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

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The Longbrake Letter*

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After a turbulent August and September, a semblance of calm has returned to global financial markets. Fears that China is on a verge of economic Armageddon have subsided. Policy makers have soothed markets by doubling down on monetary stimulus. Financial markets love easy money because it almost always leads to asset price inflation in the short run.

But the fundamentals were not nearly as troublesome as the market feared. The global economy isn't falling apart. But, global economic fundamentals aren't great either. Growth is slowing ... everywhere. This includes the U.S. where a soft third quarter annualized real GDP growth rate in the vicinity of 1 percent is probable. Inflation is hard to find just about anywhere and appears headed down rather than up.

Slow growth and low inflation is the order of the day. The good news is that recession is probably not imminent. But, the bad news is that growth will continue to disappoint and inflation will probably not rebound as expected.

This month's letter includes a special **Section V**, "Impact of Macroeconomic Trends on Long-Term Rates of Return on Investments." In this section I discuss and examine the consequences of a persistent low-inflation/low-growth environment for investment returns and the challenges that fiduciaries, who are responsible for pension funds and endowments, are likely to face in coming years.

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

Annualized second quarter real GDP growth in the "Final Estimate" was 3.9 percent, which was a small improved over the "Advance Estimate" of 3.7 percent (see **Table 1**). Growth in consumer spending and investment was much stronger. This was partially offset by weaker growth in inventories and net exports, which is a favorable development. Thus, not only did the level of real GDP growth improve in the "Final

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Estimate," the quality improved as well. All of the alternative measures of GDP improved more than total real GDP growth improved. Thus, with the exception of the first quarter of 2015, private domestic real GDP growth has exceeded an annual rate of 3.0 percent in three of the last four quarters.

Table 1
Composition of 2015 and 2014 Quarterly GDP Growth

	Second Quarter 2015 Advance Estimate	Second Quarter 2015 Preliminary Estimate	Second Quarter 2015 Final Estimate	First Quarter 2015	Fourth Quarter 2014	Third Quarter 2014
Personal Consumption	1.99%	2.11%	2.42%	1.19%	2.86%	2.34%
Private Investment						
Nonresidential	-.07%	.41%	.53%	.20%	.09%	1.12%
Residential	.21%	.25%	.30%	.32%	.31%	.11%
Inventories	-.08%	.22%	.02%	.87%	-.03%	-.01%
Net Exports	.13%	.23%	.18%	-1.92%	-.89%	.39%
Government	.14%	.47%	.46%	-.01%	-.26%	.33%
Total	**2.32%**	**3.69%**	**3.91%**	**.65%**	**2.08%**	**4.28%**
Final Sales	**2.40%**	**3.47%**	**3.89%**	**-.22%**	**2.11%**	**4.29%**
Private GDP	**2.26%**	**3.00%**	**3.43%**	**-.21%**	**2.37%**	**3.96%**
Private GDP — Net Exports	**2.13%**	**2.77%**	**3.25%**	**1.71%**	**3.26%**	**3.57%**

1. 2015 Q2 GDP — Final Estimate

Personal consumption growth was better than the "Advance Estimate" and much better than the "Preliminary Estimate." The increase of 2.42 percent was better than 2014's 1.84 percent growth, however, growth during the first half of 2015 was 1.80, similar to 2014 . This is mildly disappointing because forecasters generally expected the plunge in oil prices to result in higher consumption spending growth and this has not happened.

Net exports added 18 basis points to second quarter real GDP growth after subtracting -1.92 percent from real GDP growth in the first quarter. On balance the substantial increase in the value of the dollar over the last two years should cause net exports to subtract from real GDP growth over the next several quarters. That did not happen in the second quarter but it seems likely that the small gain in the second quarter was a statistical offset to the much larger than expected decline in the first quarter. This kind of volatility in the quarterly data reflects data reporting timing issues which amplifies data anomalies by annualizing quarterly data.

Nonresidential business investment contributed 53 basis points to real GDP growth compared to the first quarter's disappointing 20 basis points, which was depressed by significant cutbacks in energy investment. Even with this improvement, nonresidential investment is contributing less to real GDP growth in 2015 than the 77 basis points it contributed in 2014.

Government consumption and investment spending was little changed from the "Preliminary Estimate" and contributed 46 basis points to real GDP growth, all of which came from state and local spending. The 46 basis point contribution of state and local spending to second quarter real GDP growth was the greatest in many years. At least part of the increase is probably due to timing differences but there is reason to be hopeful that going forward state and local spending will continue to be a positive contributor to real GDP growth.

Inventories increased 2 basis points in the "Final Estimate." While this is a better result than the "Preliminary Estimate" contribution of 22 basis points to real GDP growth, inventory accumulation in the first and second quarters far exceeds its normal rate and therefore will most likely be reversed in coming quarters and that will reduce real GDP growth. Corroborating evidence comes from Evercore ISI's surveys — 41 percent of retailers and auto dealers reported that inventories were "too high" or a "little too high" compared to 24 percent that said they were "too low" or a "little too low." The spread for industrial companies was worse — 47 percent were either "too high" or a "little too high" versus only 4 percent that reported inventories were "too low."

All in all, although growth appeared to be reasonably solid in the second quarter, when combined with the first quarter's dismal performance first half growth differs little from the feeble real GDP growth pattern of the last few years.

2. GDP Forecasts for Q3

Table 2 shows forecasts/projections for the third quarter of 2015 and for the full years 2015 through 2018.

B of A expects real GDP growth to come in at a relatively weak 1.9 percent in the third quarter. This forecast was 3.2 percent just a few weeks ago and reflects a string of recent disappointing data reports. **GS** is even more pessimistic and is forecasting only 1.5 percent.

Third quarter real GDP growth should benefit from a pickup in consumer spending and stronger housing construction. 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. In addition, slower accumulation of inventories will probably reduce third quarter real GDP.

3. GDP Forecasts for 2015—2018

As **Table 2** shows, most forecasters expect GDP growth to be about 2.4 to 2.6 percent Y/Y in 2015 and 2.3 to 2.5 percent in 2016. After years of perennially being overly optimistic, the FOMC appears to be a little on the light side.

Table 2
Real GDP Growth Forecasts — B of A, GS, Bill's "Steady Growth", Bill's "Strong Growth" and FOMC High and Low Projections

	2015 Q3	2015 Q4/Q4	2015 Y/Y	2016 Y/Y	2017 Y/Y	2018 Y/Y
B of A	1.2	2.15	2.4	2.5	2.55	2.2
GS	1.2	2.05	2.4	2.3	2.25	2.1
Bill's Steady Growth		2.45	2.55	2.35	1.9	1.5
Bill's Strong Growth		2.5	2.55	2.5	2.1	1.8
FOMC — High#		2.3#		2.6#	2.4#	2.2#
FOMC — Low #		2.0#		2.2#	2.0#	1.8#

#Measured from Q4 to Q4

Optimism generally fades for all forecasters after 2016. The outlook for both of my scenarios is the most pessimistic and reflects my expectation that employment growth will slow dramatically and productivity will recover little from the recent extremely depressed level.

Consumer Spending. Third quarter consumer spending is expected be about as strong as it was in the second quarter, reflecting the benefits of lower oil prices and strong employment and disposable income growth during the first half of 2015. As can be seen in **Table 3** and **Chart 1**, forecasts for real consumer spending growth in 2015 range between 3.0 percent and 3.3 percent, which, if realized, would make 2015 the best year since 2006.

Table 3
Real Consumer Spending 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
Actual	1.38	1.65	2.67				
B of A				3.22	3.05	2.64	2.20
GS				3.20	3.06	2.65	2.20
Bill's Steady Growth				2.99	2.20	2.30	2.02
Bill's Strong Growth				3.02	2.43	2.58	2.40

Most forecasters expect real consumer spending growth to remain relatively strong in 2016. In contrast, my scenarios forecast a sharp decline in consumer spending growth in 2016. All forecasts for 2017 and 2018

are within a reasonably tight range and indicate that consumer spending growth will decline as employment growth slows.

The disparity in 2016 forecasts merits discussion. My forecasts of real spending growth depend upon forecasts for four variables: productivity, growth in total hours worked, percentage increase in stock prices, and percentage increase in housing prices. The first two variables capture the effect of real economic activity while the latter two variables incorporate the effects of changes in wealth on consumer spending.

Table 4 shows the individual effects of each of these four variables on real consumer spending growth. Productivity is the most important of the four. A one percent annual increase in the productivity index contributes 79 basis points to real spending growth. A one percent annual growth in total hours worked contributes 65 basis points to real spending growth. There is a lag between a change in productivity and total hours worked but the full impact occurs within a year's time. Wealth effects of housing and stock price increases take longer to impact growth in real consumer spending. The average number of months lag time is shown for each variable in **Table 4.**

Table 4
Contributions to Real Consumer Spending Growth

	Percentage Increase in Index	Percentage Contribution to Real Spending	Average Number of Months Lag
Productivity	1.0%	.79%	8.6
Hours Worked	1.0%	.65%	5.0
Stock Prices	5.0%	.31%	26.4
Housing Prices	5.0%	.47%	17.7

The left two columns in **Table 5** show the long-run impact (full impact adjusted for lags) of actual changes in the four variables between June 2014 and June 2015 on growth in real consumer spending. The right two columns in **Table 5** show the projected growth in real consumer spending given forecast changes in the four variables over the period from June 2015 to June 2016. The largest negative impact to real consumer spending in the forecast is driven by a large decline in housing and financial asset wealth accumulation. The decline in stock prices has already occurred, but the forecast slowdown in housing price growth has not yet occurred. Because of long lags only part of the negative wealth effect will be realized over calendar year 2016, but it is a significant contributor to my much less optimistic forecast for real consumer spending growth in 2016.

By some accounts stock prices are still overvalued by as much as 25 percent currently. Almost all the factors that influence stock prices are tilted in the negative direction including slowing profit growth, potentially higher interest rates, and potentially higher wage growth as the labor market continues to tighten. The recovery in the stock market in recent days is partly due to subsidence of China fears, which were overblown in any event, but is also due to the market's belief that the FOMC will probably not raise interest rates in December.

Real spending growth is also likely to slow down because growth in total hours worked eventually has to match the rate of growth in the labor force. In other words, the unemployment rate, which is very near the full employment level, cannot decline much further. The labor force has grown just 0.56 percent over

Table 5
Contributions to Real Consumer Spending Growth

	Actual June 2014 to June 2015		Forecast June 2015 to June 2016	
	Change in Index	Long-Run % Increase in Real Consumer Spending	Change in Index	Long-Run % Increase in Real Consumer Spending
Productivity	.73%	.58%	1.36%	1.07%
Hours Worked	2.21%	1.44%	1.17%	.76%
Stock Prices	7.35%	.45%	-2.86%	-.18%
Housing Prices	5.03%	.46%	.82%	.08%
Total		2.95%		1.74%

the last year and the average three-year rate of growth has been an even lower 0.36 percent. Growth in total hours worked of 1.17 percent over the next 12 months is still more than twice the growth rate in the labor force.

What saves forecast growth in consumer spending from being an outright disaster is an assumed improvement in productivity to 1.36 percent. But this might turn out to be very optimistic. Growth in productivity has averaged just 0.32 percent over the last three years, 0.54 percent over the last five years and 0.73 percent over the last year.

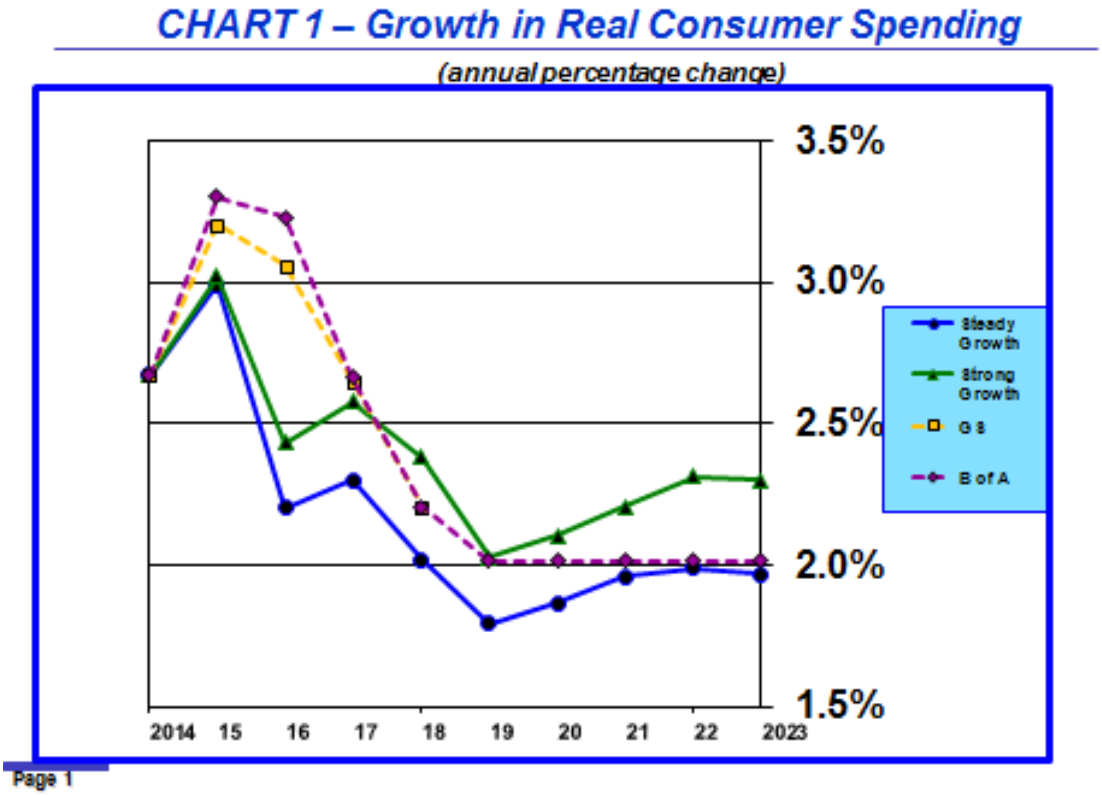
In summary, I just can't figure out how other forecasters get to 3 percent real consumer spending growth in 2016.

Chart 1 shows that various forecasts of real consumer spending growth converge to about 2.0 percent annually within about five years. A long-term 2.0 percent real rate of growth is logical, if the potential real rate of growth of GDP is also 2.0 percent and one can reasonably assume that the saving rate remains relatively constant and consumption spending's share of GDP also remains constant.

Residential Investment. Forecasts for growth in residential investment are shown in **Table 6**. Residential investment growth was strong in the first two quarters of 2015, growing at an annual rate of 10.1 percent in the first quarter and 9.3 percent in the second quarter. Both **GS** and **B of A** expect residential investment growth to continue to be strong in the remainder of 2015 and on through 2017. However, the two forecasters part company in 2018. Strong growth is warranted because of the shortage of housing that now exists and the surge in new household formation. Evercore ISI's surveys confirm the shortage of new housing inventory — only 14 percent reported that inventories were a "Little Too High" compared to 43 percent that said inventories were either a "Little Too Low" or "Too Low."

Notwithstanding the recent strength in residential housing investment, it would probably be stronger were it not for the persistence of tight mortgage underwriting standards and the absence of a fully-functioning market for private mortgages. Except for jumbo mortgages, nearly all mortgages today are guaranteed by FHA, Fannie Mae and Freddie Mac.

Nonresidential Investment. Forecasts for growth in nonresidential investment are shown in **Table 6**. This category of investment has repeatedly failed to measure up to forecaster expectations. Results so



far in 2015 are no different. Real nonresidential investment grew at a 1.6 percent rate in the first quarter and 4.1 percent in the second quarter. Investment will have to accelerate considerably in the third quarter if **B of A's** forecast of 3.5 percent growth and **GS's** forecast of 3.9 percent growth for all of 2015 are to be realized.

Both forecasters expect stronger investment growth in 2016. However, **B of A** is more optimistic than **GS** in 2017 and 2018. Over the last several quarters, measured nonresidential investment growth has consistently come in lower than forecasts. Weak aggregate demand, low income growth, a strong dollar and other factors all suggest that **B of A's** and **GS's** optimism will continue to be unfulfilled.

Private Business Investment. Private business investment includes both residential and nonresidential investment. I provide a forecast of this measure of investment but not of its component parts — residential and nonresidential investment. My forecast for 2015 is not materially different from other forecasts. However, 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.

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 real investment growth for 2012, 2013, and 2014, and forecasts for 2015 through 2018. Relative to the 68-year average growth of 2.65 percent annually the actual results

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. 1947-2015
REAL PRIVATE BUSINESS INVESTMENT								
Actual	9.78	4.21	5.31					**3.81****
B of A				4.52	5.31	5.61	4.35	
GS				4.95	6.39	5.43	4.84	
Bill's Steady Growth				4.44	3.71	2.15	1.91	
Bill's Strong Growth				4.48	4.22	2.73	2.55	
REAL NONRESIDENTIAL INVESTMENT								
Actual	8.98	3.03	6.15					**2.14***
B of A				3.52	4.37	4.94	4.44	
GS				3.91	5.01	4.11	3.74	
REAL RESIDENTIAL INVESTMENT								
Actual	13.51	9.52	1.76					**-1.36***
B of A				8.89	9.25	8.29	3.98	
GS				9.52	12.18	10.61	8.93	

*Average 2000-2015

**Real private business investment = 1.49% for 2000-2015

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, assume a modest increase over the 0.94 percent annual real 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.

Inflation-adjusted state and local spending is up 1.35 percent over the last year. **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. Evercore ISI's survey of state tax receipts declined to 49.9 in

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. 1947-2015
Actual	-1.86	-2.95	-0.58					**2.65***
B of A				0.87	1.35			
GS				0.59	1.19	1.24	1.25	
Bill's Steady Growth				0.67	1.28	1.26	1.26	
Bill's Strong Growth				0.73	1.38	1.34	1.40	

*2000-2015 average growth rate = 0.94%; federal = 2.14%; state & local = 0.24%

September, which means that nominal tax revenues are not growing (a value above 50 indicates nominal growth; a value below 50 means tax receipts are shrinking).

Trade. The trade-weighted value of the dollar has declined 22.2 percent since the dollar's value peaked in October 2013. This should lead to a larger trade deficit as growth in exports is depressed and cheaper prices lead to a surge in imports. Indeed, exports of goods have fallen from 9.6 percent of nominal GDP in October 2013 to 8.9 percent in August. However, imports of goods have also fallen over the same time period from 14.0 percent of nominal GDP to 13.2 percent, with the result that the trade deficit for goods remains unchanged at 2.9 percent of nominal GDP, although the deficit has risen from 2.8 percent to 2.9 percent over the last 12 months. However, total goods exports have declined 3.7 percent over the last 12 months compared to a 1.1 percent decline in total goods imports. Put together, the trade deficit in goods has increased 6.8 percent over the last year.

The total trade deficit, which includes financial flows, also is unchanged over the last year. Thus, the weaker dollar has not yet had the expected effect. A partial explanation is that the fall in commodity prices, particularly oil, have depressed the value of imports. Nonetheless, lower prices of imports are already depressing measures of inflation and will eventually prompt consumers to substitute cheaper foreign goods for more expensive domestic goods. In other words, it is only a matter of time before the expected increase in the trade deficit for goods increases.

II. Employment

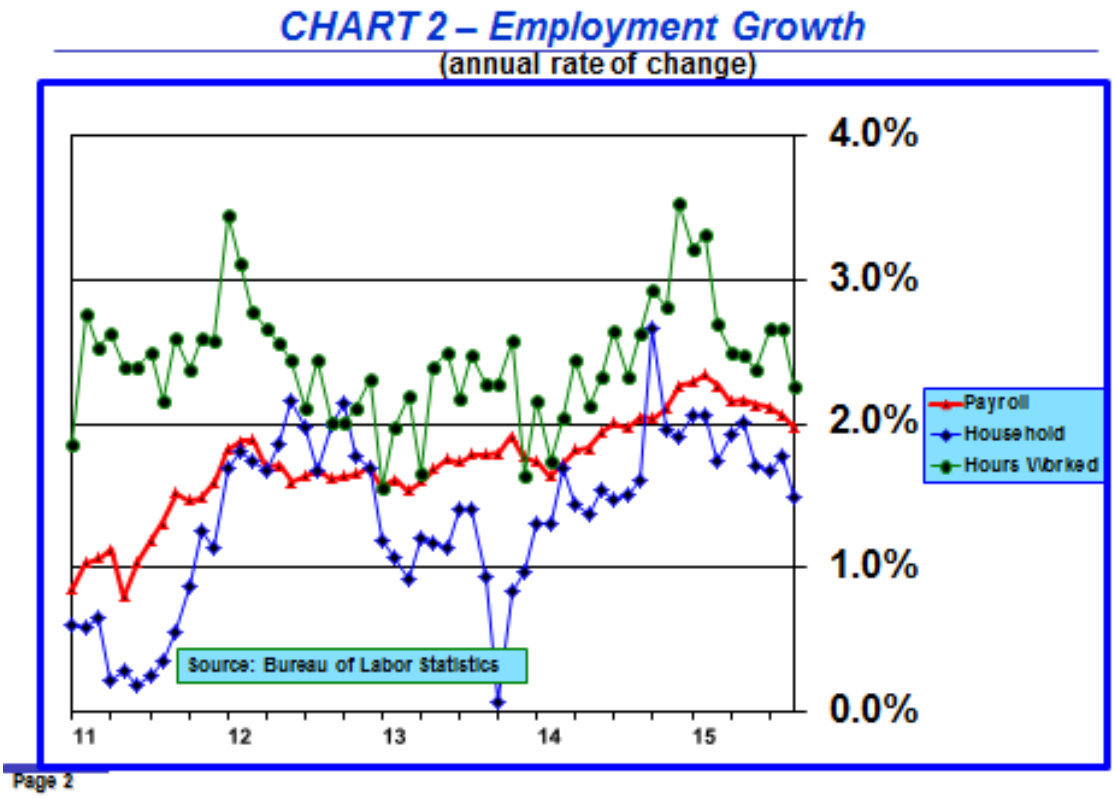
While the unemployment rate continues to decline and reached 5.05 percent in September, a level many consider to reflect full employment and a tight labor market, other measures of employment paint a picture of weakness. Indeed, many indicators of the labor market are perplexing. For example, why is the labor force growing so slowly and why is the labor force participation rate declining? What happened to

discouraged workers? If the labor market really is at full employment, why aren't wage rates rising?

1. Employment Growth

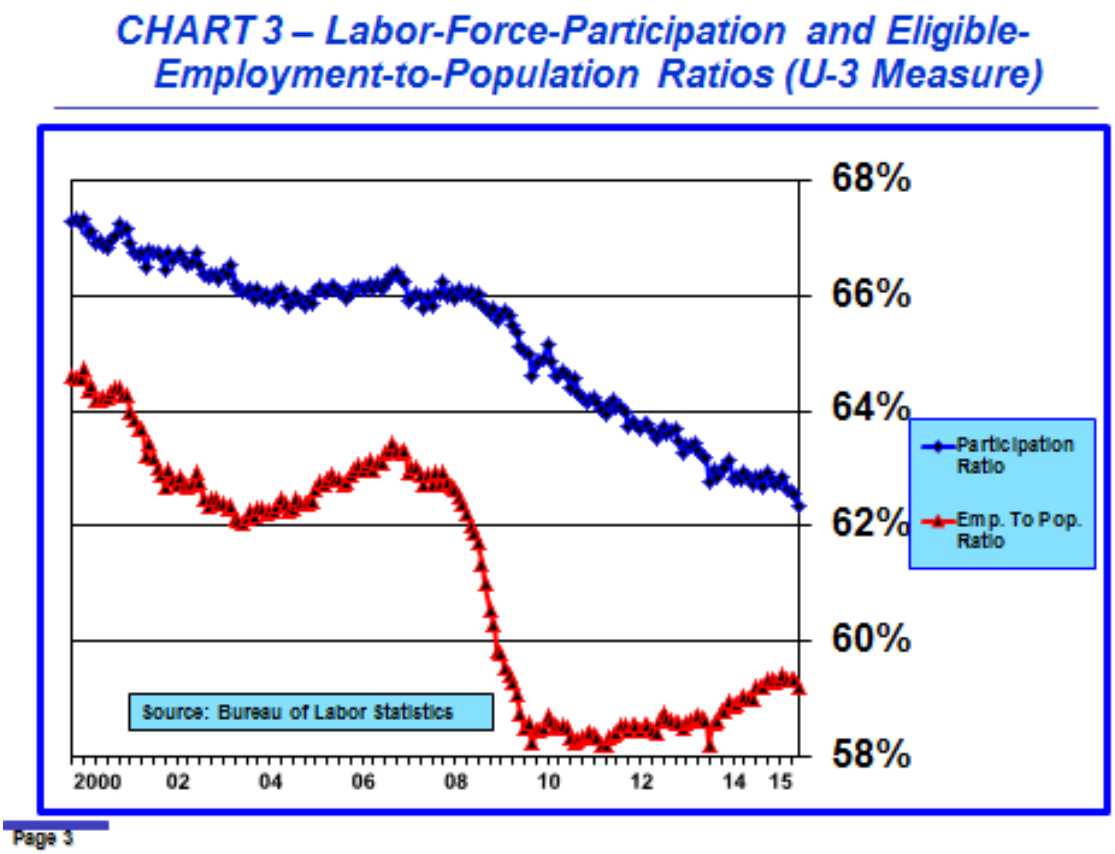
September's employment situation report was disappointingly weak. The increase in payrolls in September was 142,000 and August was revised down to 136,000. This compares to a monthly average of 198,000 over the first nine months of 2015. The 12-month rate of growth in payroll employment decelerated to 1.97 percent after peaking at 2.34 percent in February. According to the household employment survey, employment has declined 40,000 over the last two months and the 12-month rate of growth has declined from 2.65 percent in November 2014 to 1.50 percent in September. The 12-month rate of growth in total hours worked has also declined from 3.53 percent in December 2014 to 2.27 percent in September.

Chart 2 shows that all measures of employment growth are slowing.



2. Employment Participation

Another surprise, as shown in **Chart 3**, was the unexpected decline in the labor force employment participation rate to 62.36 percent and the decrease in the labor force to population ratio to 59.21. The decline in the participation ratio was greater than the decrease in the labor force to population ratio which is consistent with the decline in the unemployment rate from 5.11 percent in August to 5.05 percent in September.



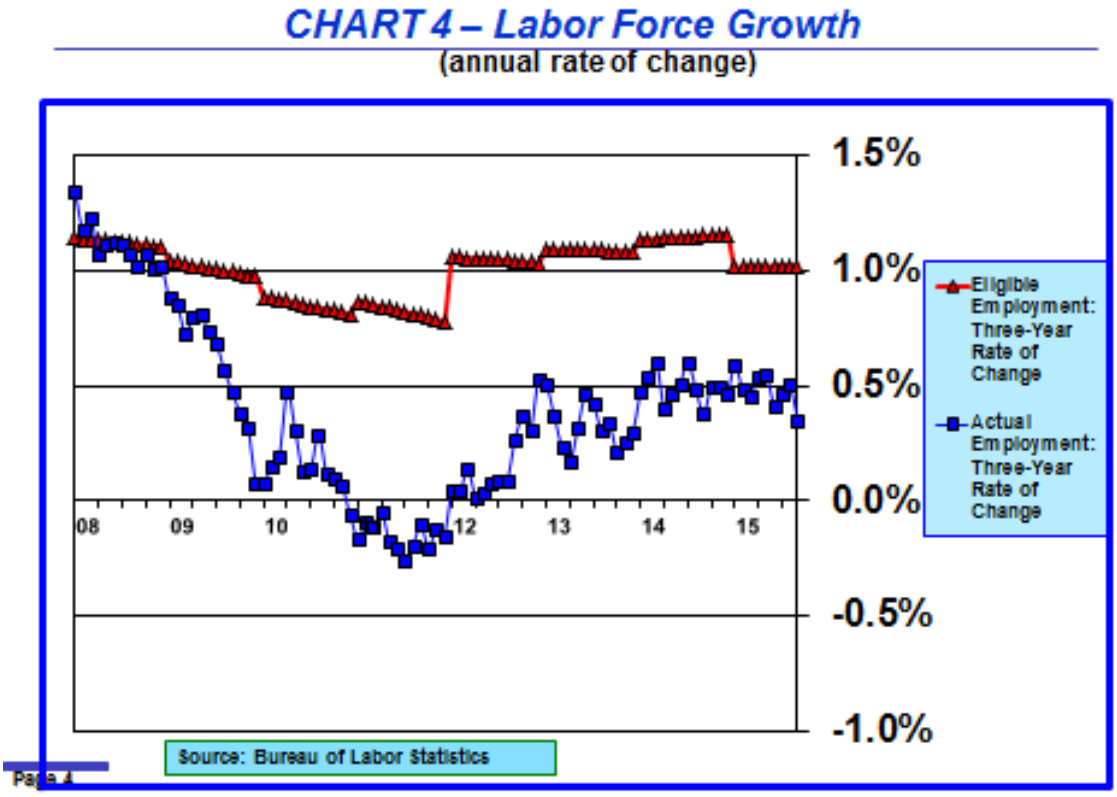
While the decline in the unemployment rate usually would be considered to be good news, what is concerning is the extraordinarily weak growth in the labor force. Over the past 12 months the labor force has grown only 0.55 percent. As can be seen in **Chart 4**, this is not a recent development as the three-year rate of growth in the labor force is 0.36 percent and has been declining since the beginning of the year.

Most forecasters, including myself, had expected the participation rate to edge up as the labor market firmed. The opposite is occurring.

There are three reasons why participation is falling short of expectations. First, the retiree cohort is increasing more rapidly than expected. Second, the number of prime-age workers not interested in working has risen. Third, fewer discouraged workers are reentering the labor force than expected.

More retirees seem inconsistent with improved health care, lengthening life spans and insufficient savings and inadequate pensions. Perhaps the recent increase is a transitory development or a statistical aberration. No one seems to know. The decline is prime age worker participation is also baffling. But, both trends have been underway for five years, which implies a structural change rather than temporary factors or data measurement issues. One possible explanation is that the extension of health care coverage through the Affordable Care Act (Obama Care) may be a cause as some workers might only have been working in the past to participate in employer provided health benefit plans.

So, whatever the reasons behind these structural changes, they no longer appear to wholly cyclical. These implies that the participation rate will continue to decline gradually and the growth in the number



of workers actually working will be slower than growth in the number eligible to work.

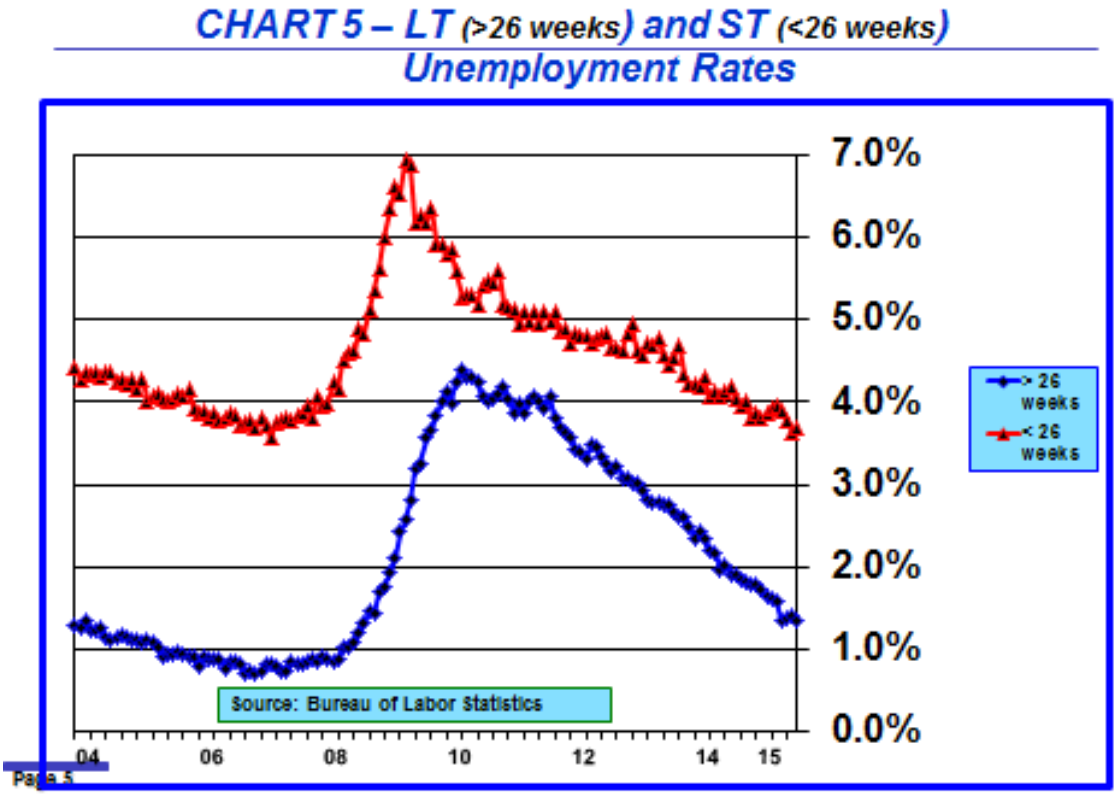
GS estimates that employment is 1.2 percent below the potential full employment level. This consists of four components: 0.2 percent due to the actual reported U-3 unemployment rate and the full employment structural level (4.85 percent given that the September U-3 unemployment rate was 5.05 percent); 0.4 percent due to the still cyclically-high level of involuntary part-time employment; 0.3 percent to 0.4 percent for discouraged workers (long-term unemployment is still slightly elevated — see **Chart 5**) and "excess" retirees; and 0.2 for other factors.

In addition to **GS's** analysis, there is some speculation that the U-3 structural full-employment rate may be lower than CBO's estimate of 5.0 percent, perhaps as low as 4.5 percent.

3. Wage Growth — Is Acceleration Just Around the Corner or Missing in Action?

If the labor market really is approaching full employment, albeit at a much lower number of employed workers than expected, theory and past experience indicate that growth in wages should be accelerating. That is what is supposed to happen when excess supply disappears and demand is increasing. But acceleration in wage growth is not happening, at least not yet. Perhaps the existence of 1.2 percent slack in the labor market is still sufficient to impede the development of significant wage pressures.

For quite some time FOMC members have been expecting the rate of growth in wages to pick up and



boost inflation. That has yet to happen convincingly. FOMC members are not the only ones with poor forecasting track records. Private sector economists have forecast acceleration in wage rate growth for some time now as the amount of slack in the labor market gradually declined. To date there is no broad-based evidence that wage increases are accelerating. However, the expectation that acceleration will occur is so embedded that missed forecasts simply get pushed forward in time. And, one can always play the anecdote game and find a story involving some company or industry that has recently raised wages. But, at the economy-wide level convincing evidence is lacking.

4. Broad-Based Measures of Labor Compensation

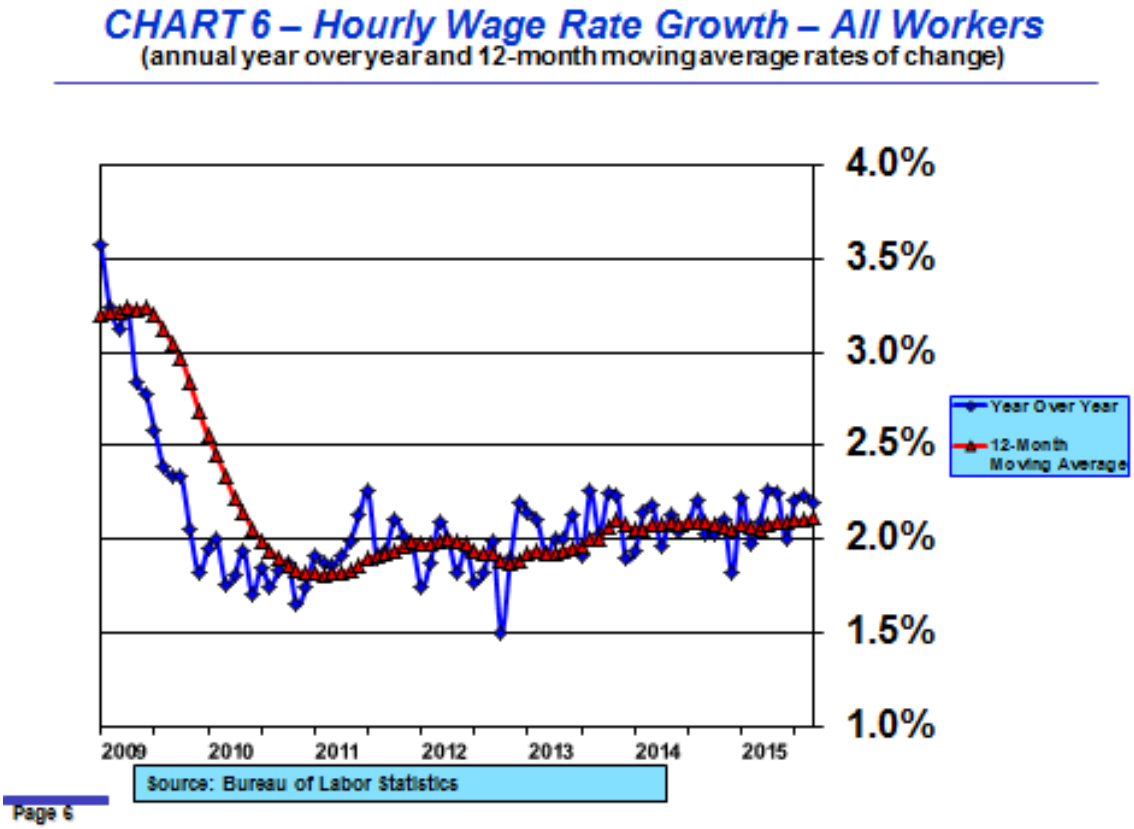
Growth in wages is an important measure of labor market strength. An increasing rate of growth is evidence of a strengthening labor market in which labor, particularly in scarcer job categories, is gaining more bargaining power.

There are two primary broad-based measures of labor compensation that provide information about compensation trends. Both are compiled by BLS. One is released monthly as part of the monthly labor situation report and includes both hourly and weekly wage rates for all workers, but includes no information about benefits which comprise approximately 30 percent of total compensation. The other, the employment cost index (ECI), is released quarterly and consists of wage and salary, benefits, and total compensation indices.

Although both sets of measures are highly correlated over time, because compilation methodologies differ for each set of measures percentage changes over fixed time periods will not necessarily be in sync. This is the case currently. Hourly wages are rising 2.1 percent annually and that rate of growth. There is a barely discernible upward trend, as indicated by a 2.2 percent year over year change in hourly wages. The wage and salary component of ECI, which had been relatively stable at a 1.5 percent annual rate of growth between 2009 and 2013 began edging up in 2014 and was 2.1 percent in the second quarter of 2015 — the same as the moving average of the hourly wage survey in the monthly employment situation report. The more comprehensive measure of ECI, which includes benefits, has risen only 2.0 percent over the last year.

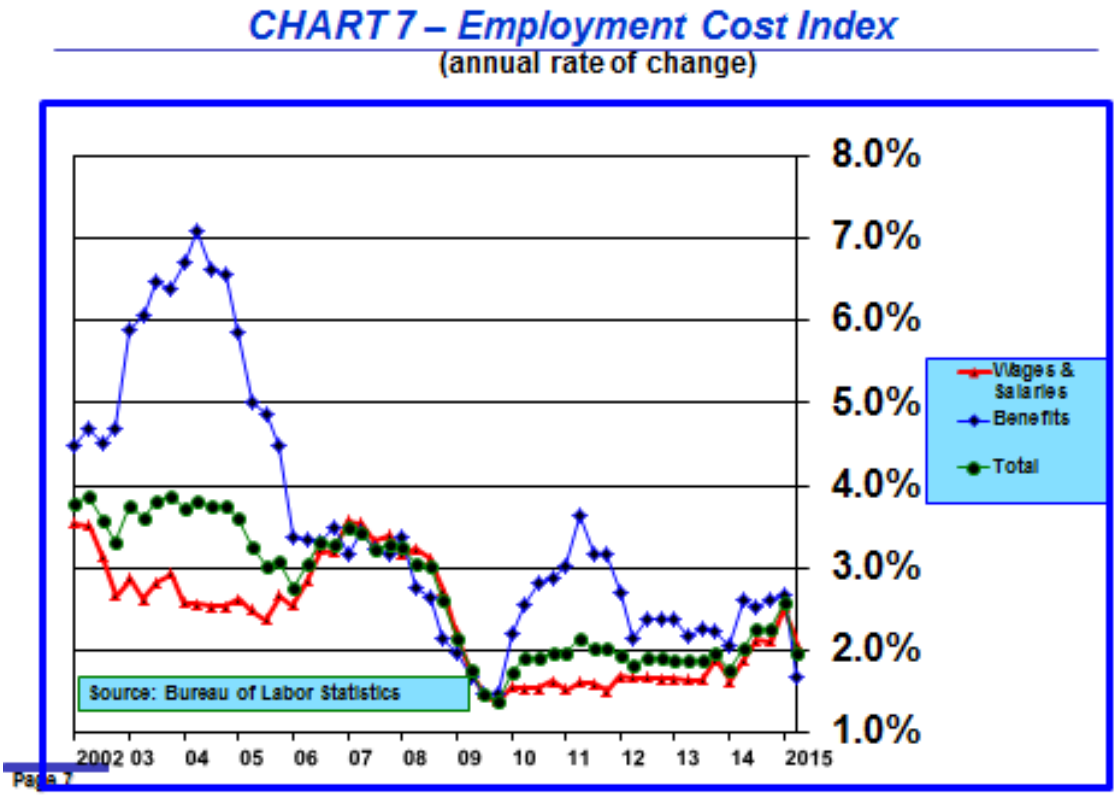
5. Hourly and Weekly Wage Trends

As can be seen in **Chart 6**, the rate of growth in hourly wages for all workers has fluctuated in a narrow band in the vicinity of 2.0 percent for the last six years. Over the last year wage growth has inched up about 0.1 percent to 2.1 percent and over the last six months the growth rate has been 2.3 percent. Thus, there are tentative signs of acceleration in wage growth but the increases are surprisingly low given how much labor market slack has diminished.



6. Employment Cost Index

Chart 7 shows trends in wages and salaries, benefits, and total compensation. The recent short-lived acceleration apparently was not the result of a firming trend in compensation growth but a compositional anomaly due to one-time reporting of nonproduction bonuses in a few industry sectors. When these one-time compensation elements are discounted, ECI tells basically the same story of no substantive acceleration in employment compensation.



7. GS's Wage Tracker

GS's wage tracker is a statistical compilation of three measures — ECI (40 percent weight); average hourly earnings (AHE) of production & non-supervisory workers (35 percent weight); and compensation per hour from the national income accounts (25 percent weight). The wage tracker in the second quarter of 2015 indicated that wages were rising 2.0 percent annually, down from 2.2 percent in the first quarter. **GS's** wage tracker has varied little from the 2.0 percent level for the last six years. **GS** had expected its wage tracker to rise to 2.5 percent in the second quarter. Obviously, it did not and the miss was sizeable.

Nonetheless, **GS** still expects the wage tracker to rise to between 2.50 percent and 2.75 percent by the end of 2015, although its confidence in its forecast appears to have wavered.

In a separate analysis of trends in wage growth at the state level, **GS** did find evidence supporting modest wage rate acceleration in states with less labor market slack.

While **GS's** wage tracker forecasts are based on its statistical analytics, intuitively, even though **GS** has lowered its expectation, the forecasts still seem optimistic to me. There is an embedded assumption that U.S. labor force composition is stable. If, however, the composition is shifting toward lower wage categories and more part-time work, an eventual wage growth rate of 3.5 percent could well be too high. In addition, the rise to 3.5 percent presumes that the historical relationship between labor market slack and wage rate growth is stable. This also does not appear to take into consideration that the current level of inflation has been low for an extended period of time and that might have the effect of slowing down acceleration in wage rate growth for a given amount of labor market slack. Then, there is also the matter of low productivity. If low productivity persists, which seems likely, then this phenomenon will retard the rate of acceleration in wage rate growth.

Failure of wage growth to accelerate as the labor market tightens also means that feedback loops of wages to inflation will have limited impact. This is yet another argument favoring the persistence of low inflation rates for a much longer period of time than most expect.

III. Prospects for Inflation

Core PCE inflation was 1.31 percent in August and total PCE inflation, which continues to be depressed by the plunge in oil prices and lower import prices, was 0.33 percent (see **Chart 8**). 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.

As can be seen in **Table 8** (**Chart 8** 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. **B of A** and **GS** expect core PCE inflation to bottom out at 1.3 percent by the end of 2015 and then begin a very gradual rise, reaching 2.0 percent sometime during 2018. FOMC projections also reflect a gradual rise.

Table 8
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	1.45	1.6	1.8	2.0
GS	1.3	1.4	1.4	1.6	1.8	2.0
Bill's Steady Growth	1.3	1.4	1.45	1.2	0.65	0.65
Bill's Strong Growth	1.3	1.4	1.45	1.2	0.65	0.65
FOMC — High			1.4	1.8	2.0	2.0
FOMC — Low			1.3	1.5	1.8	1.9

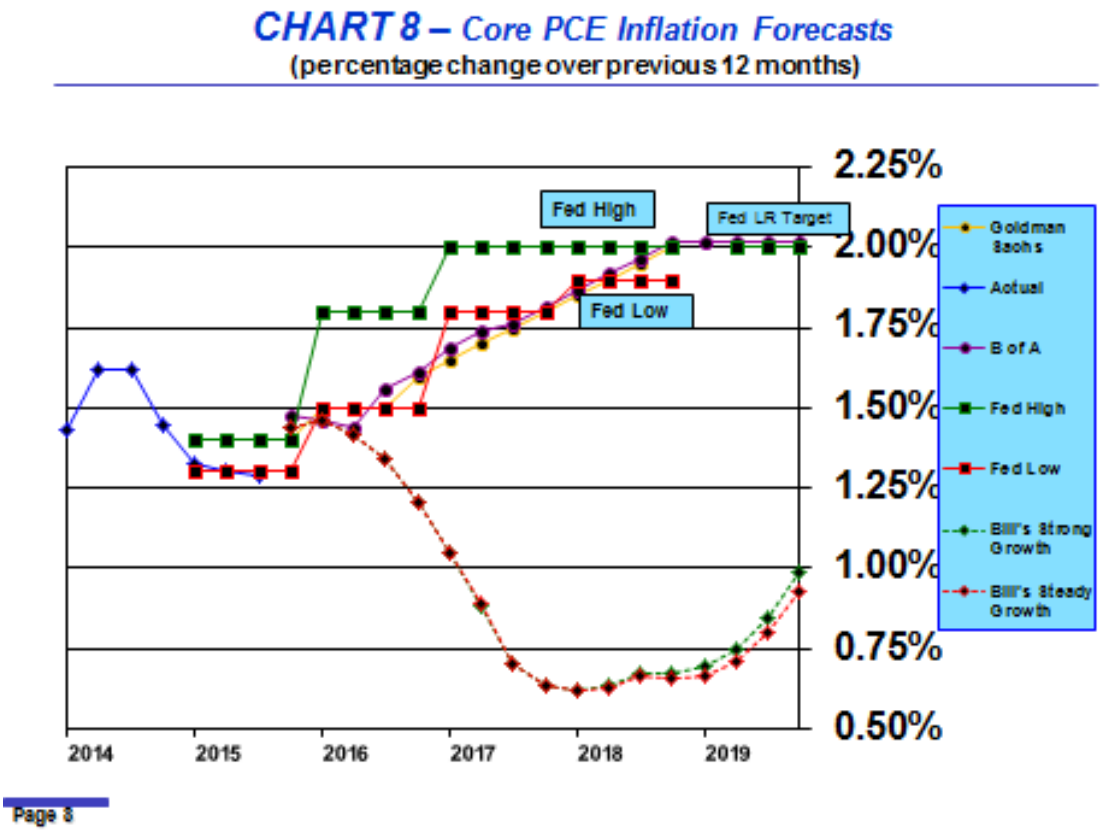
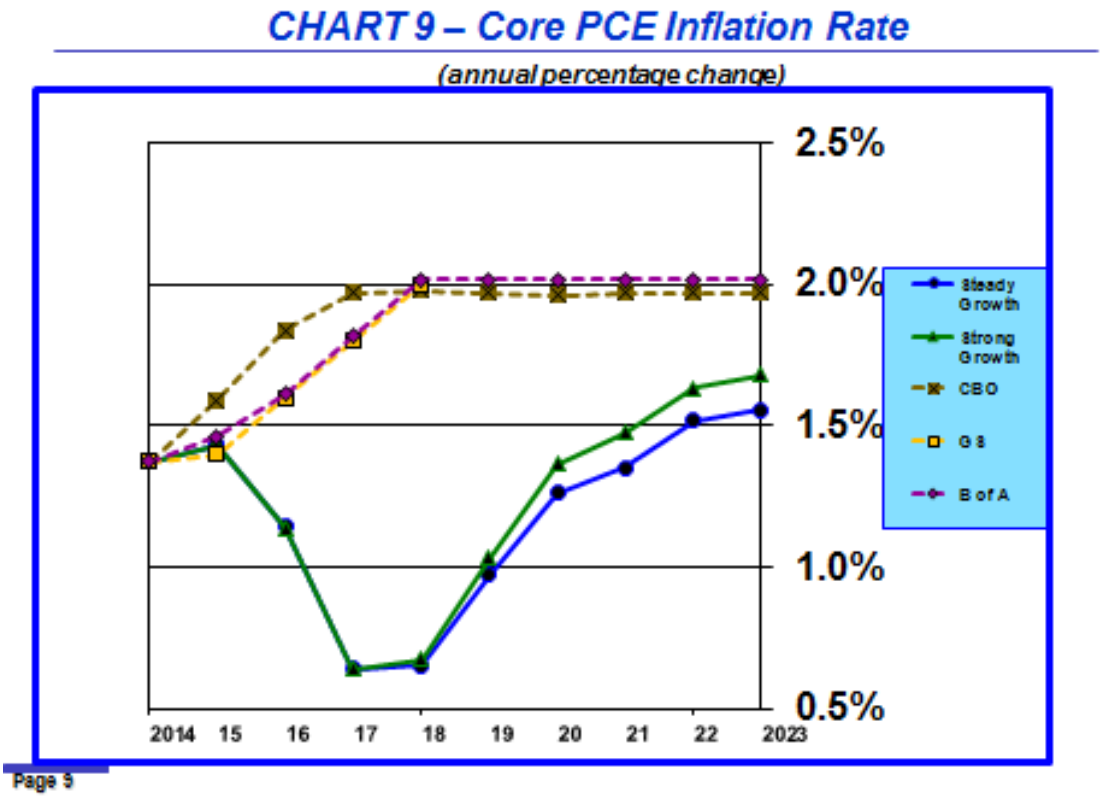


Chart 9 shows longer run pathways for core PCE inflation for various economic scenarios. With the exception of my scenarios, others converge toward 2 percent over the next three years. Either this is serendipity or there is confidence that the FOMC will be able eventually to hit and maintain the 2 percent core PCE inflation target, even though the FOMC has rarely achieved this objective in the last 20 years and global headwinds to inflation are very strong.

My inflation projections are much lower than the consensus and require some explanation. CBO's data revisions increased the size of estimated labor market slack by about 80 basis points. These revisions imply that it will take longer for labor market slack to be eliminated. When I included CBO's revisions in my forecasts of core PCE inflation, estimates dropped by more than 50 basis points across the entire time horizon. This is intuitively plausible and consistent with the ongoing absence of significant upward pressure on wage rate increases. I find it curious that analysts and FOMC members have totally ignored the importance of revisions in CBO's labor market slack projections in influencing future inflation estimates. At the very least, my two scenarios point out the sensitivity of future estimates of core PCE inflation to the measurement of labor market slack.

Import prices also affect core PCE inflation. Omission of the influence of the changing value of the dollar on core PCE inflation doesn't matter much when the value of the dollar is stable. However, since the trade-weighted value of the dollar bottomed in October 2013, it has risen 22.4 percent. With a lag that runs to an average of about 3.5 years, a rising dollar depresses core PCE inflation by 33 basis points for a 10 percent increase. Because of the long lag time, the effect of the dollar's rise is still working its way into core PCE inflation. Thus, core PCE inflation is projected to fall even more in 2016, 2017 and 2018.



My model assumes that the value of the dollar stabilizes as time passes and then falls. As that occurs, the impact of the dollar on core PCE inflation reverses and boosts inflation estimates in the "out years," bringing core PCE inflation closer to the 2.0 percent target by 2023, but still below.

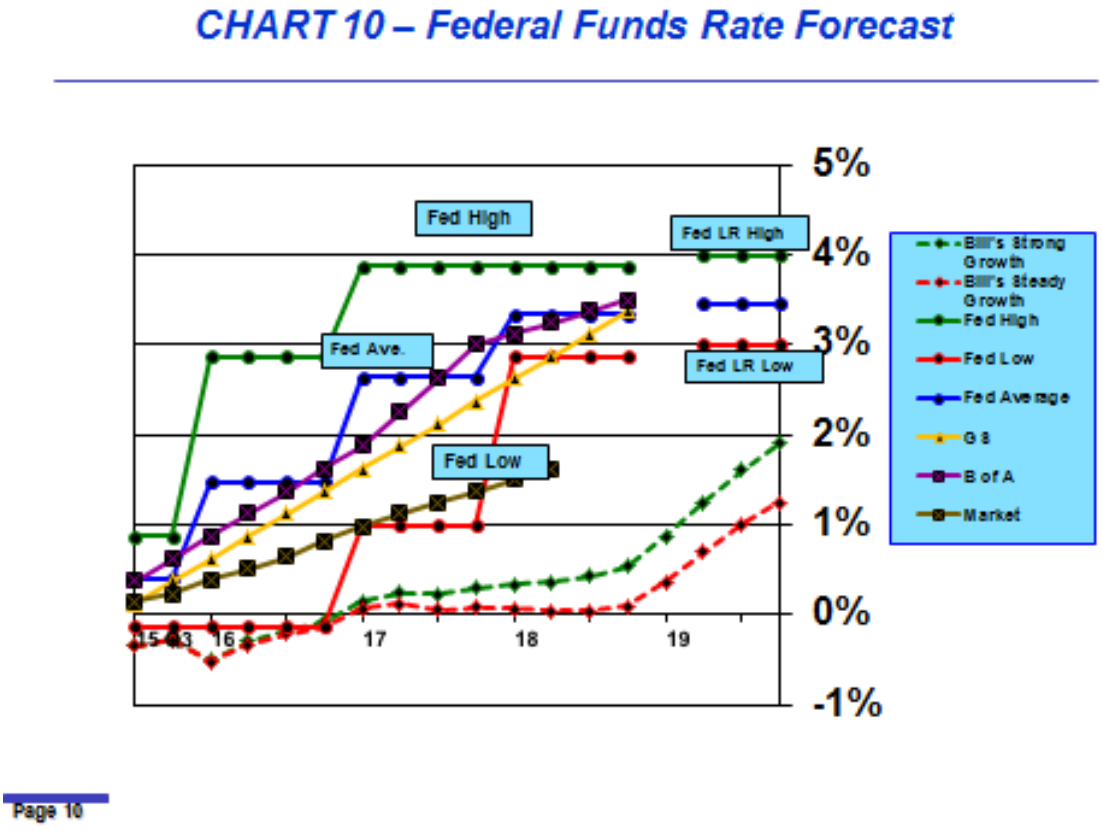
IV. Interest Rates

Immediately following the FOMC's decision not to raise the federal funds rate, interest rates across all maturities declined. The long-expected rise in interest rates has yet to surface.

1. Federal Funds Rate

Chart 10 shows projections for the federal funds rate. My scenarios are lower than the others because my inflation projections are much lower for the reasons discussed above.

Chart 10 also shows the FOMC's central tendency range for high and low projections for the federal funds rate for 2015, 2016, 2017, and 2018. The purple line (circles) is the average of projections for the 19 FOMC members (7 governors and 12 presidents — note that there are two vacancies on the Board of Governors currently which means the dots reflect only 17 participants). The FOMC projections imply that the first increase in the federal funds rate will take place during 2015, probably at the December meeting.



However, 3 of the 17 participants do not expect the federal funds rate to increase until some time in 2016. The market also places a less than 50 percent probability that the FOMC will raise rates in 2015.

B of A, which had expected the first federal funds rate increase would occur at the September 2015 meeting of the FOMC, now expects the first increase to occur at the December meeting. **GS** had expected the FOMC to wait until December. Both are now hedging their bets based on recent weaker than expected data reports.

My "***Steady Growth***" and "***Strong Growth***" forecasts are shown by the red dashed line (diamonds) and green dashed line (diamonds). Both scenarios indicate limited pressure to raise the federal funds rate until 2017.

All scenarios agree that rates will rise very gradually over time and that the long-term equilibrium level, or natural rate, is close to 3.5 percent.

2. Natural Rate of Interest and Long-Term Federal Funds Rate Projections

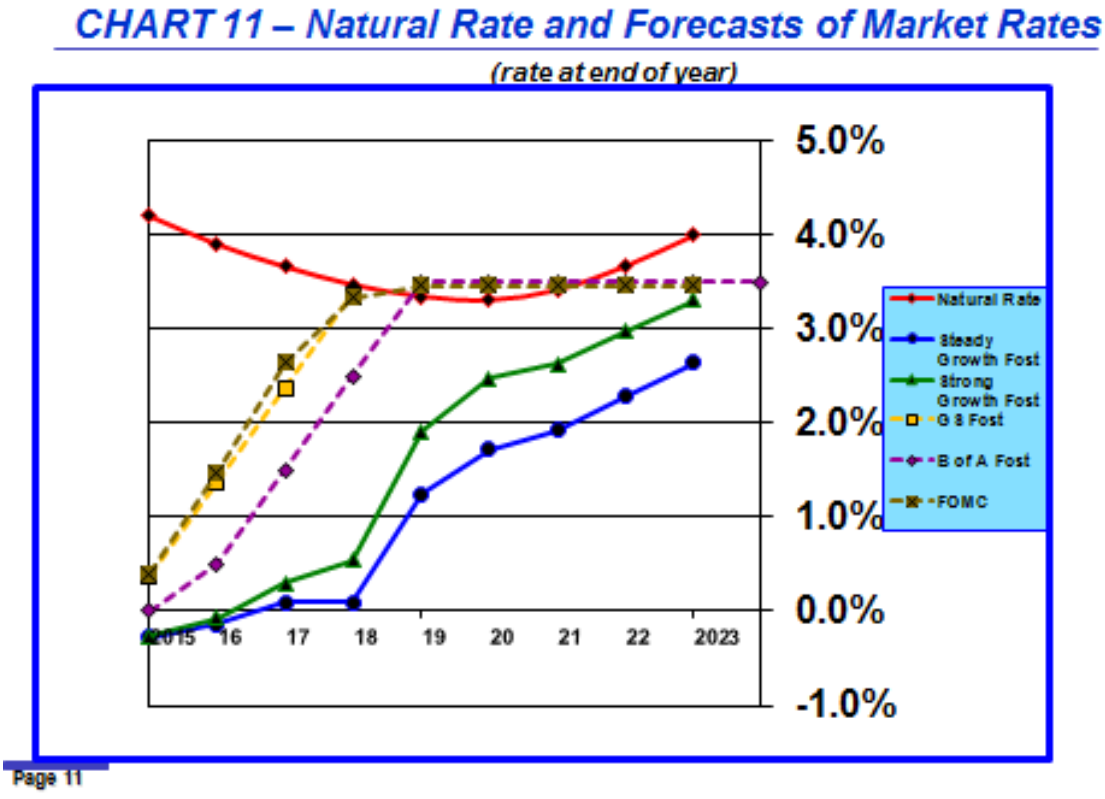
Most forecasters have concluded that real potential GDP growth will be subdued in coming years within a range of 1.8 to 2.2 percent. There are two implications of lower potential real GDP growth for monetary policy.

Smaller Output Gap. 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, although CBO's August assumption revisions raised the its output gap estimate somewhat. But in essence this means that going forward it will take a lower real rate of growth in GDP to close the gap. When the gap is closed risks will escalate that aggregate demand will exceed supply and set off an inflationary spiral. In that case, moving to tighten monetary policy too late would heighten inflationary risks. However, if the output gap is actually larger than CBO's measure and CBO acknowledged that possibility in August with its revisions, tightening monetary policy prematurely would run the risk of depressing economic activity before full employment is reached.

Note that if productivity does not rebound as expected, potential real GDP growth will be lower than projected and it would require a lower actual rate of real GDP growth to close the output gap.

Lower Natural Rate of Interest. Declining productivity and persistently low inflation depresses the equilibrium or natural 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 11**, my own estimate of the equilibrium natural rate of interest is very similar to the FOMC's.



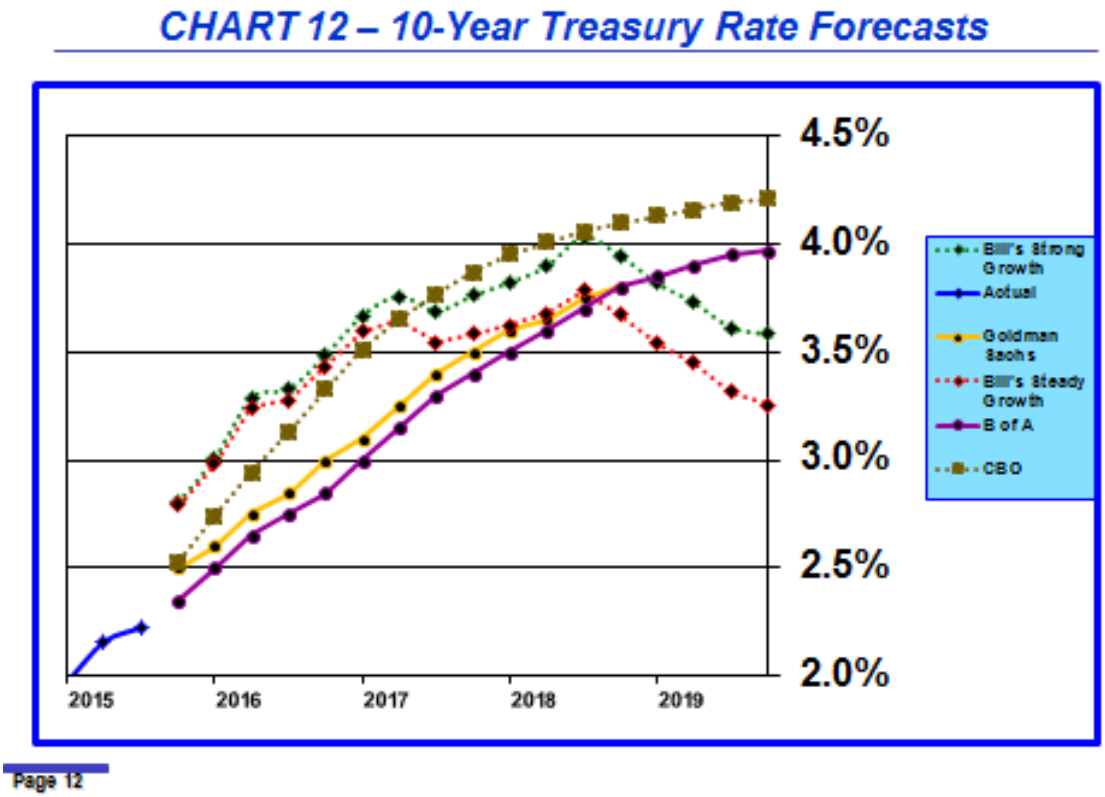
Thus, with these considerations in mind, FOMC member commentary about increasing the federal funds rate gradually should be taken seriously as reasonable policy. Indeed, if other forecasters and the market are right, actual increases in the federal funds rate will occur even more gradually. The only caution

is that this outcome 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. Indeed, I believe that downside risks to inflation outweigh upside risks. If my concerns are borne out, it follows directly that the FOMC will stretch out the timeframe for federal funds rate increases.

And, if it turns out that productivity does not rebound to the expected level, then both potential real GDP growth and the natural rate of interest will end up lower than indicated in **Chart 11**.

3. 10-Year Treasury Rate

Chart 12 shows forecasts for the 10-year Treasury rate for my "***Steady Growth***" (red dashed line and diamonds) and "***Strong Growth***" (green dashed line and diamonds) scenarios. **GS's** forecast (yellow line and circles) and **B of A's** forecast (purple line and circles) are also shown.



As of October 19, the 10-year Treasury yield was 2.04 percent, little changed from 2.17 percent at the beginning of 2015. Forecasts of the 10-year rate by the end of 2015 have been edging down and now range from 2.35 percent (**B of A**) to 2.50 percent (**GS**). The forecasts for my scenarios are slightly higher at 2.90 percent. The increased value of the dollar and very low long-term rates in Europe and Japan will continue in coming months to put a lid on long-term U.S. interest rates. All of these forecasts assume anchored inflation expectations. A step down in inflation expectations tends to have self-fulfilling behavioral consequences. Persistently low inflation, if that develops, would translate into lower inflation

expectations eventually and that development would result in lower long-term interest rates than those forecast in **Chart 12**.

Long-term interest rates have a theoretical equilibrium value which is a combination of several components: a real rate of return, the rate of expected inflation over the next several years, an inflation uncertainty premium, a liquidity premium, and a credit risk (default) premium. The risk-based premiums can be artificially reduced if the policymakers state directly or past practices indicate that bondholders will be protected from default risk.

Long-term rates can also be depressed by an intentional quantitative easing bond buying policy by a central bank. Quantitative easing usually results in depressing the value of a country's currency. That has been an intentional part of Japan's Abenomics. It is also an intentional result of the ECB's aggressive quantitative easing bond buying program.

Because the U.S. ended quantitative easing in October last year, the U.S. is now on the receiving end which is evidenced in the rise in the value of the dollar. This has a relatively immediate effect of transmitting lower foreign long-term interest rates to the U.S. through purchases of U.S. treasury bonds. It also has a longer term effect of depressing U.S. exports, slowing the rate of real GDP growth, and depressing inflation through lower import prices. This is the phenomenon of currency wars in which each nation attempts to avoid the deflationary consequences of excess aggregate supply relative to aggregate demand by devaluing its currency. The overall result is that that country's deflation is simply exported to other countries. Where this evolving international policy mix takes us in a deflationary setting is uncertain, but the odds are that the consequences will not be nearly as benign as many expect.

Other factors also influence long-term rates, at least in the short run. There is the dollar safe-haven effect which lowers rates on U.S. Treasury securities. This effect ebbs and flows, depending on global political crises and periodic turmoil in financial markets.

V. Impact of Macroeconomic Trends on Long-Term Rates of Return on Investments

Assumptions about long-term rates of return on investments are important to structuring investment portfolios and also are essential inputs into crucial decisions fiduciaries must make to assure that promises/legal commitments fiduciaries make to beneficiaries can be met over the long term.

It goes without saying that investment returns are volatile over the short run in response to fluctuations in the business cycle and oscillations in investor sentiment. However, if returns are stable over very long periods of time the risk that a fiduciary will not meet promises/legal commitments will diminish considerably. An important issue, then, is whether investment returns, indeed, are stable over long periods of time. If they are not, but fiduciaries assume that they are, significant and serious problems could develop in the ability of fiduciaries to meet contractual obligations or satisfy expectations. The problem is that a sustained structural change in rates of return on investments often is not recognized until several years have passed and by then serious damage has already occurred.

1. Rates of Return Vary With Inflation and Economic Growth

Analysis conducted by the Pension Consulting Alliance, Inc. clearly shows that rates of return on investments vary systematically with differences in the rates of inflation and economic growth. **Table 9** summarizes the environments that prevail for the combinations of high and low inflation and low and high growth.

Table 9
Growth/Inflation Environments

	Low Growth	High Growth
High Inflation	Suppresses global demand and profits	Allows for pricing power and high returns
Low Inflation	Stifles economic activity	Improves economic stability and uncertainty

Source: Pension Consulting Alliance, Inc., September 2013

Table 10 shows historical returns for different asset classes for the four growth/inflation environments. The data in **Table 10** is based on actual historical returns. Note that embedded in the median return is a fixed mix of the five asset classes. The median return would be different for alternative mixes of these five asset classes.

Table 10
Rates of Return on Investment Categories for Different Growth/Inflation Environments

Asset Class	Long-Term	Low Inflation Low Growth	High Inflation Low Growth	High Inflation High Growth	Low Inflation High Growth
Public Equity	8.75%	6.30%	**3.50%**	**12.70%**	**12.40%**
Fixed Income	3.50%	3.40%	**4.70%**	**4.30%**	**2.00%**
Real Estate	8.00%	1.20%	**13.00%**	**11.30%**	**9.00%**
Private Equity	11.75%	7.40%	**10.30%**	**15.60%**	**14.60%**
Tangibles	6.80%	4.60%	**6.20%**	**9.50%**	**7.40%**
Median Return	7.20%	4.40%	**6.10%**	**10.40%**	**8.90%**

Source: Pension Consulting Alliance, Inc., September 2013

It is very clear that low growth environments lead to lower returns, as do low inflation environments. The worst combination is "low inflation/low growth;" the best environment is "high inflation/high growth."

All four environments have persisted for short periods of time over the last 70 years. But, importantly, over the very long run the returns in the "Long-Term" column of **Table 10** have prevailed.

What is pertinent for fiduciaries is the answer to the question of whether future returns will conform to

the historical pattern or whether they will track one of the growth/inflation environments on a persistent long-run basis.

As will be discussed in the commentary that follows, growth and inflation have been slowing systematically for several decades. This is a secular trend. It means that it is highly unlikely that the long-term "historical returns" will repeat in the future. Although this secular trend has been underway for a very long time, its impact on rates of return has been masked by declining discount rates, which boost the value of assets. Declining discount rates result from a shift from a high to a low inflation environment. Once the shift is complete, discount rates will not fall any further and the transition boost to asset values will end.

This transition effect has lulled fiduciaries into complacency that higher historical rates of return are likely to persist in the future. Disappointment or worse is a highly probable outcome once the transition effect has run its course.

2. Rates of Return — Methodologies for Developing Assumptions

There are two ways to derive estimates of long-term rates of return on investments. The most common is to look at the distribution of historical returns over a very long period of time and calculate the geometric mean. The alternative is to develop a robust estimate by determining and summing the values for the components of an expected stable long-term rate of return. There are three components — a real rate of return, the rate of inflation, and a risk premium that is specific to each asset class.

3. Historical Rates of Return

Managers of pools of investment funds, such as pension funds, foundations, and college endowment funds, generally rely on historical rate of return information for asset classes to guide investment management policies. When historical information is relied upon fiduciaries make the implicit assumption that the world is stable over long periods of time. In other words, the future will mirror the past. Based on the experience of the last 70 to 80 years and taking a very long view, this assumption has been reasonable. That might continue to be the case. But, investment returns depend on economic growth, inflation, and risk. If any of these components changes and the change is sustained for a very long period of time, reliance on historical return information may turn out to be misleading. In other words, when a permanent structural change reshapes the macro-economy, reversion to the mean, which is assumed when historical information is the basis for establishing investment management policy, will not occur.

4. Investment Management Policies

There are two sets of policies that guide how fiduciaries manage investment portfolios.

Portfolio Composition. The first has to do with how an investment portfolio is structured — what asset classes are included in what proportions. In developing this policy the fiduciary will consider risks and returns on different asset classes and will determine an investment allocation strategy based on the fiduciary's risk appetite. Risk is customarily measured as the volatility in returns over time. But risk also

depends upon liquidity — the ability to convert an asset into cash at the manager's discretion without suffering a loss explicitly because of the act of selling the asset. Typically, asset classes with higher risk should have higher expected rates of return over long time periods to compensate for the great degree of risk.

Spending Policy — Draws on Portfolio Assets to Meet Needs/Obligations. Another set of policies has to do with taking draws or spending some of portfolio assets to cover beneficiary contractual obligations or needs.

In the case of ***pension funds*** spending is dictated by the contractual terms of a beneficiary's pension. But, at the macro fund level, expected life spans of pensioners must also be considered because the present value of payments to all members of a pension plan, usually referred to as "plan liabilities," must at least equal the current market value of assets under management. Unfortunately, there is a dependency between measurement of the present value of plan liabilities and the expected returns on plan assets over time because funding of pension plans includes not only contributions from sponsors and beneficiaries but also depends on expected investment performance. The assumption of the investment rate of return typically guides determination of sponsor and beneficiary contributions. Thus, if the investment return assumption is higher than actual experience over time, the pension plan will become underfunded and will not be able to meet plan liabilities over time. Conversely, a return assumption that proves to be too low will result in an overfunded pension plan. The risk of an underfunded or overfunded plan will be substantially reduced if the long-term historical return data used to determine sponsor and beneficiary contributions is stable over long periods of time.

In the case of ***foundations and college endowments***, investment earnings fund charitable causes and operations. But an important objective also is to maintain the inflation-adjusted purchasing power of portfolio assets over time. When the prices of goods and services are rising over time, the corpus of the investment portfolio needs to rise commensurately. In theory this can be accomplished by forecasting the long-term rate of return on the portfolio of investment assets and the rate of inflation. The draw rate, then, should be equal to the difference in these two forecasts. Again, all is well and good if investment returns and inflation over long periods of time are stable and past experience is a reliable indicator of future expected outcomes. But if historical data are not a reliable guide for the future, purchasing power of portfolio assets could either grow or diminish over time. The assumption of stability is especially critical for organizations that depend on spending a fixed percentage of investment assets each year to fund operations.

5. Alternative Measure of Rate of Return — Determining and Summing Values of Components of Rates of Return

Rates of return on each asset class are the sum of three components — the potential real rate of growth in profits, the expected rate of inflation, and a specific risk premium for each asset class.

Expected Return = Real Rate + Nominal Inflation + Risk Premium

As is explained below, the real rate depends on the combination of labor force growth and productivity.

a. Expected Potential Real Rate of Growth in Profits (Expected Real Rate of Growth in Potential GDP)

Over very long periods of time the expected real rate of growth in profits equals the expected real rate of growth in potential GDP. This is a true and reliable relationship as long as the labor and capital shares of real GDP (GDI) are constant. Note that GDP equals GDI. GDP is gross domestic product and measures total expenditures made by all participants in an economy over a period of time, customarily measured on a quarterly or annual basis. GDI is gross domestic income and measures total income received by all participants in an economy over a period of time.

In recent years labor's share of GDI has fallen relative to capital's share. If this trend is a permanent structural change, then the potential real rate of growth in profits would exceed the real rate of growth in GDP, but only during the time period when the labor and capital shares of GDI were changing systematically. Once a new proportional relationship between the labor and capital shares was re-established, the future growth rates of both real profits and real GDP would once again be the same.

In the commentary that follows I assume that both real rates of growth are the same. This simplifies the examination of the potential real rate of growth by focusing only on macro-economic data for real GDP.

The expected real rate of growth in potential GDP is determined by two variables. The first is population growth and, specifically, labor force (total hours worked) growth. The second is innovation, which is typically measured by nonfarm productivity.

b. Nominal Rate of Inflation

If we can assume that the Federal Reserve will be successful over a very long period of time in achieving its policy objective for the rate of inflation, then the value for this component of an investment return will be 2 percent. Historical data indicate that the realized rate of PCE inflation, the Federal Reserve's preferred measure of inflation, is much higher than 2.0 percent. Indeed, the geometric mean of PCE inflation over the last 56 years has been 3.35 percent. The mean has been 2.01 percent over the last 25 years. This means that a historical return distribution that spans a period longer than the last 25 years will not meet the assumption of stable inflation equal to 2.0 percent.

If a 56-year time period serves as the reference historical period (see **Table 11**), the inflation component of the expected rate of return will be overstated. But the overstatement is actually worse than the difference between 2.00 percent and 3.35 percent. That is because when the inflation rate rises, rates of return rise by an even greater amount. That occurs because returns on investment are taxed. What this means is that nominal rates of return must rise more than inflation when taxes are considered to maintain the same real rate of return. The relationship between the increase in nominal GDP and the increase in inflation is approximately 1.2. Thus, to maintain a stable real after-tax rate of return when inflation rises from 2.00 percent to 3.35 percent, the nominal rate of return would have to rise 1.62 percent rather than 1.35 percent.

Table 11
Total PCE Inflation — Geometric Mean

	Number of Years	Annual Inflation Rate (Geometric Mean)
1959-2015	56	3.35%
1959-1990	31	4.45%
1990-2015	25	2.01%

Source: Pension Consulting Alliance, Inc., September 2013

c. Natural (Neutral) Rate of Return Equals Potential Real Rate of Growth Plus Inflation Rate

The natural rate of return is the return on a riskless asset. An approximation of the natural rate is the full-employment federal funds rate. Generally, the rate on a longer-term riskless asset, such as a 10-year Treasury note, has a small upward bias because of a liquidity or term premium due to a degree of uncertainty about the stable long-term rate over such a long period of time.

d. Risk Premia

Risk premia are specific to each asset class. In the analysis that follows, I do not attempt to estimate risk premium for various asset classes. However, there is good reason to believe that risk premiums for each asset class vary systematically with both the underlying real rate of return on a riskless asset and the nominal inflation rate. Risk premiums should be a positive function of both of these components. What this means is that if both the real rate of return and the nominal rate of inflation decline on a long-term basis, as I expect will be the case in coming years, risk premia should also decline. What is uncertain is the exact relationship for each asset class between its risk premium and the underlying potential real rate of return and expected nominal inflation rate.

6. Historical Trends — Potential Rate of Growth — Labor Force Growth (Total Hours Worked)

Factors influencing labor force growth over time include:

- Population growth — both natural (births minus deaths) and immigration
- Demographics — labor force participation rate, e.g. baby boomer retirement
- Cultural influences — two-wage earner families, e.g., women in the work force, percentage of young people attending college

Labor force growth has been declining steadily over the last 50 years and is expected to decline further over the next 10 years. **Chart 13** shows the steady decline in labor force growth over the last 50 years from an annual growth rate exceeding 2.0 percent to less than 0.5 percent over the last five years from 2010-2014.

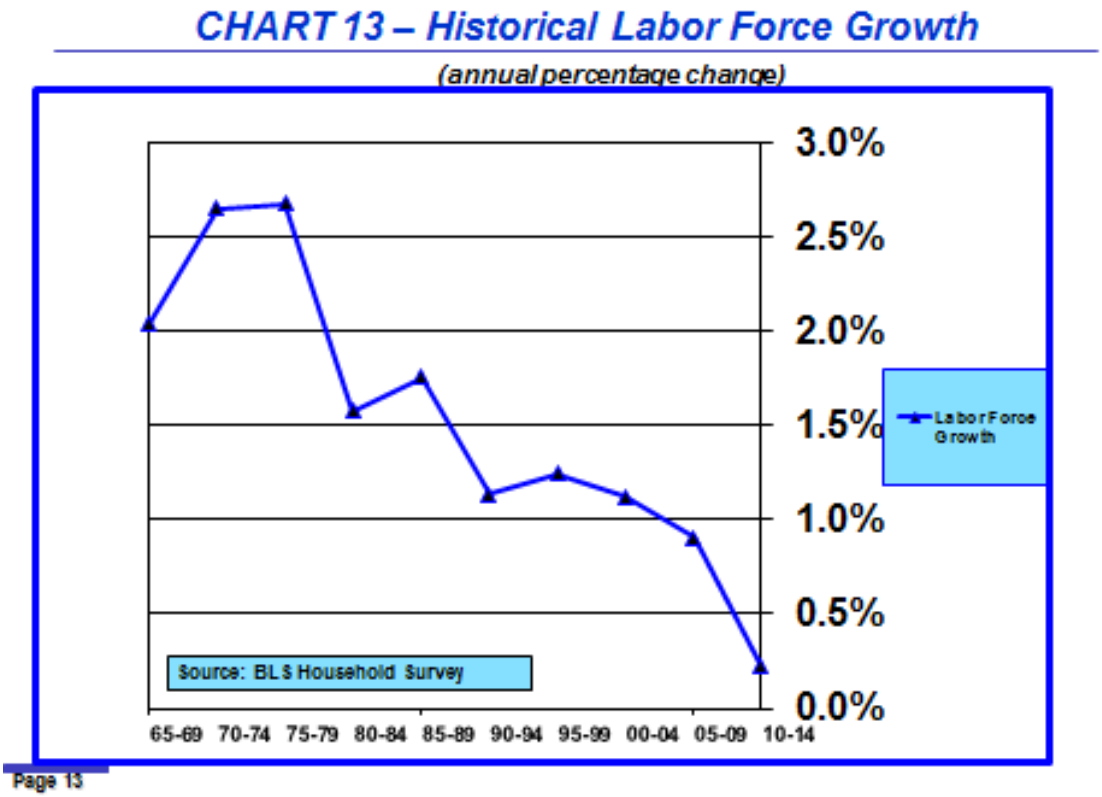
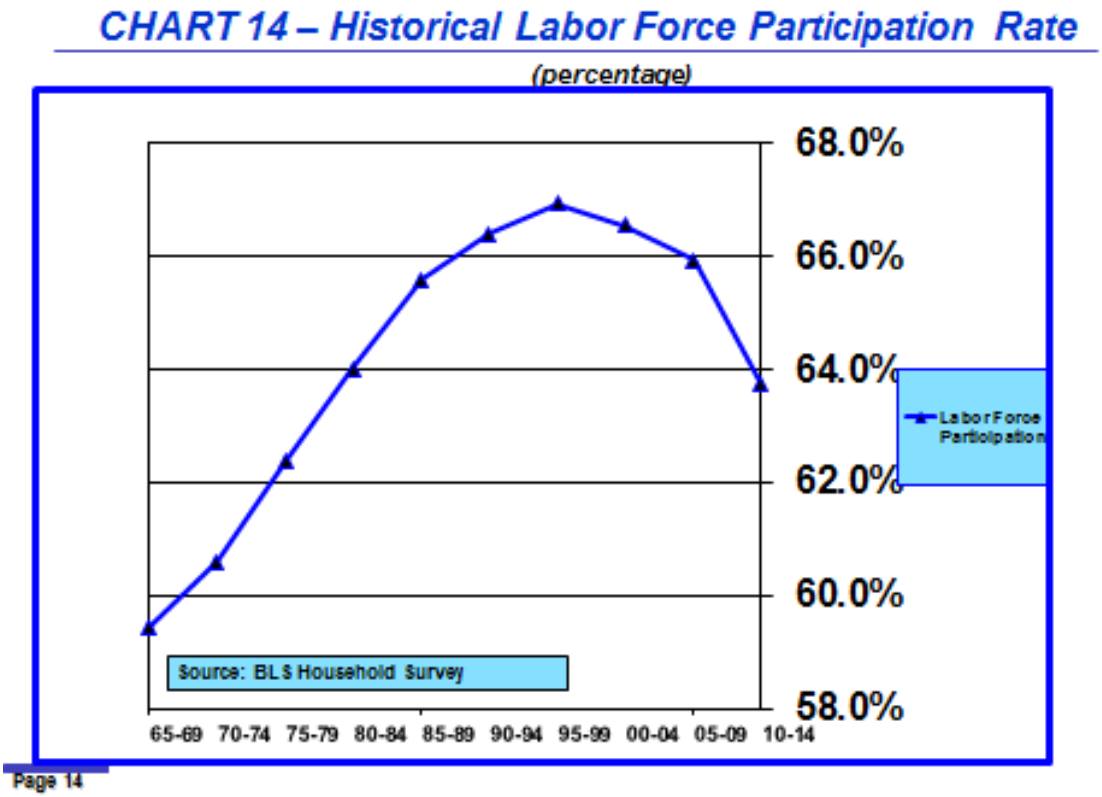


Chart 14 shows the change in the labor force participation rate over the last 50 years. It rose over most of the period primarily because increasing numbers of women joined the labor force. However, the participation rate has now turned down because the participation rate of women is no longer increasing, the baby boomer demographic bulge is now retiring, and fewer younger people are entering the labor force.

7. Historical Trends — Potential Rate of Growth — Productivity

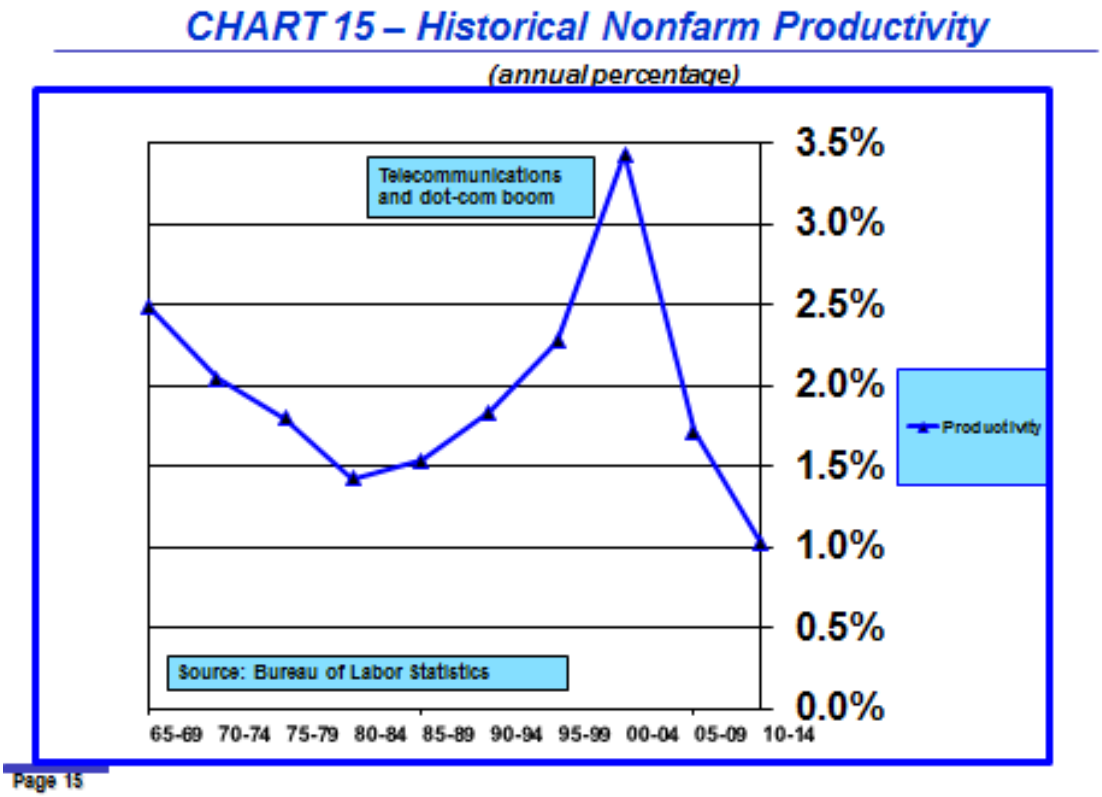
Factors influencing productivity include:

- Capital investment — for example, the benefits of applying hardware and software to production processes
- Technical progress — innovations
- Labor skills — impact of education
- Business process improvement



Historically, productivity growth, as measured by nonfarm business productivity, has been highly variable. Variability over time appears to depend upon major innovations, such as railroads, electricity, computers, fiber optics, and so forth. Productivity, as discussed in previous ***Longbrake Letters***, also appears to depend on the relationship between the expected return on investment relative to the cost of capital. When the expected return on investment exceeds the cost of capital, more investment should occur and productivity should improve. The opposite should occur when the return on investment is less than the cost of capital. Some, most notably Charles Gave, believe that the latter is the case because of monetary policy aimed at depressing interest rates. Also, the systematic retrenchment in government investment spending may also be contributing to a decline in productivity.

The question is whether the negative effects of both monetary policy and fiscal policy in depressing productivity growth in recent years is temporary or reflects a sustained structural change. CBO in its ten-year economic projections derives a bottoms-up estimate of productivity. That estimate is 1.5 percent, which is well below the long-term historical average of 2.1 percent. **Chart 15** shows historical productivity over the last 50 years in 5-year increments. Productivity in the most recent five-period period covering 2010-2014 is at its lowest level in 50 years.



8. Historical Trends — Potential Rate of GDP Growth — Combining Labor Force Growth and Productivity

Chart 16 shows potential and actual real GDP growth in five-year segments over the last 50 years. The divergence of the two series reflects fluctuations in the business cycle. What is clearly evident in **Chart 16** is that both actual and potential real GDP have declined steadily over the last 50 years and the decline has accelerated over the last 10 years. This outcome is a direct consequence in the decline in both labor force growth and productivity.

9. Forecast Trend in Potential Rate of GDP Growth — 2015-2025

CBO in preparing its analysis of federal revenues, expenditures and deficits over the coming ten years, projects a variety of economic variables. **Chart 17** shows how CBO's estimates of potential real GDP growth have changed over the last several years.

There are several important takeaways in **Chart 17**. First, CBO has become progressively more pessimistic about potential growth over time. That is the direct result of CBO's increasingly pessimistic outlook for productivity. Second, potential growth improves in the near term as the economy emerges from the devastating consequences of the Great Recession. But, third, the improvement peaks in 2018 and then potential growth gradually declines thereafter. That outcome is a direct consequence of slowing labor force growth. Fourth, potential growth over the next ten years isn't even remotely close to the 3.4 percent

CHART 16 – Historical Potential and Actual Real GDP Growth

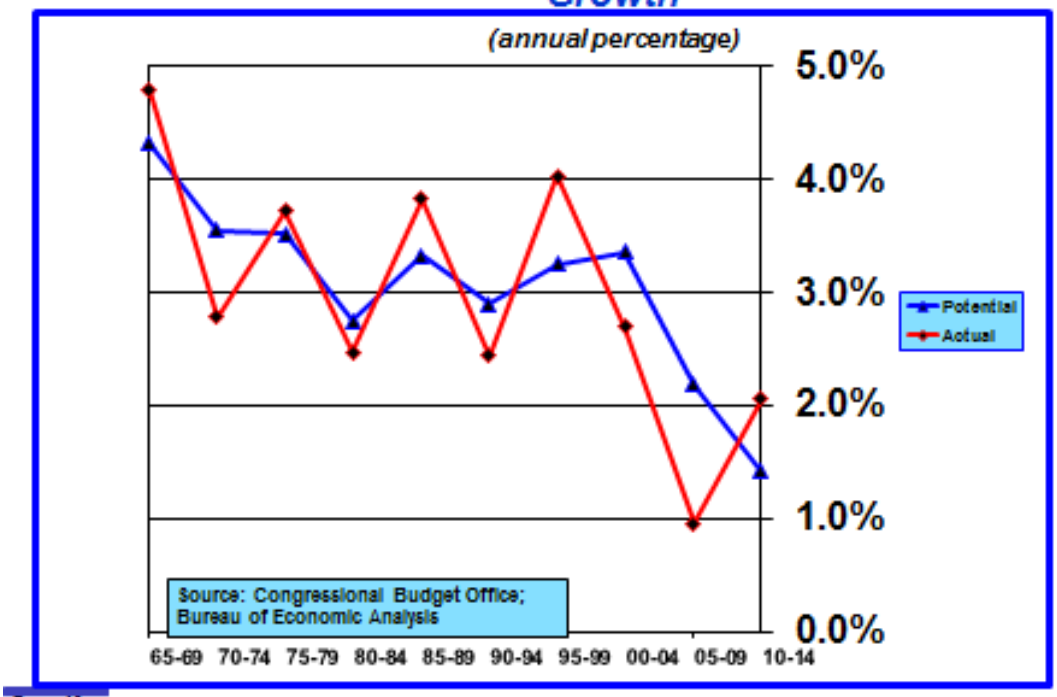
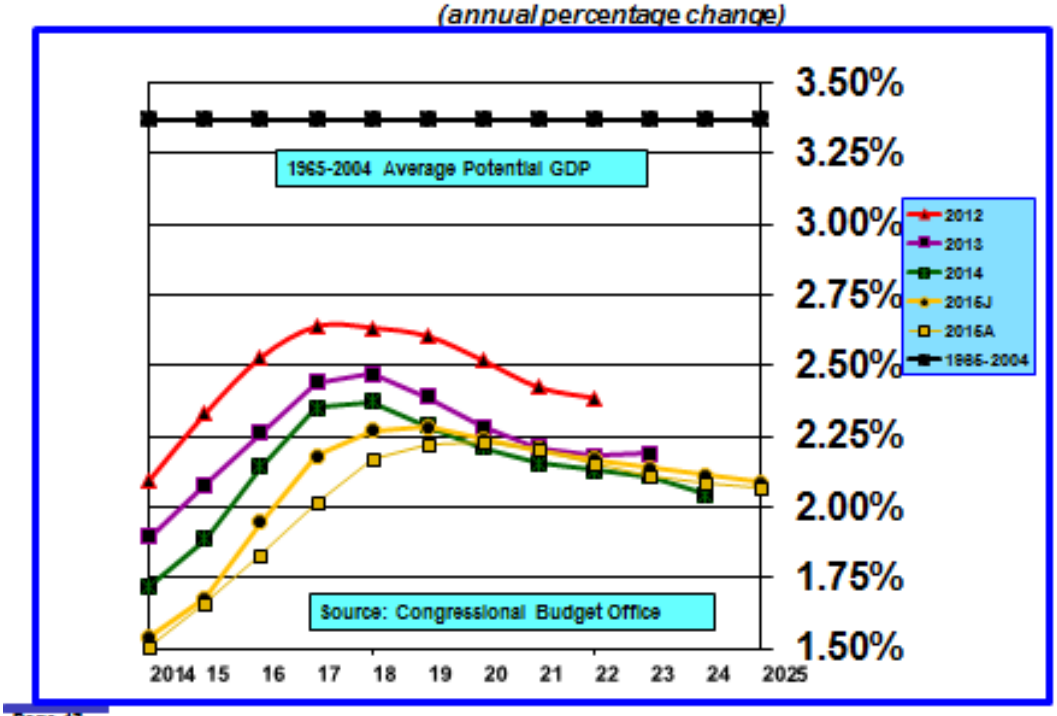


CHART 17 – CBO Potential Real GDP Rate of Growth



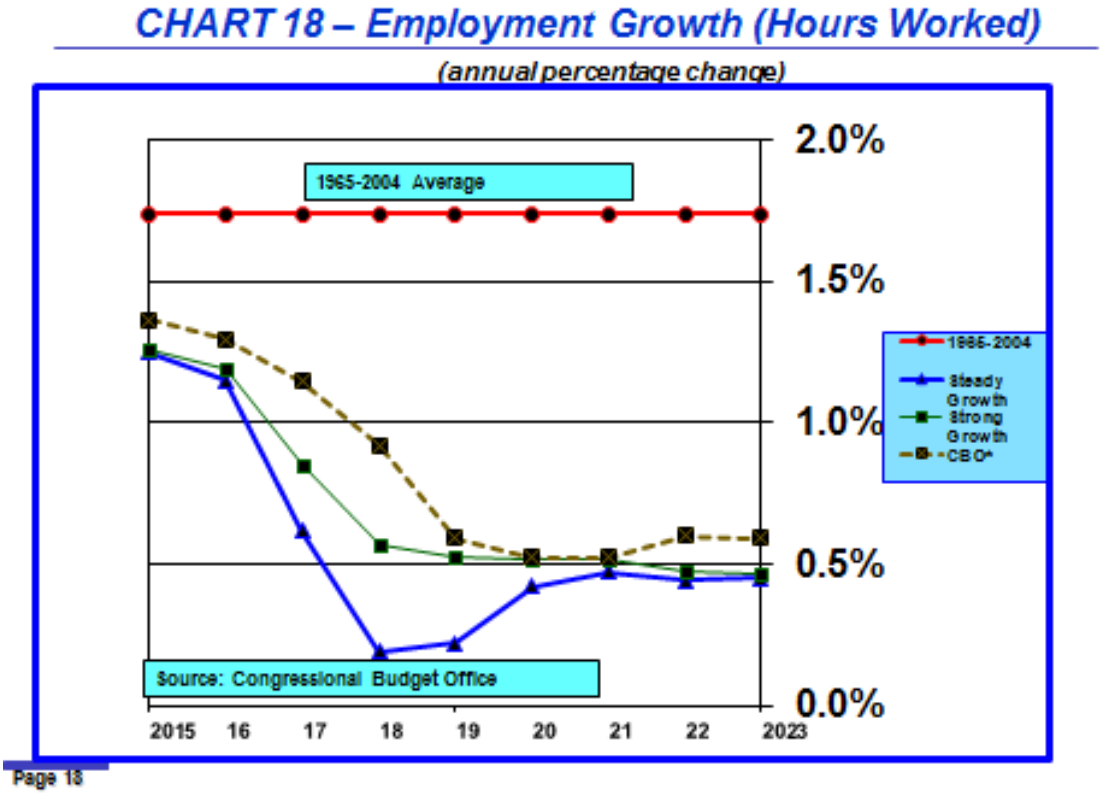
40-year average that prevailed between 1965 and 2004 and declines to 2.1 percent by 2025.

10. Forecast Trend in Labor Force Growth — 2015-2025

CBO forecasts a sharp deceleration in labor force growth over the next ten years due to:

- Declining fertility rate
- Declining participation as the labor force ages

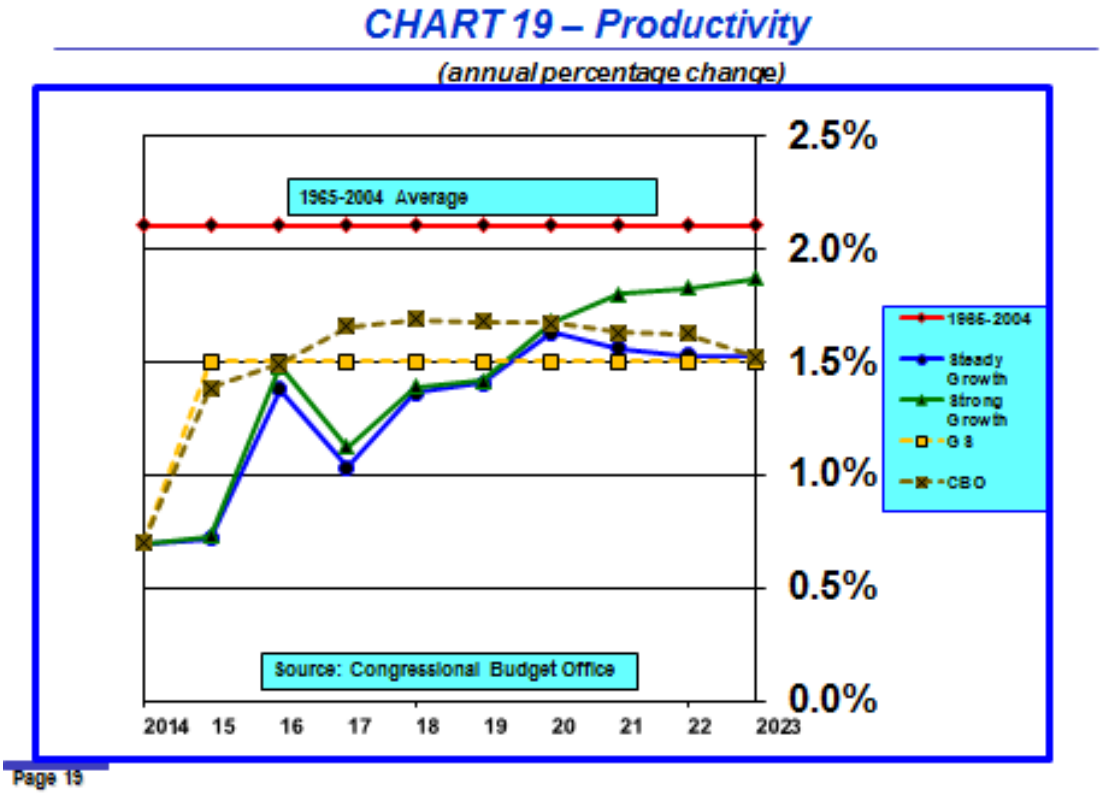
As can be seen in **Chart 18**, CBO projects that labor force growth will fall to 0.5 percent to 0.6 percent annual growth compared to an annual average of 1.74 percent over the 40 years from 1964 and 2005. My employment growth scenarios are more pessimistic over the next four years but converge to CBO's estimates by 2020.



11. Forecast Trend in Productivity — 2015-2025

As can be seen in **Chart 19**, CBO expects productivity growth to improve from exceedingly low recent levels to 1.7 percent by 2018. However, CBO expects productivity to move lower to 1.5 percent after that by 2025. These estimates are significantly lower than the 1965 to 2004 40 year average of 2.1 percent.

Estimates of productivity growth in my "Steady Growth" scenario are very similar to those of **GS** and CBO. The slightly higher estimate of productivity in my "Strong Growth" scenario is driven by an assumption of stronger investment growth.



As discussed in the ***September Longbrake Letter***, there are several theories for why productivity growth has been so low in recent years including a slowdown in technological innovation, weak capital investment because of low aggregate demand, and understatement because of failure to properly account for quality improvements in software. If either or both of the first two reasons are valid and are sustained, productivity will remain lower in the future. To the extent that mismeasurement might be the culprit, it would also mean that inflation is overstated. This is important because the improvement in productivity growth by removing mismeasurement seemingly would boost the potential rate of real growth and thus the rate of return on investments as well. But, the decline in inflation would take all of this away. So, whatever the cause of lower measured productivity might be, if it persists over the next several years, the rate of return on investments would be permanently reduced.

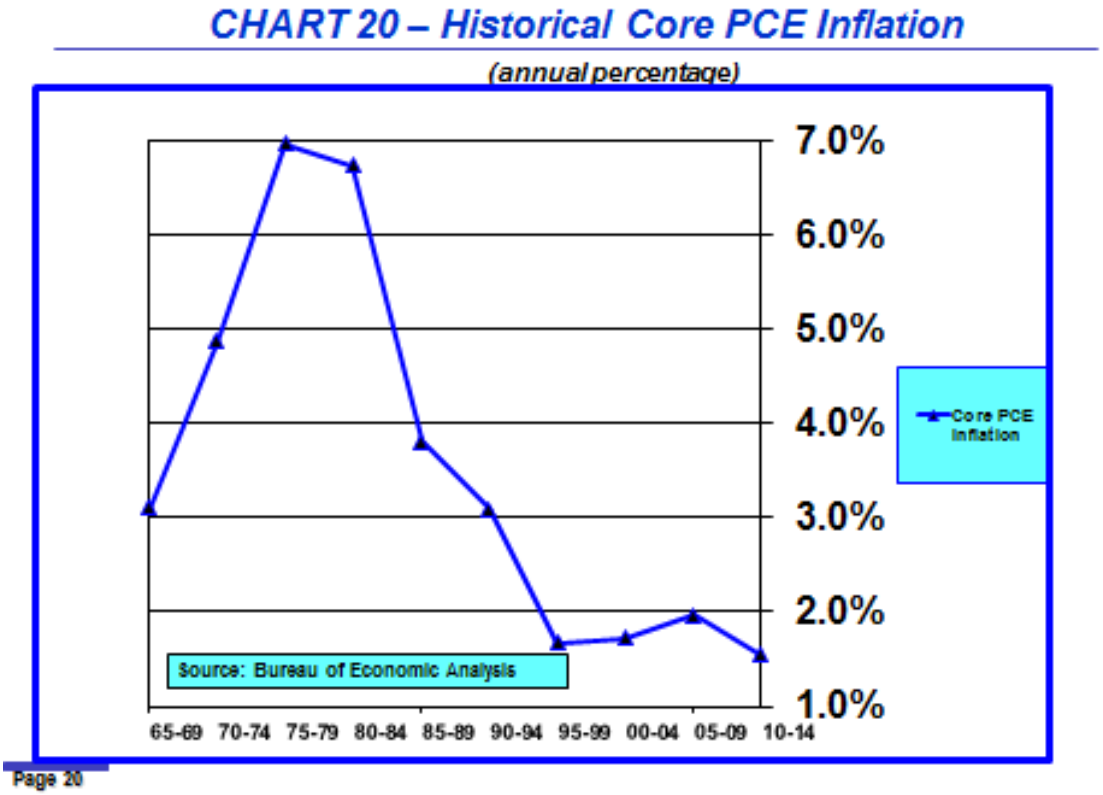
Will productivity return to its higher 2.1 percent historical average? CBO doesn't think so. Artificially-depressed rates of return due to monetary policy activism, may continue to divert investment from productive activities to financial engineering, e.g. stock buybacks and trading in derivatives, which is the essence of the secular stagnation theory. Continuing diversion of funds into existing assets and away from new productive capital investments presumes that risk-adjusted returns to debt-leveraged financial engineering will continue to exceed risk-adjusted returns on investments in plant and equipment.

12. Historical Trend in CPE Inflation

Factors influencing inflation include:

- Employment and output gaps — large gaps depress inflation; both gaps were very large following the Great Recession but are now closing
- Monetary policy — highly stimulative policy should boost inflation, but the opposite outcome may be occurring if policy is depressing capital investment spending
- Fiscal policy — depressed federal, state and local investment spending reduce aggregate demand and put downward pressure on inflation
- Global excess supply — the explosion of investment in China and other emerging economies in recent years has created enormous supply relative to demand, which is inherently deflationary, i.e., supply exceeds demand and depresses prices

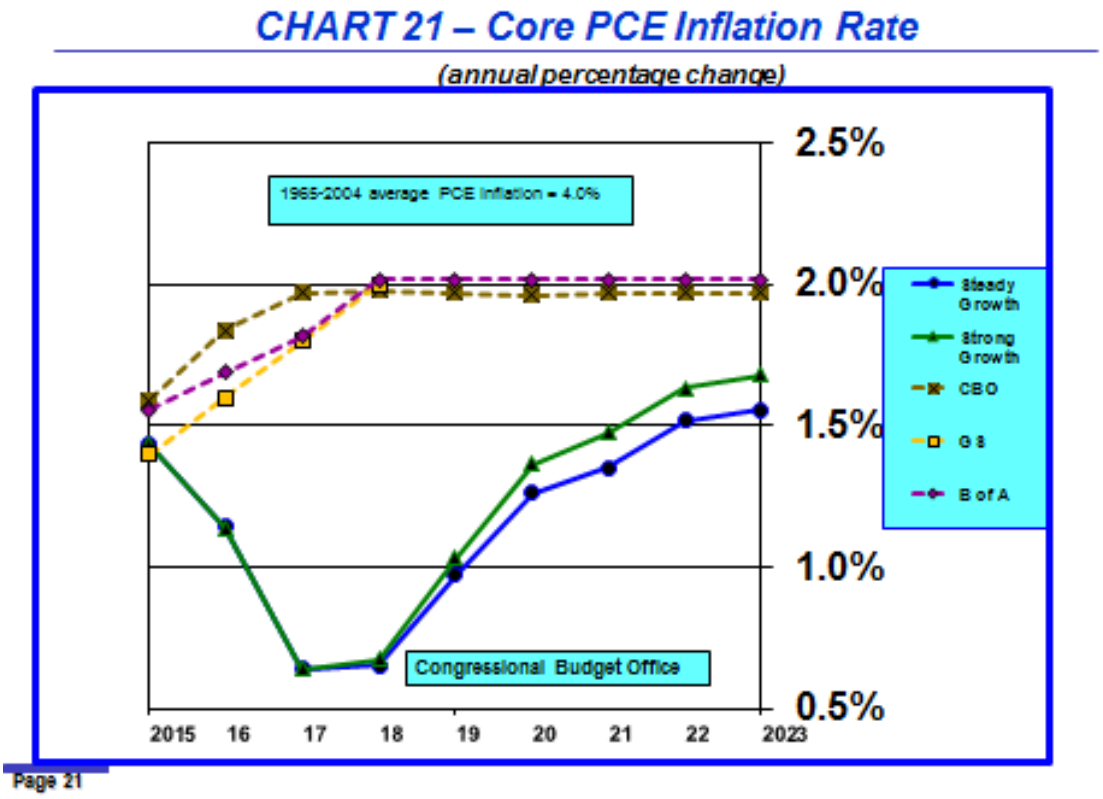
Chart 20 shows the level of core PCE inflation in five-year increments from 1965 to 2014. Over the last 20 years, PCE inflation has been consistently below the Federal Reserve's 2.0 percent target.



13. Forecast Trend in CPE Inflation — 2015-2025

Core PCE inflation is currently very depressed at an annual rate of 1.3 percent. CBO and the Federal Reserve expect PCE inflation to return to the 2.0 percent target level over the next three years. This expectation seems to fall more in the realm of wishful thinking rather than hard analysis. This belief appears to be embedded in faith that monetary policy can control inflation over time and produce the desired outcome of 2.0 percent. This line of thinking neglects to consider that there are other economic forces that influence inflation and presumes that these are unimportant because monetary policy can offset whatever they might be. This seems overly simplistic and the failure of PCE inflation to meet the Federal Reserve's 2.0 percent target for 20 years is not a ringing endorsement of a belief in an all-powerful Fed.

Chart 21 shows the consensus view (CBO, **GS** and **B of A**) with core PCE Inflation converging to 2.0 percent by 2018 and remaining at that level thereafter. My scenarios forecast a decline in core PCE inflation over the next two years and then a gradual increase thereafter, which still falls short of the 2.0 percent target by 2023.

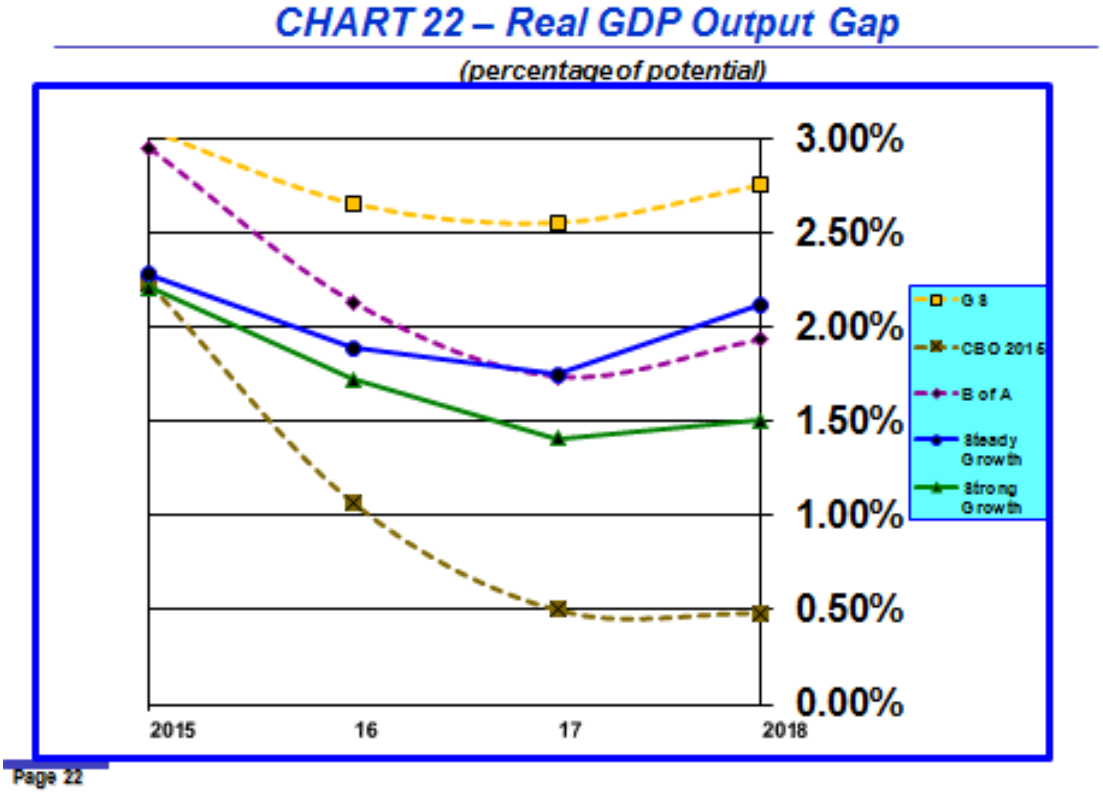


My scenarios are driven by the following factors:

- Large output gap which will persist for longer than expected due to slow growth (see **Chart 22**)
- Limited upward pressure on wage rates
- Strong dollar which is depressing import prices and putting downward pressure on growth in pro-

duction due to declining exports

- Global excess capacity — slowing global growth due to falling demand and excess supply revealed by falling commodity prices



14. Rates of Return — Historical and Prospective Trends

To reiterate, rates of return for an asset class depend upon the potential real rate of growth of GDP (proxy for real rate of growth in profits), inflation, and a risk premium.

Because both the real rate of growth and inflation have decreased over the last 50 years, it follows directly that nominal rates of return have also decreased.

Moreover, the real rate of growth will continue to decline in coming years because of the slowdown in growth in the labor force. The real rate of growth may decelerate further if productivity remains at recent very low levels. The nominal rate of PCE inflation has averaged about 2.0 percent for the last 25 years but is currently 1.3 percent. If inflation does not return to the 2.0 percent but remains, instead at recent low levels over the next several years, rates of return will decline further.

Chart 23 shows that both the federal funds rate and the 10-year Treasury rate have declined steadily since peaking in the early 1980's. **Chart 24** indicates that the natural rate (full-employment real rate plus expected inflation) should stabilize in a range of 3.5 percent to 4.0 percent. My scenarios project the

federal funds rate to reach between 2.75 percent and 3.25 percent by the end of 2023. These slightly lower levels reflect the failure of inflation to return to the 2.0 percent level by 2023.

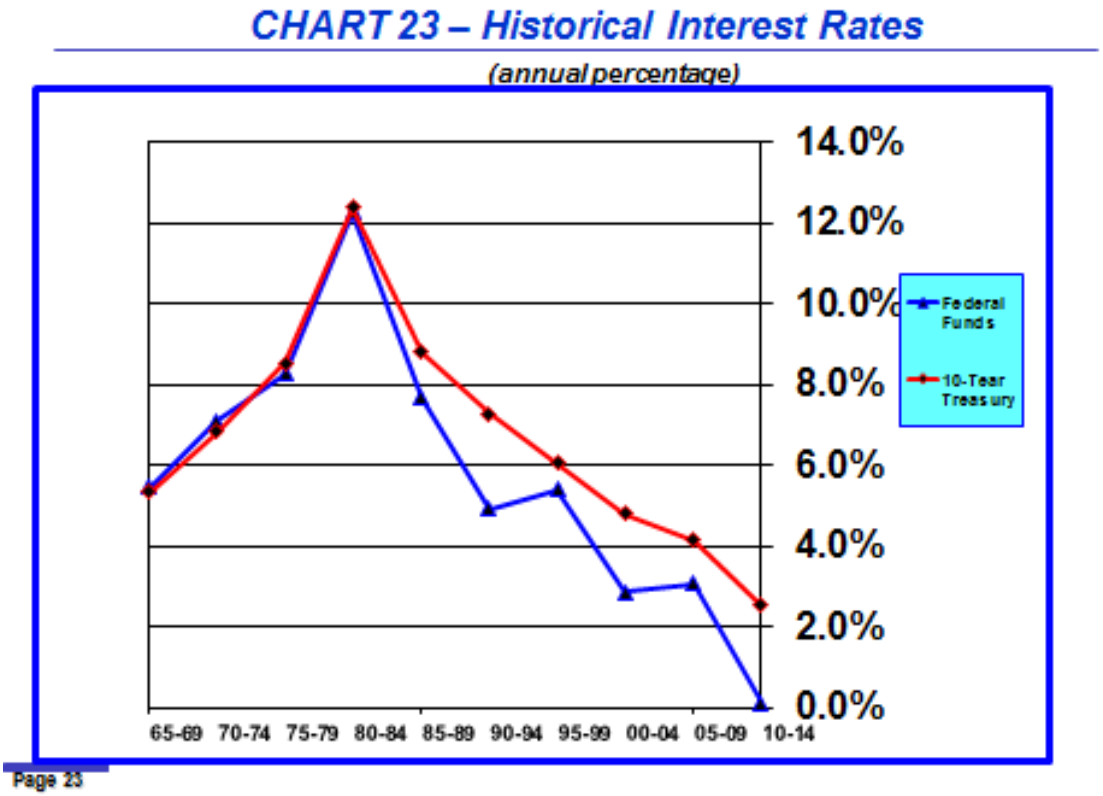
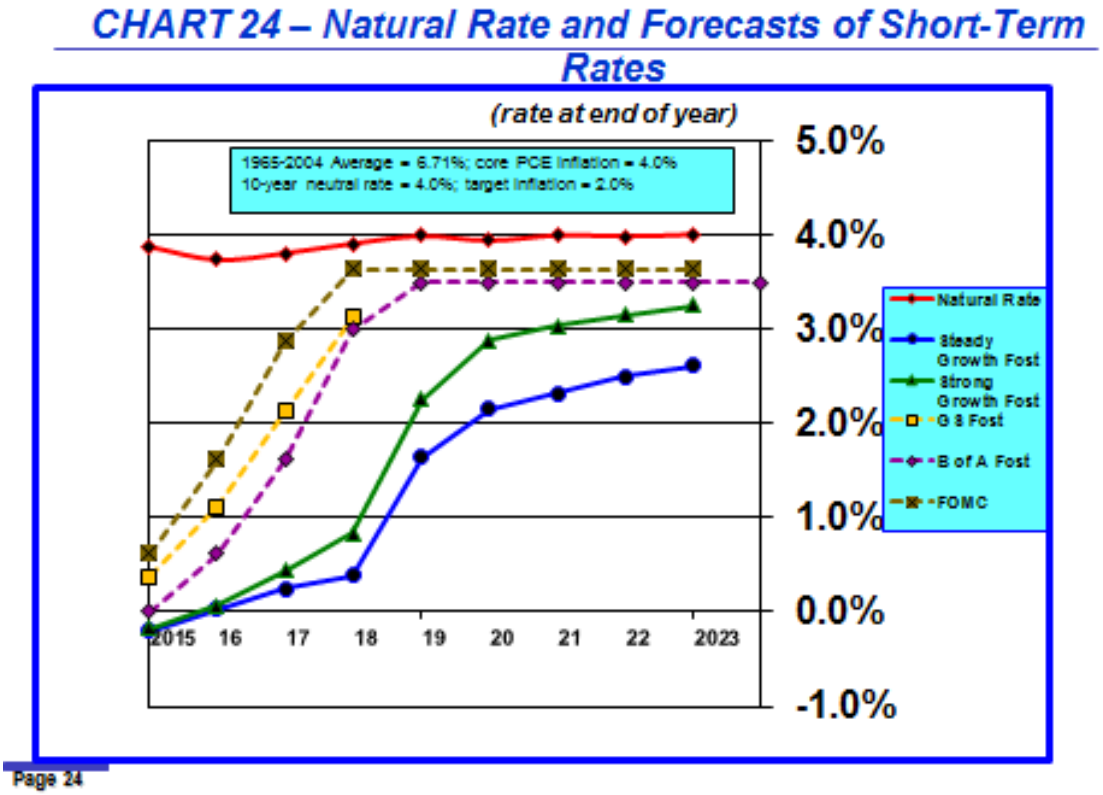


Table 12 shows the implied natural rate of return on a riskless investment

Table 12
Rate of Return on Riskless Investment Given Changes in Potential Real Rate of Growth and Expected Nominal Inflation

	Potential Real Growth	Nominal Inflation	Nominal Inflation Adjusted for Taxes*	Total Return (Natural Rate)	Federal Funds Rate	10-Year Treasury Rate
	A	**B**	**C**	**= A+C**		
1959-2015	**3.14%**	3.35%	**3.62%**	**6.76%**	5.35%	6.48%
1959-1990	**3.57%**	4.45%	**4.94%**	**8.41%**	7.04%	7.85%
1990-2015	**2.59%**	2.01%	**2.01%**	**4.60%**	3.26%	4.96%
2023-CBO	**2.13%**	1.97%	**1.96%**	**4.09%**	3.70%	4.30%
2023-BILL	**1.79%**	1.55%	**1.46%**	**3.25%**	2.64%	3.77%

*Assumes inflation adjustment for taxes = 0 when inflation = 2.0%



15. Conclusion

Low inflation has persisted for the past 20 years. There is little chance that inflation will rise in coming years. In spite of the optimism expressed by policy makers and others that inflation will move back to 2.0 percent, this is not assured and the recent level of approximately 1.5 percent could persist for many years.

Of greater consequence is that growth is slowing to about 2.0 percent and appears likely to remain at that level for a long time.

Low inflation and low growth will push down long-term investment returns. The "Low-Inflation/Low Growth" historical environment portfolio rate of return of 4.40 percent (**Table 10**) could well become the new norm.

Pension funds that assume a considerably higher portfolio rate of return will face the risk that portfolio assets over the long run will be insufficient to meet contractual pension obligations to beneficiaries.

Endowments with spending policies geared to a 5 percent annual draw will be at risk of eroding principal over time. This is much more likely to occur if there are relatively high investment management fees.

By and large, fiduciaries do not expect and therefore are not prepared for the possibility, indeed the probability, that portfolio investment returns will be persistently lower in the future.

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.

As the year progresses, actual results for many economic Indicators are diverging from beginning-of-the year forecasts, as evidenced by the large amount of red ink, "not tracking," below. In addition, many of the risks have materialized. On balance, U.S. and global economic activity is a little less strong than expected and deflationary risks have increased. These developments are being reflected in tighter financial conditions and increased financial market volatility.

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 FOMC has changed its Q4/Q4 GDP projection range several times during the year; based on the September projections, the FOMC now expects growth in 2015 to be 2.0% to 2.3%

  - Other Y/Y forecasts are also below the lower end of the original forecast range: GS = 2.4% (Q4/Q4 = 2.05%); B of A = 2.4% (Q4/Q4 = 2.15%); Bill's Steady scenario = 2.55% (Q4/Q4 = 2.45%); Bill's Strong scenario = 2.55% (Q4/Q4 = 2.5%)

- ***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 but then raised it by 0.5 percentage points in August for a net reduction of 0.6%*

  - Revised output gap should decline to between 2.3% and 2.2% by the end of 2015, which would be a 1.2% to 1.3% decline over the year; this is slightly less than the forecast 1.4% decline at the beginning of the year

- ***Potential structural rate of real GDP growth*** has declined significantly in recent years. I expect potential growth to be about 2.0% in 2015. 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 1.79% to 1.66%*

  - Potential growth for my scenarios for 2015 is 1.35%

  + Long-run potential growth for my scenarios is between 1.8% and 2.1%; it is 1.75% for GS; it is between 1.8% and 2.2% for the FMOC; and it is 2.1% for CBO; all estimates of long-run potential growth have been edging down

- ***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 1.1% in the first quarter of 2015, but rose 3.3% in the second quarter; the four-quarter change in productivity rose from 0.0% in the fourth quarter of 2014 to 0.7% in the second quarter of 2015

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

  ? Payroll growth has averaged 198,000 monthly over the first nine 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 declined; it was 62.70% in December and 62.36% in September; the short fall in participation has occurred in more retirees and fewer prime-age individuals seeking employment

- ***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 5.05% in August; employment growth has been stronger than expected while labor force growth and participation have been weaker

- ***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 annual rate of growth in the hourly wage rate — *note: this relationship is mischaracterized because inflation does not factor directly into disposable income growth; disposable income growth is a composite of many sources of income, the largest of which is wage and salary income; growth in salary and wage income depends upon growth in total hours worked and growth in nominal hourly wages, which was 2.1% at the beginning of 2015 and forecast to rise to 2.3% by the end of 2015*).

  - 12-month rate of change in disposable income is 3.5% through August; (total hours worked for all employees were growing at a 2.3% annual rate through September; growth in hourly nominal wages was unchanged through September at a 2.1% annual rate of increase); growth in hours worked is much stronger than forecast which has resulted in stronger than expected growth in nominal consumer 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 3.7% through August

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

  ? Saving rate averaged 4.85% over the first eight months of 2015 compared to 4.8% in 2014

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

  + Through October 23, stock prices were up 0.8%

- ***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 a just barely expansionary level of 50.2 in September; however, the risk of an index value below 50 by year end is increasing

+ The ISM nonmanufacturing services index was a still strong 56.9 in September but was down from 59.0 in August

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

  - Business investment rose at an annual rate of 1.6% in Q1 as energy capital investment plunged; the annual growth rate improved to 4.1% in Q2; forecasts for 2015 have been lowered to 3.6% to 3.9%

- ***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 10.1% in Q1 and 9.3% in Q2; forecasts for 2015 range between 8.8% and 9.2%

  - Over the first nine months of 2015 total housing starts were 9.9% above and single-family housing starts were 7.9% above the 2014 level and are on a pace to grow 10% during 2015, still short of the 15% to 20% forecast

- ***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 5.07% in 2014 and 5.39% through the 12 months ending June 2015; prices are on track to rise 4.0% or more 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 2.89% in December and 2.92% in August

  + The trade weighted value of the dollar rose 8.9% from December through September and is 15.2% higher than September 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.

  - The FOMC did not raise rates in either June or September; a December increase is possible but market futures indicate a less than 50% probability

- ***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 0.3% in August compared to August 2014 and is projected to rise only to 0.8% for all of 2015

+ The annual rate of change in core PCE was 1.31% in August and should be within the forecast range at the end of the year

- 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 2.09% on October 23; 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 was $436 billion and should equal about 2.4% of nominal GDP

- ***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 -0.8% in Q1, but rose 4.3% in Q2; forecast for all of 2015 has been revised to 1.4%

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 forecasts have been lowered to 3.1%; improvement in Europe has been more than offset by slower growth in China, Japan, the U.S. and emerging markets; risks are tilted to the downside during the remainder of 2015

- ***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 0.1% 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's massive bond purchase initiative has provided a stable backdrop for financial markets; however, volatility has emerged from time to time (during the spring when speculative positions, which had driven interest down to nearly zero, were unwound; and more recently in conjunction with the crisis in Greece, followed by China's growth slowdown); credit conditions have eased

- ***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 in January, however, the replacement government disintegrated but the Syriza party was returned to power in September elections; the National Front party is gaining ground in France; recent regional elections indicate that centrist parties may 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 is on track to hit 2.6%

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

  + Year over year growth in the third quarter of 2015 was 6.9%

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

  + Chinese reform policies are being implemented more slowly than expected; the anti-corruption campaign continues and has had a chilling impact on speculation in commodities; in spite of stock market turmoil, which has now abated, political stability has been maintained

- ***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 0.8%; 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.

  + 2015 growth is expected to exceed 7% and perhaps be as high as 7.8%

- ***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

  + Reductions in estimates of long-run potential GDP growth by CBO, FOMC and other analysts indicate this risk has been realized

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

  + Participation rate has fallen slightly

- Employment growth slightly above expected level through the first nine months of 2015

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

  + Through September 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 2.0% in December 2014 to 2.3% in September 2015; the employment cost index is stable at an annual rate of 2.0% through the second quarter of 2015

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

  - Through September the unemployment rate has fallen more than expected

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

  + Productivity over the last 12 months has been 0.7%

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

  - Data through August indicate that consumer disposable income and spending are rising slightly 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

  - Stock prices have changed little so far in 2015

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

  + Housing starts are below expectations

  - Residential investment is on track to meet expectations

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

  - First and second quarter data indicate that home prices are rising more than expected

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

  + Private business investment growth is slightly below the lower end of the expected range

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

  + Energy-related investment reduced real GDP growth during the first half of 2015 by about 0.5% but, after an initial lag consumer spending has risen as expected to offset much of this drag

  - There is no evidence of significant financial market disruptions stemming from the fall in oil prices; however, much higher junk bond spreads in the energy sector foreshadow troubles ahead

- ***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 considerably and might move below 50 by the end of the year

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

  + The value of the dollar has risen more than expected at the beginning of the year

  - The trade deficit has been relatively stable

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

+ Volatility has increased considerably and financial conditions are the tightest they've been in four years; Goldman Sachs estimates that tighter financial conditions, if sustained, are equivalent to an increase in the federal funds rate of 75 basis points

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

  + Core PCE inflation has been slightly softer than expected and with recent further declines in commodity prices and a stronger dollar is unlikely to rise 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; with one month remaining in the fiscal year, the deficit is likely to be slightly lower than originally expected

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

  - Through the first half of 2015 state and local spending is on track to rise slightly faster than expected

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

  + The global GDP growth forecast has been reduced from 3.7% to 3.1% and the balance of risks tilts to a further slowing

- ***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 did not materialize because the ECB initiated a massive quantitative easing program which is expected to continue until September 2016 and perhaps beyond

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

  - Speculation drove interest rates in the spring on long-term bonds too low and was followed by a short but relatively violent correction; however, that turmoil was short-lived; however volatility has reemerged because of concerns about the impact of slowing Chinese growth

- ***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; the Greek threat has been contained

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

  - The Conservative Party won an outright parliamentary majority and political stability is the order of the day for the time being; however, political fragmentation is increasing slowly

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

  + Implementation of reforms is proceeding more slowly than expected; at least one of the reforms involving opening up participation in the stock market led to a rapid escalation in prices followed by a crash in prices and extreme volatility

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

  + Growth has slowed to 6.9%

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

  ? This risk has not materialized; however, both real growth and inflation have been considerably less than expected, Prime Minister Abe's approval ratings have dropped below 50%

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

  - This risk has not materialized

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