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

Barnett Sivon & Natter P.C.
ATTORNEYS at LAW
WASHINGTON, DC

The Longbrake Letter*

Bill Longbrake

June, 2015

First quarter U.S. real GDP growth was revised to a shocking -0.7 percent according to the Bureau of Economic Analysis's (BEA) "Advance Estimate." The good news is that more recent data reports imply that the "Final Estimate" will be revised upwards to about 0.2 percent. In addition, the annual revision of GDP data that the BEA will release in late July will probably result in a further boost to 2015 Q1 real GDP growth, at least to the extent that seasonal adjustment factors are part of the cause of low Q1 real growth.

So, the economy is not about to go into a tailspin as some worried about a month ago. But neither is it poised to accelerate as most forecasters expected prior to the start of the year. The underlying trend remains one of a slow return to full employment and much lower real growth.

Analysts expected the dramatic decline in oil prices to boost growth in consumer spending. This did not happen in the first quarter. Instead the saving rate rose. Recent second quarter data indicate that consumer spending is now strengthening due to the delayed impact of lower oil prices but also because of strong employment growth. The impact of low oil prices on investment in structures and equipment was much more negative than expected in the first quarter as U.S. energy producers responded to the decline in oil prices much more quickly than anticipated. Investment growth should be better in the second quarter because oil prices have rebounded 24 percent from the trough in March. There is increasing evidence that U.S. energy producers are adjusting investment spending rapidly to changes in oil prices. Furthermore, the marginal cost of production continues to decline which means that the hurdle rate for profitable investment continues to decline.

So, while the economy is not about to crater, real GDP growth is much weaker than expected and is inconsistent with strong employment growth. The two phenomena do link but in an unhealthy fashion. The connector is nonfarm business productivity which declined 0.1 percent in 2014 and decreased at an annual rate of -3.1 percent in the first quarter. In fact as can be seen in **Chart 1**, productivity, which has risen at about 2.1 percent annually over the 60 years, has risen at an annual rate of only 0.56 percent over the last five years and 0.49 percent over the last three years.

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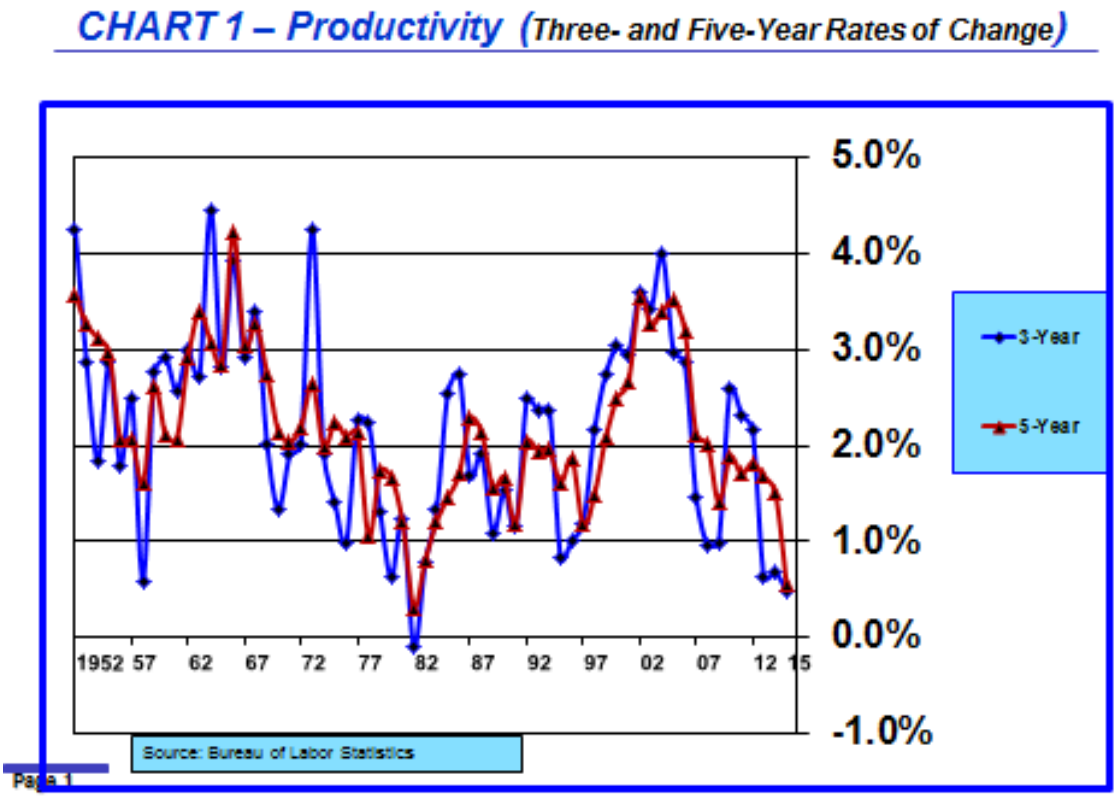


Analysts have only recently begun to notice the persistent weakness of productivity growth. For example, Goldman Sachs (**GS**), while fretting about the possibility that technological progress is miss-measured and, therefore, productivity growth is understated, nonetheless substantially reduced its forecasts for both potential and actual real GDP growth. If weak productivity growth persists, this phenomenon will have several economic repercussions.

I. Potential Real GDP Growth — A Reprise and Update

In past letters I have explained that the potential rate at which an economy can grow — its speed limit — is determined by labor force growth and productivity. In this month's letter I include material from previous letters beginning with an explanation of what GDP measures.

1. GDP — A Measure of Economy-Wide Expenditures

As most everyone knows, and especially if he/she has had at least one course in economics, an economy's performance depends upon the interaction between supply and demand.

Aggregate Demand. In macroeconomics, policy discussion and formulation focuses primarily on influencing demand because supply is presumed to be sticky or fixed in the short run. Measured real

GDP is a record of aggregate demand based on spending on goods and services by all economic sectors — consumers, businesses, government, and the rest of the world. Policymakers adjust monetary and fiscal policies with the intent to maximize employment, output, and spending within the context of price stability.

Aggregate Supply. Supply consists of resources available to produce goods and services. Components include labor, raw materials, and capital (plant and equipment). Supply also depends upon how efficiently resources can be utilized to produce outputs. Productivity defines the efficiency of the conversion of inputs (resources) into outputs. Elements of supply, such as the number of people eligible to work and the capital stock, are relatively easy to measure. However, whether people actually choose to work and the productivity of the capital stock are not easy to measure. Furthermore, there are uncertainties about labor force growth trends and future technological innovations and investment which make measurement of potential real GDP growth difficult.

Long-Run Potential Real GDP Growth. In the long run, how fast the economy can grow consistent with the policy objectives of maximizing employment, output, and spending, while maintaining price stability, depends upon growth in the labor force, growth in private and public investment, and productivity. Growth in the labor force and investment are quantitative measures, while productivity is a qualitative construct that converts hours worked and investment into greater or lesser amounts of output.

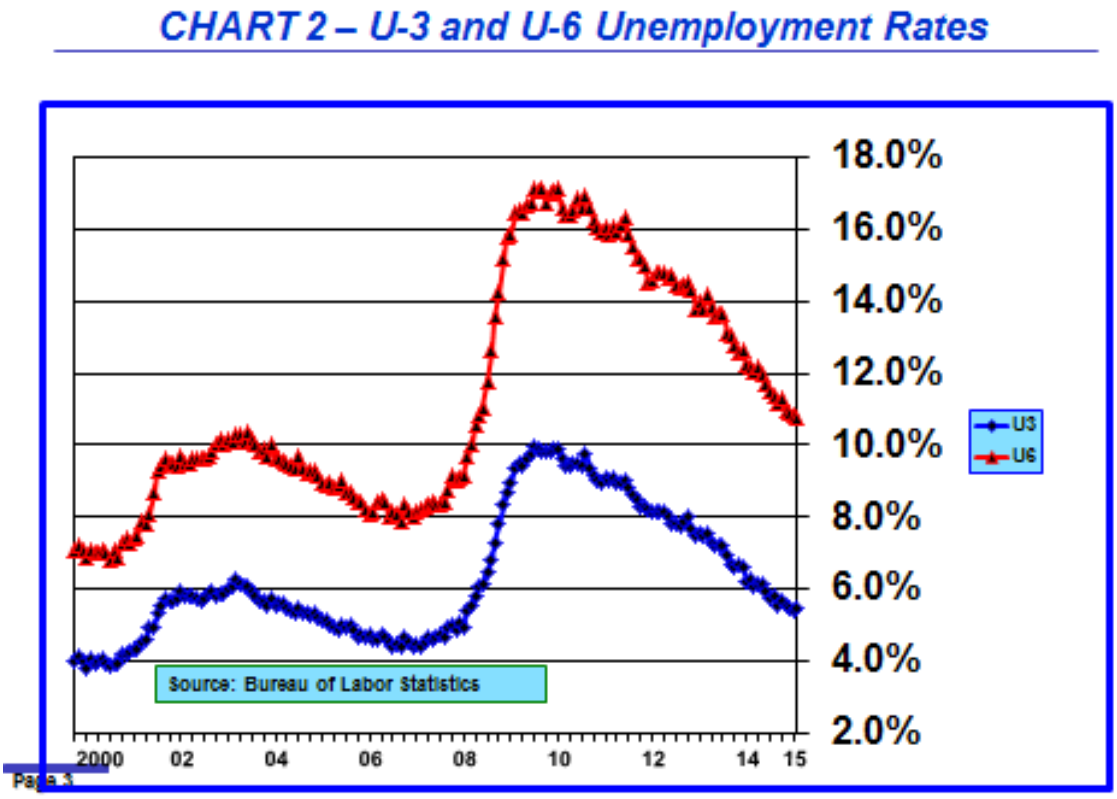
If the labor force, investment, and productivity grow more rapidly, the overall size of the economy will be larger and per capita income and wealth will be greater. There are other benefits of more rapid growth such as increased tax revenues to help fund Medicare and social security and downward pressure on the public-debt-to-GDP ratio. Generally, policies that encourage greater growth have favorable overall economic impacts while slower growth exacerbates existing problems. However, by-and-large, public policy is not focused on promoting higher future growth rates. Rather, the thrust of policy has been to reduce the output gap and the unemployment rate with the intent to return the economy to its full-employment potential as quickly as possible. The recent policy mix appears to be achieving this objective slowly, but it is not one that is likely to foster faster growth in the future.

2. Factors Influencing Labor Supply

The Congressional Budget Office (CBO) estimates that the labor market gap, as measured by the U-3 unemployment rate, has nearly closed. The unemployment rate in May was 5.51 percent compared to CBO's full-employment estimate of 5.38 percent.

However, other employment measures indicate that considerable slack remains in the labor market. For example, the U-6 measure of unemployment, which adds marginally attached and discouraged workers to the U-3 measure, was 10.79 percent in May. As can be seen in **Chart 2**, the U-6 measure is currently about 1 percentage point above the level that should prevail in the long run consistent with a 5.51 percent level of the U-3 measure. This is not an unexpected result because it takes longer for marginally attached and discouraged workers to find employment during the recovery phase of the labor market.

In addition, there is debate about the extent to which there are additional potential workers, not measured by the U-6 unemployment rate, who might re-enter the labor force as the economy continues to improve. This speculation is driven by the substantial decline in the labor participation rate since the



onset of the Great Recession — a decline that cannot solely be explained by demographic factors. Thus, ascertaining the "true" employment gap and untangling the details is a daunting task. See **Chart 3**.

Another measure, shown in **Chart 4**, that indicates that substantial slack remains in the labor market, is the length of time workers have been unemployed. The measure of short-term unemployment has returned to normal levels consistent with full employment; however, long-term unemployment of 26 weeks or longer remains elevated by nearly a full percentage point.

Factors Influencing Labor Supply Growth — Labor Force Participation. The starting point is to count the number of people in the total population who are considered to be "eligible" to be employed. As of May 2015, BLS estimated this number to be 250,455,000 out of a total population of approximately 321 million.

Next, using a monthly survey, BLS constructs an estimate of the number of people who are working and who are willing to work. The difference in the two measures is the numbers who are unemployed. In May 2015, the number willing to work was 157,469,000 (usually referred to as the labor force); the number actually working was 148,795,000; the number unemployed was 8,745,000 or 5.51 percent of those willing to work. This is the U-3 measure of unemployment. The **employment-to-population ratio** is the percentage of people working relative the number eligible to work, which was 59.41 percent (148,795,000/250,455,000). The **participation ratio** is the percentage of people willing to work (labor force) relative to the number eligible to work, which was 62.87 percent (157,469,000/250,455,000). See **Chart 3**.

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

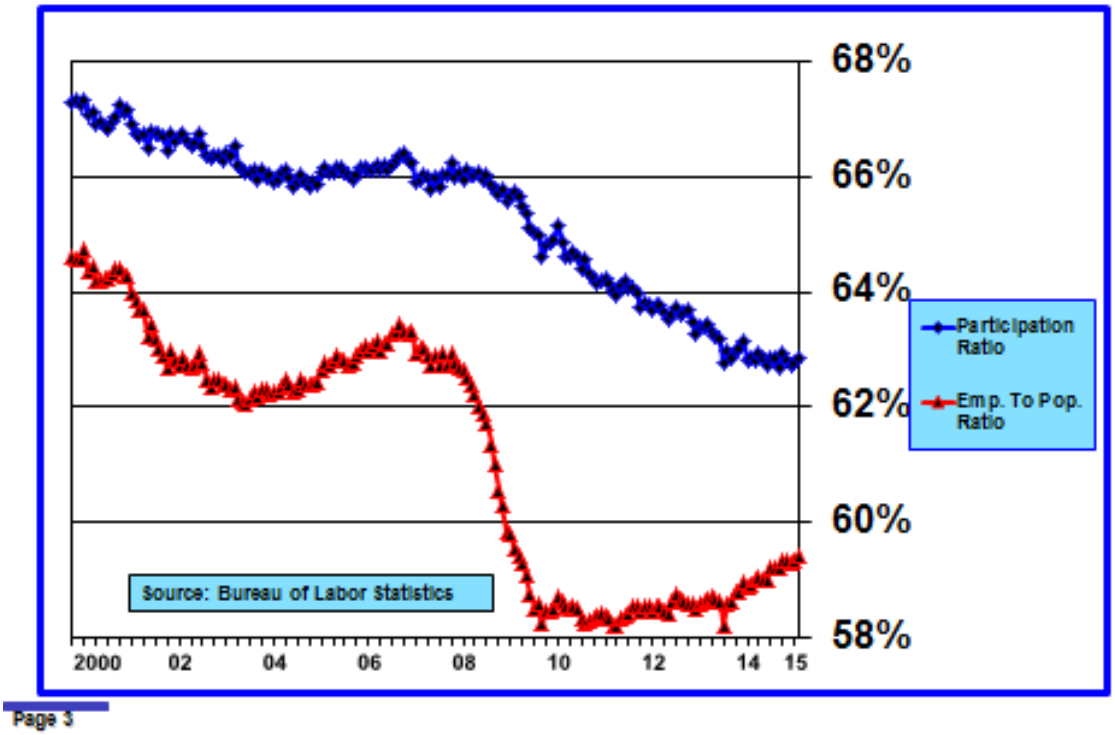
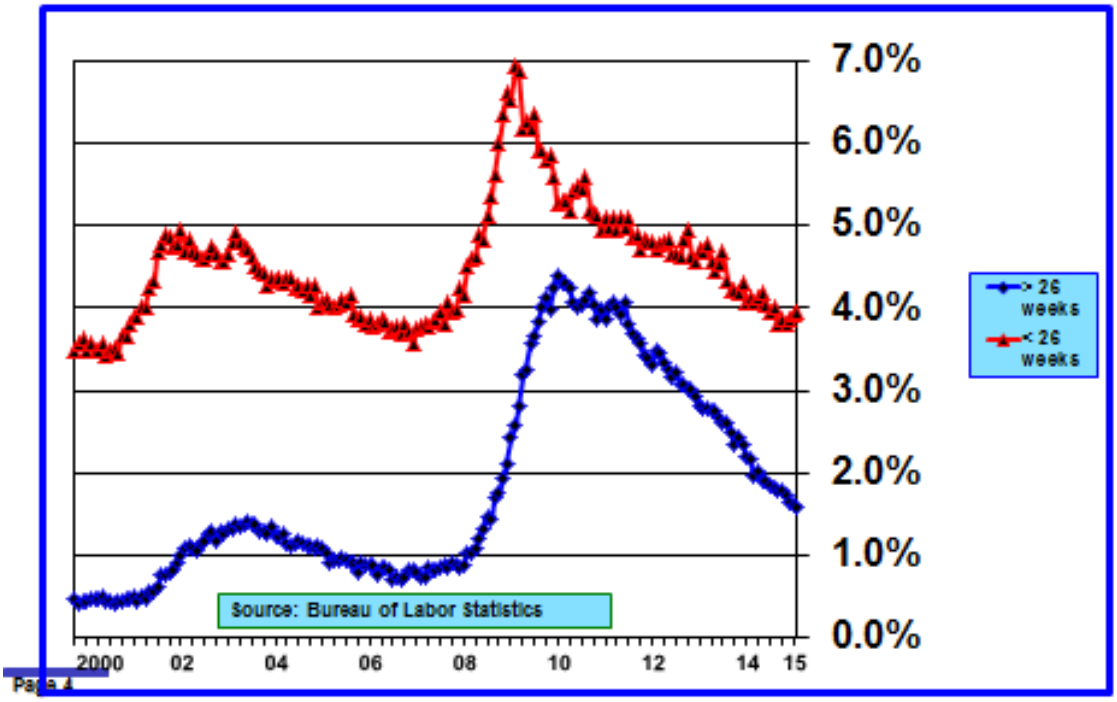


CHART 4 – LT (>26 weeks) and ST (<26 weeks) Unemployment Rates



These data taken at face value and accepting CBO's assertion that the natural rate of unemployment currently is 5.38 percent, would require the employment of only 322,000 million additional people to reach full employment. CBO and many analysts, however, believe a **"participation gap"** exists because some people have become so discouraged that they have dropped out of the labor force and, thus, are no longer counted among those willing to work. It is argued that these discouraged workers will return to the labor force as the labor market tightens and jobs become easier to find. This would mean that the "true" unemployment rate is higher than the BLS "measured" rate.

Factors Influencing Labor Supply Growth — Demographic and Cultural Trends. Over long periods of time demographic and cultural trends can have significant impacts on the participation rate. Until 2000 two factors drove the labor force participation rate up — entry into the labor force of baby boomers and greater participation of women. Now, however, as baby boomers reach retirement age, a reverse trend has set in which is reducing the participation rate by about 0.25 percent annually. This accounts for approximately half of the decline in the participation rate over the last six years. According to CBO, this trend will continue over the next decade.

While there have been shifts in participation in other labor force cohorts, such as decreasing participation among younger workers, some of these changes are probably temporary. Furthermore, there is little certainty that these other trends will continue.

Factors Influencing Labor Supply Growth — Permanent Structural Unemployment. CBO cites three drivers of permanent structural unemployment. First, some people have exited the labor force permanently because their skills no longer meet employer needs (this is referred to as *hysteresis* in economist parlance). This outcome could be caused by technology-induced changes in job opportunities or it could result from the atrophy of skills due to extended unemployment. In the wake of the Great Recession, the labor market has been punctuated by an unusually high percentage of unemployed workers who have been out of work for at least 26 consecutive weeks. Recently there have been about 2.5 million long-term unemployed people compared to 1.3 million before the Great Recession.

Second, CBO cites the possibility that employers shy away from considering long-term unemployed workers for job openings. CBO refers to this phenomenon as "the stigma of long-term unemployment." Norman Ornstein cites a study by Rand Ghayad that provides evidence of stigma.[1] Ghayad "... *sent fake resumes to employers with job openings and found that better-qualified and experienced applicants who had been out of work for more than six months were much less likely to be called for interviews than less-experienced individuals who only recently lost their jobs.*"

Third, extended unemployment benefits had a small impact on raising the level of structural unemployment — approximately 0.1 percent, according to CBO. This factor is no longer pertinent since extended unemployment benefits expired at the end of 2013

Structurally unemployed workers are unlikely to reenter the labor force in the future. Some structurally unemployed workers are counted in the BLS U-3 unemployment rate. Either they continue to hope to find work or they are going through the motions so they can collect unemployment insurance benefits. CBO believes that the natural rate of unemployment has risen from 5.0 percent prior to the Great Recession

[1] Norman J. Ornstein. "The Conservative Ideas That Could Solve Chronic Unemployment," National Journal, January 29, 2014.

to 5.38 percent currently. The difference is due to an increase in structurally unemployed workers. But, CBO also believes that some of the recent decline is the participation rate includes additional structurally unemployed workers who are not counted in the official U-3 unemployment rate.

Factors Influencing Labor Supply Growth — Policy Impacts. There is also evidence that government programs and policies contribute to decreasing labor force participation. For example, studies show that disability insurance has depressed participation to a modest extent.

More importantly, a CBO study projected that the Affordable Care Act (ObamaCare) will depress full-time job participation by the equivalent of 2.5 million workers over the next ten years and will reduce aggregate labor force compensation by 1.0 percent. This was a significant increase from CBO's estimate in a 2011 study of an 800,000 reduction.

Factors Influencing Labor Supply Growth — Immigration. Policies governing immigration amplify the rate of growth in the labor force beyond the natural rate which depends upon births and deaths and other demographic considerations. Immigration can have a significant favorable effect on increasing the growth rate in labor supply over time, provided that policies are structured to encourage immigration.

There is broad agreement that U.S. immigration policies need to be revamped but there is considerable disagreement about specific reforms and no consensus has yet emerged. President Obama has made immigration reform a key policy objective and encouraged Congress to act. Speaker Boehner of the Republican-controlled House of Representatives proposed broad immigration principles to the Republican House caucus. However, because of considerable resistance from some members of the caucus, congressional action on immigration reform has not occurred.

3. Productivity

Productivity is the second factor that determines the potential rate of growth in real GDP. It is measured by the change in the ratio of output to inputs over time. Productivity depends upon application of increasing amounts of capital to the labor input. But, productivity also depends upon qualitative factors, such as improvements in labor skills through education and on-the-job experience, the kinds of innovations that occur, and management skill in deploying enhanced work methods. Productivity is also negatively affected by structural rigidities such as compliance with laws and regulations, limitations on worker mobility, and cultural trends, such as increases in single-parent households. Although hard to quantify, some of the qualitative factors influencing productivity have become less favorable in recent years. It is difficult to assert that any of the qualitative factors have become more favorable.

Productivity tends to rise during periods of substantial increases in innovation, provided, of course, that the innovation is financed.

4. Factors Influencing Investment — Innovation

In the past, periodic bursts in technological innovations have boosted investment in the capital stock and increased the economy's supply potential. Most would agree that huge advances in computing power,

communications technology facilitated by the internet, and cheap communications devices should provide the impetus for substantial additions to the capital stock. The same could be said about advances in biotechnology. Although such potential seems intuitively plausible, investment spending and measured output growth are not reflecting realization of this potential.

5. Factors Influencing Investment — Financing

Growth in the capital stock has actually decelerated to just 1 percent in recent years. This means that the potential increase in supply stemming from innovation is not occurring.

Innovation provides the potential for the capital stock to increase but investors must provide financing and so far financing has been insufficient. There are two explanations for the shortfall in financing.

Private Investment. The first involves the demand and supply for investment. Demand for investment dollars depends on whether companies expect the return on the investment will exceed the cost of financing (cost of capital). When demand for goods and services is weak, as it was during the aftermath of the Great Recession, the returns on investment dollars are likely to be depressed and more uncertain. Companies may have large stockpiles of cash, but they are reluctant to deploy it in investment initiatives with uncertain outcomes.

Investors are reluctant to supply funding for similar reasons — uncertain and potentially low rates of return. In addition, there is evidence that FOMC monetary policy, by depressing the long-term interest rate, rather than stimulating capital investment, has had the effect of diverting financing into speculation in existing assets. This has the intended effect of increasing the value of existing assets and creating wealth that translates into increased consumption. But, it does not induce investment in new assets.

Private business investment growth, as shown in **Table 1**, appears to be relatively strong since the end of the Great Recession when compared with the nearly 70 year average growth rate of 3.78 percent. However, this cyclical rebound has been insufficient to overcome the sever plunge in private business investment that occurred during the Great Recession. As a consequence, the rate of growth in investment spending has been decelerating.

Low growth in the capital stock in recent years provides ample evidence of a policy environment that is not conducive to investment.

Public Investment. The second involves the role of government in spurring investments that increase the supply potential of the economy. The efficacy of government's role is well documented from the historical record. Government can invest in high risk initiatives and because its cost of capital is much lower than that of the private sector, it can invest in initiatives with more uncertain and potentially lower rates of return. This has occurred in the past through both major and minor initiatives and has tended to occur counter-cyclically to a degree. That is, when the output gap is large, government investment spending has tended to increase.

This can be seen in **Table 2**. Public investment spending for both federal and state and local governments has averaged 2.68 percent annually since 1947. And, if the period beginning with the Great Recession is omitted, the annual growth rate was 3.03 percent.

Table 1
Annual Percentage Growth in Private Business Investment

Time Period	Long-Term	Recession	Recovery
1947:1 — 2015:1	3.78%		
1947:1 — 2007.4	4.13%		
1985:1 — 2007:4	3.54%		
2007:4 — 2015:1	0.90%		
1985:1 — 2015:1	2.90%		
2001:1 — 2001:4		-11.22%	
2002:1 — 2007:4			3.44%
2008:1 — 2009:2		-21.25%	
2009:3 — 2015:1			7.65%
2010:1 — 2015:1			7.00%

Table 2
Annual Percentage Growth in Public Investment

Time Period	Long-Term	Recession	Recovery
1947:1 — 2015:1	2.68%		
1947:1 — 2007.4	3.03%		
1985:1 — 2007:4	2.09%		
2007:4 — 2015:1	-0.24%		
1985:1 — 2015:1	1.53%		
2001:1 — 2001:4		4.92%	
2002:1 — 2007:4			1.86%
2008:1 — 2009:2		3.51%	
2009:3 — 2015:1			-1.19%
2010:1 — 2015:1			-1.37%

Included in **Table 2** are two recessions — 2001 and 2008-09 — and subsequent recoveries from those recessions. During both recessions growth in public investment spending accelerated to an above long-term trend level — 4.92 percent in 2001 and 3.51 percent in 2008-09, which is evidence of the countercyclical impact of government fiscal policy.

During the recovery from the 2001 recession, public annual investment growth averaged 1.86 percent which was considerably below the 1947 to 2007 average of 3.03 percent. However, the story of public investment growth during the recovery from the Great Recession is, indeed, an exceptionally dismal one. Public investment has been contracting at an annual rate of -1.19 percent since the recovery began. The decline is an even worse -1.37 percent, if the last two quarters of 2009 are omitted when the benefits of federal stimulus were still filtering through the economy.

Federal fiscal policy, which has focused on reducing public spending and slowing growth in the accumulated budget deficit, unfortunately has crushed public investment. This is a major reason behind the slow growth in the capital stock and will depress growth in the supply side of the economy over time. Although fiscal policy has now normalized, which should result in an improvement in public investment growth rates, continuing constraints on spending has prevented public investment growth from returning to historical levels.

6. Potential Real GDP Growth

Potential real GDP growth is the product of growth in hours worked and productivity. The "gold standard" for estimates of potential real GDP is provided by CBO. However, CBO's estimate is just that — an estimate. CBO's estimate is based upon its assumptions about labor force growth and productivity. Different assumptions for either will result in different estimates of potential real GDP.

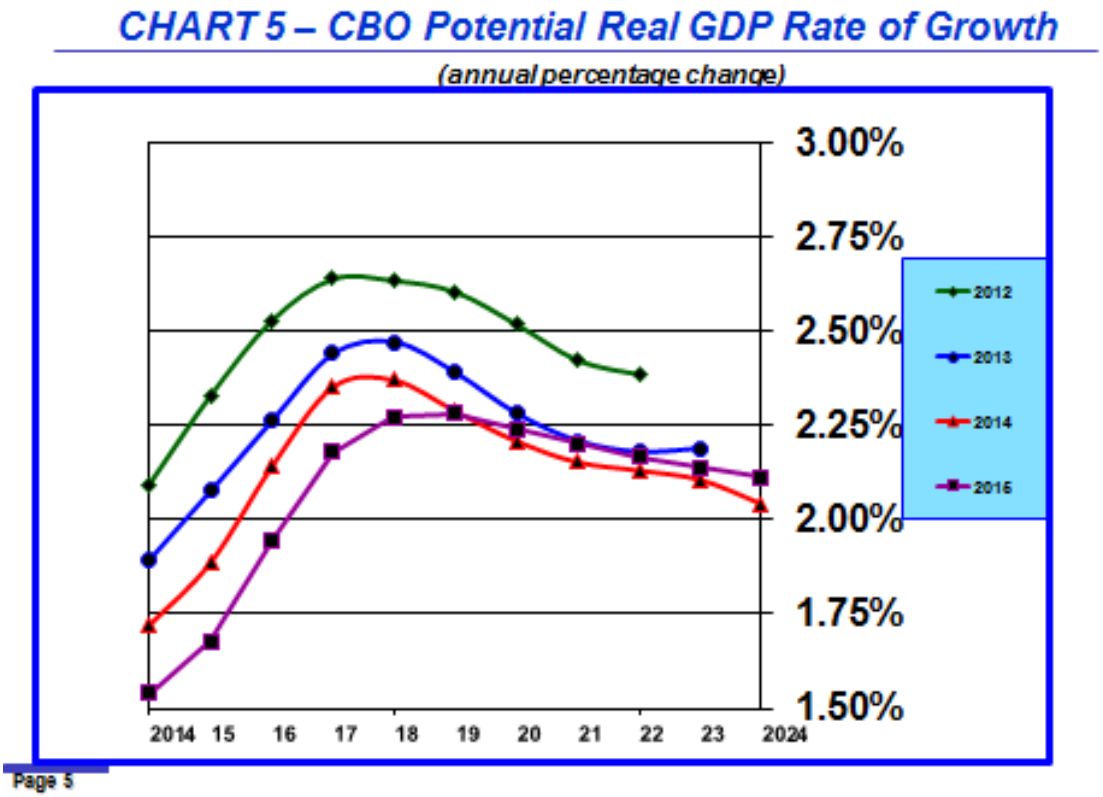
In 2007, the year preceding the Great Recession, CBO estimated potential growth to be 2.45 percent. This was well below the historical long-term potential growth rate of 3.2 percent. However, in the nearly six years since the recovery from the Great Recession commenced CBO estimates that potential growth averaged 1.33 percent. CBO expects potential growth to improve to 2.1 percent by 2025.

As **Chart 5** shows, CBO has repeatedly reduced its estimate of potential GDP growth over the past four years, except for a very small increase after 2019 in its most recent update.

My long-term forecast for productivity is 1.6 percent in the "**Steady Growth**" scenario and 1.9 percent in the "**Strong Growth**" scenario. My assumption for labor growth is 0.47 percent for the "**Steady Growth**" scenario and 0.51 percent for the "**Strong Growth**" scenario. The combined effects of labor growth and productivity result in long-term potential real GDP growth rates of 1.9 percent for the "**Steady Growth**" scenario and 2.2 percent for the "**Strong Growth**" scenario in 2023. (Potential real GDP growth is lower than the sum of the estimates of labor growth and productivity because nonfarm business productivity is not a comprehensive measure for the economy as a whole.)

Together estimates of potential real GDP and forecasts of actual real GDP growth define the output gap.

There is now a consensus that potential real GDP growth will not improve materially as the economy



heals and the output gap closes. CBO expects potential growth to be 2.1 percent in 2025. Over time FOMC members have become progressively less optimistic. The central tendency of FOMC member long-term anticipated potential real GDP growth has fallen from 2.7 percent in June 2011 to 2.15 percent in March 2015. Diminished expectations are largely the result of a reduction in expected labor force growth, but also lower productivity growth is a factor. Lower productivity is not a foreordained outcome. Policies could be pursued that would amplify productivity prospects. But, political obsession with cutting government spending and monetary policy that has depressed the real rate of interest are having and could continue to have a combined depressing impact on investment activity, which is essential in the long run to boost productivity.

II. Measurement of Productivity

BLS measures productivity as the ratio of output adjusted for inflation to total hours worked. Its measure of output is quantitative based on many data sources as well as estimates of qualitative factors, such as the increased utility of something like a computer even as the cost to produce declines. GDP is a measure of total expenditures. Although the two measures parallel each other, they are not identical. This can lead to divergences in the growth rates for the two measures over time. Over the past five years, the BLS measure of nonfarm business output has risen at a 2.77 percent annual rate. Real GDP has risen at a 2.18 percent rate over the same five-year period. Part of this differential has to do with the omission of government from the BLS measure of nonfarm business output. Government as a percentage of GDP expenditures

has shrunk from 21.1 percent of real GDP to 17.8 percent during this time. This translates into a rate of growth in private real GDP of 3.03 percent, which is higher than the growth rate of nonfarm business output.

There is a view that BLS is underestimating growth in nonfarm business output because it is not capturing qualitative improvements in software. If this is true BLS's measure of productivity is understated. GS poses the

GS, based on an examination of details of how BLS calculates nonfarm business productivity, observes that the recent slowdown is due almost entirely to the contribution from information technology.[2] But, **GS** observes that the apparent slowdown may result from statistical mismeasurement of information technology "where quality-adjusted prices and real output are much harder to measure than in most other sectors." As an example of the difficulty of measuring the contributions of technology, GS cites the phenomenon of computing power exploding even as costs plunged. A measure of output based on dollar value would not have captured the enormous increase in the qualitative value of increased computing power.

Statisticians devised measurement methodologies that took the relationship between quality improvements and falling costs into account. This actually involved revising the methodology for calculating inflation — the GDP deflator. This avoided both the understatement of GDP and productivity. However, unlike the adjustments crafted for hardware, statisticians have not devised measurement adjustment methodologies for the explosion in software and the capabilities that enhanced software create. Thus, **GS** believes that inflation is overstated and GDP and productivity are understated. And, this mismeasurement has grown in importance as the mix of information technological output has shifted from systematically from hardware to software and digital content. **GS** believes that due to this real GDP is understated by about 0.2 percent annually. This is a big deal when real GDP is growing little more than 2 percent annually.

GS does not expect action on the software measurement problem. Based on that belief and its analysis, it has revised its projection for productivity growth down to 1.5 percent and its estimate for potential real GDP growth down to 1.75 percent.

But, others are skeptical of **GS's** view. JPMorgan economists Michael Feroli and Jesse Edgerton, according to James Pethoukoukis of the American Enterprise Institute, argue that the "conjecture that the recent growth slowdown [in economic growth and productivity] is due to mismeasurement has little empirical support."[3] The thrust of the counterargument is that the digital economy is not a new phenomenon but the slowdown in growth and productivity is. Moreover, negative quality adjustments are not made for the likes of more crowded airplanes, narrower seats and more frequent delays, which it could be argued offset to some extent the positive quality adjustments that come from more versatile digital software. Another observation is that the productivity slowdown is occurring in other sectors of the economy, not just in information technology and digital software.

It is likely that the debate will continue but that as additional research is conducted greater light will be forthcoming. In the meantime, there is good reason to conclude that the productivity and slowdown

[2] Jan Harzius and Kris Dawsey. "Productivity Paradox v2.0," US Economics Analyst Issue No: 15/21, Goldman Sachs, May 23, 2015.

[3] James Pethokoukis. "Is there really a Great Stagnation? The problem of measuring economic growth in America's digital economy," American Enterprise Institute, June 12, 2015.

in potential real GDP growth may stem primarily from the FOMC's intentional monetary policy to drive down the real rate of interest.

III. Secular Stagnation — A Primary Cause of Low Productivity Growth

There are three potential culprits behind the emerging long-run trend of slower growth in the U.S. economy. The first is ***secular stagnation***. It involves very low or negative real rates of interest. Secular stagnation leads to a persistent output gap and/or slow economic growth. A second culprit is ***lack of private business and governmental investment spending***. It is related to the first but can also be driven by noneconomic forces such as political agenda and uncertainty. A third culprit is a ***change in expectations*** about the future that leads to a change in behaviors on a current basis. Such changes can be self-fulfilling. For example, an expectation of low or declining inflation may be interfering with the tendency of wages to rise when the labor market tightens. Employers lack pricing power and resist wage increases. Employees become less demanding for increases in nominal wages because they are less concerned about losing inflation-adjusted spending power.

Another development whose long-run consequences are not yet fully evident is the effect of excess global capacity and super-loose global monetary policies involving quantitative easing, which has forced U.S. interest rates down to levels that would probably not otherwise prevail.

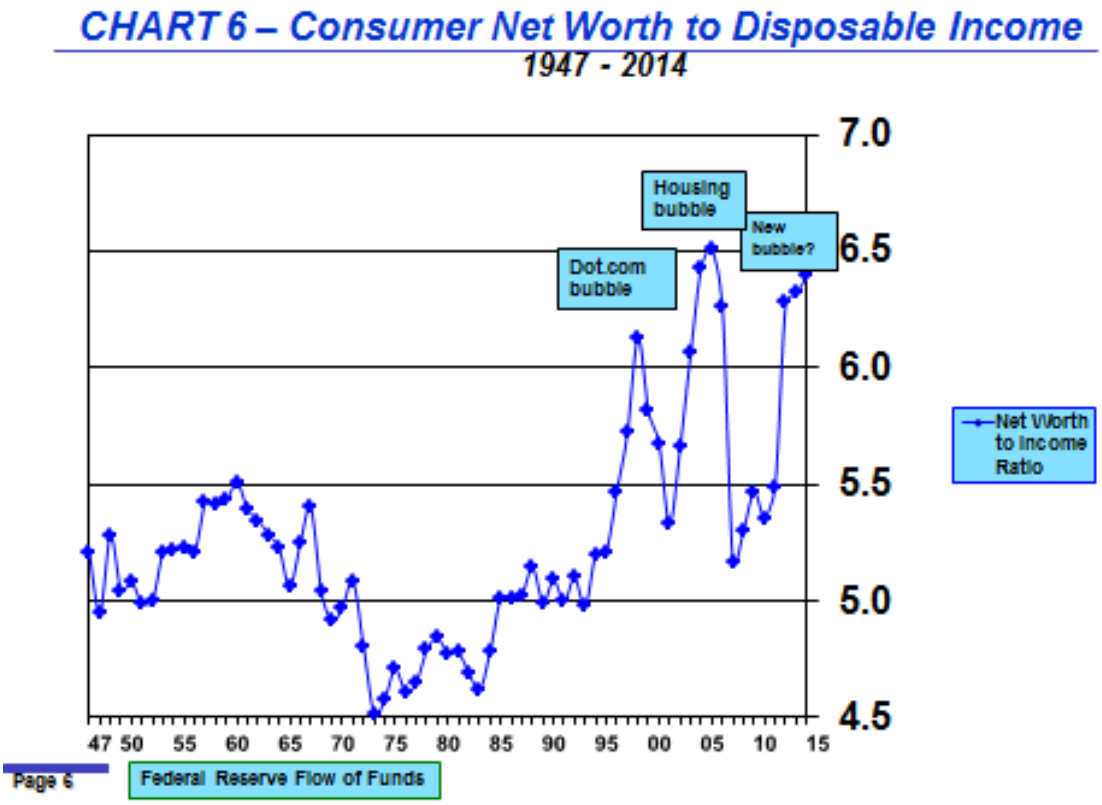
Secular stagnation tends to be a condition of mature economies although it is not an automatic outcome.

Secular stagnation is characterized by a low and declining real rate of interest which reflects an excess of desired saving over desired investment. This condition results in a persistent output gap and/or slow economic growth.

- Low real interest rates crowd out low return, riskier investments.
- Productivity slows because of diminished investment activity.
- Real economic activity grows more slowly.
- Incomes rise less rapidly along with slower economic growth and this depresses growth in consumption.
- A persistent output gap is highly deflationary.
- The excess between desired saving and desired investment goes into speculation and drives price bubbles in financial and real assets.
- Asset price speculation benefits the rich; low productivity penalizes the poor by holding down wage increases, and collectively both phenomena drive increasing income and wealth inequality.

Price bubbles can drive economies to full employment, temporarily. But this outcome is not sustainable, because bubbles are inherently unstable and eventually burst. A pattern of price bubbles and boom and bust will persist for as long as intended saving exceeds intended investment.

Chart 6 shows the ratio of consumer net worth to disposable income. Historically, the ratio fluctuated between 4.5 and 5.5. However, it rose to 6.13 during the dot.com investment bubble and then to 6.51 during the housing bubble. The ratio has surged once again to 6.39 in the first quarter of 2015, a level consistent with the two previously acknowledged bubbles. Are we heading into yet another bubble?



1. Natural Rate of Interest

It is conventional wisdom that when the economy is at full employment and booming the Federal Reserve should raise the federal funds rate. When unemployment is high and the output gap is large the Federal Reserve should lower the federal funds rate. The rationale is that by changing the cost of money, the Federal Reserve can either stimulate or discourage investment and spending and in so doing boost or dampen economic activity. The objective of monetary policy is to promote full employment at low and stable rates of inflation and dampen cyclical fluctuations.

While the federal funds rate is one of many **market rates of interest**, it is the one traditionally that the Federal Reserve manipulates in its attempt to modulate economic activity over the business cycle. Because the level of long-term interest rates depends upon the current short-term interest rate, the federal funds rate, and future expected values of the federal funds rate, the Federal Reserve can influence interest rates across the maturity spectrum by setting the current value of the federal funds rate and signaling its future intentions.

Policy risk arises if the Federal Reserve's implementation of monetary policy results in setting the **market rate of interest** at a level that is above or below the **natural rate of interest**. But because the natural rate is unobservable it is difficult to know when the market rate of interest differs from the natural rate. To understand why divergence between the two rates leads to policy risk, it is important to know what the natural rate of interest is and why, when it differs from the market rate of interest, policy risk is triggered and can build to troublesome levels if the divergence between the market rate and the natural rate is large and persists for a long period of time.

Investment, Saving and the Natural Rate of Interest. The natural rate of interest is that rate of interest at which **intended investment** and **intended saving** balance. This is the same concept as the intersection of a demand and supply curve for a product, such as sugar, which determines its market price.

After the fact, or **ex post** in economic jargon, investment and saving are always equal. But realized investment and saving may not be what investors and savers intended, which is an **ex ante** concept in economic jargon. Because intended investment and intended saving are not directly observable it follows that the natural rate of interest cannot be known with certainty.

According to theory, if the expected return on an investment in a productive asset is greater than the natural rate of interest, that investment should be undertaken. A saver has a choice between current and future consumption. A low interest rate encourages current consumption; a high interest rate encourages saving and a deferral of consumption. The **equilibrium natural rate of interest** occurs at the rate that induces enough savings — **supply of funds** — to fund investments — **demand for funds** — whose expected returns exceed the equilibrium rate of interest.

Since the natural rate of interest is not observable, actual decisions are based upon the market rate of interest. But, if the market rate of interest is different from the natural rate, some decisions will be "incorrect". This initiates policy risk and its magnitude will depend on the size, direction, and persistence of the divergence between the natural and market rates of interest. ***Because the Federal Reserve controls the market rate of interest, it can become the source of policy risk by setting a market rate of interest that is inconsistent with the natural rate of interest.***

What Happens When the Market Rate and Natural Rate of Interest Diverge? When the market rate of interest is set below the natural rate of interest, money is said to be cheap and investments will be funded whose expected rates of return are below the natural rate of interest but above the market rate of interest. While this is intuitively obvious, the macroeconomic implications are less obvious.

Economic growth depends upon investment in new productive assets. When money is too cheap investment will occur not only in productive assets but also in less productive assets such as building roads and bridges to nowhere. But when money is cheap it will also flow into existing investments with the result that the prices of existing assets are bid up. This can happen directly into real assets, such as real estate, or indirectly into financial assets, such as stocks and bonds. Prices of existing assets, then, inflate above "fair" value.

This is the phenomenon that **Hyman Minsky** described in his **financial instability hypothesis**. A market rate set below the natural rate leads to speculation and in the extreme to Ponzi finance and unsustainable bubbles. Minsky's financial instability hypothesis posits three levels. The first level is

"**normal finance**" where investments are made based on expected cash flows from the investment sufficient to cover payment of principal and interest on the debt that finances the investment. This is the level that is consistent with a market rate of interest that equals the natural rate of interest. The second stage is "**speculative finance**" where investment cash flows are sufficient to cover principal repayment but insufficient to cover interest payments, thus requiring perpetual refinancing. The third stage — the bubble stage — is "**Ponzi finance**" where cash flows from investments are insufficient to cover both principal and interest. Asset prices are bid up to unsustainable levels which eventually lead to a bust.

Cheap money and debt leverage are a deadly combination as we have seen from experience. They combine to facilitate speculative and Ponzi finance. Profits accrue to speculators rather than to investors in new productive assets with the result that funds are diverted into existing assets and away from new productive assets. A quick buck can be made through speculation while returns on productive investments are uncertain and are only realized over a long period of time. This misallocation of profits is contributing to a worsening of income inequality, because the fruits of speculation flow to wealthy investors. Moreover, it should not come as a surprise that private investment growth, as measured in the national income accounts, began to decline in 2006 well before Lehman collapsed in September 2008. The 2006 to 2008 period was clearly one in which Minsky's "Ponzi finance" held full sway.

Thus, a market rate of interest that is below the natural rate of interest will lead over a period of time to the misallocation of funds into speculative activity involving existing assets. Investments in new productive assets will be neglected with the consequence that growth in the stock of capital will slow or even decline. Growth in the stock of capital is necessary to raise productivity. So, it follows, that slower growth in the capital stock or even shrinkage in the capital stock will depress productivity. Lower productivity results in decreasing the structural potential real rate of GDP growth.

When bubbles burst, asset values fall back to levels consistent with the natural rate of interest. But the nominal value of debt remains unchanged. This forces bankruptcies. The provision of copious amounts of liquidity by the Federal Reserve at cheap market rates can forestall contagion and a downward and lethal debt-deflation spiral. But, this kind of market stabilization intervention can also slow the process of right-sizing the stock of nominal debt relative to the stock of assets fairly valued at the natural rate of interest. The overhang of too much debt serves as a barrier to new investment. This phenomenon is probably an explanation, at least in part, for the on-going depressed level of new business formation. In any event, debt overhang is correlated with depressed or negative growth in the stock of capital. And, slower growth in the capital stock or shrinkage depresses productivity and the structural rate of real GDP growth.

Monetary Policy Can Contribute to Reducing the Structural Potential Real Rate of GDP Growth. Monetary policy's role is to drive the market rate of interest down when the economy is underperforming. The objective is to stimulate investment and consumer spending. But, if the market rate is set too low and is maintained at too low a level for too long, it will prompt misallocation of investment into price speculation involving existing assets. This policy risk is not trivial and is inherent in the Federal Reserve's recent monetary policy. ***The question worth pondering is whether monetary policy has migrated from serving as a cyclical stabilizing influence to contributing to a permanently lower level of potential real GDP growth.***

Recovery in real economic activity and employment following the Great Recession has been disappoint-

ingly lethargic given the Federal Reserve's exceptionally easy monetary policy. And, recovery has been accompanied by some troublesome trends. For example, income equality is worsening according to an updated study by Emmanuel Saez and Thomas Piketty.[4] At the same time corporate profit margins have escalated to all-time highs. Productivity is extremely depressed.

2. Estimates of the Natural Rate of Interest

Although the natural rate of interest is difficult to determine at any particular moment in time, it is possible to ascertain its approximate value in the long-run when the economy is at full employment. The full-employment equilibrium level of the natural rate depends on just two factors — the long-term expected rate of inflation and the level of productivity. However, it is not as simple as adding the two values together.

Inflation. The natural rate of interest tracks the level of inflation, rising when inflation increases and falling when inflation declines. However, the impact of inflation on the natural rate is greater than one. Most economists do not pay any attention to this relationship but it is an obvious one in a world in which nominal interest returns are taxed. In a world of taxes, as inflation rises, the natural rate must rise more to maintain the same level of return on capital. The inflation coefficient, thus, is approximately 1.2 rather than 1.0.

Productivity. Increases in productivity raise the natural rate of interest directly but decrease it indirectly by depressing expected inflation.

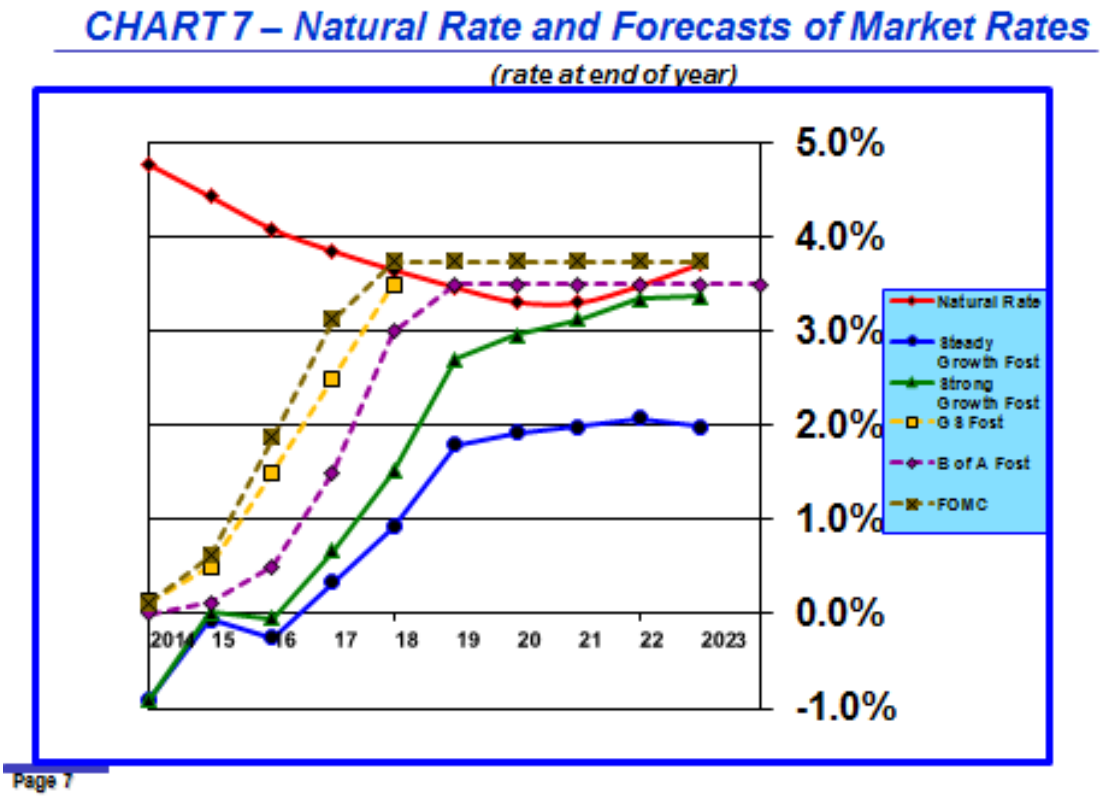
In a world of low inflation and falling productivity, the natural rate of interest will fall. This is evident in **Chart 7**.

Several comments are in order to explain the contents of **Chart 7**. First, the red line and black diamonds are my estimate of the natural rate of interest. For the next several years it is in a gradual declining trend as the lagged effect of slowing productivity filters slowly into the natural rate.

Second, all other interest rate projections in **Chart 7** are forecasts of the market rate of interest at various points in time. Because all estimates presume an eventual return to full employment and a steady level of inflation in the vicinity of 2.0 percent market interest rates converge over time to the presumed underlying equilibrium natural rate of interest. Note that all market rate forecasts, except my "***Steady Growth***" forecast converge to my estimate of the natural rate of interest in the long-run. The "Steady growth" market rate forecast is lower than the others because it assumes that full employment remains elusive.

Third, in the near future the natural rate of interest is much higher than the market rate of interest. This occurs because considerable slack remains in the economy and because monetary policy is geared intentionally to keep the market rate of interest depressed.

[4] Annie Lowrey. "The Rich Get Richer Through the Recovery," *New York Times*, September 10, 2013. The share of income of the top 1% was 22.5% in 2012 compared to 19.7% in 2011 and matched the highs that preceded the Great Depression and Great Recession. The top 1% has "captured" about 95% of the aggregate increase in income since the end of the Great Recession.



IV. Implications for Monetary Policy

There are two implications of lower potential real GDP growth for monetary policy.

1. Smaller Output Gap

As noted above, CBO has progressively over the past few years lowered its estimate of potential real GDP growth as it has revised down its estimates of labor force growth but particularly as it has decreased its expectations for productivity. This has had the immediate effect of reducing the measured size of the output gap. This means that going forward it will take less growth in real GDP to close the gap. When the gap is closed risks escalate that aggregate demand will exceed supply and set off an inflationary spiral. Moving to tighten monetary policy too late will heighten inflationary risks. However, if the output gap is actually larger than CBO's measure tightening monetary policy prematurely runs the risk of depressing economic activity before full employment is reached.

2. Lower Natural Rate of Interest

Declining productivity and persistently low inflation, as we have seen, depresses the equilibrium rate of interest. This means that the FOMC will not have to raise interest rates as much as it has in past cycles

to reach the noninflationary full employment level of interest rates. The FOMC already recognizes this phenomenon in its long-term projection for the federal funds rate and, as indicated in **Chart 7**, my own estimate of the equilibrium natural rate of interest is very similar to the FOMC's.

Thus, with these considerations in mind, FOMC member commentary about increasing the federal funds rate gradually should be taken seriously as reasonable policy. The only caution is that this is contingent on inflation remaining well behaved and not becoming unanchored. This appears to be a very reasonable presumption given a global economy in which aggregate supply greatly exceeds aggregate demand.

V. Financial Markets' Stability

While most professional economists belief monetary policy's current emphasis on quantitative easing and artificially depressing market interest rates is soundly based and essential to returning the economy to full employment, some fret about the potential financial instability that may be building beneath the surface.

1. Financial Markets — Risk Mispriced

Monetary policy has intentionally depressed interest rates since late 2008 with the objective of stimulating consumption and investment. I discussed in the section above how artificially depressed interest rates can lead to speculation in assets rather than new productive investment. But, there is another consequence.

Administered interest rates, particularly when the zero bound is binding, as it has been since 2008, provide a high degree of certainty to investors and extract risk from the marketplace. The Federal Reserve's quantitative easing program, by purchasing large quantities of long-duration U.S. Treasury and mortgage backed securities, not only depressed long-term interest rates, it also reduced duration risk. By reducing the supply of low risk long-duration securities, the Federal Reserve forced investors to search for yield and this depressed the credit spreads on riskier categories of long-duration securities. In short, risk has systematically been underpriced.

In today's financial markets, replete with a plethora of derivatives that are intended to help investors manage risk but also increasingly serve as direct investments, mispricing of risk can create serious potential problems. Measurement of risk for volatility derivatives, such as VIX or the CBOE Volatility index, have become distorted by the Federal Reserve's extended period of zero-interest-rate policy (ZIRP). When risk measures are depressed artificially, value at risk models permit greater use of leverage. This is not a problem until the mispricing of risk corrects, as it surely will once the Federal Reserve begins to normalize monetary policy. What is potentially troublesome is that investors might not be able to adjust hedge ratios quickly enough as policy normalizes and this could prompt extreme market volatility and perhaps even forced liquidation of positions at a loss — the classic fire sale phenomenon that characterizes bursting bubbles.

2. Financial Markets — Lack of Liquidity

Related to the mispricing of risk is reduced market liquidity in traditionally highly liquid securities. Liquidity has been reduced not only by the Federal Reserve's large scale asset purchase program, i.e., quantitative easing, it has also been reduced by the liquidity requirements imposed by the Dodd-Frank Act on financial institutions. The problem is especially severe for mortgage backed securities because the outstanding stock of mortgages has declined $1.3 trillion to $9.4 trillion since the housing bubble burst.

In addition to a reduced supply of liquidity and the mispricing of risk, the institutional structure of the dealer market is much weaker than prior to the Great Recession. Simply put dealers are less willing today to perform the traditional market making role of supporting risk. This implication is that when volatility strikes there may be little ability of the private market to perform a stabilizing role. Not all would be lost as the Federal Reserve can serve as lender of last resort. But, Federal Reserve intervention would invoke the "Fed Put" and perversely that would encourage potentially imprudent risk taking.

My sense is that financial markets are more fragile today than commonly understood or acknowledged. As the Federal Reserve normalizes monetary policy the risk of potentially violent market spasms is not trivial.

VI. Long-Run Economic Prospects

Periodically I have provided long-term projections for key economic variables based on my "***Steady Growth,***" "***Strong Growth***" and "***Stagnation***" scenarios and other analysts such as **CBO**, **GS**, and **B of A**. The "***Stagnation***" scenario assumes a relatively immediate recession followed by a lethargic recovery. This is not a particularly realistic scenario but is included to show the short-term impact of a more volatile economy. These projections are updated in the charts that follow.

Chart 8 shows the progression in labor force growth over time. All scenarios converge in the long run to annual growth of about 0.50 percent, which reflects slow population growth and aging demographics.

Chart 9 shows productivity projections. With the exception of my "Strong Growth" scenario, productivity projections converge in the long run to about 1.5 to 1.6 percent. However, all scenarios may prove to be overly optimistic based on recent trends.

Chart 10 combines the labor force growth and productivity projections to derive estimates of potential real GDP growth. **GS's** recent pessimistic revision to long-term potential real GDP growth stands out and is below my "Steady Growth" scenario by about 0.15 percent. Even the more optimistic projections are low, ranging from 2.1 to 2.2 percent. The FOMC's central tendency is 2.15 percent.

Chart 11 shows real GDP growth forecasts.

Chart 12 shows real GDP output gap projections. Unlike previous comparisons, the projections now are quite similar — convergence has been to my scenarios.

Chart 13 shows forecast for the U-6 unemployment rate. These forecasts have also tightened consid-

CHART 8 – Employment Growth (Hours Worked)

(annual percentage change)

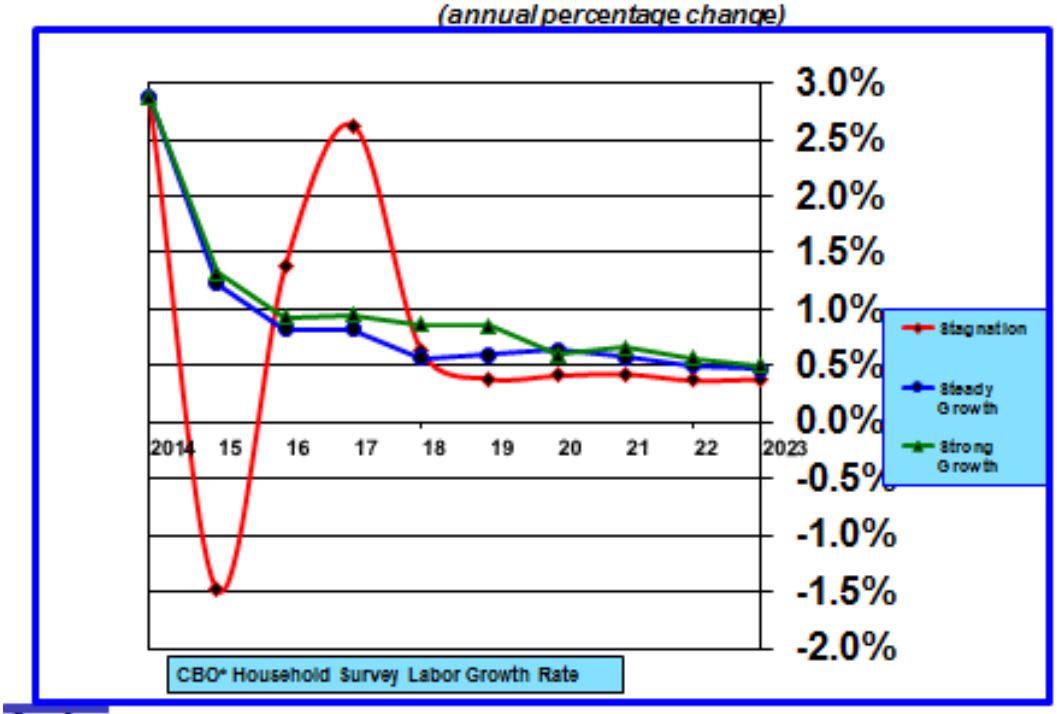


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CHART 9 – Productivity

(annual percentage change)

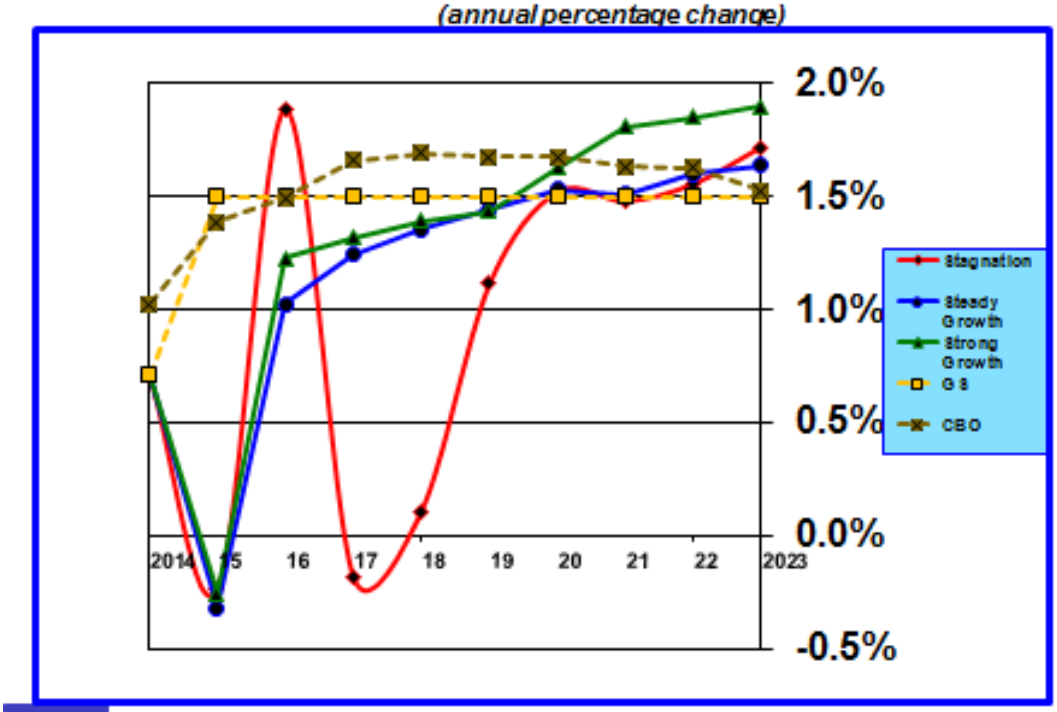

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CHART 10 – Potential Real GDP Growth

(annual percentage change)

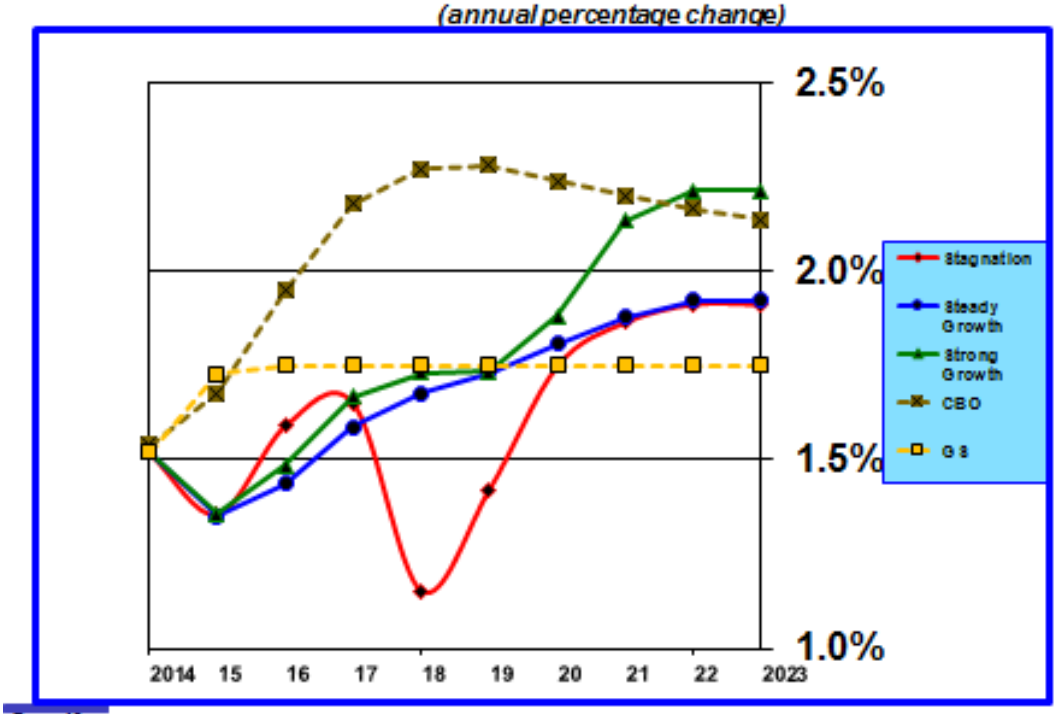

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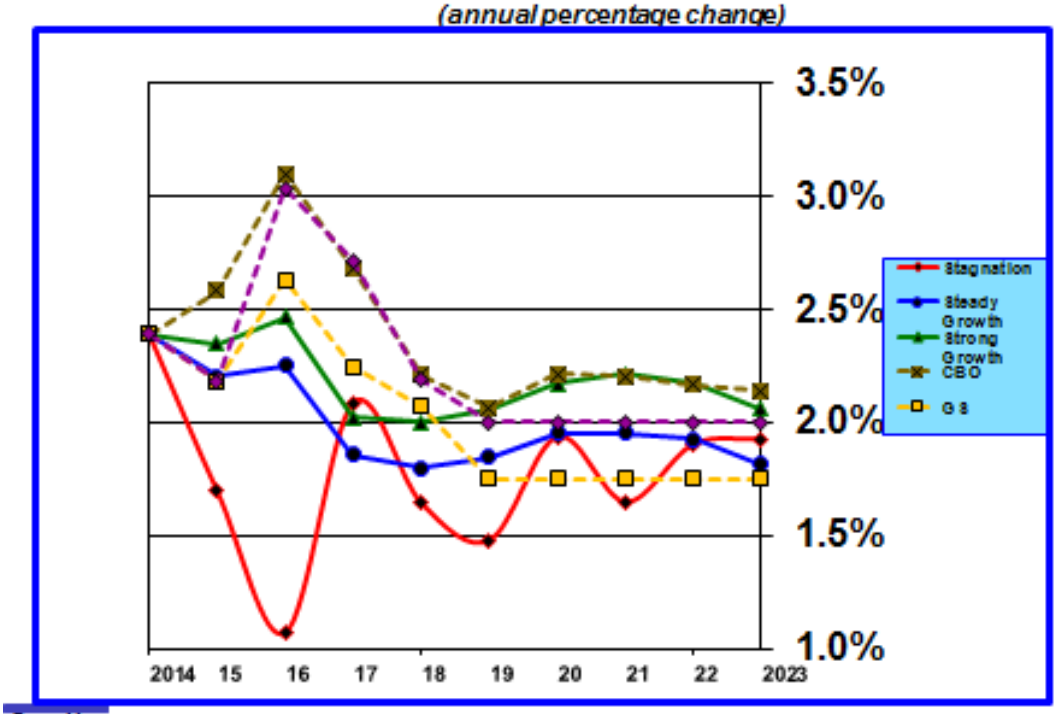
CHART 11 – Realized Real GDP Growth

(annual percentage change)



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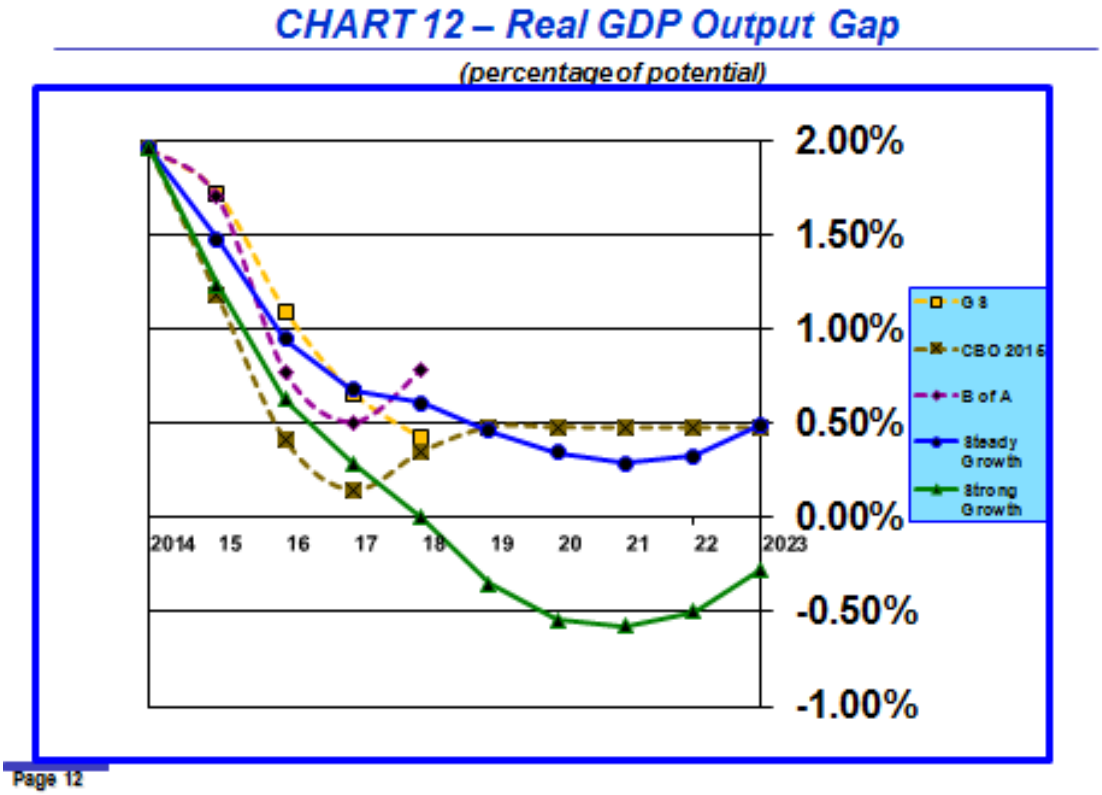

erably.

PCE core inflation forecasts in **Chart 14** converge to 2.0 percent except for my "***Strong Growth***" and "***Stagnation***" scenarios. Higher inflation in the "***Strong Growth***" scenario results because economic growth exceeds potential while the reverse is true for the "***Stagnation***" scenario.

Growth in nominal spending in **Chart 15** rises in all scenarios as the employment gap closes and wages and inflation rise.

The differences reflect the relative strength of these drivers. Real growth in my scenarios in **Chart 16** reflects the impact of the inflation-adjusted impact of employment and wage gains.

The **GS** and **B of A** forecasts show a different pattern in **Chart 16** and reflect a short-term cyclical bounce and longer-term easing in the growth rate to approximately the same level as expected real GDP growth. The difference between my scenarios and the others has to do with my expectation that the saving rate declines over the longer-term from recent levels.

In most of the scenarios shown in **Chart 17** the federal funds rate converges to the long-term natural equilibrium rate, ranging between 3.25 and 3.75 percent.

Similarly, in **Chart 18**, long-term rates converge to approximate the steady state growth rate in nominal GDP, ranging from about 3.75 to 4.25 percent. This implies a very flat yield curve in the long-run with about a 50 basis point slope, which essentially is the term premium. CBO's long-term projection

CHART 13 – Unemployment Rate

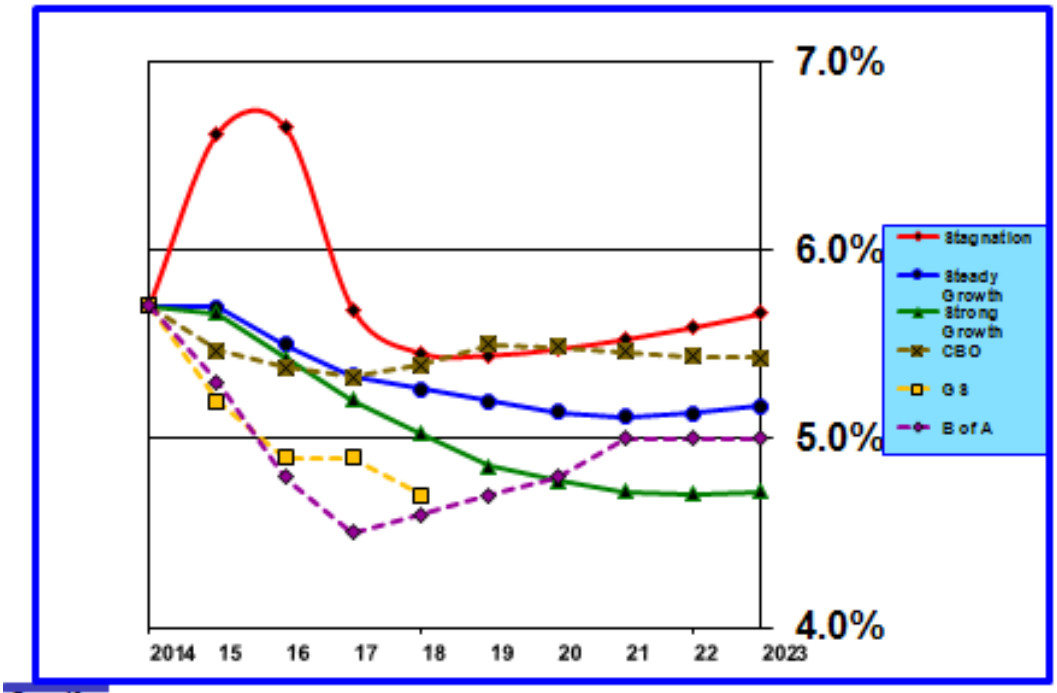

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CHART 14 – Core PCE Inflation Rate

(annual percentage change)

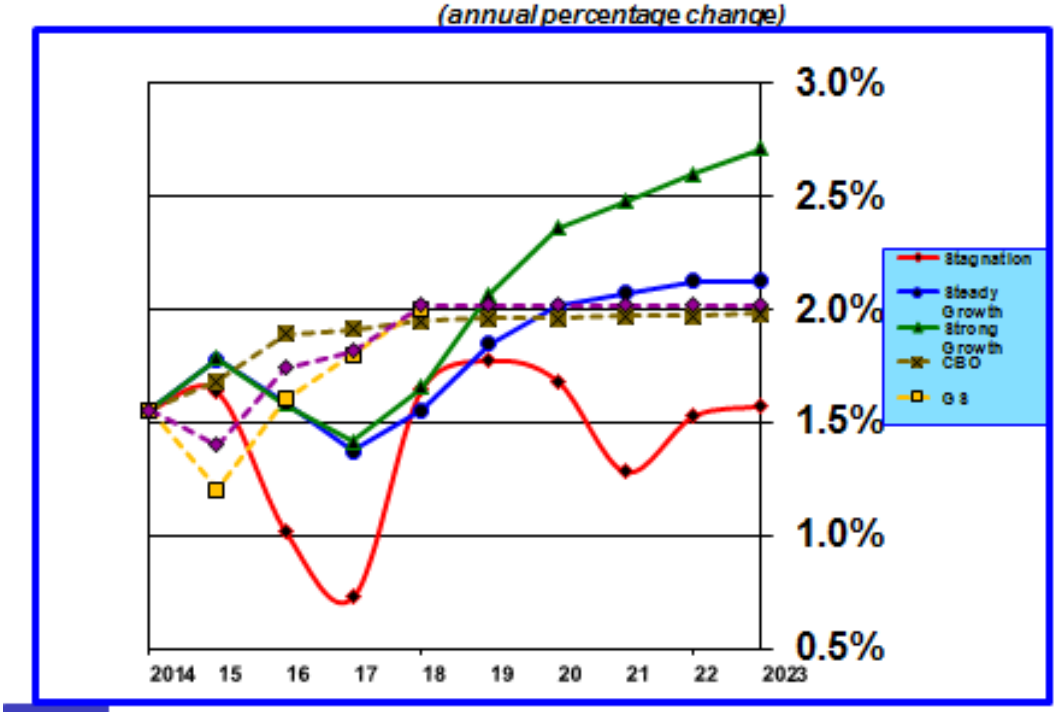

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CHART 15 – Growth in Nominal Consumer Spending

(annual percentage change)

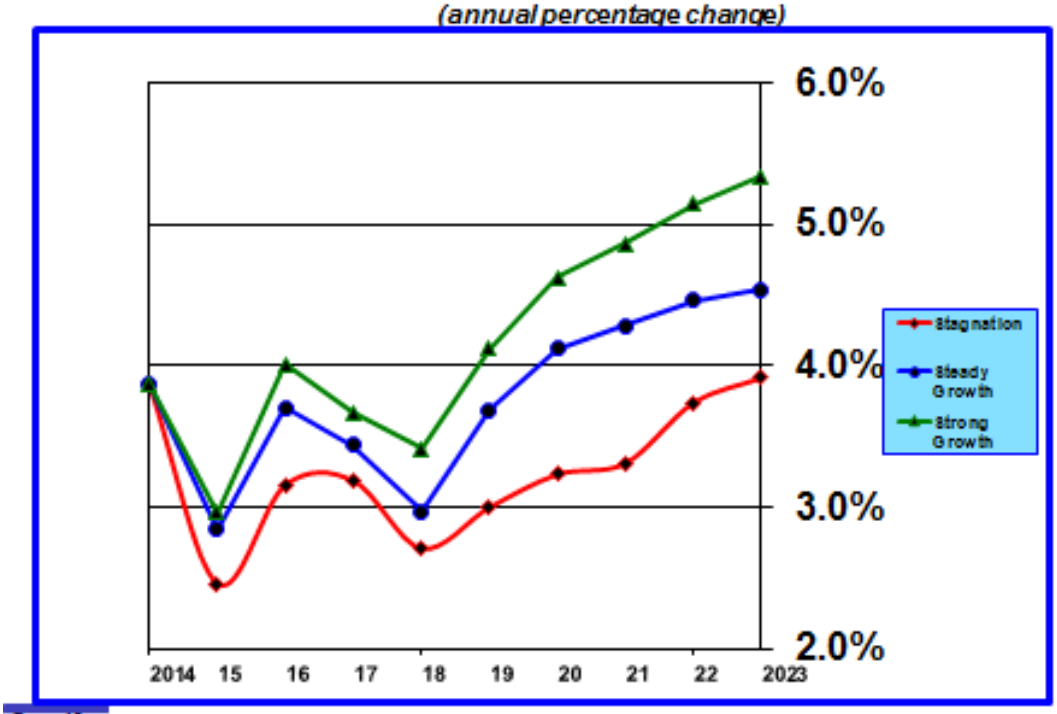
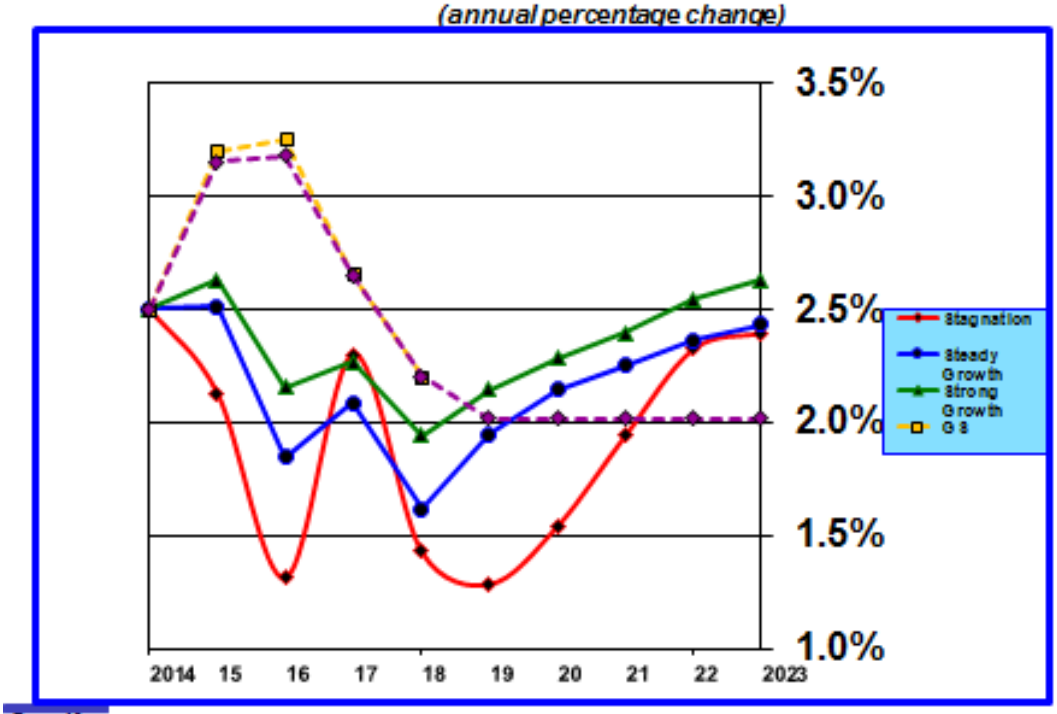
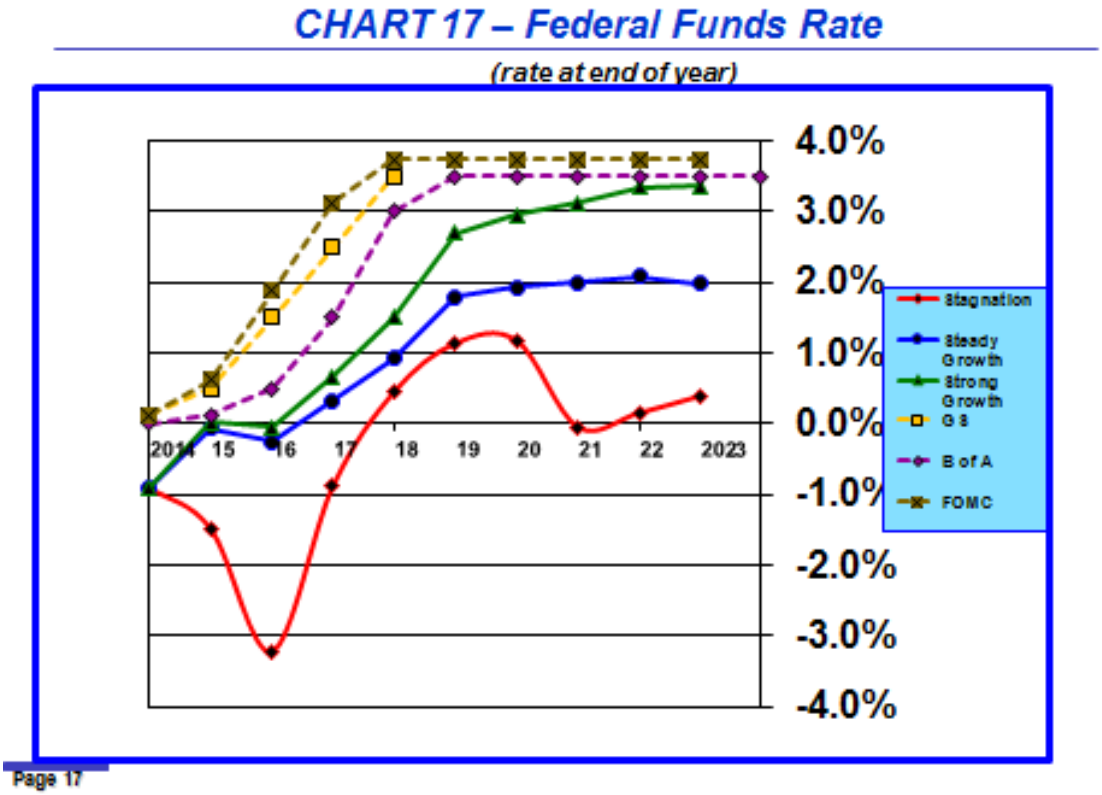


CHART 16 – Growth in Real Consumer Spending

(annual percentage change)





of 4.6 percent seems a bit high. If long-term rates end up being somewhat lower, as he other forecasts indicate, this would have favorable implications for the federal budget deficit over the longer term.

Chart 19 shows the annual budget deficit for various scenarios. The near-term recession is obvious in the "***Stagnation***" scenario. The annual budget deficit moderates slightly through 2017 and then begins to deteriorate as entitlements for social security and Medicare begin to ramp up as the population ages.

Chart 20 shows a similar progression over time for the total budget deficit — slight improvement in the next couple of years and then slow deterioration. The exceptions are the "***Strong Growth***" and "***Stagnation***" scenarios. In the former scenario, strong economic growth keeps the total budget deficit on a modest downward track. In the latter scenario, weak growth results in a rapidly rising total deficit.

VII. U.S. Economic Outlook — Real GDP Growth

Annualized first quarter real GDP growth in the "Preliminary Estimate" was a very disappointing -0.7 percent (see **Table 3**). However, recent data releases indicate that the "Final Estimate" is likely to be raised back to 0.2 percent.

CHART 18 – 10-Year Treasury Rate

(rate at end of year)

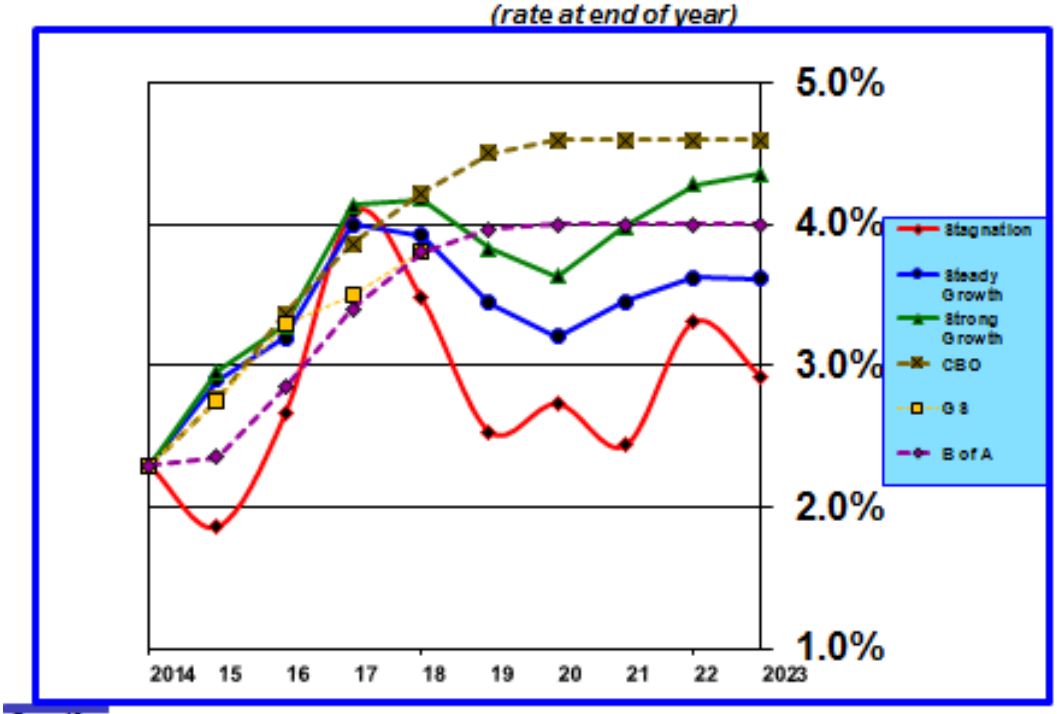


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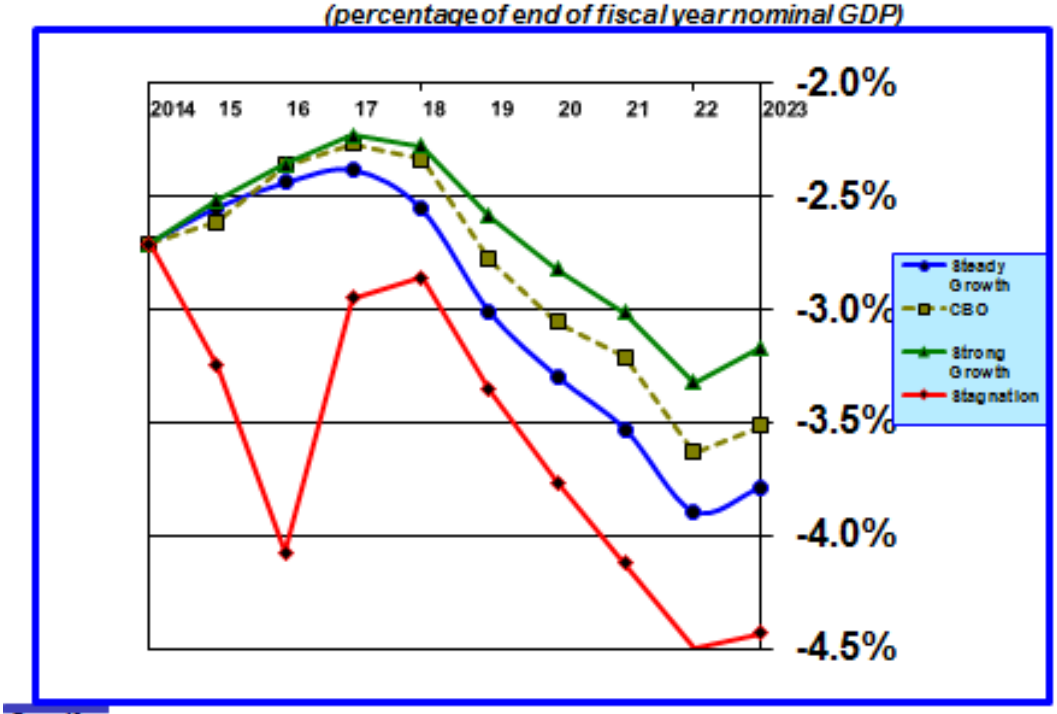
CHART 19 – Annual Federal Budget Deficit

(percentage of end of fiscal year nominal GDP)



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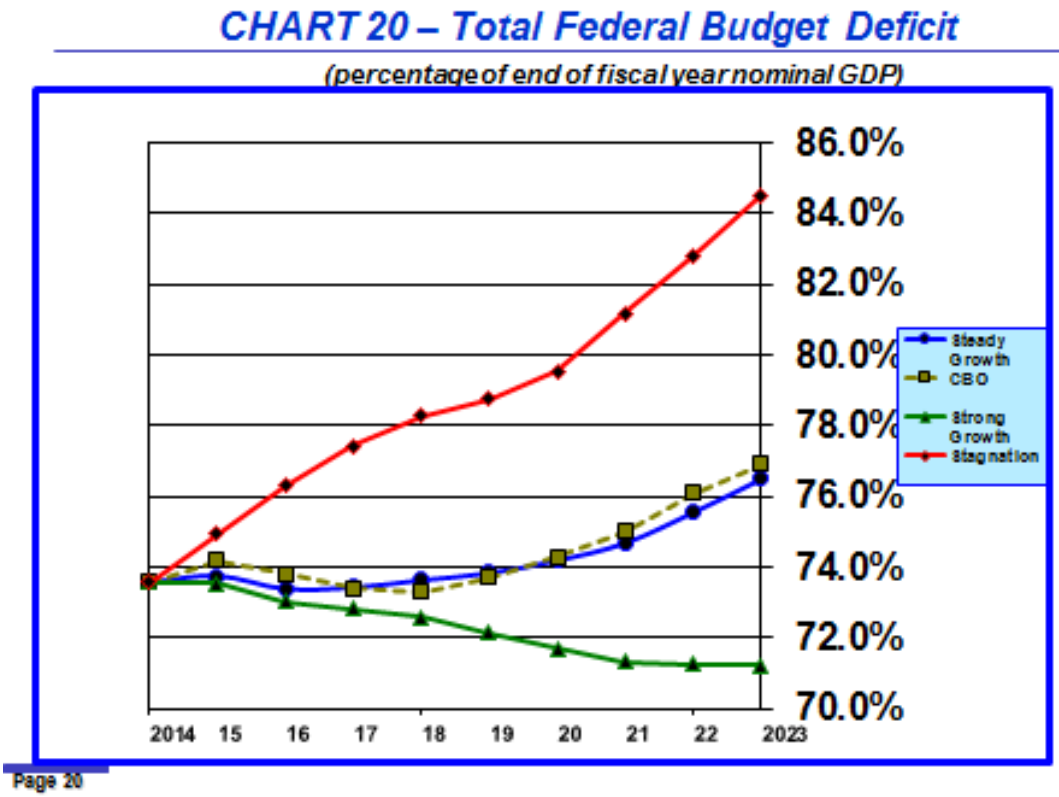


1. 2015 Q1 GDP — Preliminary Estimate

Personal consumption got even weaker. However, this number should rise in the "Final" estimate.

Totally missing was any spending benefit from the plunge in oil prices. This might simply be due to a response lag. Spending falls because of the decline in gas prices but the extra cash is saved rather than spent on other goods and services. This behavioral pattern has been observed in the past when tax rebates were not spent immediately upon receipt but eventually were spent over the next several months. **GS** conducted an analysis which indicates that consumer spending should have been 0.5 percent to 1.0 percent higher in the first quarter.

My statistical analysis indicates that in July 2014 oil prices had no impact on the saving rate. However, by March 2015 the decline in oil prices had boosted the saving rate by 0.46 percent. Note, assuming that the rate of growth in disposable income is constant, an increase in the saving rate is consistent with a slowing in nominal consumption growth by the same percentage.

The boost in the saving rate is already beginning to subside and will reach zero by December and then will subtract approximately 25 basis points from the saving rate during the first half of 2016. This swing of 70 basis points in the saving rate translates into a difference of 0.5 percent in nominal GDP growth.

GS's analysis also indicates that only one-fourth to one-half of the benefit of lower gas prices should have occurred during the first quarter. Consequently, **GS** is very confident that consumer spending will

Table 3
Composition of 2015 and 2014 Quarterly GDP Growth

	First Quarter 2015 Advance Estimate	First Quarter 2015 Preliminary Estimate	First Quarter 2015 Final Estimate	Fourth Quarter 2014 Final Estimate	Third Quarter 2014	Second Quarter 2014
Personal Consumption	1.31%	1.23%		2.98%	2.21%	1.75%
Private Investment						
Nonresidential	-.44%	-.37%		.60%	1.10%	1.18%
Residential	.04%	.16%		.12%	.10%	.27%
Inventories	.74%	.33%		-.10%	-.03%	1.42%
Net Exports	-1.25%	-1.90%		-1.03%	.78%	-.34%
Government	-.15%	-.20%		-.35%	.80%	.31%
Total	**.25%**	**-.75%**		**2.22%**	**4.96%**	**4.59%**
Final Sales	**-.49%**	**-1.08%**		**2.32%**	**4.99%**	**3.17%**
Private GDP	**-.34%**	**-.88%**		**2.67%**	**4.19%**	**2.86%**
Private GDP — Net Exports	**.91%**	**1.02%**		**3.70%**	**3.41%**	**3.20%**

accelerate in coming quarters. Second quarter monthly data releases so far are supportive of this expectation.

Net exports subtracted an even greater -1.90 percent from real GDP growth. This was primarily the result of the 19.0 percent increase in the value of the dollar over the last 12 months. The West Coast dock strike during the quarter also contributed to the out-size decline. However, notwithstanding these reasons, the large decline does not seem fully reasonable and will either be revised downward over time or will be offset by a large increase in subsequent quarters.

Nonresidential business investment subtracted -0.37 percent from first quarter real GDP growth. This was slightly better than the -0.44 percent in the "Preliminary" estimate. This decline was caused mainly by a plunge in energy-related investment.

All in all, even though faulty seasonal adjustments probably overstated weakness in first quarter real GDP growth, the strong dollar and low oil prices contributed significantly to disappointing growth.

2. GDP Forecasts for Q1 and Q2

Table 4 shows forecasts/projections for the first and second quarters of 2015 and for the full years 2015 through 2018.

Table 4
Real GDP Growth Forecasts — B of A, GS, Bill's "Steady Growth", Bill's "Strong Growth" and FOMC High and Low Projections

	2015 Q1	2015 Q2	2015 Q4/Q4	2015 Y/Y	2016 Y/Y	2017 Y/Y	2018 Y/Y
B of A	0.2	3.4	2.0	2.2	3.0	2.7	2.2
GS		3.1	2.0	2.2	2.6	2.25	2.1
Bill's Steady Growth			1.7	2.2	2.25	1.9	1.8
Bill's Strong Growth			2.0	2.35	2.5	2.0	2.0
FOMC — High[#]			2.7h[#]		2.7h[#]	2.4h[#]	2.4h[#]
FOMC — Low [#]			2.3h[#]		2.3h[#]	2.0h[#]	2.0h[#]

[#]Measured from Q4 to Q4

B of A expects the "Final Estimate" of first quarter growth to be boosted to 0.2 percent, which would be the same as "Advance Estimate." However, the composition of the components between the two estimates is likely to be quite different.

Both **B of A** expects real GDP growth to rebound to 3.4 percent in the second quarter and **GS** is close behind with a forecast of 3.1 percent. Combining the expected revision to the first quarter with these second quarter forecasts simply is consistent an underlying real GDP trend growth rate of about 2.0 percent.

Second quarter real GDP growth should benefit from a pickup in consumer spending, stronger housing construction and the flow through benefits on spending from last year's strong employment gains. Offsets will probably include subdued business investment and weaker manufacturing activity due to the strong dollar and lower energy prices, both of which have negatively impacted the competitiveness of U.S. exports.

Consumer Spending. Retail sales had been weaker than expected for several months, but reports for the last couple of months have reversed this adverse trend. In this context, **B of A's** and **GS's** forecasts in **Table 5** of acceleration in consumer spending growth from 2.5 percent in 2014 to 3.2 percent in 2015 are becoming more credible.

GS and **B of A** remain optimistic that consumer spending will accelerate during the remainder of 2015 because of rapid growth in employment and lower gas prices. Other forecasters, including myself, are less optimistic with forecast spending growth in 2015 between 2.5 percent and 2.8 percent.

Table 5
Consumer Spending Growth Rate Y/Y Forecasts — B of A, GS, Global Insight, Economy.com, Blue Chip, Bill's "Steady Growth" and Bill's "Strong Growth"

	2012	2013	2014	2015	2016	2017	2018
Actual	1.74	2.34	2.50				
B of A				3.16	3.18	2.65	2.20
GS				3.20	3.26	2.66	2.20
Global Insight*				2.60	3.50	3.00	
Economy.com*				2.50	2.80	2.70	2.60
Blue Chip*				2.80	3.20	2.90	2.90
Bill's Steady Growth				2.51	1.85	2.08	1.62
Bill's Strong Growth				2.63	2.15	2.27	1.94

*May forecast

Forecast consumer spending growth rises to between 2.8 percent and 3.5 percent in 2016 and then slows to between 2.65 percent and 3.0 percent in 2017. Further slowing occurs in 2018 as the transitory benefit of lower oil prices dissipates and as employment growth begins to slow. My forecasts are low relative to others reflecting a slowdown in employment growth and slower improvement in wages.

Residential Investment. Forecasts for growth in residential investment are shown in **Table 6**. In spite of a tepid 1.3 percent increase in residential investment in the first quarter, GS expects residential investment growth to be about 7 percent in 2015 and then accelerate to about13 percent in 2016 and 2017 and 11 percent in 2018. **B of A** has been less optimistic. It reduced its 2015 forecast for residential investment growth 5 percent to 3 percent, but still expects residential investment growth to rise to about 8.5 percent in both 2016 and 2017. Then residential investment growth falls to 4 percent in 2018.

As each quarter rolls by the much expected acceleration in housing investment has failed to materialize. This is a bit of a mystery because the overhang of excess supply has long since disappeared and household formation has begun to rise. For these reasons forecasters expect housing to emerge at any minute from the doldrums. So, they simply keep pushing forward strong housing acceleration. It is getting to the point, however, that some are pondering whether fundamental structural changes have occurred in the housing market which will limit the extent to which housing investment rises as the economy improves. Stringent underwriting standards and changes in household formation and, thus, in housing demand, may not be as transitory as forecasters expect.

Nonresidential Investment. Forecasts for growth in nonresidential investment are shown in **Table 6**. Based upon first quarter results, **GS** has reduced its 2015 forecast business investment growth from 4.0 percent to 2.6 percent. Similarly, **B of A** has reduced its 2015 forecast from 4.9 percent to 2.9 percent. Both forecasters expect stronger investment growth in 2016, 2017, and 2018 in a range of 4.5 percent to 6.0 percent. However, unless real interest rates move to a much higher positive value, these forecasts are likely to prove to be too optimistic.

Private Business Investment. Private business investment includes both residential and nonresi-

Table 6
Real Private Business Investment (Residential and Nonresidential) Growth Rate Y/Y Forecasts — B of A, GS, Bill's "Steady Growth" and Bill's "Strong Growth"

	2012	2013	2014	2015	2016	2017	2018	Ave. 1947-2014
REAL PRIVATE BUSINESS INVESTMENT								
Actual	8.30	4.68	5.39					**3.80***
B of A				3.48	5.44	5.94	4.35	
GS				3.80	6.20	5.50	4.89	
Bill's Steady Growth				3.14	2.58	2.55	2.47	
Bill's Strong Growth				3.46	3.64	2.94	2.81	
REAL NONRESIDENTIAL INVESTMENT								
Actual	7.19	3.05	6.32					**2.55***
B of A				2.88	4.52	5.26	4.44	
GS				2.61	4.53	4.12	3.74	
REAL RESIDENTIAL INVESTMENT								
Actual	13.51	11.90	1.59					**-1.34***
B of A				6.02	9.22	8.62	3.98	
GS				8.84	12.91	10.61	8.93	

*Average 1999-2014; real private business investment = 1.55% for 1999-2014

dential investment. My forecast for 2015 is somewhat lower than other forecasts. My below consensus forecasts in 2016, 2017 and 2018 result from my more pessimistic outlook for nonresidential investment, which I believe will continue to be depressed by low real interest rates and slower real GDP growth.

Table 6; Real Private Business Investment (Residential and Nonresidential) Growth Rate Y/Y Forecasts — B of A, GS, Bill's "Steady Growth" and Bill's "Strong Growth" *Average 1999-2014; real private business investment = 1.55% for 1999-2014

Government Investment. Government investment spending is divided between federal and state/local investment spending. State and local government spending accounts for 61.2 percent of the total.

Table 7 shows actual total government investment growth for 2012, 2013, and 2014, and forecasts for 2015 through 2018. Relative to the 68-year average growth of 2.68 percent annually the actual results and forecasts are quite pessimistic. But the pessimism is warranted by the political constraints that have been imposed on government spending in recent years. Forecasts for 2015-2018, including my own, are

consistent with the 1.14 percent rate of growth in government investment spending over the last 16 years. However, as is already turning out to be the case in 2015, even these low rates of growth may prove to be too optimistic.

Table 7
Government Investment Growth Rate Y/Y Forecasts — B of A, GS, Bill's "Steady Growth" and Bill's "Strong Growth"

	2012	2013	2014	2015	2016	2017	2018	Ave. 1947-2014
Actual	-1.28	-2.01	-0.16					**2.68***
B of A				0.57	1.07			
GS				0.33	1.19	1.25	1.25	
Bill's Steady Growth				**0.32**	**1.16**	**1.26**	**1.22**	
Bill's Strong Growth				**0.48**	**1.30**	**1.34**	**1.40**	

*1999-2014 average growth rate = 1.14%; federal = 2.12%; state & local = 0.54%

Inflation-adjusted state and local spending is up 1.04 percent over the last year, but declined at an annual rate of -1.8 percent in the first quarter. **GS** cites three reasons to expect relatively weak state and local government spending growth in coming quarters. First, state revenue growth will be weak due both to slow economic growth and voter resistance to tax increases. Second, most states plan only modest budgetary increases, which is directly related to weak revenue growth and balanced budget requirements. Third, a growing proportion of state and local expenditures are allocated to health and other social benefits, which are not counted as spending in the national income accounts — they are transfer payments.

VIII. Monetary Policy, Inflation and Interest Rates

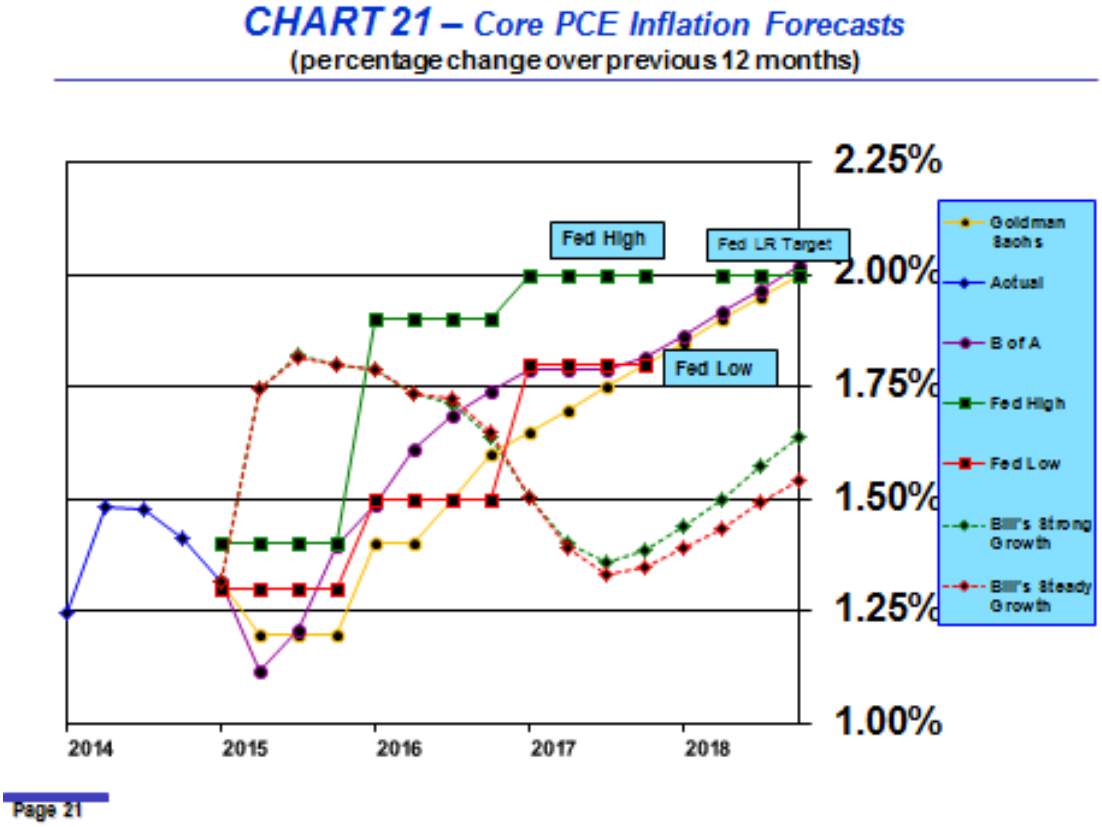
By the time this letter is published, the FOMC will have released its June policy statement and updated its economic projections. I will provide commentary in the July letter.

In the U.S. the major questions confronting policy makers is when to begin raising the federal funds rate and how fast to raise it. The answers depend upon the strength of labor market and inflation prospects. The employment market has improved considerably, but weaknesses in some measures, in particular wage rate growth, still persist. Somewhat worrisome, however, is the weakness of core PCE inflation.

Were it not for weak inflation, which FOMC members generally believe to be a short-term transitory phenomenon, the improvements in the labor market have probably be sufficient to warrant beginning to tighten monetary policy.

Fed watchers have pretty much concluded that the FOMC will not begin to raise interest rates until September and even that conviction is far from solid. Speculation is rising that the date of the first rate increase will be pushed to later in 2015 or perhaps even to sometime in 2016. For example, the IMF recently put out a position paper opining that the FOMC should not raise rates until 2016.

Core PCE inflation was 1.24 percent in April and total PCE inflation was 0.12 percent (see **Chart 21**). Compared to core PCE inflation, total PCE inflation is much more volatile and has been negative for short periods of time in the past. For that reason the FOMC prefers to focus policy deliberations on the core PCE inflation measure.



Core PCE inflation is well below the FOMC's target level of 2 percent and is not much above the lows near 1.0 percent experienced briefly in mid-2009 and late-2010 when the FOMC was concerned about the threat of deflation.

As can be seen in **Table 8** (**Chart 21** shows historical core PCE price index data and data from **Table 8** in graphical form), forecasts of the core PCE inflation index indicate that inflation will change little during 2015. **GS** expects core PCE inflation to bottom out at 1.2 percent by the end of 2015 and then begin a very gradual rise, reaching 2.0 percent sometime during 2018. **B of A** does not expect core PCE inflation to fall quite as low but agrees with **GS's** forecast that core PCE inflation will not reach a 2.0 percent target until 2018. FOMC member projections also anticipate a gradual rise.

Risks of downward pressure on core PCE inflation relative to the forecasts and projections outweigh

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

Core CPE	2013	2014	2015	2016	2017	2018
B of A	1.3	1.4	1.4	1.7	1.8	2.0
GS	1.3	1.4	1.2	1.6	1.8	2.0
Global Insight (CPI)*		1.6	-0.2	2.0	2.5	2.6
Economy.com (CPI*		1.6	0.4	2.6	2.7	
Blue Chip (CPI)*		1.6	0.2	2.2	2.3	2.4
Bill's Steady Growth	1.3	1.4	1.8	1.6	1.4	1.55
Bill's Strong Growth	1.3	1.4	1.8	1.6	1.4	1.65
FOMC — High			1.4	1.9	2.0	
FOMC — Low			1.3	1.5	1.8	

*March forecast

risks of upward pressure. The collapse in oil prices is contributing to downward pressure. The strong dollar will contribute further to downward pressure on inflation through lower import prices.

IX. APPENDIX: Outlook — 2015 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 2015 U.S. and global economic outlook and risks to the outlook were contained in the ***December 2014 Longbrake Letter*** and are included below without any changes. As events unfold during 2015, this will enable the reader to track my analytical prowess. Current assessments follow each item with the following identifiers: "+" tracking forecast; "-" not tracking forecast; "?" too soon to know. As events unfold during 2015, this will enable the reader to track my analytical prowess.

1. **U.S.**

- ***2015 real GDP Y/Y*** growth projections range from 2.7% to 3.5%. The FOMC's central tendency Q4/Q4 projections range from 2.6% to 3.0%. (Q4/Q4 projections are highly dependent upon potential anomalies in Q4 data; therefore, Y/Y estimates, which average all four quarters, are more stable estimates.) Because the substantial decline in oil prices is likely to boost consumption growth more than it depresses investment growth, actual 2015 real GDP growth is likely to be at the high end of the forecast range.

  - The Federal Reserve lowered its GDP forecast range in March to 2.3% to 2.7% (June FOMC projections released after June Letter written)

  - Other forecasts are now well below the lower end of the original forecast range: GS = 2.2%; B of A = 2.2%; Bill's Steady scenario = 2.2%; Bill's Strong scenario = 2.35%

- ***Real GDP output gap*** will remain high, but will close rapidly during 2015 from about 3.4% to 2.0%. (The exact size of the output gap will be revised by CBO, probably in February 2015).

  + CBO revised the output gap down by 1.1 percentage points in February; revised output gap should decline to between 1.5% and 1.2% by the end of 2015

- ***Potential structural rate of real GDP growth*** has declined significantly in recent years. I expect potential growth to be about 2.0% in 2014. Long-term potential real GDP growth will edge up in coming years to between 2.0% and 2.3%.

  + CBO reduced 2015 potential growth from 1.8% to 1.7%

  - Potential growth for my scenarios for 2015 is 1.25%

  + Long-run potential growth for my scenarios is between 1.9% and 2.2%; it is between 2.0% and 2.2% for the Federal Reserve; and it is 2.1% for CBO

- ***Productivity*** should rise during 2015 as growth improves and investment increases, but should still fall well short of the historical 2.1% average.

  + Nonfarm productivity declined 3.1% in the first quarter of 2015, but the four-quarter change in productivity rose from -0.1% in 2014 to 0.3% in the first quarter of 2015

- ***Employment*** growth should slow during 2015 as full employment approaches and grow about 185,000 per month.

  ? Payroll growth has averaged 217,000 monthly over the first five months of 2015

- ***Employment participation*** will rise slightly during 2015 as the unemployment rate falls, labor market conditions tighten and discouraged workers find jobs. These cyclical factors will more than offset the downward pressure on the participation rate stemming from an aging population.

  + The participation ratio has risen slightly; it was 62.70% in December and 62.87% in May

- ***Unemployment rate*** should edge down to about 5.25%. A higher rate could occur if substantial numbers of discouraged workers re-enter the labor force.

  + The unemployment rate has fallen from 5.56% in December to 5.51% in May

- ***Nominal consumer disposable income,*** measured on a Y/Y basis will rise about 3.2% (roughly 1.2% increase in hours worked; 1.8% increase in CPI inflation and 0.2% increase in the hourly wage rate).

  - 12-month rate of change in disposable income is 4.0% through April; (total hours worked for all employees are growing at a 2.6% annual rate through May; hourly nominal wage rate unchanged through May; total CPI inflation up 0.9% through April); while growth in hours worked is much stronger than forecast, inflation is much weaker; the stronger than expected growth in nominal consumer disposable income has benefited from stronger employment growth and high growth in non-wage sources of disposable income

- ***Nominal consumer spending growth*** on the Y/Y basis will grow slightly faster at approximately 3.5%, but could grew slightly faster if low oil prices persist.

  ? 12-month rate of change is 3.8% through April

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

  - Saving rate averaged 5.5% over the first four months of 2015 compared to 4.9% in 2014; consumers are not yet spending the oil price decline windfall

- ***Stock prices***, as measured by the S&P 500 average, should rise between 0% and 5%.

  + Through June 16, stock prices were up 1.8%

- ***Manufacturing*** growth will continue to be relatively strong and the PMI index will exceed 50.

  + The ISM manufacturing index has softened since the beginning of the year but was still at an expansionary level of 52.8 in May

- ***Business investment*** spending growth should remain relatively strong in a range of 4% to 6% as employment and consumer spending growth gathering momentum; however, low oil prices will depress energy investment.

  - Business investment declined at an annual rate of -2.8% in Q1 as energy capital investment plunged; forecasts for 2015 have been lowered to 3%

- ***Residential housing investment*** should improve over 2014's disappointing level by 8% to 10%; residential housing starts should rise 15% to 20%.

  ? Residential investment grew at an annual rate of 5.0% in Q1; forecasts for 2015 have been lowered to a range of 6% to 9%

  - Over the first five months of 2015 total housing starts were 2.6% above and single-family housing starts were 2.9% above the 2014 level

- ***Residential housing prices*** should rise about 2% to 4% in 2015, more slowly than 2014's projected 4.5% increase.

  ? According to the Federal Housing Finance Agency's home purchase price index, housing prices rose 5.01% in 2014 and 4.96% through the 12 months ending March 2015; prices are on track to rise 4.0% in 2015

- ***Trade deficit*** should be slightly higher in 2015 as economic growth improves growth in imports and the rising value of the dollar depresses growth in exports. The ***dollar's value*** on a trade-weighted basis should continue to rise.

  ? The trade deficit for goods has been stable; it was 2.87% in December and 2.86% in April

  + The trade weighted value of the dollar rose 5.9% from December through May and is 17.0% higher than May 2014

- ***Monetary policy*** — the Federal Reserve will raise the federal funds rate at its June, or possibly, September 2015 meeting. Because inflation is likely to continue to fall short of the Federal Reserve's expectations, the pace of increases in the federal funds rate is likely to be slow.

  + Most expect the first increase in the Federal Funds rate to occur in September, although recent weaker data reports could delay the first increase to an even later date; FOMC members lowered projections in March for the level of the Federal Funds rate in the future and may lower it further when the June projections are released

- ***Total inflation*** measures (CPI and CPE) will fall sharply during the first half of 2015, reflecting the significant decline in oil prices. **Core PCE inflation** will be stable to slightly lower in a range of 1.3% to 1.5%, reflecting global disinflationary trends. Core PCE inflation will remain well below the FOMC's 2% objective at least through 2017.

  + Total CPE was up 0.1% in April compared to April 2014 and is projected to be 0.0% by June and rise 1.1% for all of 2015

  + The annual rate of change in core PCE was 1.24% in April and should dip to 1.15% by June before ending the year at 1.4%

- The **10-year Treasury rate** is likely to fluctuate in a range between 2.0% and 3.0% in 2015. Faster than expected real GDP employment growth will push the rate toward the top end of the range; greater than expected declines in inflation and/or heightened financial instability will push the rate toward the bottom end of the range.

  + The 10-year Treasury rate was 2.32% on June 16; because of low rates globally and aggressive quantitative easing by the European Central Bank and the Bank of Japan, the 10-year Treasury rate is likely to remain near the lower end of the 2.0% to 3.0% range during 2015

- ***Fiscal policy*** will have limited impact on real GDP growth during both fiscal year and calendar year 2015. The deficit as a percentage of nominal GDP will probably decline from fiscal year 2014's level of 2.75% to 2.50%. The decline could be greater if economic growth and tax revenues exceed expectations or less if Congress increases spending without offsets as it did in approving the tax extenders bill for 2014.

  + The 2015 fiscal year deficit is on track to equal 2.50%; the 12-month deficit through April was 2.31%

- ***State and Local investment*** spending growth rises slightly from 0.5% in 2014 to 1.0% in 2015, which is still well below the long-term average of approximately 1.4%.

  - State and local investment declined at an annual rate of -1.8% in Q1; forecast for all of 2015 has been revised to 0.7%

2. **Rest of the World**

- ***Global growth*** is likely to improve to 3.7% in 2015 from 3.2% in 2014. Risks are tilted to the upside because of the substantial decline in oil prices.

  - Global growth forecast has been lowered further to 3.2%; improvement in Europe has been more than offset by slower growth in China and the U.S.

- ***European growth*** will be positive but will is likely to fall short of the consensus 1.2%.

  - Europe's growth forecast has been raised to 1.6%

- ***European inflation*** will continue to decline and may even turn into outright deflation. Quantitative easing, assuming it occurs, may be too late and have too limited an impact to deflect emerging deflationary expectations. Europe may well be headed to the kind of deflationary trap Japan has been in for the last 20 years.

  + Consumer prices in Europe are expected to rise only 0.2% during 2015

- ***European financial markets*** may face renewed turmoil. Markets expect the ECB to begin purchasing large amounts of securities, including sovereign debt, by March. This presumes that legal hurdles and German opposition will be overcome. Assuming that quantitative easing actually occurs, its impact is likely to disappoint.

  - The ECB has embarked upon a massive quantitative easing program; there has been some recent market turbulence as speculative positions, which had driven interest down to nearly zero were unwound; credit and financial conditions have eased; the decline in oil prices and the exchange value of the euro are also helping boost growth to a higher than expected rate

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

  + Centrists lost the Greek election; the National Front party is gaining ground in France; recent regional elections indicate that centrist parties are likely to lose the Spanish elections scheduled for late 2015; the Conservative Party won an outright majority in the UK parliamentary elections but political fragmentation grew as the Scottish National Party won 56 seats

- ***U.K. growth*** is expected to slow from 3.0% in 2014 to 2.6% in 2015; however, political turmoil, should the May parliamentary elections be inconclusive, could drive growth lower.

  + Expected 2015 real GDP growth has been revised down to 2.2%

- ***China's GDP growth*** will slow below 7% and gradually moved toward 6% as economic reforms are implemented and the shift to a consumer-focused economy gathers momentum.

  + Year over year growth in the first quarter of 2015 was 7.0% but annualized first quarter growth was 5.3%

- ***China's leadership*** will focus on implementing ***economic reforms*** and will overcome resistance and maintain stability.

+ Chinese reform policies are being implemented slowly; the anti-corruption campaign continues and has had a chilling impact on speculation in commodities

- ***Japan's*** economic policies may be successful in defeating deflation, but GDP growth will be hard pressed to achieve the expected 1.6% rate in 2015 if Abenomics' third arrow of economic reforms fails to raise the level of potential growth sufficiently to overcome the effect of negative population growth on labor force growth.

  + Japanese expected growth has been lowered to 1.1%; the Bank of Japan is likely to fall short of its goal to raise inflation to 2.0%expected inflation currently is 0.8% for 2015 and 1.4% for 2016

- ***India*** should experience an improvement in real GDP growth to 6.3% in 2015.

  ? Too early to determine

- ***Emerging market countries*** that are energy consumers will experience greater growth, as long as the U.S. does better in 2015; energy producing. countries and those heavily dependent upon commodities exports for growth will do less well.

  + Data indicate that slower growth in China, Japan and the U.S. is dragging down growth in emerging markets

3. **Risks** — stated in the negative, but each risk could go in a positive direction.

   - ***U.S. potential real GDP growth*** falls short of expectations

     + Q1 GDP and forecast revisions for all of 2015 indicate this risk will be realized

   - ***U.S. employment growth*** is slower than expected; the ***participation rate*** is stable or declines rather than rising modestly

     - Participation rate has risen slightly; employment growth above expected level through the first five months of 2015

   - ***U.S. hourly wage rate growth for all employees*** does not rise materially over its 2014 level of 2.1%

     + Through May this risk is being realized — wage growth, measured as a 12-month year over year rate of change, remains unchanged at 2.1%; however, the six month annualized rate of change has risen from 1.9% in December 2014 to 2.1% in May 2015, perhaps indicating emerging wage pressures

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

     - Through May the unemployment rate remains within the expected range

   - ***U.S. productivity*** remains low in the vicinity of 1%

     + Q1 productivity was -3.1% and is up only 0.3% over the last 12 months

   - ***Real U.S. consumer income and spending*** increase less than expected

     - Data for Q1 suggest that consumer disposable income and spending may rise more than expected

   - ***U.S. financial asset prices*** rise more than expected posing increased bubble risks

     - Bond prices are at the low end of the expected range

     - The increase in stock prices is within the expected range

- ***Growth in U.S. residential housing investment and housing starts*** is less than expected

  + Housing starts and residential investment are well below expectations

- ***U.S. residential housing price increases*** slow more than expected

  - Preliminary evidence suggests that home prices may rise more than expected

- ***U.S. private business investment*** does not improve as much as expected

  + Private business investment fell at an annual rate of -2.8% in Q1; forecasts for all of 2015 have been revised down

- ***Oil price declines*** in the U.S. trigger bankruptcies and cause tight financial conditions with negative implications for economic activity and growth

  - There is no evidence of significant disruptions stemming from the fall in oil prices

- ***U.S. manufacturing growth*** slows as the value of the dollar rises and global growth slows

  + ISM manufacturing index remains above 50 but has softened

- ***U.S. trade deficit*** widens and the ***value of the dollar*** rises more than expected

  + The value of the dollar has rose more than expected at the beginning of the year, but stabilized in May

  - The trade deficit has been stable

- ***U.S. monetary policy*** spawns financial market uncertainty and contributes to financial instability

  - Volatility has increased somewhat and financial conditions have tightened slightly, but there is no indication of financial instability

- ***U.S. inflation*** *falls, rather than rising, and threatens deflation*

  + Core PCE inflation has been slightly softer than expected and may not rebound as much as expected by year end

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

  + Long-term interest rates are at the lower end of the expected range

- ***U.S. fiscal policy*** is more restrictive than expected and the ***budget deficit*** falls more than expected

  ? Tax receipts have been stronger than expected; however recent legislation may drive expenditures and the deficit higher over the remainder of the year

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

  + State and local spending fell at an annual rate of -1.8% in Q1; forecast growth has been revised lower for all of 2015

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

  + The global GDP growth forecast has been reduced from 3.7% to 3.2%

- ***Europe*** slips back into recession

  - Growth is improving in Europe because of the decline in the value of the euro, lower commodity prices, easier financial and credit conditions, and less fiscal drag

- ***ECB*** does not engage in quantitative easing or the quantitative easing program it decides to pursue lacks market credibility

- This risk will not materialize because the ECB has initiated a massive quantitative easing program which is expected to continue until September 2016

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

  - Speculation drove interest rates on long-term bonds too low and was followed by a short but relatively violent correction; however, this turmoil was short-lived

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

  ? Political fragmentation is building slowly but does not yet threaten the survival of the Eurozone and the European Union

- ***Acute political turmoil*** engulfs the **U.K.**

  - The Conservative Party won an outright parliamentary majority; however, political fragmentation is increasing slowly

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

  - This risk has not materialized

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

  + While year over year growth in the first quarter was 7.0%, the annualized rate of growth in last year's fourth quarter and the first quarter of this year have been well short of 7.0%

- ***Japan*** — markets lose faith in Abenomics

  - This risk has not materialized; however, both real growth and inflation have been less than expected

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

  - This risk has not materialized

Bill Longbrake is an Executive in Residence at the Robert H. Smith School of Business at the University of Maryland.