

# Three Things to Worry About

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A decade ago in 2006, we were in an era of 3% GDP growth and 2% inflation illustrated in the figures below. Back then, the most important forecasting task was to give an early alarm of a coming recession when inflation and GDP growth would be weaker, when jobs would be lost and when debt would be troubled. Except for the recessions, the forecasts for GDP growth and inflation deviated little from 3% and 2%.

The already aged expansion we are currently enjoying may be nearing the end-of-life, and the recession forecast is a critical task. Is a recession likely in the next couple of years? **(Foreshadowing: Old but still vital.)**

Forecasting the next recession is not the only task. Recent changes in GDP growth make the long-run GDP growth rate more difficult to predict. The 3% GDP growth has shifted down after the recession of 2008/09 to a very

steady and disappointing 2%. However, President Trump has promised to “Make America Great Again,” and has turned that promise into a forecast in his recently proposed budget which is premised on a return to 3% GDP growth and the additional government revenues that would entail. A conservative approach to the budget would rely on the assumption of 2% growth, and have contingency spending plans if 3% actually occurred. A conservative approach is the right choice unless the prospect of 3% growth is quite likely. That’s question two: how likely is a return to 3% GDP growth? **(Foreshadowing: Don’t count on 3%.)**

Aggressive monetary policy since 2008 has raised the possibility of serious inflation, though none has shown up yet. Changes in rates of inflation are very hard to understand and to predict. **(Foreshadowing: Smells like 3% but the odor is faint. Worry about the Sasquatch in your garden too.)**

Figure 1 Growth Rate of US Real GDP



## THREE THINGS TO WORRY ABOUT

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Figure 2 Rate of Inflation of Prices of Personal Consumption Expenditures Excluding Food and Energy



Answers to these three questions are critical for multiple reasons. The recession risk is an important consideration for relatively short-term planning like inventories and payrolls, and the long-term growth forecast is critical for long-term planning regarding retirement and building. The inflation drama is playing not on Main Street but on Wall Street, since an unexpected increase in inflation shifts wealth from lenders to borrowers.

The next section identifies key aspects of our forecast, and then come three sections that answer the three questions:

- Is this elderly expansion getting near the end of life?
- What can make America great again?
- Can you see clouds of inflation gathering on the horizon?

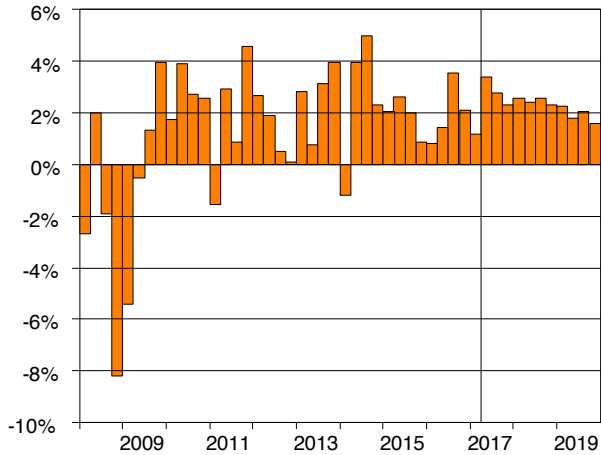
## UCLA ANDERSON FORECASTS

The history and forecasts of four key macro variables are illustrated in Figure 3. The near-term GDP growth forecasts exceed 2% but drift below 2% in 2019. The unemployment drifts downward to 4.1% in 2019. Inflation is above 2% in 2017 and moves up to 2.7% by the end of 2019. The 50 basis points rise in inflation rates is more than matched by 175 basis point increase in both the 10-Year Treasuries and the Federal Funds rate, meaning somewhat higher real rates but a yield curve that remains moderately steep at 150 basis points

Figure 3 Forecasts

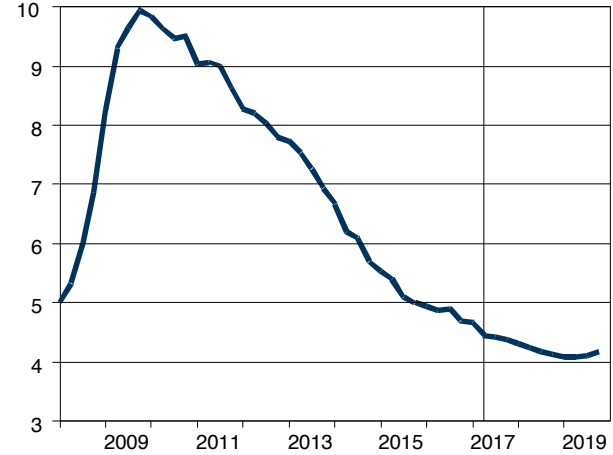
**REAL GDP**

(Percent Change, SAAR)



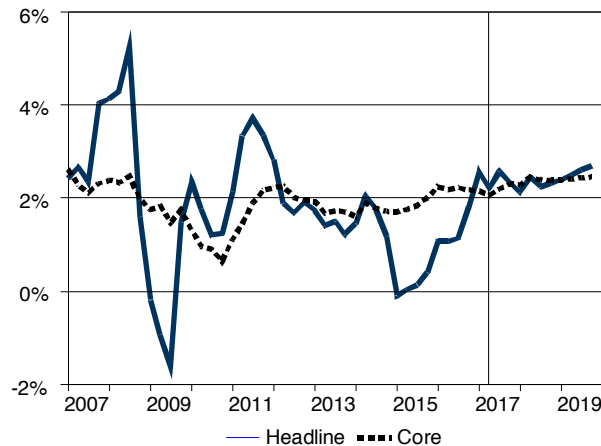
**UNEMPLOYMENT RATE**

(Rates)



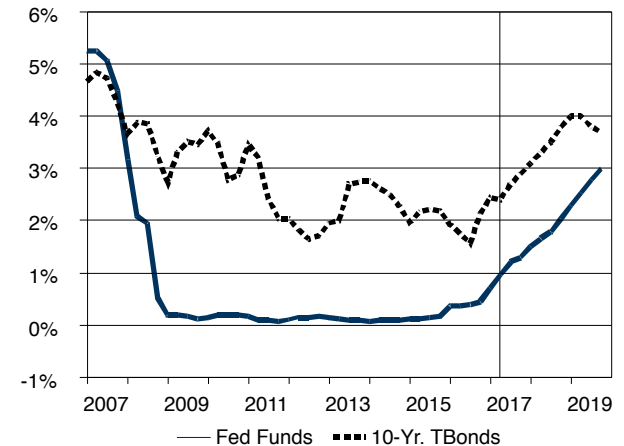
**INFLATION**

(Percent Change Year Ago)



**INTEREST RATES**

(Rates)



Is this elderly expansion getting near the end-of-life?

The current economic expansion began in 2009q3 and is 32 quarters old in 2017q2. This expansion is elderly by historical standards, with only one case of a longer-life: the 40 quarters achieved by the Clinton/Bush expansion that began in 1991q2 and ended in 2001q1. An actuary, but not necessarily an economist, would tell you death is imminent. An economist might argue that economic time can proceed more slowly than calendar, or faster too. For example, the Internet Bubble and the Housing Bubble created an unus-

tainably frenetic pace but the pace of the current expansion seems slow, very slow.

The growth of U.S. real GDP over the twelve economic expansions since 1947 is illustrated in Figure 4. The vertical axis labelled “peak” is the last quarter of the expansion. The data illustrated are the percent difference of real GDP from the cycle peak value. To the right of the vertical axis are the recession data and to the left are the expansion data. The last year of the expansion is shaded to attract attention to signals of the end. The current expansion is the dark line without markers plotted as if the most recent data, 2017q1, were the end.

## THREE THINGS TO WORRY ABOUT

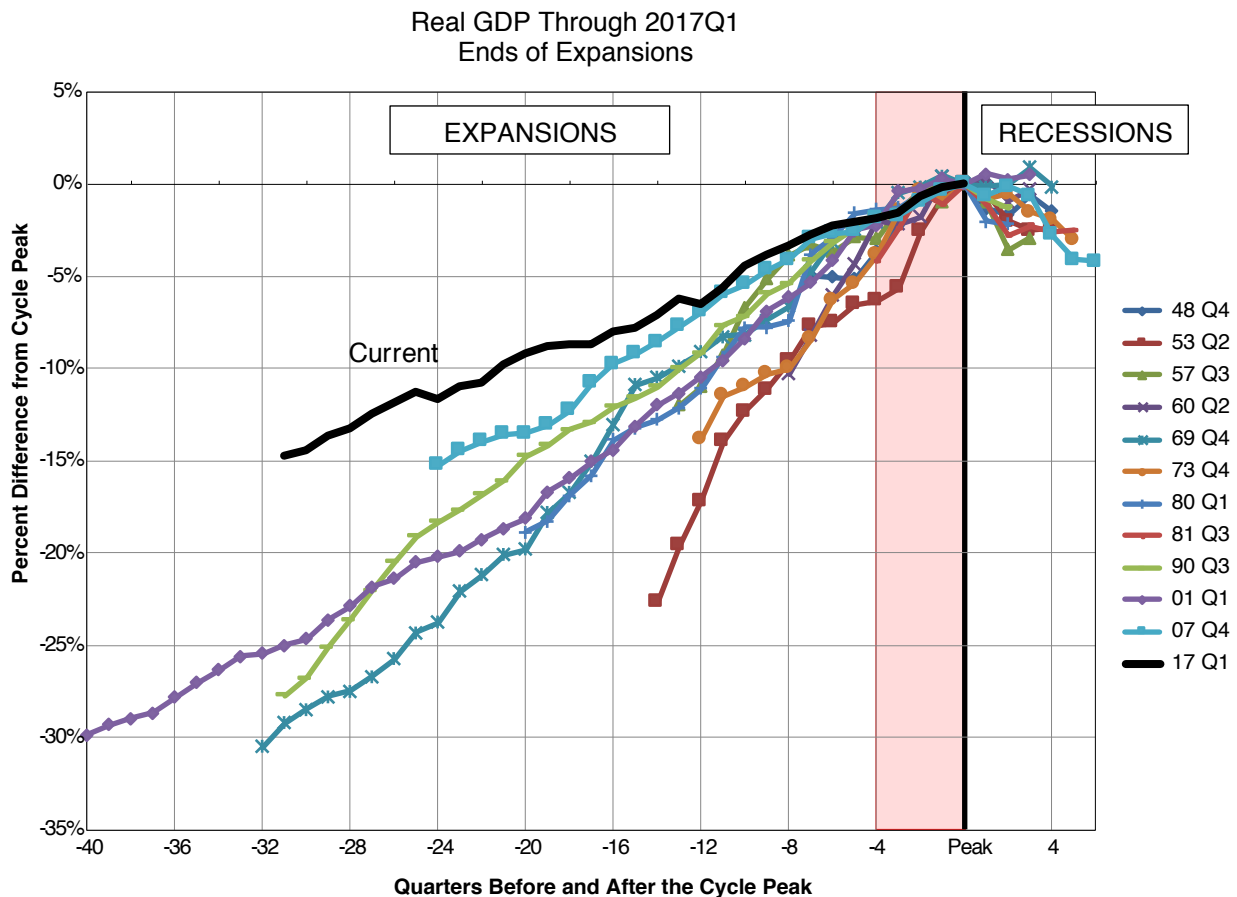
We are going to look at these “ends of expansion” graphs to see if 2017q1 looks like it might be the end. Mostly we will focus on the last year or two of data. The last year of the expansion is shaded to attract attention. There doesn’t seem to be anything about the growth of real GDP that signals the end of the expansion. Incidentally, a popular Wall Street metaphor for the economy is an airplane which crashes when it slows down to “stall speed.” There is no support for this metaphor in the GDP data.

We are currently experiencing quarter 32 of an expansion. The Reagan/Bush expansion that ended in 1990q3 lived for 31 quarters. The Kennedy/Johnson expansion that ended in 1969q4 lived for 32 quarters. The long Bush/Obama expansion starts at 40 quarters before the peak. That’s 3 of 11 expansions. The other 8 had shorter lives. That seems very worrisome.

However, what is also evident in Figure 4 is the fact that this current expansion has had the most mild rate of growth of any U.S. expansion in the data set. This current expansion has had only 15% increase in real GDP so far, while the other three long expansions ended with cumulative GDP growth of 28%, 30% and 30%. At 32 quarters of life, these three had grown between 25% and 30% compared with the latest of only 15%.

Speaking of metaphors, maybe you should think of the economy as a fruit tree. If you pick too much too fast, no fruit is left to pick and a time-out is needed for the tree to replenish itself. That’s a recession. But if you pick slowly, you can pick on and on and on. Maybe the current expansion will never end. However, (an economist’s favorite word) take another look at Figure 4 and you can see that the most recently completed expansion that ended

Figure 4 Ends of Expansions Graph: Real GDP



in 2007q4 gave us the same 15% total GDP growth over 24 quarters, which was more rapid growth than the current one, but slower than all the others. Seems like we were picking that fruit tree at a modest pace then too. That seems to raise the worry level a bit.

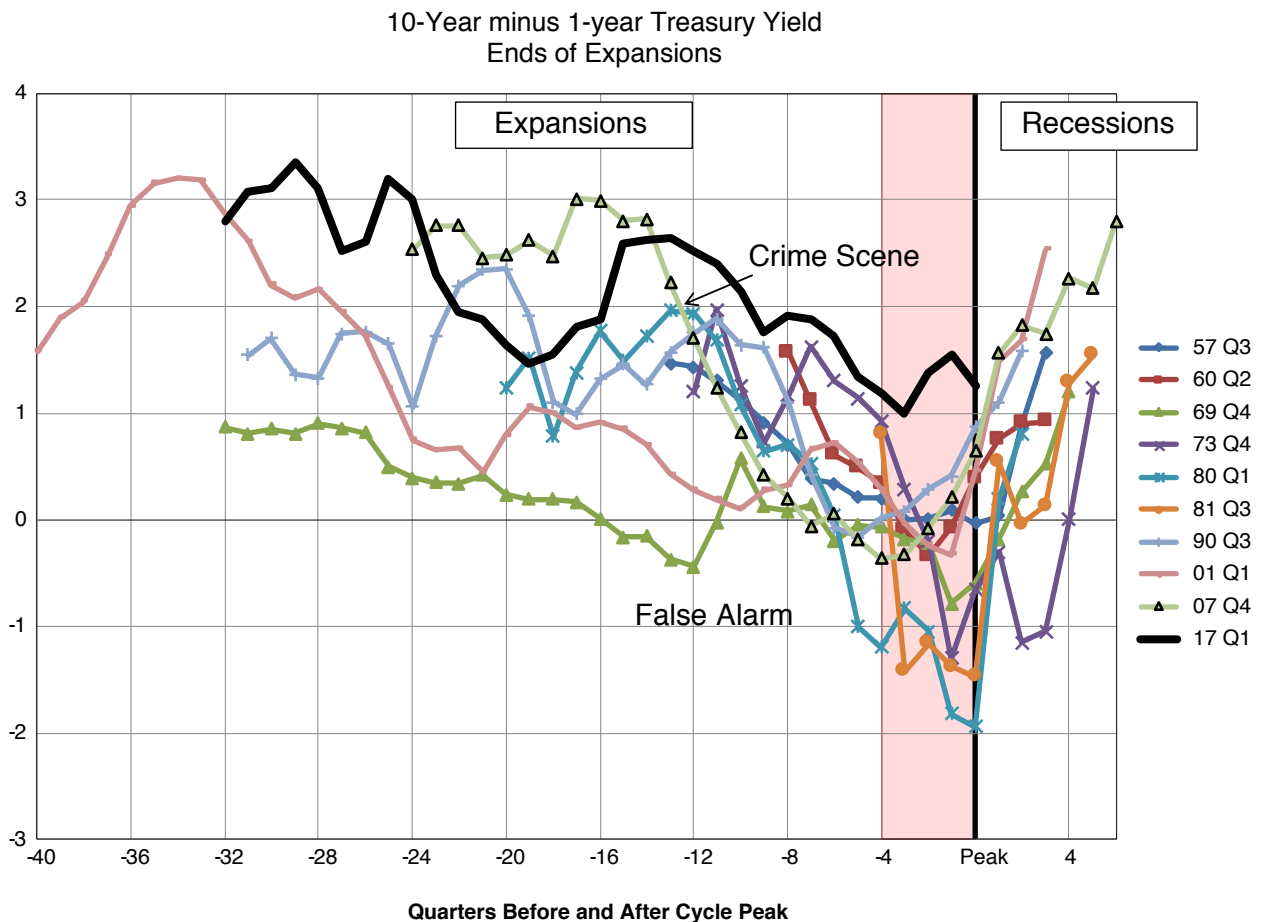
End of Expansion Alarms

*A Wall Street Alarm: An Inverted Yield Curve*

Clearly we need to find some signals of over-picking, some things that sound valid alarms about an oncoming recession. Wall Street has traditionally issued warnings

of a coming recession with an inverted yield curve with the return on ten-year Treasuries less than one-year Treasuries. The difference between the yields on 10- and 1-year Treasuries are illustrated in the “end-of-expansion” graph Figure 5. The last year before the recession is shaded to attract your attention. Compare the data in that year with the two years earlier. For all the expansions that have ended, an inverted yield curve occurred in the last year or the next to last year of the expansion. Though the yield curve has flattened over the last three years, it still is far from signaling an oncoming recession. **NO ALARM HERE.** That’s good news from Wall Street.

Figure 5 Ends of Expansions: Slope of the Yield Curve



## THREE THINGS TO WORRY ABOUT

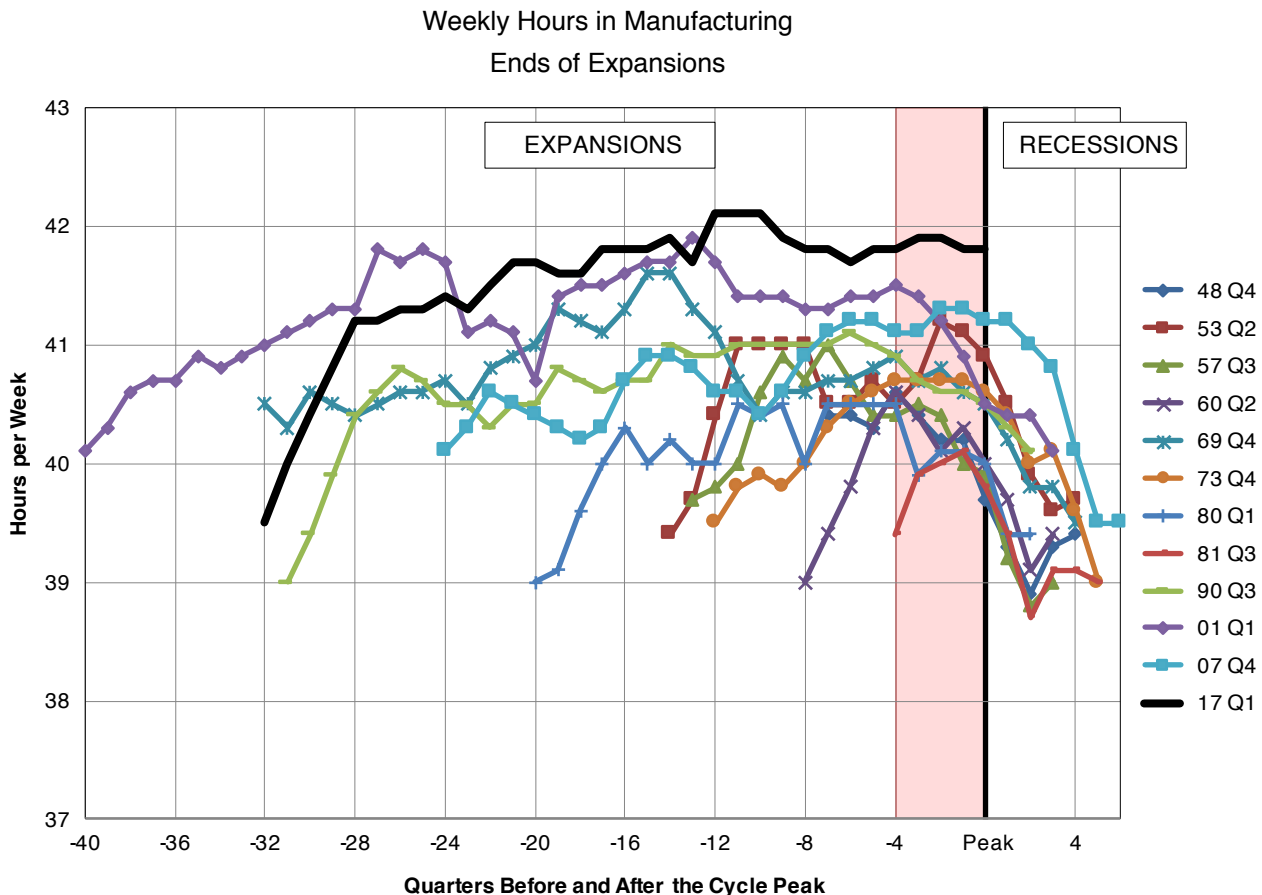
It is said that expansions do not die; they are murdered by the Federal Reserve. These inverted yield curves are created by tightening monetary policy that drives up short-term rates without an equivalent increase in the long-term rates. Circumstantial evidence of the latest murder is indicated by the words “Crime Scene” in Figure 5 which depicts the reversal of monetary policy which increased the one-year yield from 1.2 in 2014q1 to 5.0 in 2006q2, thus turning the steeply sloped yield curve with a 300 basis point spread into an inverted yield curve in 2006q2. We must all hope that the Federal Reserve Board doesn’t murder the current expansion.

I offered an alternative metaphor in my book, **Macro Economic Patterns and Stories**. Rather than murderers, the members of the Federal Reserve Board are well-meaning but over-indulgent first-time parents. When the expansions are young, the new members of the Board give us heaps of

ice cream, big gulp sodas, and chocolate candy bars in the form of a very steep yield curve. We love that stuff, but when obesity becomes so extreme that even the over-indulgent cannot ignore it, they take the sweets away, and we are left to correct our bad habits in an economic recession. Take another look at the Crime Scene in Figure 5. Notice that the yield curve was very steep in the three preceding years. The crime of poor-parenting was committed in those earlier years, and what is labelled a crime scene is just a parental awakening to the fact that the housing market was out of control.

Incidentally, there was an inverted yield curve in 1967 in the middle of the expansion that ended in 1969. That is labelled a false alarm in the figure, but actually I think it was a valid alarm of a weakening private economy that was offset by a big increase in Department of Defense spending on the Vietnam war – a fiscal stimulus, in other words.

Figure 6 Weekly Hours in Manufacturing



*Main Street Alarms: Decline in Weekly Hours in Manufacturing*

The Main Street equivalent of an inverted yield curve is a decline in weekly hours of production workers in manufacturing illustrated in Figure 6. The logic that underlies this as a leading indicator is that in the face of a decline in sales, manufacturers first cut overtime hours and only later lay off workers. The alarm sounded by a decline in weekly hours precedes the recession by only two or three quarters, while the inverted yield curve tends to occur earlier, and more reliably as well.

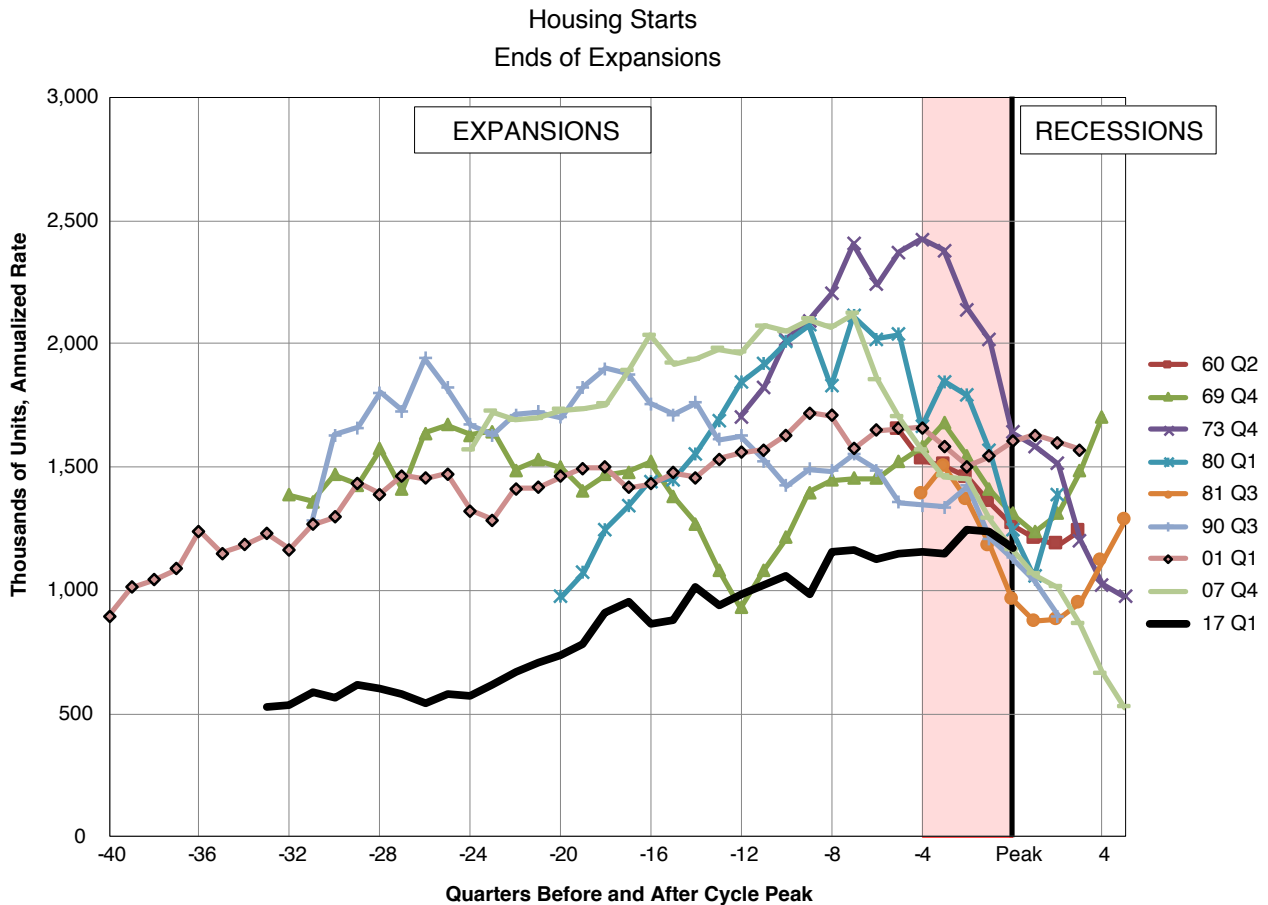
The current level of weekly hours is almost an all-time high, and there is no decline so far. **NO ALARM HERE.** That's good news from Main Street.

*Main Street Alarms: Homes*

We have used housing as a leading indicator of recessions since time immemorial, and with the role that housing played in the Great Recession, many other economists have awakened to this reality, though macro-economic texts continue to be written without reference to housing. Per the ends-of-expansions image for housing starts depicted in Figure 7, housing starts tend to decline the year preceding the recession, but are currently at recession levels. **NO ALARM HERE.** That's good news from Main Street.

Incidentally, there was no housing alarm preceding the 2001 recession. That was a business downturn with a collapse of business investment spending that had been fueled by the Internet. The other recession not affected by housing was 1953. (not depicted because housing starts data go back only to 1959) That was a Department of Defense downturn at the end of the Korean War.

Figure 7 Housing Starts



# THREE THINGS TO WORRY ABOUT

## Main Street Alarms: Over-building of Vehicles

Autos are a different story. Figure 8 is an ends-of-expansions graph for sales of autos and light trucks. As is true also for homes, the auto market did not suffer much in the 2001 downturn but in the three other expansions in the figure, auto sales peaked in the second year before a recession and fell in the year before recession. The last year and a half have auto sales in excess of 17 million units. History does not suggest that can last indefinitely. **SOME CONCERN HERE.** A weaker auto sector could be in the cards, but that alone is not likely to end the expansion

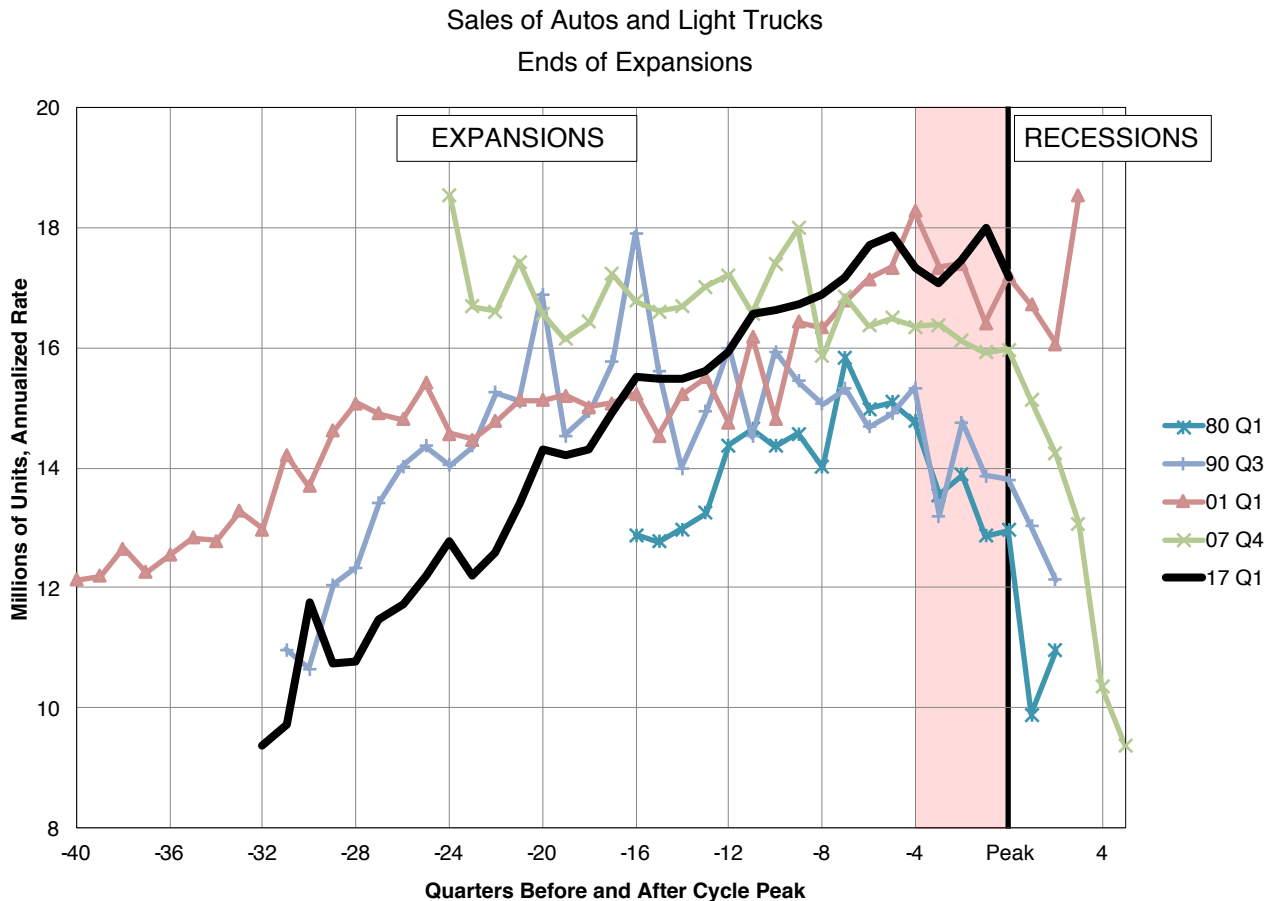
## What can make America Great again?

For 37 years from 1970 to 2007 the U.S. GDP grew at a constant rate of 3% per year. Since the end of the Great Recession the growth rate has only been 2%. Because of the power of compounding there is a huge difference between

3% and 2%, and the commitments we made thinking 3% would last forever are causing us great difficulties in the 2% reality of the last eight years. The most massive of those commitments is our promise to take care of our growing group of elderly with Social Security and Medicare. These unfunded liabilities have been estimated by economist Larry Kotlikoff to amount to \$211 trillion in debt. That makes the huge official government debt of \$19 trillion seem tiny and unimportant by comparison.

Take a look at the remarkable image below, Figure 9. This figure illustrates the level of U.S. real GDP from 1947 to 2016. The vertical shaded regions are the official recessions when GDP declined. The vertical scale is “logarithmic” which means that the biggest numbers are squeezed together. Don’t ask exactly how that works. All you need to know is that in this figure straight lines represent constant rates of GDP growth. That is what allows me to draw the four narrow corridors of growth within which real GDP has fluctuated. The first corridor that began in 1951 had 3% GDP growth.

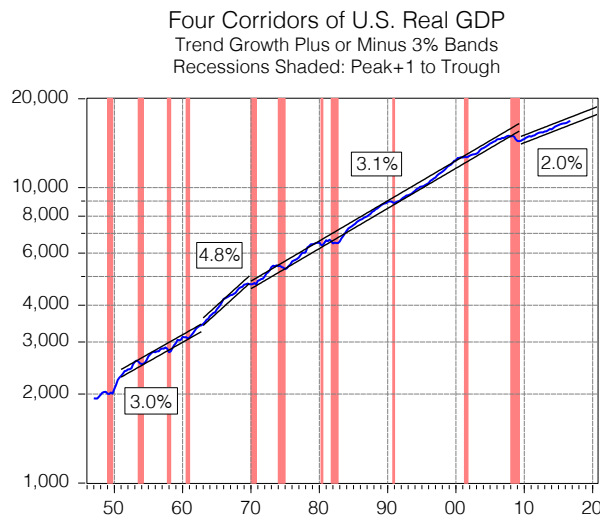
Figure 8 Sales of Autos and Light Trucks





Then came the Happy Days of the 1960s with real GDP growth of 4.8% and with substantial growth of earnings at every level of the income distribution, poor and rich alike. But abruptly in 1970, GDP growth slowed to 3.1%, and that is where growth stayed for 37 years until 2007. This period included the oil price shocks in the 1970s, the Carter malaise, the Reagan tax cuts, the decline in the value of the dollar in the late 1980s, the end of the Cold War, the Internet Boom and the Housing Bubble. All of these powerful forces should have affected GDP growth, but growth stayed at 3%. It felt like a constant of nature, like 9.8 meters per second squared.

Figure 9 Four Corridors of GDP growth



Most of the political rhetoric in those years focused on policies that might help or hinder long-term growth, but nothing seemed to matter much. In those 37 years it should have been the job of the President and the Congress not to worry about their effects on long-term growth but instead to help make the downturns less frequent and less severe, for example, by curtailing the government’s role in the boom and bust cycle in housing.

Now it’s not the magical 3% any more. It’s only 2%. Now the President and the Congress have a very different and much more important job. They need to figure out how to get us back into the 3% corridor, or better yet make America great again by turning the clock back to 1960 when the growth rate was 4.8%. Otherwise, our politicians need to curtail future commitments to make them sustainable in a 2% world. It is NOT sustainable to fund Medicare by borrowing from the Chinese or other foreign lenders as we have been doing. We might have thought we were outsmarting the

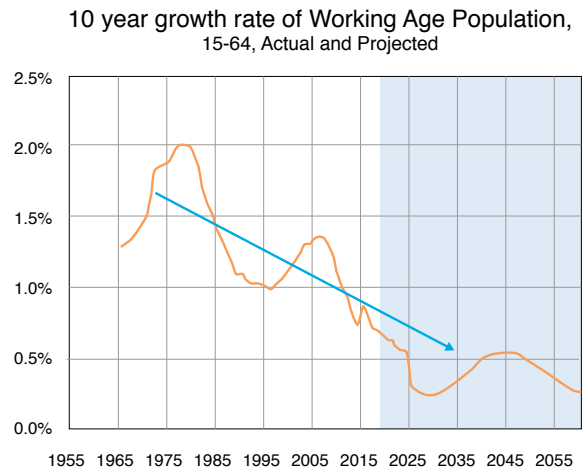
Chinese by selling them Treasury bills and bonds which will prove much less valuable when we get our inflation going to get out from under all that debt. There are two problems with this scheme. One is that the U.S. Treasury has issued way too much short-term debt, which is little reduced by inflation. The other problem is that the Chinese are trading in their Treasuries for real estate in California and elsewhere. Unless Trump nationalizes our real estate, there is no way to escape the fact that the future rental value of all that real estate is going to accrue to the Chinese.

We need 3% growth or more. The reason the Social Security unfunded liabilities are large with a 3% economy is that Social Security funding requires contributions from workers to fund the benefits of retirees, and the system needs to have the number of workers grow at the same rate or a higher rate than the number of retirees. With the baby boomers now retiring, the number of workers per retiree is declining rapidly. With that reality, the system is not receiving enough contribution to sustain itself. Social Security is a failing defined benefit retirement plan. It’s a Ponzi scheme that is coming unraveled. Medicare is different. It’s just a huge give-away to our elderly, and to our near-elderly who can expect the system to survive as long as they do. For the rest it’s fiscal child-abuse. A more rapidly growing economy would produce greater tax revenues and would help a lot with the burden of taking care of our elderly.

### Slowing Growth of the Workforce is a Problem

Demography is a big contributor to our growth slowdown. Figure 10 illustrates the alarming decline in the growth rate of the working age population. The first wave in

Figure 10 Slowing Growth of Working Age Population



## THREE THINGS TO WORRY ABOUT

the figure reflects the baby boomers coming of age, and the second wave is the ripple effect of the baby boomers when their children were coming of age. Those baby boomers gave us growth rates of working age population of 2% per year back in the 1960s and the boomer ripple gave us 1.4%. Soon enough it will be only about 0.25%. That difference subtracts 1.75% off GDP growth.

Another important demographic fact is that in 2010 there were five working age adults to every person 65 and over, but that ratio is destined to fall to only three. This will surely affect the national debate about how much we can do for our elderly, but in addition, the basic force that

drives the economy has shifted from marriages and families and homes and cars bought by young people to taking care of the elderly. It's a totally different dynamic

### Declining Share of Manufacturing Slow Growth

The decline in the fraction of manufacturing jobs illustrated in Figure 12 contributes to slower growth. (There is a difference in the level and growth of earnings and productivity of a high school graduate working on an assembly line of Ford Motor Corporation versus working as a cook for McDonalds.)

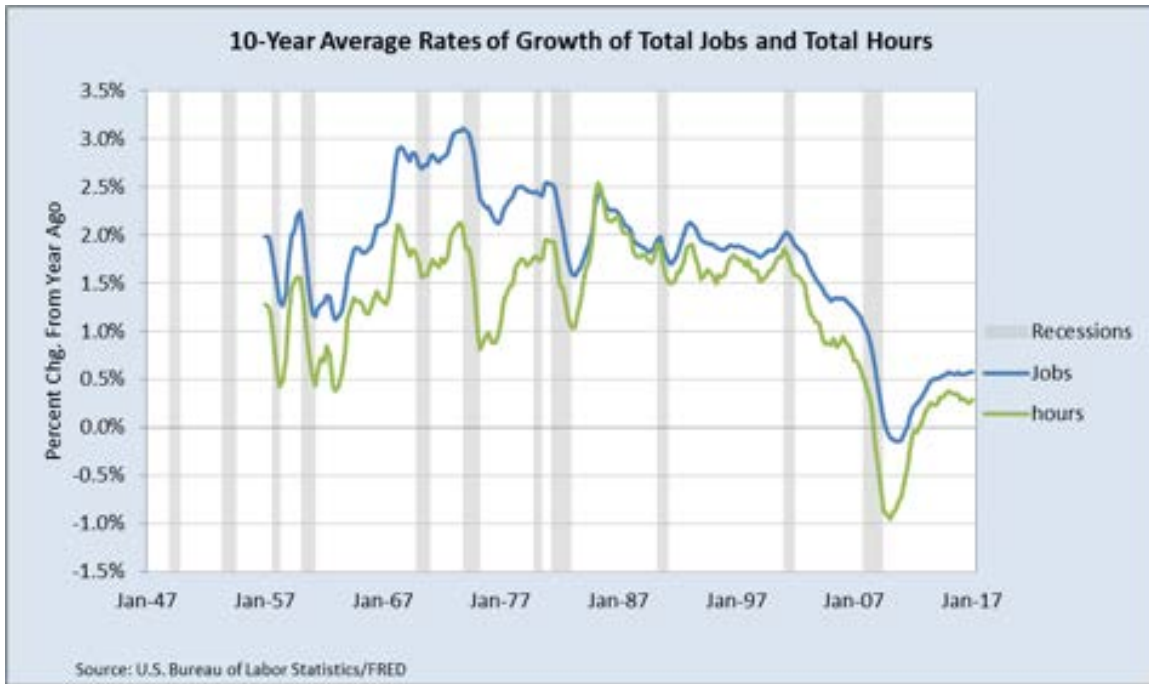
Figure 11 Rising Fraction of Population 65 and Above



Figure 12 Manufacturing Share of Payroll Jobs



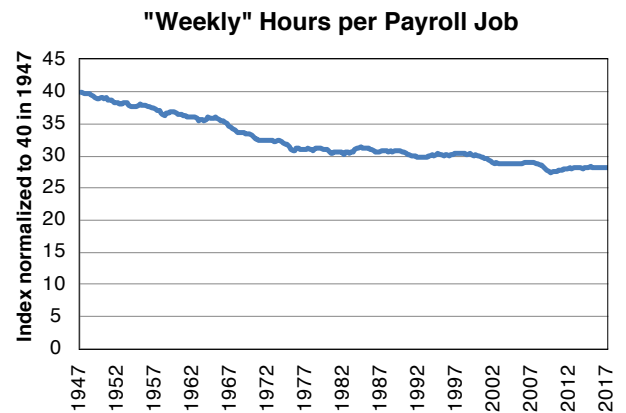
Figure 13 Rates of Growth of Total Jobs and Total Hours



Increase in Part-Time Work Also Lowers Growth

The slowing rate of growth of the working age population comes with slower growth of payroll jobs, but the rate of growth of total hours worked has been consistently lower than the rate of growth of jobs, both illustrated in Figure 13. While over the last decades, jobs have grown at the measly rate of only 0.5% per year, hours have grown at half that rate. Figure 14 makes this point by dividing jobs by the index of total hours and scaling the result to equal 40 hours per job in 1947, which is labelled “weekly” hours per job. This was declining from 40 to 30 from 1947 to 1970 and from 30 to 28 from 200 to 2017. In other words, most of the shift away from overtime and toward part-time occurred before 1970, but the shift is continuing.

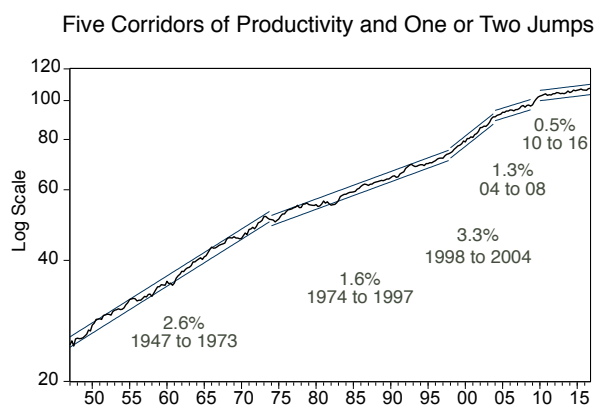
Figure 14 Hours per Job



### Slowing Growth of Productivity is a Problem

Growth of GDP is the sum of the growth in hours worked plus the growth of GDP per hour (productivity). Improvements in productivity come from more and better equipment, more and better education, more experience and better management. The image below illustrates the five corridors of constant productivity growth. Back in the 1960s, productivity growth was 2.6%. Except for the Internet Rush when productivity growth zoomed to 3.3%, it's been less and less over time. Since the Great Recession, productivity growth has only been 0.5%

Figure 15 Corridors of Productivity



### Japan offers A Lesson in Humility

The rapidity of the shift from 3% to 2% GDP growth is a big surprise, since most of the explanations for slower growth fold in slowly over time. We are not alone in trying to figure out the meaning of an abrupt transition. Japanese growth shifted dramatically lower in 1990 at the beginning of what was called the Lost Decade in 1990, something that has dragged on for two and a half decades. Figure 16 illustrates U.S. and Japanese real per capita GDP, with a log scale to make visually clear the periods of constant per capita growth. At about the same time in 1969/1970, Japanese per capita GDP growth downshifted from 8.5% to 3.3% per year and U.S. per capita GDP growth downshifted from 3.6% to 2.1%. Japan downshifted again in 1991 from 3.3% per year to 0.7% per year. The U.S. continued on its 2.1% trend until 2008 when it downshifted to 1.3%.

These shifts are poorly understood, but their existence raises the likelihood of weak U.S. growth going forward. Through more than a decade after 1990, most commentators blamed Japan's Lost Decade on inadequately stimulative monetary policy, and only recently with the ascendancy of Shinzō Abe have fiscal policy and deregulation been endorsed as stimulus measures. This is like a shift from blood-letting to leaches in a desperate attempt to cure the patient. A better approach may begin by recognizing that Japan and the U.S. both have suffered from declining rates of growth of the working age population, rapid aging, changing external competition and great technological advances (the PC and artificial intelligence). What is needed is not more of the traditional treatments of fiscal and monetary policy which have very doubtful efficacy in the situation we find ourselves. We need to design the medicine for the reality of the challenges we face. Trump and his team of economic advisors (or is that a gaggle or a chorus of advisors?) don't seem to understand the problems.

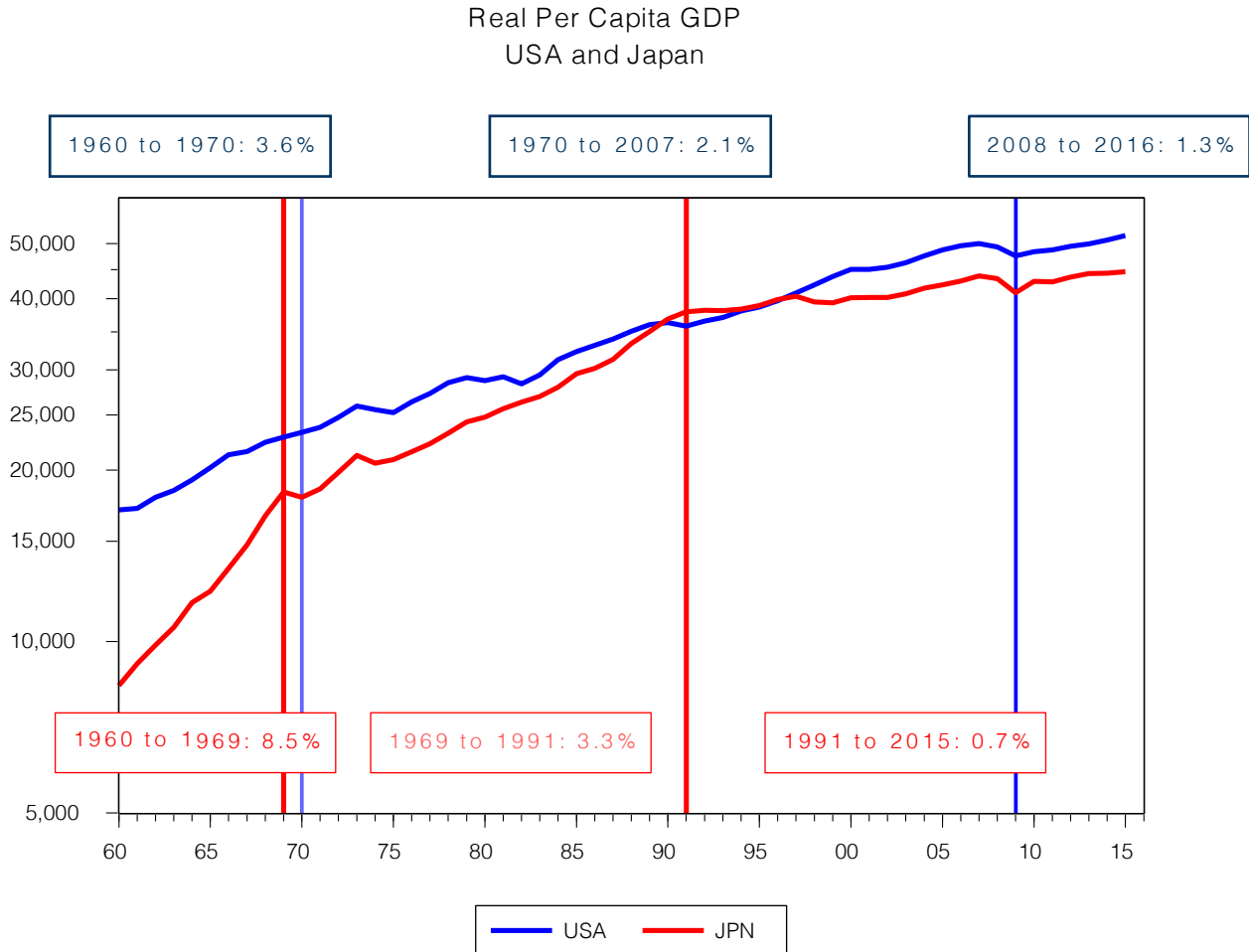
### What will make America Great Again?

To make America great again we have to solve three problems – how to increase the rate of growth of the working age population, how to increase the rate of growth of hours by making more of the new jobs full-time not part-time, and how to increase the rate of growth of productivity.

We can make America young again, not necessarily with some new version of Viagra that turns the clock back for all the elderly, but instead by increasing substantially the number of young and educated immigrants.

Can we make the rate of growth of America's productivity great again? There are hopes but little evidence. The hope is that we have overburdened our businesses with taxes and regulations that have slowed the whole thing down, and the combination of lower tax rates and deregulation coming under President Trump will make productivity growth great again. The hope is also that increased investment in infrastructure will help too. The alternative view is that we are in any entirely different technological age which is not capable of producing high rates of productivity growth any more. Time will tell. In the meantime, the safe thing is to plan on only 2% growth.

Figure 16 USA and Japan Real Per Capita GDP: Log Scales



## Can You See Clouds of Inflation Gathering on the Horizon?

We have saved the most difficult for last: Is there inflation ahead?

### History of Interest Rates and Inflation

The history of inflation and interest rates is illustrated in Figure 17 which depicts the annual rate of inflation of the PCE price index and the interest rate on 10-year Treasury Bonds. The gap between the two is a measure of the real rate of interest. This picture shows how rising inflation rates in the 1960s came with rising interest rates in an apparent attempt by the bond market to keep the real rate of interest positive but unexpected bursts of inflation caught the bond market by surprise and real rates were squeezed. As if to get even, when inflation rates plummeted in the 1980s interest rates remained stubbornly high and the real rate exceeded 5%. But subsequently, with the steady march downward of interest rates, the real rate was squeezed to zero or nearly zero. Thus the questions: What will happen to inflation rates? How will this affect bond nominal rates? What does this mean for the real rate of interest?

Whatever is our forecast, the bond market has its own ideas. Figure 18 illustrates the expected inflation rate over the next five years inferred from the shape of the yield curve. A year ago it exceeded 2% but it has subsequently fallen

below 2%. Figure 19 illustrates the market-determined real rate of return on 10-year Treasuries. We went from a 2% real rate before the 2008/09 downturn to a 0.5% currently. How bad is that!! **Our forecast is for a modest increase in the inflation rate and corresponding increases in interest rates keeping the real rate low.**

### Money and Inflation: Is there no relation?

The classic economic theory of inflation is built on the “quantity theory of money” which is summarized by the equation  $MV=PQ$  where P is the price level, Q is real output, PQ is a measure of the volume of transactions, M is the money supply and V is the velocity of money. This equation can be treated as a definition of velocity,  $V=PQ/M$ , but becomes a theory with the assumption that V is almost constant. With V constant, for any level of output Q, the price level P is proportional to money M. If you want to double prices as they have in Venezuela double the money M. This is not working out well in the United States. Velocity is not a constant at all – it has dropped precipitously. In other words, the Federal Reserve has greatly increased M but there has been no noticeable impact on P.

The story begins with the monetary base defined as currency plus excess reserves held by the commercial banks. Per Figure 20 the monetary base increased from around \$900 billion in 2008 to \$4 trillion in 2010 a historically unprecedented increase in 2014. If all went according to the quantity theory, an increase in money by a factor of 4 or

Figure 17 Inflation and Interest Rates

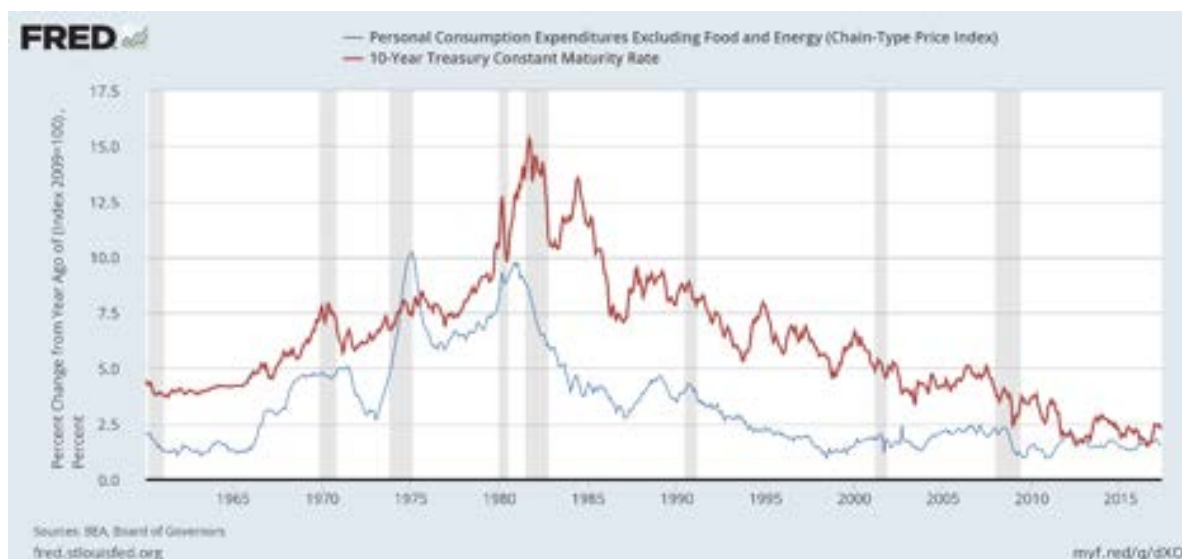


Figure 18 Expected 5-year Inflation Revealed by the Shape of the Yield Curve



Figure 19 Inflation Protected Ten-Year Treasury Rates



## THREE THINGS TO WORRY ABOUT

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more, the price level ought to increase by a similar amount. But the increase in the monetary base did not come with a like increase in money. M1 increased from \$1.4 trillion to \$3.4 trillion today, less than 3:1 increase. This is “explained” as a reduction in the money multiplier, illustrated in Figure 21. In other words, the potential for inflation was curtailed by the banking system which didn’t create the deposits that could have occurred with the 4:1 increase in the money base. The other slippage came from a sharp reduction in the money multiplier from 10 to 6 illustrated in Figure 22. This reflects the very large increase in cash and checking accounts on the balance sheets of corporations and individuals.

In other words, incipient inflation is mean and ugly and huge but hiding in the woods. The Fed’s job is to hunt down that animal and put it to sleep before it devours the economy. Maybe they will and maybe they won’t. Maybe it’s just a fictional Sasquatch created by the authors of the Quantity Theory of Money. After all, what is money I ask myself when I hold my iPhone near a reader.

**Inflation is difficult to forecast. The only thing we know is persistence.**

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Figure 20 Monetary Base





Figure 21 M1 Money Multiplier



Figure 22 M1 Velocity

