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The Longbrake Letter*

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I. Not Even Multi-Mega Disasters and Political Drama Have Dented Optimism or Slowed Economic Momentum

Harvey, Irma, Maria and Nate. California wildfires. Las Vegas mass shooting. A president on the rampage undoing environmental policy, withdrawing health insurance subsidies, putting dreamers in jeopardy of deportation, saber rattling with North Korea and Iran, lobbying for humongous tax cuts that will mostly benefit wealthy people and send the deficit soaring, and demeaning fellow party members. Yet, investor, business and consumer optimism has not been fazed in the least. Stocks reach new highs nearly daily; price volatility is a distant memory; interest rates refuse to rise; credit spreads are tight and getting tighter; inflation is wilting.

But, we have seen this movie before – indeed many times. When optimism prevails and there is ample liquidity, financial markets turn giddy. As with the alchemist of old, everything turns to gold. Yes, we’ve seen this movie before – in 2005-06, 1997-99, 1986-89

Times, such as the one the global economy finds itself in currently, occur when the economic cycle is mature. They are fueled by copious amounts of liquidity courtesy of central banks. For a while, sometimes for a very long while, these goldilocks moments go on and on sustained by optimism-driven positive feedbacks.

Evercore ISI recently published a list “Investor Consensus Views” that summarizes well current sentiment:

- Synchronized global growth – for the first time in several years economic activity is accelerating simultaneously in all developing and emerging markets; the interactive feedbacks are reinforcing positive momentum.

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- Restrained inflation – in spite of accelerating growth, there is little to no evidence of increasing inflationary pressures; indeed, inflation in the U.S. has declined and expected acceleration in wage growth is missing in action.
- Stimulative monetary policies – even though the Fed affirmed at the recent meeting of the Federal Open Market Committee that it is proceeding with “normalization” of U.S. monetary policy through reduction in balance sheet size and increases in the federal funds rate, U.S. monetary policy remains accommodative, as do the monetary policies in Europe and Japan.
- Positive S&P earnings outlook – forecast earnings continue to rise; even profits reported in the National Income Accounts, which are adjusted for inflation and depreciation, showed some improvement in the second quarter.
- China’s economy OK – although recent data indicate a slight slowing in China’s economy, it is gradual and not a matter of market concern.
- Increasing perceived odds of U.S. tax cuts – the congressional deal to suspend the federal debt ceiling and fund the federal government until December 6, prompted by President Trump, eliminated the threat of a nasty fight and possible shutdown of the government and shifted political activity toward tax reform and tax cuts; Senate Republicans are crafting a proposal for reasonably substantial individual and corporate tax cuts which would not be revenue neutral.
- Low perceived odds of recession any time soon
- U.S. growth may accelerate – most forecasters expect U.S. and global economic growth to be a little stronger in 2018; the prospect of tax cuts in the U.S. bolsters that expectation.

During moments such as this, most come to believe that the good times will roll on indefinitely. Risk seems to have been tamed and caged. But, little by little, behaviors adapt to the perceived absence of risk. Decisions in a world in which risk no longer prevails as a governor contribute to creating unsustainable imbalances that ultimately and inevitably lead to market corrections which eliminate the imbalances. Whether the correction is mild or cataclysmic depends upon how long euphoria persists and how great imbalances become.

Already classical indicia of imbalances exist. Volatility is abnormally low and credit spreads are extremely tight; liquidity, as measured by the slowing growth in the supply of money and credit, is tightening; prices of equities are more than one standard deviation above “normal” levels; the spread between the real rate of return on investments and the cost of capital is narrowing; and debt leverage for governments and businesses is high and in many cases at all-time peaks.

Does this mean that the turning point is nigh? Not at all. History tells us that momentum can continue to assure the good times roll on for a very long time. But, history also tells us that as time passes, imbalances will build and the severity of the ultimate and inevitable correction will grow.

What will trigger the correction? Here the movie is clear as well. The correction follows attempts by central banks to lean against the consequences of economies operating above full capacity. When aggregate demand exceeds supply, inflation or the threat of inflation prompts central banks to tighten liquidity. It is always the loss of liquidity, real or imagined, that triggers a correction or recession. That is why the

Federal Reserve's policy to raise interest rates and shrink its balance sheet, which is intended to achieve the proverbial soft landing, may ultimately be the trigger of the correction rather than the curative.

Stay tuned. Little by little we are moving in that direction.

II. "Yellow Flags" – Nascent Risks

In June'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 single 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 while others have developed relatively recently. Economic trends typically develop slowly; thus little has happened over the past several months to elevate recessionary concerns. Indeed, international economic growth has been accelerating and the U.S. economy is benefiting.

But, while the current optimism is soundly based and measured, it is fact that the U.S. economic expansion is mature – the output gap has been eliminated and the labor market is tight. In response, the Fed is gradually tightening monetary policy. Imbalances both in the U.S. and global economies exist and are building. Eventually, a correction, or more likely a recession, will occur. Predicting timing is always difficult as the good times always seem to go on a lot longer than expected. In the absence of flagrant speculation-driven bubbles, there is good reason to expect favorable economic conditions to prevail for the next several quarters.

With respect to risks and building imbalances in economic activity, I have enumerated in previous letters several "yellow flags" which well could be harbingers of worse times to come. These risks have not gone away, but for now, no financial markets crisis of any sort appears imminent. Periodically I intend to provide updated commentary about "yellow flag" developments.

"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

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 platform 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.

This is a slow-moving trend which is likely to have significant long-run consequences. However, it is less likely to play a significant role in the current economic cycle.

Consumer Disposable Income and Spending. As discussed elsewhere in this month’s letter, consumer spending growth has greatly exceeded consumer disposable income growth over the past 12 months. Nominal consumer spending has accelerated from 3.63 percent in August 2016 to 4.50 percent in August 2017. Over the same time, nominal disposable income growth has slowed from 3.17 percent to 2.55 percent. If nominal disposable income growth is really slowing, and to be honest there is real doubt about the accuracy of the data because it is inconsistent with strong employment growth and stable to slightly higher average wage rates, consumer spending growth should have slowed down rather than accelerating. If these data are not revised, then the consumer saving rate has plummeted, as reported, from 5.05 percent in August 2016 to 3.67 percent in August 2017. Since saving is the residual difference between disposable income and consumer spending, the decline in the saving rate can come from a combination of increased use of consumer credit and lower cash allocations to savings accounts and other types of investments.

If disposable income really is slowing, then growth in consumer spending will eventually have to slow. My econometric model indicates that this is likely to happen over coming months. Growth in consumer spending is forecast to decline from the 4.5 percent annual growth rate in August 2017 to 3.3 percent in August 2018. But, my forecast growth of disposable income accelerates from 2.5 percent to 3.5 percent over the same time frame. All of this suggests that, barring a collapse in employment growth in coming months, real GDP growth will slow, but will not collapse.

Consumer Credit. Annual consumer credit growth has accelerated from 2.9 percent in August 2016 to 5.5 percent in August 2017, after peaking at an annual rate of growth of 6.7 percent in December 2016. Credit growth has been modestly faster than growth in consumer disposable income.

¹Claire Miller Cain. “Amazon’s Move Signals End of Line for Many Cashiers,” The New York Times, June 17, 2017.

The Federal Reserve's second quarter Senior Loan Officer Opinion Survey indicated that banks tightened credit standards modestly for credit card and auto loans, but credit standards were stable on other consumer loans. Credit standards for residential real estate loans eased slightly and demand edged up.

All-in-all, consumer credit does not appear to be a problem at this time.

Business and Commercial Real Estate Credit. Business credit expansion was weak in 2016 and, according to the Federal Reserve's Senior Lending Officer Survey, weakened somewhat during the second quarter of 2017. Credit standards were unchanged in the second quarter.

Demand weakened for commercial real estate loans in the second quarter as credit standards tightened slightly.

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.

Total business credit to GDP has been increasing over the past several quarters at 72.2 percent in the second quarter of 2017 was approximately 1 percentage point lower than the peak level reached in 2008.

Trends in commercial business and commercial real estate lending are flashing yellow and should be monitored closely.

Monetary Policy. The Federal Open Market Committee (**FOMC**) last raised the federal funds rate in June. The next increase is universally expected in December. In October, the **FOMC** implemented a policy to shrink the Federal Reserve's balance sheet gradually. The market has accepted these developments in stride with little concern and the bull market has rolled on. Perhaps this is due, in part, to the market's belief that the **FOMC** will not raise the federal funds rate much further in this cycle because of low real rates of interest and weak inflation. However, the **FOMC's** proposed policy tightening pathway is far more draconian than the market expects, which poses the potential for a damaging policy mistake in coming months.

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 always build as rates rise and liquidity diminishes. A traditionally reliable precursor of the turning point from expansion to recession is a flat or inverted yield curve. The yield is positively sloped currently. The 2-10 year Treasury yield spread is about 80 basis points, but this spread has contracted about 50 basis points since the beginning of the year.

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 2.50 to 3.00 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.

There is good reason to be concerned about the course of the Federal Reserve's current monetary policy in light of the potential imbalances that have been unleashed by its unprecedented and extended manipulation of interest rates during its multi-year campaign to reflate an economy.

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 at 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?

Overshoots in tightening monetary policy customarily lead to recession. In this regard the disagreement between **FOMC** members and the market about how much further tightening is needed is troublesome. Yellow is flashing. This is probably the greatest risk and accordingly bears very close watching.

Stock Market Valuations. Stock prices continue to claw their way higher. By some measures, stock prices are more than one standard deviation above fair value.

Favorable price action has been concentrated in a few large capitalization stocks. This development is aided and abetted by a trend toward passive investing which creates demand pressure on stocks in the index. One analyst also opines that when investors favor large cap stocks it is a sign that they are beginning to get nervous about small company balance sheets. If this is true it will be reflected eventually in the widening of corporate Baa bond spreads. This has not yet occurred – Baa bond spreads are extremely tight and have been tightening further and are very close to their historical lows.

Overvaluation can be sustained for a very long time as long as optimism prevails. However, tighter financial conditions if, and when, they take hold of financial markets, will deflate stock prices very quickly. This is more likely to be a derivative consequence than a trigger. Nonetheless, it is flashing yellow and needs to be monitored. Further increases in stock prices and escalation in price-earnings ratios would be particularly troublesome.

Real Inflation-Adjusted Company Earnings. S&P 500 company earnings have been growing rapidly this year. Stock prices, naturally, have responded positively. Accelerating global growth has reinforced optimism about the continuation of a favorable trend in earnings.

While market participants respond to reported earnings, measurement issues stemming from GAAP accounting rules can mask underlying trends in economic earnings. Will Denyer of GavekalResearch points

out that when earnings of the domestic nonfinancial corporate sector are adjusted for inflation, currency movements and economic depreciation of capital, real profits have been declining since 2015, although there was a small 2 percent year-over-year improvement in the second quarter of 2017, but that compared with 10 percent growth in S&P 500 earnings.^{2,3}

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.

For the time being accelerating economic growth will either boost the rate of return on investment, as occurred in the second quarter, or slow its decline. The greater risk is a rising cost of capital and that will depend on the conduct of monetary policy and financial conditions. Current spreads are at the lower end of the historical range and are flashing yellow.

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 (long corporate bond rate, long Treasury bond rate, and federal funds rate).

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 4.8 percent and the after-tax rate is 3.8 percent, which is a slight improvement from the first quarters rates of 4.6 percent and 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, the long treasury bond real yield, and the federal funds real rate. The spreads during this year’s first quarter, which are shown in **Table 1**, were 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. The spreads improved slightly, by approximately 0.2 percent in the second quarter, assuming unchanged cost of capital. Since the first quarter, the federal funds rate has increased 25 basis points, Treasury bond rates have been

²Will Denyer. “Still No real Recovery in US Profits,” GavekalResearch, May 29, 2017.

³Will Denyer. “Good News at the NIPA Coal Face,” GavekalResearch, August 31, 2017.

stable, and corporate bond rates have fallen slightly as spreads have tightened.

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

Spread	Recent	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 may dip into the red zone if the FOMC raises the federal funds rate by 25 basis points at its December 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. As the global economy has picked up steam, prices of commodities have firmed a bit. Copper prices, for example, have risen about 20 percent since the beginning of the year. Oil prices, however, have bounced around within a narrow range and are no higher now than at the beginning of the year. At the moment commodity price trends appear to be relatively benign.

By and large commodity price action is not troublesome at this time. However, watch for any kind of sustained run up in prices.

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. This could also partially explain why disposable income growth has been weak this year. But, it could also reflect slowing economic activity.

State and local tax revenues have been underperforming and state and local investment spending has declined modestly over the last year. But this reflects a long-standing trend in which state and local government spending has been shrinking as a proportion of total GDP, so this development is not necessarily indicative of faltering economic activity. State and local government investment spending has shrunk from 12.9 percent of real GDP in 2009 to 10.4 percent in the second quarter of 2017. The state and local government debt-to-GDP ratio has declined from 21.3 percent to 15.8 percent over the same time period.

State and local spending trends are part of a longer-term phenomenon that is linked with lower potential economic growth. In the near term, it is unclear that soft tax collections are a consequence of slowing economic activity.

China. In advance of the upcoming party gathering, 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. In the long run this policy will not be sustainable but probably difficulties can be avoided in the near term.

China is not flashing yellow at this time.

Summary. Overall, there are no glaring red flags visible, but there are several yellow flags and some

other risk factors which remain relatively benign at the moment but which should be monitored closely. There are also positive trends I have not enumerated. On balance, these vignettes are symptomatic of slowing growth that inevitably occurs in an economy which is operating at full capacity and the increasing potential for tighter financial conditions and financial market turbulence as the Federal Reserve continues to “normalize” monetary policy by raising interest rates and reducing liquidity.

III. Outlook for U.S. Real GDP

Second quarter real GDP growth was strong and was relatively unaffected by unusual factors and statistical quirks. Until Hurricanes Harvey and Irma, prospects were favorable for similar strength in the third quarter. While third quarter data could be skewed by these disasters, their impact is likely at worst to prove to be only temporary. Optimists happily predict continued sustained economic expansion in the U.S. and elsewhere in the world. Pessimists worry about building economic imbalances and nascent risks lurking beneath the surface, which could derail good times.

For the time being, optimists hold sway and favorable economic momentum appears sufficient to guarantee good economic performance for several months and perhaps quarters to come.

1. “Final Estimate” of Second Quarter GDP

The “**Final Estimate**” of second quarter GDP growth of 3.1 percent was unchanged from the “**Preliminary Estimate**” and improved from 2.6 percent reported in the “**Advance Estimate**.”

Details of the “**Final Estimate**” are shown in **Table 2**. The bottom four panels of **Table 2** show different measures of real GDP growth. These include the traditional “**Total GDP**” measure, and three alternatives – “**Final Sales**,” “**Private**,” and “**Private Domestic**.”

Table 2
Composition of 2017 and 2016 Quarterly GDP Growth

	Second Quarter 2017 Advance Estimate	Second Quarter 2017 Preliminary Estimate	Second Quarter 2017 Final Estimate	First Quarter 2017	Fourth Quarter 2016	Third Quarter 2016
Personal Consumption	1.93%	2.28%	2.24%	1.32%	1.99%	1.92%
Private Investment						
Nonresidential	.64%	.85%	.82%	.86%	.02%	.42%
Residential	-.27%	-.26%	-.30%	.41%	.26%	-.18%
Inventories	-.02%	.02%	.12%	-1.46%	1.06%	.16%
Net Exports	.18%	.21%	.21%	.22%	-1.61%	.36%
Government	.12%	-.05%	-.03%	-.11%	.03%	.09%
Total	2.57%	3.05%	3.06%	1.24%	1.76%	2.78%
Final Sales	2.59%	3.03%	2.94%	2.70%	.70%	2.62%
Private	2.47%	3.08%	2.97%	2.81%	.67%	2.53%
Private Domestic	2.29%	2.87%	2.76%	2.59%	2.28%	2.17%

Reported quarterly “**Total GDP**” growth tends to be highly variable because of volatility in various GDP components, especially inventories, and the methodology of annualizing quarter growth rates which amplifies the impact of short-term aberrations in the growth of individual GDP components. “**Total GDP**” grew 3.06 percent in the second quarter “**Final Estimate**” compared to 1.24 percent in the first quarter.

However, most of the difference between the first and second quarters’ measures of annualized real GDP growth was due to the change in the inventories component. The “**Final Sales**” measure of real GDP removes the contributions of changes in inventories. “**Final Sales**” grew 2.94 percent in the second quarter, which was only slightly stronger than 2.70 percent in the first quarter and 2.62 percent in the third quarter of 2016. The anomaly for this measure of real GDP occurred in the fourth quarter of 2016 when “**Final Sales**” grew only 0.70 percent. But that one-quarter aberration was due to another GDP component involving the contribution of exports and imports to real GDP growth.

“**Private**” GDP omits both inventory changes and government investment spending. Growth in government expenditures rises during periods of economic weakness and falls during periods of strength or when fiscal austerity is the order of the day.

“**Private Domestic**” GDP omits inventory changes, government spending and net exports. This measure gives the truest picture of the performance of the core of the U.S. economy, which accounts for approximately 87 percent to “**Total GDP**.” Annualized quarterly growth rates of this measure are very stable, varying over the past four quarters from 2.17 percent to 2.76 percent. The second quarter “**Final Estimate**” was 2.76 percent, reflecting steady upward improvement over the past four quarters.

Overall, the picture that the various measures of real GDP paint is one of gradual growth that is somewhat above the potential rate so that the output gap has been shrinking little-by-little.

2. Growth Rates of Real GDP Components – 4-Quarter Moving Average

Because quarterly annualized GDP data in the customary **BEA** reports are highly volatile, without the kind of dissection of details discussed above quarterly data can be very misleading about the underlying trends in economic growth. **Table 3** and **Chart 1** show four-quarter moving averages of growth rates for GDP components as well as the four alternative measures of real GDP. This smooths out quarterly aberrations in the data and gives a clearer picture of the health and direction of the economy.

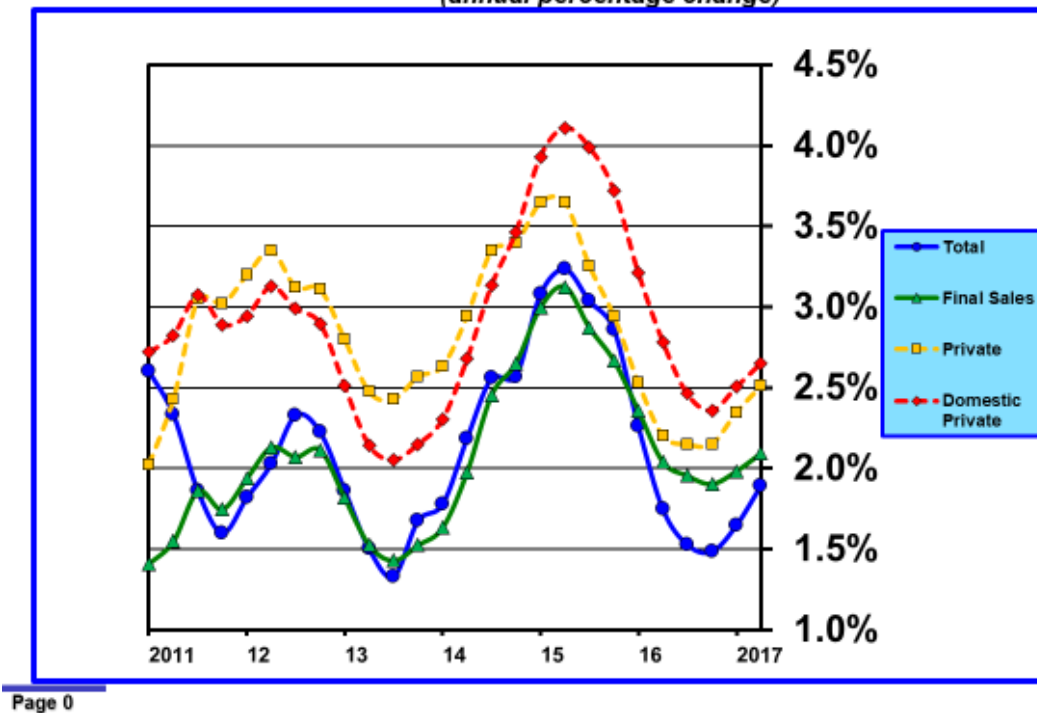
Since the second quarter of 2011 growth in “**Private**” GDP has been consistently greater than growth in “**Total GDP**.” Since 2015 fiscal policy has been mildly supportive of “**Total GDP**” growth. In recent quarters government’s contribution to real GDP growth has been small and diminishing, which has reduced the growth rate in “**Total GDP**” relative to “**Private**” GDP.

There are some important takeaways from **Chart 1**. First, all four measures of real GDP growth troughed in the fourth quarter of 2016 and have edged up since then. Second, “**Private**” GDP, which omits government spending and inventory accumulation, and “**Domestic Private**” GDP, which omits government spending, inventory accumulation and net exports, have been growing more rapidly than “**Total GDP**” and “**Final Sales**.”

Table 3
Year-Over-Year Growth Rates for Components of Real GDP

	GDP Component Weight	Second Quarter 2017	First Quarter 2017	Fourth Quarter 2016	Third Quarter 2016	Second Quarter 2016	First Quarter 2016	Fourth Quarter 2015
Personal Consumption	69.46%	2.80%	2.81%	2.73%	2.78%	2.99%	3.27%	3.64%
Private Investment	17.13%							
Nonresidential	13.34%	1.94%	.57%	-.59%	-.67%	-.24%	.84%	2.34%
Residential	3.51%	2.09%	3.34%	5.48%	7.41%	9.60%	10.43%	10.23%
Inventories	.13%	-59.8%	-69.7%	-66.8%	-66.3%	-45.7%	-14.8%	48.4%
Net Exports	-3.59%	5.98%	6.33%	7.51%	10.59%	18.89%	22.88%	27.49%
Exports	12.75%	1.97%	.76%	-.33%	-.93%	-1.19%	-.52%	.41%
Imports	-16.34%	2.83%	1.92%	1.27%	1.32%	2.50%	3.61%	4.96%
Government	17.16%	.13%	.28%	0.75%	1.05%	1.29%	1.55%	1.39%
Total	100.0%	1.89%	1.65%	1.49%	1.53%	1.75%	2.26%	2.86%
Final Sales	99.87%	2.09%	1.98%	1.90%	1.96%	2.04%	2.36%	2.67%
Private	82.71%	2.51%	2.35%	2.15%	2.15%	2.20%	2.53%	2.95%
Private Domestic	86.30%	2.65%	2.50%	2.36%	2.46%	2.78%	3.21%	3.72%

CHART 1 – Real GDP Growth – Alternative Measures
(annual percentage change)

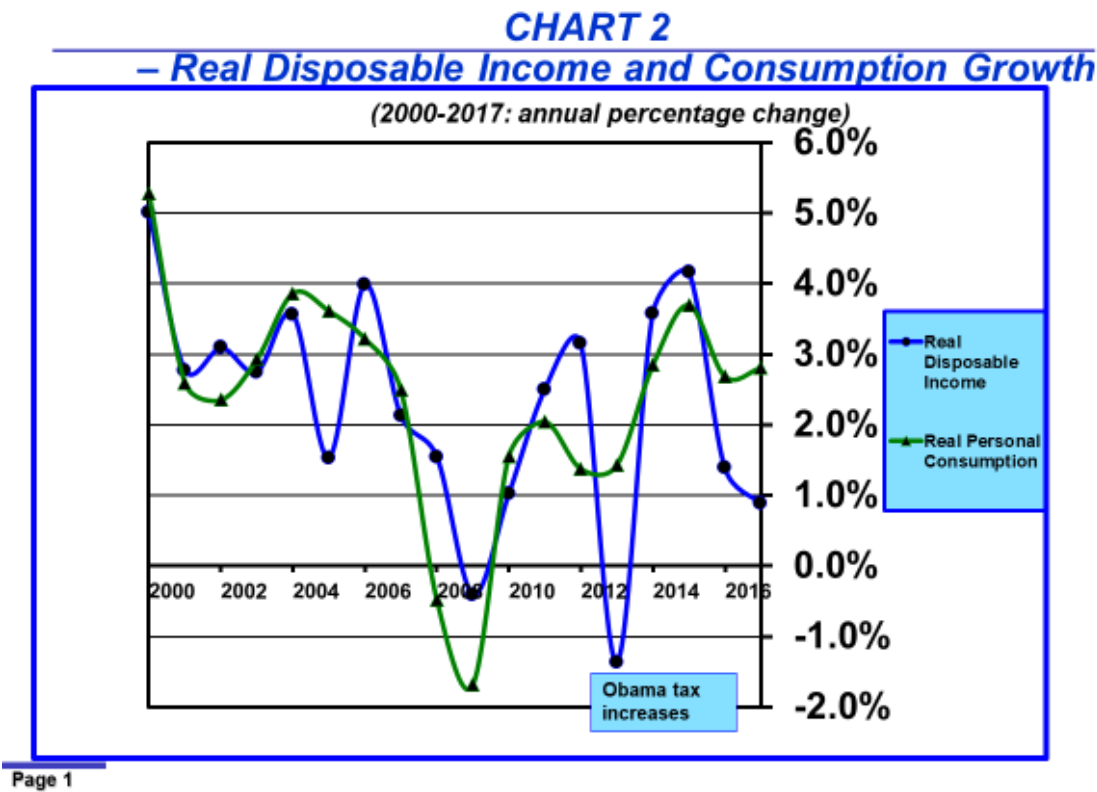


3. Consumption and Disposable Income

Personal consumption contributed 2.24 percent to second quarter real GDP growth compared to 1.32 percent in the first quarter. First quarter consumption growth was initially reported as an implausibly low 0.44 percent but the revised figure is still unusually weak relative to strong employment growth. The four-quarter moving average trend is a more reliable indicator and it rose from 2.73 percent in the fourth quarter to 2.81 percent in the first quarter and 2.80 percent in the second quarter. The recent growth rate in consumption has been relatively stable in a range of 2.70 to 2.80 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.

Chart 2 shows annual rates of growth in real disposable income and real consumer spending from 2000 through the first eight months of 2017. The negative impact of the Great Recession on both disposable income and consumption growth is clear in **Chart 2**. So, too is the temporary depressing effect of the Obama tax increases on disposable income growth in 2012 but not on consumption growth. However, it is unclear why growth in disposable income has faltered recently while consumption growth has remained relatively strong.



This divergence is evident in **Chart 3**. Over the past two years, nominal disposable income growth has plunged while spending growth has remained relatively high and even increased over the past three

quarters.

CHART 3 – Nominal Disposable Income and Consumption Growth

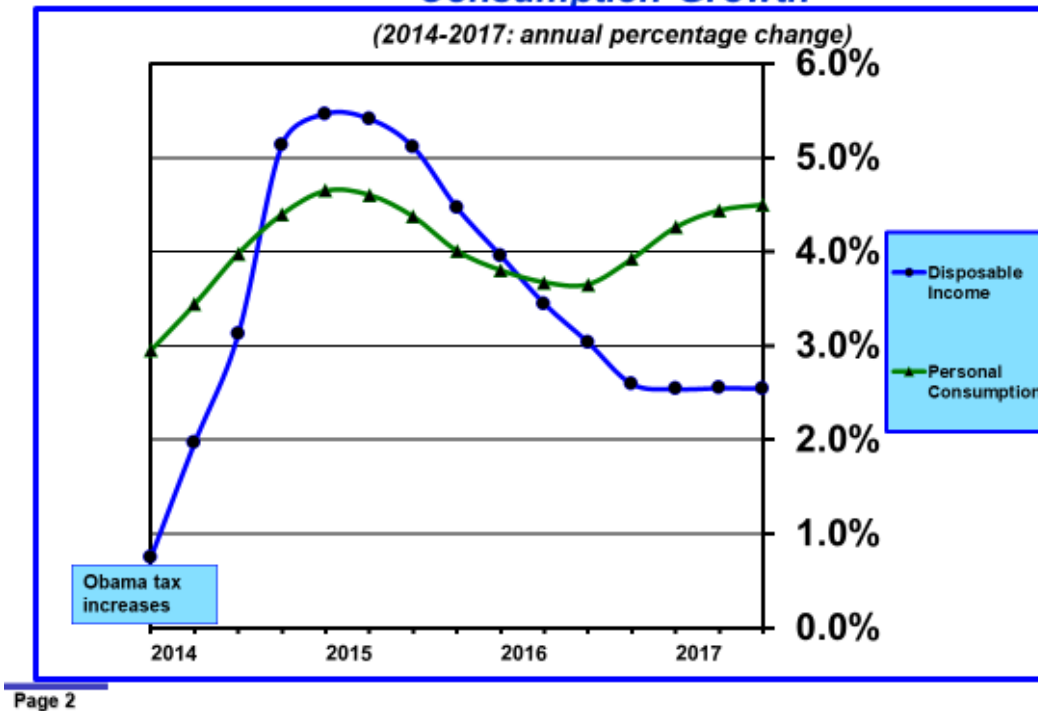


Chart 3 shows the 4-quarter moving average growth rates in nominal disposable income and consumption from 2014 through the second quarter of 2017. Growth in consumption is typically less volatile than growth in disposable income. Consumer saving serves as the buffer (see **Chart 4**). When growth in disposable income is weak, the saving rate usually declines as consumers dip into savings and increase borrowing to sustain consumption. This phenomenon is consistent with the permanent income hypothesis which posits that consumers will plan consumption expenditures based upon expected long-run sustainable income rather than adjust consumption to short-term oscillations in disposable income.

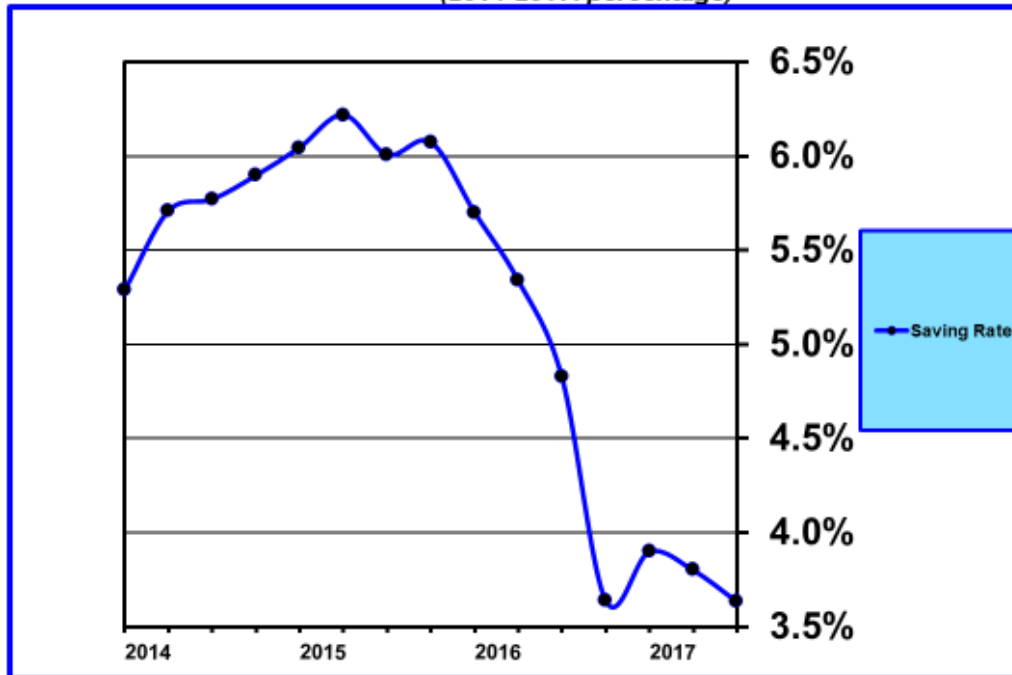
As is evident in **Chart 4**, so far as the reported data are concerned, consumer spending has been supported by a collapse in the saving rate from 6.1 percent during 2015 to 3.8 percent over the first eight months of 2017.

As can be seen in **Chart 3**, disposable income growth has slowed considerably over the last several quarters. This phenomenon only became apparent when **BEA** did its annual benchmarking of the National Income Accounts in July. The downward revisions are inconsistent with strong employment growth and some, albeit limited, acceleration in wage rates. **GS** believes that this inconsistency can be explained, at least in part, by tactical income shifting from one year to another and that **BEA** will revise disposable income up by 0.8 percent at the next benchmarking in July 2018. This would also lift the saving rate by 0.4 percent.⁴

⁴Spencer Hill. "Tactical Income Shifting and Compensation Slump," US Daily, Goldman Sachs Economics Research, September 22, 2017.

CHART 4 – Saving Rate

(2014-2017: percentage)



Page 3

However, if the decline in disposable income growth has not been caused by incomplete disposable income data but is due to fundamental factors, then eventually growth in consumption will fall. In turn, since consumption is nearly 70 percent of total GDP, growth in GDP will decline.

Since the election of Donald Trump as president, consumer and business confidence has surged to high levels. Over the same time, consumption growth has accelerated but income growth has merely stabilized at a relatively low level. Assuming the income data are reliable, which they might not be, income growth in coming months will need to accelerate to validate consumer optimism. Negligible acceleration in wage growth and slowing employment growth do not bode favorably.

Forecasts of growth in real consumer spending over the next several years are shown in **Table 4** and **Chart 5**. Real consumer spending increased 2.69 percent in 2016. This is not the final number as several more revisions will occur over the next few years.

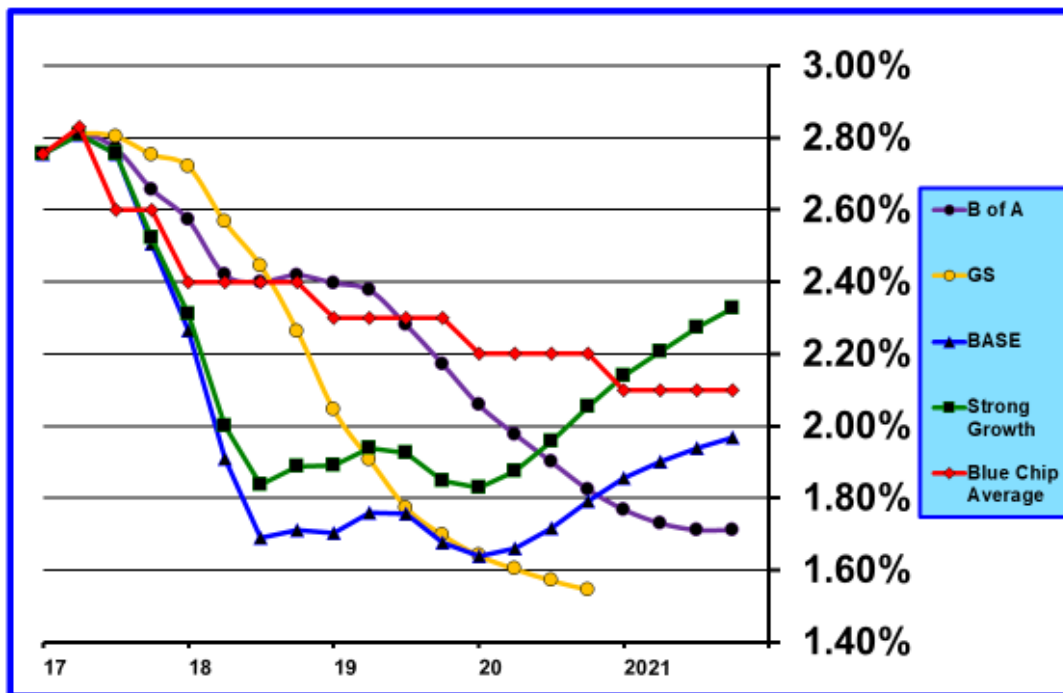
Most forecasters expect real consumer spending growth to slow in coming years because the economy is at full employment and employment growth is set to slow in coming quarters to match the underlying demographic dynamics of aging and slowing population growth.

This slowing pattern is apparent in the data in **Table 4** and **Chart 5**. Growth in real wages might moderate the forecast decline in consumer spending growth, but only if the growth rate in real wages 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.

Table 4
Real Personal Consumption Growth Rate Forecasts

	2013	2014	2015	2016	2017	2018	2019	2020	2021
Actual	1.43	2.84	3.70	2.69					
B of A					2.66	2.42	2.17	1.82	1.71
GS					2.75	2.26	1.70	1.55	
ISH Markit					2.60	3.00	2.80	2.50	2.50
Economy.com					2.70	2.70	2.20		
Blue Chip					2.60	2.40	2.30	2.20	2.10
Bill's BASE					2.51	1.71	1.68	1.79	1.97
Bill's Strong Growth					2.52	1.89	1.85	2.05	2.33

CHART 5 – Real Consumer Spending Forecasts
(annual rate of change)



Page 4

Although all forecasters agree that consumer spending growth will slow, there are differences in my projections for spending growth in 2017 and 2018 compared to other forecasters. My 2018 forecast, shown in the “**BASE**” and “**Strong Growth**” scenarios, is below the forecasts of others. Beyond 2018, my forecasts of spending growth stabilize in 2019 and 2020 in the “**BASE**” and “**Strong Growth**” scenarios, but then rise in 2020 and 2021. After 2017 **GS** is more pessimistic than others, with the exception of my scenarios, 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 about 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 possibly of **GS**, all forecasters appear to be overly optimistic about real consumer

spending growth in 2018. ISH Markit's excessive optimism persists beyond 2018, perhaps because it believes that the Trump administration's 3 percent real GDP growth assumption is attainable. These kinds of forecasts point out the speculative nature of much of economic forecasting and weaknesses inherent in most econometric models.

4. Business Investment

Real private investment consists of three principal categories – business investment, which is labeled “non-residential” 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 closely tracks growth in business and residential investment.

Table 5 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 5
Real Private Investment (Residential and Nonresidential) Growth Rate Forecasts

	2013	2014	2015	2016	2017	2018	2019	2020	Ave. 1947-2017
	REAL PRIVATE INVESTMENT								
Actual	5.02	6.21	3.83	0.63					3.73**
B of A					3.96	4.09	4.09	3.41	
GS					3.90	4.21	2.79	2.31	
Bill's BASE					3.62	2.27	2.27	2.20	
Bill's Strong Growth					3.82	3.07	3.03	3.03	
	REAL NONRESIDENTIAL (BUSINESS) INVESTMENT								
Actual	3.50	6.88	2.34	-0.59					2.53*
B of A					4.48	4.39	4.09	3.41	
GS					4.63	4.58	2.94	2.41	
	REAL RESIDENTIAL INVESTMENT								
Actual	11.88	3.46	10.23	5.48					-0.26*
B of A					2.00	2.93	4.06	3.41	
GS					1.14	2.75	2.20	1.91	

*Average 1999-2017

**Real private investment = 1.61% for 1999-2017

Nonresidential investment (business) growth faltered in 2015 and was crushed in 2016 by the collapse in oil and commodity prices. But business investment was down in other sectors as well. Investment growth was negative -0.59 percent in 2016.

Nonresidential investment came out of deep slumber in the first half of 2017, rising at an annual rate of 7.2 percent in the first quarter and 6.7 percent in the second quarter. 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 and stronger global growth. Possible benefits of tax reform and tax cuts have largely been removed from 2017 forecasts. Some optimism remains for a fiscal boost in 2018, but as can be seen in **Table 5, B of A** is more optimistic than **GS**.

Although **GS** expects growth in nonresidential investment to be 4.6 percent for all of 2017, its capital expenditures tracker registered about 6.0 percent in September. In addition to a continuation of the first half'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 decreased 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 been too optimistic.

Following 2018 and over the next several years **GS** expects business investment (nonresidential investment) to be close to trend growth of 2.53 percent that has prevailed over the last 19 years, while **B of A** expects growth to be above trend for 2017-2020. I have been consistently skeptical in the past about what I felt were overly optimistic forecasts for growth in business investment 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, which is highly uncertain.

B of A is especially optimistic about the outlook for business investment growth to remain at a high level over the next several years 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, according to the Federal Reserve's data on capacity utilization, because firms are operating at less than full capacity, the incentive to invest has been dampened.

Housing – Real residential investment growth was very strong in 2015. Growth in 2016 slowed considerably but remained well above the long-term trend, which is not difficult considering that the annual rate of growth over the past 19 years has been slightly negative.

Housing inventories are lean and demand is relatively strong, resulting in upward pressure on housing prices. However, outsized housing price increases which 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. Forecasts reflect this scenario, although trend growth is expected to match (**GS**) or slightly exceed (**B of A**) 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 based upon growth in household formation and replacement of existing homes. But, starts were 1.18 million in 2016, up 6.3 percent from 1.11 million in 2015. Housing starts have averaged 1.20 million in the first seven months of 2017, which was 2.6 percent above the pace of the first seven 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. **GS**'s forecast is similar

– 1.22 million starts in 2017 and 1.30 million in 2018 and there is not much improvement after that.

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 July 2017 Federal Reserve’s Senior Loan Officer quarterly survey indicated that lending standards in all categories of residential loans were unchanged or easier. The survey indicated a slight strengthening in residential loan demand. However, credit standards tightened for commercial real estate loans and demand weakened.

In summary, housing demand is depressed relative to demographics and historical trends in household formation and supply is weak. Overall 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 (S&P CoreLogic Case-Shiller National Home Price Index) in July over the prior year; the Federal Housing Finance Agency’s purchase only housing price index was up 6.6% in the second quarter of 2017 compared to the second quarter of 2016. These increases are well above the 2.7 percent growth in aggregate nominal disposable income and 2.0 percent growth in per capita nominal disposable income over the past 12 months. 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, residential investment growth, which rose at a dismal annual rate of 1.5 percent in the first half of 2017, will continue to be weak in coming quarters because of higher housing prices and the potential for somewhat higher mortgage interest rates. I would place greater confidence in **GS**’s conservative forecast relative to **B of A**’s marginally more optimistic forecast.

5. Change in Inventories

Inventories subtracted 1.46 percent from “**Total**” GDP growth in the first quarter after adding 1.06 percent in the fourth quarter of 2016 (see **Table 1**). The change in inventories was very subdued in the second quarter, adding only .12 percent to real GDP.

As can be seen in **Table 6**, real inventory accumulation declined each quarter from the first quarter of 2015 to the second quarter of 2016. Inventory growth bounced back to \$63.1 billion in the fourth quarter of 2016, but sagged to \$1.2 billion in the first quarter and \$5.5 billion in the “**Final Estimate**” for the second quarter.

Inventories generally add between 0.1 and 0.2 percent to annual real GDP growth. Based on the historical record, inventory accumulation in the second and third quarters of 2016 and the first and second quarters of 2017 was well below average.

Table 6
Quarterly Real Inventory Data
(most recent data are in red)

	Advance Estimate	Preliminary Estimate	Final Estimate	First Annual Revision	Second Annual Revision	Third Annual Revision
2017 Q2	-3	1.8	5.5			
2017 Q1	10.3	4.3	2.6	1.2		
2016 Q4	48.7	46.2	49.6	63.1		
2016 Q3	12.6	7.6	7.1	17.0		
2016 Q2	-8.1	-12.4	-9.5	12.2		
2016 Q1	60.9	69.6	68.3	40.7	40.6	
2015 Q4	68.6	81.7	78.3	56.9	68.2	
2015 Q3	56.8	90.2	85.5	70.9	96.2	
2015 Q2	110.0	121.1	113.5	93.8	105.6	
2015 Q1	110.3	95.0	99.5	112.8	114.4	132.2
2014 Q4	113.1	88.4	80.0	78.2	76.9	76.9
2014 Q3	62.8	79.1	82.2	79.9	66.8	85.6
2014 Q2	93.4	83.9	84.8	77.1	55.2	69.9
2014 Q1	87.4	49.0	45.9	35.2	36.9	38.7
2013 Q4	127.2	117.4	111.7	81.8	87.2	103.6
2013 Q3	86.0	116.5	115.7	95.6	93.6	109.0
2013 Q2	56.7	62.6	56.6	43.4	39.6	52.6

As can be seen in **Table 6**, initial inventory data are crude estimates and are subject to substantial revision over the next three years. The \$5.5 billion inventory accumulation in the second quarter “**Final Estimate**” will be revised three more times in the next three years.

To add to the data quality problem, quarterly changes are annualized and this can greatly amplify the impact of data errors and contribute to misperceptions about the trend in real GDP growth. Volatile inventory data are especially troublesome in this regard.

There are two ways to gain a better sense of the underlying trend in real GDP growth. One way is to omit highly volatile data, especially data that are subject to substantial subsequent adjustment. That is why many analysts report the growth rate in “**Final Sales**,” which omits inventory data, as I do in **Tables 2** and **3**.

Another method that helps give a better sense of the underlying trend in real GDP growth is to focus on year-over-year growth rates, which are calculated by dividing the average of the most recent four quarters by the average of the preceding four quarters. The result of that calculation methodology can be seen in **Table 3** by comparing the growth rates in “**Total GDP**” and “**Final Sales**.” Quarterly data volatility in growth rates largely disappears – the impact of inventories on “**Total GDP**” growth is very small and

the growth trends in “**Total GDP**” and “**Final Sales**” are very similar.

Evercore ISI conducts a quarterly survey of inventories which covers 63 companies including retailers, restaurants, wine and spirits, auto dealers, homebuilders, industrial companies, chemical companies, and manufacturing and capital goods companies. It asks each company to rate current inventory levels on a five-dimension scale: “too high;” weight = 1, “little too high;” weight = 0.5, “about right;” weight = 0, “little too low;” weight = -0.5, and “too low;” weight = -1.

In the aggregate inventories were +1 in the third quarter compared to +12 in the second quarter, indicating that inventories have gone from being modestly too high to about right. However, while inventory levels are better for consumer goods companies, they remain high at +22 in the third quarter compared to +33 in the second quarter. Auto dealers, which is a subcategory, was +24 in the third quarter; retailers and restaurants, which also a subcategory, was +13. At the other end of the spectrum, homebuilders were -29 in the third quarter and the shortage of inventory grew during the quarter. Inventories for industrial, manufacturing, and capital goods companies were about right in the third quarter, but inventories for chemical companies were too low, reflecting the negative impact of recent hurricanes.

Evercore ISI's survey of inventories implies that growth in inventories should recover in the next quarter or two to closer to the long-term trend rate. This would boost real GDP growth.

6. Government Investment

Government investment subtracted -0.03 percent from second quarter real GDP growth after subtracting -0.11 percent in the first quarter (see **Table 2**). This means that there has been virtually no growth in government investment spending during the first half of 2017.

Federal government spending declined at an annual rate of -0.27 percent and state and local spending declined at an annual rate of -0.50 percent during the first half of 2017.

Table 7 shows recent growth rates in government spending and forecasts for 2017-2021. **GS** expects government investment spending growth to be slightly positive during the remainder of 2017 and be close to zero for all of 2017. **B of A** does not expect much improvement in government investment during 2017 and very pessimistic about growth in 2018. **B of A** does not expect Congress to enact any significant fiscal legislation over the next two years. **GS** expects growth to improve in subsequent years to a level well above the 0.80 percent growth trend of the past 18 years. I think a continuation of the lower recent trend rate is more likely.

7. Net Exports

In the “**Final Estimate**” net exports contributed 0.21 percent to second quarter real GDP growth after adding .22 percent to first quarter real GDP growth (see **Table 2**). This reversed the negative trend that prevailed in 2014, 2015 and 2016 as the dollar strengthened. The reversal reflects stronger growth in exports and has been driven by a weaker dollar and an acceleration in global growth.

Although the trade deficit in goods and services has been relatively stable, rising slightly from 2.70

Table 7
Federal and State and Local Investment Spending Growth Rates

	2013	2014	2015	2016	2017	2018	2019	2020
Federal	-5.82	-2.43	-0.08	0.05				
State and Local	-0.81	0.52	2.31	1.18				
Total Government	-2.86	-0.65	1.39	0.75				
GS Federal					-0.04	1.29	1.16	1.04
GS State and Local					0.10	1.75	2.30	2.09
GS Total					0.05	1.58	1.86	1.69
B of A Total					-0.27	0.06		
BASE					0.05	1.02	1.10	1.10
Strong Employment					0.08	1.22	1.35	1.36

percent of GDP in January 2014 to 2.75 percent of GDP in August 2017, the shares of both imports and exports as offsetting components of GDP have declined. Exports have declined from 9.64 percent to 8.04 percent of GDP since January 2014. Over the same period imports have declined from 13.88 percent to 12.20 percent of GDP. However, in recent months GDP shares of both imports and exports have stabilized and are showing preliminary signs of increasing.

Part of the decline in imports was related to the collapse in energy prices, but part was also due to a world-wide decline in trade. In recent months global trade volumes have begun to grow once again, probably reflecting the current strength of global economic activity. This reversal might prove temporary. There is some evidence that a longer-term downward secular trend in global trade is in place due to technological advances and the related shift in economic activity toward knowledge-based services, which generally are located near the point of consumption. Prior to the recent upturn, the decline in trade was not limited to the U.S.; it has been a global phenomenon.

8. Third Quarter 2017 Forecasts

Forecasts of third quarter real GDP are likely to be unreliable because of the impacts of Hurricanes Harvey and Irma. Prior to the hurricanes **B of A** forecast third quarter GDP growth of 2.9 percent. It then reduced its forecast to 1.7 percent to account for the impacts of the hurricanes, but now has raised its forecast to 2.8 percent based on recent strong data reports. **GS** is currently forecasting third quarter to come in at 2.2 percent rather than its earlier forecast of 2.8%, but has not updated its forecast based on recent data reports.

9. Longer-Term Real GDP Forecasts

Chart 6 shows quarterly real GDP growth projections from the third quarter of 2017 to the fourth quarter of 2021. **Table 8** includes annual real GDP growth for 2013-16 and forecasts for 2017 to 2021. Generally, forecasts are tightly clustered in 2017 between 2.0 and 2.2 percent. My “**BASE**” and “**Strong Growth**” forecasts are at the low end of the range in 2018, but move to the high end of the range by 2021.

My “**BASE**” scenario is on the low end of the spectrum in 2018 because of lower assumed employment and productivity growth. However, most forecasters are relatively growth bullish for 2018 and some are

CHART 6 – Real GDP Growth Forecasts
(four-quarter rate of change)

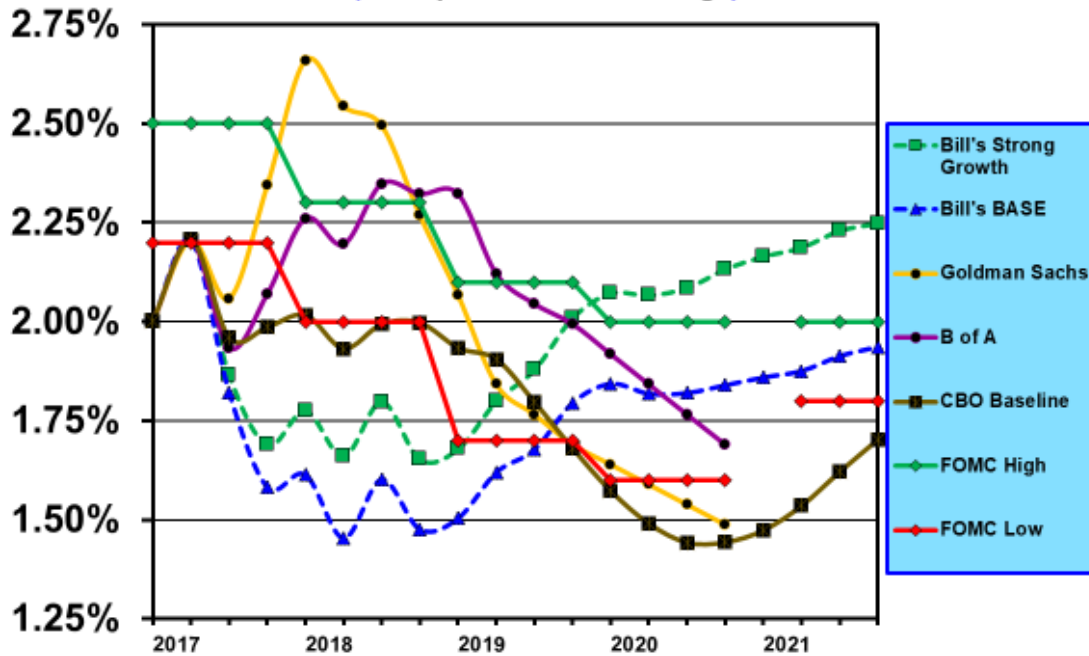


Table 8
Real GDP Growth Forecasts
(year-over-year average)

	2013	2014	2015	2016	2017	2018	2019	2020	2021
Actual	1.68	2.57	2.86	1.49					
B of A					2.05	2.28	2.12	1.80	1.69
GS					2.15	2.49	1.84	1.56	1.75
IHS Markit					2.10	2.70	2.40	2.10	2.20
Economy.com					2.10	2.80	2.10		
Blue Chip Average					2.10	2.40	2.10	2.00	2.00
CBO					1.99	2.00	1.68	1.44	1.70
FOMC High*					2.50	2.30	2.10	2.00	
FOMC Low*					2.20	2.00	1.70	1.60	
Bill's BASE					2.05	1.54	1.65	1.83	1.90
Bill's Strong Growth					2.07	1.65	2.01	2.13	2.25

*Q4 to Q4 – sensitive to specific Q4 values and may diverge from year-over-year trend

extremely optimistic, e.g. IHS Markit and Economy.com.

CBO's forecasts, based upon its June 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 2017-2020 periods reflect no improvement in growth over time and generally track expectations of other forecasters.

IV. U.S. Employment Developments

September's employment report was a mixed bag. Hurricanes Harvey and Irma impacted some of the numbers negatively. Sampling error also appeared to be especially large for other numbers. For example, the labor force rose 575,000 and household employment grew 906,000 compared to a decline in payroll employment of 33,000. It seems likely that the labor force and household employment increases were impacted by large positive sampling errors and payroll employment was depressed by the hurricanes. For example, the outsized 111,000 plunge in hospitality employment in September looks to be related to the hurricanes and should be short-lived. These anomalies should sort themselves out in the October and November employment reports.

1. Employment Growth

Reflecting the transitory negative impacts of Hurricanes Harvey and Irma, payroll employment declined 33,000 in September. However, the underlying trend in payroll employment probably is slowing. There was a total of 39,000 in downward revisions to the two prior months.

Chart 7 shows the three measures of employment growth – payroll employment, household employment, and total hours worked. **Chart 7** also shows the labor force growth rate, which indicates the expected equilibrium rate of employment growth when the economy is at full employment. When growth in the three measures of employment exceeds growth in the labor force, the unemployment rate declines and the labor market tightens.

As can be seen in **Chart 7**, the trend in the annual rate of quarterly growth in payroll employment has slowed gradually from the cyclical peak of 2.22 percent in February 2015 to 1.36 percent in September 2017. Monthly payroll employment growth averaged 226,000 in 2015, 187,000 in 2016 and 148,222 over the first nine months of 2017.

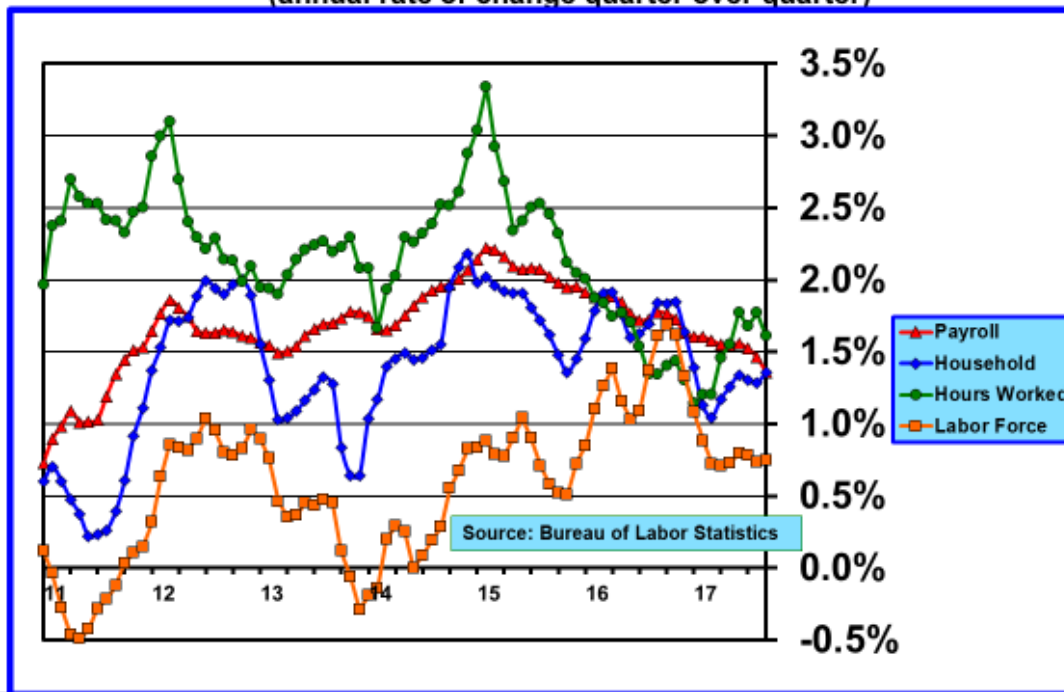
Household employment growth had been decelerating averaging 209,200 in 2015, 173,400 in 2016, and 166,000 over the first eight months of 2017, but the anomalous 906,000 gain in household employment in September brought the nine-month average for 2017 up to a whopping 248,222. The 100,000 monthly gap between payroll and household employment so far during 2017 makes absolutely no sense and is likely to diminish substantially in future monthly employment reports.

Over the past 12 months the annual rate of quarterly household employment has been 1.36 percent, the same as payroll employment growth. Growth in these two measures of employment should be nearly identical over long periods of time, but as is clear in **Chart 7**, the growth rates can diverge, sometimes substantially, over short time spans.

Visually, **Chart 7** paints a picture of gradually slowing employment growth. This is what is to be expected because the labor market appears to have exceeded full employment and thus monthly growth should slow to approximately the underlying growth rate dictated by demographic trends, which is well under 1.0 percent – the labor force is growing currently at an annual rate of 0.75 percent.

Growth in total hours worked by all employees has been slowing as well. Growth has decelerated from a cyclical peak of 3.34 percent in February 2015 to 1.61 percent in September 2017. Over this time span

CHART 7 – Employment Growth
(annual rate of change quarter over quarter)



Page 7

the average length of the workweek has shortened from 34.54 hours to 34.39 in September.

2. Employment Participation

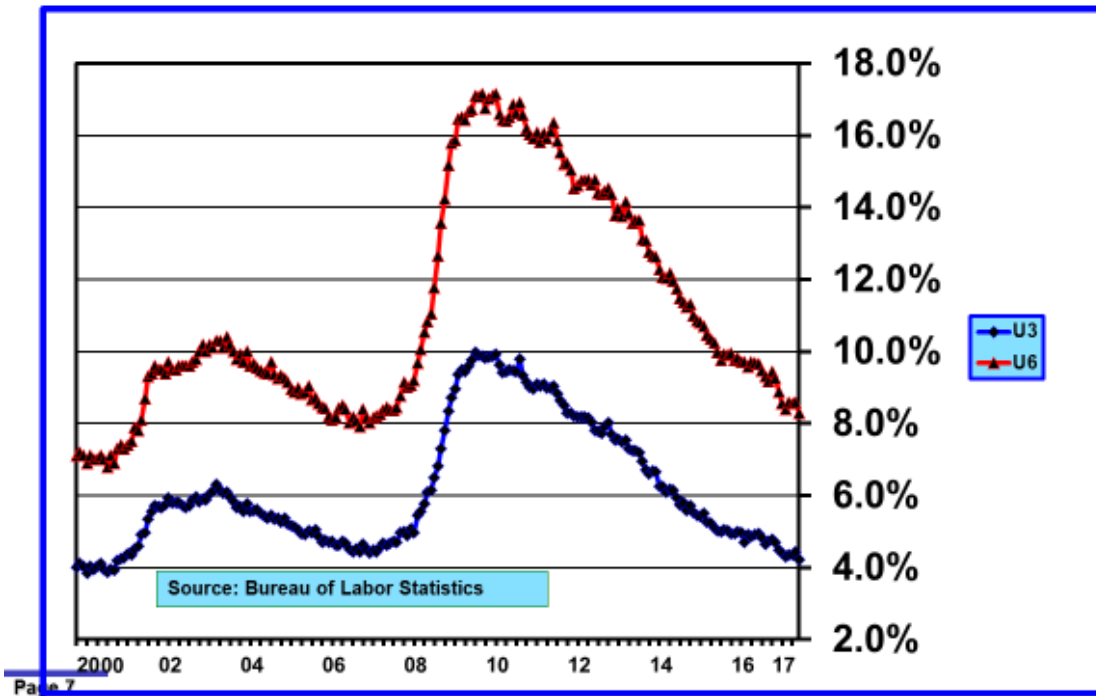
Employment participation had been declining until about a year ago, reflecting demographic shifts and an increase in discouraged workers exiting the labor force due to poor job prospects during and following the Great Recession. The downward trend in participation driven by changing demographics should continue to reduce participation by about 0.20 percent annually over the next ten years. Because discouraged workers are not counted in the labor force there has been 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 63.06 percent in September 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 62.02. This is a swing of approximately 1.71 million workers many of whom were probably discouraged but have now reentered the labor.

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

As can be seen in **Chart 8**, the U-3 unemployment rate has fallen to 4.22 percent and is now below the minimum level reached prior to the Great Recession. The September U-3 unemployment rate was

considerably below **CBO's** full employment (NAIRU) estimate of 4.74 percent. Because the denominator of the unemployment rate is the estimate of the size of the labor force, the large above average increase in the labor force in September may have imparted a downward bias in the estimate of both the U-3 and U-6 unemployment rates.

CHART 8 – U-3 and U-6 Unemployment Rates



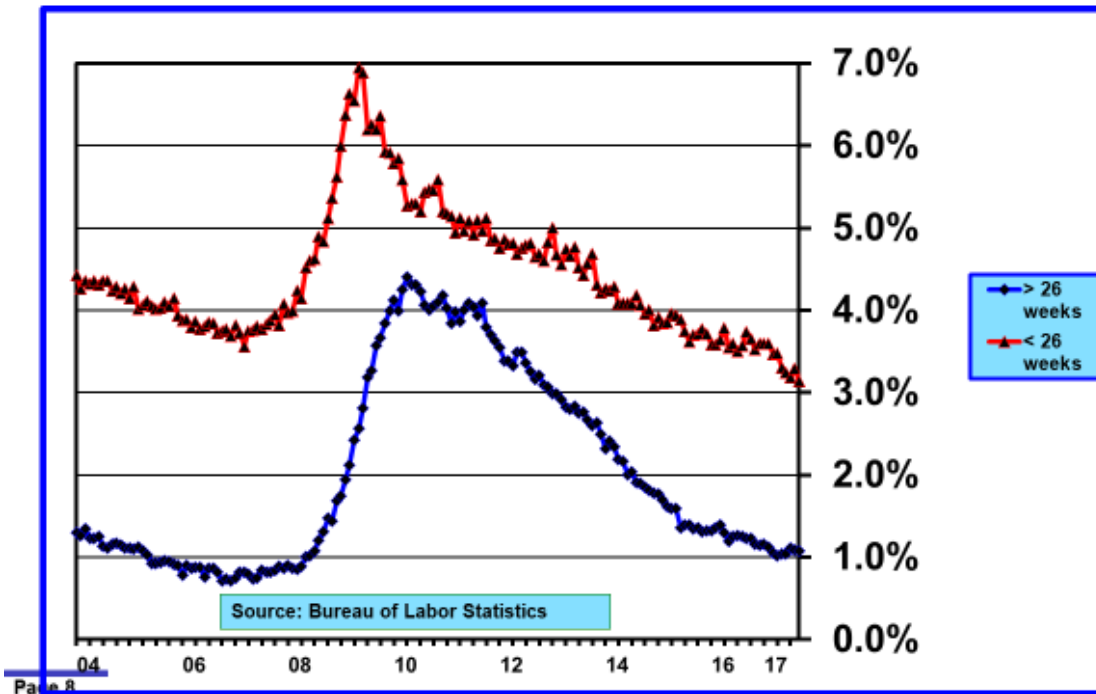
The U-6 measure of unemployment, which adds those working part time who would prefer full-time employment and those marginally attached to the labor force to the U-3 measure, has fallen to 8.29 percent and is approximately 0.1 to 0.2 percent above the pre-Great Recession low reached in early 2007. The U-6 measure of unemployment fell 161 basis points since the end of 2015 compared to a decline of 80 basis points in the U-3 measure, which underscores an improving labor market that is now above full employment.

Long-term and short-term unemployment rates are also indicators of labor market tightness and are shown in **Chart 9**. The short-term unemployment rate has now fallen well below 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 1.08 percent in September. It is still about 0.30 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 50 basis points below **CBO's** full-employment estimate of the non-accelerating inflation rate of unemployment (NAIRU).

**CHART 9 – LT (>26 weeks) and ST (<26 weeks)
Unemployment Rates**



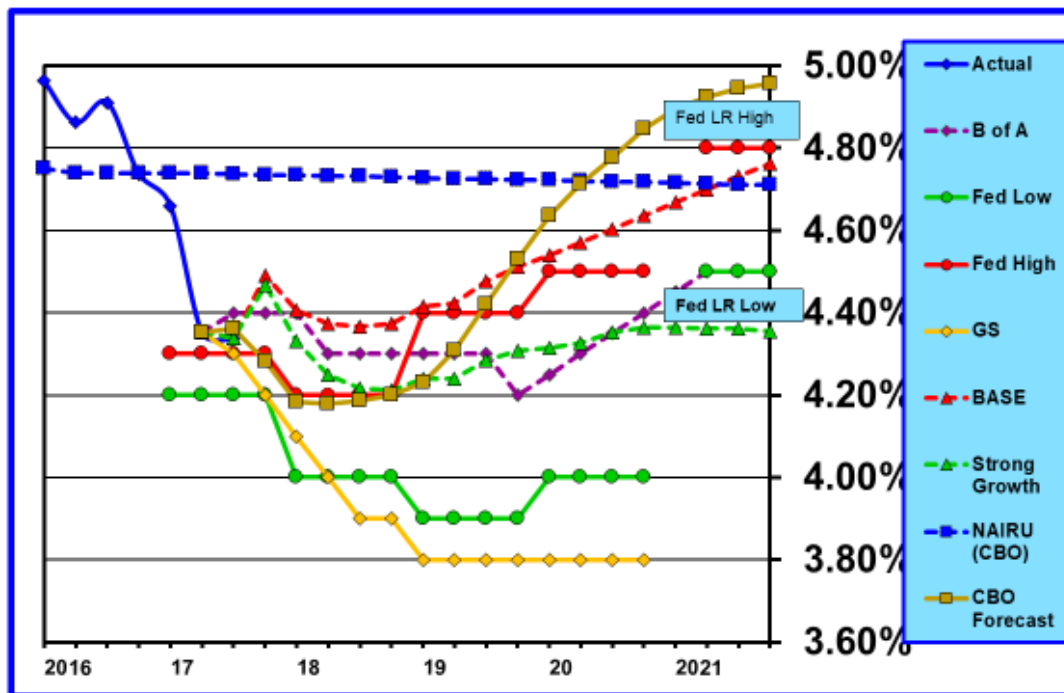
As the term NAIURU implies, when unemployment falls below this level for any length of time not only is it likely that wages will increase but inflation will probably increase as well. For that reason, the **FOMC** is now crafting monetary policy to maintain full employment but limit the potential for 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. However, the recent decline in inflation may delay implementation of tighter policy.

Chart 10 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 NAIURU is also shown in **Chart 10**.

Most forecasts project the unemployment rate to stay below NAIURU over the next three years. **GS** and **B of A** are the most optimistic and anticipate that the unemployment rate will fall to 3.8 to 4.2 percent by the end of 2018. The unemployment rate falls to 4.37 percent in my “**BASE**” scenario and to 4.21 percent in my “**Strong Growth**” scenario. It bottoms out at 4.18 percent in **CBO**’s forecast. It is beginning to look like the unemployment rate will fall below **CBO**’s forecast for a period of time. Thus, when **CBO** updates its economic forecasts in early 2018 there is an increasing possibility that it will lower its forecast for the unemployment rate. That would also reduce my forecasts because my “**BASE**” scenario employment growth projections purposely track **CBO**’s. In addition, there is an increasing possibility that **CBO** will reduce its estimate of the NAIURU unemployment rate.

During 2019 and 2020 various forecasts diverge considerably. **GS** is the most optimistic. Its forecast unemployment rate forecast remains anchored at 3.8 percent. **B of A** on the other hand expects the

CHART 10 – NAIRU and Unemployment Rate Forecasts
(quarterly average)



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unemployment rate to rise from 4.2 to 4.4 percent by the end of 2020. **CBO** is even more pessimistic and expects the unemployment rate to reach 4.85 percent by the end of 2020. **CBO**'s pessimism might be tempered when it updates its employment growth assumptions in early 2018.

The upper portion of **FOMC**'s projection range and my unemployment rate forecasts are similar to B of A's forecasts during 2019. My "**BASE**" scenario rises to 4.63 percent and my "**Strong Growth**" scenario edges up to 4.36 percent by the end of 2020.

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

Increasingly, it appears that structural changes in the labor market may have lowered NAIRU to a greater extent than indicated by **CBO**'s estimates. 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. As the Labor Market Has Tightened, Wage Growth Has Accelerated Less Than Expected

Now that the labor market is above 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 has been considerable inertia in wage adjustments which has resulted 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 several 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 may be less pressure to increase wages as much now that the labor market has tightened. Third, lingering employee long-term job insecurity may be dampening demands for higher wages. Responses to a University of Michigan survey question addressing concerns about layoff risk over the next five years remain elevated. Also, the long-term unemployment rate remains elevated. Fourth, falling inflation expectations may also be a factor. Fifth, retirement of high-wage baby boomers and replacement with low-wage new entrants may be depressing the average level of wage rates, which would moderate the average rate of wage increases. Sixth, there may be more capacity in the labor market than **CBO's** NAIRU unemployment rate implies, if NAIRU has declined. The **FOMC's** Summary of Economic Projections implies a median estimate of NAIRU of 4.6% and the median estimate from the Survey of Professional Forecasters is 4.5 percent compared to **CBO's** estimate of 4.74 percent.⁵ Seventh, low productivity gains in recent years may also be a factor in retarding wage rate acceleration.

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.

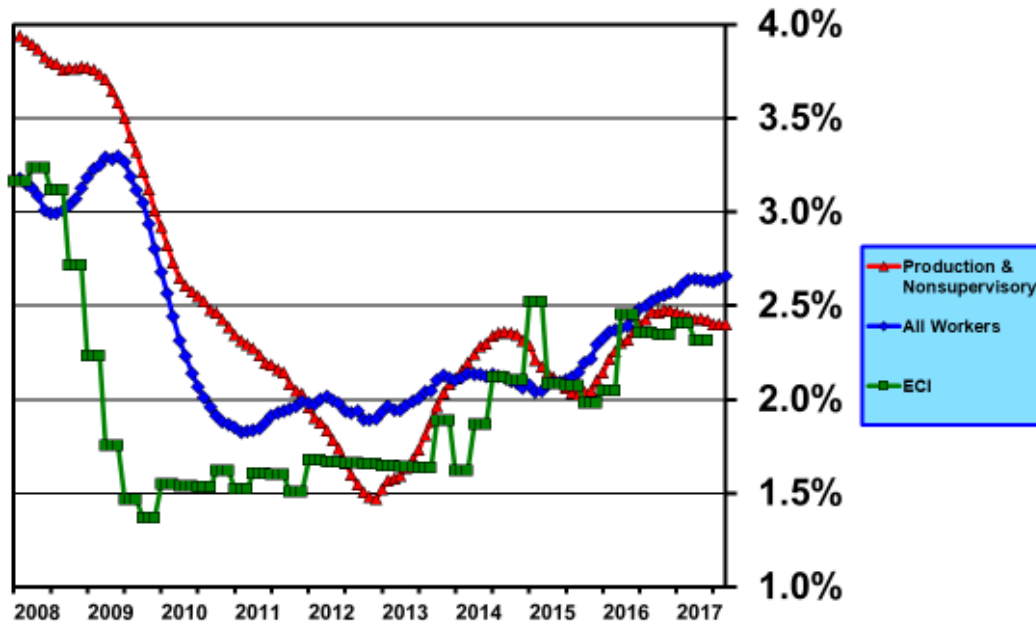
Interestingly, the University of Michigan survey indicates that the share of workers who have not received a pay increase over the previous 12 months has been edging up and remains above the highest level that occurred following the dot.com bust in 2001.

As can be seen in **Chart 11**, increases in wage growth are following the traditional upward cyclical trend as the labor market tightens. But those increases are not as great as historical experience indicates should be occurring. Consequently, forecasts of wage rate increases, which have been based largely upon historical relationships, have been consistently 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

⁵Regis Barnichon and Christian Matthes. "The Natural Rate of Unemployment over the Past 100 Years," Federal Reserve Bank of San Francisco Economic Letter, 2017-23, August 14, 2017. In this paper, the authors conclude that NAIRU has fluctuated within a tight band of 4.5 percent to 5.5 percent over the past 100 years. The authors' estimate of the current level of NAIRU is close to the lower bound of this range.

CHART 11 – Hourly Wage Rate Growth – ECI, All Workers and Production and Nonsupervisory Workers
(annual year over year and 12-month moving average rates of change)



Source: Bureau of Labor Statistics

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indices (see **Chart 11**). A third measure is also released quarterly as part of BLS's report on output, total hours worked, and productivity.

Chart 11 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 11** track each other closely over time. All three measures had been rising gradually, but growth has stalled over the past few months for the all workers measure and has edged down for ECI and production and nonsupervisory workers, even as the unemployment rate has fallen well below NAIRU.

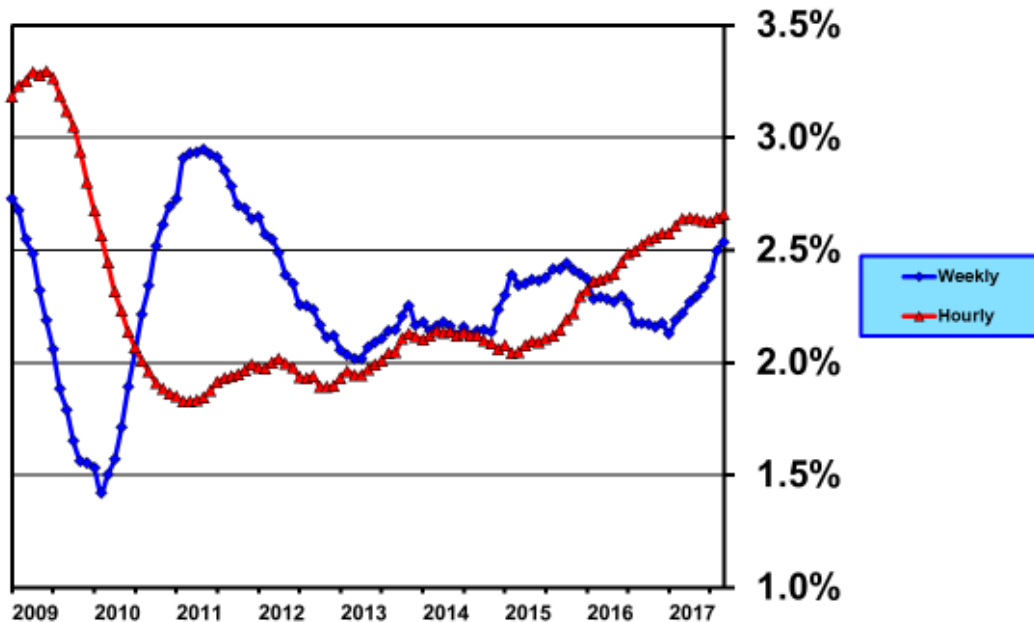
Although these measures are highly correlated over time, because compilation methodologies differ for each set of measures percentage changes over fixed time periods will not always be in sync. Currently, all three sets of measures are exhibiting a similar level and trend. Average hourly wages (12-month moving average) of all employees have risen 2.66 percent annually over the past 12 months compared to 2.52 percent a year ago. Increases in average hourly wages (12-month moving average) of production and nonsupervisory workers have edged down a little, rising 2.40 percent annually in September compared to 2.47 percent a year ago. ECI growth in wages and salaries has fallen from 2.45 percent in the second quarter of 2016 to 2.31 percent in the second 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 faster than growth in hourly wages, rising from 2.18 percent in September 2016 to 2.54 percent in September 2017 (see **Chart 12**). This outcome reflects a modest slowing in the average length of the workweek from 34.43 hours in September 2016 to 34.39 hours

in September 2017. In fact, the average length of the workweek has edged up very slightly since the start of 2017, which could be due to stabilization in the proportions of part-time and full-time workers. Until recently, the proportion of part-time workers had been increasing.

CHART 12 – Hourly & Weekly Wage Rate Growth – All Workers

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



Source: Bureau of Labor Statistics

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Chart 13 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.

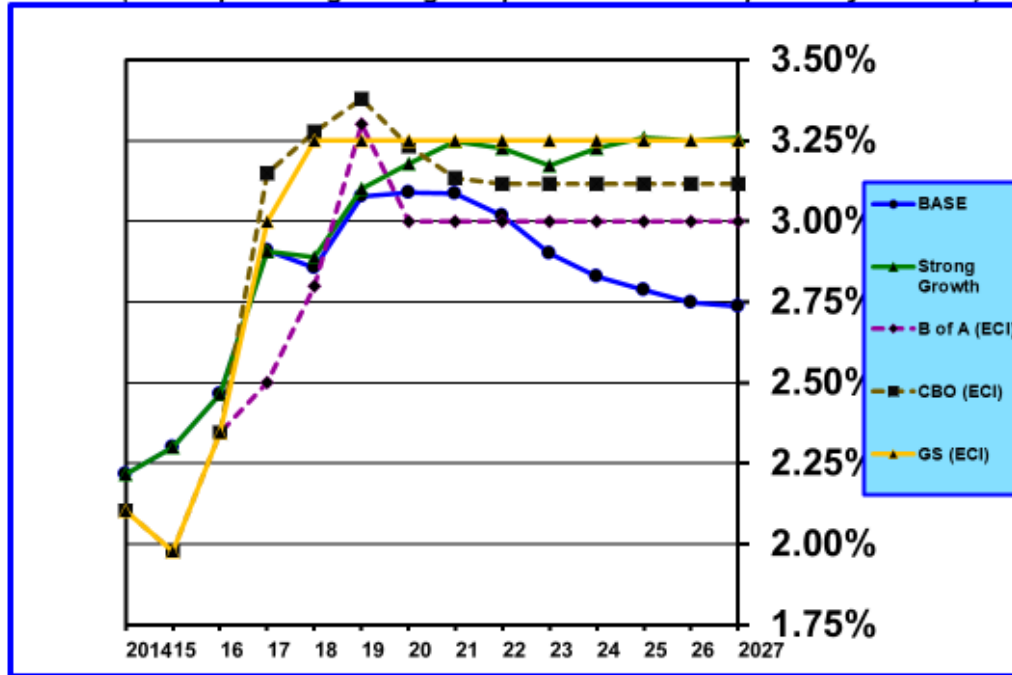
CBO, GS and B of A forecast wage rate growth only for ECI. Although the methodologies for constructing these different wage data series differ, the directionality of all is highly correlated over time, even if the levels aren't precisely the same at every point in time. GS's ECI wage growth forecast rises to 3.0 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 3.4 percent in 2019 but then slows to 3.1 percent by 2021.

Forecast 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 3.09 – 3.12 percent in 2019. Thereafter wage growth in my "BASE" scenario tracks CBO's projections closely and is not much different from B of A's projections in 2020 - 2022. Thereafter growth in wages in my "BASE" scenario erode as inflation slowly ebbs.

Wages continue to rise gradually in my "Strong Growth" scenario to 3.28 percent by 2027, reflecting the impacts of faster employment growth and lower short-term and long-term unemployment rates.

CHART 13 – Hourly Wage Rate Forecasts

(annual percentage change for production & nonsupervisory workers)



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GS’s wage tracker registered 2.25 percent in September 2017, about 75 to 100 basis points short of its long-run expected 3.0 – 3.25 percent annual rate of increase. GS’s assumes a 3.8 percent unemployment rate, which is well below NAIRU, 2.0 percent inflation, and 1.0 – 1.25 percent annual productivity increases (nonfarm productivity increases would be higher, about 1.4 – 1.7 percent, as the measure of productivity GS cites does not cover the entire economy).

In GS’s view the recent weakness in wage growth results from inflation and productivity below expected long-run values. In other words, the historical forces determining wage rate growth have not changed. The upward adjustment in wage rate growth will be consistent with historical precedent and levels of the key determinants – inflation, productivity, and labor market slack. GS corroborates its view by demonstrating that low unemployment metropolitan statistical areas have experienced faster wage growth acceleration in recent months than high unemployment areas.

GS also compared the recent Federal Reserve’s Beige Book wage information with the Beige Books for 1997 and 2006, which were also times when the economy was at full employment. GS examined “labor market tightness,” “labor market conditions,” and “wage pressures.” GS concluded that the Beige Book assessment of three of these three labor market dimensions is similar to 1997 and 2006 and in both of the previous cycles, wage growth accelerated in the following year.⁶

GS also recently refined its statistical “wage tracker,” which boosted its third quarter wage tracker

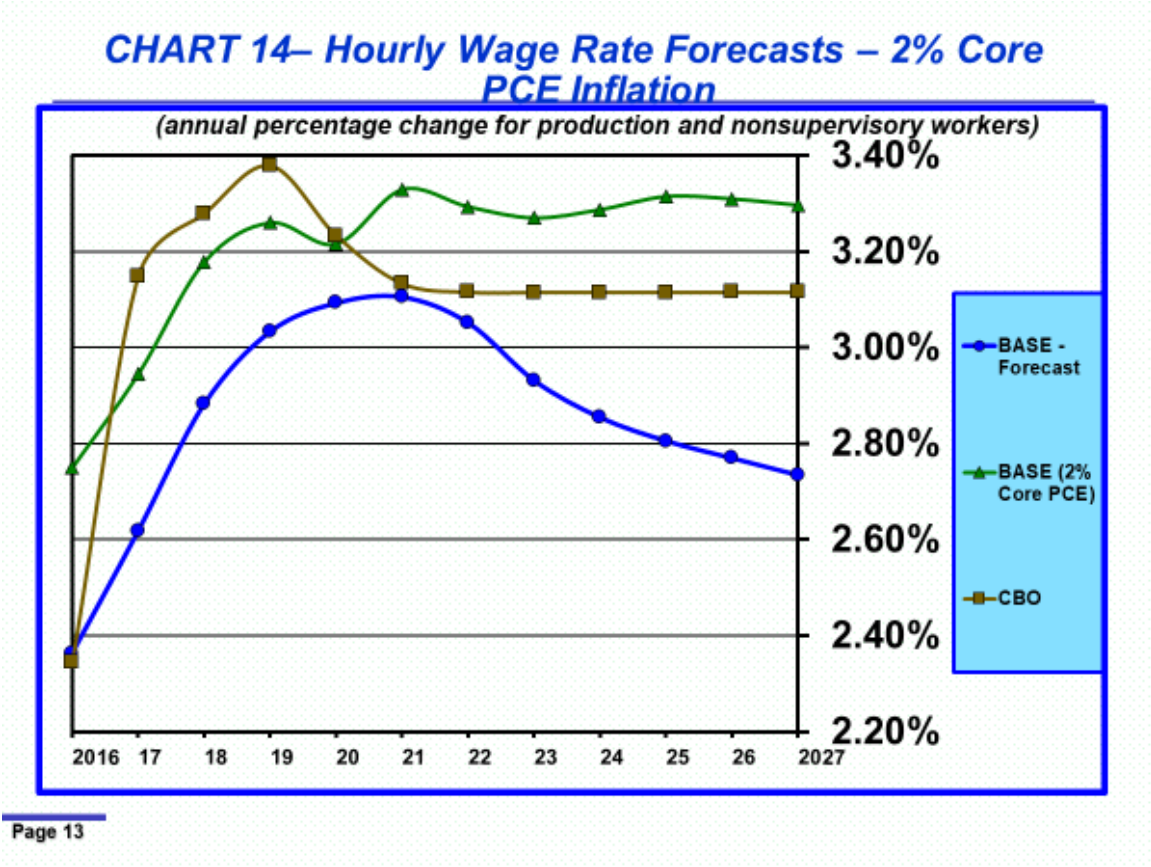
⁶Spencer Hill. “Quantifying Wage Signals in the Beige Book,” US Daily, Goldman Sachs Economic Research, October 4, 2017.

estimate from 2.4 percent to 2.8 percent.⁷

While **GS** is sticking to its guns, others are less certain that wage rate growth will accelerate nearly as much.

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

Chart 14 shows two alternative nominal wage rate growth curves – one for my forecasts of the 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 40 basis points less in the “**BASE**” scenario – about an average annual rate of increase of 2.89 percent between 2021 and 2027 compared to 3.30 percent if inflation averages 2.0 percent. The 2 percent inflation alternative matches **B of A**'s long-term 3.0 percent rate of increase.

⁷Jan Hatzius, Dann Struyven, and Avisha Thakkar. “Are Wages Reaccelerating?” US Daily, Goldman Sachs Economic Research, October 11, 2017.

V. Inflation

Surprising just about everyone, core PCE inflation has declined this year even as unemployment fell below NAIRU. This has led to much head scratching. Nonetheless, most **FOMC** members remain confident that both core and total PCE inflation will return to the 2.0 percent target level by 2018 or 2019..

When core PCE inflation was 1.87 percent in 2016 and appeared to be well on the way to reaching 2.0 percent, **FOMC** members were confident that the target of 2.0 percent would be reached in the next two years. However, core inflation has declined steadily since February and stood at 1.29 percent in August. Initially, **FOMC** members dismissed the pullback in inflation to transitory factors, but the persistent decline over six months has led some members to worry about the possibility that inflation expectations have become unanchored to the downside.

Core PCE inflation was 1.29 percent in August and is nearly unchanged from its recent low of 1.25 percent in July 2015.

Total PCE inflation, which had been depressed by the plunge in oil prices and lower import prices in late 2015, rebounded to 2.18 percent in February, up from the 0.19 percent rate of increase that prevailed in September 2015. But total PCE inflation has declined since then and was 1.43 percent in August.

As can be seen in **Table 9** (**Chart 15** shows historical core PCE price index data and data from **Table 9** in graphical form), forecasts of the core PCE inflation index now indicate that inflation will be lower in 2017 than in 2016. Over the longer run, **B of A** expects core PCE inflation to settle at the **FOMC**'s 2.0 percent target. **GS** is forecasting 2.0 percent in 2019 and 2.2 percent in 2020 before dropping back to 2.0 percent in following years. **CBO** projects that 2.0 percent is reached by the end of 2018 and remains at that level thereafter. **FOMC** projections reflect a rise to the 2.0 percent target during 2018 or 2019.

Table 9
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	2021
Actual	1.55	1.48	1.37	1.87					
B of A					1.46	1.89	2.02	2.02	2.02
GS					1.50	1.90	2.10	2.20	2.00
CBO					1.77	1.97	1.99	2.01	1.99
IHS Markit*					2.00	1.60	2.20	2.80	2.60
Economy.com*					2.00	2.10	2.80		
Blue Chip Average*					2.00	2.00	2.30	2.40	2.30
Bill’s BASE					1.67	1.96	1.82	1.77	1.62
Bill’s Strong Growth					1.67	1.98	1.88	1.82	1.72
FOMC High					1.6	2.0	2.0	2.1	2.0
FOMC Low					1.5	1.8	2.0	2.0	

*CPI – total index; on average CPI averages about 25 basis points higher than CPE

Part of the unexpected recent 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 about 10 to 25 basis points below my forecasts rather than being about 20

basis points higher in 2017.

As can be seen in **Chart 15**, my econometric model indicates core PCE inflation will closely track the estimates of others through 2020, but softens in 2021. During 2018, and 2019 core PCE inflation in the “**BASE**” and “**Strong Growth**” scenarios is in the vicinity of 2.0 percent but then declines in 2020 and continues edging down gradually, reaching 1.32 percent to 1.55 percent by 2027.

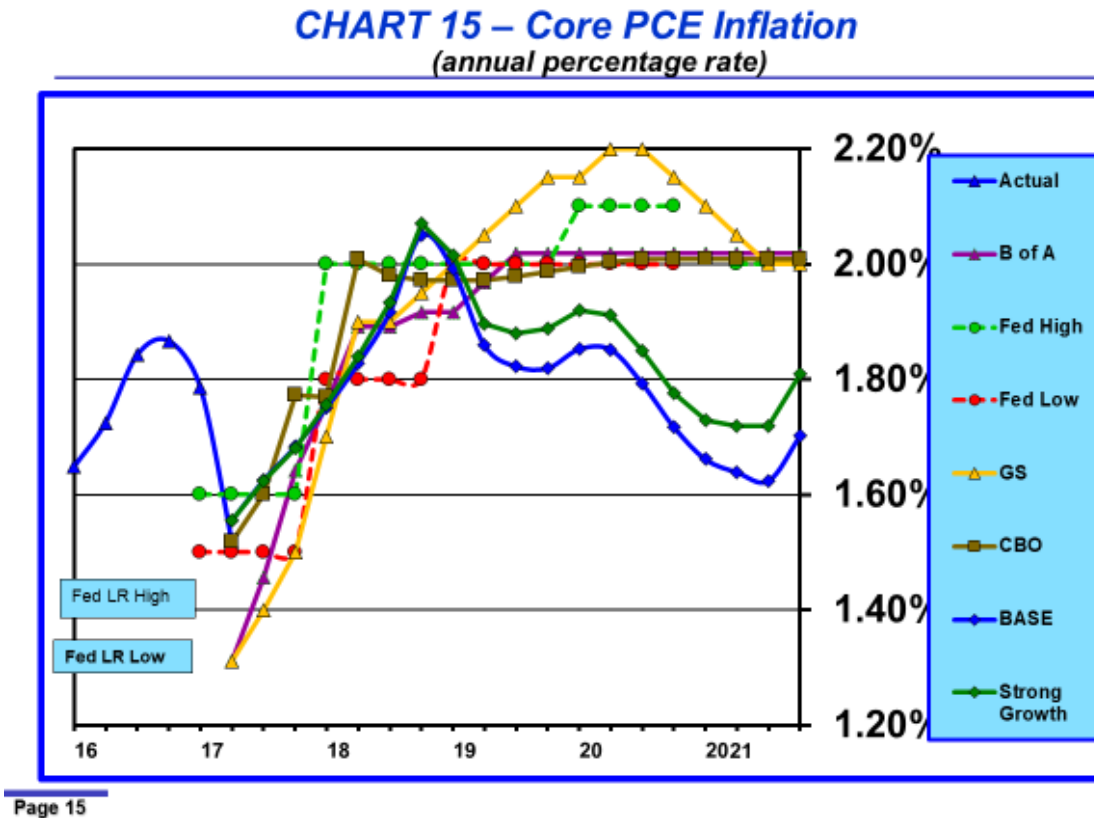


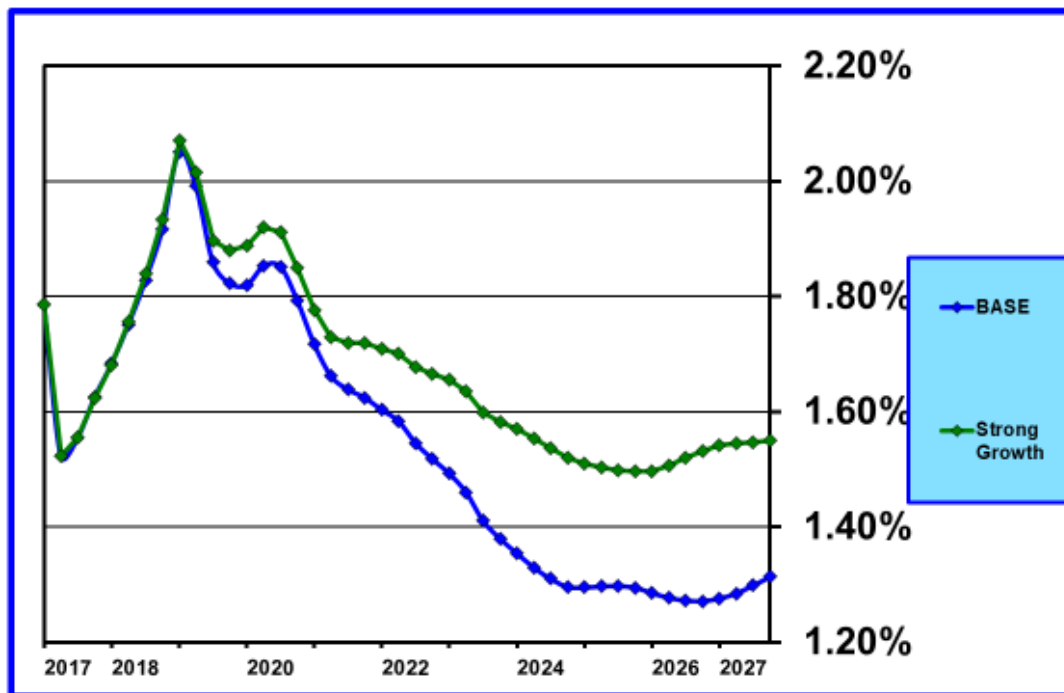
Chart 16 shows core PCE inflation estimates for my “**BASE**” and “**Strong Growth**” scenarios from 2017 to 2027. What is notable in **Chart 16** is that inflation moves up to the **FOMC**’s 2.0 percent target in 2018 and 2019 but falls well below that target after that.

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 might benefit from additional fiscal stimulus in the coming year.

VI. Monetary Policy

While **FOMC** members generally agree that monetary policy tightening needs to proceed in the near term, the median expectation about the long-term equilibrium federal funds rate was reduced by about 25 basis points to a range of 2.50 to 3.00 percent. This implies that **FOMC** members believe that only five to six more 25 basis points increases in the federal funds rate will be required to “normalize” monetary policy.

CHART 16 – Core PCE Inflation
(annual percentage rate)



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Federal Reserve Board of Governors Chair, Janet Yellen, said in a speech to the G30 on October 15, 2017, "... we continue to expect that the ongoing strength of the labor market will warrant gradual increases in that rate [federal funds] to sustain a healthy labor market and stabilize inflation around our 2 percent longer-run objective." Market participants collectively believe that low and declining inflation will cause the **FOMC** to delay or even eliminate further increases in the federal funds rate after December. Yellen pushed back on this view saying that "... my best guess is that these soft readings will not persist and with the ongoing strengthening of labor markets I expect inflation to move higher next year. Most of my colleagues on the **FOMC** agree."

This sounds pretty solid, but markets refuse to believe. Of course, we could have a new Fed chair by next February and **FOMC** policy could change. However, there is considerable inertia in the formulation of monetary policy and, if anything, the rumored replacements for Janet Yellen as board chair are generally viewed as more hawkish on raising interest rates.

There is real lack of focus on balance sheet shrinkage. Perhaps this is because the shrinkage will be very limited initially. But let there be no doubt that liquidity will begin to be impacted in a meaningful way. Already measures of the supply of money and credit indicate that growth is slowing and "quantitative tightening" and increases in the federal funds rate will only serve to depress growth further. The deceleration in growth is consistent with a maturing economic cycle but has not yet reached the red zone which in previous cycles has sent a reliable signal of heightened recession risk.

VII. Interest Rates

1. Interest Rates – Federal Funds Rate

The **FOMC** raised the federal funds rate 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, most likely at the December meeting. Market sentiment agrees.

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 the market forecast 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 10**.

Table 10

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	2021-27	Total	Long Run
FOMC median	3	3	2	0.5	0	8.5	2.50-3.00*
B of A	3	3	3	0	0	9	2.75-3.00*
GS	3	4	4	0	0	11	3.25-3.50*
IHS Markit	3	2	3	1	0	9	2.75-3.00
Economy.com	3	3	5	0	0	11	3.25-3.50
Market Forecast	3	1	0	0	0	4	1.50-1.75
Bill's BASE	2	2	4	3	-2	9	2.75-3.00#
Bill's Strong Growth	2	3	4	4	4	17	4.75-5.00#

*FOMC, B of A and GS rates are equilibrium estimates

#Bill's estimates are forecasts which peak above the likely equilibrium rate

In its September Summary of Economic Projections (SEP), the median **FOMC** member view is three 25 basis point increases in the federal funds rate in 2017 to 1.25 - 1.50 percent, two of which have already occurred; three more in 2018 to 2.00 - 2.25 percent; two more in 2019 to 2.50 - 2.75 percent; and possibly one increase in 2020 to 2.75 - 3.00 percent. The **FOMC**'s central tendency long-term equilibrium level for the federal funds rate is 2.50 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.

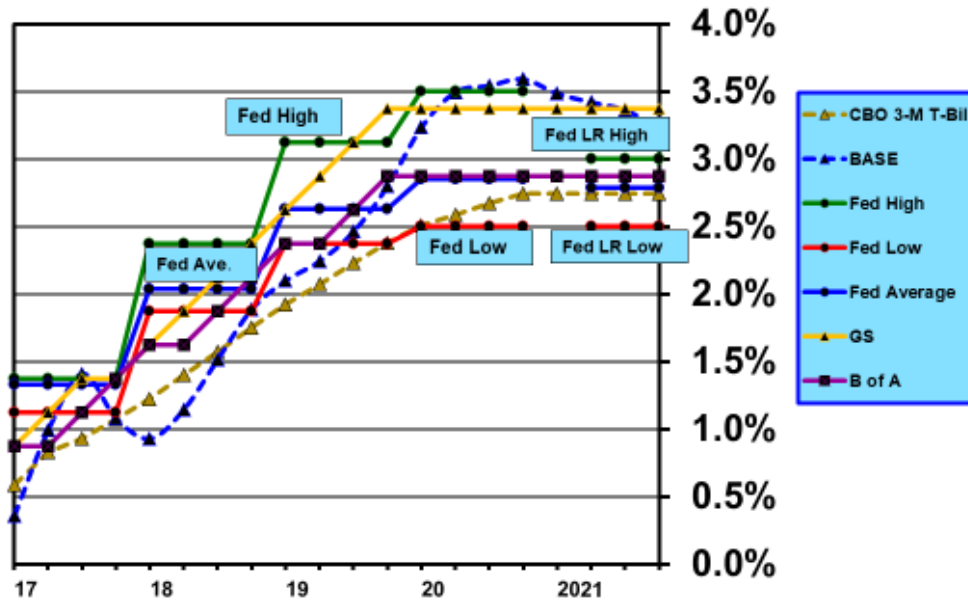
B of A and **GS** both expect three increases in 2017 with the remaining increase occurring in December. Over the longer run **GS** expects more tightening than **B of A** and the **FOMC** and a higher equilibrium level of the federal funds rate of 3.25 to 3.50 percent compared to 2.50 to 3.00 percent for the **FOMC** and 2.75 to 3.00 percent for **B of A**.

My federal funds rate forecast in my "BASE" scenario projects no further increase in 2017, two increases in 2018, followed by four increases in 2019 and three more in 2020. My "BASE" case peak rate reaches 3.25 to 3.50 percent between 2020 and 2024. This is not an equilibrium rate but a forecast that reflects a cyclical peak of an economy operating slightly above full capacity. My estimate of the long-term

equilibrium rate is 2.75 to 3.00 percent.

Chart 17 shows the quarterly progression in the federal funds rate from the present through 2021 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 in 2018 but by 2020 it is higher than **B of A**'s forecast and near **GS**'s projection.

CHART 17 – Federal Funds Rate Forecasts



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 its current range of 2.50 to 3.00 percent. 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 to 3.75 percent is a likely level for the long-term neutral federal funds rate, but it could be lower, if productivity remains relatively weak. This also means that the real neutral interest rate, assuming inflation is 2.00 percent, would be 1.25 to 1.75 percent. (See **Table 11**.)

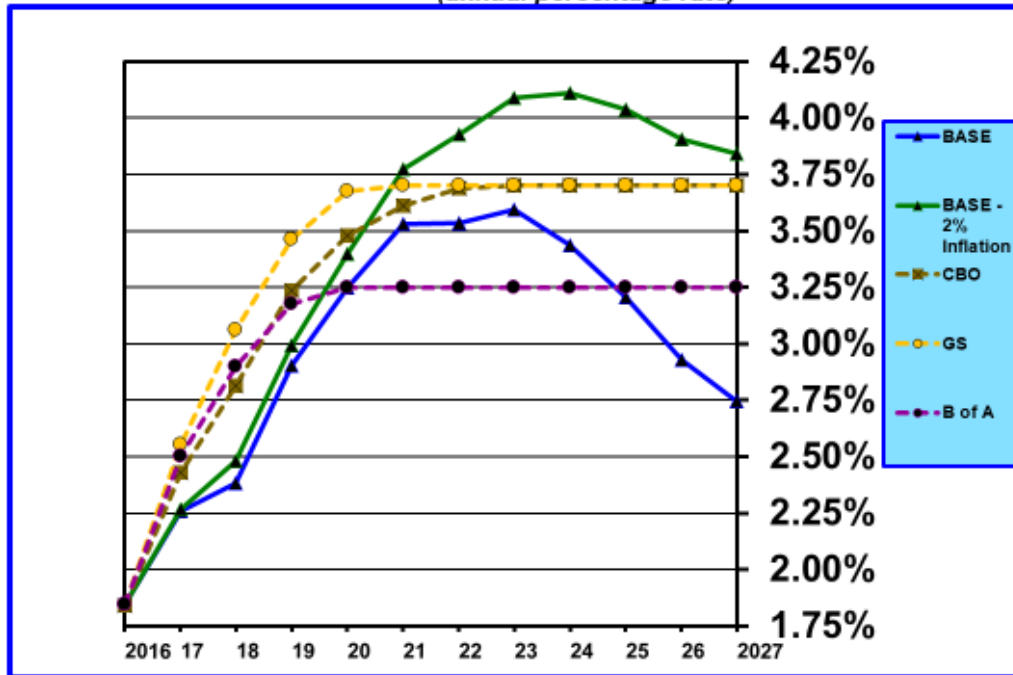
2. Interest Rates – 10-Year Treasury Note Yield

Chart 18 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.

CHART 18 – Ten-Year Treasury Yield

(annual percentage rate)



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Assuming an inflation rate of 2.0 percent, my model indicates that the 10-year neutral rate should be between 3.35 percent and 4.00 percent, depending on the level of productivity. (See **Table 11**.) The long-term neutral rate is 3.70 percent for **GS**, 3.25 percent for **B of A** and 3.70 percent for **CBO**. These estimates do not differ materially from my estimated range of 3.35 percent to 4.00 percent.

My forecasts for the 10-year yield in my “**BASE**” scenario, which are shown in **Chart 18**, are generally 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 2.95 to 3.25 percent between 2021 and 2027, rather than 3.90 to 4.20 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 September SEP the central tendency range for this rate was 2.50 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 .50 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 .50 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 expects at most another 50 basis points increase in the federal funds rate to a range of 1.50 to 1.75 percent. This is 100 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.

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 11** 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.

Table 11
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	1.58%	1.35%	1.78%	1.95%
Inflation (core PCE)	1.51%	2.00%	2.00%	2.00%
Productivity	.67%	.90%	1.40%	1.60%
Labor Force	1.82%	.60%	.60%	.60%
		Nominal Rate		
Federal Funds	.96%	3.28%	3.65%	3.80%
10-Year Treasury	2.20%	3.38%	3.84%	3.98%
		Implied Real Rate		
Federal Funds	-.55%	1.28%	1.65%	1.80%
10-Year Treasury	.71%	1.38%	1.84%	1.98%
		Long-Term Assumptions (2021-27)		
Inflation (core PCE)		1.38%	1.38%	1.38%
Productivity		.90%	1.40%	1.60%
Labor Force		.60%	.60%	.60%
		Nominal Rate		
Federal Funds		2.78%	3.15%	3.30%
10-Year Treasury		2.45%	2.82%	2.96%
		Implied Real Rate		
Federal Funds		1.40%	1.77%	1.92%
10-Year Treasury		1.07%	1.44%	1.58%

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 1.40 to 1.90 percent, depending upon the strength of productivity, compared with the **FOMC**'s range of .50 to 1.00 percent for the neutral rate.

In the top panel of **Table 11** 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 11** is substituting my forecast of core inflation for an assumed target rate of 2.0 percent, which averages 1.38 percent over the 2021-27 period.

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. — October Assessment:** Strong consumer, business, and investor optimism, combined with political uncertainty continue to influence economic activity favorably on balance; early in the year survey data were much stronger than hard economic data reports, but better hard economic data are now being reported; however, recent natural disasters could slow the favorable trend, at least temporarily
 - ✓ **Prospects for tax cuts and tax reform are rising once again, but congressional action remains uncertain; tax cuts, if they occur are unlikely to take effect until 2018**
 - ✓ **The surge in confidence that followed Trump’s election is being sustained by higher stock prices, strong employment growth, and accelerating global growth**
 - ✓ **The index of leading indicators continues to trend up, rising 0.4% in August**
 - ✓ **The Citi U.S. Surprise Index continues to rise and moved into positive territory at 6.4 on Oct. 11**
 - **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 initially reduced its Q3 forecast growth to 1.7% in response to the negative consequences of Hurricanes Harvey and Irma but has raised it to 2.8% as strong data reports continue to flow in; GS lowered its Q3 forecast to 2.0%*
 - ? *GS’s U.S. Current Activity Indicator (CAI) rose to 3.3% in September from 3.1% in July; the CAI is a proxy for real GDP growth and reflects what GS thinks GDP growth would be without the impacts of the hurricanes; in early 2017 CAI was high because of strong survey data; the more recent rise in the index has been driven by stronger hard data*
 - + *B of A’s 2017 forecast is 2.05% and GS’s is 2.15%; my “BASE” scenario forecast is 2.05% and my “Strong Growth” scenario is 2.07%*
 - + *FOMC boosted its 2017 Q4/Q4 central tendency range in September to 2.2-2.5%, which is a bit of a statistical aberration since the BEA revised down Q4 2016 real GDP*
 - **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's estimate of the output gap in the fourth quarter of 2016 decreased from 1.30 percent to 0.45 percent. This improvement was comprised of two components – BEA's revisions to real GDP reduced the gap by 23 basis points; CBO's downward revisions in January and June of estimated potential real GDP reduced the gap by 62 basis points; the revised end of 2017 output gap should be zero or slightly positive

+ The second quarter output gap was 0.16%; growth over the remainder of 2017 should reduce the output gap to near zero 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 1.58%
 - Long-term potential real GDP growth has moved higher to a range of 1.9% to 2.2%
- **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 0.00% Y/Y and .84% Q4/Q4; Y/Y productivity rose to an estimated 0.81% in the second quarter and Q2/Q2 was an estimated 1.36%
 - ? Y/Y productivity growth in 2017 is on a track to rise 1.1% and Q4/Q4 could be .7%
- **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 148,222 over the first nine months of 2017
 - Household employment growth averaged 248,222 over the first nine months of 2017
 - Labor force growth over the same period averaged 167,333 – 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 slightly from an average of 60.1 in December to 56.2 in early October but remains very strong (a value above 50 is favorable)
 - The Conference Board's labor market differential was +18.1 in August (the highest level since August 2001 just prior to 9/11) compared to +16.1 in July, +13.6 in June, +11.7 in May, +10.9 in April, +12.8 in March, +7.3 in February and +6.0 in January, indicative of a very strong employment market
- **Employment participation** will resume a gradual decline during 2017 due to demographically-embedded retirements of baby boomers.
 - Participation rose from 62.67% in December to 63.06% in September
- **Unemployment rate** should edge down slightly to between 4.3% and 4.5%.
 - U3 unemployment rate in September was 4.22%; 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%.
 - Acceleration in wage rate growth has been slower than expected

+ BLS Y/Y hourly wage growth for all employees in September was 2.66%; Y/Y hourly wage growth for production and nonsupervisory workers was 2.40% in September

- **The employment cost index grew a disappointing 2.37% in the second quarter**

- GS's wage tracker was 2.25% in September, its Q3 estimate is 2.4%, and a revised Q3 wage tracker estimate is 2.8%

+ Consumer and business wage expectations surveys have risen to 2.8% from 2.6% at the beginning of the year

+ The Atlanta Fed wage tracker was up 3.3% in July, but reflects a slowing in growth from earlier in the year

+ Evercore ISI's composite index of temporary and permanent placement wage pressures was a strong 64.0 in the week ending October 13 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 August nominal consumer income growth over the past 12 months was 2.55%; growth in 2017 appears likely to be in the middle 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 August, nominal consumer spending growth over the past 12 months was 4.50%; growth in 2017 appears likely to be above the top end of the forecast range; this strength is not due to inflation, which has declined, but reflects instead strong consumer confidence

- September retail sales rose 1.6% and the decline in August retail sales was revised to -0.1% from -0.2%; August retail sales were depressed because Amazon Prime Day pulled sales forward into July; the year-over-year growth in nominal retail sales in September was 4.4%

? On line store sales have risen 5% over the past year; department store sales have declined 5% over the past year

+ Propelled by incentives and replacement sales due to hurricane damage, auto sales soared to an annual rate of 18.5 million units in September compared to sluggish sales for much of the year; however, unit prices declined, reflecting the impact of incentives; sales have declined 2.4% year to date compared to 0.4% growth in 2016; B of A expects auto sales to be 17 million in 2017 and to continue declining to an annual rate of 13 million units by 2021

? U.S. vehicle production is expected to rise to 11.3 million units in Q4 from 10.7 million in Q3

? After relative stability for most of 2017, the University of Michigan Survey of Consumers sentiment index surged to 101.1 in October, which was a 13-year high; it was 95.1 in September, 96.8 in August, 93.4 in July, 95.1 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 has been relatively stable since surging early in the year: it was 119.8 in September compared to 120.4 in August, 120.0 in July, 117.3 in June, 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 dipped to 49.5 on October 6, after peaking at 53.3 on August 26, and is now below the 51.3 registered on March 24, which had been the highest level in 16 years*

? *Evercore ISI's index of company surveys improved to 53.6 on October 13, reflecting no negative impact from recent hurricanes; the index remains above 50.1 registered on December 30*

- **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 3.80% over the first eight months of 2017 compared to 3.81% over the past 12 months – the large forecast miss was caused by a substantial downward revision in savings by the Bureau of Economic Analysis in its annual bench market revisions of National Income Accounts*

- **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 14.0% as of October 13*

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

- *Due to the impacts of Hurricane Harvey, the industrial production index dropped sharply by 0.9% in August to 104.7 from 105.7 in July and 105.3 in June; the index was 103.5 in January; recent manufacturing strength reflects in part stronger global growth and a weakening dollar*

- *89.8% of manufacturers were somewhat or very positive about business prospects for their companies in the third quarter compared to 89.5% in the second quarter and 93.3% in the first quarter versus 56.6% in 2016 – the first quarter index was an all-time high for this survey in its 20-year history*

- *The NFIB optimism index skyrocketed to 105.8 in January and has held at a high level since then, although some erosion was evident in September: 105.3 in February, 104.7 in March, 104.5 in April and May, 103.6 in June, 105.2 in July, 105.3 in August and 103.0 in September; these readings are the highest sustained level since 2004; however this high level of optimism has not translated into increased capital investment – there was a small decrease in reported capital outlays in September and a larger decrease in planned capital outlays*

- *ISM manufacturing index strengthened to its highest level of the year in September; it was 60.8 in September, 58.8 in August, 56.3 in July, 57.8 in June, 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 jumped to the highest level of the year in September; it was 59.8 in September compared to 55.3 in August from 53.9 in July, which was the lowest so far this year: it was 57.4 in June, 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)*

? *Reflecting the theme of relatively strong economic activity, the GS analyst index decisively reversed April's decline to 47.1 by rising to 59.5 in May, 52.9 in June, 55.2 in July, 57.2 in August and 56.6 in September; 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)*

? *S&P earnings growth has been very strong, but National Income accounting data, which adjusts profits for inflation and depreciation, was under downward pressure until a slight increase in the second quarter*

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

- *Business investment grew at a stronger than expected rate of 6.8% in the first half of 2017 and is expected to rise 4% to 5% for the entire year*

? *Capacity utilization (the U.S. operating rate) was impacted by hurricanes and dipped to 76.1% in August from 76.7% in July; it was 75.7% in January; it remains well below the 80.0% level that typically leads to a sustained acceleration in business investment spending*

? *According to the NFIB survey, capital spending has been solid but relatively stable during 2017, "but not enough for a significant improvement in GDP growth or productivity;" however, plans for capital outlays have risen to the highest level since 2006, so there is some room for optimism about future increases in capital spending*

? *The second quarter survey of manufacturers indicated plans to increase capital spending 3.2% over the next year compared to 2.1% in the first quarter survey*

? *EvercoreISI's survey of capital goods has been rising steadily from 44.7 in January to 60.1 in the week ending October 6 (a value above 50 indicates growth in activity)*

? *EvercoreISI's third quarter company inventory survey indicated that the overhang that emerged in the second quarter has disappeared; auto dealer inventories are still high but have decreased from +43% in the second quarter to +24% in the third quarter; home builder inventories moved from a very low -25% in the second quarter to an even lower -29% in the third quarter*

? *C&I lending credit standards have tightened some; C&I lending has weakened steadily over the course of 2017 and growth is now negative; however total bank loans grew at an annual rate of 5.5% over the five-month period of April-August*

? *Commercial real estate credit standards continued to tighten in the second quarter, reflecting regulatory pressures; commercial real estate lending growth is decelerating but is still positive*

- **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; in the aftermath of the hurricanes, the index dropped to still relatively strong 64 in September; it was 68 in August, 64 in July, 66 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 August were 1.8% above the 2016 total, but should be within the forecast range by the end of the year*

- **Housing investment** grew at an annual rate of 1.5% in the first half of 2017, and is projected to grow a mediocre 1.0% to 2.0% for the entire year

? *Evercore ISI's homebuilders survey has risen from a strong 57.5 in December to an even stronger 60.9 on October 13 (a value above 50 is favorable)*

? *Homeownership averaged 63.4% during 2016, the lowest level in 50 years, but rose to 63.9% in the second quarter; GS expects homeownership to stability at 65% over the next 3 years, which*

will boost annual housing starts by about 150,000 to 200,000 cumulatively over the next 3 years and increase growth in housing investment by 1% to 2% annually

? According to the Federal Reserve's senior loan officer Q1 survey, mortgage credit standards tightened slightly; there was no change in Q2

- **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 6.6% Y/Y in Q2 2017

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

- CoreLogic reported that housing prices are overvalued (more than 10% over sustainable value) in 34% of the U.S.'s 100 largest metropolitan areas and undervalued in 28% (more than 10% under sustainable value); however, overvaluation tends to be concentrated in the larger metropolitan areas (46% of the 50 largest metro markets are overvalued)

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

+ The trade deficit in August, measured as a 12-month moving average, was 2.75%, slightly worse than December's 2.67%

- 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 -8.7% in September from December and is now at its lowest level since January 2015; the dollar has fallen because confidence in Trump economic stimulus has faded, greater than expected strength in European and emerging economic growth, and higher 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 have averaged slightly less than \$50 a barrel so far in 2017 and averaged \$50 in September; downside risks to prices outweigh upside risks because of rapidly rising U.S. shale oil production, although a curtailment of Venezuela oil exports could lead to a price spike

- **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 75%; following release of the September FOMC meeting statement, the market raised its probability to 67%

+ The FOMC updated its guidelines for shrinking its balance sheet at the June meeting; at its September meeting the FOMC announced that implementation would begin in October

? Financial conditions have eased so far in 2017 and were 98.98 in October compared to 100.05 in December and have now fallen well 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 1.43% in August compared to August 2016; the index, which peaked in February at 2.18%, has fallen as the effects of the rebound from low oil prices experienced in early 2016 dropped out of the index; the index now appears to be headed by year end to a level below the 1.5-1.7% range*
 - *GS's inflation tracker rose to 1.7% in September from 1.5% in August and 1.4% in July*
 - + *Conference Board 5-10 year CPI inflation expectations have declined a little this year and appear to have stabilized in a range of 2.4% to 2.5%*
 - + *5-year, 5-Year Forward CPI Inflation Expectation rate derived from Treasury Inflation Protected Securities was 1.98% on October 6 compared to 2.08% on December 30, 2016; this translates into an expected long-run PCE inflation rate of approximately 1.73%*
 - + *The August survey of professional forecasters indicated a decline in long-term expected CPE inflation to 2.00% and CPI to 2.25%*
- **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 1.29% in August compared to August 2016; it now appears that core PCE inflation will be near the bottom end of the forecast range by the end of the year or perhaps slightly below it; B of A's forecast for 2017 is approximately 1.5%*
- 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 2.28% on October 13 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*
 - ? *President Trump's budget is a political document and is a nonstarter in Congress*
 - *Congress failed to pass health care reform; this complicates prospects for tax reform legislation because the expected fiscal benefits from health care reform will not be available to offset tax cuts*
 - *The odds of significant tax reform have improved in recent days; infrastructure stimulus legislation is uncertain; enactment of legislation, if that occurs, is likely to be delayed until early 2018*
 - + *Congress passed legislation to provide \$15.2 billion in Hurricane Harvey relief aid and combined it with a suspension of the debt ceiling until December 6, thus averting the possibility of a government default for the time being; an additional \$34 billion in emergency relief for Hurricanes Irma and Maria and California wildfires is pending in Congress*
 - + *Congress passed a three-month continuing budget resolution, which will extend government spending at fiscal year 2017 levels to December 6, but adoption of a fiscal year 2018 budget resolution will need to occur prior to the expiration of the continuing resolution; thus the possibility of a partial government shutdown has been deferred until December*

? Congress suspended the federal debt ceiling until December 6, which means that the debt ceiling is unlikely to become binding before March 2018

- 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 August 2017 the budget deficit for the prior 12 months was 3.30%; however, with one month to go, the fiscal year deficit is forecast to be approximately 3.65%

+ CBO's revised budget deficit projection for fiscal 2017 is 3.63%; my current estimate is 3.65%

- **State and Local investment** spending growth should range between 1.0% and 1.5%.
- **State and local spending fell at an annual rate of -0.5% in the first half of 2017; improvement is expected over the remainder of the year, but it is increasingly likely that state and local spending in 2017 will be flat, which will be well short of the 1.0% to 1.5% range**

? EvercoreISI's survey of state and local tax revenues 47.8 in October compared to 47.0 in September, 47.8 in August, and 48.2 in July (a value of the index below 50 indicates modest deceleration)

2. **Rest of the World — October Assessment:** Economic activity continues to be strong just about everywhere and has become self-reinforcing

- ✓ **GS's global current activity indicator (CAI) was 4.7% in September compared to 4.5% in August, 4.3% in July, 4.6% in May, 4.4% in April, 4.3% in March and 4.1% in February, indicating that global growth remains very strong; global growth will probably exceed the forecast pace of 3.4% for 2017**
- ✓ **CAI for major advanced economies has accelerated from 1.5% last summer to 3.2% in September**
- ✓ **CAI for emerging markets rose from 4.3% in January to 4.7% in February, 5.5% in March, 5.6% in April, 6.2% in May, 6.1% in June, 5.4% in July, 5.7% in August and 5.9% in September**
- ✓ **OECD's global index of leading economic indicators has been rising slowly over the past year and reached 100.2 in June, July and August compared to 99.9 in April and 100.0 in March**
- ✓ **The Citi Global Surprise Index continues to rise from +13.1 on September 4 to 25.0 on October 11**
- ✓ **The JP Morgan Global Manufacturing PMI increased to 53.2 in September and August compared to 52.7 in July, and is at the highest level since May 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 3.6%; the IMF has also upgraded its 2017 global growth forecast to 3.6% and expects growth to edge up to 3.7% in 2018

- *GS has raised its 2017 forecast to 3.7%*

- *Global growth has accelerated, political instability has been limited, and the dollar has weakened considerably, although it has stabilized in the past few weeks*

? *Global inflation has drifted up slightly due to firming commodities prices; diminishing output gaps should create modest further upside pressure; global inflation is expected to be 2.9% in 2017*

- **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 highest level since February 2011; it rose from 57.4 in August to 58.1 in September*

- *B of A has increased its 2017 GDP forecast to 2.1%*

- *GS has raised its 2017 forecast to 2.2%*

- *The euro has strengthened considerably*

- **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 2017 inflation forecast has been boosted to 1.5% (it was 1.5% in September); core inflation has also edged up and is expected to be 1.2% in 2017 (it was 1.1% in September)*

- **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*

- **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; this was interpreted as a setback for populism*

+ *While the German Bundestag elections on September 24 guaranteed a fourth four-year term of Chancellor for Angela Merkel, her party, the center-right Christian Democratic Union, and the center-left Social Democrats lost substantial ground to parties on the left and the right; the right-wing Alternative for Germany party did much better than expected, garnering 12.7% of the votes, indicating that populism is gaining traction in Germany*

+ *While the cyclical economic upturn in Europe has muted the tides of populism somewhat, Germany's election outcome indicates that it remains a significant force which could gain momentum should the European economy falter*

? *Italy is scheduled to hold elections in 2018; while popular support for the euro has ebbed, Italy's recent return to tepid growth may limit support for Euroskeptic parties, but it is still likely that centrist parties will emerge somewhat weaker just as has occurred in Germany and the Netherlands*

? *Greece has faded from the news and appears to be complying, albeit grudgingly, with creditor bailout requirements; however, the IMF expects yet another bailout will be required in the coming year*

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

? *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; concerns about the potential consequences of the U.K.'s departure from the EU has ebbed and there is increasing sentiment that the two-year deadline for exit will be extended, perhaps indefinitely*

? *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 formed 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 1.4% to 1.6%; 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% set in 2016; however, 2017 GDP growth is tracking 6.6% (B of A) and 6.9% (GS)*

- *Growth momentum has been strong but some slowing is expected; however, downside risks of a sharp deterioration in growth are limited*

+ *GS's current activity indicator was a strong 7.0% in September*

? *The yuan was down against the dollar early this year, but more recently it has strengthened in recent months; foreign reserves have stopped dropping and remain near a hefty total of \$3 trillion*

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

? *The 19 Party Congress will be held in November; 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.

- Total inflation is expected to be 0.5%, and core inflation is expected to be 0.4%; however, GS's Japan inflation tracker is 1.0%, implying upside pressure on inflation may be building

- GDP growth has been marked up to 1.6% by B of A and GS

- GS's current activity indicator was 2.6% in October

? Prime Minister Shinzo Abe recently called for parliamentary elections with the hope that the vibrant Japanese economy will prompt voters to return him and his party to power for several more years

- **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; most are optimistic that India will be able to sustain high GDP growth for a number of years, however and surprisingly, growth has slowed considerably so far this year

- GDP growth is on track to reach 6.3% to 6.7% in 2017 and was a disappointing 5.7% in Q2, but is expected to accelerate to 7.4% in 2018

? It is unclear whether the recent slowdown in growth is a temporary reaction to Modi's much-needed economic reforms or whether slower growth might persist for a longer period of time

+ GS's current activity indicator rose sharply early in the year and peaked at nearly 12.0% in May and June but since then has fallen to 5.0%, reflecting the growth recession that is currently in progress

- **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 in tandem with accelerating growth in developed economies; the dollar's decline in value has helped growth accelerate

+ 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, 5.6% in April, 6.1% in May, 5.4% in July, 5.7% in August and 5.9% in September

+ GDP growth is expected to be 5.2% in 2017 and 5.3% in 2018

- **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 0.6% to 0.9%; GS's current activity indicator has been positive so far in 2017 and rose to nearly 5.0% in September; however, the political situation continues to be troublesome

- Economic conditions are improving in Russia; GDP growth is expected to be 2.5% in 2017; however, GS's current activity indicator has deteriorated recently and was below 2.0% in September

+ Economic and political conditions continue to deteriorate in Venezuela, but regime change does not appear to be imminent; President Trump has voiced strong negative sentiments, but no action has been taken to strengthen economic sanctions

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

October Assessment: No significant positive or negative risks have surfaced so far in 2017; however, Hurricanes Harvey and Irma will probably dampen U.S. economic growth in the third and fourth quarters, but underlying growth momentum remains strong

- **U.S. potential real GDP growth** falls short or exceeds expectations; falling short is the more serious risk
 - *Risk not realized; however, updated forecasts for actual real GDP growth 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 9 months of 2017 employment growth is close to the top of the forecast range*
- **Employment participation rate** rises rather than remaining stable or falling modestly
 - + *The participation rate has risen from 62.67% to 63.06%*
- **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 2.66% for all employees in September*
- **U.S. Unemployment rate** rises
 - *Risk not realized, the rate has fallen more than expected*
- **U.S. productivity** remains below 1%
 - + *Q2 2016 to Q2 2017 productivity increased 1.4%, but the 12-quarter moving average was 0.8%; the full year productivity increase is on track to be approximately 1.1%*
- **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 within the expected range*
 - + *Consumer spending growth is slightly above the upper end of the expected range*
- **U.S. stock prices** fall more than or rise more than the expected range of -10% to +5%
 - + *Growth in stock prices is well 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
 - + *Housing investment growth is on track to be less than expected*
- **U.S. residential housing price increases** are less than expected
 - *Housing prices are rising more than expected and are overvalued by more than 10% in 34% of the U.S.'s 100 largest metropolitan areas; I estimate that housing prices nationally are approximately 9% above the long-term trend level*
- **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 the first half of 2017 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*
- **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 another increase of 25 basis points is likely in December*
- **Financial conditions** tighten and cause financial market volatility
 - *Risk not realized, financial conditions have eased 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 be considerably lower than 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 and smaller have risen*
- **Federal budget deficit** increases more than expected
 - *Risk not realized; according to CBO the deficit is likely to be within the expected range*
- **U.S. state and local spending** does not rise as fast as expected
 - + *Spending is likely to increase much less than expected in 2017*
- **Global GDP growth** does not rise as fast as expected
 - *Risk not realized; growth is accelerating and is expected to be between 3.6% (B of A) and 3.7% (GS) in 2017 and between 3.7% (B of A) and 3.9% (GS) in 2018*
- **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 material actions so far to limit trade; however, NAFTA negotiations appear to be faltering*
- **European growth** is considerably less than expected
 - *Risk not realized, growth is accelerating and is expected to reach 2.2% in 2017*
- **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; inflation is expected to rise to 1.5% in 2017, but the 2.0% target will be very hard to attain – the forecast for 2018 is 1.1%; core inflation is expected to rise to 1.2% in 2017 and 1.3% in 2018

- **Europe** – financial market turmoil reemerges

- Risk not realized; the steadily improving European economy has strengthened the euro and bolstered stock prices

- **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

+ Centrist parties did poorly in Germany's Bundestag elections

+ Austria's Peoples Party campaigned on limiting immigration and won a surprise parliamentary election and most likely will form the next government with the far-right Freedom Party

- Populism remains worrisome but the improvement in European economic growth has diminished this risk for the time being

- **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

? November marks the five-year point in President Xi's term; party officials will meet at the 19th Party Congress in November to consider policy and leadership changes

- **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; second quarter growth was 6.8% and is likely to be 6.6% or greater for all of 2017

- **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; GDP grew at a 2.5% annual rate in the second quarter, which was the 6th consecutive quarter of growth; growth for 2017 is forecast to be 1.5% to 1.6%

- The inflation goal of 2% will not be met, but core inflation has moved up to 0.3% and is expected to be 0.4% for all of 2017

- **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

+ Hurricane Harvey devastated Houston, the 4th largest U.S. city; this disaster along with Hurricane Irma, which wreaked severe damage in Florida, could reduce third quarter U.S. real GDP by 0.8%, according to GS; however, the negative impacts are likely to prove temporary as rebuilding rears up in the fourth quarter of 2017 and the first quarter of 2018

- **New risk** – North Korea’s developing nuclear strike capability and potential for pre-emptive military intervention to neutralize that capability
 - + *Risk is simmering after the UN passed new stiff sanctions and North Korea’s leader and President Trump traded bellicose comments – “North Korea would be met with fire and fury like the world has never seen.”*
 - + *North Korea continues to escalate the situation by testing ICBM missiles, two of the latest of which overflew Japan’s northern most island of Hokkaido, and detonating what it claimed was a hydrogen bomb*
 - + *North Korea now possesses the ability to launch massive global disabling cyber attacks*

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