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

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The Longbrake Letter*

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I. Good times — The U.S. Economic Expansion Is Continuing, The Labor Market Is Strong, Inflation Is Low — How Long Will This Last?

Expansion of economic activity in the U.S. began in July 2009 and is nearing the eight-year mark. While not yet the longest economic expansion — that honor belongs to the 9 — year expansion in the 1990s — this expansion is showing increasing signs of maturity. As reflected by April's 4.4 percent unemployment rate, little slack remains in the labor market.

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

Today, there does not appear to be any single highly visible imbalance. However, when the economy is operating at full employment and the Federal Reserve is engaged in tightening monetary policy, the risks of slower growth and even recession begin to build. A traditionally reliable precursor of the turning point from expansion to recession is a tight monetary policy which results in a flat or inverted yield curve. Currently, monetary policy is in the early stage of tightening. In addition to monetary policy, there are several other risks — "yellow flags" — which are emerging in the U.S. economy and which should be monitored.

Following the election of Donald Trump as U.S. president last November, optimism soared across the board, stock markets rallied, and interest rates rose as market participants anticipated that the policies of the Trump administration would boost economic growth and business profits. This phenomenon became known as the "Trump Trades" in financial markets.

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

Generally, markets anticipate the expected consequences of government policies and adjust prices of financial and real assets. That is what occurred at the end of 2016. However, it has become increasingly apparent to market participants that policy changes are likely to be less consequential than implied by campaign rhetoric and what changes do occur are likely to take longer for Congress to consider and take action. This is true both for trade and immigration policies with negative economic implications as well as for tax reform and infrastructure stimulus with positive economic implications. Congress is increasingly distracted by the scandals emanating from the Trump White House. In addition, the drama surrounding the passage of replacement health care legislation and its narrow approval by the House of Representatives revealed the lack of a cohesive Republican Party.

With the exception of a single trading day, the markets have concluded that the escalating drama in Washington will have little impact on the U.S. economy. The S&P 500 stock average has been grinding higher slowly and reached successive all-time highs on several days in late May. Slow growth, limited downside risks, and accelerating global growth have had a soothing impact on markets.

For the time being global economic acceleration appears to be sustainable. Europe at long last is benefitting from the European Central Bank's aggressive monetary easing; Europe's banks, with the notable exception of Italy, are in better condition and are lending; and many governments have pulled back on austerity policies. China returned about a year ago to its old tried and true policy of stimulating housing investment. Market reforms and building a consumer-based economy are not moving forward very rapidly. Eventually, the piper will be paid, because without reform the Chinese economy will eventually stagnate. However, that outcome is not yet imminent. India's economy under Prime Minister Modi is performing well and even the basket cases of Brazil and Russia are beginning to revive. Venezuela continues to go from bad to worse, but it is too small to have any impact of consequence.

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

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

We may continue to muddle through as we have for the past several years — lackluster growth, but no cataclysmic events. Let us hope so. There is little substantive evidence that growth will improve much and escalating political uncertainty is worrying.

II. "Yellow Flags" — Nascent Risks

Last month I summarized some "yellow flags" to watch for indications that the economy might be vulnerable to recession. I prefaced that summary with the observation that unlike the expansions that preceded the previous two recessions, there is no starkly obvious imbalance or bubble plaguing the U.S. economy that threatens imminent recession. However, there are several trends that bear close watching. Some of the "yellow flags" have been building up over an extended time period while others have developed relatively recently. Economic trends typically develop slowly; thus little has happened over the past month to elevate recessionary concerns. The most likely path forward remains gradual growth over the next several quarters.

"Yellow flags" to watch include:

- Restructuring of retailing
- Commercial and consumer bankruptcies
- Robotics and artificial intelligence
- Consumer spending, particularly autos
- Consumer credit
- Commercial and real estate credit
- Money supply growth
- Real inflation-adjusted company earnings
- Investment — the tightening spread between the return on capital and the cost of capital

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

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

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

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

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

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

Real Inflation-Adjusted Company Earnings. S&P 500 company earnings grew approximately 14.7 percent in the first quarter, much of which stemmed from the recovery of energy sector profits. This is the strongest growth since 2011. Presumably this development is a major factor in the stock market

shrugging off political turmoil in Washington and clawing its way to an all-time high just prior to Memorial Day.

Will Denyer of GavekalResearch points out, however, that when earnings of the domestic nonfinancial corporate sector are adjusted for inflation, real profits have been declining since 2015.[1] S&P 500 earnings include profits from international activities and financial services companies, both of which Denyer omits from his measure of real profits. Denyer omits international earnings because they do not reflect the health of the US domestic economy. Earnings of financial services companies tend to be highly cyclical and are particularly sensitive to changes in monetary policy and, as such, are traditionally omitted from the measure of real domestic profits.

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

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

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

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

Denyer calculates three different measures of the cost of capital — the long corporate bond real yield, the long treasury bond real yield, and the federal funds real rate. The current spreads, which are shown in **Table 1**, are 2.5 percent, 3.6 percent, and 4.4 percent, respectively. These spreads peaked during this cycle at 4.8 percent, 6.0 percent and 7.5 percent, respectively.

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

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

All three spreads have been declining and all three are now well below their cycle median levels. None of the spreads are yet signaling the risk of imminent recession, but the federal funds rate spread is very

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

close and will probably dip into the red zone if the FOMC raises the federal funds rate by 25 basis points at its June meeting as the market expects. When a spread enters the red zone, it should be interpreted as signaling an elevated possibility of recession but not an absolute certainty that recession will occur.

III. Components of U.S. Real GDP

According to the Bureau of Economic Analysis' "**Preliminary Estimate**," first quarter real GDP grew at a somewhat better annual rate of 1.15 percent compared to the disappointing annual rate of 0.69 percent in the "**Advance Estimate**."

In spite of weak first quarter growth, the downward drift in the four-quarter moving average growth rate evident since the second quarter of 2015 has now reversed.

Many analysts have dismissed the weak "**Preliminary Estimate**" as an artifact of faulty seasonal adjustment that is depressing the first quarter estimate and raising growth estimates for the second, third and fourth quarters. To the extent there might be merit in this argument, although there is no incontrovertible proof, the four-quarter moving average washes out seasonal impacts. Thus, the four-quarter moving average of real GDP growth rose from 1.62 percent in the fourth quarter to 1.73 percent in the first quarter, even though the analyzed first quarter estimate was 1.15 percent.

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

1. "Preliminary Estimate" of First Quarter GDP

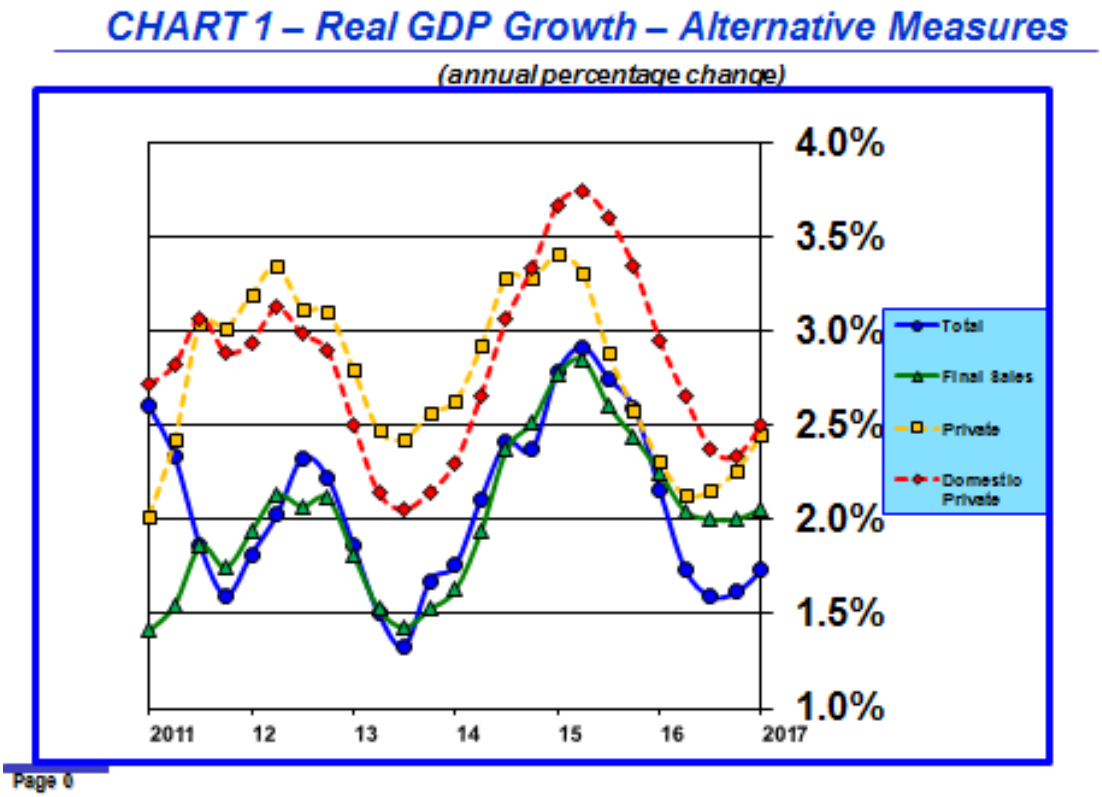
Annualized first quarter real "**Total**" GDP growth in the "**Preliminary Estimate**" was 1.15 percent (blue line with circles in **Chart 1**). Alternative GDP measures, shown in **Table 2** and **Chart 1**, reveal that economic growth was depressed by large anomalous changes in inventories and government spending. In particular, the outsized change in inventories subtracted -1.07 percent from real growth in the first quarter but added 1.01 percent in the fourth quarter — a total swing of 2.08 percent.

"**Final Sales**" omits inventory changes which tend to be volatile over the cycle, rising when the economy slows and falling when the economy accelerates (green line with triangles in **Chart 1**). This measure of real GDP was -1.07 percent in the first quarter compared to an increase of 1.01 percent in the fourth quarter. Netting out inventories, growth in "**Final Sales**" improved from 1.07 percent in the fourth quarter to 2.22 percent in the first quarter.

"**Private**" GDP is a measure of non-governmental economic activity. It omits both inventory changes and government investment spending (yellow dotted line with squares in **Chart 1**). 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. Growth in "**Private**" GDP was greater than growth in "**Total**" GDP during 2011, 2012, 2013 and 2014, a period when fiscal policy was contractionary. Since 2015, with the exception of the second quarter of 2016 and now the first quarter of 2017, fiscal policy has been mildly supportive of "**Total**" real GDP growth. Government activity subtracted 30 basis points from "**Total**"

Table 2
Composition of 2016 and 2017 Quarterly GDP Growth

	First Quarter 2017 Advance Estimate	First Quarter 2017 Preliminary Estimate	First Quarter 2017 Final Estimate	Fourth Quarter 2016	Third Quarter 2016	Second Quarter 2016
Personal Consumption	.23%	.44%		2.40%	2.03%	2.88%
Private Investment						
Nonresidential	1.12%	1.34%		.11%	.18%	.12%
Residential	.50%	.50%		.35%	-.16%	-.31%
Inventories	-.93%	-1.07%		1.01%	.49%	-1.16%
Net Exports	.07%	.13%		-1.82%	.85%	.18%
Exports	.68%	.69%		-.55%	1.16%	.21%
Imports	-0.61%	-.55%		-1.27%	-.31%	-.03%
Government	-.30%	-.20%		.03%	.14%	-.30%
Total	**0.69%**	**1.15%**		**2.08%**	**3.53%**	**1.41%**
Final Sales	**1.62%**	**2.22%**		**1.07%**	**3.04%**	**2.57%**
Private	**1.92%**	**2.42%**		**1.04%**	**2.90%**	**2.87%**
Private Domestic	**1.85%**	**2.29%**		**2.86%**	**2.05%**	**2.69%**



real GDP growth during the first quarter. "**Private**" GDP growth was 1.04 percent in the fourth quarter and 2.42 percent in the first quarter.

"**Private Domestic**" GDP is a measure of domestic non-governmental economic activity. It omits

inventory changes, government investment spending and net exports (red dotted line with diamonds in **Chart 1**). Since mid-2014 net exports have depressed "**Total"** real GDP growth. That development flowed directly from the stronger dollar and was corroborated by the slowdown in industrial production and manufacturing during much of 2016, which are more directly linked to international trade than other sectors of the economy. Like inventories, net exports typically are highly volatile on a quarterly basis. This was particularly the case in the third and fourth quarters as net exports inflated "**Total"** GDP by 85 basis points in the third quarter and subtracted 182 basis points in the fourth quarter. However, net exports had a negligible impact on first quarter "Total" GDP, adding only 13 basis points. Netting out the impact of net exports, annualized "**Private Domestic"** GDP declined from 2.86 percent in the fourth quarter to 2.29 percent in the first quarter.

Thus, when the noise of inventories, government spending and net exports is swept out of the way, first quarter annualized real GDP was considerably stronger than the weak 1.15 percent growth in "Total" real GDP.

Table 3 provides numeric year-over-year data (four-quarter rolling average) for the four measures of GDP shown in **Chart 1**. **Table 3** also includes year-over-year (four-quarter moving average) data showing the year-over-year growth rates for key components of real GDP — personal consumption, nonresidential investment, residential investment, net exports, and government.

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

	GDP Component Weight	First Quarter 2017	Fourth Quarter 2016	Third Quarter 2016	Second Quarter 2016	First Quarter 2016	Fourth Quarter 2015
Personal Consumption	69.3%	2.86%	2.74%	2.61%	2.70%	2.86%	3.18%
Private Investment	17.0%						
Nonresidential	13.2%	.45%	-.53%	-.30%	.33%	1.08%	2.07%
Residential	3.6%	2.67%	4.86%	7.83%	10.77%	12.11%	11.70%
Net Exports	-3.4%	3.66%	4.27%	8.13%	17.23%	21.68%	26.83%
Exports	12.8%	1.36%	.36%	-.56%	-1.14%	-.66%	.11%
Imports	-16.2%	1.83%	1.15%	1.12%	2.21%	3.26%	4.58%
Government	17.3%	.21%	0.81%	1.30%	1.65%	1.97%	1.79%
Total	**100.0%**	**1.73%**	**1.62%**	**1.59%**	**1.74%**	**2.16%**	**2.60%**
Final Sales	**99.9%**	**2.06%**	**2.00%**	**2.00%**	**2.05%**	**2.25%**	**2.44%**
Private	**82.4%**	**2.46%**	**2.26%**	**2.16%**	**2.13%**	**2.31%**	**2.58%**
Private Domestic	**85.8%**	**2.50%**	**2.34%**	**2.38%**	**2.66%**	**2.96%**	**3.34%**

In spite of strong first quarter growth, residential investment, which contributes only 3.6 percent to "**Total**" GDP, has weakened over the past eight quarters. Personal consumption growth has weakened also, although recent strong employment gains and rising wages appear to have stabilized personal consumption growth in the vicinity of 2.60 to 2.85 percent.

Economic activity decelerated from the second quarter of 2015 through the third quarter of 2016 but a modest uptrend has taken hold over the last two quarters. Over the past five quarters, "**Total**" GDP has grown more slowly than "**Final Sales**," reflecting slower growth in inventories. And, if most analysts are on the mark in expecting *long-run potential real GDP* to increase annually in a range of 1.7 to 2.0 percent, the "**Final Sales**" year-over-year growth rate of 2.06 percent in the first quarter appears to be close to a maximum level now that the economy is at full employment.

Until the first quarter, growth in nonresidential investment, which contributes 13.2 percent of real GDP growth, had been weakening. Although the bounce in the first quarter reversed the declining trend, the year-over-year rate of change is still well below growth in consumer spending and growth in GDP indicating that investment continues to be a weak contributor to GDP growth.

Persistent weakness in nonresidential investment is particularly worrisome because strong productivity gains in the long run depend on robust investment spending growth. Recent weakness was due in part to the decline in oil prices and the collapse in energy investment, but weak nonresidential investment has been much broader-based than energy. With the recent surge in business optimism and stronger global growth there is reason for optimism that business investment will pick up. That did occur in the first quarter, but much of increase came from a bounce in energy investment. However, considerable excess capacity utilization remains, which does not bode well for robust investment activity.

Given the cyclical upswing in global growth and the possibility of growth friendly fiscal and regulatory policies, it is possible that the U.S. economy will experience its own cyclical upswing in growth in coming quarters. However, the longer term risk of slow growth in the range of 1.7 to 2.0 percent remains in place because of slowing labor force growth and lackluster productivity.

2. Consumption

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

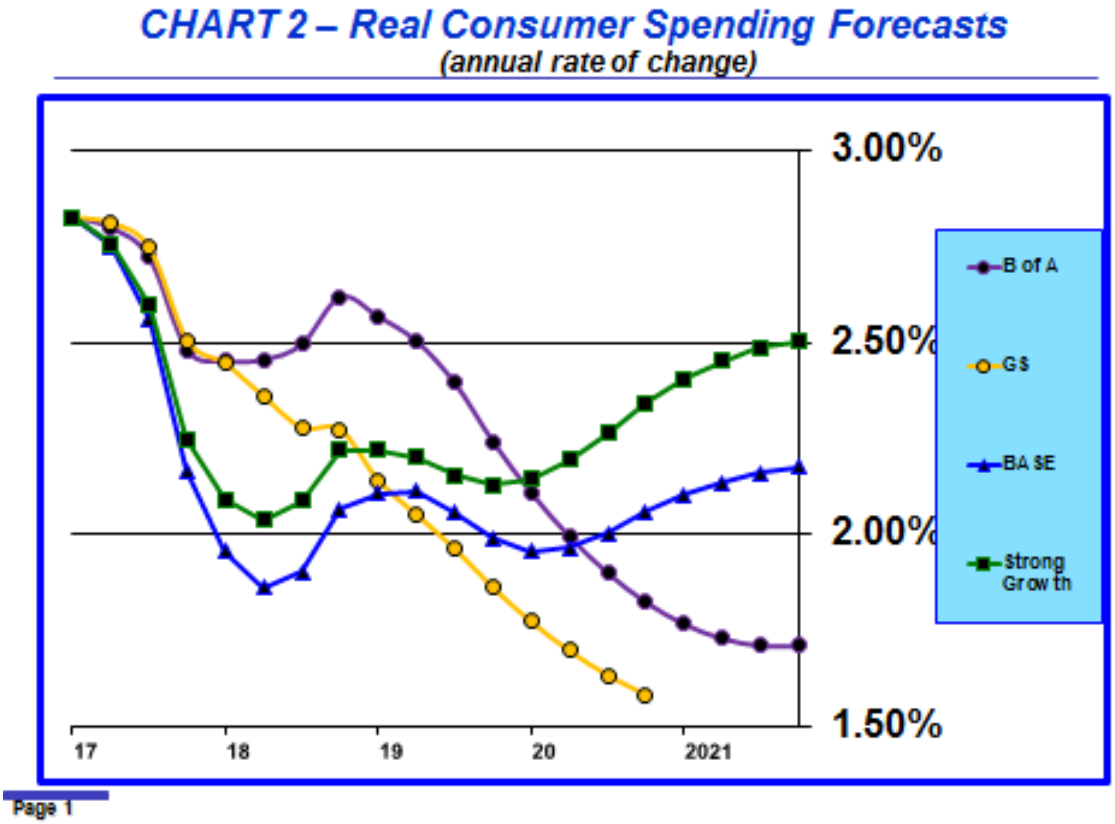
In the long run, growth in nominal disposable income and consumer saving preferences determine growth in nominal personal consumption. Nominal disposable income depends upon a lot of things but the most important ones are the level of employment and wage rates. Tepid growth in employment and lethargic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

Forecasts of growth in real consumer spending are shown in **Table 4** and **Chart 2**. Real consumer spending increased 2.74 percent in 2016. This is not the final number as several more revisions will occur over the next few years.

Table 4 Real Personal Consumption Growth Rate Forecasts

Table 4
Real Personal Consumption Growth Rate Forecasts

	2013	2014	2015	2016	2017	2018	2019	2020	2021
Actual	1.43	2.88	3.21	2.74					
B of A					2.48	2.62	2.24	1.82	1.71
GS					2.50	2.27	1.86	1.58	
Global Insight					2.80	3.20	2.90	2.40	2.30
Economy.com					3.20	3.20	2.10		
Blue Chip					2.70	2.50	2.20	2.20	2.10
Bill's BASE					2.17	2.07	1.99	2.06	2.18
Bill's Strong Growth					2.25	2.22	2.13	2.34	2.50



Over the longer run growth in real consumer spending generally should follow growth in employment and growth in real wages (disposable income). Now that the economy is at full employment, employment growth is set to slow to match underlying demographic dynamics. This is why all forecasters expect real consumer spending growth to slow in coming years.

This is the general pattern apparent in the data in **Table 4** and **Chart 2**. Growth in wages (disposable income) might moderate the forecast decline in consumer spending growth, but only if the growth rate in real wages (disposable income) increases. That would require productivity to improve from its recent very low level. That would be a welcome result, but is not at all assured.

Although all forecasters agree that consumer spending growth will slow, there are considerable differences in opinions about growth in 2017 and 2018. My forecasts, shown in the "**BASE**" and "**Strong Employment**" scenarios, are at the low end of the range in 2017 but gravitate toward the high end of the range by 2021.The divergence in forecasts over the next several quarters reflects different assumptions about employment and wage growth and the possible effects of fiscal stimulus. Over the longer run, most analysts' forecasts converge based upon shared expectations that employment growth will slow and wage growth will stabilize. The rather low real consumer spending forecasts of **B of A** and **GS** in 2020 and 2021 relative to my forecasts appears to be linked to my lower inflation forecasts, which benefits real growth.

3. Investment

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

Table 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	5.54	3.90	0.57					**3.74****
B of A					4.88	5.07	4.60	3.41	
GS					4.29	2.70	2.84	2.69	
Bill's BASE					4.09	2.17	2.27	2.20	
Bill's Strong Growth					4.48	3.03	3.03	3.03	
REAL NONRESIDENTIAL INVESTMENT									
Actual	3.50	6.04	2.07	-0.53					**2.45***
B of A					4.66	4.96	4.56	3.41	
GS					4.20	2.83	2.84	2.60	
REAL RESIDENTIAL INVESTMENT									
Actual	11.88	3.49	11.70	4.86					**-0.07***
B of A					5.71	5.46	4.75	3.41	
GS					5.63	2.21	2.84	3.03	

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

Nonresidential investment (business) growth was crushed in 2015 and 2016 by the collapse in oil prices. But investment was down in other sectors as well. As a result, investment growth was 0.57 percent in 2016.

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

Forecasters expect investment growth to be strong for all of 2017 due to the recovery of investment in energy, stronger global growth and the possible benefit of tax reform and tax cuts. Although **GS** expects growth in nonresidential investment to be 4.2 percent for all of 2017, its capital expenditures tracker registered 6.2 percent in early May. In addition to a continuation of the first quarter's momentum, **GS** expects easier financial conditions and stronger domestic demand, as implied by purchasing manager surveys, to make 2017 a good year. This might prove to be too optimistic based on declining auto demand, somewhat tighter credit access, and the declining spread between return on capital and cost of capital. Generally, in recent years, analyst forecasts of growth in business investment have proved to be optimistic.

Following 2017 and over the next several years **GS** expects business investment to match average trend growth of 2.45 percent that has prevailed over the last 19 years, while **B of A** is much more optimistic. I have been consistently skeptical in the past about what I felt were overly optimistic forecasts and that skepticism has been merited. **GS**'s forecasts are now more consistent with my view. I continue to expect that investment growth will remain near the average of the past 18 years, even if Congress enacts public infrastructure investment stimulus legislation.

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

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

Housing starts are still historically low relative to family formation rates. The trend rate in housing starts should be about 1.4 million. However, starts were 1.18 million in 2016, up 6.3 percent from 1.11 million in 2015. Starts are expected to rise only modestly in 2017 and will still be below 1.4 million.

Housing starts averaged 1.22 million in the first four months of 2017, which was 5.9 percent above the pace of the first four months of 2016.

Housing prices were up 5.8 percent in February over the prior year. This increase is above the rise in nominal disposable income and, thus, is not sustainable over the long run. The rapid rise in home prices reflects to a substantial extent a shortage of housing supply. Builders are not producing a sufficient number of new units to meet growth in household formation. This is due in large part to constraints on access to credit. The Federal Reserve's Senior Loan Officer quarterly survey indicates that a net 32.4 percent of lenders have tightened access to residential single-family construction credit and a net 36.1 percent have

tightened access to multi-family construction loans.

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

4. Inventories

Inventories subtracted 1.07 percent from "**Total**" GDP growth in the first quarter after adding 1.01 percent in the fourth quarter. 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 was actually negative in the second quarter of 2016. Inventory growth bounced back to a $49.6 billion increase in inventories in the fourth quarter of 2016, but sagged to $4.3 billion in the first quarter.

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 Q1	10.3	4.3				
2016 Q4	48.7	46.2	49.6			
2016 Q3	12.6	7.6	7.1			
2016 Q2	-8.1	-12.4	-9.5			
2016 Q1	60.9	69.6	68.3	40.7		
2015 Q4	68.6	81.7	78.3	56.9		
2015 Q3	56.8	90.2	85.5	70.9		
2015 Q2	110.0	121.1	113.5	93.8		
2015 Q1	110.3	95.0	99.5	112.8	114.4	
2014 Q4	113.1	88.4	80.0	78.2	76.9	
2014 Q3	62.8	79.1	82.2	79.9	66.8	
2014 Q2	93.4	83.9	84.8	77.1	55.2	
2014 Q1	87.4	49.0	45.9	35.2	36.9	31.7
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

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, third and fourth quarters of 2016 and the first quarter of 2017 was anomalous. The 1.16 percent decline due to inventory de-accumulation in the second quarter of 2016 painted a weaker picture, the 0.49 percent increase in the third quarter and the 1.01 increase in the fourth quarter painted a stronger picture, and the -1.07 percent decrease in the first quarter of 2017

painted a weaker picture of "**Total"** GDP growth than long-term trends warrant.

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 $4.3 billion inventory accumulation in the first quarter "**Preliminary Estimate**" will be revised four 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 is shown in **Table 3** and **Chart 1**. 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.

5. Net Exports

In the "**Preliminary Estimate**" net exports added a negligible 0.13 percent to first quarter real GDP growth (see **Table 2**). This reflected a return to more normal stability in the contribution of net exports to real GDP following the gyrations of the two previous quarters. Growth in net exports has been slowing for several quarters, reflecting a decline in the growth rates of both exports and imports (see **Table 3**).

6. Government Investment

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

Growth in government spending has slowed steadily in recent quarters (see **Table 3**). Government investment contributed a very modest 0.32 percent to GDP growth in 2015 and 0.14 percent in 2016.

Table 7 shows recent growth rates in government spending and forecasts for 2017-2020.

Both **B of A** and **GS** expect government investment spending to be close to zero in 2017. I am somewhat more optimistic; however, that optimism is predicated in large part on additional federal infrastructure spending. The spending growth estimates in **Table 7** for the "**BASE**" and "**Strong Growth**" scenarios reflect a front-loading of a $450 billion ten-year infrastructure investment program assumed to begin in late 2017. However, a specific proposal does not yet exist and increasingly it looks like legislation may not be enacted in time for infrastructure spending to begin by late 2017. I assume that infrastructure spending reaches a peak level in 2018 which boosts government investment growth. Thereafter, however,

Table 7
Federal and State and Local Investment Spending Growth Rates

	2013	2014	2015	2016	2017	2018	2019	2020
Federal	-5.82	-2.54	0.00	0.59				
State and Local	-0.81	0.23	2.92	0.94				
Total Government	-2.86	-0.86	1.79	0.81				
GS Federal					-0.09	1.00	1.14	1.04
GS State and Local					0.19	1.43	2.07	2.09
GS Total					0.08	1.26	1.71	1.69
B of A Total					-0.12	0.73		
BASE					0.44	3.56	2.22	0.75
Strong Employment					0.44	3.56	2.22	0.75

while infrastructure spending remains elevated, annual percentage increases decline and actually fall below the long-run trend level.

7. Second Quarter 2017

Forecasters expect second quarter real GDP growth will be stronger than the first quarter's weak 1.15 percent growth. Both **GS** and **B of A** are currently forecasting 2.6 percent growth in the second quarter. A strong rebound in the second quarter following the weak first quarter is likely because consumer spending was unrealistically low in the first quarter report. **GS** is forecasting 3.2 percent consumption growth and **B of A** is forecasting 3.0 percent consumption growth in the second quarter. These forecasts imply that consumer spending will contribute 2.1 to 2.2 percent to real GDP growth in the second quarter. Getting from there to 2.6 percent or greater shouldn't be hard.

Also, the negative impact of inventory accumulation will likely flip to a positive contribution. All inventory accumulation has to do is exceed $4.3 billion — its quarterly trend level is $37 billion. Inventory accumulation is notoriously difficult to forecast. **B of A** expects inventories to grow $25.3 billion in the second quarter, which would add about 0.5 percent to GDP growth. However, **GS** expects inventories to increase only $4.0 billion in the second quarter, which would add nothing to GDP growth.

8. Longer-Term Real GDP Forecasts

Chart 3 shows quarterly real GDP growth projections from the second quarter of 2017 to the fourth quarter of 2020. **Table 8** includes annual real GDP growth for 2013-16 and forecasts for 2017 to 2020. Generally, forecasts are tightly clustered in 2017. My "**BASE**" and "**Strong Growth**" forecasts are at the lower end of the range in 2018, but move to the higher end of the range by 2020.

My "**BASE**" scenario is on the lower end of the spectrum in 2018 because of lower assumed employment and productivity growth. **CBO**'s forecasts, based upon its January update, are now generally similar to other forecasts in 2017 but are somewhat more pessimistic in 2018, 2019 and 2020. With the exception of 2018, all forecasts fall within the **FOMC**'s high and low estimates during the 2017-2019 periods.

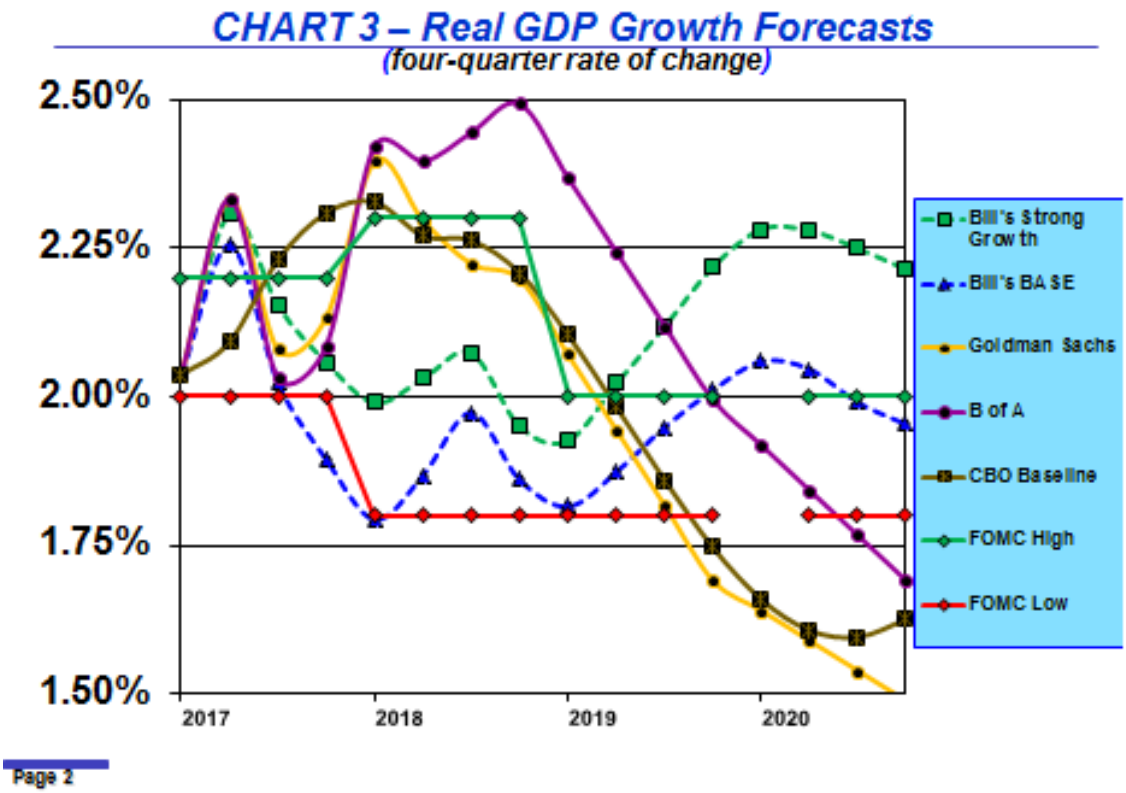


Table 8
Real GDP Growth Forecasts

(***year-over-year average***)

	2013	2014	2015	2016	2017	2018	2019	2020
Actual	1.68	2.37	2.60	1.62				
B of A					2.12	2.44	2.18	1.80
GS					2.15	2.28	1.88	1.56
CBO					2.28	2.01	1.71	1.54
FOMC High*					2.20	2.30	2.00	
FOMC Low*					1.80	1.80	1.80	
Bill's BASE					2.07	1.87	1.91	2.01
Bill's Strong Growth					2.14	2.01	2.07	2.26

*Q4 to Q4 — FOMC year-over-year 2017 equivalent is a range of approximately 2.00 to 2.20 percent, which is in line with other 2017 forecasts

IV. U.S. Employment Developments

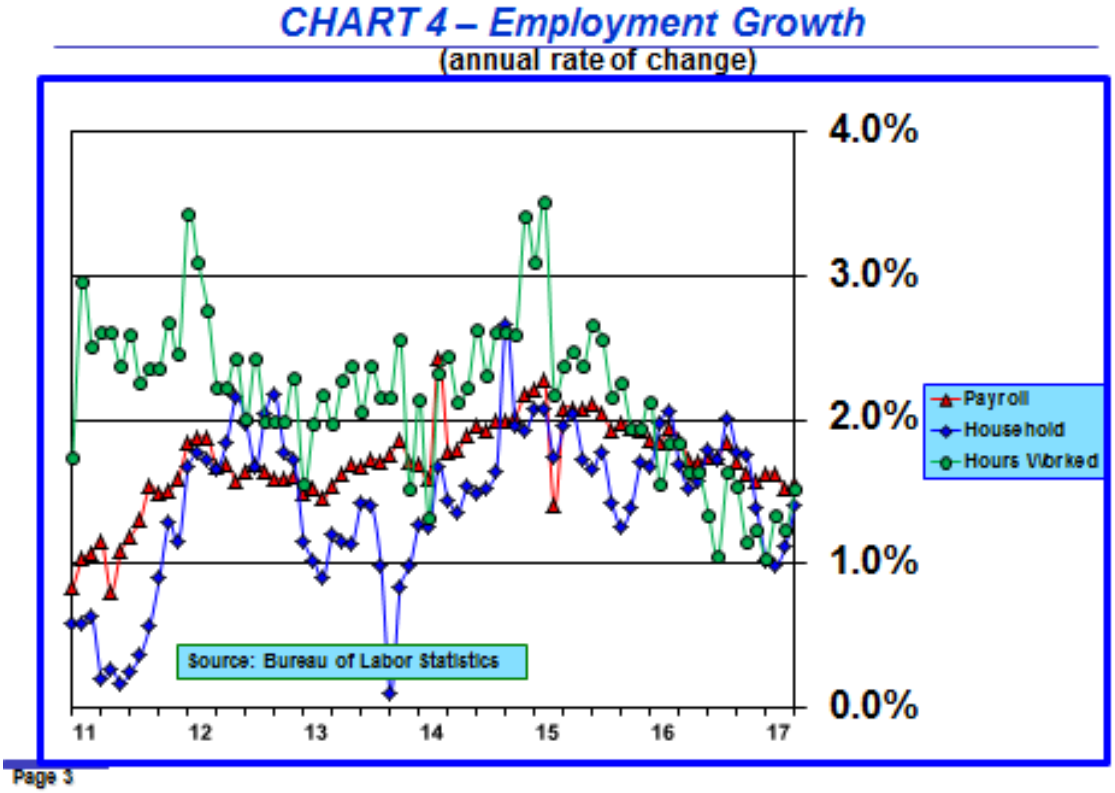
April's payroll employment report was much stronger than March's weak report. April payroll employment rose 211,000, bringing the average for the first four months of 2017 to 184,500.

Nonetheless, because the unemployment rate is now well below the natural rate, monthly payroll

employment gains are likely to converge to the underlying natural rate of growth in the labor force in coming months, which currently is in a range of 70,000 to 80,000. If monthly growth well above the natural rate continues over the next several months, the labor market will overheat and the FOMC will continue to raise the federal funds rate at a faster than expected pace with the intent to prevent an upside breakout in inflation.

1. Employment Growth

As can be seen in **Chart 4**, the trend in the 12-month rate of growth in payroll employment has slowed gradually from the cyclical peak of 2.27 percent in February 2015 to 1.56 percent in April 2017. Payroll employment growth averaged 226,000 in 2015, 187,000 in 2016 and 184,500 over the first four months of 2017.



Household employment growth averaged 209,200 in 2015, 173,400 in 2016, and 261,500 over the first four months of 2017. Household employment has grown at a slightly slower annual rate of 1.41 percent over the past 12 months compared to payroll employment growth of 1.56 percent.

Growth in total hours worked by all employees has been slowing as well. The average length of the work week shortened during 2016 from 34.5 hours to 34.3 hours. The 12-month growth rate in total hours worked by all employees was 1.52 percent over the past 12 months, compared to 1.24 percent in 2016, 1.94 percent in 2015 and 3.42 percent in 2014.

Chart 4 shows the three measures of employment growth — payroll employment, household employment, and total hours worked. Probably the most important thing to notice in **Chart 4** is the choppy downward trend in employment growth. This is indicative of a maturing labor market. All three measures are in a tight range near 1.5 percent currently.

2. Employment Participation

Employment participation had been declining until about a year ago, reflecting demographic shifts and an increase in discouraged workers exiting the labor force due to poor job prospects during and following the Great Recession. The downward trend in participation driven by changing demographics should continue to reduce participation by about 0.15 percent annually over the next ten years. Because discouraged workers are not counted in the labor force there has been considerable debate about their numbers and whether they would reenter the labor force once the labor market tightened. The increase in the participation rate from 62.39 percent in September 2015 to 62.93 percent in April 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 62.15. This is a swing of approximately 1.25 million workers many of whom were probably discouraged but have now reentered the labor.

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

As can be seen in **Chart 5**, the U-3 unemployment rate has fallen to 4.40 percent and matches the level attained prior to the Great Recession. The April U-3 unemployment rate was below **CBO**'s full employment (NAIRU) estimate of 4.74 percent.

The U-6 measure of unemployment, which adds those working part time who would prefer full-time employment and those marginally attached to the labor force to the U-3 measure, has fallen to 8.57 percent and now matches the 2005 pre-Great Recession difference between the U-3 and U-6 unemployment measures when the labor market was at full employment. The U-6 measure of unemployment fell 133 basis points over the past 16 months compared to a decline of 61 basis points in the U-3 measure, which underscores an improving labor market that is now at full employment.

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Long-term and short-term unemployment rates are also indicators of labor market tightness and are shown in **Chart 6**. The short-term unemployment rate has returned to the low level that prevailed prior to the Great Recession. The long-term unemployment rate has declined from over 4 percent in the aftermath of the Great Recession to 1.02 percent in April. It is still about 0.2 percent above the low level reached in 2006 just prior to the onset of the Great Recession.

CHART 5 – U-3 and U-6 Unemployment Rates

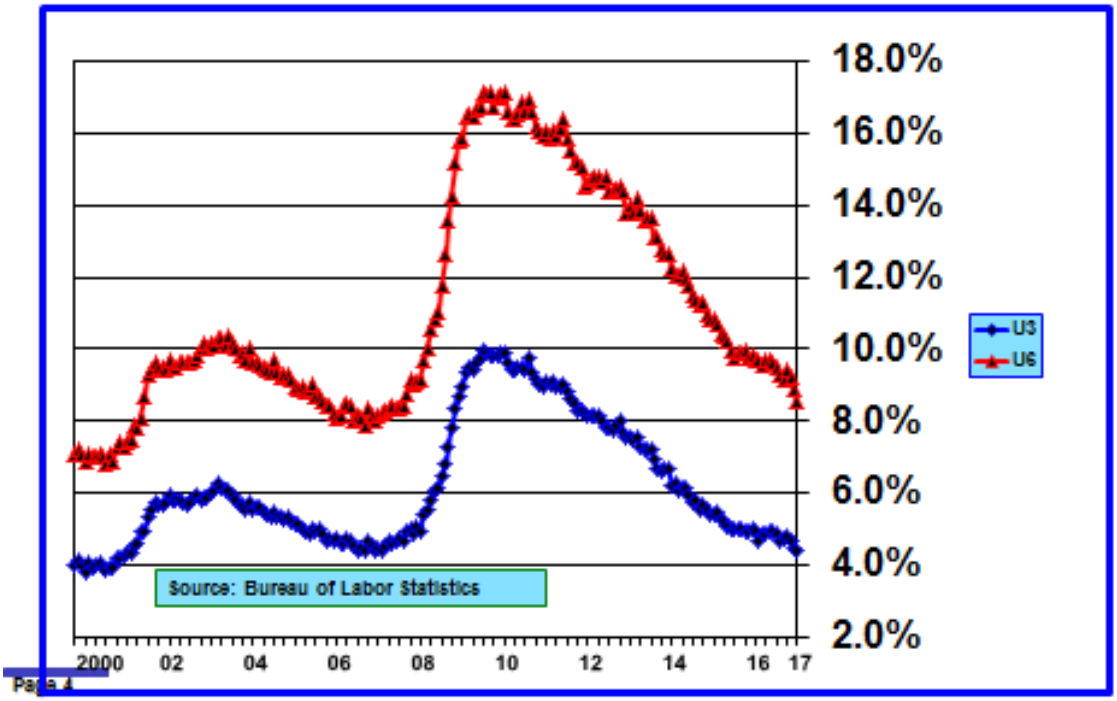
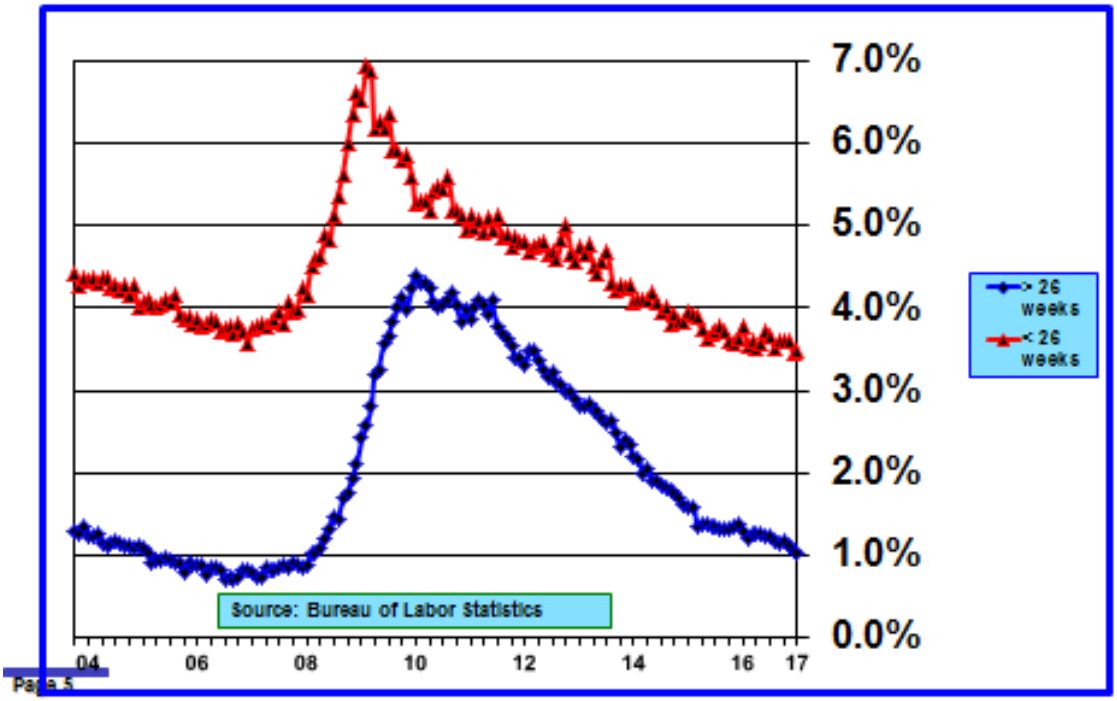


CHART 6 – LT (>26 weeks) and ST (<26 weeks) Unemployment Rates

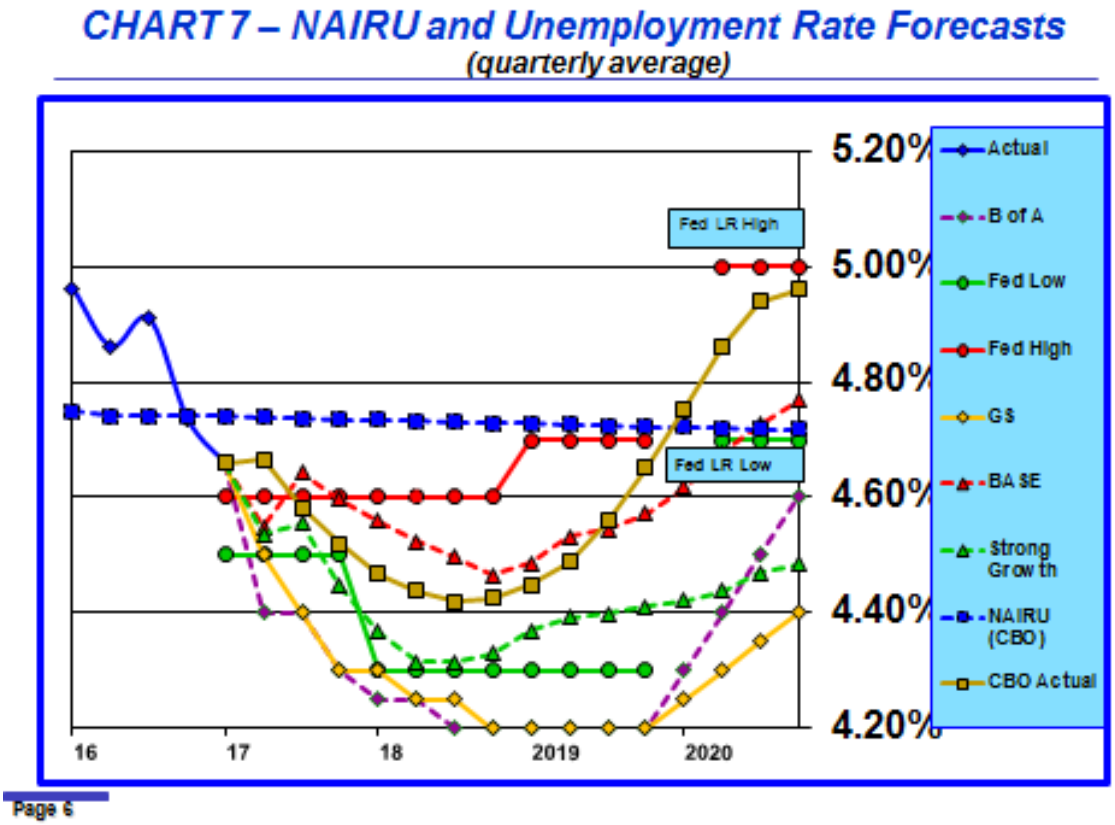


4. Forecasts of the U-3 Unemployment Rate

Forecasters expect the labor market to continue to tighten. The current U-3 unemployment rate is 35 basis points below **CBO**'s full-employment estimate of the non-accelerating inflation rate of unemployment (NAIRU).

As the term NAIRU implies, when unemployment falls below this level for any length of time not only do wages increase but inflation increases as well. For that reason, the FOMC is now crafting monetary policy to maintain full employment but limit the potential for tight labor markets to foster inflation. The traditional monetary policy tool involves raising interest rates. While this worry is a prominent topic for FOMC members, offsetting worries up to now about tepid growth in real GDP and fragility of international financial markets had resulted in the FOMC adopting a cautious, go slow approach to increasing interest rates. Recent indications of stronger economic growth both domestically and globally have emboldened the FOMC to normalize monetary policy more rapidly.

Chart 7 shows U-3 unemployment rate forecasts for **B of A**, **GS**, **and FOMC** high and low range, and my "**BASE**" and "**Strong Growth**" scenarios. **CBO**'s estimate of NAIRU is also shown in **Chart 7**.



Most forecasts project the unemployment rate to stay below NAIRU over the next three years. **GS** and **B of A** are the most optimistic and anticipate that the unemployment rate will fall to 4.2 percent by 2018. The unemployment rate falls to 4.46 percent in my **"BASE"** scenario by 2018, while it falls to 4.33 percent in the "**Strong Growth**" scenario.

GS's and **B of A**'s forecast unemployment rates hold at 4.20 percent in 2019; my "**BASE**" scenario rises to 4.57 percent and my "**Strong Growth**' scenario edges up to 4.41 percent.

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

Forecasts for **B of A**, **GS** and my "**Strong Growth**" scenario are close to the low end of the FOMC's forecast range during 2017, 2018 and 2019. My "**BASE**" scenario is consistent with **CBO**'s projections and both fall about midway between the FOMC's high and low projections.

Increasingly, it appears that structural changes in the labor market may have lowered NAIRU. This possibility in discussed in the following section. If NAIRU indeed is lower, then CBO and the FOMC will probably lower their estimates in upcoming benchmark revisions. 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.

5. Wage Growth Is Accelerating As the Labor Market Tightens

Now that the labor market has reached 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. And the data indicate this is occurring.

However, there is considerable inertia in wage adjustments which results in a slow rise in average wages even after the labor market has reached or exceeded full employment. Inertia may be greater in this cycle for a number of reasons. First, collective bargaining power provided by unions on the behalf of labor continues to decline as a catalyst for higher wages. Second, because wage increases might not have slowed as much as they could have during the extended period of labor market slack, there is less need to increase wages as a faster rate now that the labor market has tightened. However, some of this inertia has been offset as many states and local governments have raised minimum wage floors over the past two years.

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

There are three primary broad-based measures of labor compensation that provide information about compensation trends. All are compiled by the Bureau of Labor Statistics (**BLS**). One is released monthly as part of the monthly labor situation report and includes both hourly and weekly wage rates for all employees and separately for production and nonsupervisory workers, but includes no information about benefits which comprise approximately 30 percent of total compensation. A second measure, the employment cost index (ECI), is released quarterly and consists of wages and salaries, benefits, and total compensation indices (see **Chart 8**). A third measure is also released quarterly as part of **BLS**'s report on output, total hours worked, and productivity.

Chart 8 reveals that there has been very little acceleration in total compensation (ECI) over the past six years. Total compensation was growing at an average rate of 2.05 percent in 2011 and 2.38 percent in the first quarter of 2017. Growth in wages and salaries has moved up from an average of 1.55 percent in 2011 to 2.41 percent in the first quarter of 2017. Much of the acceleration in wages and salaries has been

offset by slowing growth in benefits, which declined from an average of 3.25 percent in 2011 to 2.24 percent in the first quarter of 2017.

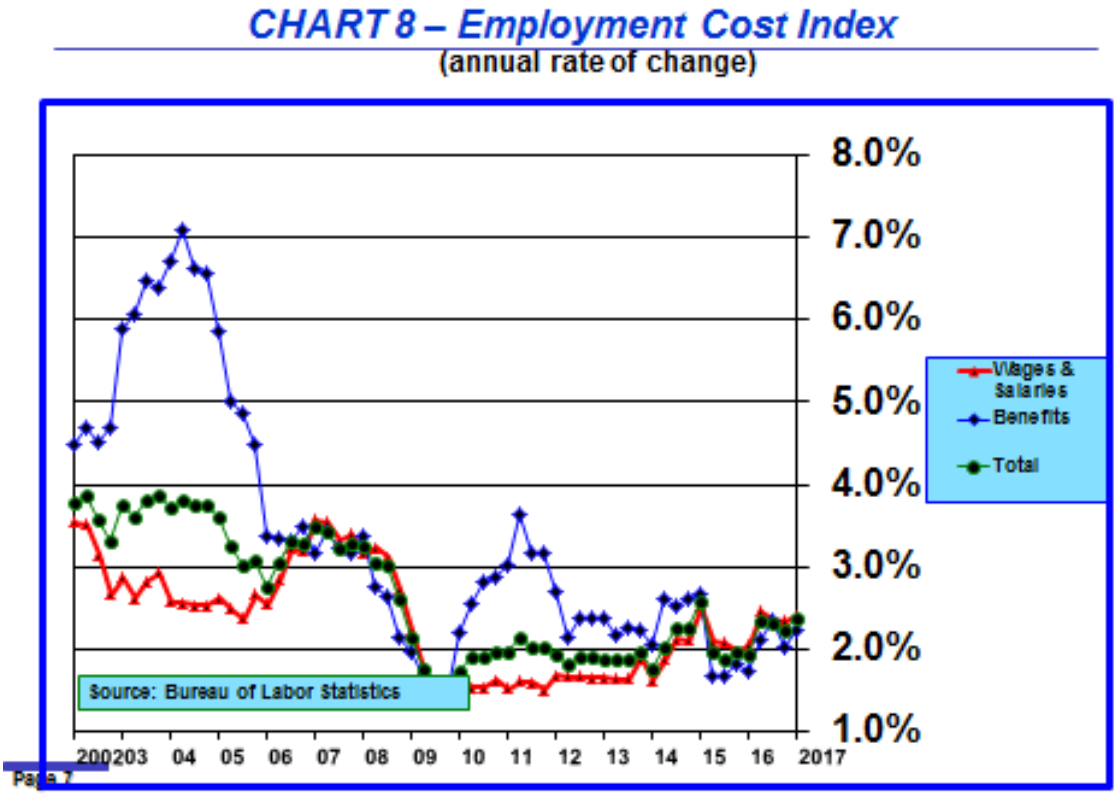


Chart 9 shows the rate of growth in hourly wages for all workers, production and nonsupervisory workers, as well as the ECI (total wages and salaries). All three sets of measures in **Chart 9** track each other closely over time. All three measures have been rising gradually over the past six quarters.

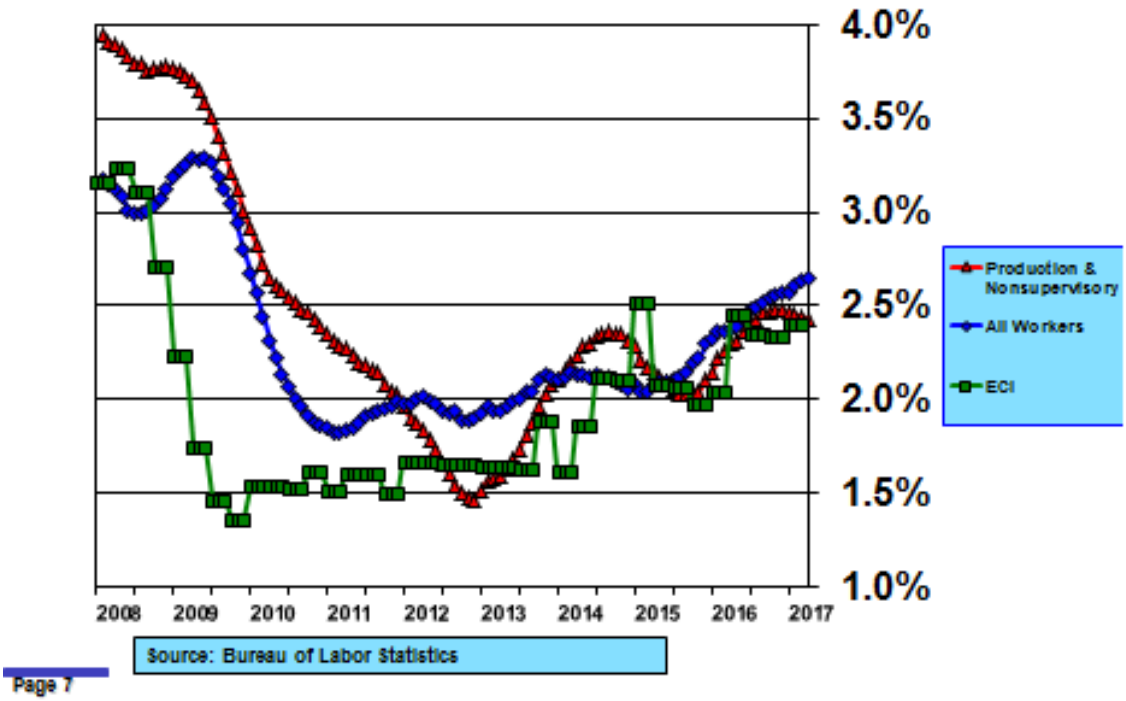
Although these measures are highly correlated over time, because compilation methodologies differ for each set of measures percentage changes over fixed time periods will not necessarily be in sync. This is the case currently. Average hourly wages (12-month moving average) of all employees are rising 2.64 percent annually over the past 12 months compared to 2.38 percent a year ago. Average hourly wages (12-month moving average) of production and nonsupervisory workers are rising 2.43 percent annually compared to 2.30 percent a year ago. ECI growth in wages and salaries has risen from 2.05 percent in the first quarter of 2016 to 2.41 percent in the first quarter of 2017.

To a certain extent, focusing only on hourly wages is a bit misleading. If one looks at growth in average weekly earnings, which factors in the length of the workweek and thus incorporates changes in the mix of full and part-time employees, rather than the

hourly wage rate, there has been little growth in weekly wages for all employees, rising from 2.16 percent in April 2016 to 2.31 percent in April 2017 (see **Chart 10**). This outcome reflects a modestly shorter average number of hours worked per week, which could be due to a greater proportion of part-time workers as well as fewer hours for other employees, offset by growth in the hourly wage rate.

CHART 9 – 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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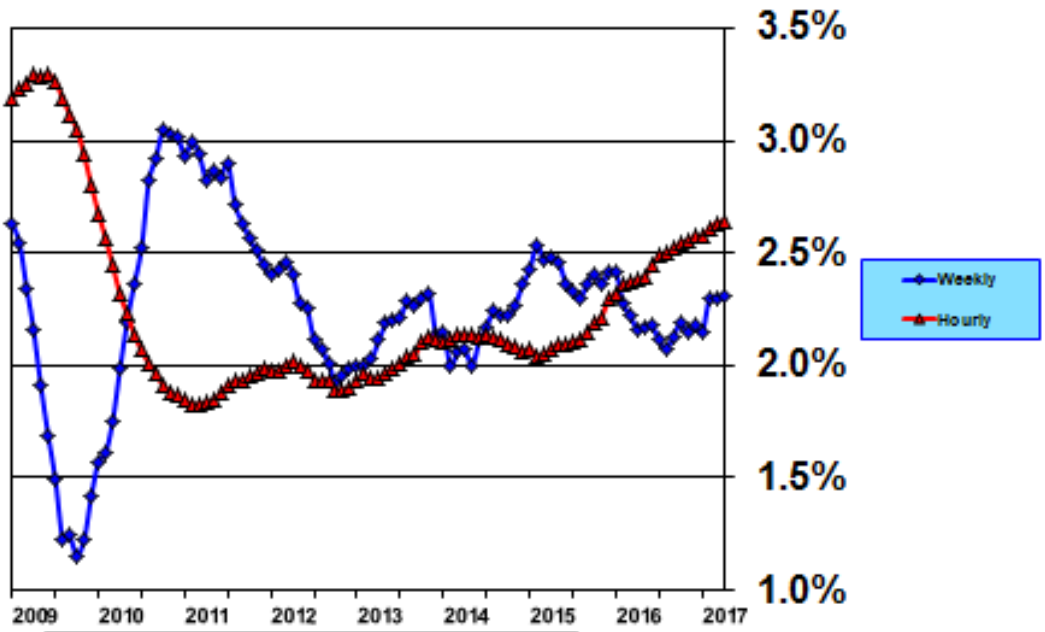
CHART 10 – Hourly & Weekly Wage Rate Growth – All Workers

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



Source: Bureau of Labor Statistics

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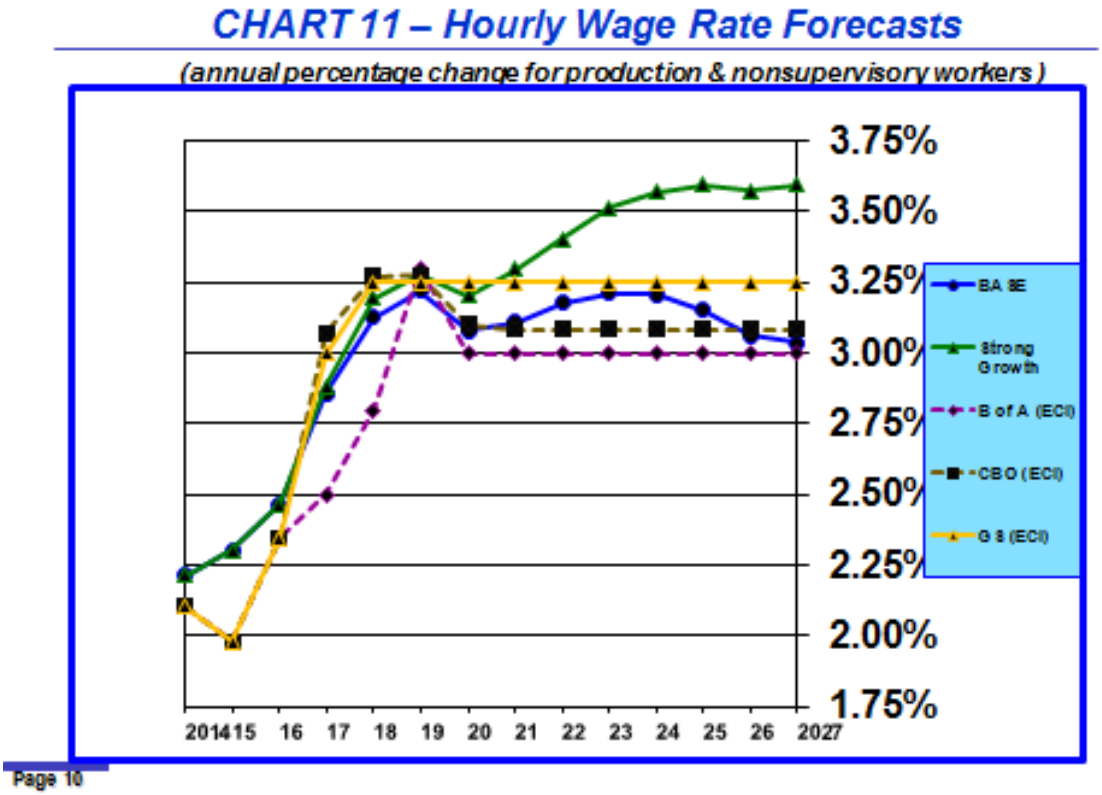
Chart 11 shows my projections for wage growth for production and nonsupervisory workers over the next ten years and **CBO**'s, **GS**'s and **B of A**'s projections for growth in the wages and salaries component of ECI for all workers.



CBO, GS and **B of A** forecast wage rate growth only for ECI. Although the methodologies for constructing these different wage data series differ, the directionality of all is highly correlated over time, even if the levels aren't precisely the same at every point in time. **GS**'s ECI wage growth forecast rises to 3.25 percent by 2018 and remains at that level thereafter. **B of A**'s ECI forecast rises to 3.3 percent in 2019 but then recedes to 3.0 percent. **CBO**'s ECI forecast rises to 3.3 percent in 2018 but then slows to 3.1 percent by 2020.

Wage growth for production and nonsupervisory workers rises at about the same rate as **CBO**'s and **GS**'s projections in my "**BASE**" and "**Strong Growth**" scenarios, reaching 3.22-3.28 percent in 2019. Thereafter wage growth in my "**BASE**" scenario is stable and tracks CBO's projections closely and is not much different from **B of A**'s projections. Wages continue to rise gradually in my "**Strong Growth**" scenario to 3.60 percent by 2027, reflecting the impacts of faster employment growth and lower short-term and long-term unemployment rates.

GS's wage tracker registered 3.0 percent in the first quarter of 2017, just 25 basis points short of the long-run expected 3.25 percent annual rate of increase. **GS**'s 3.25 percent level assumes full employment, 2.0 percent inflation, and 1.25 percent annual productivity increases (nonfarm productivity increases would be higher as that measure does not cover the entire economy). The current weakness in wage growth results from inflation and productivity below their expected long-run values. In other words, the historical forces

determining wage rate growth have not changed. The upward adjustment in wage rate growth is consistent with historical precedent and levels of the key determinants — inflation, productivity, and labor market slack.

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

Tan Kai Xian of GavekalResearch suggests, however, that there may be other reason for the absence of significant wage pressures, including demographic shifts, changing labor force participation, and increasing automation.[2]

First, job hopping has undergone a secular decline due to the aging of the labor force. Statistically, younger workers change jobs more frequently than older workers. Thus, as the workforce ages job turnover will decline and that means that any point in time frictional unemployment between jobs will be lower. The takeaway is that the natural rate of unemployment (NAIRU) will be lower. Practically speaking, this could mean that CBO's current estimate of NAIRU as 4.74 percent is too high. To the extent this might be true, it implies that the economy is not necessarily at full employment yet, although it is very close.

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

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

V. Inflation

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

Core PCE inflation was 1.58 percent in March and has risen 27 basis points from its recent low of 1.31 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 2.15 percent in February, up from the 0.23 percent rate of increase that prevailed at the end of 2015. Now that commodity prices have stabilized, total CPE inflation declined in March to 1.85 percent, as the early 2016 increases in prices of commodities dropped out of the year-over-year annual rate of change.

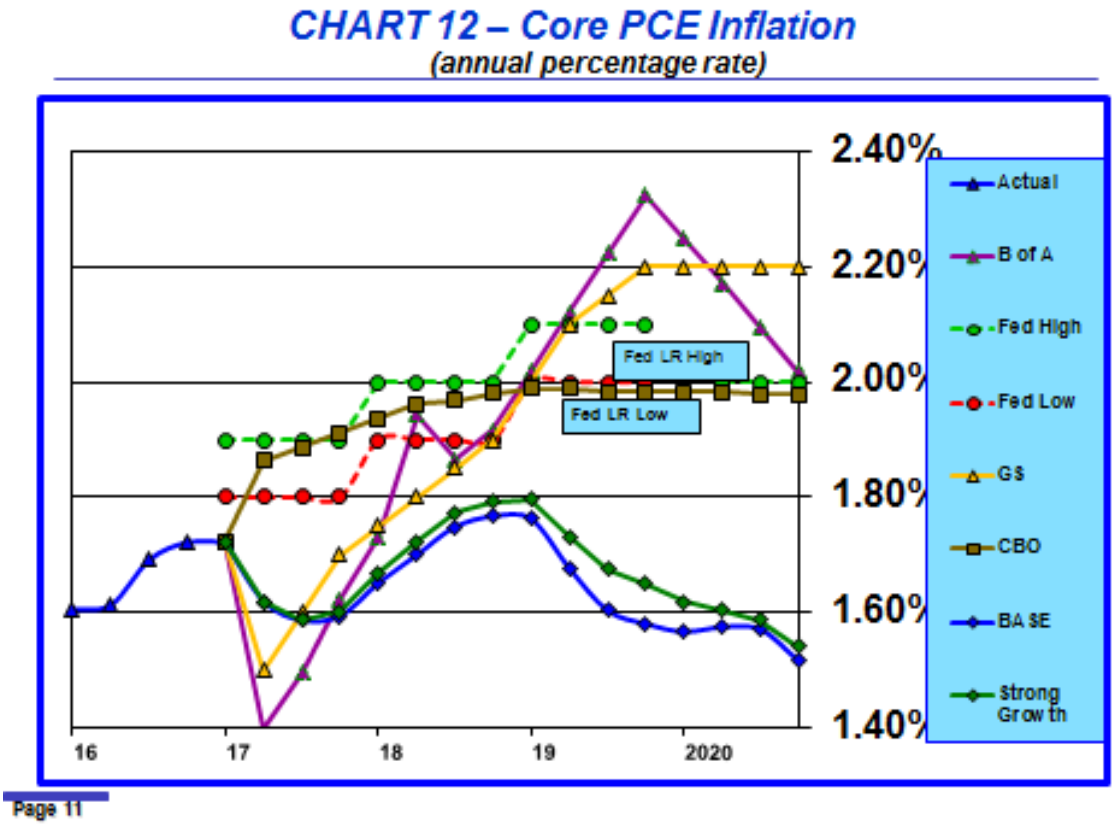
As can be seen in **Table 9** (**Chart 12** shows historical core PCE price index data and data from **Table**

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

9 in graphical form), forecasts of the core PCE inflation index now indicate that inflation will not increase during 2017. Over the longer run, **B of A** and **GS** expect core PCE inflation to break above 2.0 percent during 2019, and then edge back toward 2.0 percent after that. **B of A** expects inflation to reach 2.3 percent in 2019 and **GS** is forecasting 2.2 percent in 2019. FOMC projections reflect a gradual rise to its 2.0 percent target during 2018.

Table 9
Core PCE Inflation Forecasts — B of A, GS, Bill's "BASE", Bill's "Strong Growth" and FOMC High and Low

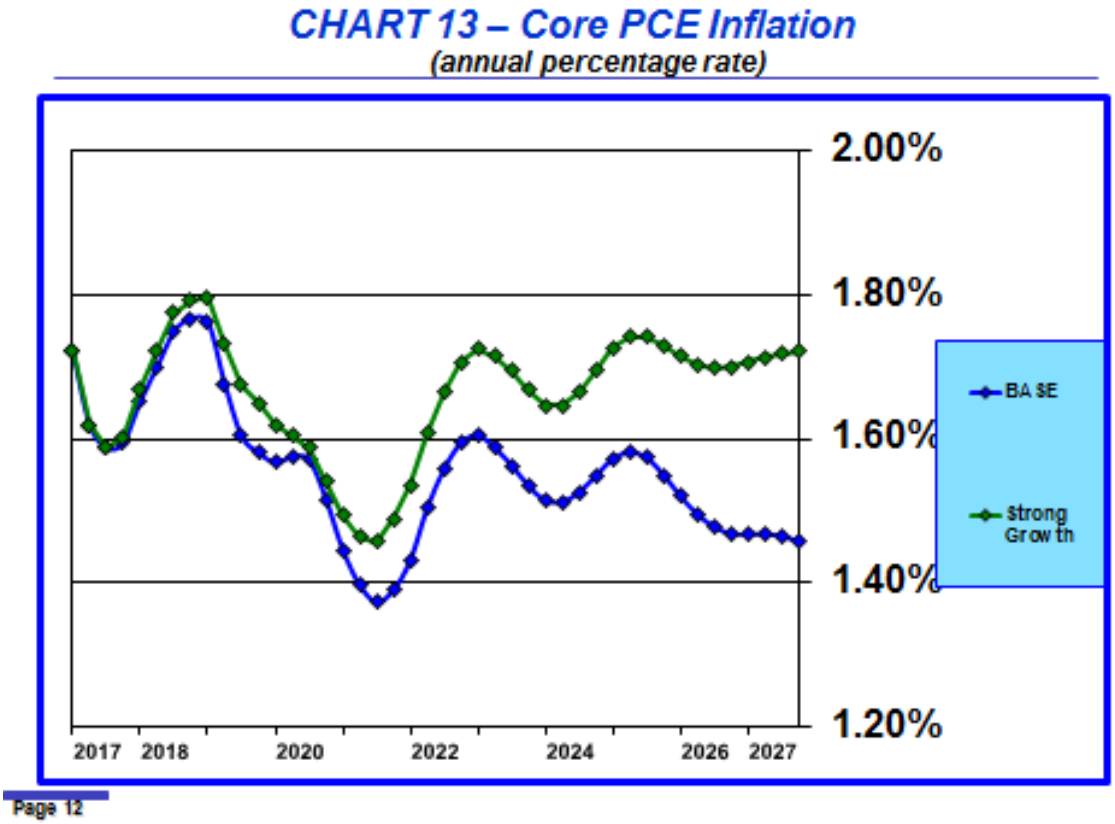
Core CPE	2013	2014	2015	2016	2017	2018	2019	2020
Actual	1.55	1.50	1.39	1.75				
B of A					1.62	1.92	2.32	2.02
GS					1.70	1.90	2.20	2.20
Bill's BASE					1.62	1.76	1.58	1.49
Bill's Strong Growth					1.64	1.79	1.64	1.52
FOMC — High					1.9	2.0	2.0	
FOMC — Low					1.8	1.9	2.0	



Core PCE inflation declined in March and, based upon April's CPI report, core PCE inflation is likely to be subdued in April. Part of the unexpected softness in core PCE inflation is related to quality improvements in cell phones, but other price categories have been weaker than expected. **GS** and **B of A** recently reduced their inflation forecasts for 2017 and to a lesser extent for 2018. Their revisions are now

consistent with my forecasts rather than being about 20 basis points higher in 2017.

GS and **B of A** still expect core PCE inflation to exceed 2.0 percent in 2019. I continue to be skeptical. As can be seen in **Chart 13**, my econometric model indicates inflation is likely to remain below 2.0 percent for several years in a range of 1.40 to 1.80 percent, even though the economy is operating at full employment.



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

Tan Kai Xian cited three reasons why inflation might not head higher as most expect.[3] First, energy prices have been stable for over a year and have recently fallen a tad. The pro-energy policies of the Trump administration are likely to favor increases in supply relative to demand which would keep a lid on prices. Indeed, the risks of lower energy prices in coming months are greater than the risks of higher prices. Do not worry about OPEC production quotas. They leak like a sieve and in any event OPEC has limited pricing power. Any increase in prices above $55 a barrel will prompt a surge in U.S. shale oil production. U.S. energy investment in new rigs was very strong in the first quarter.

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

Second, growth in consumer, real estate and business lending has slowed as financial institutions have tightened underwriting. Auto lending has slowed to an annualized rate of 0.9 percent over the last three months and credit card lending to an annual rate of 3.6 percent over the past 12 months. Business lending has stalled, but might recover if business optimism leads to capital investment and inventory building in anticipation of improved sales. Commercial real estate lending has slowed largely in response to increased regulatory scrutiny and tighter underwriting standards. Slower credit growth will take pressure off of inflation.

Third, inflation expectations rose sharply following last year's presidential election because of President Trump's tax reform and infrastructure proposals. Congress has been distracted by investigations and has yet to move forward on tax and infrastructure legislation. Although the House of Representatives finally passed a health care bill by the slimmest of margins, the Senate plans to write its own bill. There is no assurance that Congress will ultimately be able to pass health care legislation. The best case now appears to be that something is cobbled together but it could well take the great part of 2017 to do so. This makes the job of passing tax reform harder because it was anticipated that the health care legislation would help pay for the costs of tax reform. Sum all of this up and the risks of longer than expected delays in enacting and implementing tax cuts, tax reform and infrastructure stimulus seem all but assured and the possibility that nothing at all happens cannot be ruled out.

Tan Kai Xian concludes that the more likely pathway for CPI inflation is "... *to tail off through the spring and flatten out at about 2% in the summer months.*" PCE inflation of about 1.6 percent, which is generally what my "**BASE**" scenario is forecasting, is consistent with 2.0 percent CPI inflation. This scenario is the one that appears now to be unfolding.

VI. Inflation, Productivity and Real GDP Growth

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

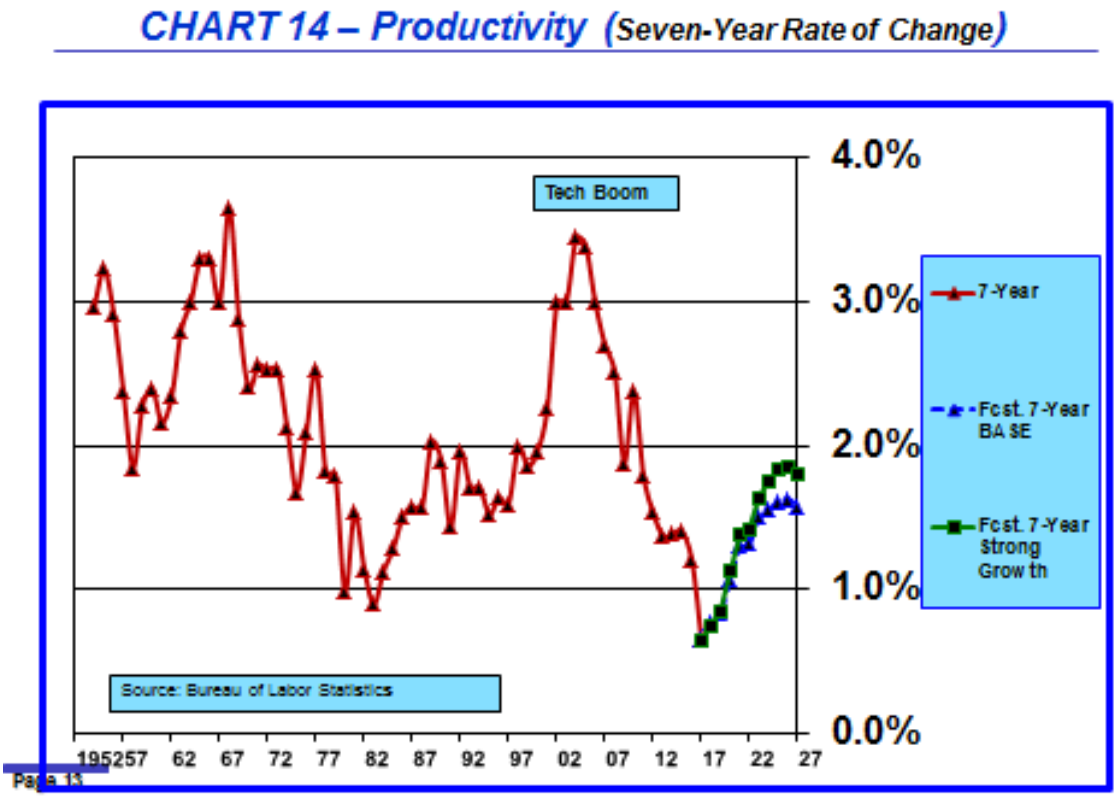
Chart 14 shows historical rates of increase in productivity and projections for my "**BASE**" and "**Strong Growth**" scenarios.

Analysts expect, or perhaps the more appropriate word is "hope," that productivity will rebound from its recent dismal 0.52 percent annual rate of increase to at least 1.50 to 1.75 percent.

Charles Gave blames poor productivity on low real rates of interest and asserts that cheap money destroys growth.[4] The general argument is that capital is diverted to low-risk speculative assets because leverage is cheap and interest rates are controlled rather than financing more risky investments in productive activities. Unambiguously, over long periods of time, low real rates and low productivity are positively correlated. However, the question is whether low rates are the cause of low productivity or rather whether low productivity caused by other forces is the cause of low rates of interest.

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

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



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

GS continues to argue that part of the decline in productivity is due to measurement error, which it estimates accounts for 0.25 to 0.50 percent or about half of the shortfall from 1.50 to 1.75 percent. Other analysts, while acknowledging that productivity is hard to measure and is probably misstated, argue that there is no evidence that measurement error has been materially greater in recent years. They do not find **GS**'s arguments persuasive. It should be noted that if **GS**'s view about measurement error is valid, then inflation is overestimated.

March's unexpected decline in the core CPI rate and April's slower than expected increase, and, thus, probably in the core CPE rate as well, was cited by **GS** as evidence supporting its mismeasurement hypothesis.[5] The BLS incorporated a quality adjustment for cell phone services stemming from Verizon's adoption of unlimited data packages. Quality adjustments depress the inflation deflator and all else equal raise measured productivity and real GDP growth, which is **GS**'s allusion to the "return of the missing growth." Of course, a lot more quality adjustments would be required to depress inflation and raise

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

growth significantly. That may happen and, if it does, that would lend support to **GS**'s mismeasurement hypothesis. However, that would mean that the FOMC's task of lifting inflation to its 2 percent target would transform into a bigger job.

According to a recent Bloomberg release, statisticians at the Bureau of Labor Statistics and the Bureau of Economic Analysis have been studying the issue of potential mismeasurement of quality changes in computer hardware and software on price indices. I have been unable to locate a paper on this matter, however. The Bloomberg report indicates that price indices might be overstated by as much as 40 basis points annually over the period 2000 to 2015. If this is so, then real GDP growth would be understated by the same 40 basis points annually. Measured productivity would also increase as would potential real GDP growth. Along with a higher measured real rate of GDP growth, real interest rates would also be higher.

While this might seem like good news, it would mean that inflation is a lot lower than currently reported and much farther away from the FOMC's 2.0 percent nominal target. The implication of lower inflation, along with the emerging view that NAIRU is lower than CBO's estimate, is that monetary policy should be normalized at a much slower pace than implied by the FOMC's projections to enable "mismeasured" inflation to rise to the policy target of 2.0 percent.

If measurement error is dismissed as explaining part of the decline in productivity, **GS** argues that there are two other cyclically-based effects that explain much of the decrease. The implication is that cyclically-based effects will eventually reverse and productivity will rebound to a much higher and persistent level.

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

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

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

VII. Financial Conditions

GS calculates and publishes a financial conditions index, **GSFCI**. **GS** has conducted extensive empirical research which demonstrates that financial conditions impact economic growth. Tighter financial conditions lead to slower growth. Tighter financial conditions can occur through intentional tightening of monetary

policy by the **FOMC**. But, tighter financial conditions can also occur during episodes of financial market instability and panic.

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

GSFCI was 99.54 in mid-May, about 50 basis points easier than the December level, even though the FOMC raised the federal funds rate 25 basis points in March and the market is expecting the FOMC to raise the federal funds rate another 25 basis points in June. This implies that the FOMC strategy of raising the federal funds rate gradually is working without creating more adverse market conditions.

VIII. Interest Rates

1. Interest Rates — Federal Funds Rate

The FOMC raised the federal funds rate 25 basis points at its March meeting. Going forward the debate now revolves around how rapidly the FOMC will raise rates. The expected number and timing of federal funds rate increases made by several analysts, including myself, is shown in **Table 10**. It should be emphasized that the market forward yield curve indicates that fewer rate increases will occur and they will be stretched out over a longer period of time.

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	Total to Equilibrium	Equilibrium Rate
FOMC — median	3	3	3	0	9	2.75-3.00
B of A	3	3	3	0	9	2.75-3.00
GS	3+	4	4	0	11	3.25-3.50
Bill's BASE	2	2	4	2	10	3.00-3.25
Bill's Strong Growth	3	2	4	4	15	4.25-4.50

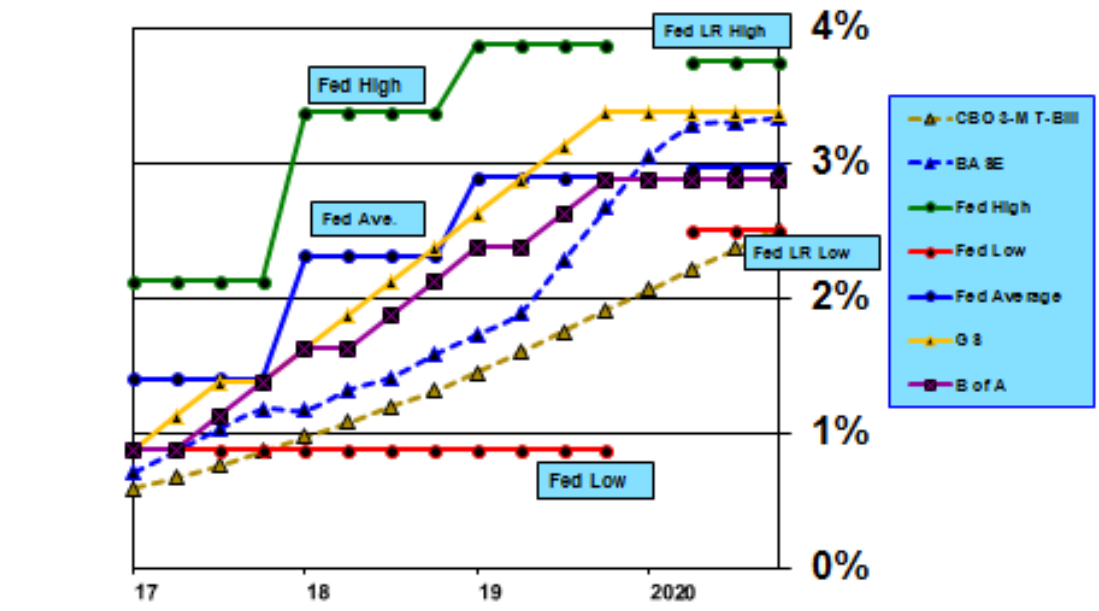
In its March Summary of Economic Projections (SEP), the median FOMC member view is three 25 basis point increases in the federal funds rate in 2017 (1.25-1.50 percent), three more in 2018 (2.00-2.25 percent), three more in 2019 (2.75-3.00 percent), and a long-term equilibrium level of 2.75 to 3.00 percent. In the past the SEP projections have proved to be very unreliable guides to future monetary policy. For example, a year ago the FOMC median projected four increases in the federal funds rate. Only one occurred. The question now is whether, with the economy at full employment and fiscal stimulus in the wings, the FOMC's projected three rate increases in 2017 might turn out to be an underestimate.

B of A now expects three increases in 2017 with the two remaining increases occurring in June and September. **GS** is firmly in the three increases camp and expects the remaining two increases to occur in June and September. Also, **GS** expects a faster pace of tightening than **B of A** and a higher equilibrium level of the federal funds rate of 3.25 to 3.50 percent compared to 2.75 to 3.00 percent for the FOMC and 2.75 to 3.00 percent for **B of A**.

My updated federal funds rate forecast in my "**BASE**" scenario projects one additional rate increase in 2017, two additional increases in 2018, followed by four increases in 2019 and two more in 2020. My "**BASE**" case equilibrium rate settles at 3.00 to 3.25 percent, slightly above **B of A**'s and the FOMC's projections. However, the federal funds rate in my "**Strong Growth**" scenario continues to rise to 4.25 to 4.50 percent. Actually, this is not an equilibrium rate but reflects the consequences of a tight monetary policy in an overheated economy — the unemployment rate falls gradually to 4.0 percent in this scenario by 2027, considerably below the NAIRU rate of approximately 4.7 percent.

Chart 15 shows the quarterly progression in the federal funds rate from the present through 2020 implied by the FOMC's high, low and average projections. It also shows forecasts for **B of A, GS**, and my "**BASE**" scenario. My forecast pathway rises a bit more slowly but by 2020 lands between **B of A**'s and **GS**'s projections.

CHART 15 – Federal Funds Rate Forecasts



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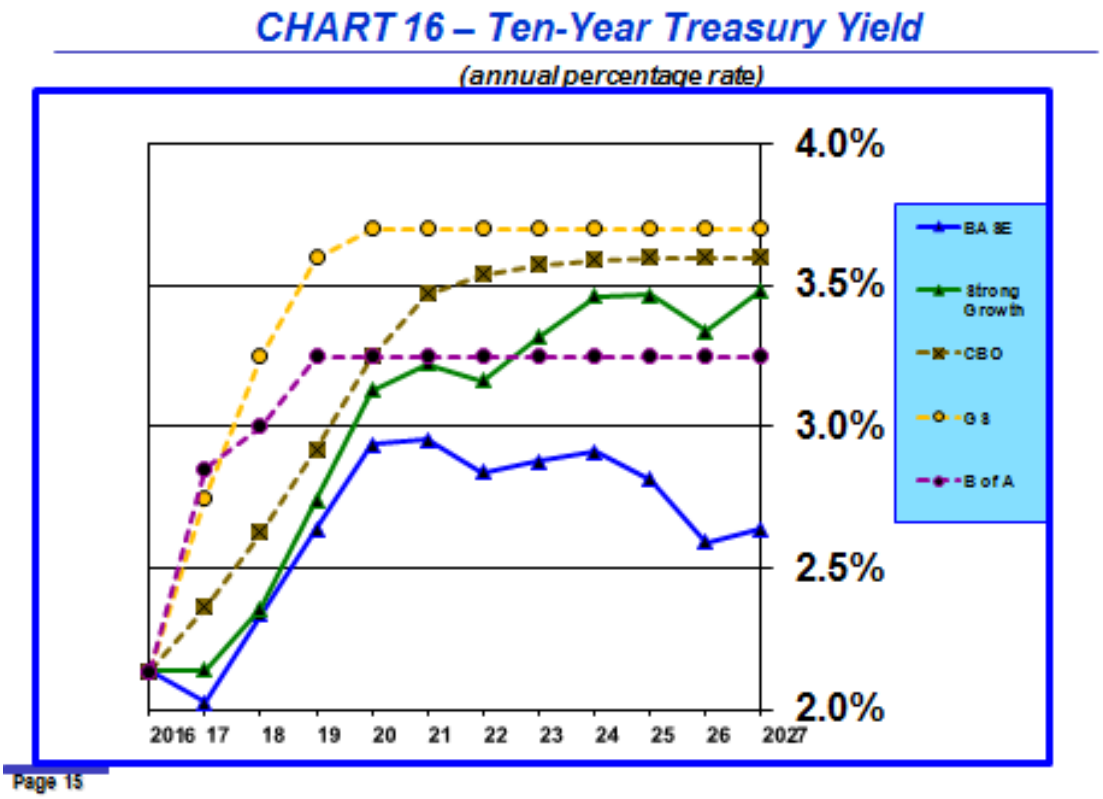
Until December 2016, FOMC members had steadily reduced the median estimate of the long-term nominal value of the federal funds rate from 4.25 percent to 2.875 percent — the median value rose to 3.00 percent in December and remained at that level in March. Based upon my model, my sense is that the FOMC's 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 3.50 percent is a likely level for the long-term neutral federal funds rate, but it could be lower at 3.25 percent, 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 1.50 percent.

2. Interest Rates — 10-Year Treasury Note Yield

Assuming an inflation rate of 2.0 percent, my model indicates that the 10-year neutral rate should be about 3.50 percent. The long-term neutral rate is 3.70 percent for **GS**, 3.25 percent for **B of A** and 3.60 percent for **CBO**. These estimates do not differ materially — all fall within a range of 3.25 percent to 3.70 percent.

My forecasts for the 10-year yield in my "**BASE**" scenario, which are shown in **Chart 16**, are lower than those of other forecasters because my forecasts of inflation are lower than 2.0 percent. The range in my average annual forecasts is 2.65 to 3.00 percent between 2020 and 2027, rather than 3.45 to 3.80 percent that my model says would prevail if inflation were 2.0 percent in the "**BASE**" scenario.



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

   ✓ **The Citi Surprise Index decisively reversed course in recent weeks plunging to -37.5 on May 17 after reaching 47.3 on April 6; over the same time period the 13-week average declined from 43.9 to 25.7**

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

   - ***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 and GS;s Q2 forecasts are both 2.6%

     ? GS's May U.S. Current Activity Indicator (CAI) eased to a still strong 3.0% from 3.4% in April; the CAI is a proxy for real GDP growth; its recent high level has been driven by strong survey data, which have yet to translate into strong actual economic activity

     + B of A's 2017 forecast is 2.1% and GS's is 2.15%; my "BASE" scenario forecast is 2.1% and my "Strong Growth" scenario is 2.15%; FOMC tightened its 2017 Q4/Q4 central tendency range in March to 2.0-2.2%

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

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

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

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

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

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

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

  ? 2016 productivity was 0.24% Y/Y and 1.07% Q4/Q4; Y/Y productivity rose to 0.52% in the first quarter and Q1/Q1 was 1.14%

  - Y/Y productivity growth in 2017 is on a track to rise to 1.1% and Q4/Q4 could be 1.25%

- ***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 184,500 over the first four months of 2017

  - Household employment growth averaged a very strong 261,500 over the first four months of 2017

  + labor force growth over the same period averaged 140,250 — eventually payroll and household employment growth will converge to labor force growth

  + Evercore ISI temporary and permanent employment surveys remain strong, but have edged down from an average of 60.1 in December to 58.8 in May but remain very strong (a value above 50 is favorable)

  - The Conference Board's labor market differential was +11.7 in April compared to +12.7 in March, +7.3 in February and +6.0 in January, indicative of a strong employment market, but perhaps with the hint of imminent softening

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

  + Total job openings have ceased to increase over the past several months

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

  - Participation grew from 62.67% in December to 62.93% in April

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

  + U3 unemployment rate in April was 4.40%

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

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

  ? Atlanta Fed wage tracker declined from 3.8% in December to 3.5% in May (this measure consistently is higher than other measures of wages)

  + GS's wage tracker was 3.0% in April

  + Evercore ISI's composite index of temporary and permanent placement wage pressures were a relatively strong 64.1 in the week ending May 26 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 March nominal consumer income growth over the past 12 months was 3.70%; growth in 2017 appears likely to be near the top end of the forecast range

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

  - As of March nominal consumer spending growth over the past 12 months was 4.2%; growth in 2017 appears likely to be within the forecast range

  ? University of Michigan Survey of Consumers sentiment index was 97.7 in May compared to 98.0 in April, 96.9 in March, 96.3 in February, but below the 98.5 registered in January and 98.2 in December ; improved confidence since the election is solely the result of those identifying themselves as Republicans, confidence among Democrats has declined sharply

  ? Conference Board consumer confidence index pulled back to 120.3 in April after surging to 124.9 in March, the highest level since December 2000; this compares to 116.1 in February, 111.8 in January and 113.3 in December; since the election confidence has risen the most for those earning $35,000 to $100,000, the only category that has declined is those earning $15,000 or less

  ? Bloomberg's U.S. Consumer Comfort index eased to 49.7 on May 12 from 51.3 on March 24, which was the highest level in 16 years

  ? Evercore ISI's index of company surveys was 52.4 on May 26 compared to 50.1 on December 30

  ? Retail sales growth was a little softer than expected in April

  ? Auto sales slowed significantly in March to an annual rate of 16.6 million units and rose only slightly in April to 16.8 million compared to the recent annual average of about 18 million, a slowing trend, if continued, which will depress growth in consumer spending

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

  + The saving rate averaged 5.21% over the first three months of 2017 compared to 5.47% over the past 12 months

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

  - The S&P 500 stock index was up 7.9% as of May 26

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

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

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

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

- ISM manufacturing index fell to 54.8 in April from 57.2 in March compared to 57.7 in February, 56.0 in January and 54.5 in December (a value above 50 is favorable)

- ISM non-manufacturing index rose to 57.5 in April compared to 55.2 in March, 57.6 in February, 56.5 in January and 56.6 in December (a value above 50 is favorable)

? GS analyst index fell further in April to 47.1 from 51.5 in March, 56.7 in February, 58.8 in January and 60.7 in December (a value above 50 is favorable); this measure is now signaling deteriorating earnings prospects; notably, at the same time the aggregate index has been falling the employment index has also been falling and the labor cost index has been rising, which are indicators of a tight labor market

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

  ? Capacity utilization (the U.S. operating rate) rose to 76.7% in April, but remains well below the 80.0% level that typically leads to a sustained acceleration in business investment spending

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

  ? Evercore ISI's survey of capital goods has been rising and accelerated in the last month to 57.5 in the week ending May 19 (a value above 50 indicates growth in activity)

  ? C&I lending standard have tightened some; C&I lending has declined at an annual rate of -1.1% since November, but might simply reflect improving access to other sources of credit as the energy sector financial difficulties recede

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

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

  ? NAHB housing market index rose to 70 in May compared to 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 April were 4.0% above the 2016 total

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

  ? Evercore ISI's homebuilders survey has risen from a strong 57.5 in December to an extremely strong 64.7 on May 26 (a value above 50 is favorable)

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

  ? According to the S&P Case-Shiller index, the year over year trend in housing prices was an increase of 5.8% in February, which is well above the rate of increase in nominal incomes and, thus, is not sustainable

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

- ***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 Board's Housing Purchase Price Index rose 6.2% during 2016

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

  + The trade deficit in March, measured as a 12-month moving average, was 2.68%, slightly worse than December's 2.65%

- 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 -1.5% in April from December; the dollar has fallen because confidence in Trump economic stimulus has faded, and greater than expected strength in European and emerging economic growth

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

  + Oil prices averaged about $51 a barrel so far in 2017; downside risks to prices outweigh upside risks because of rapidly rising U.S. shale production and a record net long speculative positions which are betting on higher prices

- ***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 on March 15 and reaffirmed its expectation to raise this rate two more times during 2017; B of A expects two additional increases in June and September; GS expects two additional increases in June and September; the probability of an increase at the June FOMC meeting is 80%

  ? Financial conditions have eased so far in 2017 and were 99.54 in May compared to 100.05 in December and matched 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 in 2016 was 1.60%

  + Total CPE inflation was up 1.85% in March compared to March 2016; the index, which peaked in February at 2.15%, is now falling as the effects of the rebound from low oil prices experienced in early 2016 drop out of the index; the index now appears to be headed by year end to a level below the 1.7-2.0% range

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

  + 5-year, 5-Year Forward Inflation Expectation rate derived from Treasury Inflation Protected Securities was 1.90% on May 26 compared to 2.08% on December 30, 2016

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

? Core CPE inflation in 2016 was 1.74%

+ Core CPE inflation was up 1.58% in March compared to March 2016; the estimate for April is even lower at 1.50%; it now appears that core PCE inflation will be near the bottom end of the forecast range by the end of the year

- The **10-year Treasury rate** is likely to fluctuate in a range between 1.75% and 2.75% in 2017. Faster than expected real GDP and employment growth would push the rate toward the top end of the range; greater than expected declines in inflation and/or heightened financial instability would push the rate toward the bottom end of the range.

  + The 10-year Treasury yield was 2.25% on May 26 compared to 2.45% on December 31, 2016

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

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

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

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

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

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

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

  - Through April 2017 the budget deficit for the prior 12 months is 3.00%

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

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

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

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

   ✓ **GS's global current activity indicator rose to 4.6% in May, compared to 4.4% in April, 4.3% in March and 4.1% in February, indicating that global growth is accelerating above the forecast pace of 3.4% for 2017 and the 3.0% actual growth in 2016; the pace of growth for major advanced economies has accelerated from 1.5% last summer to 3.1% in May; this indicator for emerging markets rose from 4.3% in January to 4.7% in February, 5.5% in March, 5.6% in April, and 5.8% in May**

✓ **The J.P. Morgan Global Manufacturing PMI remained at 53.0 in March, the strongest level since May 2011**

✓

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

- ***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.

  - Both B of A and GS have raised their 2017 forecasts for global growth to 3.6%

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

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

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

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

  - European growth forecast has been revised upward to 1.7%

  - The euro has strengthened slightly

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

  - Thanks to rebounding energy prices, the inflation forecast has been boosted to 1.6%; however, core inflation remains below 1% and has shown no signs of rising

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

  - No episodes of volatility have occurred so far

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

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

  - Emmanuel Macron, a centrist Europhile, convincingly won the French presidential election

  ? Historically, the French centrist parties engineer the outcome of the parliamentary elections, which follow the presidential election on June 11 and 18, to shut out candidates of extreme left and right parties — that might not happen this time, thus it is possible that the composition of the new parliament might make Macron's ability to govern difficult and create political crisis

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

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

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

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

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

  ? Parliament initiated the two-year time frame for U.K. withdrawal from the European Union on March 29; increasingly a "Hard Brexit" outcome appears likely

  ? Prime Minister May unexpectedly set early parliamentary elections for June 8; Conservatives are expected to strengthen their majority which would reinforce the likelihood of a "Hard Brexit;" however, the election might also strengthen the Scottish National Party, which could increase the probability of a referendum and Scottish vote to leave the U.K.

  - Expected 2017 GDP growth has been marked up to 1.5%; however, given the likelihood of a "Hard Brexit," growth is expected to decelerate considerably in future years

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

  + The official 2017 GDP growth target has been cut to 6.5% from 7.0% in 2016; however, 2017 GDP growth is still tracking 6.6%

  - Growth momentum is strong and downside risks have diminished

  ? The yuan is down 4.4% against the dollar over the last 12 months; however, foreign reserves have dropped below a still very hefty $3 trillion

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

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

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

  - Expected 2017 inflation has been marked up to 1.3%

  - GDP growth has been marked up to 1.7%

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

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

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

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

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

  + GS's current activity index for emerging markets countries rose from 4.3% in January to 4.7% in February, to 5.5% in March, and to 5.6% in April, and 5.8% in May

  + GDP growth is expected to be 3.5% in 2017

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

  + Expected 2017 GDP growth for Brazil is between 0.6% and 1.0%; however the political situation is deteriorating

  - Economic conditions are improving in Russia; GDP growth is expected to be 1.9% in 2017

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

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

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

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

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

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

     + Through the first 4 months of 2017, employment growth is above the expected level

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

     + The participation rate has risen over the first 4 months of 2017

   - ***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

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

- Risk not realized, the rate has fallen more than expected but remains within the year-end forecast range

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

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

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

  + Consumer income has risen faster than expected

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

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

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

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

  - Risk not realized

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

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

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

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

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

  + Manufacturing surveys are stronger than expected

- ***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

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

  - Risk not realized

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

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

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

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

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

- Risk not realized

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

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

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

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

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

  + Spending declined in Q1

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

  - Risk not realized; growth appears to be accelerating

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

  - Risk not realized; other than cancelling TPP, the Trump administration has taken no action so far to limit trade

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

  - Risk not realized, growth is accelerating

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

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

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

  - Risk not realized

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

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

  - Marine Le Pen, the far-right French presidential candidate was defeated by the moderate centrist Emmanuel Macron

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

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

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

  - Risk not likely to be realized

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

  + Growth momentum is improving

  - The inflation goal of 2% will not be met

- ***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 slightly

- Severe and, of course, unexpected ***natural disasters*** occur, which negatively impact global growth
- ***New risk*** — North Korea's developing nuclear strike capability and potential for pre-emptive military intervention to neutralize that capability

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