirements. Notwithstanding these safeguards, should an individual institution get into serious trouble, the requirement for systemically important financial institutions (SIFIs) to have living wills, is intended to enable regulatory authorities to quickly and surgically resolve failures and contain the potential for systemic contagion.

To my way of thinking, as helpful as establishing rigorous prudential standards might be and preparing for prompt intervention when trouble arises, this micro approach ignores the possibility that macroeconomic policy will drive systemic financial instability rather than the acts of one or more wayward SIFIs. The Federal Reserve needs to monitor macroeconomic developments and the consequences of policy responses not just in terms of their impacts on employment and inflation but also in terms of financial system stability. There is building awareness, I believe, in the importance of this tri-part focus, but considerations of systemic financial stability are not yet robustly built into the monetary policy decision making process.

That brings us to the recent global financial panic. Measures of financial conditions, which appear to capture well emerging financial system instability, at least in the latter stages of their development, began to escalate during the summer of 2015. Indeed, the FOMC in response delayed the first federal funds rate hike that had widely been expected to occur in September 2015. When a degree of calm returned to markets during the fall, the FOMC proceeded to initiate monetary tightening in the U.S. at its December meeting. Financial conditions began to tighten again and full-scale panic ensued in January. Again, the FOMC responded by pulling back and the crisis passed or, what may turn out to be the case, simply went into hibernation.

This is not to argue that the FOMC was wrong to begin tightening monetary policy. After all, the labor market is near full employment and the risk of rising inflation, although not necessarily the reality that inflation will actually increase, exists. The FOMC now finds itself in the difficult position of attempting to

satisfy its full employment and price stability mandates without aggravating the financial instability that is already at an elevated level in the global financial system.

GS calculates and publishes a financial conditions index. Moreover, **GS** has conducted extensive empirical research which demonstrates that tighter financial conditions slow economic growth over the next few quarters. That intuitively makes sense because tighter financial conditions reflect elevated perceptions of risks and cause market participants to act with a greater degree of caution. Riskier loans are not made and more speculative investments are deferred or avoided altogether.

GS recently included a financial conditions variable in its version of the traditional Taylor Rule, which provides guidance for calibrating monetary policy to attain full employment and price stability. **GS** posits that the effects of financial conditions on the policy interest rate are not necessarily independent of the employment and inflation components of the Taylor Rule. Because of the interactive effects, **GS** believes that a more gradual rate of monetary policy tightening in the U.S. is prudent policy. In this regard, **GS** has ratified through a model a policy that the FOMC has already embraced.

But, a gradual tightening policy may maintain a semblance of financial stability for the time being, but such a policy is not directed to dealing directly with the sources of financial instability. In that regard, such a policy is palliative, not curative. And, cynics will continue to observe, with merit, that every time that the market has a convulsion, the FOMC pulls back and, perversely, this encourages more risk-taking which worsens, rather than ameliorates, underlying financial market instability.

As I have said before, policymakers can postpone the day of reckoning, perhaps for a very long time. But, if underlying global systemic imbalances are not addressed effectively, the day of reckoning will inevitably eventually occur. And, history tells us that the longer imbalances are allowed to build, the greater will be the pain when pretend and extend policies no longer work.

6. FOMC Slashes Federal Funds Rate Projections

After the minutes of the April FOMC meeting explicitly mentioned the possibility of an interest rate increase at the June meeting, the substantial downward revision to the projections of future rate increases at the June meeting was a dovish surprise. Although the median still projects two 25 basis point increases in the federal funds rate during the remainder of 2016, six of seventeen participants now project only one increase compared to only two of seventeen at the March meeting. As can be seen in **Table 8**, the average year-end federal funds rate for all participants fell from 1.02 percent to 0.83 percent, which is consistent with two increases.

Moreover, projections for interest rate increases in 2017 and 2018 were also slashed. The year-end average federal funds rate for 2017 fell from 2.04 percent to 1.63 percent, implying three increases rather than four in 2017. The year-end average rate for 2018 fell from 2.95 percent to 2.46 percent, implying three increases rather than four in 2018. The message was clear.

Based on its assessment of domestic and global economic conditions and prospects, the FOMC now believes that future increases in the federal funds rate will occur more gradually over a longer period of time. In past cycles such a message from the FOMC would have been criticized, in light of an economy very near full employment with some evidence of firming inflation, as getting seriously behind the curve

Table 8
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	June			.83	1.63	2.46	3.14
	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

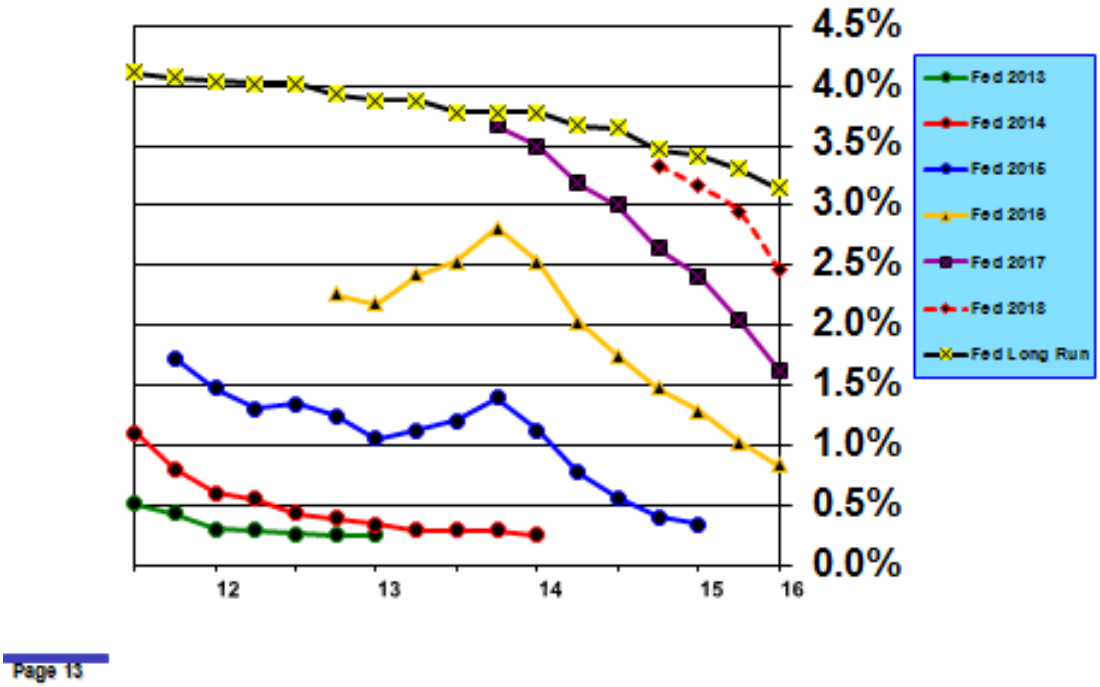
and risking unleashing an inflationary outbreak. But, the market's reaction was quite the opposite. The market priced out any increase in the federal funds rate and does not anticipate one now until well into 2017. Furthermore, the entire yield curve declined and the 10-year Treasury yield hit its lowest level of the year of 1.57 percent the day after the FOMC meeting. As of June 21, 2016 the 10-year Treasury rate rebounded slightly to 1.71 percent.

Even more telling, the FOMC reduced its median projection of the equilibrium level of the long-term federal funds rate to 3.00 percent, while maintaining its expectation that the long-term inflation rate will be 2.00 percent. What this means is that the FOMC expects the real long-term equilibrium rate of return to be only 1.00 percent.

Chart 12 shows that the FOMC has reduced its projection for the long-term neutral rate steadily over the last few years from approximately 4.25 percent in 2012 to 3.00 percent currently. The other lines on **Chart 12** show a systematic reduction in projected increases in the federal funds rate for the years 2013 through 2018. The way to interpret **Chart 12** is given by the following example: in 2014 the FOMC projected that the federal funds rate would reach 2.50 percent by the end of 2016; the current 2016 year-end

projection is 0.83 percent; the current year-end 2018 projection is 2.50 percent. The FOMC has pushed out its projection of a 2.50 percent federal funds rate by a full two years.

CHART 12 – FOMC Federal Funds Rate Projections



7. James Bullard's Regime-Based Forecasting Model for the Federal Funds Rate

When the FOMC released its federal funds rate projections following the June meeting there was one oddity. While all other members expected the federal funds rate to increase gradually, one member pegged the federal funds rate at .an unchanging level of .50 to .75 percent through 2018. It turned out that this dot belonged to James Bullard, president of the St. Louis Federal Reserve Bank.

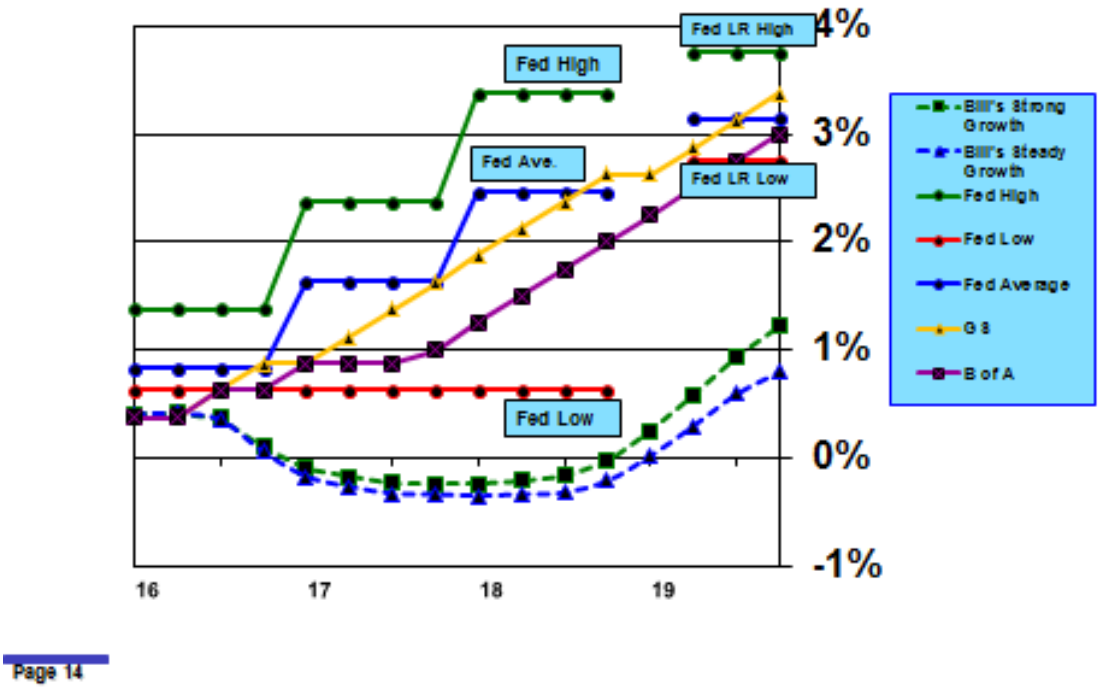
Bullard's rationale, as described in a paper he released two days after the FOMC meeting, is that there can be many stable economic regimes. He believes the U.S. is currently in a low growth, low productivity, low inflation, low interest-rate regime. Furthermore, the labor market is near full employment and inflation is approaching the 2.0 percent target level. There is reason to expect that the current regime will persist until some shock occurs and as long as it persists there will be no pressure to increase interest rates. For Bullard's view to be valid, inflation would need to remain at a low and relatively stable level and not increase over time due to the potential lagged impacts of tighter output and employment markets. Or, put somewhat differently, expectations of stable prices could block market pressures that historically have lifted inflation.

As is often the case with an out-of-consensus view, Bullard's ideas have already been dismissed as lacking in analytical rigor. Whatever merits Bullard's theory might have, there is the observed reality that

there appears to be little pressure to increase interest rates. Thus, Bullard's expectation of no further changes in the federal funds rate for the next few years may be the correct forecast, but not necessarily for the reasons he has put forth.

I arrive at a similar conclusion, as can be seen in **Chart 13**, through an econometric model that incorporates traditional measures of inflation, productivity, labor force growth, labor force slack (both short-term and long-term unemployment rates relative long-term normal levels), and financial conditions. I have been saying for a long time that I do not expect interest rates to rise much for an extended period of time and so far that view has turned to be more on the mark than conventional forecasting models.

CHART 13 – Federal Funds Rate Forecasts



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8. Interest Rates — Federal Funds Rate

B of A has revised its forecast to only one increase in the federal funds rate during 2016 and pegs the most likely date as September. **B of A** expects two 25 basis points increases during 2017 which would bring the target federal funds rate range to 1.00 percent to 1.25 percent by the end of 2017.

GS has changed its forecasting approach to focus primarily on the timing of the next 25 basis points increase in the federal funds rate. **GS** now also expects only one more increase during 2016 and assigns a 25 percent probability to July, a 40 percent probability to September (combined 65 percent probability of an increase by September), and a 35 percent probability an increase later in the year or in 2017 or possibly a cut. While four increases remain in **GS**'s overall 2017 macro forecasts, it has ceased to place any emphasis on this forecast, preferring instead to focus on the probable timing of only the next rate

increase.

Chart 13 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 "**Steady Growth**" and "**Strong Growth**" scenarios.

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 1.0 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.

My view is that January's panic was a warning shot across the bow. The weaker dollar and lower interest rates were essential and necessary to defuse that panic, particularly with respect to emerging markets. But, the policy shift that helped calm financial markets and bought time for emerging markets is inflicting damage on Europe and Japan. Both are struggling to avoid deflation. Their currencies are strengthening and that, in time, will depress economic activity. Moreover, neither appears to have policy options any longer that could parry yet another negative shock.

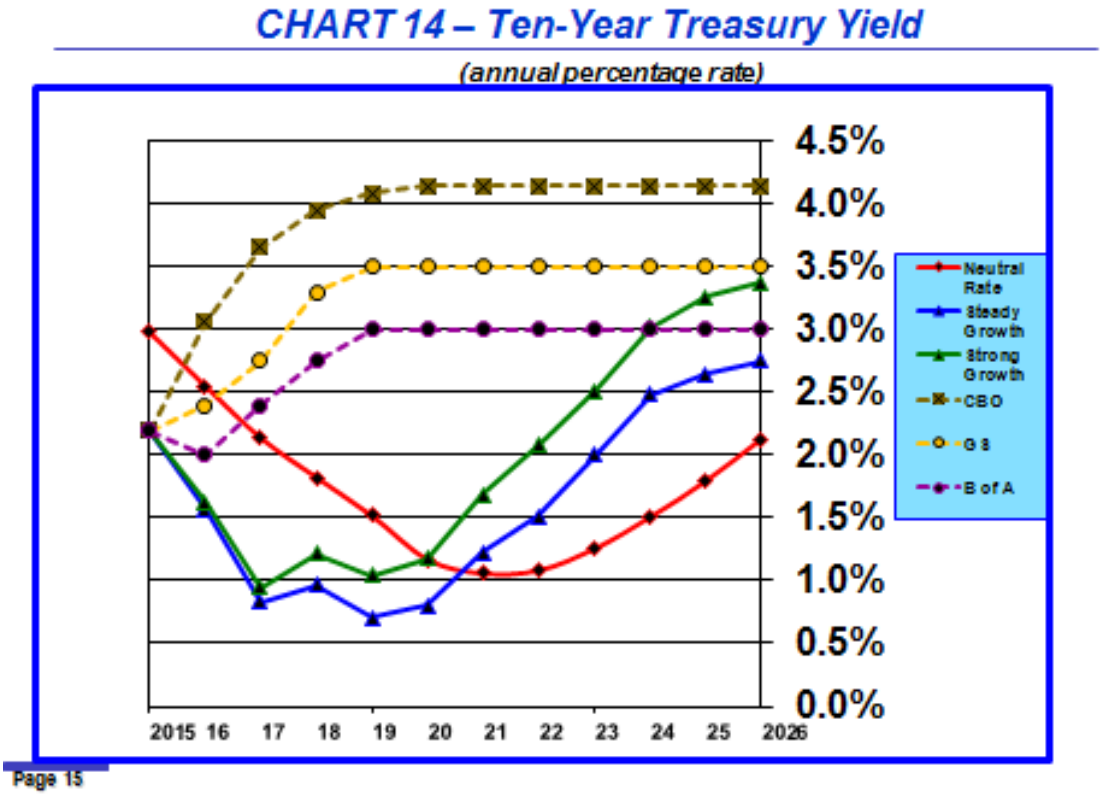
Caution on the part of the FOMC is warranted. Given the breadth of global imbalances, an FOMC rate increase and more hawkish commentary could well unleash a repeat of January's market panic.

9. Interest Rates — 10-Year Treasury Note Yield

Chart 14 shows forecasts for the 10-year Treasury note yield over the next ten years. Analysts continue to reduce their forecasts for the ten-year yield. Partly this is a mark-to-market exercise driven by the persistent decline in this yield in opposition to expected increases. Analysts still expect long-term rates to rise from the current level, but not to as high a level.

B of A's revised long-term ten-year yield forecast seems a bit odd since the 3.0 percent level is exactly the same as its 3.0 percent forecast for the federal funds rate. Longer term interest rates include a positive term premium. This implies that **B of A** is forecasting a negatively sloped yield curve, net of the term premium, in the long run, which customarily is indicative of very low inflation or even modest deflation. However, **B of A**'s long-term inflation forecast is 2.0 percent. That implies that the long-term real rate of interest is just 1.0 percent. However, **B of A** has suggested that there is a good chance that the long-run level of the federal funds rate could be lower than 3.0 percent. That would address the apparent inconsistency in **B of A**'s current long-run forecasts of 3.0 percent for both the federal funds rate and the 10-year Treasury rate.

My estimate of the nominal long-term neutral rate for the 10-year Treasury dips to 1.1 percent in 2021 before rising to 2.1 percent in 2026, which implies a real rate that is negative over most of the forecast time period.



Over the next five years my model forecasts that the 10-year yield will decline 93 basis points from its recent level of 1.81 percent (see **Table 9**). Slowing labor force growth contributes 93 basis points to the decline. However, tighter labor market conditions raise the yield by 34 basis points. Thus, the total impact of changes in the labor market contributes 59 basis points to the decline. Rising productivity adds 33 basis points while easier financial conditions subtract 53 basis points. Collectively, all of these factors decrease the 10-year yield by 79 basis points. The remaining 12 basis points decline stems primarily from my forecast that inflation will decline.

Table 9
Changes in 10-Year Treasury-Note Yield//(Basis Points)

	Labor Growth	Labor Gap	Productivity	Inflation	Financial Conditions	Other	Total
2016-2020	-93	34	33	-1	-53	-11	-93
2021-2026	-2	-7	32	185	-10	-5	192
2016-2026	-95	26	64	184	-64	-17	99

After 2020, inflation in my model moves rapidly toward 2.0 percent and this adds 192 basis points to the 10-year yield by 2026. What is important to note is that even though my inflation forecast eventually matches that of others, the 10-year yield rises in the aggregate by only about 50 to 100 basis points from its recent low level. Other forecasters expect the 10-year yield to rise 100 to 200 basis points and that is expected to occur within the next three years rather than in eight to ten years' time.

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 more upbeat, particularly in the U.S. 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 1.8% and GS has reduced its estimate to 2.0%; my estimate is now 1.5% (note that my lower estimate results from slowing employment growth and low productivity); the FOMC has reduced it's 2016 Q4/Q4 projection range from 2.3%2.5% to 1.9%2.0%

     ? GS is currently projecting annualized GDP growth for Q2 of 3.1%; B of A's Q2 estimate is 2.6%

   - ***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. Other analysts believe the current output gap is smaller than CBO's estimate.***)

     - OECD's output gap estimate is 1.8% at the end of 2016 and 1.2% at the end of 2017

     - My current estimate of the output gap at the end of 2016 is between -2.1% and -2.2% with only a small 0.2% additional decline in 2017

   - ***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%.

     - Due to disappointing productivity gains, 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 long-term potential estimate is 2.0%; and the FOMC's central tendency range is 1.8%2.0%; my long-term range is 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 was 0.6% in 2015; the five-year average was 0.4%; my current productivity projection for 2016 is 0.7%; B of A's is 0.1%

  - Productivity was an annualized -0.6% in the first quarter due to a combination of strong growth in total hours worked and weak growth in output

- ***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 150,000 per month over the first five months of 2016

- ***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 was 62.59% in May compared to 62.65% in December and up slightly from its low of 62.42% in September 2015

  ? According to GS's estimate the remaining participation gap is about 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 change little over the remainder of the year

- ***Unemployment rate*** should edge down to between 4.6% and 4.8%.

  + Unemployment rate was 4.69% in May slightly below the long-term structural rate of 4.84%, according to CBO

  ? Based on the U-3 measure, the economy is very close to full employment

  ? U-6 unemployment rate, which adds marginally attached workers and those working part-time for economic reasons to the number unemployed but looking for work, was 9.73% in May, which is about 1.5% above the full-employment level

- ***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 April was 4.0% ahead of the year earlier level due to strong employment gains during the last year; growth is projected to fall to 3.1% by the end of 2016 provided that employment growth and total hours worked slow

- ***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 April was rising at a 3.6% annual pace, I project nominal spending growth in 2016 to be approximately 3.3%

? Growth in nominal retail sales was weaker than expected over the first two months of 2016 but was stronger than expected during April and May; however, ISI's survey of state tax revenues indicates that sales tax collections are declining

? Consumer sentiment measures have been soft, but relatively stable in recent months: University of Michigan's preliminary index was 94.3 in early June compared to 96.1 a year ago; the Conference Board was 92.6 in May, down from 94.7 in April and 96.1 in March, and also down from 101.4 a year ago; Evercore ISI's weekly company surveys have been edging down and have fallen from 52.4 to 49.4 since March 2015, but they are up from the recent low of 47.7 in late April

- ***Household personal saving rate*** will decline slightly as growth in spending exceeds growth in disposable income.

  - The saving rate was 5.62% over the first four months of 2016 compared to the 2015 average rate of 5.12% (nominal income growth has exceeded spending growth so far in 2016)

- ***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 2.2% 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 51.3 in May compared to 50.8 in April, 51.8 in March, 49.5 in February, 48.2 in January and 48.0 in December, reflecting a moderate improving trend that now indicates modest growth; however, the Markit Flash U.S. Manufacturing PMI declined in May to its lowest level since September 2009

  + The PMI non-manufacturing index was 52.9 in May compared to 55.7 in April, 54.5 in March 53.4 in February, 53.5 in January, and 55.8 in December, reflecting modest, but stable growth in services; however, the declining trend is worrisome

  + The NFIB optimism index for small businesses rose to 93.8 in May compared to 93.6 in April, 92.6 in March, 92.9 in February, 93.9 in January, and 95.2 in December, reflecting softer growth; this index is now down substantially from the recent cyclical peak of 100.3 reached in December 2014

  + GS's business conditions index was 48.6 in May compared to 44.9 in April, 46.5 in March, 40.4 in February, 39.9 in January, and 48.6 in December, marking the 14th consecutive month below 50 (a value of 50 indicates trend growth; thus, business conditions have been below trend for the last 14 months)

- ***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.

  - Business investment fell at an annual rate of -6.2% in the first quarter, reflecting in part energy investment cutbacks; however, investment in non-energy areas has fallen short of expectations

  - GS expects business investment fall -1.0% overall during 2016; B of A expects business investment to decline -0.7% in 2016

  ? An ISI mid-2016 survey indicates that U.S. capital spending plans have moderated during 2016 and global capital spending plans have turned negative for the first time since the survey began in 2010

- ***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%.

  - Residential housing investment rose during the first quarter at a higher than expected 17.1% annual rate, but the growth rate is expected to slow in coming quarters

  - GS expects housing investment to increase 9.7% in 2016; B of A expects an increase of 10.4%; both estimates are slightly above the expected range

  ? Over the first five months of 2016 housing starts are 4.4% above 2015's average, but 11.0% above the first five 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%; GS expects prices to increase 3.8%

  ? The Federal Housing Finance Agency's purchase only price index rose 5.7% over the 12-month period through March 2016

- ***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. ***(Trade data were revised for the last several years in April 2016, which reduced the size of the deficit, with reductions being greater in more recent months)***

  - The trade deficit has fallen slightly over the last 12 months from 2.75% to 2.67% in April

  - The trade-weighted value of the dollar has fallen 4.7% since December, but was stable in May

- ***Monetary policy*** — the Federal Reserve will raise the federal funds rate two to three times during 2016 in 25 basis point increments.

  - The market probability for a 25 basis point increase currently does not exceed 50% until the first quarter of 2017; the FOMC median is still two increases in 2016, but six of seventeen members now only expect one increase; B of A expects one increase in September and GS has a probability of 65% for an increase by September; my econometric model indicates no additional increases until 2019

- ***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 2.5% in 2016 according to B of A; PCE is expected to rise from 0.7% to 1.7%

- ***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 1.8%; FOMC's June projection range for 2016 was raised to 1.6% to 1.8%

- 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 1.71% on June 21

- ***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.

  - With GDP revisions, the 2015 calendar year fiscal deficit was 2.63%; both growth and the deficit are rising less rapidly than forecast; the 12-month cumulative deficit to GDP ratio was 2.60% in May 2016 compared to 2.31% in May 2015 but is expected to rise to approximately 3.06% by the end of 2016

- ***State and Local investment*** spending growth should range between 1.5% and 2.0%.

  - State and local investment spending grew at an annual rate of 2.9% in the first quarter, but is expected to increase 1.0% to 1.5% for all of 2016

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 3.1% in 2016

  - The global manufacturing index is in a declining trend and at 50.0 in May indicates no growth

  - The OECD leading indicator declined to its lowest level since the Great Recession early in 2016 but improved slightly in May

- ***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 stable, but if the U.K. votes to leave the European Union on June 23, downside risks are likely to increase

- ***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 is 0.0%

  - The ECB is slowly losing its battle to push inflation to 2.0% as reflected in market long-term inflation expectations, which have declined below 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 in March as panic subsided and the ECB ramped up monetary easing; nonetheless, bank stocks continue to underperform, a worrying development

- ***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 a new election has been scheduled

+ Italy's banking crisis has the potential to erupt and could derail Renzi's fall constitutional referendum; however, recent ECB monetary policy initiatives have bought additional time for Italian banks

+ Greece's third bailout is increasingly in jeopardy of failing; however, Greece's parliament has enacted spending cuts and tax increases necessary to meet the requirements for disbursal of funds under the current bailout agreement; debt relief in necessary according to the IMF — creditors have promised to consider that possibility in 2018 after the next set of German elections

- ***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 1.7% (IMF 1.9%) 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 23; the outcome is too close to call

- ***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% (IMF 6.5%); policy makers have once again taken actions to boost housing construction and public investment, which will give a short-term boost to the economy but could worsen future economic performance as debt leverage continues to grow faster than economic output

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

  ? President Xi's anticorruption campaign and centralization of power is smothering the consensus governance approach in place for the last 30 years and may be creating latent political instability

- ***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% (IMF 0.5%)

  - Japanese markets responded very negatively to the Bank of Japan's imposition of negative interest rates; the yen has strengthened

  - Inflation is now expected to be -0.2%

  - Evidence is increasing that Abenomics is failing: only 36% of businesses surveyed by ISI in the second quarter expect conditions to improve compared to 83% in the first quarter; the yen continues to strengthen, which will depress profits, thus only 36% expect to increase prices compared to 58% in the first quarter

  - There is increasing skepticism that the Bank of Japan can do much more to boost inflation and economic growth

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

  + IMF is forecasting 7.5% GDP growth

  ? Prime Minister Modi has had difficulty getting parliament to pass economic reforms, which has held back growth potential

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

  - Declines in the prices of commodities and capital outflows have depressed growth in most emerging market economies in 2016; however, easier U.S. monetary policy and rebounding prices of commodities have averted a potential meltdown

  - 2016 GDP forecast has been revised downward from 4.3% to 4.0% and is 2.8% if China is omitted

- ***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; political instability is building in Brazil with the impeachment of President Dilma Rousseff

  + Russia's 2016 GDP forecast has been revised from -1.0% to -1.8%

  + Brazil's 2016 GDP forecast is -3.5%

Risks — stated in the negative relative to the forecast (***+ risk realized***; ***- risk not realized***).

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

  + Forecasts of actual 2016 growth have been reduced; lower than expected productivity, if sustained, will depress potential growth

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

  - Employment growth over the first five months of 2016 has been within the expected range, but growth slowed sharply in April and May

- ***Employment participation rate*** rises rather than remaining stable or falling modestly

  - The participation rate has been stable

- ***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 2.40% in May (12-month moving average); however, the rate of increase in weekly average wages has fallen from 2.42% in December to 2.18% in May as the length of the workweek has decreased; other measures of wages indicate a slight acceleration

- ***U.S. Unemployment rate*** falls less than expected

  - Risk not realized, unemployment rate is within the forecast range

- ***U.S. productivity*** remains below 1%

+ Productivity fell at an annual rate of -0.6% in the first quarter and has risen only 0.7% over the last four quarters; little improvement over the remainder of 2016 seems likely

- ***Real U.S. consumer income and spending*** increase less or more than expected; less than expected increases are the more serious risks

  + Income is rising faster than forecast and spending is rising about as expected with the consequence that the saving rate has risen slightly

- ***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

  - First quarter housing investment was stronger than expected

  + Housing starts are rising more slowly than expected

- ***U.S. residential housing price increases*** are less than expected

  - Risk not realized; prices are rising faster than expected, although the rate of increase is expected to slow during the remainder of the year

- ***U.S. private business investment*** does not improve as much as or more than expected; falling short of expectations is the more serious risk

  + Business investment declined sharply in the first quarter and is now expected to be negative for the entire year

- ***Oil price declines*** that occurred in 2015 trigger bankruptcies and cause tighter financial conditions with negative implications for economic activity and growth

  ? Early in the year it appeared that this risk would be realized; however, the rebound in the price of oil has delayed, perhaps prevented, realization of potential problems

- ***U.S. manufacturing growth*** contracts or expands more than expected; contraction is the more serious risk

  - Risk not realized

- ***U.S. trade deficit*** does not widen as expected

  + Deficit has declined slightly

- ***Value of the dollar*** rises substantially

  - Risk not realized; value of the dollar has declined since December

- ***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

- Risk not realized — increase in spending about as expected

- ***Federal budget deficit*** increases more than expected

  - Risk not realized — deficit slightly less than expected

- ***U.S. state and local spending*** does not rise as fast as expected

  - Risk not realized — spending rose faster than expected in the first quarter but growth is expected to slow over the remainder of 2016

- ***Global GDP growth*** does not rise as fast as expected

  + Risk realized

- ***European growth*** is considerably less than expected

  + Risk realized — modest reduction in forecast growth

- ***ECB's*** quantitative easing program is not successful in raising inflation and stimulating the European economy

  + Risk realized — inflation forecast is 0.0% for 2016; IMF estimates a 35% probability that Europe is headed to deflation

- ***Europe*** — financial market turmoil reemerges

  - Risk realized temporarily early in the year but calm has returned; ECB's monetary policy has been successful in maintaining financial market stability; bank stocks continue to perform poorly relative to other industries, reflecting continuing investor concerns about profitability and problem loans

- ***Europe*** — political instability and social unrest rises more than expected threatening survival of the Eurozone and the European Union

  + Risk realized — euroskeptic parties continue to gain ground and are forcing centrist parties to take policy positions that feed centrifugal forces eating away at the cohesion of the European Union

- ***Chinese*** leaders have difficulty implementing ***economic reforms***

  + Risk realized — reforms have been delayed in favor of economic stimulus implemented primarily through state-owned banks and the municipal bond market

- ***China's growth*** slows more than expected

  - Risk not realized — policy makers are pulling out all the stops to boost the growth rate; this will eventually backfire, but not during 2016

- ***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 — although recent data reports have had a modest upbeat tone, underlying conditions are slowly deteriorating and the popularity of the Abe government is eroding

- Severe and, of course, unexpected ***natural disasters*** occur, which negatively impact global growth

  ? Japan's Kyushu earthquakes may have negative consequences for the global economy, although no serious dislocations are yet evident

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