Our Perspectives:
Commentary on the economy & regulatory policies affecting financial companies

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The Longbrake Letter*

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I. Will Federal Reserve Monetary Policy Bring the U.S. Economic Expansion to a Premature End?

Expansion of economic activity in the U.S. in the current cycle began in July 2009 and is nearing the eight-year mark. While not yet the longest economic expansion – that honor belongs to the 9 $\frac{1}{2}$ year expansion in the 1990s – this expansion is showing increasing signs of maturity. As reflected by May's 4.3 percent unemployment rate, little or no slack remains in the labor market.

But, to be sure, expansions do not die simply of old age. They turn into recessions when the economy overheats and excesses and imbalances build up. Usually, excesses and imbalances are visible particularly with the benefit of hindsight, but on a real-time basis markets tend to underestimate the existence and severity of imbalances and thus when recession actually takes hold, most are surprised.

Today, there does not appear to be any single highly visible imbalance. However, when the economy is operating at full employment and the Federal Reserve is engaged in tightening monetary policy, the risks of slower growth and even recession begin to build. A traditionally reliable precursor of the turning point from expansion to recession is a tight monetary policy which results in a flat or inverted yield curve. Currently, if you accept the Federal Reserve's Summary of Economic Projections at face value, monetary policy is in the early stage of tightening. It projects that the federal funds rate will need to be raised from the current range of 1.00 to 1.25 percent to 3.00 to 3.25 percent over the next two and a half years.

But, the bond market yield curve indicates that only a little more monetary policy tightening is needed to a federal funds rate range of 1.50 to 1.75 percent. Rarely does one see such a large difference of opinion. Who is right? If the market is right and the Federal Reserve continues to tighten policy, recession will surely come sooner than later.

*The information contained in this newsletter does not constitute legal advice. This newsletter is intended for educational and informational purposes only.

In addition to monetary policy, there are several other risks — "yellow flags" — which are emerging in the U.S. economy and which should be monitored.

There is good reason to be concerned about the course of the Federal Reserve's current monetary policy in light of the potential consequences that have been unleashed by its unprecedented and extended manipulation of interest rates during its multi-year campaign to reflate an economy which was severely damaged by the financial crisis and ensuing Great Recession of 2007-09.

Prices guide decision making. That is true for both market-determined and administered prices. The risk, in the case of administered prices, is that an all-knowing expert is substituting its judgment for that of the market, which could result in an ongoing buildup in imbalances which continuation of the policy of administered prices prevents market forces from ameliorating. Such may well turn out to be the case for interest rates which the Federal Reserve intentionally depressed with the explicit intent to raise the values of financial assets and create a wealth effect that would help boost aggregate demand.

Now that the economy is operating close to full capacity, many are congratulating the Federal Reserve on the effectiveness of its monetary policy. But history may come to judge recent monetary policy more harshly just as Alan Greenspan's fame as "The Maestro" was badly tarnished by the Great Recession. Will it turn out, as some already argue, that the Federal Reserve's monetary policy promoted speculation in financial assets to the detriment of capital investment with the consequence that productivity and potential growth in real GDP have been depressed significantly? As the Federal Reserve now strives to "normalize" monetary policy, will uneconomic activities based upon zero interest rates and the suppression of risk surface and roil financial markets? Will history judge recent monetary policy as a significant factor in exacerbating income inequality with the attendant consequences of that trend for American culture, social cohesion and political probity?

For the time being, however, global economic acceleration is real and has momentum. The U.S. economy is likely to continue to benefit.

All-in-all, markets are positioned for good news, not for bad news. While the odds of significant bad news actually occurring are not extraordinarily high in the near term, when markets are positioned for perfection the risks of disappointment go up.

We may continue to muddle through as we have for the past several years — lackluster growth, but no cataclysmic events. The Federal Reserve may back off of its monetary tightening policy as the market appears to expect. But even if the muddle through trend continues, there is little substantive reason to expect that economic growth will improve much nor that troublesome and deep-seated social, cultural, and political issues will improve; indeed, the currently deteriorating political climate is worrisome.

II. "Yellow Flags" — Nascent Risks

In April's letter I summarized some "yellow flags" to watch for indications that the economy might be vulnerable to recession. I prefaced that summary with the observation that unlike the expansions that preceded the previous two recessions, there is no starkly obvious imbalance or bubble plaguing the U.S. economy that threatens imminent recession.

However, there are several trends that bear close watching. Some of the "yellow flags" have been building up over an extended time period while others have developed relatively recently. Economic trends typically develop slowly; thus little has happened over the past month to elevate recessionary concerns. The most likely path forward remains gradual growth over the next several quarters.

"Yellow flags" to watch include:

- Restructuring of retailing
- Robotics and artificial intelligence
- Consumer spending, particularly autos
- Consumer credit — auto loans and student debt
- Business and commercial real estate credit and corporate debt
- Monetary policy
- Stock market valuations
- Real inflation-adjusted company earnings
- Investment — the tightening spread between the return on capital and the cost of capital
- Weak commodity prices
- Federal, state and local tax receipts
- China stimulative economic policy and rapid grow of debt leverage

A few updates on some of these "yellow flags" follow.

Restructuring Retailing/Robotics. Amazon announced its intent to purchase Whole Foods for $13.4 billion in cash. This prompted Claire Cain Miller to fantasize: "*Imagine this scene from the future: You walk into a store and are greeted by name, by a computer with facial recognition that directs you to the items you need. You peruse a small area — no chance of getting lost or wasting time searching for things — because the store stocks only sample items. In the back, robots retrieve your items from a warehouse and deliver them to your home via driverless care or drone.*"[1]

Information management companies, such as Amazon, are on the cusp of combining big data on individuals with technology and robotics to eliminate many routine service jobs. According to a McKinsey Global Institute report, two-thirds of the tasks done by grocery store workers can be automated. Forrester forecasts that 25 percent of sales jobs could be automated within a year and 58 percent by 2020. This seems a little Pollyannaish, but is indicative of the possibilities that are emerging.

This kind of job restructuring is likely to have favorable impacts on productivity, but like the loss of manufacturing jobs may have longer term social, cultural and political consequences.

[1] Claire Miller Cain. "Amazon's Move Signals End of Line for Many Cashiers," The New York Times, June 17, 2017.

Consumer Spending. Retail sales were weak in May, but much of the weakness was concentrated in gasoline sales, which probably reflects the recent decline in oil prices. Auto sales continue to be weak and are linked to a slowdown in consumer credit growth. Excluding autos and gasoline, retail sales growth was in line with expectations.

Consumer Credit. Consumer credit expansion is slowing. It rose $8.2 billion April, about half of the expected level of $15.0 billion. Both revolving and non-revolving credit fell well short of expectations. One month's data, of course, does not constitute a trend. But, this slowdown bears close watching because if it continues, consumer spending will slow and slower economic activity will follow.

The Federal Reserve's first quarter Senior Loan Officer Opinion Survey indicated that a net -9.2 percent reported stronger consumer loan demand, which was the weakest level since 2010. Credit card demand declined from -8.3 percent in the fourth quarter to -10.2 percent in the first quarter; auto loan demand remained depressed at -13.3 percent. Weak demand for consumer credit is inconsistent with strong consumer confidence survey measures.

The New York Federal Reserve Bank's survey of Consumer Expectations Credit Access, covering February, showed an increase in involuntary credit account closures to 5.0 percent compared to 3.8 percent in the October 2016 survey. The percentage of involuntary account closures of households with FICO scores less than 680 increased to 14.8 percent in February compared to 9.6 percent in October.

The New York Federal Reserve Bank's report on Household Debt and Credit indicated growth in seriously delinquent credit card and auto loan delinquencies over the past two quarters.

Mortgage originations dropped to $491 billion in the first quarter from $617 billion in the fourth quarter of 2016, reflecting rising interest rates.

All-in-all various measures of consumer credit are telling a story of slowing demand for credit. Part of this story has to do with tighter credit standards, but part of the story has to do with a more general pullback in demand for credit. For example, according to the New York Federal Reserve Bank's report on Household Debt and Credit, applications for new credit cards have fallen by more than 15 percent since June 2016. Moreover, the decline in sales of new autos reflects to a substantial extent satiation of pent-up demand.

Business and Commercial Real Estate Credit. Business credit expansion was weak in 2016 but picked up sharply in the first quarter and the momentum has continued into the second quarter. Issuance is up and credit spreads have tightened. In a contrarian sense this is concerning particularly in light of the deterioration in debt service coverage ratios.

Commercial real estate prices have increased 76 percent in inflation-adjusted terms since 2009 and are now above levels that prevailed prior to the Great Recession. **GS**'s price model indicates that prices are moderately overvalued — apartments 13 percent overvalued, offices 11 percent overvalued and retail 7 percent overvalued. **GS** is not ready to hit the panic button and notes that overvaluations in the 10 to 15 percent range are not uncommon.

Mergers and acquisitions usually rise when the economy is strong. During the first quarter of 2017 M and A activity was 40 percent lower than the recent peak in the first quarter of 2015.

Monetary Policy. The Federal Open Market Committee (**FOMC**) raised the federal funds rate as expected. However, the **FOMC**'s proposed policy tightening pathway is far more draconian than the market expects, which poses the potential for damaging policy mistake in coming months.

Stock Market Valuations. Stock prices continue claw their way higher. However, favorable price action has been concentrated in a few large capitalization stocks. One analyst opines that when this happens it is a sign that investors are beginning to get nervous about small company balance sheets. If this is true it will be reflected in the widening of corporate Baa bond spreads. This has not yet occurred — Baa bond spreads are extremely tight and close to their theoretical lows. This is a "yellow flag" which bears watching.

Real Inflation-Adjusted Company Earnings. S&P 500 company earnings grew approximately 14.7 percent in the first quarter, much of which stemmed from the recovery of energy sector profits. This is the strongest growth since 2011. Presumably this development is a major factor in the stock market shrugging off political turmoil in Washington and clawing its way to an all-time high just prior to Memorial Day.

Will Denyer of GavekalResearch points out, however, that when earnings of the domestic nonfinancial corporate sector are adjusted for inflation, real profits have been declining since 2015.[2] S&P 500 earnings include profits from international activities and financial services companies, both of which Denyer omits from his measure of real profits. Denyer omits international earnings because they do not reflect the health of the US domestic economy. Earnings of financial services companies tend to be highly cyclical and are particularly sensitive to changes in monetary policy and, as such, are traditionally omitted from the measure of real domestic profits.

Denyer notes *"... that conventional accounting does not adjust for the rising cost of replacing capital, such as depreciating assets and inventories."* Denyer also adjusts "working capital" for inflation. When these adjustments are made to aggregate domestic nonfinancial company earnings, real earnings continue to decline. This decline is not yet signaling that recession is imminent, but the trend is consistent with an increasing risk of recession. Denyer believes this trend is likely to continue to develop especially since the prospects of significant fiscal stimulus and tax reform have diminished.

It should be noted, however, that not all analysts agree that prospects for fiscal stimulus and tax reform have diminished materially. Evercore ISI analysts believe there is an 80 percent probability that corporate tax reform will occur by the first quarter of 2018 and a 60 percent probability that reform will include individual tax cuts.

Spread Between the Return on Capital and the Cost of Capital. Will Denyer of GavekalResearch calculates three spreads between the return on capital and the cost of capital.

The return on investment capital is the same for all three measures and is calculated as operating earnings, less the cost of replenishing all invested capital at current costs, divided by invested capital at current cost. The current pre-tax rate is 4.6 percent and the after-tax rate is 3.5 percent. These rates are down from 6.5 percent (pre-tax) and 5.0 percent (after-tax) during the early stages of the recovery from the Great Recession.

Denyer calculates three different measures of the cost of capital — the long corporate bond real yield,

[2]Will Denyer. "Still No real Recovery in US Profits," GavekalResearch, May 29, 2017.

the long treasury bond real yield, and the federal funds real rate. The current spreads, which are shown in **Table 1**, are 2.5 percent, 3.6 percent, and 4.4 percent, respectively. These spreads peaked during this cycle at 4.8 percent, 6.0 percent and 7.5 percent, respectively.

Table 1
Spreads — Real Return on Invested Capital Minus Real Cost of Invested Capital

Spread	Current	Cycle Median	Peak	Pre-Recession
Long Corporate Bond	2.5%	3.1%	4.8%	1.4%
Long Treasury Bond	3.6%	4.7%	6.0%	3.3%
Federal Funds Rate	4.4%	5.9%	7.5%	4.3%

All three spreads have been declining and all three are now well below their cycle median levels. None of the spreads are yet signaling the risk of imminent recession, but the federal funds rate spread is very close and will probably dip into the red zone if the FOMC raises the federal funds rate by 25 basis points at its June meeting as the market expects. When a spread enters the red zone, it should be interpreted as signaling an elevated possibility of recession but not an absolute certainty that recession will occur.

Commodity Prices. Prices, particularly oil, have been surprisingly weak recently. The GS commodity price index is now down over 6 percent since the beginning of the year. In the case of oil, the price decline appears to be the result of too much supply. However, if demand is ebbing, as might be the case for some other commodities, this would be worrisome.

Federal and State and Local Tax Receipts. Federal tax revenues are tracking 3 percent behind **CBO**'s projections. CBO speculates that this may involve intentional deferral of income recognition in the hope that tax reform will lower tax rates. But, it could also reflect slowing economic activity. State and local tax revenues also are underperforming and state and local investment spending has declined modestly over the last year.

China. Chinese officials continue to pull out all the stops to guarantee strong GDP growth. So far this policy has been successful, but at the cost of escalating debt leverage. This is not sustainable indefinitely but probably difficulties can be avoided in the near term.

There are no glaring red flags visible yet, but plenty of yellow flags. There are also positive trends I have not enumerated. On balance, these vignettes are symptomatic of slowing growth in a mature economy.

III. Outlook for U.S. Real GDP

Analysts generally expect GDP growth to be a lot stronger during the remainder of 2017, even though the anticipated benefit of fiscal stimulus is now expected to be smaller and occur later because of the increasing negative impact of White House scandals on the Republican congressional legislative agenda.

1. Consumption

Personal consumption contributed 0.44 percent to first quarter real GDP growth compared to 2.40 percent in the fourth quarter. The paltry 0.44 percent makes little sense and is the artifact of timing and quarterly annualization. The four-quarter moving average trend is a more reliable indicator and it rose from 2.74 percent in the fourth quarter to 2.86 percent in the first quarter. The recent growth rate in consumption has been relatively stable in a range of 2.60 to 2.85 percent.

In the long run, growth in nominal disposable income and consumer saving preferences determine growth in nominal personal consumption. Nominal disposable income depends upon a lot of things but the most important ones are the level of employment and wage rates. Tepid growth in employment and lethargic growth in wage rates will result in slow growth in disposable income.

Forecasts of growth in real consumer spending are shown in **Table 2** and **Chart 1**. Real consumer spending increased 2.74 percent in 2016. This is not the final number as several more revisions will occur over the next few years.

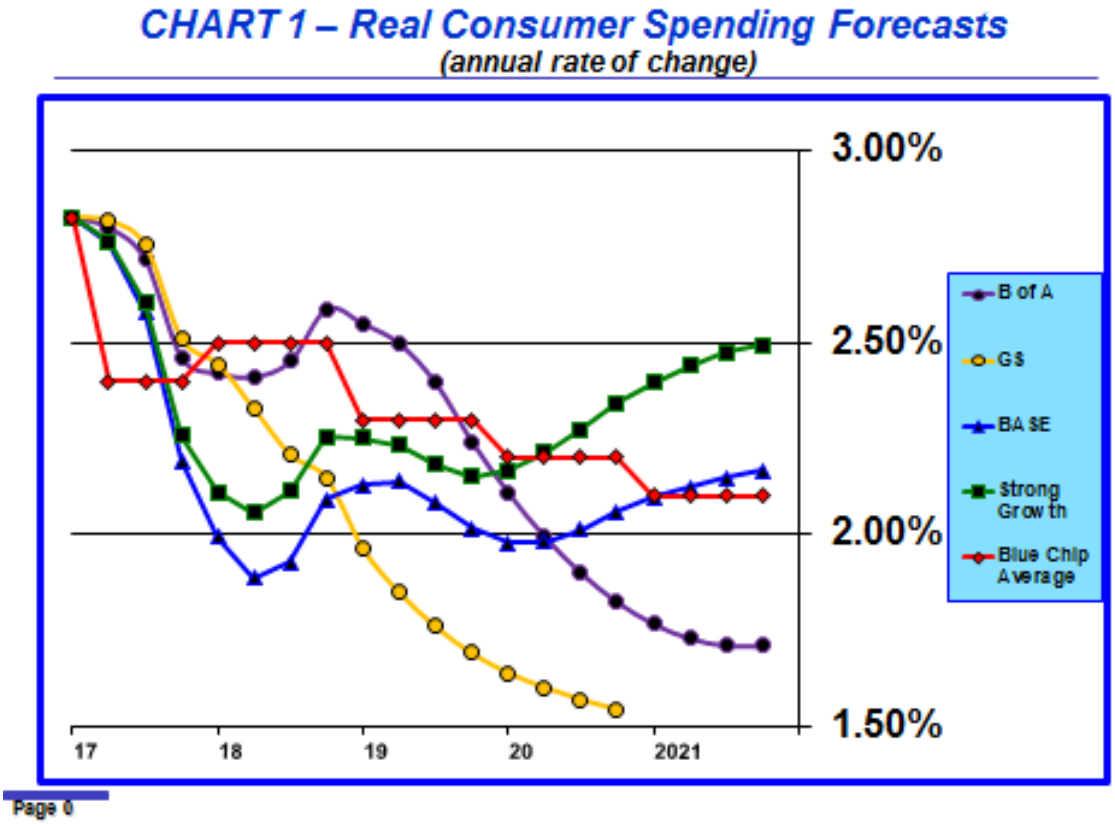
Table 2
Real Personal Consumption Growth Rate Forecasts

	2013	2014	2015	2016	2017	2018	2019	2020	2021
Actual	1.43	2.88	3.21	2.74					
B of A					2.46	2.59	2.24	1.82	1.71
GS					2.51	2.15	1.69	1.55	
Global Insight					2.50	3.20	3.00	2.60	2.50
Economy.com					2.50	2.80	2.20		
Blue Chip					2.40	2.50	2.30	2.20	2.10
Bill's BASE					2.19	2.09	2.02	2.06	2.16
Bill's Strong Growth					2.26	2.25	2.15	2.34	2.49

Now that the economy is at full employment, employment growth is set to slow to match underlying demographic dynamics. This is why all forecasters expect real consumer spending growth to slow in coming years.

This is the general pattern apparent in the data in **Table 2** and **Chart 1**. Growth in wages (disposable income) might moderate the forecast decline in consumer spending growth, but only if the growth rate in real wages (disposable income) increases. That would require productivity to improve from its recent very low level. That would be a welcome result, but is not at all assured.

Although all forecasters agree that consumer spending growth will slow, there are differences in my expectations for spending growth in 2017 compared to other forecasters. My 2017 forecasts, shown in the "**BASE**" and "**Strong Employment**" scenarios, are 20 to 30 basis points below the forecasts of others. Beyond 2017, my forecasts of spending growth are very stable in the "**BASE**" scenario and rise gradually in the "**Strong Employment**" scenario; **GS** is very pessimistic and expects a substantial decline in consumer spending growth; the same is the case to a somewhat lesser extent for **B of A** after 2019. Although **GS**'s and **B of A**'s long-term pessimism on real consumer spending growth may turn out to be good forecasts, their estimates seem inconsistent with their assumptions about growth in employment and wage rates over the next few years.



With the exception of **GS**, all forecasters appear to be excessively optimistic about real consumer spending growth in 2018. Global Insight's excessive optimism persists beyond 2018, perhaps because it actually believes that the Trump administration's 3 percent real GDP growth assumption is actually attainable. All of this points out the speculative nature of much of economic forecasting and weaknesses inherent in most econometric models.

2. Investment

Real private investment consists of three principal categories — business investment, which is labeled "nonresidential" in the National Income Accounts, residential investment, and changes in inventories. While changes in inventories are volatile from quarter to quarter, over the very long run the growth rate in inventories generally tracks growth in business and residential investment.

Table 3 shows growth rates for real private investment and separately for two of its three principal components — nonresidential (business) and residential investment. Residential investment is 20 percent of total investment, nonresidential investment is 77 percent, and growth in inventories accounts for approximately 3 percent.

Table 3 Real Private Investment (Residential and Nonresidential) Growth Rate Forecasts
*Average 1999-2017; **Real private investment = 1.59% for 1999-2017

Nonresidential investment (business) growth was crushed in 2015 and 2016 by the collapse in oil

Table 3
Spreads — Real Return on Invested Capital Minus Real Cost of Invested Capital

	2013	2014	2015	2016	2017	2018	2019	2020	Ave. 1947-2017
REAL PRIVATE INVESTMENT									
Actual	5.02	5.54	3.90	0.57					**3.74****
B of A					4.82	4.76	4.52	3.41	
GS					4.17	2.67	2.86	2.56	
Bill's BASE					4.09	2.17	2.27	2.20	
Bill's Strong Growth					4.48	3.03	3.03	3.03	
REAL NONRESIDENTIAL (BUSINESS) INVESTMENT									
Actual	3.50	6.04	2.07	-0.53					**2.45***
B of A					4.67	4.69	4.48	3.41	
GS					4.16	2.75	2.74	2.43	
REAL RESIDENTIAL INVESTMENT									
Actual	11.88	3.49	11.70	4.86					**-0.07***
B of A					5.35	5.04	4.67	3.41	
GS					4.20	2.39	3.29	3.03	

*Average 1999-2017;
**Real private investment = 1.59% for 1999-2017

prices. But investment was down in other sectors as well. As a result, investment growth was a weak, but still positive, 0.57 percent in 2016.

Nonresidential investment came out of deep slumber in the first quarter of 2017, soaring at an annual rate of 11.4 percent. A recovery in energy investment accounted for about half of the increase. Other sectors contributed as well. In addition, the acceleration in global growth had a favorable impact on nonresidential investment growth.

Forecasters expect **real private investment** growth to be strong and above the long-term trend for all of 2017 due to the recovery of investment in energy, stronger global growth and the possible benefit of tax reform and tax cuts. Although **GS** expects growth in nonresidential investment to be 4.2 percent for all of 2017, its capital expenditures tracker registered about 6.0 percent in June. In addition to a continuation of the first quarter's momentum, **GS** expects easier financial conditions and stronger domestic demand, as implied by purchasing manager surveys, to make 2017 a good year. This might prove to be too optimistic based on declining auto demand, somewhat tighter credit access, and the declining spread between return on capital and cost of capital. Generally, in recent years, analyst forecasts of growth in business investment have proved to be optimistic.

Following 2017 and over the next several years **GS** expects **business investment** (**nonresidential investment)** to match trend growth of 2.45 percent that has prevailed over the last 19 years, while **B of A** expects growth to be above trend for 2017-2019 before falling slightly below trend in 2020. I have been consistently skeptical in the past about what I felt were overly optimistic forecasts and that skepticism has been merited. **GS**'s forecasts are now more consistent with my view. I continue to expect that investment growth will remain near the average of the past 19 years, even if Congress enacts public infrastructure investment stimulus legislation.

B of A is especially optimistic about the outlook for business investment to accelerate in 2018 and 2019 because it expects corporate profits to accelerate, credit conditions to remain benign and uncertainty to diminish. A potential weakness in **B of A**'s business investment model is the possibility of cumulative negative effects over time of low interest rates and depressed innovation, as reflected in a slower rate of new business formation. Also, because firms are operating at less than full capacity, the incentive to invest is dampened.

Now that the labor market has reached, of perhaps exceeded, full employment, one theory is that companies will increase capital investments to offset rising wage rates. There does appear to be some evidence which corroborates this expectation. Evercore ISI conducts a semi-annual survey of capital expenditures and hiring plans. In its most recent survey, conducted between May 15 and June 7, Evercore ISI found that a net of 30 percent of Chief Financial Officers plan to increase capital expenditures in 2017 compared to 9 percent in the November 2016 survey. In addition, **GS**'s capital expenditures tracker has strengthened over the last year. It attributes this primarily to the general improvement in domestic and international growth momentum over the past year.

Of course, plans do not necessarily translate into actual expenditures. Other considerations matter. Two important considerations are wages and existing capacity utilization.

GS's research indicates that a 1 percent increase in wage growth boosts growth in capital expenditures by 0.5 percent.[3] This is a relatively small amount and wages have risen far less than 1 percent. Capacity utilization, as measured by the Federal Reserve, was 76.6 percent in May, which is well below the 80.0 percent level traditionally considered to be an indication of tight capacity utilization. It should be noted, however, that Tan Kai Xian of GavekalResearch, believes the Federal Reserve's measure understates the actual utilization rate.[4] He cites an alternative measure constructed by the Institute for Supply Management, which indicates capacity utilization is running above 80 percent. This measure is based on asking survey respondents to indicate their current operating rate compared to their "normal" capacity level. Tan Kai Xian also cites falling real corporate profits, in contrast to rising S&P nominal profits, as further evidence that the U.S. is operating above full capacity in both the labor and capital markets. But, assuming that this analysis is valid, it does not imply necessarily that capital expenditures will increase. If expected returns on new capital expenditures relative to the cost of capital are insufficient, companies will not make those investments, regardless of the tightness of capacity.

Housing — Real residential investment growth was very strong in 2015. Growth in 2016 slowed considerably but remained well above the long-term trend. Housing inventories are lean and demand is relatively strong, resulting in upward pressure on housing prices. However, outsized housing price increases that are exceeding growth in wages and nominal disposable income will eventually dampen single-family residential demand and inventories should improve with the consequence that residential investment growth should slow in coming years. Generally, forecasts reflect this scenario, although trend growth is expected to exceed that of overall real GDP growth.

Housing starts are still historically low relative to family formation rates. The trend rate in housing starts should be about 1.4 million. But, starts were 1.18 million in 2016, up 6.3 percent from 1.11 million in 2015. Housing starts averaged 1.19 million in the first five months of 2017, which was only 1.3 percent

[3]David Mericle and Ben Snider. "Will a Tighter labor Market Boost Capex?" US Daily, Goldman Sachs Economics Research, June 8, 2017.

[4]Tan Kai Xian. "Mind The (Output) Gap," GavekalRearch, June 13, 2017.

above the pace of the first five months of 2016.

Starts are expected to rise only modestly in 2017 and will still be below 1.4 million. **B of A** lowered its forecast recently and now expects housing starts will be only 1.20 million in 2017 and 1.30 million in 2018 because of lower than expected activity in multifamily housing construction.

According to B of A, the shortfall in housing starts relative to the level implied by demographics and historical trends in household formation can be traced to high levels of student debt, tighter credit standards, including higher down payment requirements, which many have difficulty meeting, and lifestyle changes among Millennials including delays in marriage and having children. The consequence is that Millennials have much lower homeownership rates, a phenomenon that seems likely to persist. This is depressing single family construction.

On the supply side, the number of homebuilders declined substantially during the Great Recession and has not recovered. Credit standards remain tight for construction loans and this is reducing the extent of speculative building. The Federal Reserve's Senior Loan Officer quarterly survey indicates that a net 32.4 percent of lenders have tightened access to residential single-family construction credit and a net 36.1 percent have tightened access to multi-family construction loans.

Thus, even though housing demand is depressed relative to demographics and historical trends in household formation, supply is also depressed with the overall consequence that housing inventory is very lean. In response, average housing prices have been rising faster than growth in nominal incomes. All else equal, this creates a feedback loop which depresses demand.

Housing prices were up 5.9 percent (Case-Shiller) in March over the prior year; the Federal Housing Finance Agency's purchase only housing price index was up 6.0% in the first quarter of 2017 compared to the first quarter of 2016. These increases are above the 3.8 percent growth in aggregate nominal disposable income and 3.2 percent growth in per capita nominal disposable income. This differential is eroding affordability and, thus, is not sustainable over the long run. Any increase in mortgage rates will simply make matters worse.

In summary, although residential investment grew very rapidly in the first quarter, higher housing prices and somewhat higher mortgage interest rates should limit investment growth going forward. I would place greater confidence in **GS**'s conservative forecast relative to **B of A**'s more optimistic forecast.

3. Government Investment

Government investment subtracted 0.20 percent from first quarter real GDP growth (see **Table 2**). Federal government spending subtracted 0.14 percent and state and local spending subtracted 0.06 percent.

Growth in government spending has slowed steadily in recent quarters. Government investment contributed a very modest 0.32 percent to GDP growth in 2015 and 0.14 percent in 2016.

Table 4 shows recent growth rates in government spending and forecasts for 2017-2020.

GS expects government investment spending to be close to zero in 2017 and **B of A** expects growth to be negative. My optimism is predicated on additional federal infrastructure spending, which increasingly

Table 4
Federal and State and Local Investment Spending Growth Rates

	2013	2014	2015	2016	2017	2018	2019	2020
Federal	-5.82	-2.54	0.00	0.59				
State and Local	-0.81	0.23	2.92	0.94				
Total Government	-2.86	-0.86	1.79	0.81				
GS Federal					-0.12	1.14	1.06	1.04
GS State and Local					0.19	1.93	2.30	2.09
GS Total					0.07	1.62	1.86	1.69
B of A Total					-0.39	0.38		
BASE					0.44	3.56	2.22	0.75
Strong Employment					0.44	3.56	2.22	0.75

is unlikely to occur prior to 2018 and might not occur even then. The spending growth estimates in **Table 4** for the "**BASE**" and "**Strong Growth**" scenarios reflect a front-loading of a $450 billion ten-year infrastructure investment program assumed to begin in late 2017. However, a specific proposal does not yet exist. I also assume that infrastructure spending reaches a peak level in 2018 and this boosts government investment growth. Thereafter, however, while infrastructure spending remains elevated, annual percentage increases decline and actually fall below the long-run trend level. My assumptions should now be considered to be optimistic. Government infrastructure spending legislation is unlikely to occur this year and the chances for later enactment have diminished. The Trump administration's conceptual proposal is for $300 million in additional federal spending to be combined with a somewhat greater amount of private investment spending for a total of $1 billion over ten years. Thus, my optimistic 2017 and 2018 government investment growth forecasts will probably not come to pass.

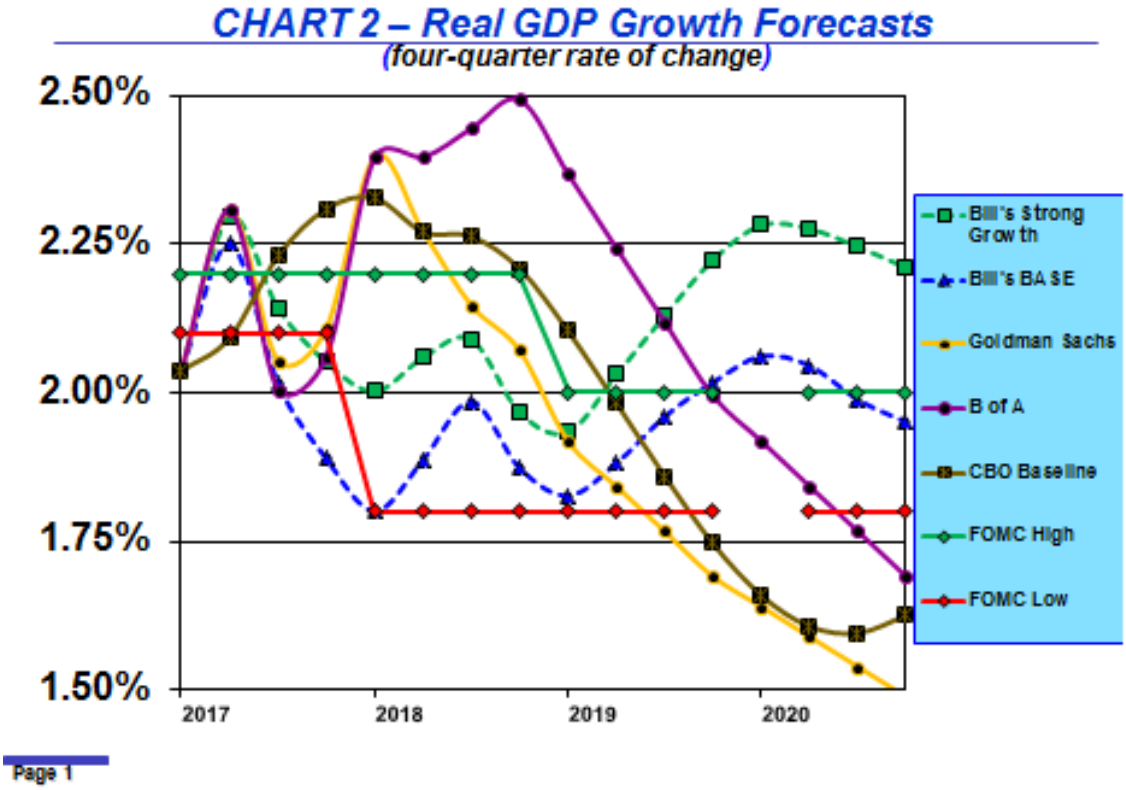
4. Second Quarter 2017 GDP Forecast

Forecasters expect second quarter real GDP growth will be stronger than the first quarter's weak 1.15 percent growth. **GS** is forecasting 2.5 percent growth in the second quarter and **B of A** is currently forecasting 2.2 percent growth. A rebound in the second quarter following the weak first quarter is likely because of the large negative impact of inventories and because consumer spending was unrealistically low in the first quarter report. **GS** is forecasting 3.3 percent consumption growth and **B of A** is forecasting 3.0 percent consumption growth in the second quarter. These forecasts imply that consumer spending will contribute 2.05 to 2.25 percent to real GDP growth in the second quarter. Getting from there to second quarter real GDP growth of 2.2 percent to 2.5 percent shouldn't be too hard.

Also, the negative impact of inventory accumulation will likely flip to a positive contribution, although **GS** currently expect the contribution of inventory accumulation to second quarter real GDP growth to be negative. All inventory accumulation has to do is exceed $4.3 billion — its quarterly trend level is $37 billion. Inventory accumulation is notoriously difficult to forecast. **B of A** expects inventories to grow $14.3 billion in the second quarter, which would add about 0.3 percent to GDP growth. However, **GS** expects inventories to decrease $5.0 billion in the second quarter, which would decrease GDP growth.

5. Longer-Term Real GDP Forecasts

Chart 2 shows quarterly real GDP growth projections from the second quarter of 2017 to the fourth quarter of 2020. **Table 5** includes annual real GDP growth for 2013-16 and forecasts for 2017 to 2020. Generally, forecasts are tightly clustered in 2017. My "**BASE**" and "**Strong Growth**" forecasts are at the lower end of the range in 2018, but move to the higher end of the range by 2020.



My "**BASE**" scenario is on the lower end of the spectrum in 2018 because of lower assumed employment and productivity growth. **CBO**'s forecasts, based upon its January update, are now generally similar to other forecasts in 2017 but, with the exception of **GS**'s forecasts, are somewhat more pessimistic in 2019 and 2020. The **FOMC**'s high and low estimates during the 2017-2019 periods reflect no improvement in growth and generally track expectations of other forecasters.

IV. U.S. Employment Developments

May's increase in payroll employment was 138,000. This was weaker than the consensus expectation of 170,000. In addition, payroll growth for March and April was revised down by 66,000. This brought average monthly payroll gains for the first five months of 2017 down to a still relatively strong 162,000.

However, the unemployment rate declined to 4.29 percent, which is well below **CBO**'s full employment estimate of 4.74 percent. Thus, monthly payroll employment gains are likely to converge to the underlying

Table 5
Real GDP Growth Forecasts
(***year-over-year average***)

	2013	2014	2015	2016	2017	2018	2019	2020
Actual	1.68	2.37	2.60	1.62				
B of A					2.10	2.43	2.18	1.80
GS					2.13	2.22	1.80	1.56
Global Insight					2.20	2.70	2.40	2.20
Economy.com					2.20	2.60	2.10	
Blue Chip Average					2.10	2.40	2.10	2.00
CBO					2.28	2.01	1.71	1.54
FOMC High*					2.20	2.20	2.00	
FOMC Low*					2.10	1.80	1.80	
Bill's BASE					2.06	1.89	1.92	2.01
Bill's Strong Growth					2.13	2.03	2.08	2.25

*Q4 to Q4 — FOMC year-over-year 2017 equivalent is a range of approximately 2.10 to 2.20 percent, which is in line with other 2017 forecasts

natural rate of growth in the labor force in coming months, which currently is in a range of 70,000 to 80,000. If monthly growth well above the natural rate continues over the next several months, the labor market will overheat and the **FOMC** will continue to raise the federal funds rate at a faster than expected pace with the intent to prevent an upside breakout in inflation. The policy statement and action of the **FOMC** at its June meeting reflect exactly this concern. However, financial markets do not appear to share this concern as inflation continues to fall short of the **FOMC**'s 2.0 percent target.

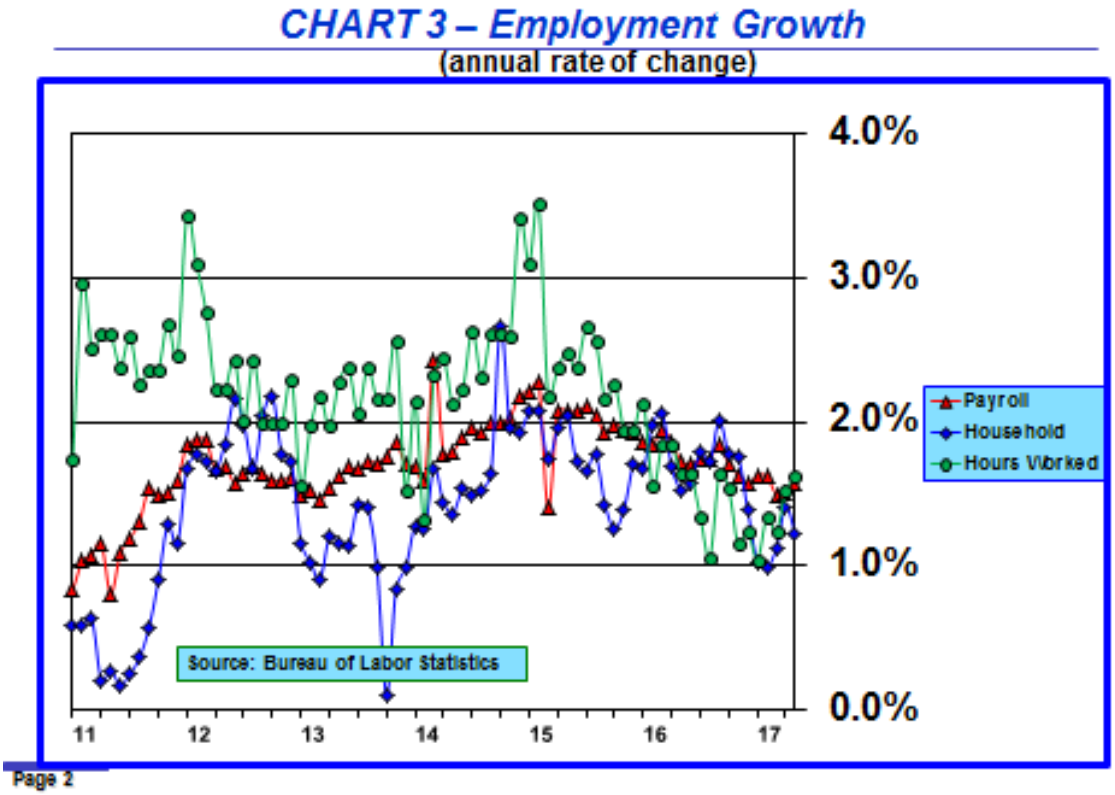
1. Employment Growth

As can be seen in **Chart 3**, the trend in the 12-month rate of growth in payroll employment has slowed gradually from the cyclical peak of 2.27 percent in February 2015 to 1.58 percent in May 2017. Payroll employment growth averaged 226,000 in 2015, 187,000 in 2016 and 162,000 over the first five months of 2017.

Household employment growth averaged 209,200 in 2015, 173,400 in 2016, and just 25,400 over the first five months of 2017. Household employment has grown at a slower annual rate of 1.22 percent over the past 12 months compared to payroll employment growth of 1.58 percent.

Growth in total hours worked by all employees has been slowing as well. The 12-month moving average length of the work week for all employees has shortened from 34.53 hours at the beginning of 2016 to 34.37 hours in May. The 12-month growth rate in total hours worked by all employees was 1.62 percent over the past 12 months, compared to 1.24 percent in 2016, 1.94 percent in 2015 and 3.42 percent in 2014.

Chart 3 shows the three measures of employment growth — payroll employment, household employment, and total hours worked. Probably the most important thing to notice in **Chart 3** is the choppy downward trend in employment growth. This is indicative of a maturing labor market. All three measures are in a tight range between 1.2 and 1.6 percent currently.



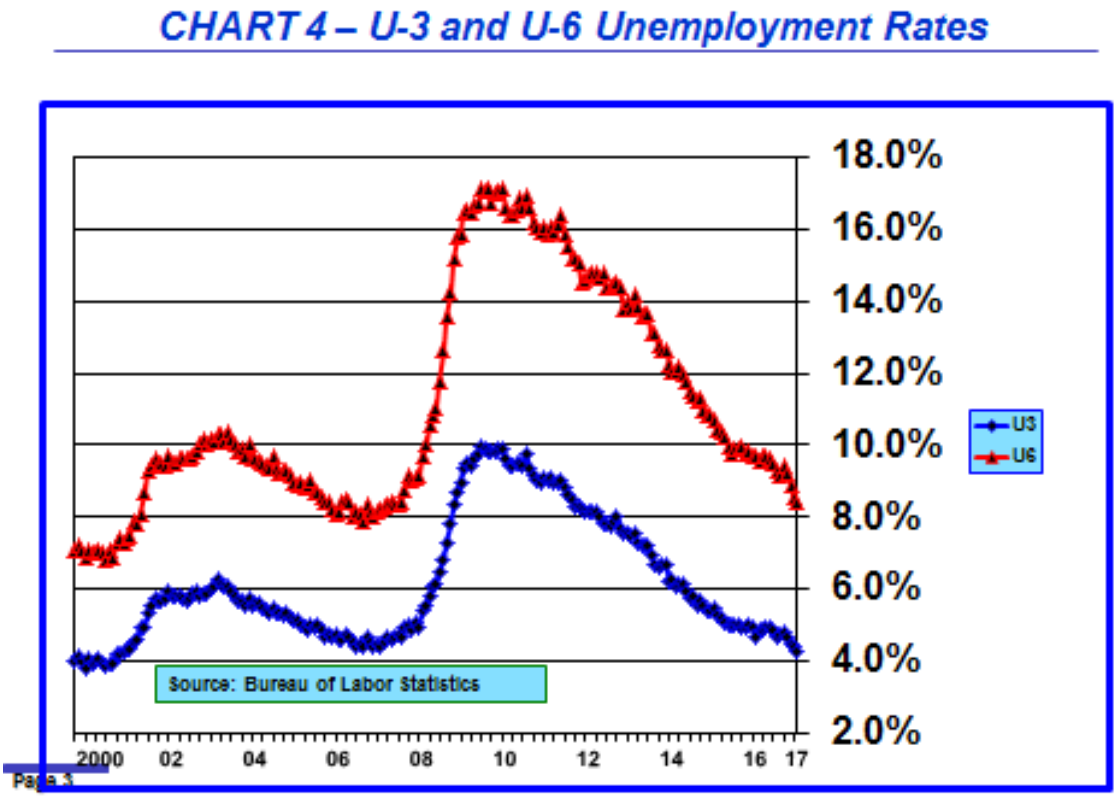
2. Employment Participation

Employment participation had been declining until about a year ago, reflecting demographic shifts and an increase in discouraged workers exiting the labor force due to poor job prospects during and following the Great Recession. The downward trend in participation driven by changing demographics should continue to reduce participation by about 0.15 percent annually over the next ten years. 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 62.39 percent in September 2015 to 62.71 percent in May 2017 is suggestive evidence that many discouraged workers have reentered the labor market in the last few months as jobs have become more abundant. If that were not the case, the participation ratio should have fallen to about 62.14. This is a swing of approximately 900,000 workers many of whom were probably discouraged but have now reentered the labor.

3. Measures of Unemployment Reflect a Labor Market That Is At Full-Employment

As can be seen in **Chart 4**, the U-3 unemployment rate has fallen to 4.29 percent and has now fallen below the minimum level reached prior to the Great Recession. The May U-3 unemployment rate was considerably below **CBO**'s full employment (NAIRU) estimate of 4.74 percent.

The U-6 measure of unemployment, which adds those working part time who would prefer full-time



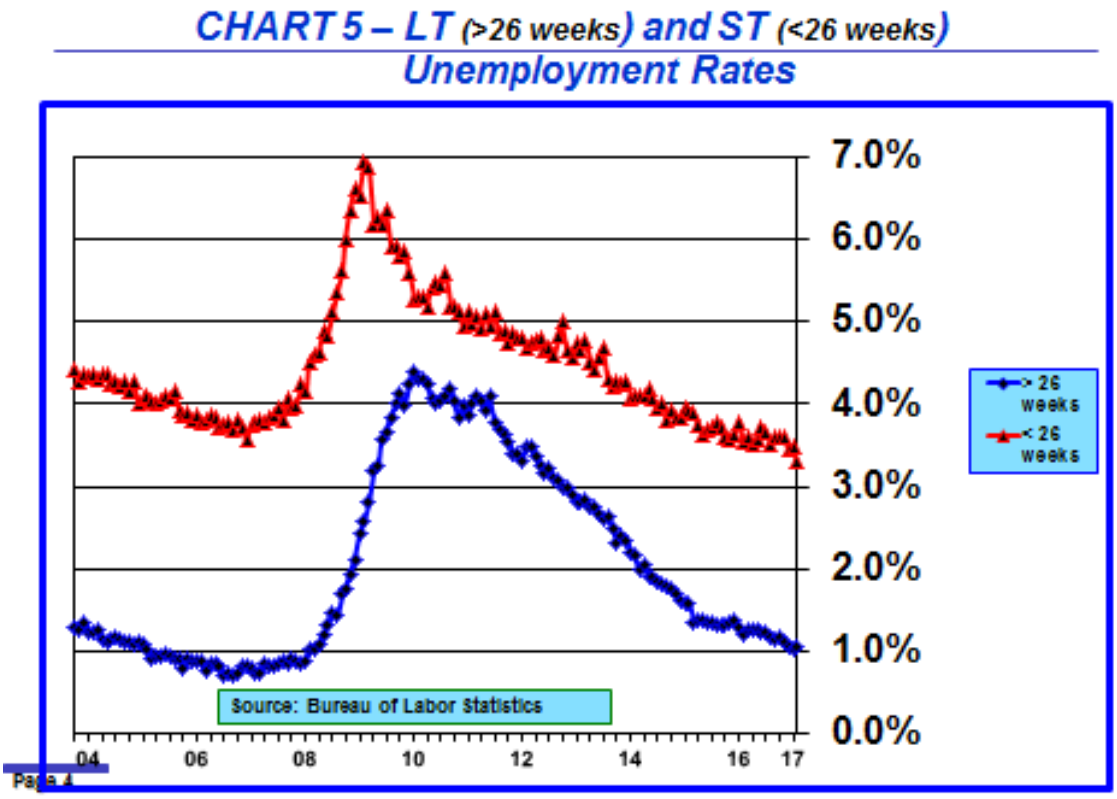
employment and those marginally attached to the labor force to the U-3 measure, has fallen to 8.41 percent and is approximately 0.25 percent above the pre-Great Recession low reached in early 2007. The U-6 measure of unemployment fell 149 basis points over the past 17 months compared to a decline of 72 basis points in the U-3 measure, which underscores an improving labor market that is now at or perhaps a bit above full employment.

Long-term and short-term unemployment rates are also indicators of labor market tightness and are shown in **Chart 5**. The short-term unemployment rate has now penetrated the minimum level reached prior to the Great Recession. The long-term unemployment rate has declined from over 4 percent in the aftermath of the Great Recession to 1.04 percent in May. It is still about 0.25 percent above the minimum level reached in 2006 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 current U-3 unemployment rate is 45 basis points below **CBO**'s full-employment estimate of the non-accelerating inflation rate of unemployment (NAIRU).

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** is now crafting 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. Recent indications of stronger economic growth both domestically and globally have emboldened the **FOMC** to "normalize" monetary policy more rapidly.

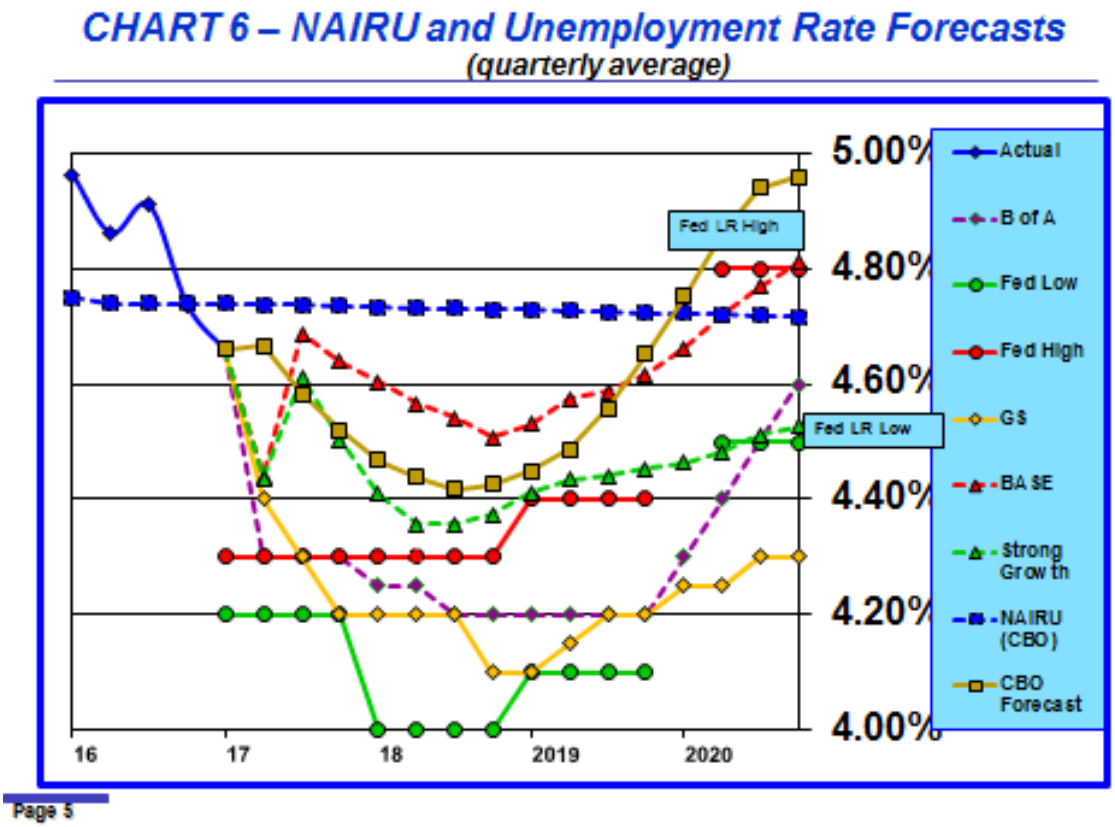
Chart 6 shows U-3 unemployment rate forecasts for **B of A**, **GS, FOMC** high and low range, and my "**BASE**" and "**Strong Growth**" scenarios. **CBO**'s estimate of NAIRU is also shown in **Chart 6**. Reflecting the recent more rapid decline in the unemployment rate than expected, **B of A**, **GS** and the **FOMC** have all lowered their unemployment rate forecasts.

Most forecasts project the unemployment rate to stay below NAIRU over the next three years. **GS** and **B of A** are the most optimistic and anticipate that the unemployment rate will fall to 4.1 to 4.2 percent by 2018. The unemployment rate falls to 4.51 percent in my **"BASE"** scenario by 2018 and to 4.36 percent in my "**Strong Growth**" scenario.

During 2019 **GS**'s forecast unemployment rate moves from 4.1 percent to match **B of A**'s 4.2 percent forecast. My "**BASE**" scenario rises to 4.62 percent and my "**Strong Growth**' scenario edges up to 4.45 percent.

After 2019 all forecasts, including the **FOMC**'s long-run projected range, move upwards gradually. **CBO** also expects the unemployment rate to begin rising in 2019 and by 2020 its forecast exceeds its estimate of NAIRU.

Forecasts for **B of A** and **GS** are now within the high and low bounds of the **FOMC**'s revised forecast



range during 2017, 2018 and 2019. My "**BASE**" scenario is consistent with **CBO**'s projections, but both now fall above the **FOMC**'s high projections.

Increasingly, it appears that structural changes in the labor market may have lowered NAIRU to a greater extent than indicated by **CBO**'s estimates. This possibility in discussed in the following section. If NAIRU indeed is lower, then **CBO** will probably lower its estimates in upcoming benchmark revisions due to be released in August. The implication of a lower NAIRU is straightforward — the labor market is not quite as tight as believed. To the extent that this turns out to be the case there will be less upward pressure on inflation and the **FOMC** could slow the rate at which the federal funds rate is normalized. While financial markets seem inclined toward this view, the **FOMC** remains on a course to raise the federal funds rate much more than financial markets currently expect.

5. Wage Growth Is Accelerating As the Labor Market Tightens

Now that the labor market has reached and perhaps exceed 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. The data indicate this is occurring but to a more limited extent than past experience implies.

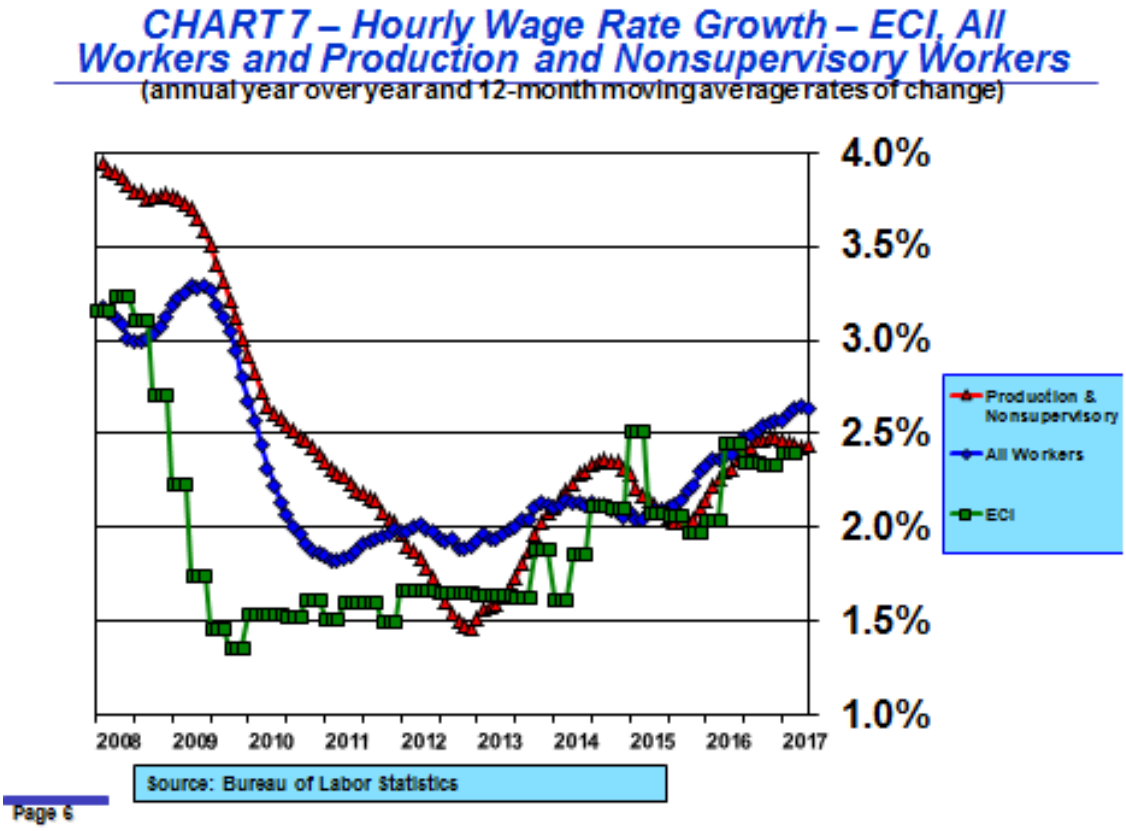
Historically, there is considerable inertia in wage adjustments which results in a slow rise in average wages even after the labor market has reached or exceeded full employment. Inertia may be greater in this

cycle than previously for a number of reasons. First, collective bargaining power provided by unions on the behalf of labor continues to decline as a catalyst for higher wages. Second, because wage increases might not have slowed as much as they could have during the extended period of labor market slack, there is less need to increase wages as much now that the labor market has tightened. On the other hand, however, some of the historical inertia appears to have been offset as many states and local governments have raised minimum wage floors over the past two years.

Forecasts of wage rate increases generally have been higher than have actually materialized.

There are three primary broad-based measures of labor compensation that provide information about compensation trends. All are compiled by the Bureau of Labor Statistics (**BLS**). One is released monthly as part of the monthly labor situation report and includes both hourly and weekly wage rates for all employees and separately for production and nonsupervisory 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 wages and salaries, benefits, and total compensation indices (see **Chart 7**). A third measure is also released quarterly as part of **BLS**'s report on output, total hours worked, and productivity.

Chart 7 shows the rate of growth in hourly wages for all workers, production and nonsupervisory workers, and ECI (total wages and salaries). All three sets of measures in **Chart 7** track each other closely over time. All three measures have been rising gradually over the past six quarters.



Although these 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. Average hourly wages (12-month moving average) of all employees are rising 2.64 percent annually over the past 12 months compared to 2.39 percent a year ago. Average hourly wages (12-month moving average) of production and nonsupervisory workers are rising 2.44 percent annually compared to 2.32 percent a year ago. ECI growth in wages and salaries has risen from 2.05 percent in the first quarter of 2016 to 2.41 percent in the first quarter of 2017.

To a certain extent, focusing only on hourly wages is a bit misleading. Growth in average weekly earnings for all employees, which factors in the length of the workweek and thus incorporates changes in the mix of full and part-time employees, has been a little slower than growth in hourly wages, rising from 2.17 percent in May 2016 to 2.39 percent in May 2017(see **Chart 8**). This outcome reflects a modestly shorter average number of hours worked per week, which could be due to a greater proportion of part-time workers as well as fewer hours for other employees, offset by growth in the hourly wage rate.

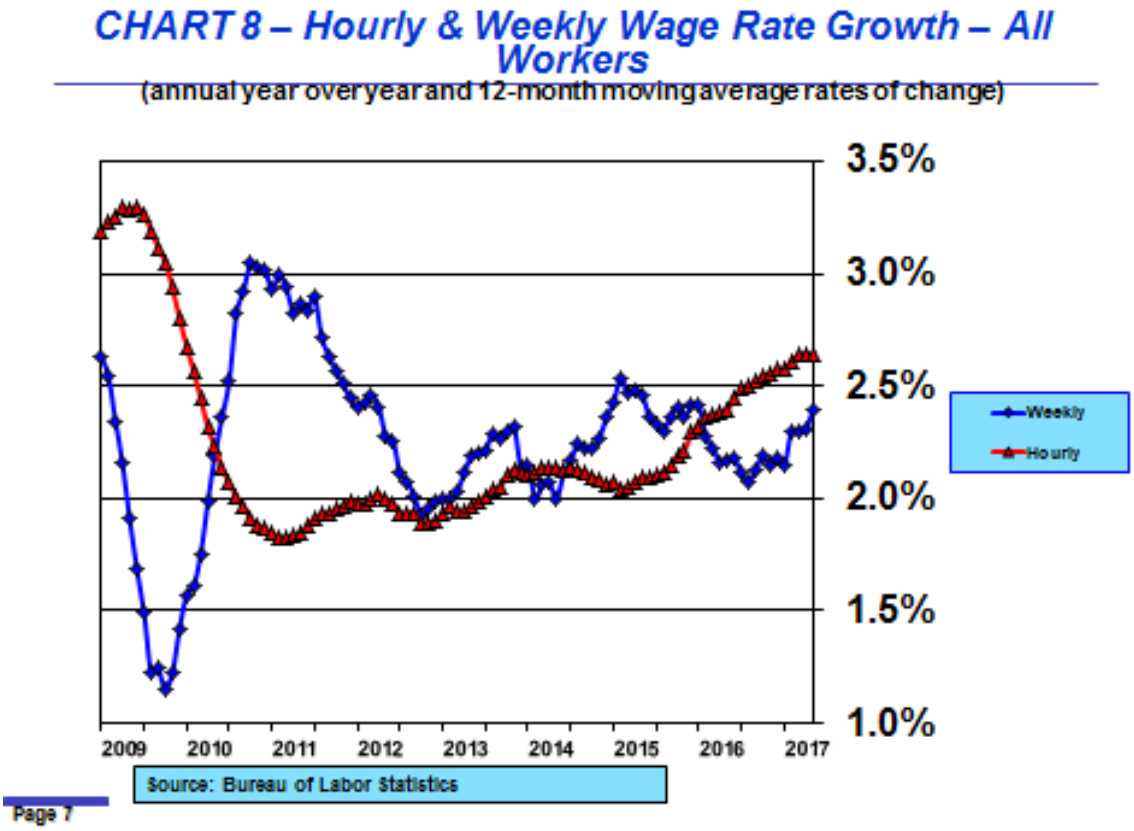
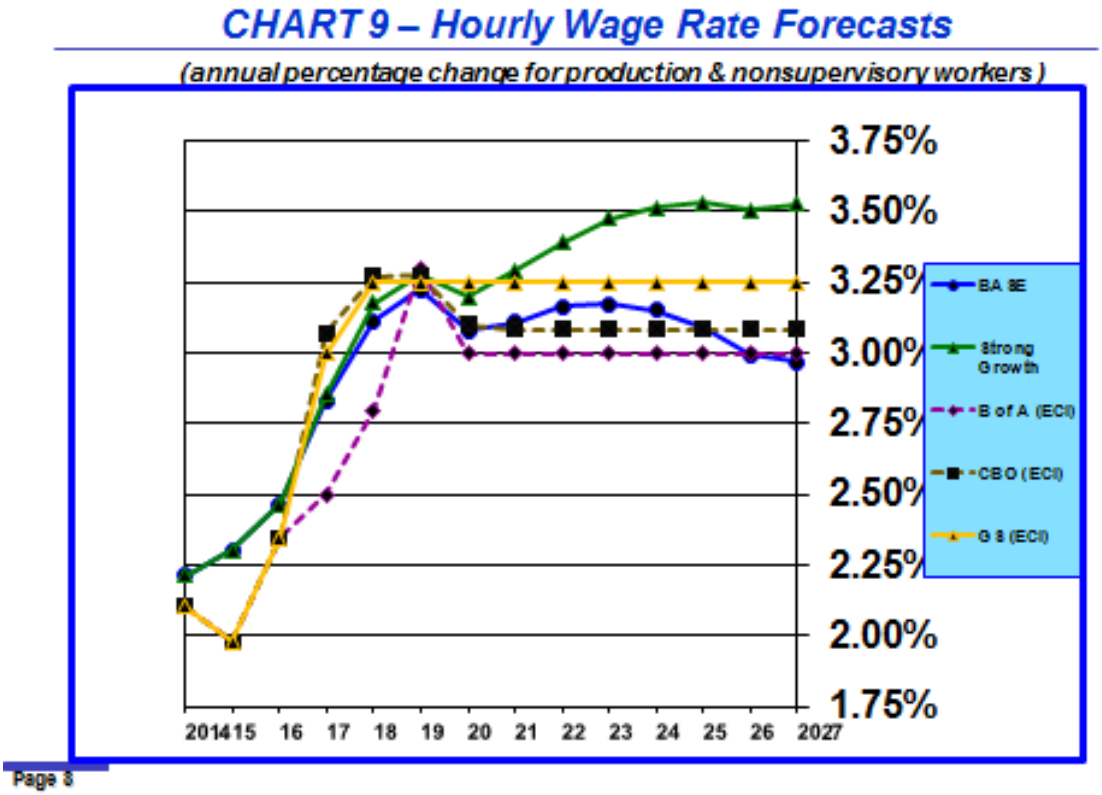


Chart 9 shows my projections for wage growth for production and nonsupervisory workers over the next ten years and **CBO**'s, **GS**'s and **B of A**'s projections for growth in the wages and salaries component of ECI for all workers.

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 at every point in time. **GS**'s ECI wage growth forecast rises to 3.25 percent by 2018 and remains at that level thereafter. **B of A**'s ECI forecast rises to 3.3 percent in 2019 but then recedes to 3.0 percent. **CBO**'s ECI forecast rises to 3.3 percent in 2018 but then slows to 3.1 percent by 2020.



Wage growth for production and nonsupervisory workers rises at about the same rate as **CBO**'s and **GS**'s projections in my "**BASE**" and "**Strong Growth**" scenarios, reaching 3.16-3.27 percent in 2019. Thereafter wage growth in my "**BASE**" scenario is stable and tracks CBO's projections closely and is not much different from **B of A**'s projections. Wages continue to rise gradually in my "**Strong Growth**" scenario to 3.55 percent by 2027, reflecting the impacts of faster employment growth and lower short-term and long-term unemployment rates.

GS's wage tracker registered 2.7 percent in the first quarter of 2017, about 50 basis points short of its long-run expected 3.25 percent annual rate of increase. **GS**'s 3.25 percent level assumes full employment, 2.0 percent inflation, and 1.25 percent annual productivity increases (nonfarm productivity increases would be higher as the measure of productivity **GS** cites does not cover the entire economy). The current weakness in wage growth results from inflation and productivity below their expected long-run values. In other words, the historical forces determining wage rate growth have not changed. The upward adjustment in wage rate growth is consistent with historical precedent and levels of the key determinants — inflation, productivity, and labor market slack.

GS corroborates this conclusion by demonstrating that low unemployment metropolitan statistical areas have experienced faster wage growth acceleration in recent months than high unemployment areas.

Tan Kai Xian of GavekalResearch suggests, however, that there may be other reasons for the absence of significant wage pressures, including demographic shifts, changing labor force participation, and increasing

automation.[5]

First, job hopping has undergone a secular decline due to the aging of the labor force. Statistically, younger workers change jobs more frequently than older workers. Thus, as the workforce ages, job turnover will decline and that means that at any point in time frictional unemployment between jobs will be lower. The takeaway is that the natural rate of unemployment (NAIRU) will be lower. Practically speaking, this could mean that **CBO**'s current estimate of NAIRU as 4.74 percent is too high. To the extent this might be true, there is a good chance **CBO** will reduce its NAIRU estimates when it publishes updated estimates in August.

Second, the uptick in the participation rate indicates that discouraged workers are reentering the labor force. This hidden labor supply is temporarily retarding upward pressures on wages. This factor is likely, however, to run its course in the near future.

Third, Tan Kai Xian argues that low cost automation will hold wages down. This argument applies primarily to lower skills jobs. Recently, however, wages have been rising more rapidly in these job categories, perhaps supported by increases in minimum wages enacted by many states and communities over the past two years. Thus, to the extent that automation becomes a factor in slowing growth in wages, this may well be more of a factor in the future than it is currently.

6. Factors Affecting Wage Rate Growth

Wage growth has been slower to recover than employment. Forecasters have repeatedly been forced to push forecast wage increases forward in time.

B of A cites four reasons that wage growth has lagged in the current labor market recovery.

1. **Nominal Wage Rate Rigidity.** The argument is that wages are sticky and did not fall as much as they should have when unemployment was high. Thus, as in the early stages of labor market recovery pressures to raise wages were minimal.

2. **The "Silver Tsunami".** Because of the aging of the Baby Boom generation a greater proportion of the work force consisted of highly paid older workers who are now retiring. Their replacements were younger, lower paid workers.

3. **Industrial Composition.** A very large portion of the 16.4 million new jobs created since the labor market bottomed in December 2009 has been in service sectors with low wages. This compositional effect has dragged down the average wage rate for all workers.

4. **Characteristics of the Employed vs Non-employed.** Employed workers receive more job offers at better wages and higher benefits than unemployed workers. Research indicates that starting wages for those who have been unemployed are 30 percent lower than those who are employed and are simply changing jobs. This matters because of the much larger number of long-term unemployed persons following the Great Recession.

[5]Tan Kai Xian. "Behind Weak US Wage Growth," GavekalResearch, May 9, 2017.

To these reasons, **GS** adds another. Job recovery has been slower in rural areas and so, too, has been wage growth. Geographic mobility has declined, which in the past was a means of redistributing workers from excess supply regions to excess demand locales.

Models for forecasting nominal wage growth typically include inflation, productivity, and the unemployment rate as variables. Over time, to preserve real purchasing power, nominal wages should rise and fall in tandem with the rate of inflation. Productivity is included as a variable because labor should receive a portion of productivity gains in the form of higher nominal wage increases. The inclusion of the unemployment rate is simply a way of measuring the effect of the gap between the supply of labor and the demand for labor on nominal wage rates.

However, in my view the U-3 unemployment rate is an oversimplification of the complexity of labor market dynamics that influence nominal wage rates. Accordingly, I include three labor market variables in my model of nominal wage rate growth in place of the U-3 unemployment rate. Two involve different ways of measuring the supply and demand relationships. The two measures do a better job of teasing out oscillations in nominal wage rates over the cycle than using the U-3 rate alone.

Two of the three employment measures involve splitting the U-3 rate into two components: the short-term unemployment rate, defined as those unemployed for 26 weeks or less; and the long-term unemployment rate, defined as those unemployed for more than 26 weeks. The sum of these two variables equals the U-3 unemployment rate. However, it turns out that the coefficients of these two variables and the lag times are very different. The third labor variable is the growth rate in total hours worked. This variable is a proxy for the strength of economic growth over the cycle and over time. It is positively correlated with nominal wage rate growth — the faster hours worked rises, the faster nominal wage rates rise.

Table 6 shows the coefficients and average lags in number of months for the variables which explain variations in the rate of nominal wage rate growth for production and nonsupervisory employees.

Table 6
Coefficients and Average Lags (in months) for Variables That Explain Variations in the Rate of Nominal Wage Rate Growth for Production and Nonsupervisory Employees and Forecasts for 2017 (Short-Term) and 2021-27 (Long-Term)

Variable	Coefficient	Lag (months)	2017 Forecast	2021-27 PCE Inf.	2017 PCE Inflation = 2.0%	2021-27 PCE Inflation = 2.0%
Constant	.067		6.74%	6.74%		
Inflation	.417	8.3	.68%	.63%	.83%	.83%
Productivity	.120	57.1	.05%	.17%		
Short-Term Unemp. Rate	-1.217	36.2	-5.04%	-4.48%		
Long-Term Unemp. Rate	-.291	59.3	-.96%	-.32%		
Employment Growth Rate	.566	18.5	1.24%	.36%		
TOTAL			2.70%	3.10%	2.85%	3.30%

PCE Core Inflation — A 1 percent increase in core PCE inflation raises the rate of growth in nominal wages by 41.7 basis points. 63.7 percent of the lagged adjustment occurs between months 4 and 12 and the remainder occurs between months 13 and 18. Wages respond with a short lag to changes in inflation. However, it is also possible that a feedback loop will kick in such that an increase in wages will lead to a further increase in inflation. This is a cost-push feedback loop which can become embedded in automatic

cost-of-living contractual price wage adjustments. In recent years such automatic increases have become less prevalent. **GS,** based on statistical analysis, found that inflation persistency has declined over time and also that inflation expectations have become more important.[6] The impact of these structural changes has been to anchor inflation and this, in turn, has been accompanied by a decrease in the volatility of changes in wage rates.

Productivity — A 1 percent increase in nonfarm business productivity raises the rate of growth in nominal wages by 12.0 basis points. This is a rather small impact, which implies that labor does not benefit much from improvements in productivity. What impact there is does not occur until after 48 months have elapsed.

Short-Term Unemployment Rate — A 1 percent increase in the short-term unemployment rate decreases the rate of growth in nominal wages by 121.7 basis points. This is a rather substantial impact but it does not occur immediately. There is no impact for 24 months; the entire impact occurs between months 25-48.

Long-Term Unemployment Rate — A 1 percent increase in the long-term unemployment rate decreases the rate of growth in nominal wages by 29.1 basis points. This is a relatively small impact which does not impact wage growth for 48 months. The entire impact occurs between months 49 and 72.

It is natural to expect the lagged impact on wages to take longer for long-term unemployment than for short-term unemployment. During a recession it takes a while for long-term unemployment to develop and build. Importantly, however, following the Great Recession, long-term unemployment rose to a very high level and persisted for a long time. When the labor market is at full employment, the long-term unemployment rate is less than 1 percent (it averaged about 0.8 percent in 2006 and 2007). Following the Great Recession, the long-term unemployment rate peaked over 4.0 percent in late 2010, fully 18 months after the end of the recession. The short-term unemployment rate peaked in mid-2009 coincident with the end of the Great Recession and had declined by nearly 2 percentage points by the time the long-term unemployment rate peaked. In the two years following its peak the long-term unemployment declined only to 3.0 percent. Since 2013 the long-term rate has continued to fall gradually and is currently approximately 1.0 percent, which is about 0.2 percent above the 2006-2007 level (see **Chart 5**).

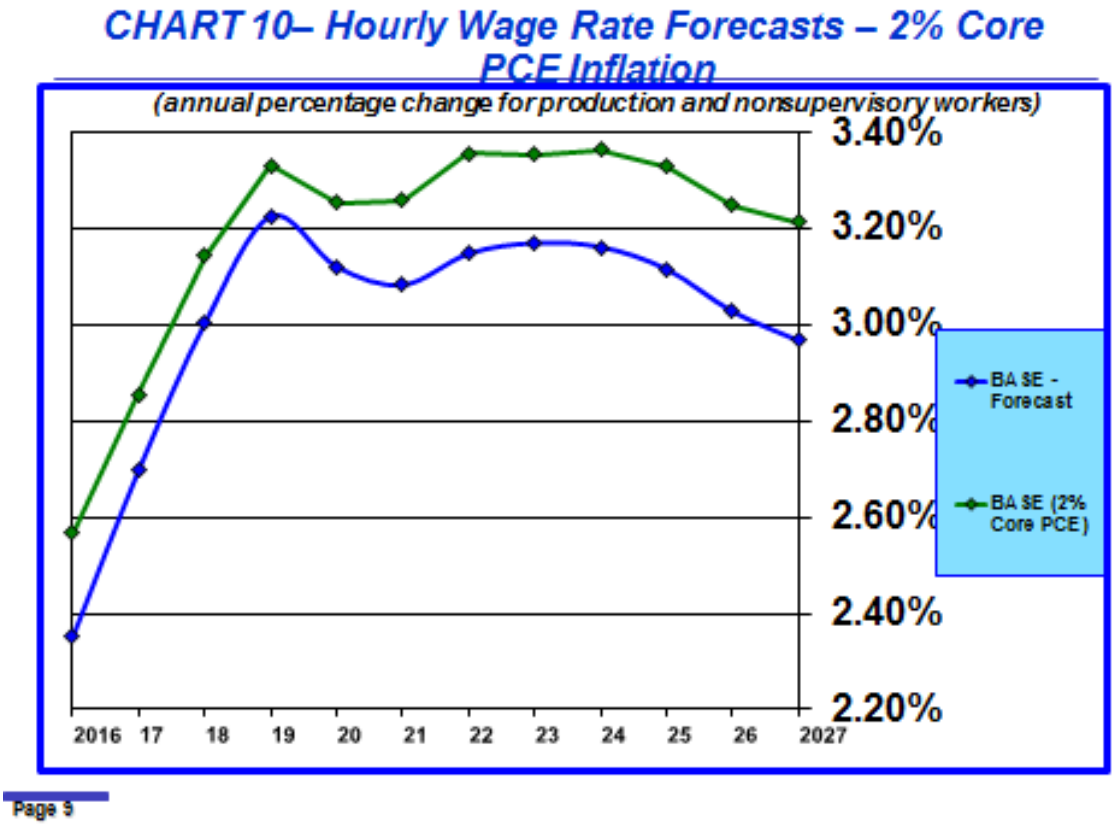
Growth Rate in Total Hours Worked — The effect of this variable on the rate of growth in nominal wages is nonlinear. This means that the effect of a 1 percent change in the rate of growth in total hours worked on wage growth will vary with the starting point for the growth rate in total hours worked. On average a 1 percent change in the growth rate of total hours worked raises the rate of growth in nominal wages by 56.6 basis points. The impact is spread out over time: 42.0 percent occurs in the first year, 32.4 percent occurs in the second year, 11.2 percent occurs in the third year, and 14.4 percent occurs in the fourth through sixth years. The nonlinear effect manifests itself in an escalating impact on wage growth as employment growth rises and a diminishing impact as employment growth falls. For example, a 1 percent increase in the rate of growth in total hours worked from1 percent to 2 percent results in an increase in wage growth of 63.4 basis points. However, a fall in the growth rate of total hours worked from -1 percent to -2 percent decreases wage growth by only 36.3 basis points. Thus, wage growth is downwardly sticky in a soft labor market.

[6] Sven Jeri Stehn. "The Missing Reflation," Global Economics Analysts, Goldman Sachs Economics Research, June 16, 2017.

Because this variable primarily captures the cyclical effect of labor growth, it needs to be interpreted in conjunction with the short-term and long-term unemployment rates. But there is also a secular trend element embedded in this variable. Thus, as labor growth slows in coming years, there will be less upside pressure on wage rates. Some might argue that this is counter-intuitive because slower labor growth could increase the scarcity value of a smaller labor pool. Although the model does not address this possibility directly, the inclusion of both the short-term and long-term unemployment rates should control for labor scarcity.

7. Impact of 2 Percent Inflation on Nominal Wage Growth Rate

Chart 10 shows the two nominal wage rate growth curves — one for my core PCE inflation rate and an alternative one in which core PCE inflation is assumed to be constant at the FOMC's target of 2.0 percent.



Because my forecast of core PCE inflation averages less than 2.0 percent, my forecasts for nominal wage growth rate average 20 basis points less in the "**BASE**" scenario — about an average annual rate of increase of 3.10 percent between 2021 and 2027 compared to 3.30 percent if inflation averages 2.0 percent. Both alternatives fall between **B of A**'s long-term 3.0 percent rate of increase and **GS**'s 3.25 percent rate of increase.

V. Monetary Policy

John C. Williams, president of the San Francisco Federal Reserve Bank, said in a recent speech said "*With an economy at full employment, inflation nearing the Fed's 2 percent goal, and the expansion now in its eighth year, the data have spoken and the message is clear: We've largely attained the hard-sought recovery we've been after for the past nine years. In light of this achievement, we need to shift the conversation from* ***'how do we achieve a sustained recovery?'*** *to* ***'how do we sustain the recovery we've achieved?***"'[7]

In a more recent speech Williams asserted that "*The U.S. economy has fully recovered from the global financial crisis and the ensuing recession.*"[8] With respect to risk, cited the possibility that the economy might overheat "... *which could undermine the sustainability of the expansion.*" However, an offsetting risk is moving too aggressively. "... in achieving sustainable growth, it is better to close in on the target carefully and avoid substantial overshooting." These are balanced words and Williams emphasizes the importance of "... *gradually raising interest rates to bring monetary policy back to normal ....*" However, as I comment below, Williams view of "gradual" may well result in overshooting, if the market's view of appropriate monetary policy turns out to be more correct.

Williams, while celebrating the success of monetary policy in restoring aggregate demand, laments the dismal annual rate of growth in potential real GDP, which he believes to be 1.6 percent. Low prospective employment growth of 0.5 percent annually and anemic productivity of 1.1 percent (the equivalent of approximately 1.4 percent annual rate of increase in nonfarm productivity) are to blame. He asserts that monetary policy cannot influence these supply-side fundamentals. That is a task for fiscal policy. While Williams is optimistic about the economy having reached full employment, he is decidedly among the most pessimistic FOMC members when it comes to projecting the trend rate of growth in potential real GDP. His estimate of 1.6 percent is below the lower bound of the FOMC's central tendency range of 1.8 to 2.0 percent.

Donald Trump's election and his proposed tax reform, infrastructure and regulatory simplification policies initially buoyed markets and prompted soaring consumer and business optimism. But as time has passed the market's optimism about enactment of significant fiscal legislation in 2017 has plunged from 70 to 30 percent. The reality is that fiscal policy changes are complicated and typically generate enormous political controversy. For those reasons fiscal legislation often takes a long time to pass Congress. After enactment there are implementation delays. And, following implementation it takes time for the fiscal policy changes to impact real economic activity. This is especially true for infrastructure spending. However, if "animal spirits" are kindled in anticipation of policy changes, business decisions can impact economic activity well before changes in fiscal policy become effective. Although this seemed to be a possibility in early 2017, subsequent events have undermined the potential benefits of the surge in optimism.

The Federal Reserve's May Beige Book, which summarizes anecdotal economic information on a regional basis, was a bit weaker than the April report — too districts, New York and Chicago, downgraded economic activity and none upgraded.

[7] John C. Williams. "From Sustained Recovery to Sustainable Growth: What a Difference Four Years Makes," Remarks to The Forecasters Club, New York, New York, March 29, 2017.

[8] John C. Williams. "Risk, Resilience and Sustainable Growth: U.S. Monetary Policy in a Post-Recovery Era," Remarks to the Symposium on Asian Banking and Finance, May 29, 2017.

1. Economic Activity

In the June statement, the **FOMC** was cautiously optimistic in its assessment of overall economic activity, which *"...has been rising moderately so far this year."* With respect to business investment the **FOMC** said: "... *business fixed has continued to expand.*" Somewhat surprising in light of weak first quarter consumer spending and a flat May retail sales report released the same morning as the **FOMC** met was the statement that *"... household spending has picked up in recent months."* In light of the **FOMC**'s decision to raise the federal funds rate and its Summary of Economic Projections which anticipates several more rate increases in coming quarters and which is contrary to the markets own assessment, these assessments were viewed as somewhat "hawkish."

Table 7 shows the **FOMC**'s central tendency projections for real GDP growth for 2017, 2018, and 2019, as well as the long-term potential real rate of GDP growth. The bottom end of the range in GDP growth projections for 2017 was raised 0.1 percent to 2.1 percent. Given the lackluster 1.2 percent growth in the first quarter, this tiny bit of optimism implies that **FOMC** members expect the economy to grow at a 2.5 percent clip over the remainder of 2017. Members shaved the top end of 2018's range by 0.1 percent to 2.2 percent. What stands out in **Table 7** is the steady decline in projected long-run growth; however, **FOMC** projections have stabilized in the last year in an anemic range of 1.8 to 2.2 percent.

Table 7
Economic Projections of Real GDP (Q4/Q4) By Federal Reserve Board Members and Federal Reserve Bank Presidents, June 2017

Real GDP %		Central Tendency						
		2014	2015	2016	2017	2018	2019	Long Run
Q4/Q4	Actual	2.49	1.88	1.96				
Y/Y	Actual	2.37	2.60	1.62				
2017	June				2.1 - 2.2	1.8 - 2.2	1.8 - 2.0	1.8 - 2.0
	Mar				2.0 - 2.2	1.8 - 2.3	1.8 - 2.0	1.8 - 2.0
2016	Dec			1.8 - 1.9	1.9 - 2.3	1.8 - 2.2	1.8 - 2.0	1.8 - 2.0
	Sep			1.7 - 1.9	1.9 - 2.2	1.8 - 2.1	1.7 - 2.0	1.7 - 2.0
	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

2. Employment

Most believe the labor market has reached and perhaps has even exceeded full employment. The U-3 unemployment rate in May was 4.3 percent, which was more than 0.4 percent *below* **CBO**'s estimate of NAIRU (non-accelerating inflation rate of unemployment). The **FOMC**'s assessment of the labor market was positive. While it refrained from commenting about whether the labor market has achieved full employment, it said *"... the labor market has continued to strengthen"* and *"[j]ob gains have moderated but have been solid, on average since the beginning of the year, and the unemployment rate has declined."* In the outlook paragraph, the **FOMC** added that *"... labor market conditions will strengthen somewhat further."*

FOMC projections of the U-3 unemployment rate are shown in **Table 8**. The more rapid than expected decline in the U-3 unemployment rate in recent months forced **FOMC** members to slash their unemployment rate projections by 0.3 percent in 2017, 2018 and 2019. Importantly, **FOMC** members also reduced the range for the long-term unemployment rate, which is presumably the **FOMC**'s version of NAIRU, by 0.2 percent to 4.5 to 4.8 percent. **CBO**'s long run estimate of NAIRU is 4.7 percent, which is now closer to the top end of the **FOMC**'s range. There is a strong likelihood that **CBO** will reduce its estimate of NAIRU when it updates its economic projections in August. By lowering the long-run range for the unemployment rate, the **FOMC** is indicating that while the labor market is tight, it is not necessarily overheated to an excessive degree. Its policy statement and Summary of Economic Projections indicate that the U-3 unemployment rate could fall as much as 0.3 percent further before stabilizing.

If the U-3 unemployment rate, which is the simple measure used in the Taylor Rule to assess what the level of the federal funds rate should be, were the only relevant employment policy measure, the **FOMC**'s task to proceed aggressively 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.

While the **FOMC** overestimated expected real GDP growth for many years until recently, it simultaneously underestimated the decline in the unemployment rate. While these forecasting misses would seem at first blush to be inconsistent, with the benefit of hindsight there have been 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 in previous economic recoveries, 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 which have not repeated as expected.

3. Inflation

In its June statement, the **FOMC** factually reported inflation developments: "*On a 12-month basis, inflation has declined recently and, like the measure excluding food and energy prices, is running somewhat below 2 percent. Market-based measures of inflation compensation remain low; survey-based measures of longer-term inflation expectations are little changed on balance.*" In fact, market-based measures of inflation compensation have been declining and survey-based measures are moderately lower than a year.

In the outlook paragraph of the policy statement the FOMC opined that: "*Inflation on a 12-month basis*

Table 8
Economic Projections of Unemployment Rate by Federal Reserve Board Members And Federal Reserve Bank Presidents, June 2017

Unemp. Rate %		Central Tendency						
		2014	2015	2016	2017	2018	2019	Longer Run
Actual	5.58%	5.02%	4.72%					
2017	June				4.2 - 4.3	4.0 - 4.3	4.1 - 4.4	4.5 - 4.8
	Mar				4.5 - 4.6	4.3 - 4.6	4.3 - 4.7	4.7 - 5.0
2016	Dec			4.7 - 4.8	4.5 - 4.6	4.3 - 4.7	4.3 - 4.8	4.7 - 5.0
	Sep			4.7 - 4.9	4.5 - 4.7	4.4 - 4.7	4.4 - 4.8	4.7 - 5.0
	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

is expected to remain somewhat below 2 percent in the near term but to stabilize around the Committee's 2 percent objective over the medium term. . . . the Committee is monitoring inflation developments closely."

As can be seen in **Table 9**, the **FOMC** reduced the projected range for inflation in 2017 from 1.8 to 2.0 percent to 1.6 to 1.7 percent. There was also a 0.1 percent reduction in the bottom end of the projection range for 2018 but no change in the range for 2019. a slight upgrading of the **FOMC**'s inflation projections in 2017, but no change in 2018 and 2019. The **FOMC** has dropped the phrase "stabilize around 2 percent" and replaced it with the terminology "symmetric," which is intended to convey that its 2.0 percent target is not a ceiling but an average over the cycle. While the term "symmetric" has a certain logic to it, the FOMC has not conducted policy in the past on this basis and does not appear inclined to do so currently. During the press conference following the FOMC meeting, Chair Yellen was dismissive of the recent decline in the inflation rate as an artifact of temporary technical adjustments and transitory one-off developments. These are explanations we have heard before, yet core inflation has remained consistently below 2.0 percent. Perhaps now that the economy is at full employment inflation will finally rise to 2.0 percent. However, not all of the recent decline in core inflation can be blamed on transitory and technical factors. Prices for goods remain under considerable pressure and shelter inflation, which had been somewhat elevated because of tight housing supply, now appears to be ebbing. My own statistical analysis indicates that inflation is likely to remain below 2.0 percent for an extended period of time.

Table 9
Economic Projections of Inflation By Federal Reserve Board Members And Federal Reserve Bank Presidents, June 2017

Variable		Central Tendency						
		2014	2015	2016	2017	2018	2019	Long Run
		0.9	**0.6**	**1.6**				
PCE Inf. %	*June*				*1.6 - 1.7*	*1.8 - 2.0*	*2.0 - 2.1*	*2.0*
2017	Mar				1.8 - 2.0	1.9 - 2.0	2.0 - 2.1	2.0
2016	Dec			1.5	1.7 - 2.0	1.9 - 2.0	2.0 - 2.1	2.0
	Sep			1.2 - 1.4	1.7 - 1.9	1.8 - 2.0	1.9 - 2.0	2.0
	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*	***1.5***	***1.4***	***1.7***	***1.6 - 1.7***	***1.8 - 2.0***	***2.0 - 2.1***	***2.0***
2017	Mar				1.8 - 1.9	1.9 - 2.0	2.0 - 2.1	2.0
2016	Dec			1.7 - 1.8	1.8 - 1.9	1.9 - 2.0	2.0	2.0
	Sep			1.6 - 1.8	1.7 - 1.9	1.9 - 2.0	2.0	2.0
	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					

4. Reducing the Size of the Fed's Balance Sheet

Following much market speculation, the **FOMC** published updated "Normalization Principles" for reducing the size of the Federal Reserve's balance sheet. No starting date was announced. However, most

market participants expect the **FOMC** to initiate runoff at the September **FOMC** meeting and wait until December to implement the next increase in the federal funds rate. This timing is reinforced by sentiment that the FOMC will want to be well on its way on implementing balance sheet reduction prior to the end of Janet Yellen's term as chair at the end of January 2018.

FOMC guidelines indicate that runoff will focus entirely on not replacing entirely maturing principal. Also the FOMC specified initial caps on the amounts of maturing principal that will not be replaced - $6 billion monthly for Treasuries and $4 billion monthly for mortgage backed securities (MBS). These caps would increase quarterly and after 12 months these would reach $30 billion for Treasuries and $20 billion for MBS. **B of A** estimates that the balance sheet would shrink by $30 billion in 2017, $391 billion in 2018, $459 billion in 2019, $345 billion in 2020 and $324 billion in 2021. **GS** assumes runoff will be slightly less and will be completed toward the end of 2020. **GS** expects an overall reduction of $1.1 trillion to $3.3 trillion. **B of A** is projecting a reduction of $1.55 trillion.

No start date was specified in the guidelines, thus the speculation about a September start. Also, no eventual "optimal" size of the Federal Reserve's balance sheet was mentioned.

There are two views about the impact of balance sheet reductions on interest rates. The market supply view is that rates will go up as the private sector is forced to absorb more Treasuries and MBS. This is the reverse effect of lowering rates which large scale asset purchases during the quantitative easing policy was intended to achieve. The other view is that the market will view balance sheet shrinkage as a monetary tightening move with the expected consequence growth will slow and inflation will fall, with the consequence that interest rates would fall. We likely won't know the tradeoffs between these two views until long after shrinkage has ended and economists have had time to conduct sophisticated econometric analyses.

While it's hard to pin down the ongoing impact of the Fed's large balance sheet on the economy and the dollar, by some estimates the ten-year Treasury term premium is depressed by between 50 and 100 basis points. Specifically, the ten-year term premium is 68 basis points below the average level that prevailed between 2005 and 2008; the term premium for mortgage backed securities is also depressed by 45 basis points currently compared to the earlier period. A word of caution about these comparisons is in order, however. Since the natural rate of interest has declined over the past ten years, a somewhat lower term premium would be a possible related development.

In any event, the argument is that normalization of monetary policy and longer-term interest rates should involve shrinking the size of the Fed's balance sheet. Otherwise, long-term interest rates will remain artificially depressed below the level consistent with a neutral monetary policy.

Federal Reserve research suggests that the depressed ten-year term premium would rise about 15 basis points annually as the Fed's portfolio of securities ages and average maturities decline and as non-replacement of amortizing and maturing securities occurs. Such a passive policy would take four to five years to eliminate the depressed term premium. It follows that that time frame could be shortened by selling securities prior to maturity.

In summary, normalizing monetary policy involves both adjusting the federal funds rate and reducing the size of the Fed's balance sheet. Both will eventually tighten financial conditions, slow economic activity, and reduce inflationary pressures. However, the impacts of the two sets of monetary policy tools operate through different transmission channels and will have differential effects, both in terms of magnitude and

timing, on economic activity and inflation. While there is considerable experience with the impacts of tightening monetary policy through the federal funds rate, there is no prior experience with the effects of tightening policy by reducing the size of the Fed's balance sheet. For that reason, the **FOMC**'s so slow approach makes sense.

VI. Inflation

FOMC members remain confident that both core and total PCE inflation will return to the 2.0 percent target level by 2018 or 2019. In 2013 and 2014 FOMC members were premature in their expectation that inflation would rise quickly toward the target of 2.0 percent and were forced repeatedly to extend the time frame for achievement of the 2.0 percent target. Over the past two years as PCE inflation has risen slowly, FOMC projections have been stable. With core PCE inflation of 1.75 percent in 2016, FOMC members remain confident that the target of 2.0 percent will be reached in the next two years.

Core PCE inflation was 1.54 percent in April and has risen 23 basis points from its recent low of 1.31 percent in July 2015. However, core PCE inflation in May might fall to 1.41 percent, based on May's core CPI. If that occurs, it will mean that very little progress has occurred in increasing core PCE inflation over the last two years.

Total PCE inflation, which had been depressed by the plunge in oil prices and lower import prices in late 2015, rebounded to 2.15 percent in February, up from the 0.23 percent rate of increase that prevailed at the end of 2015. But commodity prices are declining once again and as a consequence total CPE inflation was 1.71 percent in April and is projected to fall further to 1.57 percent in May.

As can be seen in **Table 10** (**Chart 11** shows historical core PCE price index data and data from **Table 10** in graphical form), forecasts of the core PCE inflation index now indicate that inflation will not increase during 2017. Over the longer run, **B of A** and **GS** expect core PCE inflation to break above 2.0 percent during 2019, and then edge back toward 2.0 percent after that. **B of A** expects inflation to reach 2.3 percent in 2019 and **GS** is forecasting 2.1 percent in 2019. FOMC projections reflect a gradual rise to its 2.0 percent target during 2018 or 2019.

Part of the unexpected softness in core PCE inflation is related to quality improvements in cell phones, but other price categories, such as shelter and medical services inflation, have been weaker than expected. **GS** and **B of A** recently reduced their inflation forecasts for 2017 and to a lesser extent for 2018. Their revisions are now consistent with my forecasts rather than being about 20 basis points higher in 2017.

GS and **B of A** still expect core PCE inflation to exceed 2.0 percent in 2019. I continue to be skeptical. As can be seen in **Chart 12**, my econometric model indicates inflation is likely to remain below 2.0 percent for several years in a range of 1.40 to 1.70 percent, even though the economy is operating at full employment.

Core PCE inflation forecasts for my "**BASE**" and "**Strong Growth**" scenarios are not materially different. After 2017, all are lower than the forecasts of **B of A**, **GS** and the FOMC. While one should never discount the possibility of a sea-change in the economic environment in the future that would set inflation on a different course, there is evidence that core PCE inflation will remain modestly below 2.0 percent in coming years, notwithstanding an economy that is operating near full employment and which

CHART 11 – Core PCE Inflation
(annual percentage rate)

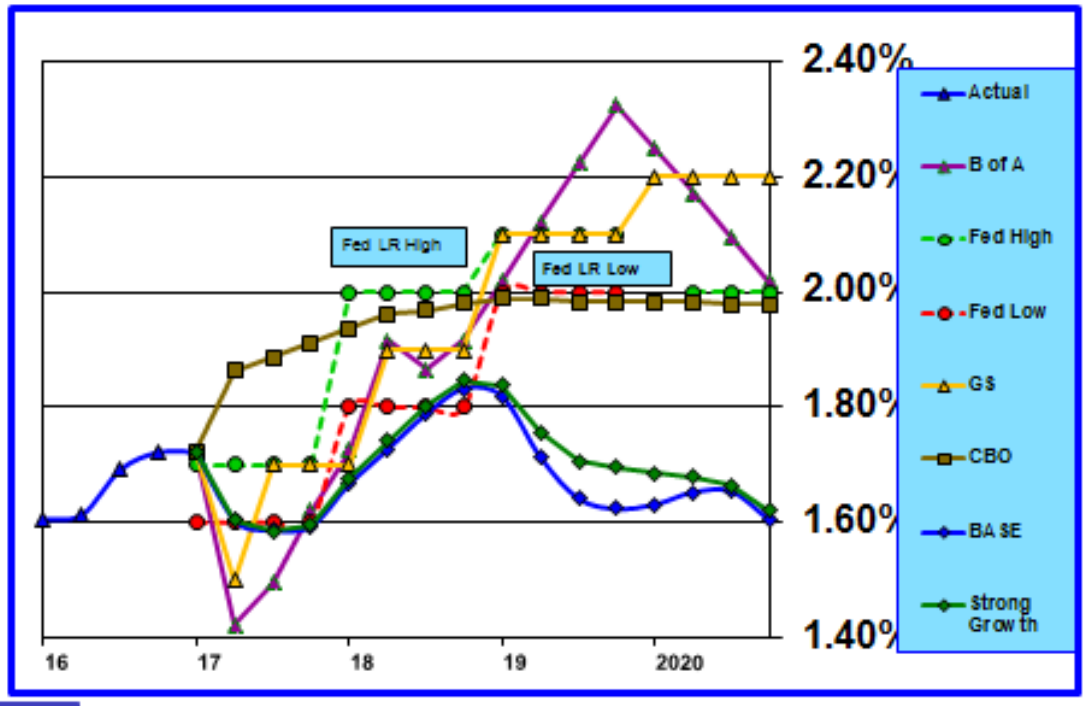


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CHART 12 – Core PCE Inflation
(annual percentage rate)

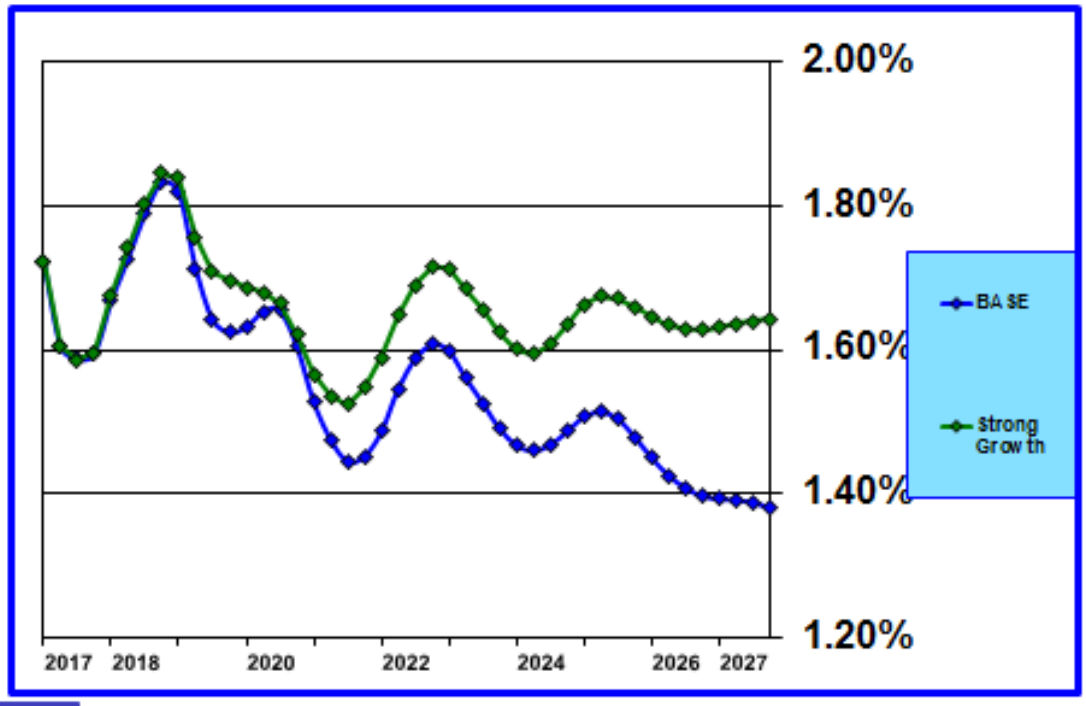

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Table 10
Core PCE Inflation Forecasts — B of A, GS, Bill's "BASE", Bill's "Strong Growth" and FOMC High and Low

Core CPE	2013	2014	2015	2016	2017	2018	2019	2020
Actual	1.55	1.50	1.39	1.75				
B of A					1.62	1.92	2.32	2.02
GS					1.70	1.90	2.10	2.20
Global Insight*					2.30	1.80	2.20	2.70
Economy.com*					2.60	2.50	2.90	
Blue Chip Average*					2.40	2.20	2.30	2.40
Bill's BASE					1.63	1.83	1.62	1.58
Bill's Strong Growth					1.63	1.85	1.69	1.60
FOMC - High					1.7	2.0	2.1	
FOMC - Low					1.6	1.8	2.0	

*CPI — total index

might benefit from additional fiscal stimulus in the coming year.

Tan Kai Xian cited three reasons why inflation might not head higher as most expect.[9] First, energy prices have been stable for over a year and have recently fallen a tad. The pro-energy policies of the Trump administration are likely to favor increases in supply relative to demand which would keep a lid on prices. Indeed, the risks of lower energy prices in coming months are greater than the risks of higher prices. Do not worry about OPEC production quotas. They leak like a sieve and in any event OPEC has limited pricing power. Any increase in prices above $55 a barrel will prompt a surge in U.S. shale oil production. U.S. energy investment in new rigs was very strong in the first quarter. In fact, oil prices are declining in spite of accelerating global economic activity. This outcome is being driven by ample supply, despite OPEC's attempts to limit production, and high inventories.

Second, growth in consumer, construction and commercial real estate lending has slowed as financial institutions have tightened underwriting. Commercial real estate lending has slowed largely in response to increased regulatory scrutiny and tighter underwriting standards. Slower credit growth will take pressure off of inflation.

Third, inflation expectations rose sharply following last year's presidential election because of President Trump's tax reform and infrastructure proposals. Congress has been distracted by investigations and has yet to move forward on tax and infrastructure legislation. Although the House of Representatives finally passed a health care bill by the slimmest of margins and the Senate leadership has released a similar draft bill, there is no assurance that Congress will ultimately be able to pass health care legislation. If health care reform legislation does not pass by September, this will make the job of passing tax reform harder because it was anticipated that the health care legislation would help pay for the costs of tax reform. Sum all of this up and the risks of longer than expected delays in enacting and implementing tax cuts, tax reform and infrastructure stimulus are high and the possibility that nothing at all happens cannot be ruled out.

Tan Kai Xian concludes that the more likely pathway for CPI inflation is "... *to tail off through the*

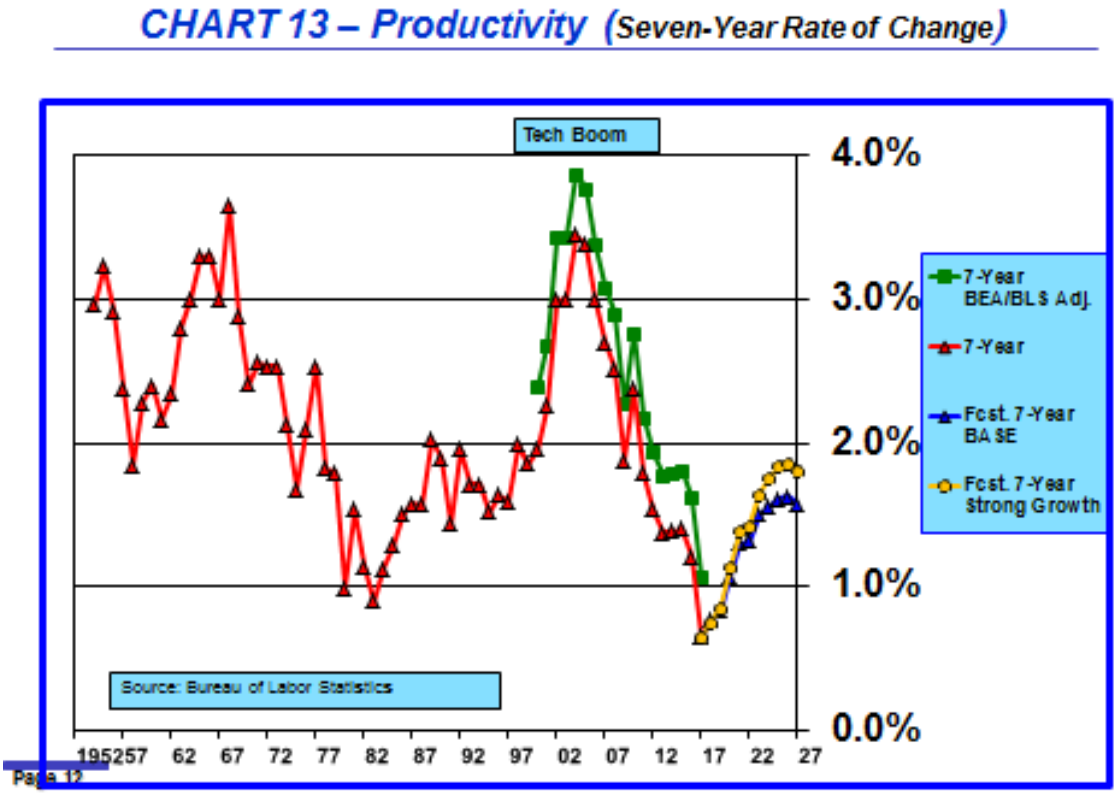
[9]Tan Kai Xian. "US Inflation: The End of the Affair," GavekalResearch, The Daily, February 13, 2017.

spring and flatten out at about 2% in the summer months." PCE inflation of about 1.6 percent, which is generally what my "**BASE**" scenario is forecasting, is consistent with 2.0 percent CPI inflation. This scenario is the one that appears now to be unfolding.

VII. Inflation, Productivity and Real GDP Growth

To remind readers, the long-run real growth speed limit of the economy is determined by the rate of growth in the labor force and productivity.

Chart 13 shows historical rates of increase in productivity and projections for my "**BASE**" and "**Strong Growth**" scenarios.



Analysts expect, or perhaps the more appropriate word is "hope," that productivity will rebound from its recent dismal 0.54 percent annual rate of increase to at least 1.50 to 1.75 percent.

1. Are Low Real Rates of Interest Contributing to Low Productivity?

Charles Gave blames poor productivity on low real rates of interest and asserts that cheap money destroys growth.[10] The general argument is that capital is diverted to low-risk speculative assets because leverage

[10]Charles Gave. "E Pur Si Muove, GavekalResearch, The Daily April 7, 2017.

is cheap and interest rates are controlled rather than financing more risky investments in productive activities. Unambiguously, over long periods of time, low real rates and low productivity are positively correlated. However, the question is whether low rates are the cause of low productivity or rather whether low productivity caused by other forces is the cause of low rates of interest.

I tested Gave's hypothesis and found a sustained decline in long-term real interest rates of 100 basis points reduces productivity by about 20 basis points and potential real GDP growth by a little more.

Persistent low productivity gains in recent years are not unique to the U.S. It is a shared phenomenon affecting all developed economies. While it is tempting to blame this development on consequences of the Great Recession, arguments have been made that the weakness in productivity is not transitory but rather reflects a secular slowdown in innovation and capital investment. But Gave's view, which appears to be supported by my econometric analysis, would assign some of the responsibility for lower productivity to central banks' use of monetary policy to depress nominal and real rates of interest.

2. Is Low Reported Productivity the Consequence of Measurement Error?

The answer to this question is "Yes." But, the evidence indicates that the size of the measurement error has been constant over time, which means that the declining trend in productivity over the last several years remains fact.

GS continues to argue that part of the decline in productivity is due to measurement error, which it estimates accounts for 0.25 to 0.50 percent. A study recently published in the *Journal of Economic Perspectives* and authored by current and former staff members of the Bureau of Economic Analysis and the Bureau of Labor Statistics provides statistical evidence for the years 2000, 2005, 2010 and 2015 that corroborates GS's mismeasurement hypothesis.[11] As is shown in **Table 11**, measurement error emanates from the overstatement of the deflators for personal consumption expenditures and private fixed investment. However, ***and this is a very important point***, the authors find that the magnitude of the overstatement of inflation is virtually constant over time: .43 percent in 2000, .39 percent in 2005, .40 percent in 2010, and .41 percent in 2015.

If inflation is overstated by a fixed amount, it directly follows that real GDP and productivity are understated by the same amounts. These adjustments are shown in **Table 11**. Along with a higher measured real rate of GDP growth, real interest rates would also be higher by a similar amount.

Adjusted values for productivity are shown in **Chart 13**; adjusted values for core PCE inflation are shown in **Chart 14**, and adjusted values of real GDP growth are shown in **Chart 15**.

As can be seen in **Chart 14**, when inflation is adjusted for measurement error, the FOMC is considerably further away from its 2.0 percent inflation target. However, it is not altogether clear whether this matters for formulation of monetary policy since the size of the measurement error has been relatively stable and persistent over a very long period of time. After all, the 2.0 percent target is arbitrary. What is important is that the target be sufficiently above zero to mitigate the risks of encountering deflation when

[11] Erica L. Groshen, Brian C. Moyer, Ana M. Aizcorbe, Ralph Bradley, and David M. Friedman. "How Government Statistics Adjust for Potential Biases from Quality Change and New Goods in an Age of Digital Technologies: A View from the Trenches," *Journal of Economic Perspectives*, Vol. 31, No. 2, Spring 2017, pp. 187-210.

CHART 14 – Core PCE Inflation – BEA/BLS Inflation Adjustment

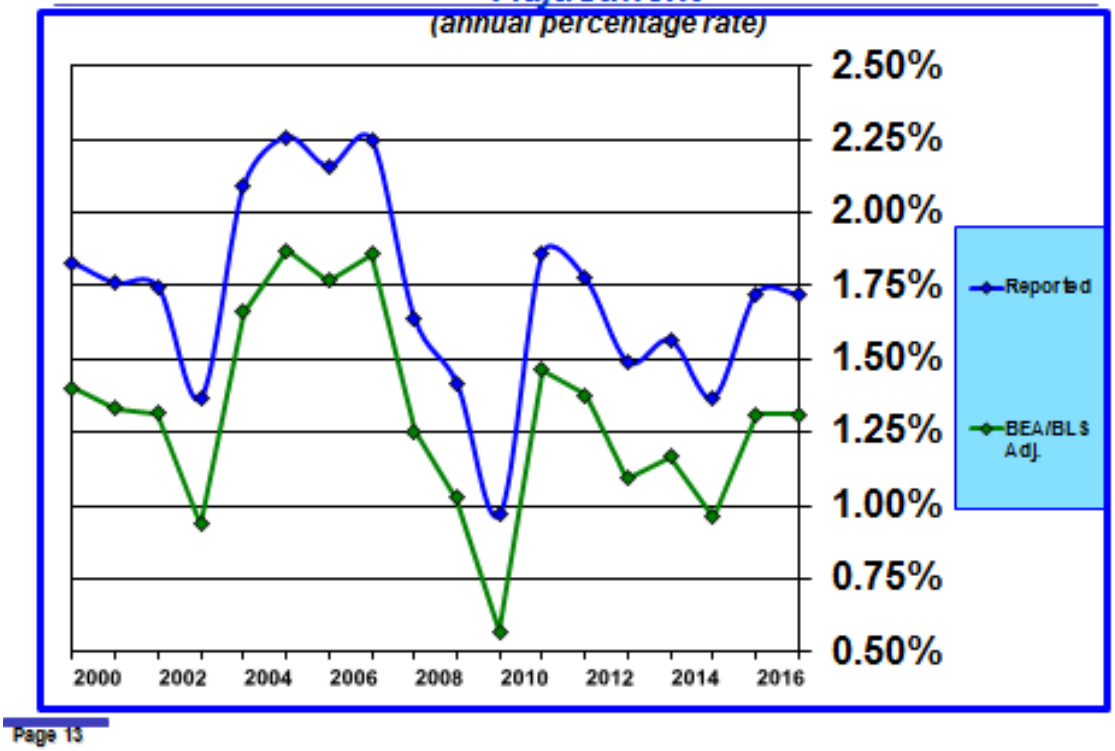


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CHART 15 – Real GDP Growth – BEA/BLS Inflation Adjustment

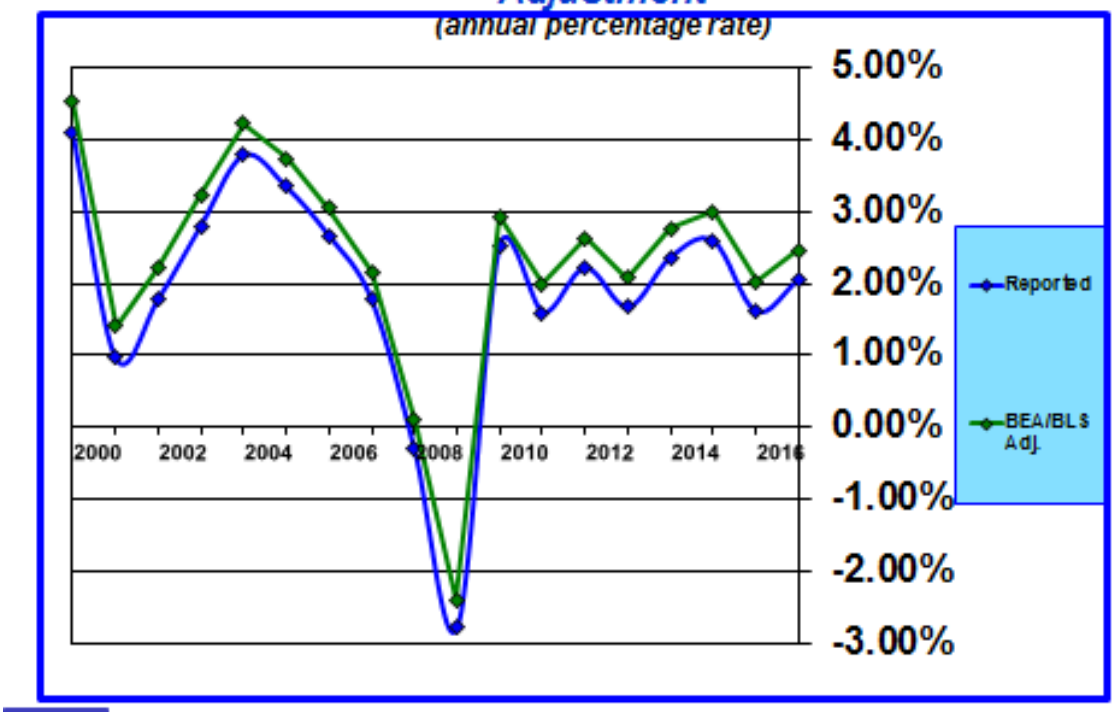

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Table 11
Mismeasurement of Inflation and Implications for Productivity and Real GDP Growth

	2000	2005	2010	2015
Personal Consumption Expenditures	-.20%	-.22%	-.24%	-.26%
Private Fixed Investment	-.23%	-.17%	-.16%	-.15%
Total Mismeasurement of Inflation	**-.43%**	**-.39%**	**-.40%**	**-.41%**
Reported Core PCE	1.83%	1.37%	.97%	1.37%
Adjusted Core PCE	**1.40%**	**.94%**	**.57%**	**.96%**
Reported Real GDP Growth	4.09%	3.35%	2.53%	2.60%
Adjusted Real GDP Growth	**4.52%**	**3.74%**	**2.93%**	**3.01%**
Reported Productivity (7-year average)	1.96%	3.38%	2.37%	1.40%
Adjusted Productivity (7-year average)	**2.39%**	**3.77%**	**2.77%**	**1.81%**

economic activity is weak. A target of 1.5 percent might provide a sufficient cushion.

March's unexpected decline in the core CPI rate and April's slower than expected increase in the core CPI rate, and, thus, probably in the core CPE rate as well, was cited by **GS** as evidence supporting its mismeasurement hypothesis.[12] The BLS incorporated a quality adjustment for cell phone services stemming from Verizon's adoption of unlimited data packages.

While this might seem like good inflation news, it poses a risk to monetary policy formulation. It is one thing to conclude that reported inflation is consistently overstated by a fixed amount. It is another matter altogether to begin whittling away at this mismeasurement by adjusting the reported inflation measure incrementally. That would create the illusion that inflation is falling when what is actually happening in reality is that embedded measurement error is being reduced. Unfortunately, none of this is clear — the Verizon cell phone adjustment appears to be of recent vintage, so perhaps it really is an additional decline in inflation and not just the removal of a portion of embedded mismeasurement. The policy implication of lower inflation, along with the emerging view that NAIRU is lower than CBO's estimate, is that the **FOMC** should raise the federal funds rate at a much slower pace than implied by the **FOMC**'s projections. This appears to be the message that the market is trying to send to the **FOMC**.

If the market's assessment is fundamentally correct but the **FOMC** persists in raising the federal funds rate, the odds of recession will escalate and history will judge the **FOMC** guilty of perpetrating a significant policy error.

3. Other Negative Impacts on Productivity

Regardless of measurement error which does not appear to explain the declining trend in productivity, **GS** argues that there are two cyclically-based effects that explain much of the decrease. The implication is that cyclically-based effects will eventually reverse and productivity will rebound to a much higher and persistent level.

First, **GS** argues that slower growth in capital services per hour worked has had an important negative

[12] Daan Struyven and Jan Hatzius. "The Return of the Missing Growth," US Economics Analyst, Goldman Sachs Economic Research, April 21, 2017.

impact of productivity. This is linked to weakness in capital spending. The cyclical argument is that capital spending will rebound as the economy operates at full capacity over time. I would categorize this as a "hope" argument. Measures of capacity utilization remain elevated even though full employment appears to have been reached or nearly reached. There are countervailing arguments having to do with structural changes in the economy toward less-productivity prone services, diminished innovation, as well as significant declines in housing and government investment.

Second, **GS** examines components of its proprietary current activity indicator that historically have been correlated with changes in productivity. It finds that growth in output-related components has accelerated and this development should lead to increased productivity over time. This is a novel analysis and may turn out to have merit, but it is untested; in other words, correlation does not necessarily imply causality.

Will Denyer of GavekalResearch cites four factors which have contributed to the decline in productivity.[13] First, offshoring led U.S. firms to invest more abroad than domestically. Second, low interest rates incentivized financial engineering over productive investment. Third, low interest rates enabled inefficient firms to survive, thus reducing productivity gains from "creative destruction." Fourth, tax and regulatory policies discouraged investment. Denyer believes that productivity can be boosted by increasing business investment and enabling more "creative destruction." Since much of the problem, in his opinion, has been policy driven, productivity can be improved by making policy more investment friendly.

Persistent weakness in productivity would depress potential real GDP to a considerably greater extent than forecasters currently expect. Such an outcome would depress nominal and real interest rates and growth in wages and would contribute downward pressure on inflation.

VIII. Financial Conditions

GS calculates and publishes a financial conditions index, **GSFCI**. Components of this index include the federal funds rate, the 10-year Treasury yield, credit spreads, stock prices, and foreign exchange value of the dollar.

GS has conducted extensive empirical research which demonstrates that financial conditions impact economic growth. Tighter financial conditions lead to slower growth. Tighter financial conditions can occur through intentional tightening of monetary policy by the **FOMC**. But, tighter financial conditions can also occur during episodes of financial market instability and panic.

Even though the FOMC is raising interest rates, which ordinarily would tighten financial conditions, GS's financial conditions indicator has declined modestly so far in 2017. This development is growth friendly.

GSFCI was 99.25 in mid-June, about 75 basis points easier than the December level, even though the FOMC raised the federal funds rate 50 basis points in March and June and the market is expecting the FOMC to raise the federal funds rate another 25 basis points, probably in December. This implies that the FOMC strategy of raising the federal funds rate gradually so far has not led to more adverse market

[13] Will Denyer. "Policy and Productivity: How To Make America Great Again," GavekalResearch, June 7, 2017.

conditions.

IX. Interest Rates

1. Interest Rates — Federal Funds Rate

The FOMC raised the federal funds rate another 25 basis points at its June meeting to a range of 1.00 to 1.25 percent. The FOMC's projections indicate that there will be one more increase of 25 basis points in 2017. Market sentiment agrees, but the probability is only slightly greater than 50 percent. The market expects the FOMC to delay this increase until the December FOMC meeting.

With respect to the issue of additional increases in the federal funds rate in 2018 and subsequent years, there is considerable divergence among the FOMC's own projections, forecasts of analysts and market forecasts embedded in TIPS securities. The expected number and timing of federal funds rate increases made by several analysts, including myself, the FOMC and the market is shown in **Table 12**.

Table 12

Table 12
Number of Federal Funds Rate Increases of 25 Basis Points — FOMC, B of A, GS, Bill's "BASE", Bill's "Strong Growth"

	2017	2018	2019	2020	Total	Peak Rate
FOMC - median	3	3	2.5	.5	9	2.75-3.00*
B of A	3	3	3	0	9	2.75-3.00*
GS	3	4	4	0	11	3.25-3.50*
Market Forecast	3	1	0	0	4	1.50-1.75
Bill's BASE	2	2	4	2	10	3.00-3.25#
Bill's Strong Growth	2.5	2.5	4	3	15	4.25-4.50#

*FOMC, B of A and GS rates are equilibrium estimates
Bill's estimates are forecasts which peak above the likely equilibrium rate

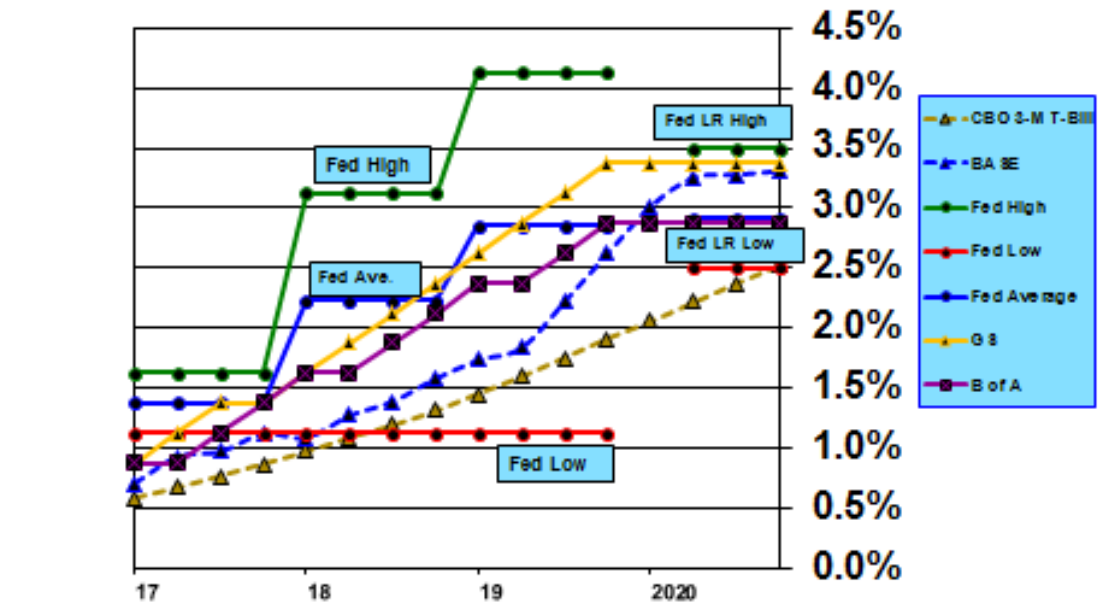
In its June Summary of Economic Projections (SEP), the median FOMC member view is three 25 basis point increases in the federal funds rate in 2017 (1.25-1.50 percent), two of which have already occurred, three more in 2018 (2.00-2.25 percent), three more in 2019 and 2020 (2.75-3.00 percent), and a long-term equilibrium level of 2.75 to 3.00 percent. In the past the SEP projections have proved to be very unreliable guides to future monetary policy. For example, at the beginning of 2016 the FOMC median projected four increases in the federal funds rate during 2016. Only one occurred. While most seem to agree that 2017 will see three increases, which is not a very risky call since two increases have already occurred, there is a wide divergence of opinion about the number of increases in 2018 and later years.

B of A and **GS** both expect three increases in 2017 with the remaining increase occurring in December. Over the longer run **GS** expects more tightening than **B of A** and the **FOMC** and a higher equilibrium level of the federal funds rate of 3.25 to 3.50 percent compared to 2.75 to 3.00 percent for the **FOMC** and **B of A**.

My federal funds rate forecast in my "**BASE**" scenario projects no further increase in 2017, two additional increases in 2018, followed by four increases in 2019 and two more in 2020. My "**BASE**" case equilibrium rate settles at 3.00 to 3.25 percent, slightly above **B of A**'s and the **FOMC**'s projections. However, the federal funds rate in my "**Strong Growth**" scenario continues to rise to 4.25 to 4.50 percent. Actually, this is not an equilibrium rate but reflects the consequences of a tight monetary policy in an overheated economy — the unemployment rate falls gradually to 4.1 percent in this scenario by 2027, considerably below the NAIRU rate of approximately 4.7 percent.

Chart 16 shows the quarterly progression in the federal funds rate from the present through 2020 implied by the **FOMC**'s high, low and average projections. It also shows forecasts for **B of A, GS,** and my "**BASE**" scenario. My forecast pathway rises a bit more slowly but by 2020 lands between **B of A**'s and **GS**'s projections.

CHART 16 – Federal Funds Rate Forecasts



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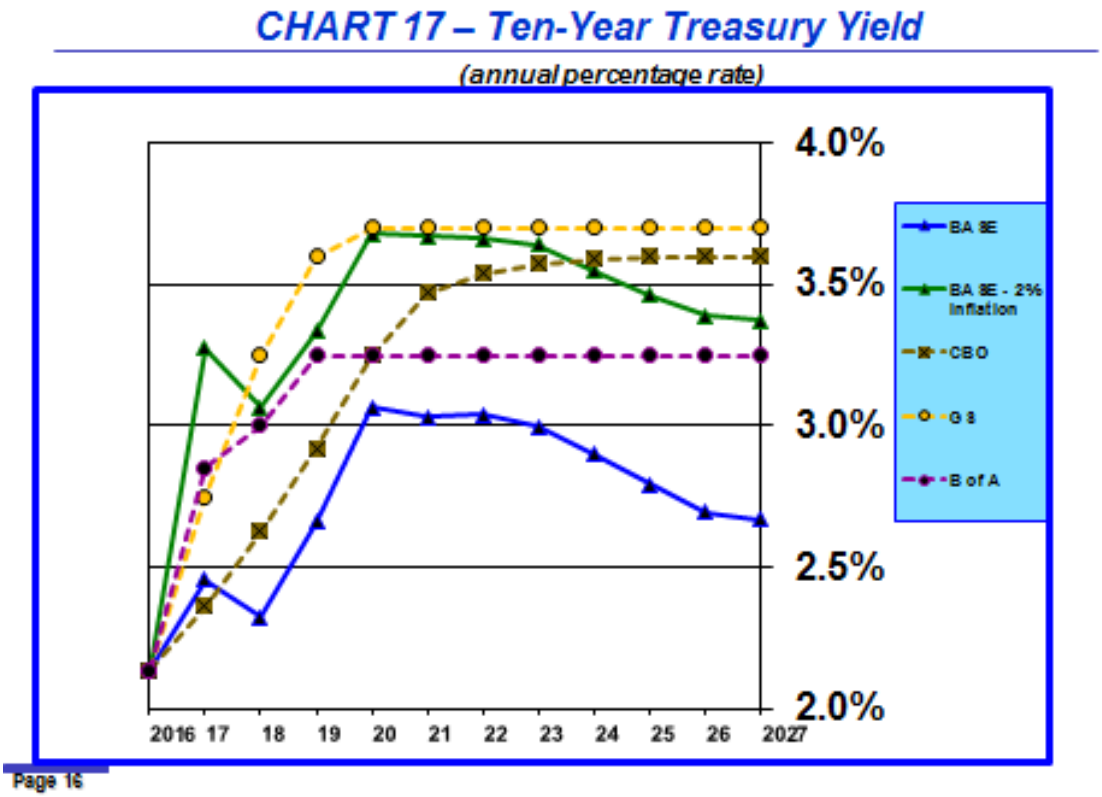
Until December 2016, FOMC members had steadily reduced the median estimate of the long-term nominal value of the federal funds rate from 4.25 percent to 2.875 percent — the median value rose to 3.00 percent in December and remained at that level in March and June. Based upon my model**,** my sense is that the FOMC's median projection for the federal funds rate is reasonable with its estimate of long-term real GDP growth of 1.8 to 2.0 percent. My "**BASE**" scenario, assuming 2.0 percent core PCE inflation, indicates that a long-term nominal federal funds rate of about 3.25 percent is a likely level for the long-term neutral federal funds rate, but it could be 3.00 percent or less, if productivity remains relatively weak. This also means that the real neutral interest rate, assuming inflation is 2.00 percent, would be 1.00 to 1.25 percent.

2. Interest Rates — 10-Year Treasury Note Yield

Chart 17 shows forecasts for the 10-year Treasury note yield over the next ten years. Over time analysts have reduced their forecasts for the ten-year yield. Partly this is a mark-to-market exercise driven by the persistent decline in this yield contrary to expected increases. But the adjustments also reflect a growing consensus that the long-run equilibrium real rate of interest has declined. Analysts still expect long-term rates to rise from the current level, but no longer to as high a level.

Assuming an inflation rate of 2.0 percent, my model indicates that the 10-year neutral rate should be about 3.25 percent. The long-term neutral rate is 3.70 percent for **GS**, 3.25 percent for **B of A** and 3.60 percent for **CBO**. These estimates do not differ materially — all fall within a range of 3.25 percent to 3.70 percent.

My forecasts for the 10-year yield in my "**BASE**" scenario, which are shown in **Chart 17**, are lower than those of other forecasters because my forecasts of inflation are lower than 2.0 percent. The range in my average annual forecasts is 2.70 to 3.00 percent between 2020 and 2027, rather than 3.40 to 3.70 percent that my model says would prevail if inflation were 2.0 percent in the "**BASE**" scenario.



3. Real Rate of Interest and Natural Rate of Interest

The **real rate of interest** is the nominal rate of interest minus the rate of inflation. Over the economic cycle both the nominal rate of interest and the reported inflation rate vary. Thus, the real rate of interest

also varies over the cycle.

The **natural rate of interest**, sometimes also referred to as the neutral rate of interest or the equilibrium rate of interest, is a specific value of the real rate of interest (nominal rate of interest less the monetary authority's target inflation rate) that occurs when an economy is operating at (not below or above, but at) its full potential. The value of the natural rate depends upon fundamental factors such as the rate of population growth, demographics (e.g., aging), productivity, and inflation expectations. Because these fundamental factors do not necessarily remain constant over time the value of the natural rate can vary.

The natural rate is not directly observable and thus, has to be teased out of messy data.

From a monetary policy perspective, the importance of knowing the value of the natural rate of interest is determining, when the monetary authority's inflation target rate is added, what the nominal value of the short-term interest rate — the federal funds rate — will be when the economy is operating at full capacity.

In the **FOMC**'s Summary of Economic Projections (SEP), one of the data points members supply is an estimate of the long-run equilibrium federal funds rate. This is the same as the neutral or equilibrium rate of interest because the accepted assumption is that it is the rate that will prevail when the economy is operating at full capacity. In the June SEP the central tendency range for this rate was 2.75 to 3.00 percent. Given that the **FOMC**'s inflation target is 2.0 percent, this means that the consensus of **FOMC** members believes that the neutral rate of interest is in a range of .75 to 1.00 percent.

This all seems to be very tidy. However, there are two big assumptions embedded in the long-run SEP equilibrium value of the federal funds rate. First, and obviously, is that the real rate of interest when the economy is operating at full capacity will be in a range of .75 to 1.00 percent. Second, and less obviously, is that the **FOMC** will be successful in achieving a 2.0 percent stable nominal inflation rate. Most assume that the FOMC has the power to engineer this outcome. But, neither assumption is absolutely guaranteed. Both could be wrong.

What evidence exists suggests that both of the **FOMC**'s assumptions for the real rate of interest and inflation, when the economy is operating at full capacity, could be too high. Certainly, this is what the market believes currently. The market currently expect at most another 50 basis points increase in the federal funds rate to a range of 1.50 to 1.75 percent. This is 125 basis points lower than what the **FOMC** projects, which is a very large and significant difference. Of course the market could be wrong and the **FOMC** right; or vice versa, or "truth" could lie somewhere in between.

This is not a trivial issue. If the **FOMC** sticks to its guns and believes it knows best and forges ahead, but the market's assessment is the more correct one, the **FOMC** will commit a serious policy error by over tightening monetary policy and this will surely push the U.S. economy into recession.

There is no clear cut answer to who is correct or closer to being correct. But, because the consequence of an overaggressive monetary policy — recession — is greater than the consequence of too easy a monetary policy — economic overheating and higher inflation — good risk management principles argue for a more cautious monetary tightening approach than is currently spelled out in the **FOMC**'s SEP. If inflation remains subdued and far short of the 2.0 percent target, expect the **FOMC** in the future to revise down its projections for the federal funds rate, even if the unemployment rate continues to fall.

Now some evidence does exist that sheds a modest amount of light on the two big assumptions about

the level of the real rate of interest and the expected long-term level of inflation.

The market's five-year five-year forward inflation expectations rate was 1.78 percent on June 21th. Because the expected inflation rate is derived from TIPS securities which are indexed to the CPI, it is necessary to convert the market's estimate to a PCE basis. Over the last 10 years core CPI has averaged 1.85 percent and core PCE has averaged 1.60 percent, a difference of 25 basis points. This implies that the market's current long-term expected PCE inflation rate is 1.53 percent. Interestingly, this estimate is very close to my long-term 1.47 percent PCE inflation estimate (see **Table 13**). By itself, making this adjustment to the long-term equilibrium would bring the range down to 2.25 to 2.50 percent, which imply only five more 25 basis point increases in the federal funds rate rather than the eight additional increases projected by **FOMC** members.

However, with the adjustment for expected inflation, there is still 75 basis points of difference between the **FOMC** and the market that is unaccounted for. This difference presumably has to do with the value of the expected long-run natural rate of interest. If the market is right, the long-run neutral rate would fall in a range of 0 to 25 basis points.

Jens Christensen and Glenn Rudebusch, both economists at the San Francisco Federal Reserve Bank, recently published a working paper entitled, "New Evidence for a Lower New Normal in Interest Rates." [14] The neutral rate they calculate has fallen more than 200 basis points since the late 1990s and is currently about 25 basis points. The statistical methodology is quite complex but is based on a financial model using market prices of TIPS, which reflect in the authors' words *"... financial market participants' views about the steady state of the economy including the equilibrium interest rate*."

Others, most notably Thomas Laubach and John C. Williams, currently president of the San Francisco Federal Reserve Bank, have estimated the neutral rate of interest based on a macroeconomic approach that uses data from nominal short-term interest rates, consumer price inflation, and the GDP output gap. [15] The statistical results from this very different analytical methodology closely parallel the decline in the neutral rate of interest over time shown by the financial market model. The macroeconomic model also estimated a neutral rate of approximately 25 basis points in 2016.

So, the fragmentary evidence that is available is more supportive of the market's current view of only two more federal funds rate increases. However, it is possible that as the economy steams ahead at full employment and perhaps overheats that both the long-term inflation rate and the long-term neutral rate of interest will rise. There is evidence in the historical statistical analysis that this has occurred to a limited extent.

And, one additional caveat is in order. The neutral rate assumes that the economy is operating at full capacity. But, if instead the economy is operating above full capacity, which is a definite possibility in coming quarters, then the **FOMC**'s policy rate should move to a level above the long-term neutral rate to contain the risk of an inflationary outbreak. A few FOMC members have SEP rate projections that anticipate this kind of outcome. But the bad news from history is that whenever the policy rate moves above the equilibrium rate, recession follows. That is why having a better sense of what the equilibrium rate is from a current perspective is so important. And, from that perspective, the **FOMC** should cool its

[14] Jens H.E. Christensen and Glenn D. Rudebusch. "New Evidence for a Lower New Normal in Interest Rates," Federal Reserve Bank of San Francisco Economic Letter, 2017-17, June 19, 20117.

[15] Thomas Laubach and John C. Williams. "Measuring the Natural Rate of Interest Redux," *Business Economics*, Vo. 51, No.2, 2016, pp. 57-67.

jets.

4. BASE Scenario Estimates of Nominal and Real Short-Term and Long-Term Federal Funds and 10-Year Treasury Rates

My econometric model provides estimates of values of the short-term (2017) and long-term (2021-27) federal funds rate and the 10-year Treasury rate. These estimates are shown in **Table 12** for various assumed values of inflation, the growth rate in total hours worked and productivity. These estimates are forecasts based upon assumptions about the economy. As such my estimates do not ferret out the natural rate of interest. However, to the extent that my **BASE** scenario is structured to reflect how an economy operating at full capacity might look in the long run, the estimates of inflation and interest rates provide a check on the work of others.

My estimates of the long-term federal funds rate are more consistent with the **FOMC's SEP** projections than with current market expectations. My estimate of the long-run real rate of interest (not necessarily the natural rate) is in a range of 1.00 to 1.50 percent, depending upon the strength of productivity, compared with the **FOMC**'s range of 1.50 to 1.75 percent for the neutral rate.

In the top panel of **Table 13** it is assumed that growth in total hours worked remains constant at 0.6 percent annually in the long term and that core inflation remains anchored at 2.0 percent and shows the impact on the federal funds and the 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 13** is substituting my forecast of core inflation for an assumed target rate of 2.0 percent, which averages 1.47 percent over the 2021-27 period.

X. Fiscal Policy

Following the election of President Donald Trump, expectations ran high for significant federal legislation involving health care reform, tax reform, financial regulation reform, tax cuts and infrastructure spending. There were also concerns about trade and immigration. Five months into the Trump presidency only two bills have passed the House of Representatives — reform of the Affordable Care Act by a very narrow margin and the Choice Act which would repeal and revise significant portions of the Dodd-Frank Act.

In the meantime the clock is ticking on mandatory federal issues including passing a budget resolution for fiscal year 2018 and dealing with the federal debt ceiling which since March has prevented net additional federal borrowing. Both issues will need to be dealt with not later than the end of September; otherwise portions of the government will shut down and the Treasury Department will not be able to pay all obligations. No one expects such an outcome, but as the end of September approaches expect anxiety and brinksmanship to build.

In addition, the federal government continues to operate currently under a continuing budget resolution of fiscal year 2017 which is subject to spending constraints embedded in the Budget Control Act of 2011. This, too, needs to be resolved and specific appropriations bills need to be enacted.

Mandatory budget legislation will get done, probably at the last minute. There is much less certainty

Table 13
Short-Term and Long-Term Interest Rates for Federal Funds and 10-Year Treasury Rates (BASE Scenario)

	Short-Term (2017) Assumptions	Long-Term Assumptions (2021-27)		
Potential Real GDP	1.60%	1.31%	1.71%	1.86%
Inflation (core PCE)	1.53%	2.00%	2.00%	2.00%
Productivity	.70%	.90%	1.40%	1.60%
Labor Force	1.74%	.60%	.60%	.60%
		Nominal Rate		
Federal Funds	.88%	2.91%	3.26%	3.40%
10-Year Treasury	2.26%	2.95%	3.28%	3.42%
		Implied Real Rate		
Federal Funds	-.65%	.91%	1.26%	1.40%
10-Year Treasury	.73%	.95%	1.28%	1.42%
		Long-Term Assumptions (2021-27)		
Inflation (core PCE)		1.47%	1.47%	1.47%
Productivity		.90%	1.40%	1.60%
Labor Force		.60%	.60%	.60%
		Nominal Rate		
Federal Funds		2.50%	2.85%	2.99%
10-Year Treasury		2.17%	2.51%	2.64%
		Implied Real Rate		
Federal Funds		1.03%	1.38%	1.52%
10-Year Treasury		.70%	1.04%	1.17%

about other legislation, but passage of Affordable Care Act reform is both a legislative priority and necessary to provide spending room for tax reform, tax cuts and infrastructure spending, all of which remain important Republican legislative priorities.

1. Affordable Care Act

The House of Representatives after a good deal of Republican Party drama passed highly controversial reform of the Affordable Care Act. Republican Senate leadership, where Republicans hold a 52-48 voting edge, recently released a draft bill that tracks the House bill's structure, albeit with some significant differences. The leadership's plan is to pass its version of health care reform under the budget reconciliation process, which requires only a simple majority vote. This strategy has two limitations. First, health care issues that do not impact the budget cannot be enacted using this procedure. Such issues require a 60 vote majority. Second, legislation passed using the budget reconciliation process will automatically expire after ten years. That is a long time, of course, but ten years will pass, as it did for the Bush tax cuts, and then either Congress will be forced to pass legislation using the normal process or the law will revert to that which prevailed prior passage using the budget reconciliation process.

Senate Republican leadership assembled a small group of 13 Republican senators and drafted its health care reform legislation in secret. The proposed bill was made public on June 22, 2017. The bill will be

open to amendments and will be scored by CBO in the middle of the week of June 27. Reportedly, the Senate draft bill is similar in structure to the bill passed by the House and is slightly more moderate with respect to providing financial assistance to low-income people. Like the House bill, the Senate bill repeals additional taxes imposed by the Affordable Care Act and pays for them by cutting Medicaid subsidies. Beginning in 2025 the Senate bill would lower the per capita Medicaid cap growth rate. This would put pressure on states to raise taxes, reduce benefits, limit the number of enrollees, or reduce provider benefits.

Leadership's intent is to have the Senate pass this bill prior to the July 4 recess, although timing could slip to the following week. Because of the secrecy prior to the release of the draft bill, it is impossible to assess whether at least 50 of the 52 Republican senators will vote in favor. There is no doubt that all 48 Democrats will oppose whatever bill is put up for a vote.

There is much that is controversial in the House bill, especially the estimated 23 million people who stand to lose coverage and the increase in premiums for older and low-income people. The Senate bill follows much of what is in the House bill but does provide somewhat greater subsidies for older participants, provisions to reduce insurance premiums for high-risk participants, and greater subsidization of Medicaid.

Overshadowing all of this is the growing instability of the individual insurance market for health care which is already experiencing curtailment of many plan offerings and rising premiums. If Senate Republicans cannot muster the necessary 50 votes for more comprehensive reform legislation, there will be tremendous pressure to enact some kind of stopgap legislation to continue on a temporary basis funding for cost-sharing reduction subsidies. Doing nothing will result potentially in chaos in the individual insurance market after September.

Assuming, that the Senate Republican leadership is successful in passing legislation, two different bills will exist. There will be two options to resolve differences. The simplest and most likely would be a vote by the House to accept the Senate bill without any amendments. A more cumbersome alternative would be a House-Senate conference to write a compromise bill which will have to be passed without amendment by both houses of Congress to become law. The target date to accomplish all of this is in August, which seems optimistic. However, passage of health care reform is essential to providing budgetary room for the mandatory work Congress must do by September 30, 2017.

One of the more optimistic analysts places the odds of all this coming to pass within this tight time schedule at 55 to 60 percent.

2. Fiscal Year 2018 Budget Resolution

September 30, 2017 is a hard deadline. If some kind of resolution is not passed by then the government will shut down. Time can be bought by passing a continuing resolution, but this would either hold spending levels to constraints contained within the Budget Control Act of 2011 or would require offsetting spending reductions for any increases.

There are three sets of issues that will need to be resolved. First, President Trump and most Republicans want to increase defense spending above the Budget Control Act caps. President Trump has proposed deep cuts in nondefense spending as an offset, but this is a nonstarter for Democrats. Because it is likely that 60 votes will be required in the Senate, the likely outcome is some increase in spending for defense and

also perhaps for non-defense spending (no cuts) above the Budget Control Act limits. This would mirror the deal that Speaker Ryan and Senator Murray negotiated in 2015 which modestly overrode the Budget Control spending caps for both defense and nondefense spending for two years.

Second, Congress will need to reach agreement on spending levels for individual programs. For the most part negotiation will probably proceed smoothly but there could be a hot issue or two, such as additional spending to build a southern border wall.

Third, almost always the budget resolution includes pet policy and regulatory issues, some of which might prove to be controversial.

In addition, the 2018 fiscal year budget resolution will spell out assumptions for tax revenues and spending over the next ten years. This is where passage of the Affordable Care Act reform legislation becomes important. Tax cuts and spending cuts embedded in that legislation will provide room for guidance in the budget resolution for additional tax cuts over the next ten years. But, because the resolution can assume spending cuts in future years, as occurred in the 2015 budget resolution, or revenue assumptions can be goosed by outlandish economic growth assumptions, as the Trump administration did in the President's budget proposal, there will be plenty of room for maneuvering. While Congress will debate the soundness of all of these revenue and spending assumptions, ultimately congressional leadership will craft a deal which assures passage of the budget resolution. Detailed spending appropriation bills, tax cut, and tax reform proposals will follow later on. The only constraint will be that these specific bills will need to conform with the guidelines contained within the spending resolution.

All-in-all the process is likely to be messy during the last few days of September but the odds are that compromises will be negotiated to guaranteed the necessary 60 votes in the Senate.

3. Federal Debt Ceiling

There had been some speculation that the Treasury Department would run out of spending capacity prior to the end of September and this would force the debt ceiling issue to be dealt with prior to the fiscal year 2018 budget resolution. Treasury Secretary Mnuchin clarified recently that the debt ceiling will not a constraint until October. September is always a substantial budget surplus month.

We should take the Secretary at his word, but it could be a close call. Federal tax receipts have been running about 3 percent behind **CBO** projections so far in 2017. **CBO** suggests that the primary reason for the shortfall is holding back recognition of income that might be taxed at lower rates in 2018. Of course, if tax cuts are made retroactive to January 1, 2017, this would be an unnecessary precaution. But expectations for enactment of tax cuts in 2017 have declined from about 75 percent at the beginning of 2017 to 30 percent currently.

As has been the case in recent years, Congress will probably not vote to increase the debt ceiling but rather, in conjunction with action on other budget legislation, will simply suspend the ceiling until some future date.

4. Tax Reform and Tax Cuts

Republican congressional leadership and Trump administration spokespeople continue to emphasize that tax reform, tax cuts and additional infrastructure spending all remain high priorities. There is general sentiment that Republicans cannot afford to go into the mid-term congressional elections in 2018 empty handed, thus there is powerful incentive to come up with something. The problem is that there are many differences about details between Republican congressional leadership and the Trump administration which have yet to be worked through and the clock is ticking. One of the more optimistic analysts believes there is a 60 to 65 percent change that comprehensive tax reform is enacted between late 2017 and mid-2018. Most others are skeptical that Congress will enact significant tax reform and expect a small personal and corporate income tax cut, perhaps amounting to $1 trillion over ten years.

Work will not begin on legislation until October and will be guided by the 2018 fiscal year budget resolution. It is generally assumed that Congress will strive for any legislation to be revenue-neutral, which means that tax cuts will need to be offset either by spending decreases or additional revenues. Two considerations underpin an assumption that $1 trillion in tax cuts over ten years without spending cuts would qualify as being revenue neutral. First, **CBO**'s "current policy baseline" permits tax cuts of approximately $450 billion. Second, congressional rules now permit **CBO** to evaluate the impact of changes in revenue and spending laws through the application of "dynamic scoring." A reasonable guess is that $1 trillion in tax cuts would boost economic activity by enough to increase future tax revenues over the next ten years by $550 billion. That is an implied multiplier of .55. That might be stretching it a bit — I calculated a .31 multiplier for a tax cut in the ***November 2016 Longbrake Letter***. But CBO will be the arbiter of that analysis.

At a minimum cuts in both personal and corporate tax rates seem most likely. More comprehensive tax reform, such as the border adjustment tax and the elimination of expensing of interest on corporate debt, will probably be proposed and debated, but the likelihood of any kind of significant reform appears to be fading.GS lays out a scenario in which the gross personal taxes are cut by $1.0 trillion offset by $500 billion in reduced itemized deductions and in which gross corporate taxes are reduced by $1.18 trillion offset by $675 billion in tax increases, including $150 billion from a one-time repatriation of foreign earnings of American domiciled companies.[16]

5. Infrastructure Legislation

Although the Trump administration continues to talk about the importance of increased infrastructure spending, general conceptual principles have yet to be drafted and it does appear that anyone is working on drafting legislation. Generally, the Trump plan would provide for a $1 trillion public-private partnership over ten years, with the majority of funding coming from the private sector. Perhaps as much as $300 billion would come from the government. President Trump's budget includes $200 billion which would begin to be funded in fiscal year 2019.

It is unlikely that infrastructure legislation will be taken up by Congress until 2018 at the earliest and even that timing seems very doubtful.

[16] Alec Phillips. "The Political Outlook: Low Expectations Are Harder to Disappoint," Goldman Sachs Economics Research, June 2, 2017.

6. Financial Deregulation

Although the House passed substantial financial reform legislation, there is little appetite for most of the proposed reforms from both Republicans and Democrats in the Senate. Senate Banking Committee Chairman, Mike Crapo, has already announced that he will proceed in a different direction. Given all the other legislative priorities in coming months it seems unlikely that there will be any substantial financial deregulation legislation in the current Congress.

However, the Trump administration has the ability to modify existing regulations within the scope of current law. Treasury Secretary Mnuchin released a far ranging and detailed set of proposals in early June covering bank capital and liquidity requirements, capital stress test procedures, the Volcker proprietary trading rule, mortgage regulation and other kinds of financial regulations. While changes will probably occur in time, delay seems probable for two reasons. First, the Trump Administration has been slow to appoint regulators. For example, three seats on the Board of Governors of the Federal Reserve System remain vacant. Furthermore, changes in rules generally require issuing a proposal for comment followed by time to evaluate the comments and write the final rule. Finally, regulations usually have delayed effective dates to enable regulated entities to prepare to comply with the new rules. All of this suggests it will be well into 2018 and perhaps 2019 before there is any significant financial deregulatory relief.

The Treasury Department is expected to issue three more proposals in coming months recommendation regulatory changes and relief in the areas covering capital markets, asset management and insurance, and non-bank financial institutions.

7. Slow Down in State and Local Tax Receipts and Spending

Evercore ISI's survey of state and local tax receipts has declined steadily in recent months and stood at 39.1 on June 9. (An index value of 50 demarks rising versus falling revenues.) State and local tax receipts are heavily impacted by sales taxes. The recent weak trend is consistent with disappointing growth in retail sales.

State and local investment spending declined $2.6 billion in the first quarter of 2017 and is down $10.3 billion from the first quarter of 2016. This appears to have been impacted by both slow growth in revenues but also by uncertainty about federal government support in key spending categories such as Medicaid.

APPENDIX

Outlook — 2017 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 2017 U.S. and global economic outlook and risks to the outlook are listed below. As events unfold during 2017, this will enable the reader to track my analytical prowess. Observations which are on track are denoted by "+"; observations not on track are denoted by "-"; indeterminate observations are denoted by "?" and general observations are denoted by "✓".

1. **U.S.** — **June Assessment:** Strengthening growth; surging consumer, business, and investor optimism; increased political uncertainty stemming from new U.S. president and Republican-controlled Congress; survey data have been much stronger than hard economic data reports, but better economic data is expected to follow improved optimism

   ✓ **Cascading scandals involving President Trump have diminished prospects for tax cuts and tax reform in 2017; the surge in confidence that followed Trump's election is fading, but stronger global growth is supporting U.S. financial markets**

   ✓ **GS's economic data surprise index has declined over the past two months but remained marginally positive in June**

   ✓ **Consumer optimism in the economy's performance and its future trajectory remains pessimistic on balance, but sentiment has improved substantially; a net 7% were pessimistic in 2017 compared to 44% in 2008, 57% in 2011, and 34% in 2015**

   - ***2017 real GDP Y/Y*** growth projections range from 2.0% to 2.4%. The FOMC's central tendency Q4/Q4 projections range from 1.9% to 2.3%. (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 fiscal policy activism to cut taxes and increase infrastructure spending.

     ? B of A's Q2 forecast growth is 2.2%; GS's Q2 forecast is 2.5%

     ? GS's May U.S. Current Activity Indicator (CAI) has averaged 3.2% over the first 5 months of 2017 but decelerated in early June to 2.8%; the CAI is a proxy for real GDP growth; its high level so far in 2017 has been driven by strong survey data, which have yet to translate into strong actual economic activity

     + B of A's 2017 forecast is 2.10% and GS's is 2.13%; my "BASE" scenario forecast is 2.06% and my "Strong Growth" scenario is 2.13%; FOMC tightened its 2017 Q4/Q4 central tendency range in June to 2.1-2.2%

   - ***Real GDP output gap*** will remain high, but will narrow considerably during 2017 from about 1.2% to 0.5% to 0.8%. (The exact size of the output gap will be revised by CBO, probably in February 2017 and again in August 2017).

     ? CBO in its January update reduced the size of the 2016 Q4 output gap from 1.2% to 0.9%; the revised end of 2017 output gap should be in a range of 0.5% to 0.7%

     - Because of weak Q1 growth, the output widened to 1.0% in the first quarter; however, stronger growth over the remainder of 2017 should reduce the output gap to 0.4% to 0.6% by the end of the year

- ***Potential structural rate of real GDP growth*** has declined significantly in recent years. I expect potential growth to be about 1.3% to 1.4% in 2017. Long-term potential real GDP growth will edge up in coming years to between 1.75% and 2.0%.

  - Based on updated CBO data, I now expect potential GDP growth in 2017 to be approximately 1.6%

  - Long-term potential real GDP growth has moved higher to a range of 1.95% to 2.20%

- ***Productivity*** should rise during 2017 from near zero in 2016 but is still likely to be less than 1.0%, as growth improves and investment increases; it will fall well short of the historical 2.1% average.

  ? 2016 productivity was 0.24% Y/Y and 1.06% Q4/Q4; Y/Y productivity rose to 0.54% in the first quarter and Q1/Q1 was 1.23%

  - Y/Y productivity growth in 2017 is on a track to rise to 1.2% and Q4/Q4 could be 1.3%

- ***Employment*** growth should slow considerably during 2017; now that full employment has been reached actual employment growth should closely track growth in the labor force; payroll growth should average 125,000 to 150,000 per month.

  - Payroll employment growth averaged 162,000 over the first five months of 2017

  - Household employment growth averaged a very strong 159,000 over the first five months of 2017

  + labor force growth over the same period averaged 25,400 — eventually payroll and household employment growth will converge to labor force growth

  + Evercore ISI temporary and permanent employment surveys remain strong, but have edged down from an average of 60.1 in December to 58.0 in June but remain very strong (a value above 50 is favorable)

  - The Conference Board's labor market differential was +11.7 in May compared to +10.9 in April, +12.8 in March, +7.3 in February and +6.0 in January, indicative of a strong employment market, but perhaps with the hint of imminent softening

  ? The Federal Reserve's labor market conditions index was 3.5% in April compared to 3.6% in March, 3.2% in February and 2.6% in January, reflecting a moderately strong labor market

  ? Indicative of a tight labor market, total job openings exceeded 6 million for the first time ever in May

- ***Employment participation*** will resume a gradual decline during 2017 due to demographically-embedded retirements of baby boomers.

  - Participation grew slightly from 62.67% in December to 62.71% in May

- ***Unemployment rate*** should edge down slightly to between 4.3% and 4.5%.

  + U3 unemployment rate in May was 4.29%; the unemployment rate is expected to fall further

- ***Hourly wage growth*** should edge up slightly during 2017 to a range of 2.7% to 3.1%.

  + BLS Y/Y hourly wage growth for all employees in May was 2.64%

  ? Atlanta Fed wage tracker declined from 3.8% in December to 3.4% in May (this measure consistently is higher than other measures of wages)

  + GS's wage tracker was 2.7% in May

+ Evercore ISI's composite index of temporary and permanent placement wage pressures were a relatively strong 64.4 in the week ending June 16 compared to 63.7 in December 2016 (a value greater than 50 indicates upward pressure on growth in wages)

- ***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 2.75% to 3.25%.

  - As of April nominal consumer income growth over the past 12 months was 3.68%; growth in 2017 appears likely to be near the top end of the forecast range

- ***Nominal consumer spending growth*** on the Y/Y basis will rise due in part to upward pressure on inflation in a range of 3.5% to 4.0%.

  - As of April nominal consumer spending growth over the past 12 months was 4.27%; growth in 2017 appears likely to be within the forecast range

  ? University of Michigan Survey of Consumers sentiment index has been edging down since the post-presidential election high: it was 94.5 in June, 97.1 in May, 98.0 in April, 96.9 in March, 96.3 in February, 98.5 in January and 98.2 in December

  ? Conference Board consumer confidence index pulled back to 117.9 in May and 119.4 in April after surging to 124.9 in March, the highest level since December 2000; this compares to 116.1 in February, 111.8 in January and 113.3 in December; since the election confidence has risen the most for those earning $35,000 to $100,000, the only category that has declined is those earning $15,000 or less

  ? Bloomberg's U.S. Consumer Comfort index eased to 50.0 on June 10 from 51.3 on March 24, which was the highest level in 16 years

  ? Evercore ISI's index of company surveys was 52.6 on June 16 compared to 50.1 on December 30

  ? May retail core sales were unchanged from the April level; however, March and April growth rates were revised higher to 0.6% and 0.8%, respectively

  ? Auto sales slowed significantly in March to an annual rate of 16.6 million units and rose only slightly in April to 16.8 million compared to the recent annual average of about 18 million, a slowing trend, if continued, which will depress growth in consumer spending; U.S. vehicle production is expected to decline to 11.2 million units in Q3 from 11.7 million in Q2

- ***Household personal saving rate*** will decline slightly as growth in spending exceeds growth in disposable income in a range of 5.0% to 5.5%.

  + The saving rate averaged 5.22% over the first four months of 2017 compared to 5.41% over the past 12 months

- ***Stock prices***, as measured by the S&P 500 average, should be between 5% higher or 10% lower, on the downside reflecting rising wages, slowing growth in profit margins and rising short-term interest rates and on the upside reflecting growth friendly fiscal policy; there is analysis indicating that U.S. stock prices are overvalued as 2017 commences.

  - The S&P 500 stock index was up 8.7% as of June 22

- ***Manufacturing*** will continue to be weak with the PMI index just slightly above or below 50, reflecting the negative consequences of dollar strength.

- Industrial production was unchanged in May after rising 1.0% in April, falling 0.4% in March due to a sharp decrease in motor vehicles and parts, preceded by six consecutive months of expansion; recent manufacturing strength reflects stronger global growth

- 93.3% of manufacturers are somewhat or very positive about business prospects for their companies compared to 56.6% a year ago — this is an all-time high for this survey in its 20-year history

- The NFIB optimism index skyrocketed to 105.8 in January and held at a high level of 105.3 in February, 104.7 in March and 104.5 in April and May; these readings are the highest sustained level since 2004; however this high level of optimism has yet to translate into increased hiring and capital investment

- ISM manufacturing index has been relatively stable so far in 2017: it was 54.9 in May, 54.8 in April, 57.2 in March, 57.7 in February, 56.0 in January and 54.5 in December (a value above 50 is favorable)

- ISM non-manufacturing index has been relatively stable so far in 2017: it was 56.9 in May, 57.5 in April, 55.2 in March, 57.6 in February, 56.5 in January and 56.6 in December (a value above 50 is favorable)

? Also reflecting the theme of stability, the GS analyst index decisively reversed April's decline to 47.1 by rising to 59.5 in May; it was 51.5 in March, 56.7 in February, 58.8 in January and 60.7 in December (a value above 50 is favorable); profit pressures are mounting, however, as indicated by the steady increase in the labor cost index to 78.9 in May

- ***Business investment*** spending growth should improve and be in a range of 1.0% to 3.0%.

  ? Capacity utilization (the U.S. operating rate) was 76.6% in May and remains well below the 80.0% level that typically leads to a sustained acceleration in business investment spending

  ? Small business plans to increase capital spending rose along with the increase in optimism in January, declined in February, rose in March, and declined in April; plans have been relatively stable for the past 12 months

  ? Evercore ISI's survey of capital goods has been rising and accelerated in the last month to 57.5 in the week ending June 16 (a value above 50 indicates growth in activity)

  ? C&I lending standard have tightened some; after declining in recent months, C&I lending has begun to grow; the decline earlier this year probably reflected the passing of the impact of improving access to other sources of credit as the energy sector financial difficulties receded

  ? Reflecting regulatory pressures, commercial real estate lending is slowing but is still rising at a favorable 6.6% annual rate

- ***Residential housing investment*** should be about the same in 2017 as it was in 2016 in a range of 3% to 6%; housing starts should rise 2% to 5%.

  ? NAHB housing market index has been relatively stable so far in 2017; it was 67 in June, 69 in May, 68 in April, 71 in March, 65 in February and 67 in January (a value above 50 is favorable)

  ? Higher mortgage rates depress housing investment; GS estimates that a 100 basis points increase in mortgage rates will decrease the level of residential housing investment by 4-8%

  - Annualized housing starts from January through May were 1.3% above the 2016 total — weaker than expected

- Housing investment grew at an annual rate of 13.8% in the first quarter — stronger than expected, but is likely to slow over the remainder of the year

? Evercore ISI's homebuilders survey has risen from a strong 57.5 in December to an extremely strong 65.0 on June 16 (a value above 50 is favorable)

? Homeownership averaged 63.4% during 2016, the lowest level in 50 years, but rose to 63.7% in the first quarter

? According to the Federal Reserve's senior loan officer Q1 survey, mortgage credit standards have tightened; median credit scores rose slightly from 763 in Q4 to 764 in Q1

? Q1 home mortgage originations slowed to $481 billion from $617 billion in Q4, primarily reflecting an increase in interest rates

- ***Residential housing prices*** should rise more slowly in 2017 in a range of 2% to 4% in 2016.

  ? GS estimates that median housing prices will grow 3-4% more slowly for each 100 basis points increase in mortgage rates

  ? The Federal Housing Finance Agency's Housing Purchase Price Index rose 6.2% during 2016 and 6.0% Y/Y in Q1 2017

  ? According to the S&P Case-Shiller index, the year over year trend in housing prices was an increase of 5.9% in March, which is well above the rate of increase in nominal incomes and, thus, is not sustainable

- ***Trade deficit*** should rise in 2017 as the increase in the value of the dollar depresses exports and increases imports.

  + The trade deficit in April, measured as a 12-month moving average, was 2.74%, slightly worse than December's 2.68%

- The ***dollar's value*** on a trade-weighted basis should rise due to stronger economic growth and higher interest rates relative to other developed economies.

  - Trade-weighted dollar was down -2.4% in May from December; the dollar has fallen because confidence in Trump economic stimulus has faded, greater than expected strength in European and emerging economic growth, and rising U.S. interest rates relative to interest rates in other developed countries

- ***Oil prices*** are likely to trade in a narrow band of $40 to $55 per barrel because abundant and flexible supply in the U.S. will constrain prices if global demand accelerates.

  + Oil prices averaged about $50 a barrel so far in 2017 and averaged $46 in the first half of June; downside risks to prices outweigh upside risks because of rapidly rising U.S. shale oil production

- ***Monetary policy*** — the Federal Reserve will raise the federal funds rate one to three times during 2017 in 25 basis point increments.

  + The FOMC raised the federal funds rate by 25 basis points in March and again in June and reaffirmed its expectation to raise this rate one more time during 2017, probably in December; GS places the probability of a December increase at 70% but the market probability is barely above 50%

  + The FOMC updated its guidelines for shrinking its balance sheet; most expect implementation to begin in September

  ? Financial conditions have eased so far in 2017 and were 99.26 in June compared to 100.05 in December and have now fallen below the recent low of 99.57 reached in July 2016

- ***Total inflation*** measures (CPI and CPE) will be relatively stable in 2017: CPI will rise 2.0% to 2.4% and CPE will rise 1.7% to 2.0%.

  + Total CPE inflation was up 1.71% in April compared to April 2016; the index, which peaked in February at 2.15%, is now falling as the effects of the rebound from low oil prices experienced in early 2016 drop out of the index; the index now appears to be headed by year end to a level below the 1.7-2.0% range

  + Conference Board 5-10 year inflation expectations fell slightly to 2.4% in April and May from 2.5% in February; inflation expectations for the next year fell from 2.7% in February to 2.5% in April

  + 5-year, 5-Year Forward Inflation Expectation rate derived from Treasury Inflation Protected Securities was 1.78% on June 21 compared to 2.08% on December 30, 2016

- ***Core PCE inflation*** will rise slightly in a range of 1.6% to 1.9%, reflecting global disinflationary trends offset somewhat by the closing U.S. employment and output gaps.

  + Core CPE inflation was up 1.54% in April compared to April 2016; the estimate for May is even lower at 1.41%; it now appears that core PCE inflation will be near the bottom end of the forecast range by the end of the year

- The ***10-year Treasury rate*** is likely to fluctuate in a range between 1.75% and 2.75% in 2017. 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 Treasury yield was 2.15% on June 22 compared to 2.45% on December 31, 2016

- ***Fiscal policy*** will have a positive impact on real GDP growth during both fiscal year and calendar year 2017, raising real GDP growth by 0.2 to 0.3%.

  ? Congress is off to a very slow start; no significant legislation has yet been signed into law

  ? The most likely legislation to become law will involve tax cuts, but on a much smaller scale than proposed by President Trump

  ? President Trump's budget is a political document and is a nonstarter in Congress

  - The House of Representatives passed health care legislation by a very narrow margin; the Senate is writing its own bill; this, coupled with White House scandals and congressional investigations, will complicate and delay consideration of tax cut, tax reform and infrastructure spending legislation

  - The odds of tax reform and infrastructure stimulus legislation are declining; enactment of legislation, if it occurs at all, increasingly is likely to be delayed until early 2018 and the impact may be smaller

- The ***deficit*** as a percentage of nominal GDP will increase substantially from fiscal year 2016's level of 3.15% to a range of 3.50% to 4.25%. Stronger than expected growth and delayed implementation of tax cuts and infrastructure spending would push the deficit toward the lower end of the range.

  - Through May 2017 the budget deficit for the prior 12 months is 3.18%

  - CBO's revised budget deficit projection for fiscal 2017 is 3.10%; my current estimate is 3.26%, which assumes Congress cuts taxes and increases infrastructure spending (it is no longer likely that fiscal stimulus will affect the 2017 fiscal year deficit, which implies that CBO's lower deficit estimate is more likely to be on the mark)

- ***State and Local investment*** spending growth should range between 1.0% and 1.5%.

  - State and local spending declined at an annual rate of -0.6% in the first quarter; improvement is expected over the remainder of the year, but it is increasingly likely that state and local spending in 2017 will change little or could even decline from 2016's level

2. **Rest of the World** — **June Assessment**: Stronger economic activity and improving confidence.

   ✓ **GS's global current activity indicator was 4.6% in May, compared to 4.4% in April, 4.3% in March and 4.1% in February, indicating that global growth is accelerating above the forecast pace of 3.4% for 2017 and the 3.0% actual growth in 2016; the pace of growth for major advanced economies has accelerated from 1.5% last summer to 3.0% in May; this indicator for emerging markets rose from 4.3% in January to 4.7% in February, 5.5% in March, 5.6% in April, and 6.2% in May**

   ✓ **OECD's global index of leading economic indicators has been rising over the past year and reached 100.0 in March and 99.9 in April**

   ✓ **Annual growth in global trade was 5.6% in March, the fastest rate since 2011**

   - ***Global growth*** is likely to improve to 3.4% in 2017 from 3.0% in 2016. However, due to political instability in Europe and the possible negative impacts of a strong dollar on emerging market economies, risks are tilted to the downside.

     - B of A has increased its 2017 forecast to 3.5%

     - GS has raised its 2017 forecast to 3.7%

     - Global growth has accelerated, political instability has been limited, and the dollar has weakened

     ? Global inflation has drifted up slightly due to firming commodities prices; diminishing output gaps should create modest further upside pressure

   - ***European growth*** will be positive but will likely fall short of the consensus 1.4% because of potential social and political disruptions, but a decline in the value of the euro would have favorable consequences.

     ? Eurozone manufacturing PMI index has improved to its best level of 56.0 since 2010 during the recovery from the Great Recession

     - B of A has increased its 2017 forecast to 1.7%

     - GS has raised its 2017 forecast to 1.9%

     - The euro has strengthened slightly

   - ***European inflation*** will rise from 2016's 0.2% but will probably fall short of the expected 1.2%.

     - Thanks to rebounding energy prices, the inflation forecast has been boosted to 1.6%; however, core inflation is stable at approximately 1%

   - ***European financial markets*** should be relatively stable with periodic episodes of volatility prompted by specific events, such as the French and German elections or a potential banking crisis in Italy

     - No episodes of volatility have occurred so far

- ***European political dysfunction, populism and nationalism*** will continue to worsen gradually. Countries to watch closely include France, Italy, the Netherlands, Greece, Spain, and Portugal. Germany's election will occur toward the end of 2017 and could be significant, depending upon whether political and social turmoil escalates in other parts of Europe earlier in the year.

  + Dutch elections on March 15 resulted in a smaller than expected gain for the far right Party for Freedom from 15 to 19 seats out of 150, which eliminated the possibility of a referendum on European Union membership; however, the parliament is more fragmented than ever and will require three or four parties to forge a coalition, which could take several months

  - Emmanuel Macron, a centrist Europhile, convincingly won the French presidential election and his party captured a majority of seats in the parliament

  ? Germany holds bundestag elections on September 24; while it is assumed that Angela Merkel will prevail, the tides of populism could undermine her support; a grand coalition government remains the likely outcome, but could be led by the SPD (Social Democratic) party rather than Merkel's CDU (Christian Democratic Union) party

  ? Italy is not scheduled to hold elections until 2018, however an evolving rift in former prime minister Renzi's party could accelerate elections to late this year; popular support for the euro is ebbing

  ? While Greece has faded from the news and appears to be complying, albeit grudgingly, with creditor bailout requirements, the real test will come during the summer when Greece is required to make payments for which bailout funds might be insufficient

  ? The U.K. triggered the two-year withdrawal process from the EU on March 29; EU leaders held a summit in early April to map out the framework for negotiations on Britain's exit from the EU; based on that framework, the European Commission will develop detailed guidelines, which will be submitted to EU member states on the EU Council for approval; negotiations commenced in late June

- ***U.K. growth*** is expected to decline to 0.9% in 2017 compared to 1.8% in 2016 as Brexit consequences begin to develop.

  ? Parliament initiated the two-year time frame for U.K. withdrawal from the European Union on March 29; negotiations begin in late June

  ? Prime Minister May unexpectedly set early parliamentary elections with the hope of strengthening the Conservative Party's majority; instead Conservatives lost seats, Labour gained and the Scottish National Party lost seats to both Conservatives and Labour; Conservatives will form a minority government, but the likelihood of a "Hard Brexit" has been reduced and the possibility of a referendum and Scottish vote to leave the U.K. has ended, at least for the time being

  - Expected 2017 GDP growth has been marked up to 1.5%; however, given the U.K.'s impending exit from the European Union, growth is expected to decelerate in future years

- ***China's GDP growth*** is expected to be 6.6% but risks are to the downside.

  + The official 2017 GDP growth target has been cut to 6.5% from 7.0% in 2016; however, 2017 GDP growth is still tracking 6.6%, although GS's current estimate is 6.8%

  - Growth momentum is strong and downside risks have diminished; however, GS's current activity indicator is edging lower and was 6.2% in June

  ? The yuan is down against the dollar over the last 12 months; foreign reserves have dropped below a still very hefty $3 trillion

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

  ? The 19th Party Congress will be held in the fall of 2017; President Xi will receive a second term; however, there is no indication at this time that economic reforms will be a significant agenda matter

- ***Japan**'s* economic policies will continue to fall short of achieving the 2.0% inflation target; inflation is expected to rise from 0.2% in 2016 to 1.2% in 2017. GDP growth will also continue to fall short of the policy target, but is expected to rise from 1.0% in 2016 to 1.5% in 2017. Population decline and slow implementation of market reforms will continue to weigh heavily on both growth and inflation.

  - Expected 2017 inflation has been marked up to 1.6%, but core inflation is expected to be 0.3%

  - GDP growth has been marked up to 1. 6% by B of A and to 1.2% by GS

  - GS's current activity indicator was above 2.0% in May and June

- ***India*** should continue to experience relatively strong real GDP growth in a range of to 7.0% to 8.0% in 2017.

  ? State elections early in the year resulted in a major victory for Prime Minister Modi's Janata Party, which will increase Modi's ability to pursue his reform agenda; increasingly it is looking like India can sustain high GDP growth for a number of years, which will offset a probable slowing of growth in China

  + GDP growth is on track to reach 7.3% in 2017 and is expected to accelerate in 2018

  + GS's current activity indicator has been rising sharply since early in the year and reached nearly 12.0% in May and June

- ***Emerging market countries*** should experience better growth in 2017 than in 2015 and 2016 when falling prices for commodities depressed economic activity in many countries. Growth is expected to improve from 2.6% in 2016 to 3.5% in 2017. However, a major downside risk is a strong dollar, particularly for emerging economies that have large amounts of dollar-denominated debt.

  + Growth is accelerating; the dollar's slight decline in value has diminished potential risks to growth

  + GS's current activity index for emerging markets countries rose from 4.3% in January to 4.7% in February, to 5.5% in March, and to 5.6% in April, and 6.1% in May

  + GDP growth is expected to be 3.5% in 2017

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

  + Expected 2017 GDP growth for Brazil is between 0.3% and 1.0%; GS's current activity indicator has been modestly positive so far in 2017; however, the political situation is deteriorating once again

  - Economic conditions are improving in Russia; GDP growth is expected to be 1.9% in 2017; GS's current activity indicator is hovering close to 4.0%

  + Economic conditions continue to deteriorate in Venezuela, but regime change does not appear to be in the offing

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

   June Assessment: No significant positive or negative risks have surfaced so far in 2017

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

     - Risk not realized; however, updated forecasts have edged toward the lower end of the 2.0-2.4% forecast range

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

     + Through the first 5 months of 2017, employment growth is slightly above the expected level

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

     - The participation rate was about the same in May as it was in December

   - ***U.S. hourly wage rate growth*** falls from its 2016 level of 2.6% or rises much more rapidly than expected; falling wage growth is the more serious risk

     - Risk not realized; hourly wage rate growth was 2.64% in May

   - ***U.S. Unemployment rate*** rises

     - Risk not realized, the rate has fallen more than expected

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

     - Risk not realized, the Q1 2016 to Q1 2017 rate is 1.2%, but the 12-quarter moving average is 0.5%, but should rise above 1% by the end of 2017

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

     + Consumer income has risen faster than expected

     + Consumer spending growth is slightly above the upper end of the expected range, but should be within the top end of the range by yearend

   - ***U.S. stock prices*** fall more than or rise more than the expected range of -10% to +5%

     + Growth in stock prices is above the upper end of the expected range

   - ***Growth in U.S. residential housing investment and housing starts*** are less than or more than expected; below expectations is the more serious risk

     - While Q1 growth was very strong, housing investment growth is expected to moderate over the remainder of the year

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

     - Early indications are that housing prices are rising more than expected

   - ***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 grew much more than expected in Q1 and is likely to be above the top end of the forecast range by yearend

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

     - Manufacturing surveys are strong but about the same as at the beginning of the year

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

  - Trade deficit has edged up slightly

- ***Value of the dollar*** rises substantially and triggers a global dollar squeeze

  - Risk not realized, the dollar has declined in value so far in 2017

- ***Oil prices*** rise above or fall below the expected range

  - Risk not realized, price volatility has been modest and prices have remained within the expected range

- ***U.S. monetary policy*** tightens more than 75 basis points, spawns financial market uncertainty and contributes to global financial instability

  - The FOMC has increased the federal funds rate 50 basis points and expects to increase that rate another 25 basis points, probably in December

- ***Financial conditions*** tighten and cause financial market volatility

  - Risk not realized, financial conditions have eased modestly so far in 2017 and are supportive of slightly greater real GDP growth in 2017

- ***U.S. inflation*** falls or rises more than expected

  + Inflation is weaker than expected and is on a course to match 2016's inflation rate

- ***U.S. interest rates*** fall *or* rise more than expected

  - Risk not realized; however, long-term rates have fallen modestly since the beginning of the year rather than rising slightly, as expected

- ***U.S. fiscal policy*** is more expansionary than expected

  - Risk not realized; however, the chances that tax reform and infrastructure stimulus will be delayed are rising

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

  - Risk not realized; according to CBO the deficit is likely to be a little smaller in 2017 compared to 2016

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

  + Spending declined in Q1 and is now expected to increase modestly or even decrease in 2017

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

  - Risk not realized; growth is accelerating

- ***Global trade*** declines as the U.S. and other countries pursue protectionist policies

  - Growth in global trade is at the highest level since 2011; other than cancelling TPP, the Trump administration has taken no action so far to limit trade

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

  - Risk not realized, growth is accelerating

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

  - Risk not realized, Europe's GDP growth is accelerating and inflation has stabilized

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

  - Risk not realized

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

  - The Netherlands Party for Freedom, which has an anti-immigration platform and Euroskeptic sympathies, did not do as well as expected in the Dutch elections on March 15

  - France elected a moderate centrist, Emmanuel Macron, as president and gave him a parliamentary majority

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

  ? The word "difficulty" may be the wrong word choice, as leaders appear to lack resolve to pursue economic reforms

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

  - Risk not likely to be realized in 2017, but risks are building for a significant slowdown in future years

- ***Japan*** — Abenomics and monetary policy are unsuccessful in raising inflation to the 2 percent target and economic growth continues to be below expectations

  + Growth momentum is improving

  - The inflation goal of 2% will not be met, but core inflation has moved up to 0.3%

- ***Emerging economies*** — a strong dollar leads to serious difficulties especially for countries with large amounts of dollar-denominated debt.

  - Risk not realized, the dollar's value has declined

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

- ***New risk*** – North Korea's developing nuclear strike capability and potential for pre-emptive military intervention to neutralize that capability

  - Risk not realized; after some spring-time saber rattling, relative quiet has ensued

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