

Our Perspectives

Commentary on Legal, Regulatory and Economic Issues Affecting Financial Services Companies

Longbrake Letter – January 2019

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I. Placing U.S. Economy on Recession Watch

With publication of this month's *Longbrake Letter*, I am placing the U.S. economy on recession watch.

This is not a forecast that recession is imminent. It may or may not be. It is like a tornado watch. Conditions are developing that could lead to recession in the next few months, but those conditions could evolve in ways that keep the U.S. economy on firm footing for a long time to come.

What economists refer to as “***tail risk***,” which is large deviations from generally anticipated outcomes, is unusually high as 2019 commences. While the consensus does not expect recession to commence during 2019, “***tail risk***” is significant and the probability of recession occurring in the U.S., and some other countries, is rising.

While the U.S. economy put together the best two consecutive growth quarters of the current economic expansion in the second and third quarters of 2018 and the fourth quarter also promises to be strong, Europe and China have clearly lost momentum and growth in many countries, although still strong and above long-run potential, is decelerating.

Investor pessimism skyrocketed in the fourth quarter and wave after wave of selling took U.S. stock indices down nearly 20 percent, which traditionally is the demarcation point for a bear market. But, incoming economic data didn't validate the gloomy mood. All it took to dispel much of the gloom was an extraordinarily strong December employment report, which was released on January 4th. The S&P 500 average was up 6.5 percent through January 18th and nearly 14 percent from the Christmas Eve low point.

**The information contained in this newsletter does not constitute legal advice. This newsletter is intended for educational and informational purposes only. Bill Longbrake is an Executive in Residence at the Robert H. Smith School of Business, University of Maryland and an Affiliate Professor at the Daniel J. Evans School of Public Policy, University of Washington.*

Recession risks were very much on the minds of many as the stock market plunged in December 2018.

- Almost half of CEO's attending a Yale C.E.O. summit expected the U.S. economy to be in recession by the end of 2018 (that is not a misprint).
- Corporate CFO's are also gloomy – according to the Duke University/CFO Global Business Outlook survey, 48.6% expect the U.S. economy to be in recession by the end of 2019.
- Each month the Conference Board asks CEOs to rank their concerns. In January 2018, recession risk 19th out of 19 choices. In January 2019, recession risk ranked first.
- Over half of the economists polled by the Wall Street Journal expect recession to begin in 2020; 10% expect recession to begin in 2019.
- Goldman Sachs pegs recession odds at 15% in 2019, but notes that the market's probability is 50%
- Bank of America/Merrill Lynch recession model indicates a 10% to 20% chance of recession, but an alternative recession model, based upon financial market measures, places the odds of recession in 2019 at approximately 40%

What we know from experience is that forecasting a recession's onset is notoriously difficult. The fact is that we are usually well into recession before the consensus acknowledges it. What we do know from history is that when risks are unusually high, as they are at the beginning of 2019, the economy is especially vulnerable to unexpected shocks. Consumer, business and investor sentiment can plunge quickly and propel the economy into a downward spiral. Trying to forecast the pivotal shock and perhaps more importantly, its timing, is a crap shoot. The best policy is to be prepared for disaster while hoping for benign outcomes.

History tells us that good times do not last forever. When the economy is operating at full capacity, bottlenecks begin to emerge, and they slow momentum and drive up inflation. Optimism can overwhelm prudence and foster speculative excesses.

As we learned in the 1970s, when the economy is stretched to the limit, if policy does not dampen enthusiasm, inflation can spin out of control. The Federal Reserve learned this lesson and ever since then has conducted monetary policy to dampen demand and contain inflationary pressures, whenever the economy is operating near full capacity, by raising interest rates.

What we know with certainty is that economic growth will slow in the U.S. in coming months from its current torrid pace. What we don't know is whether slower growth will morph into recession. Forecasters almost universally assume that policymakers will be able to engineer the proverbial soft landing and avoid recession. History isn't particularly supportive of this sanguine view. A more typical evolution is that policy errors, lagged responses, unanticipated shocks, and abrupt shifts in sentiment from optimism to pessimism combine to turn gradual deceleration into decline.

Hard to tame excesses can develop in the real economy and financial markets. They can be fostered and nurtured by policy decisions. And they can be amplified by the interaction of policy and sentiment.

Excesses develop from phenomena that are standard parts of an economic and political system, but which have migrated to extremes relative to their normal relationships to other components. For example, during the housing bubble which preceded the Great Recession, home prices soared to levels that could not be supported by incomes and thus were destined to fall. However, soaring house prices were enabled by easy access to cheap credit and imprudent underwriting standards that relied on inflated home values rather than the ability of borrowers to service mortgages from income. This excessive reliance on debt leverage based on inflated and unsustainable housing valuations was amplified through the creation of debt derivatives, the inevitable search by investors for high yields, and investor sentiment which misunderstood and underestimated the risks inherent in the rapid run up in housing prices. Moreover, the consequences of debt leverage excesses were amplified by policy errors that permitted financial institutions to operate with inadequate levels of loss absorbing capital.

Of course, it is always easy after the fact to dissect the causes of a debacle, but it is hard to discern them and assess the extent of imbalances before the fact. Lack of critical assessment and the preponderance of optimism typically cloud clear vision about risks. Such sentiment can amplify the extent of excesses and inflate a bubble to a much greater extent.

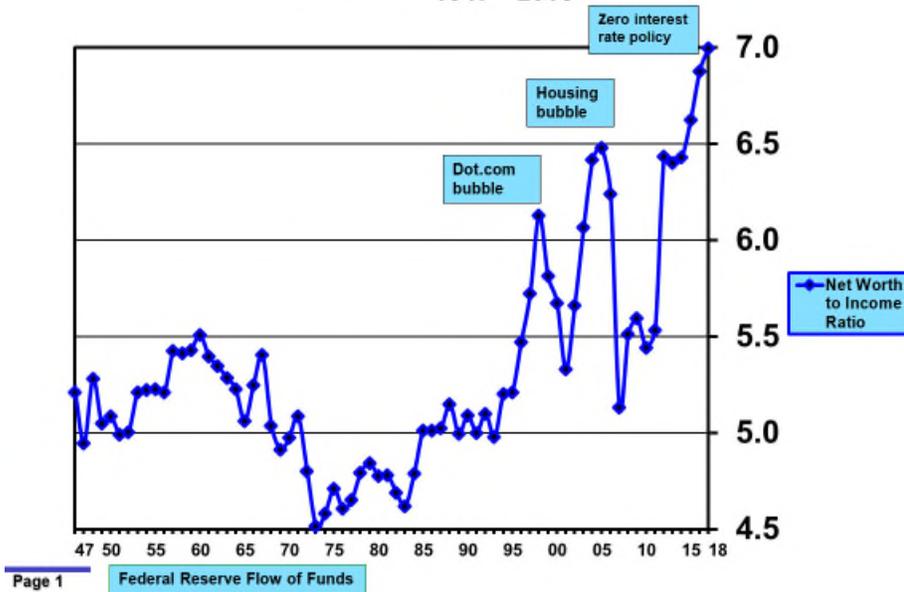
As I commented in my September letter, blatant excesses of the sort that preceded the Great Recession and contributed to its virulence are not visible today. But that does not mean there are no risks. To the contrary there are several that bear watching. Individually today's risks don't appear to pose extreme danger to the U.S. economy. But, a combination of risks and interconnected responses that correction of excesses could unleash, while difficult to foresee, could lead to recession and more difficult economic times than forecasters expect.

II. Household Net Worth to Disposable Income

Chart 1 shows the ratio of household net worth to aggregate disposable income for the past 70 years. Over most of that period, this ratio oscillated between 4.5 and 5.5. Then during the investment (.dot.com) boom of the late 1990s it briefly soared to over 6.0 in 1999 and then fell back into the historical range during the recession of 2001. But, it wasn't long before monetary stimulus and misguided housing policies undergirded another spike in this ratio to nearly 6.5 in 2006. The Great Recession of 2008-2009 soon followed and, again, this ratio reverted to its historical range.

CHART 1 – Household Net Worth to Disposable Income

1947 - 2018



Now we are confronted with yet another peak in this ratio to 7.0 in the third quarter of 2018. It isn't hard to pinpoint the culprit. It stems directly from the Federal Reserve's monetary policy of intentionally depressing both short-term and long-term interest rates for several years. This policy has caused valuations of both financial and real assets to soar.

Some argue that this policy has been successful in pulling the U.S. economy out of deep recession by creating wealth part of which has spurred additional spending. Others observe that the wealth that has been created by low interest rates has benefitted disproportionately wealthy individuals and has greatly exacerbated wealth inequality. And, there is a correlation between increasing wealth inequality and the rise of populist political movements in the U.S. and elsewhere. Some argue that this phenomenon is more than a correlation ... that there is a direct causal relationship.

Given the sharp decline in stock prices during the fourth quarter, this ratio should be somewhat below 7.0 when 2018 year-end data are compiled.

A question to ponder is whether this simple chart, which has accurately forecast the past two recessions, will once again prove to be a reliable leading indicator of recession. Or, is it different this time? Has the seemingly decades-long stability in the ratio of wealth to income changed on a permanent basis?

III. Phenomena That Lead to Recessions

There was a time during the 1990s, when economists believed their knowledge of how the economy works and how policy tools can be applied to adjust economic activity, that the business cycle had been tamed. This phenomenon was referred to as the Great Moderation. Both the mild recession of 2001 but decidedly the Great Recession of 2008-2009 buried this overly simplistic

notion. So much so, in fact, that many market participants today are skittish about the likelihood of recession just around the corner, even though economic activity in the U.S. is very strong.

While it is easy to point out all the things that could go wrong in the economy and cause recession, it is much harder to make a solid case that recession is inevitable and describe the pathway that will lead to one. In the next section of this month's letter, I describe several aspects of the economy which pose risks. And, I argue that many of those risks are elevated. But other than stating the obvious that some time in the future recession will occur, I am hard pressed to make a case that recession will occur with certainty in the next few months.

Goldman Sachs (**GS**) recently studied the causes of recession in the U.S. economy over the past 100 years and, based upon this analysis, concluded that one is not imminent.¹

Consensus forecasts put current recession risk at 25 percent, which, according to **GS**, is at the top of the historical range. Alternative recession models, which rely on financial markets measures, place the probability at 50 percent. But these alternative models are very sensitive to short-run developments in financial markets. Improving conditions in financial markets during January should drive down probability estimates in these alternative models.

GS found that there have been five major drivers of U.S. recessions:

- Industrial shocks and inventory imbalances
- Oil shocks
- Inflationary overheating and tight monetary policy
- Market financial imbalances and asset price crashes, and
- Fiscal tightening

GS believes that the first three recession causes have diminished in importance and potential impact as the U.S. economy has evolved and restructured over time.

Manufacturing's contribution to GDP has diminished steadily as services have become an ever-increasing portion of economic activity. Services typically are less sensitive to economic cycles. Disruptive labor strikes have not occurred in several decades. In addition, technological innovations have made it much easier to control inventories. That said, however, the inventory cycle is not completely dead as illustrated by the burst in inventory accumulation in the third quarter caused primarily by businesses trying to beat price increases stemming from the imposition of tariffs on Chinese imports. Nonetheless, these structural changes have greatly diminished the likelihood that industrial shocks and inventory imbalances will be the primary drivers of a future recession.

Oil prices still gyrate and still contribute to large fluctuations in the investment cycle. However, overall, energy efficiency has improved and this has diminished the proportion of business and consumer spending devoted to energy. In addition, shale oil and gas technology has reduced U.S.

¹ Hatzius, Jan and Mericle, David. "Learning from a Century of US Recessions," US Economics Analyst, Goldman Sachs Economic Research, January 20, 2019.

dependence on energy imports and decreased considerably the potential of politically motivated international energy shocks.

In the past, when the economy was operating at or above full capacity and labor markets were tight, price inflation and wages rose and led the **FOMC** to raise interest rates and tighten monetary policy with the intent to moderate price pressures. Unfortunately, the historical record indicates that tight monetary policy has often been a recession catalyst. What appears to be different now is that prices and wages have not responded to nearly the same extent to tightening economic capacity and labor markets as they did in the past. Wages are rising, but my analysis indicates that recent hourly wage growth should be about 0.7 percent higher based upon historical relationships. The market seems to have figured this out quite some time ago and for well over a year has forecast a much smaller increase in the federal funds rate than the experts on the **FOMC**. However, thanks to market volatility in the fourth quarter, **FOMC** members are beginning to understand the inflation threat is subdued and the need to raise interest rates, therefore, has diminished. But, they are not yet fully convinced as they expect to raise the federal funds rate twice in 2019 but the market is forecasting no increases. Interestingly, **GS** expects two increases in 2019 – one in June and one in December – although its probability analysis indicates only one increase in 2019. **B of A** also expects two increases – one in March and one in June. My own sense is that the market will win this forecasting battle.

But, it is incomplete to focus only on the role of monetary policy in setting interest rates. Since the Great Financial Crisis, the **FOMC** has used the Fed's balance sheet as an instrument of policy. Quantitative easing – large scale asset purchases – depressed long-term interest rates, but also kept financial markets highly liquid. By decreasing the size of the Fed's balance sheet through sales of securities, the **FOMC** is reducing market liquidity at the same time as federal deficit spending is also diminishing market liquidity. This development is without precedent, so the past doesn't provide guidance. It could turn out to be a consequential recession risk. While the **FOMC** hasn't paid much attention to this risk, there is some indication that may change in coming months.

This brings me to the fourth recession cause – market financial imbalances and asset price crashes. Unequivocally, this has been the primary cause of the last two recessions. **GS** believes this recession cause is less consequential today because of regulatory reforms implemented after the Great Financial Crisis and by private sector restraint. I am considerably less sanguine. For example, in December credit spreads blew out on high yield debt securities and new issuance almost came to a standstill. Banks stepped in and filled the lending gap. For the moment, the crisis has passed and credit spreads have narrowed. But this isn't exactly a compelling development in support of **GS's** argument of better regulation and private sector restraint. This kind of faith in the efficacy of policy actions preceded the two previous recessions and obviously, with the benefit of hindsight, was misplaced. Think about the risks posed by collateralized loan obligations (CLOs), dollar-denominated debt in emerging economies, administered interest rates that have been kept low for years, and the explosion of debt-to-GDP ratios in almost every country around the globe. All of these are surely imbalances. The question is whether any one or combination of them is sufficiently great to trigger recession.

Fiscal policy contraction historically occurred as a part of post-war demobilization. This has not contributed to a U.S. recession since 1953 (Korean Conflict) and to a lesser extent 1969 (Vietnam War).

However, fiscal risks are of a different sort in today's economy. Political risk, which is an outcome of intensifying partisan conflicts, has risen steadily in recent years. The current partial federal government shutdown is a consequence and if it persists much longer could have nontrivial negative impacts on the economy.

An emerging fiscal risk is government deficit financing. Risk grows as the ratio of government debt to GDP rises. In the short run, governments can boost economic growth through deficit spending, but when such a policy is carried to an extreme it can depress growth and catalyze financial crisis when investors are no longer willing to finance further increases in government debt. There is debate about what ratio of government debt to GDP constitutes a tipping point. The European Union has a policy limiting the ratio to 60 percent, but Italy is close to 130 percent and to date has evaded financial crisis. Ultimately, the tipping point depends upon investor confidence. What we do know with certainty is that an increasing debt-to-GDP ratio raises risk and slows growth. That means the U.S. and many other countries are headed in the wrong direction, but the climactic moment, when everything falls apart, could be many, many years in the future. In the meantime, if recession occurs for some other reason, burgeoning debt to GDP ratios will constrict governments' abilities to use fiscal policy to soften the consequences.

Based upon its historical analysis of recession causes, **GS** concludes that a soft landing is more probable than most believe in coming years than recession.

IV. Developing Risks

With these observations in mind, let's take a deeper look at some the obvious risks that exist in the U.S. and global economies and financial markets.

1. The U.S. Economy Is Operating Above Full Capacity

Based upon Congressional Budget Office (**CBO**) analysis, the U.S. economy entered 2019 operating about 0.35 percent above capacity on a four-quarter moving average basis. This is expected to grow to approximately 1.1 percent to 1.2 percent by the end of the year. In the past the economy has rarely operated at full capacity for very long before recession occurred. Soft landings don't usually occur. ***Economic expansions don't die of old age, they die when the economy operates above capacity and overheats.***

2. Excessive U.S. Corporate Debt

Two policy initiatives, adopted in reaction to the Great Recession, one of which was intended to prevent recurrence of the behaviors that contributed to the severity of the Great Recession, have shaped U.S. financial markets over the past ten years. These policies were intended to pull the economy out of its near-depression state and prevent reoccurrence of the financial mischief that catalyzed the Great Financial Crisis.

First, **monetary policy** went far beyond the traditional strategy of lowering short-term rates. Quantitative easing, involving the purchase of U.S. Treasury securities and mortgage backed securities issued by government sponsored enterprises, was added to the monetary policy tool kit. This policy intentionally injected copious amounts of liquidity into the financial system and depressed long-term interest rates.

Because quantitative easing endured for several years, two effects evolved which helped boost economic growth, but which simultaneously sowed the seeds of future problems.

First, market participants came to rely on abundant liquidity and low and sustained long-term interest rates. This had the direct effect of inflating asset values and creating a wealth effect that helped stimulate economic growth. The stock market was the most visible beneficiary of this policy, but all other long-term asset classes also benefited. Inflation in asset values enabled lending at apparently conservative loan-to-value ratios. But, debt service coverage ratios based upon cash flows remained the same. With abundant liquidity and the mirage of conservative lending terms, competition drove credit spreads down. Loans appeared to have low risk but weren't very profitable. In fact, if the artificially inflated asset values returned to levels dictated by market interest rates rather than depressed rates manipulated by the Federal Reserve, in the longer run such loans would be even less profitable because of inadequate credit spreads. As the Federal Reserve pursues its current monetary policy of normalizing interest rates, the artificial inflation in asset values will melt away. Then it will become apparent that tight credit spreads have not adequately priced risk of default. The apparent risk mitigation of low loan-to-value ratios will turn out to be an illusion.

But, tight credit spreads are not the only problem with commercial and industrial loans and commercial real estate loans. Other underwriting terms have been loosened steadily and is continuing according to the most recent Federal Reserve Senior Loan Officers survey. According to Moody's Analytics, the composite underwriting score for commercial and industrial loans deteriorated from 2.5 in 2007 prior to the Great Recession to 4.0 in 2017. Scores for every underwriting term – financial covenants, subordination limitations, additional debt issuance, asset sales and mandatory prepaids, and voting and assignments, have weakened in favor of borrowers. Many of these loans have found their way into the collateralized loan obligation market, which has nearly doubled in size since 2013 to \$550 billion. Over the same period leveraged loans have ballooned from \$800 billion to \$1.4 trillion.

GS opines: *“Overheating in corporate credit markets poses several macroeconomic risks. First, high leverage makes firms more vulnerable to rising interest rates. Second, low profit spreads have historically led to reversals with a credit crunch sometimes causing a broader growth slowdown. Third, rapid deterioration in risky pockets of corporate credit markets can trigger broader financial market disruptions and tighten standards on less risky lending.”*²

² Chen, Brian, Choi, David, and Mericle, David. “Assessing Financial Stability Concerns in Corporate Credit Markets,” US Daily, Goldman Sachs Economic Research, September 21, 2018.

Currently, risks are moderate because the rate of return on invested capital exceeds the cost of borrowing. But higher interest rates will raise the cost of borrowing and slowing economic activity will depress the rate of return. Historically, when the spread between the return on investment and the cost of capital approaches zero, recession has ensued. According to Gavekal Research, this point will be reached with two to four more increases of 25 basis points in the federal funds rate, depending upon what happens to the rate of return on invested capital.³ This implies that this risk may be activated as soon as the second quarter of 2019. On October 30th, TrackMacro, a quantitative signaling algorithm of Gavekal, flashed red and hit the maximum 100 percent defensive reading.⁴ It is signaling that inflation will rise and economic activity will slow, a toxic combination for asset prices.

Second, the **Dodd-Frank Act** changed regulatory requirements in several ways. It increased capital and liquidity requirements for regulated financial services institutions. In the interests of protecting consumers from unscrupulous lending practices, it also imposed stricter requirements on consumer and residential lending. The intent on the one hand was to force regulated financial institutions to have greater reserves to withstand credit losses and liquidity crises. On the other hand, the intent was to protect consumers from predatory lending.

There have been two visible consequences. First, the number of market makers has declined substantially and many assert that liquidity is now less assured should a financial markets crisis erupt. The risk is escalation of contagion.

Second, tighter residential loan underwriting standards and the costs of consumer compliance have limited the availability of home construction and home mortgage credit and contributed to a housing shortage and an escalation in housing prices that has exceeded increases in household incomes. I estimate that national housing prices, after falling 7.8 percent below trend in the first quarter of 2012 in the aftermath of the Great Recession, were 12.3 percent above trend in the second quarter of 2018. While this is well short of the housing bubble peak of 34.9 percent above trend in the first quarter of 2006, it is indicative of the increased unaffordability of housing, which will only get worse if interest rates rise further.

3. Leveraged Loans and Collateralized Loan Obligations (CLOs)

Leveraged loans have grown to \$1.13 trillion and account for 12 percent of outstanding corporate debt. Of that amount, approximately \$600 billion are packaged in CLOs. Carmen Reinhart asserts that CLOs "... share many similarities with the now notorious mortgage-backed securities of the pre-subprime- crisis era."⁵

Leveraged loans are borrowings by low-credit-rated companies, generally secured by a portion of the company's assets and paying a floating rate of interest. CLOs are a structured security, which means there are multiple credit tranches, which are collateralized by a pool of leveraged loans.

³ Denyer, Will. "GE is More Fish Than Fowl," The Daily, Gavekal Research, November 16, 2018/

⁴ Darcet, Didier. "The Penultimate One," GaveKal Intelligence Software, The Quant Corner, November 2018.

⁵ Reinhart, Carmen M. "Financial Crises: Past and Future," AEI Economics Working Paper 2018-12, December 2018.

Growth in CLOs has been propelled by investors' desire for high yielding variable rate securities. As always happens when demand exceeds supply, credit spreads are very tight and not reflective likely long-term defaults and probable losses. Also, underwriting standards have deteriorated, and covenants are generally lax.

As long as corporate earnings remain robust, leveraged loans should perform satisfactorily. This implies that CLOs will not likely be a primary cause of recession but could greatly amplify a recession once it is underway. These securities will be very vulnerable to a slowdown in sales revenues that impairs earnings and debt servicing capacity.

Take note of Carmen Reinhart's comparison of CLOs to subprime residential mortgage securities and their companion, collateralized debt obligations (CDOs). As the risks of CDOs became increasingly apparent during 2006 and 2007, most, including chairman of the Federal Reserve System, Ben Bernanke, dismissed the importance of the risks posed by these securities because they were a small portion of the securities market. This turned out to be a horribly complacent and terribly incorrect assessment. We know how it turned out. Subprime residential mortgage securities and CDOs were the tip of an iceberg. The cold hard reality as it turned out was that overleverage and credit laxity permeated large parts of the securities markets and contagion resulted in unanticipated extensive financial carnage. Can history repeat itself? Students of the market with the history of the Great Financial Crisis in mind say "No," but it's difficult to know for sure all the linkages in an opaque market until after the fact. What we know with certainty is that low interest rates have driven financial engineering and a substantial increase in corporate debt. We know that CLOs are the latest hot investment, which is attractive to retail investors through ETFs.

4. Deteriorating Residential Loan Credit Standards

This risk has developed without much market notice and may be relatively small in the overall scheme of things. Its genesis was in programs Fannie Mae and Freddie Mac instituted several years ago to make residential loans more broadly available. Down payment requirements were reduced, and debt-to-income ratios were liberalized. The offset was maintenance of high FICO scores, which measure the ability and willingness of borrowers to meet their debt obligations.

When interest rates began to rise in 2017 volumes in these programs surged. To maintain overall mortgage origination volumes, mortgage originators naturally gravitated to these programs as origination volumes plummeted in mortgage refinances. According to a research note published by Recursion, "Over the past year risks in the agency market by some measures have ballooned, reaching close to or surpassing the peaks attained in the mid-2000's."⁶

Li and Koss observe that mortgage risk is best measured by assessing what is happening in the tail of the distribution. Following the Great Financial Crisis, the percentage of mortgages purchased by Fannie and Freddie with debt-to-income ratios greater than 45 percent averaged approximately 5 percent for several years. However, beginning in 2018 this percentage abruptly spiked to more than 20 percent. Similarly, the percentage of loans purchased by the agencies with loan-to-value

⁶ Chang, Li and Koss, Richard. "Recursion Solutions Market Note," Recursion, November 2018.

ratios exceeding 95 percent rose from less than 4 percent to 15 percent. And the percentage of loans with both a high loan-to-value ratio and a high debt-to-income ratio rose from near zero to 3 percent.

Defaults occur when people lose their jobs or have significantly adverse life events such as illness or divorce. Default rates are highly correlated with debt-to-income ratios. Loss given default is highly correlated with loan-to-value ratios and falling home prices. According to my estimates, home prices on average across the country are approximately 12 percent above trend. What this means is that should unemployment begin to rise, both the incidence of defaults and losses will escalate, assuming that home prices also fall as they did during the Great Recession.

It is hard to determine whether this is a significant risk. Probably by itself this risk won't trigger recession. But, if recession occurs, it would increase its severity.

5. U.S. Trade Policy

According to economic theory, tariffs have negative consequences for economic growth and employment. Tariffs raise the cost of goods to consumers which depresses demand. This leads to lower production. A recent International Monetary Study confirms theory. The study examined 151 countries covering the period 1963 to 2014. The study found that tariffs reduce economic output, productivity and employment, but do not change the trade deficit. Impacts were greater for developed economies and economies that were expanding. Specifically, the authors found that an aggregate increase in tariffs of 3.6 percent reduced GDP by 0.4 percent and decreased productivity improvement by 0.9 percent after five years. These results were statistically significant.

If the U.S. responds to tariffs in the same way, the trade deficit is unlikely to decline, but there will be negative consequences over time for GDP and employment. Since the political focus has been on reducing the trade deficit, if it does not decline as the IMF study indicates, this is likely to have negative political repercussions.

In the short run the U.S.–China trade deficit has increased, aided in part by a 10 percent depreciation in the Chinese currency relative to the dollar. The increase in the trade deficit has also been spurred by stockpiling to beat the increase in tariffs on imports from China to 25 percent on January 1, 2019, now delayed until March 1st. This phenomenon was evident in third quarter GDP data. Inventory accumulation skyrocketed but this was almost entirely offset by a decrease in net exports (imports greater than exports). More of the same is likely in the fourth quarter. Anticipatory actions of this sort boost U.S. growth and employment in the short run, but this will reverse after the tariffs take effect. The implication is that U.S. growth will slow in 2019 as excess inventories are run off and perhaps to a greater extent than most forecasters expect.

6. Monetary Policy

As discussed in the section above concerning risks stemming from corporate debt leverage, the normalization of interest rates could have greater negative impacts on economic activity in coming months than in past monetary policy tightening episodes because long-term rates have been artificially depressed for a long time. In turn, valuations have been artificially elevated. The

adjustment process in valuations could turn out to be more disruptive than in past tightening cycles and could spur unexpected bankruptcies for those who have relied too heavily on debt leverage.

Moreover, it is worth considering the implications of the months long difference in market expectations for interest rates and the **FOMC's** interest-rate projections. The market expects no increases from the current range of 2.25 percent to 2.50 percent during 2019. However, the median of the **FOMC** projections has the federal funds rate increasing twice during 2019 to a range of 2.75 percent to 3.00 percent, 50 basis points higher than the market's forecast.

If the market's view is more correct, the **FOMC** risks a policy error which would increase the probability of recession. Past recessions have usually occurred when the **FOMC** raised the federal funds rate well above the long-term equilibrium value. Lag times between adjustments in the policy rate and the impact on economic activity can be as long as 18 months. Monetary policy works through tightening financial conditions, but economic momentum can delay the transmission of higher rates to tighter financial conditions for an extended period. For this reason, the **FOMC** historically has raised the federal funds rate by too much. Or, another way of looking at it, because of concern for losing control of inflation and inflation expectations, the **FOMC** has had a bias historically to increase the federal funds rate more than a retrospective view indicated was probably necessary. The possibility that this policy error will occur in the current monetary policy tightening cycle should not be discounted.

But, it is incomplete to focus only on the role of monetary policy in setting interest rates. Since the Great Financial Crisis, the **FOMC** has used the Fed's balance sheet as an instrument of policy. Quantitative easing – large scale asset purchases – depressed long-term interest rates, but also kept financial markets highly liquid. By decreasing the size of the Fed's balance sheet through sales of securities, the **FOMC** is reducing market liquidity at the same time as federal deficit spending is also diminishing market liquidity. This development is without precedent, so the past doesn't provide guidance. It could turn out to be a consequential recession risk. While the **FOMC** hasn't paid much attention to this risk, there is some indication that may change in coming months.

7. Tightening Financial Conditions

One of the more important advances in economic forecasting in recent years has been an improved understanding of the importance of financial conditions in guiding developments in the real economy. Prior to the Great Recession economic forecasting models focused primarily on real economic activity, monetary policy and fiscal policy, but did not include to any great extent the interaction of financial markets and the real economy. Consequently, the enormous financial risks that built up in the economy prior to 2008, which were recognized by a few seasoned analysts, were not captured in econometric models. Thus, many were surprised who should not have been.

In recent years measures of financial conditions have been constructed and their relationship with and impact on real economic activity has been tested. The measure I follow closely is the Goldman Sachs Financial Conditions Index (**GSFCI**). This measure is a weighted composite of credit spreads, exchange rates, market prices movements and other indicators of financial market

conditions. Through its research **GS** has been able to determine how a persistent change in financial conditions will impact economic activity.

GSFCI is pegged to a neutral level of 100. However, since 2010 it has averaged 99.5. At the beginning of 2018, the January **GSFCI** hit a recent low of 98.29. By December **GSFCI** had risen to 100.12. As market volatility has eased early in the new year **GSFCI** has retreated to 99.75.

In late December, following the surge in tightening financial conditions, **GS** concluded the "... tightening has only moderately reduced the median growth outcome for 2019..." But, **GS** added a caution. Financial tightening "... has considerably increased downside tail risk."⁷ For now, the easing of financial conditions in January has reduced tail risk.

Tighter financial conditions do the work of slowing the economy that the **FOMC's** interest-rate policy is intended to accomplish, but the time lags are much shorter. **GS**, which had been forecasting four 25 basis point increases in the federal funds rate in 2019 reduced this number to two in December and added that the caveat that risk was in the direction of only one increase rather than three.

GS's research indicates that 100 basis points tightening in financial conditions, which is what occurred during the fourth quarter, if persistent, would reduce the median estimate of real GDP growth over the next four quarters by 0.7 percent. However, tail risk of GDP growth falling below zero would rise from 10 percent to 15 percent. However, **GS** has reduced its 2019 real GDP growth forecast from 2.6 percent to 2.4 percent. This seems reasonable, given the improvement in financial conditions during January. However, **GS's** 2.4 percent 2019 growth estimate is the median of a distribution, which means that actual 2019 real GDP growth could be higher or lower than this estimate.

The takeaway from **GS's** research is that changes in financial conditions matter. They not only matter but large and persistent changes can alter the outlook for real economic activity quickly and dramatically. With that in mind, maintaining a close watch on **GSFCI** and also on **GS's CAI** (current activity indicator) will be key in monitoring the possibility of recession and timing of onset.

8. Declining Consumer, Business, and Investor Sentiment

Shifts in consumer, business, and investor sentiment rarely are a direct cause of recession. But in tandem with a substantive economic development they can amplify a momentum shift literally overnight. An example was the failure of Lehman Brothers in early October 2008. Recession was already underway; it began in January 2008. But until the failure of Lehman, the recession was developing gradually. The Lehman failure scared the living daylights out of investors. Overnight liquidity dried up, asset prices plunged and panic engulfed employers and consumers. Within days the economy was in freefall.

⁷ Choi, David. "The FCI Impulse: It's the Tails That Matter Most," US Economics Analyst, Goldman Sachs Economics Research, December 21, 2018.

Another experience of a similar sort in which I was a participant occurred in April 1980 when President Carter decided to implement price controls to corral inflation. The program was confusing to consumers and they reacted by delaying spending. Within days economic activity plummeted and recession ensued.

In both cases it was policy action which triggered a violent and negative shift in sentiment. But the policy actions were responding to substantive imbalances and problems in the economy and financial markets.

Violent shifts in sentiment are rare, but significant shifts occur more frequently. The most recent shift was a rather abrupt change in investor sentiment from risk on to risk off which started in early October. High visibility in financial markets can amplify shifts in sentiment and that is what occurred over the next three months. When stocks tumble, if the tumble is great enough, it can spill over to consumer and business optimism and lead to a slowdown in production, investment, and spending. Recent survey data suggest that this has occurred to a certain extent but probably not on the order of magnitude that would lead to a significant slowing in economic momentum in the U.S. However, most forecasters have trimmed forecast growth a little in 2019.

Investor sentiment has now flipped back to risk on. But, not much has really changed in the economic outlook. Investors over-reacted and this fed on itself for a while. Similarly, there is little reason to be euphoric now. Growth is slowing everywhere in the world to more sustainable levels. Tail risks are higher than normal. Policy shocks and negative surprises could refocus attention on the tail risks later in the year and a shift in sentiment in response could amplify the negative impact on the economy and financial markets.

For the moment, the most recent negative policy shock involving partial shutdown of the U.S. federal government has not had a strong negative impact on sentiment. However, each day is a new day. Continuation of the shutdown could adversely impact sentiment over time and this could have knock on negative consequences on other kinds of economic activity. What surely can be said is that it is not a positive development.

9. Escalating Political Uncertainty

A Congressional Polarization Index, based upon roll-call votes, has reached its highest level since the days of Teddy Roosevelt. A news-based economic policy uncertainty index has recently risen to its highest level since the dark days of the Great Recession. Now we are in the throes of a partial government shutdown with no resolution in sight.

Policy uncertainty can cause people and businesses to delay making decisions and can depress optimism. Although heightened levels of uncertainty appear to be correlated with slower economic growth, there does not seem to be a direct causal relationship between increased political uncertainty and recession. The relationship that does exist, is linked to specific policy actions, not to uncertainty about what might happen.

While the current partial federal government shutdown is a specific policy action, its impacts so far have been limited and have not triggered a broader reaction.

10. Men of the Trees – Men of the Boats

Increasing political uncertainty appears to be more deeply rooted in societal and potential developments than can simply be attributed to the personality of the U.S. president or heightened congressional partisanship.

Charles Gave of Gavekal Research opines colorfully:⁸

... all over the world, you have seen a tension between what I call “the men of the trees” and “the men of the boats.” The joke is something that comes from the French Polynesia, that some men like to stay next to the tree where they were born, and some guys cut the tree and go to see the next island if it is any better. The world has been managed by the men of the boats for the last 30 or 40 years, and it has been managed extremely successfully for the men of the boats, and extremely unsuccessfully for the men of the trees. And the men of the tree are revolting everywhere. Whether you talk Trump or Brexit, tractors, as the populists in Italy, or the yellow jackets in France, it’s exactly the same thing. There is absolutely no difference, it’s all the same problem. And the funny thing is that the men of the boats, the highly intelligent people, are basically talking to the other guys as if they are idiots. They tell them, “Look you’re uneducated,” which is not true, “You don’t know what the real world is all about so shut up and let us manage the world as we have managed it for the last 30 or 40 years: Which is perfectly understandable if you are a man of the boats. So we have a massive problem in the sociological and almost political buildup of our nations all over the West. And I don’t know how it’s going to finish, but it’s certainly not good news.

In Europe the “men in the boats” are the centrist Europhile politicians and the European Commission technocrats lodged in Brussels. The “men of the trees” are the working-class populists, both on the left and on the right ends of the political spectrum. It is the spontaneous yellow jacket, anti-Macron movement in France; it is the Five-Star – National League populist governing coalition in Italy, it is the nationalist-populist political governments in Hungary and Poland.

In the U.S. it is the anti-immigration, anti-elite coalition that helped elect Donald Trump.

A common denominator of the men of the boats is that of a highly educated elite meritocracy that believes they know best. But the men of the trees see the men of the boats as self-serving, taking care of their interests and stifling the men of the trees. This breeds divisiveness and political fragmentation and could be disruptive to economic activity.

11. Brexit and the European Union

⁸ Gave, Charles. “Audio & Transcript – Gavekal Research Call December 13, 2018>” Gavekal Research is proprietary and not publicly available.

U.K. Prime Minister Theresa May and the EU reached agreement on a draft plan for the U.K. to leave the EU, but the U.K. parliament rejected the proposal resoundingly.

The withdrawal agreement covered U.K. payments into the EU budget, the rights of EU citizens living in the U.K. and the northern Ireland border. It provided for a two-year transition period during which the U.K. would continue to be subject to EU market rules but would no longer engage in EU political institutions – the U.K. would be subject to EU rules but would have no role in formulating those rules. Further negotiations were to occur during the transition period which would determine the long-term relationship between the U.K. and the EU.

This deal is now off the table and there is no evident back up plan. The March 29th official separation date is barely two months away.

Adverse economic consequences of stalemate and potential disorderly exit cannot be ruled out. Populist forces continue to gain ground in the EU. Populations in many EU member countries are not optimistic about the long-term economic outlook. Centrist parties, which have been the mainstay of support for the EU, continue to atrophy. The EU holds parliamentary elections in May and will form a new European Council later in 2019. Depending upon the election outcome, potentially dramatic changes could occur.

Grinding political unraveling of support for the EU and the prospect of more challenging economic times at best heighten uncertainty and at worst could throw the continent into political chaos and economic decline. This is not an outcome that most anticipate but it is one that should not be dismissed out of hand.

12. Italy, France and Germany

Another challenge to the integrity of the EU is playing out over the Italian budget. During 2018 two populist parties, one on the right and the other on the left, joined together to form a coalition government. The coalition reached a compromise budget which would have resulted in an estimated 2.4 percent deficit. While this deficit seems small in relation to deficits nearly twice as large in the U.S., because Italy's public-debt-to-GDP ratio greatly exceeds EU rules, the proposed budget was rejected by the European Commission (EC). Italy's government initially held firm and refused to modify its proposed budget. Worried financial markets increased spreads on Italian government debt. Inevitably both sides found a way to kick the can down the road. The Italian government agreed to reduce the budget deficit a little bit and the EC winked at requiring Italy to manage to a primary deficit that would reduce its debt-to-GDP ratio. In the meantime, Italy's economy continues to stagnate and may be entering recession. If that occurs, both the budget deficit and the government debt-to-GDP ratio will both go up.

An increasing portion of the Italian electorate is disaffected with EU membership. They see little in the way of benefits. Inflation-adjusted per capita income is the same today as it was 20 years ago and the income gap between Italians and citizens in other EU countries continues to widen. Increasingly, Italians have come to realize that the euro and EU fiscal rules are responsible for Italy's economic malaise. To regain competitiveness and stimulate economic growth, Italy needs to

devalue the currency it doesn't have because it is locked into the euro. The euro straightjacket and EU deficit and public debt rules force austerity. But austerity has reinforced Italy's economic decline.

Recent economic data indicate that Italy's economy is losing momentum rapidly. A recession, which is increasingly possible, would reinforce public disaffection with the EU and heighten pressure on the governing coalition to defy the EC. While the recent accommodation worked out between the Italian government and the EC defers the unresolved underlying problems to another day, Italy's economy will continue to perform poorly as long as it remains under the straitjacket of the euro. This is unsustainable in the long run. If confrontation occurs in coming months, it would rekindle the euro crisis of a few years ago and this would probably negatively impact global financial markets.

In France, President Macron is an unabashed Europhile and has been attempting to strongarm the French economy to implement reforms to unleash economic growth. But as Thomas Friedman recently wrote, "*When you simultaneously challenge all these things that anchor people – their sense of home, their job security, their prospects for growth and the social norms that, for better or worse, defined their lives – and the amp it all up with social networks, you can get a really ferocious blowback, as France's president, Emmanuel Macron, saw across his country.*"⁹ This phenomenon, Charles Gave has observed, is not unique to France. It is present in all developed western countries. Friedman went on to say: "*Macron, by contrast, dared to do the right things to unlock growth in France, at the right time, 'but he did not understand the difference between being right and doing it right,' a French economist, Ludovic Subran, told me.*"

Then there is Germany, and all is not well there either. Economic growth was negative in the third quarter of 2018 and industrial production is contracting. One of its largest banks, Deutsche Bank, is teetering on the edge of failure. Centrist political parties are in decline and Angela Merkel will soon give up the chancellorship to the new leader of the Christian Democratic Union, Annegret Kramp-Karrenbauer. Germany's much vaunted economy is in jeopardy of descending into recession. Its economic growth has been powered by exports. But as China's growth slows and the U.S. pursues its trade war with China, Germany may be an unintended victim.

13. China

China's growth slipped to an annual rate of approximately 6.0 percent in the third quarter and brought the 12-month rate of growth down to 6.5 percent. Growth slipped further to 6.4 percent in the fourth quarter of 2018 compared to the fourth quarter of 2017, although growth in 2018 on a four-quarter moving average basis was 6.6 percent.

In the longer-term, China's high growth rate is not sustainable. That is because population and employment growth are decelerating rapidly and because its economy is catching up quickly with developed economies. What that means is that the outsized productivity increases China has experienced will moderate to lower levels prevalent in developed economies. Potential growth

⁹ Friedman, Thomas L. "The End of Europe?" [The New York Times](#), December 18, 2018.

depends on the sum of employment growth and the rate of productivity improvement. Eventually this could push growth down to 3 percent or lower. Potential growth in Japan, which has a shrinking population and workforce, is approximately 1 percent.

China has driven high growth through a capital infrastructure intensive policy fueled by construction activity and prodigious amounts of credit. In the short run such a policy mix drives high growth. But the policy ultimately becomes self-limiting for two reasons. First, building infrastructure counts in GDP but once built it must be used to continue generating GDP. Empty buildings do not contribute to GDP. What this means is that China must build a consumer economy to take advantage of newly constructed infrastructure. China is working on this. But growth based upon consumer spending depends upon population growth and increases in household incomes. Policy cannot easily raise consumer spending growth in the way that it can increase investment spending growth. This is because consumer spending depends upon employment growth and productivity improvements which policy can influence but outcomes evolve slowly.

Second, credit creation stimulates spending and can accelerate growth. But, credit obligations ultimately must be serviced, or defaults will ensue. The ability to service debt depends upon incomes. In the long run nominal growth in GDP (spending) and credit need to be approximately the same to maintain economic stability. If credit continually grows faster than spending, as it has in China, the ability to service it will deteriorate over time. Initially in an economy which has underutilized credit, the increased use of credit can trigger significant increases in spending. However, as the use of credit matures, the efficiency of each additional unit of credit in creating more spending declines. China has followed this path rapidly and this has contributed to China's high growth rate. However, China's use of credit has matured to the point where its efficiency in creating additional spending has declined precipitously and servicing risks have escalated.

About a year ago China's leadership became concerned with the proliferation of highly speculative wealth management products and instituted rules to regulate them. Credit growth slowed in 2018 and not surprisingly GDP growth is also slowing.

In recent years whenever China's growth slowed significantly, the leadership responded with monetary and fiscal spending stimulus. In 2009 this intervention was great enough that it fostered a global economic recovery. China has responded similarly to each subsequent slowdown in its economic growth. Global economic growth, particularly in emerging markets and commodity exporting countries such as Brazil, Australia, and Canada, have benefited.

Today China finds itself once again in a growth slowdown and since July has been actively attempting to stimulate its economy, but with one major exception. To date it hasn't relaxed its campaign to limit speculative credit products. This time around the Chinese economy isn't responding materially to stimulus.

Going forward there are two pathways China can take and two sets of risks that will evolve depending upon which pathway is chosen. China can continue to follow the current policy mix which limits outsized credit creation. This would result in a slower rate of economic growth over

time. The question is whether the leadership can accept such an outcome given their track record of promising high rates of growth.

The alternative pathway is to relax credit restrictions and reopen the credit spigot. This will give a short-term boost to growth, but at the cost of increasing instability in the financial system over the longer run.

Prudence argues for the first pathway, but politics may drive policymakers to pursue the second pathway.

Overlaying this policy choice is the evolving trade war with the U.S. In the short run, it is becoming clearer that China has more to lose from tariffs than the U.S. does. The list of U.S. trade demands to remove tariffs is long and politically unpalatable to the Chinese leadership. As the war escalates and extends, economies in both countries will be damaged. But at the moment the playing field is uneven. The U.S. economy is strong, but the Chinese economy is slowing. The negative impact of tariffs will be greater in China in the short run. Since China seems unlikely to capitulate to U.S. demands and with a lack of pressure on U.S. policymakers to negotiate because of a well-performing U.S. economy, it seems likely that stalemate will persist. As the IMF study, discussed in the section on trade above, documents, this will have negative effects for growth, employment and productivity, but the adverse effects, particularly in the U.S., will not be visible for a long time.

14. Commentary

It is practically speaking foolhardy to attempt to predict when recession might occur and, if it occurs, its severity. Events can occur that materially impact outcomes. That said, however, it is possible to know whether risks are building. And that is clearly the case currently as global growth momentum slows and the Federal Reserve continues to “normalize” monetary policy. And, it is possible that policymakers will be able to manage the risks discussed above in ways that diffuse them and enable economic activity to return to a trajectory consistent with long-term potential.

But, prudence and good risk management dictate that one should prepare for a messy resolution of many of these risks and this might involve a period of recession.

As to timing, the U.S. economy should experience significant slowing as soon as the first quarter of 2019. Whether and when a recession follows will depend a great deal on Federal Reserve monetary policy, the evolution of financial conditions, and declines in investor, business and consumer optimism. These outcomes could occur as soon as the second half of 2019 or not until sometime during 2020. And, if we’re really fortunate, the soft landing that most forecasters foresee will be the scenario that ultimately prevails.

V. Economic Scenarios – 2019 to 2026 – What A Recession Might Look Like

While recession anxiety is on the rise, almost all forecasts assume that growth will slow gradually from 2018’s significantly above potential pace but that no recession will occur. This is the forecast embedded in my **BASE** scenario. I also often include a **STRONG GROWTH** scenario, which encompasses the potential impacts of fiscal stimulus and strong consumer, business, and investor

sentiment. In light of recent market and political developments, the probability of the **STRONG GROWTH** scenario has diminished considerably.

The **BASE** scenario and most forecasts reflect the following. At the beginning of 2019 in the case of the U.S., unemployment is significantly below the natural rate. This gap is expected to widen during 2019 and will add to wage and inflation pressures. However, increasing labor scarcity will result in slower employment growth and that will have knock on impacts resulting in slower spending, investment and GDP growth. In addition, the benefits of fiscal stimulus will wain during 2019 and turn negative by the end of the year.

Using my econometric model (the methodological construction of my econometric model was described in the ***April 2018 Longbrake Letter***), I can simulate what a recession might look like both in the short run, but also in the long run. For purposes of the simulation I assume that a recession begins in November 2019 – middle of the fourth quarter. That is arbitrary for illustrative purposes and is not a prediction. I include two recession scenarios – **MILD RECESSION**, which is 50 percent as bad as the Great Recession of 2008-2009, and a **SEVERE RECESSION**, which is 75 percent as severe.

Input variables for the recession scenarios include monthly changes in payroll employment, oil prices, and stock prices, and quarterly changes in house prices, business investment, and government investment. Data for January 2008, which was the official start of the Great Recession, and following months were matched with October 2019 and following months. Thus, the first recession impact shows up in the simulations beginning in the month of November 2019. For quarterly data, the first recession impact does not show up until the first quarter of 2020. Except for oil prices, for which I crafted an arbitrary recession pathway, the other economic variables follow the 2008 Great Recession pattern in lock-step, except for being scaled to be either 50 percent or 75 percent as bad. The scenarios continue in this fashion for six years until the end of 2025 so that the pattern of recovery from the Great Recession is also captured. Other economic variables, such as GDP growth and inflation, are derived from the simulations.

Several caveats are in order. First, the timing of onset of recession is arbitrary. That could happen sooner, later, or not at all, if a soft landing somehow materializes. Second, I assume the severity of a recession will be less than what occurred in 2008-09 based on my sense that the economic imbalances are less consequential and severe today. That is a judgment call which could prove to be wrong. Third, I assume the pattern of decline and the timing and pattern of recovery will be identical to what occurred following the Great Recession. That, of course, is unlikely to be the case, as history never repeats itself with this degree of precision. Nonetheless, the scenarios are useful in demonstrating the directional impacts of recession on economic outcomes and in some cases, such as the projection of the federal budget deficit-to-GDP ratio, the magnitude of those outcomes relative to a benign scenario of ongoing moderate growth without recession.

1. Economic Scenarios

In the simulations I show the results of four scenarios over the timeframe from 2019 through 2026. Occasionally for some of the economic variables, for comparative purposes, I show forecasts or

projections from Bank of America/Merrill Lynch (**B of A**), the Congressional Budget Office (**CBO**), the Federal Open Market Committee (**FOMC**) and, in the case of the federal funds rate, the market's forecast.

- **BASE** (blue line and diamonds in charts)
- **STRONG GROWTH** (green line and circles in charts)
- **MILD RECESSION** (red line and squares in charts)
- **SEVERE RECESSION** (dotted dark red line and triangles in charts)
- **Bank of America/Merrill Lynch** (purple line and circles in charts)

2. Real GDP Growth

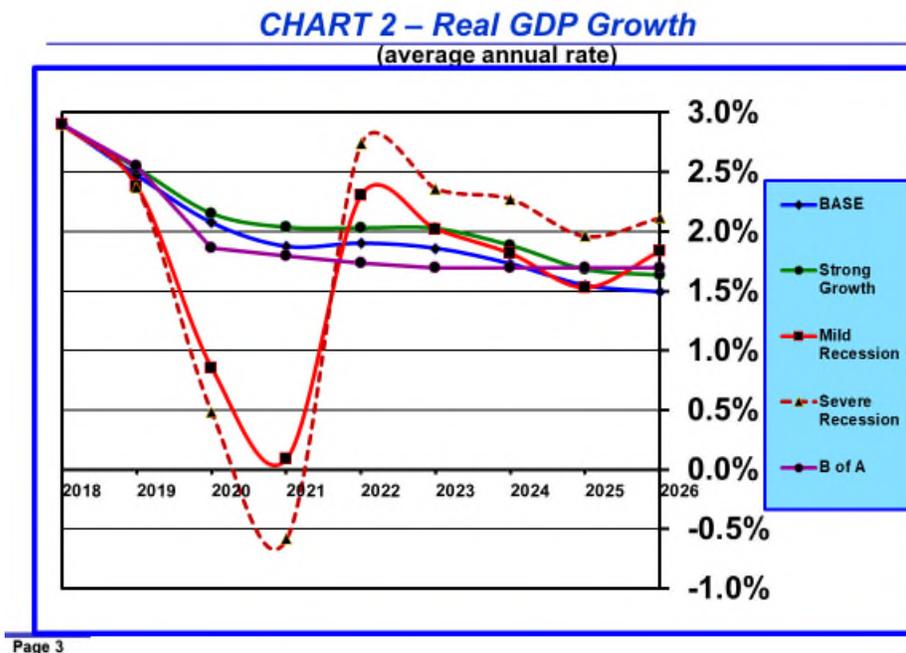


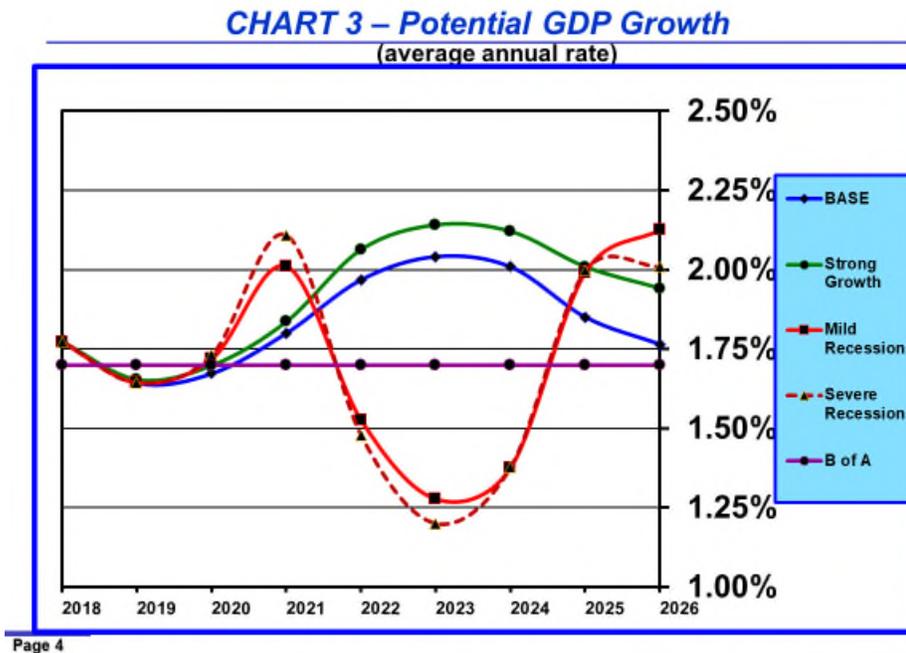
Chart 2 shows real GDP growth projections for my four scenarios and **B of A**. Note that my **BASE** and **STRONG GROWTH** scenarios are somewhat more optimistic about real GDP growth than **B**

of **A** until 2025, but all three follow a very similar pattern of gradually decelerating growth. Growth deceleration reflects two phenomena. First, the economy is currently operating above full potential employment. That disparity is assumed to go away over time. Second, growth in the labor force is gradually slowing over time due to slowing population growth and changing labor force dynamics, most notably the aging and retirement of baby boomers.

Annual real GDP growth, measured by a four-quarter moving average, follows a V-pattern and bottoms at -0.1 percent in the **MILD RECESSION** scenario in the third quarter of 2020 (presidential election time) and -0.85 percent at the same time in the **SEVERE RECESSION**.

3. Potential Real GDP Growth

B of A pegs long-run potential real GDP growth at 1.7 percent. Other estimates of potential growth vary between 1.6 percent and 2.0 percent. I derive potential real GDP growth through 24-quarter moving averages of labor force growth and productivity increases. However, productivity has a distinct cyclical element. It rises initially as recession commences because employers reduce workers more quickly than output. But then it falls during the late stages of recession and early stages of recovery because investment is depressed. As the recovery matures, investment recovers, and productivity improves. This phenomenon can be seen in the **BASE** and **STRONG GROWTH** scenarios in 2021-2024. The cyclical ebb and flow of productivity is clearly evident in the **MILD RECESSION** and **SEVERE RECESSION** scenarios in **Chart 3**.

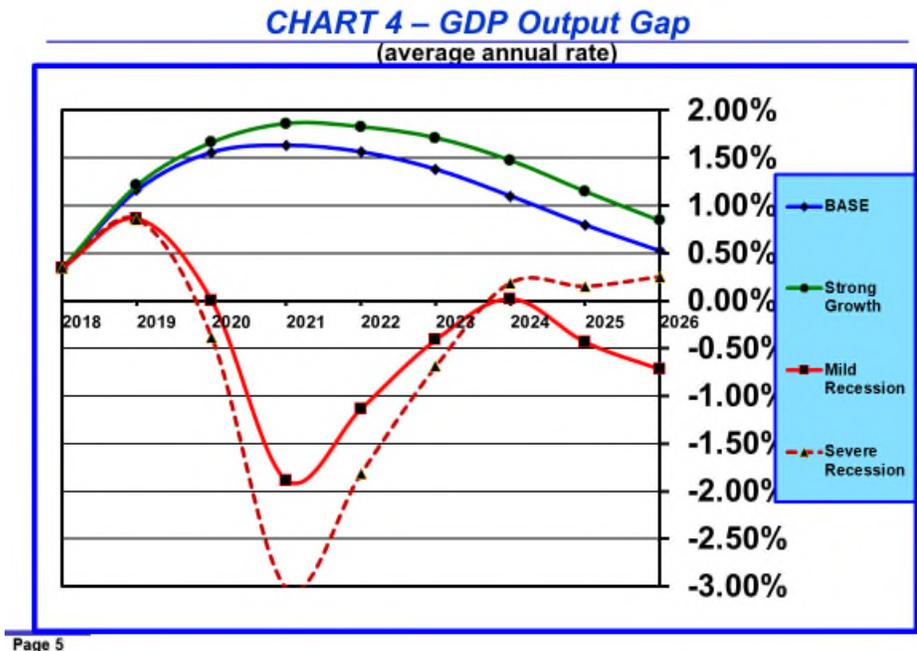


What is not apparent from **Chart 3** is that recessions, based upon the historical experience, result in a permanent reduction in the level of potential real GDP. This loss in the long run is equal to approximately 1 percent to 2 percent of real GDP, depending upon the severity of the recession.

As will be seen in the charts below, this phenomenon has real consequences for the federal budget deficit-to-GDP ratio.

4. Real GDP Output Gap

Chart 4 is derived by taking the difference between potential real GDP and forecast actual real GDP. Forecast fourth quarter 2018 real GDP is forecast to be approximately 35 basis points above potential. This positive output gap continues to rise in the **BASE** and **STRONG GROWTH** scenarios over the next two to three years, peaking between 1 percent and 2 percent above potential. because forecast growth continues to exceed potential. After that the positive output gap diminishes slowly.

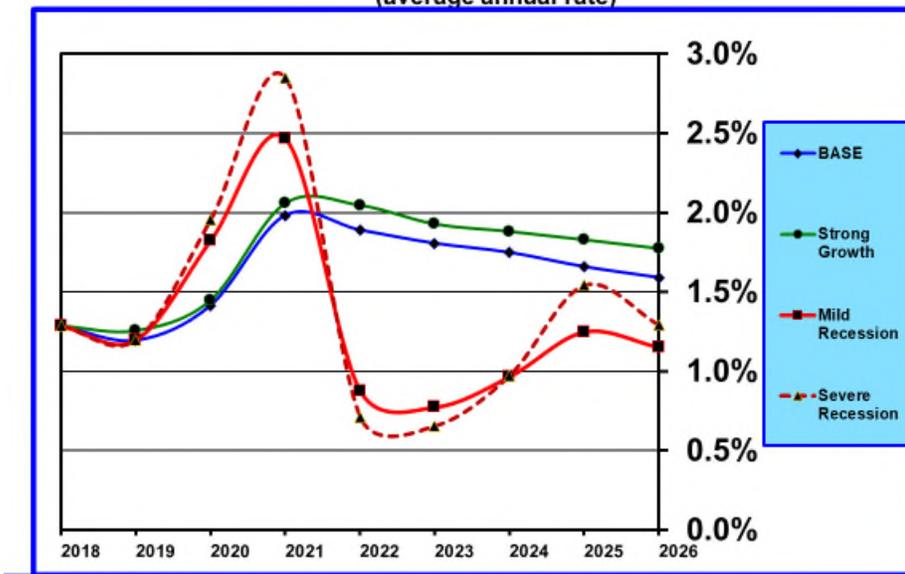


In the **MILD RECESSION** scenario, the output gap falls to negative 2 percent by the end of 2021 and negative 3 percent in the **SEVERE RECESSION**. During the Great Recession, according to **CBO**, the output gap fell to negative 5 percent at the end of 2010.

5. Productivity

Projections of productivity in the scenarios depicted in **Chart 5** are determined by assumptions about business and government investment and employment growth rates. As mentioned in the discussion of **Chart 3**, Potential Real GDP Growth, productivity rises initially in the **MILD RECESSION** and **SEVERE RECESSION** scenarios as recession commences because employers reduce workers more quickly than output. But then it falls during the late stages of recession and early stages of recovery because investment is depressed. As the recovery matures, investment recovers, and productivity rises. However, it is notable that productivity remains depressed in the long term relative to the **BASE** and **STRONG GROWTH** scenarios.

CHART 5 – Productivity
(average annual rate)



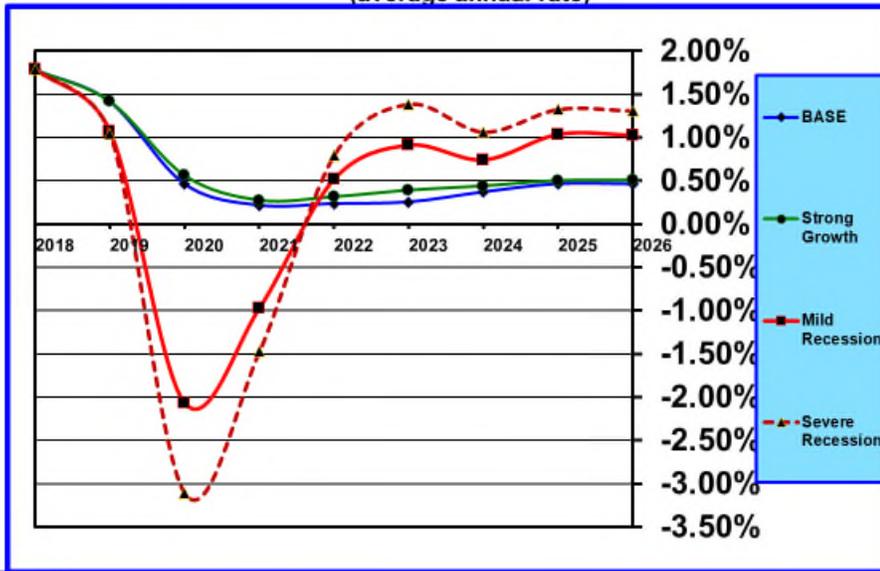
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6. Payroll Employment Growth and Unemployment Rate

Payroll employment plummets quickly in the **MILD RECESSION** and **SEVERE RECESSION** scenarios in **Chart 6** and the decline persists for about two years until late 2021.

In the **BASE** and **STRONG GROWTH** scenarios, employment growth slows by 2021 to less than the natural rate of growth in the labor force. This results in gradually eliminating the overly tight employment market as indicated by the difference between the projected unemployment rate and the noninflationary rate of unemployment (**NAIRU**) in **Chart 7**. Notice in **Chart 7** that **B of A's** unemployment rate forecast remains well below **NAIRU** throughout the entire forecast period. This is not a likely outcome and will either be resolved eventually by the actual unemployment rate rising (more likely) or **NAIRU** being reduced by CBO (less likely, but possible).

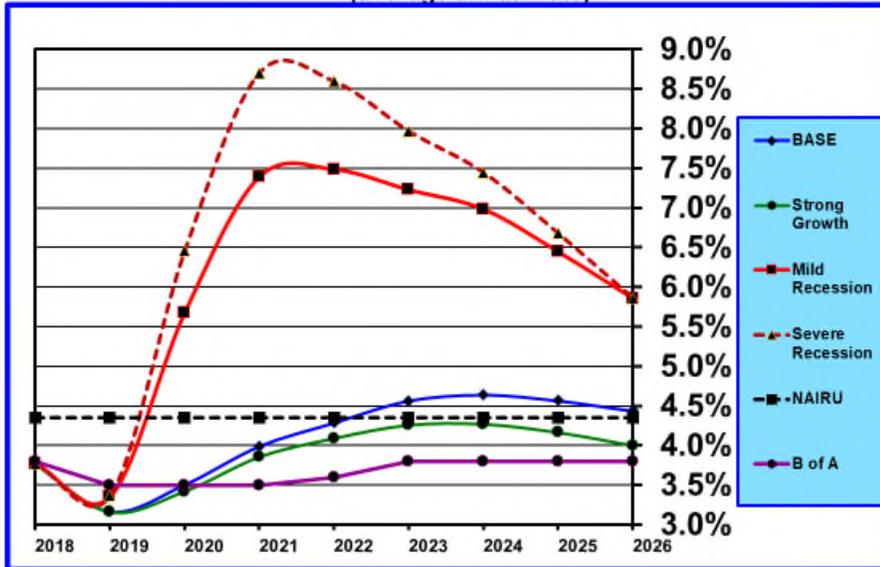
CHART 6 – Payroll Employment Growth
(average annual rate)



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Unemployment climbs to 7.5 percent by late-2022 in the **MILD RECESSION** scenario and to about 8.5 percent in the **SEVERE RECESSION** scenario. Unemployment peaked at nearly 10.0 percent in the Great Recession. As was the case in the aftermath of the Great Recession, unemployment declines very gradually after topping out.

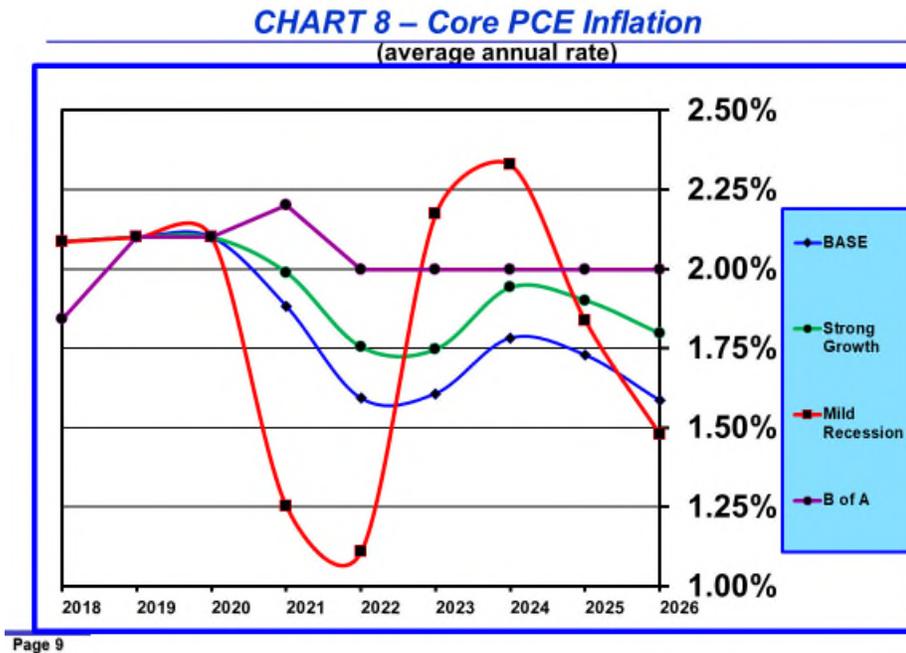
CHART 7 – U-3 Unemployment Rate
(average annual rate)



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7. Core PCE Inflation

Although core PCE inflation declines well below the **FOMC's** 2 percent target during a **MILD RECESSION**, as shown in **Chart 8**, deflation does not appear to be a serious risk.



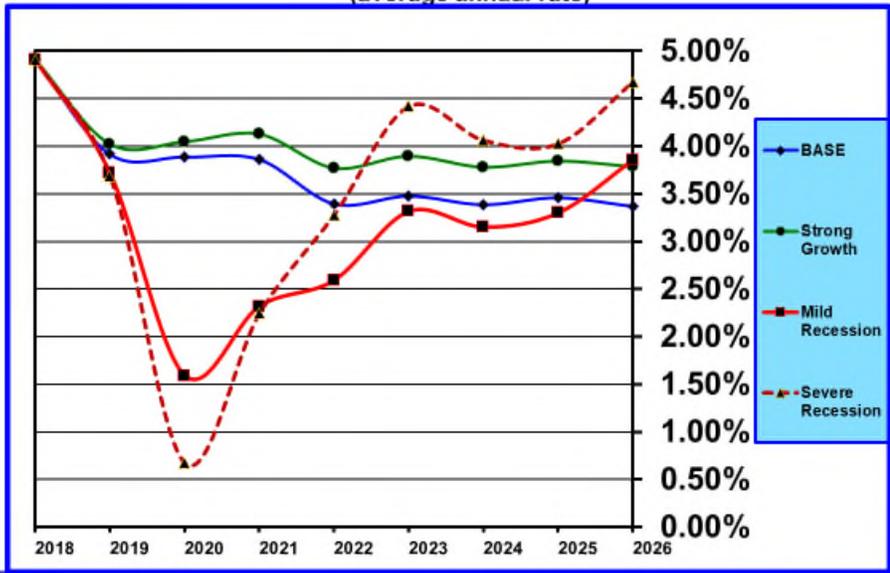
Perhaps the more interesting feature of **Chart 8** is that core PCE inflation in the **BASE** and **STRONG GROWTH** scenarios is persistently below 2 percent when growth starts converging with potential after 2020.

8. Consumer Spending – Nominal and Real

Chart 9A shows projections for growth in nominal consumer spending for my four scenarios and **Chart 9B** compares my scenario projections of real consumer spending growth with **B of A's** forecast.

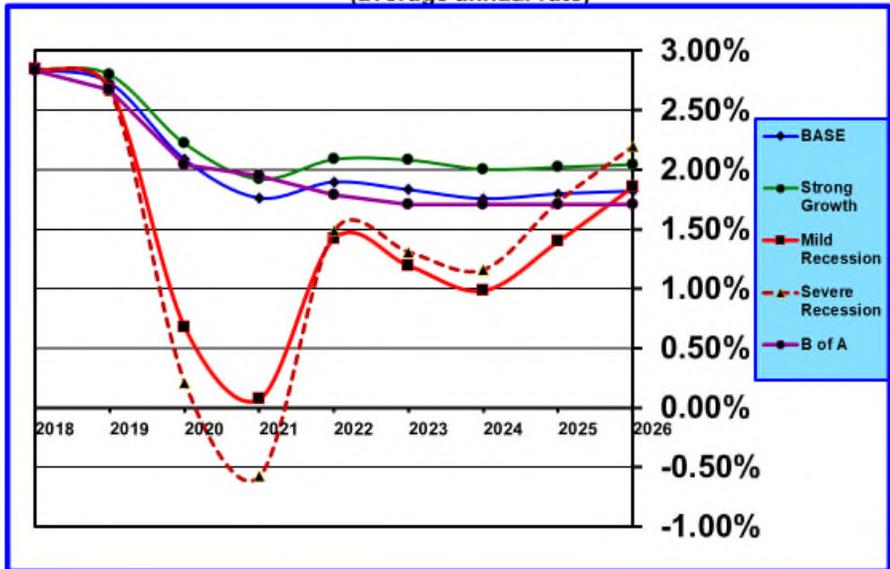
Notice in **Chart 9B** that growth in real consumer spending slows over the longer run in the **BASE** and **STRONG GROWTH** scenarios and in **B of A's** forecast. This results directly from the assumption that consumer spending growth, in the aggregate, depends on employment growth, which is projected to slow down to the underlying natural rate of growth in the labor force, and growth in wages, which is expected to be contained by inflation which does not exceed 2 percent, and stagnant growth in productivity.

CHART 9A – Nominal Consumer Spending Growth
(average annual rate)



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CHART 9B – Real Consumer Spending Growth
(average annual rate)

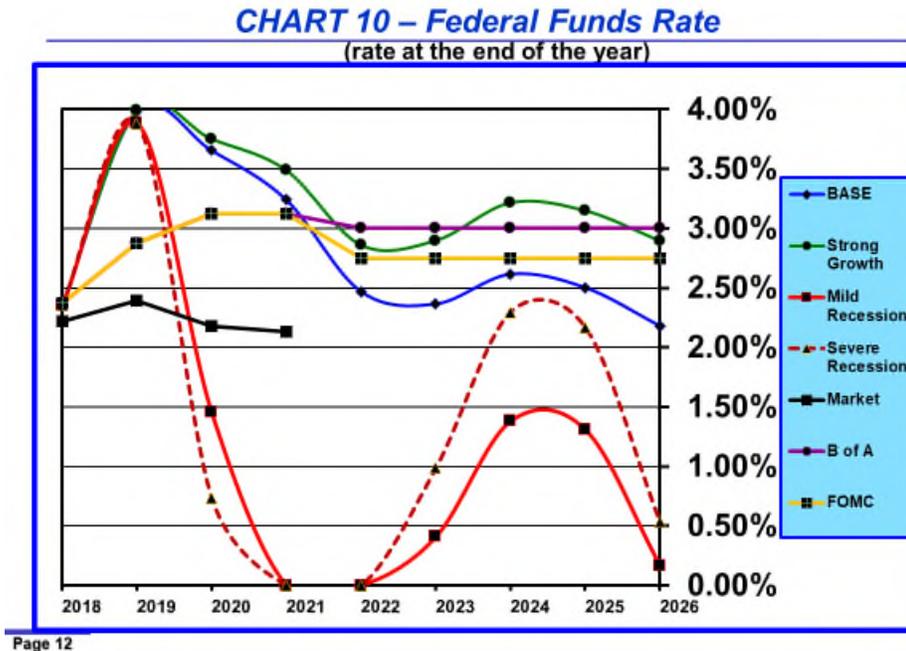


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Notice also in **Chart 9B** that real growth in consumer spending in the **MILD RECESSION** and **SEVERE RECESSION** scenarios remains depressed for an extended period. However, in the long-run the real growth rate in consumer spending returns to a level dictated by labor force growth, productivity gains, and increases in household wealth, none of which appear to be impacted in the long run by a recession.

9. Interest Rates – Federal Funds Rate

As can be seen in **Chart 10**, as happened in the Great Recession of 2008-2009, the federal funds rate declines to zero by early 2021 in both the **MILD RECESSION** and **SEVERE RECESSION** scenarios. Unlike the Great Recession, however, the federal funds rate stays at zero for only about two and a half years instead of the seven years at the zero boundary that followed the Great Recession.



What might strike you as a bit odd in **Chart 10** is that the federal funds rate rises to 4.0 percent in the **BASE** and **STRONG GROWTH** scenarios in 2019. The market expects no further increases and analysts (**B of A**) and the **FOMC** expect only two additional increase in 2019 to a range of 3.0 percent to 3.25 percent. This naturally raises the question of why my model's estimates are out of sync with everyone else.

My econometric model is based upon historical data and historical relationships among economic variables. This is an imperfect forecasting methodology because structural changes in the economy, which shift relationships among economic variables, such as the federal funds rate, aren't part of the projection process. After time passes and if a structural shift is sustained, I can adjust the models to accommodate for these changes. With that said, the 4 percent federal funds rate which drops out of the model is impacted by several things which need to be discounted. First, a key variable is my projection of inflation which is currently higher than I believe will be the case. This most likely is due to a structural shift that has made both wage and price inflation stickier to the upside in this cycle than in previous cycles. Second, another important variable is labor market tightness, which I measure as the gap between the natural rate of unemployment (**NAIRU - CBO**) and the actual unemployment rate. There is reason to believe that **CBO's** projections of the natural rate of unemployment are too high, but we won't know for sure until **CBO** revises its estimates sometime in the future. I've already made my own downward adjustment, but it might not be

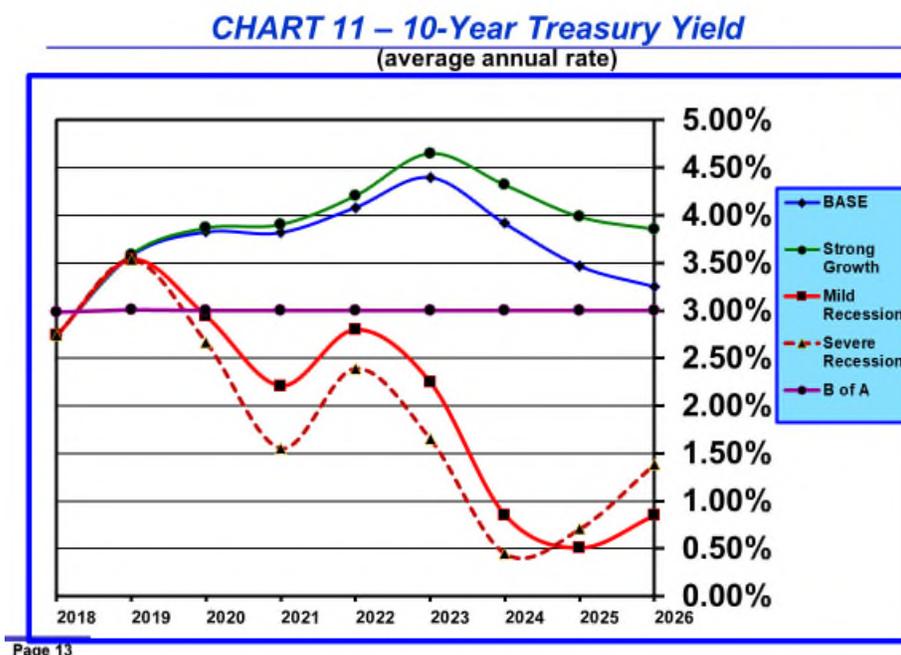
enough. Third, the term risk premium in longer maturity rates has clearly been depressed in recent years and I expect some of that impact filters through to the federal funds rate. Fourth, volatility in the federal funds rate, because it is an administered rate, is almost always lower over the course of the cycle than other short-term rates. The **FOMC** tends to look through short-run pressures, which limits upside and downside spikes. All of this said, my view is that this time around the market has been more on the mark than the models or professional analysts. This has not always been the case in the past and sometimes the market's forecast has been flat out wrong. It all points out that there is no tried and true way to forecast interest rate movements. One needs to consider these data but also mull over a variety of analytical critiques. And in the final analysis one needs to be prepared for a range of outcomes all of which have a real, if small, probability of occurrence.

10. Interest Rates – Ten-Year Treasury Note Yield

Many of the same modeling shortcoming explained above for the federal funds rate are also pertinent for the 10-year Treasury Note yield. In **Chart 11**, the 10-year yield rises to between 4.0 percent and 4.5 percent by 2023. This seems very unlikely. Most analysts forecast this yield to range between 3.0 percent and 3.5 percent over the next several years – **B of A's** forecast is 3.0 percent.

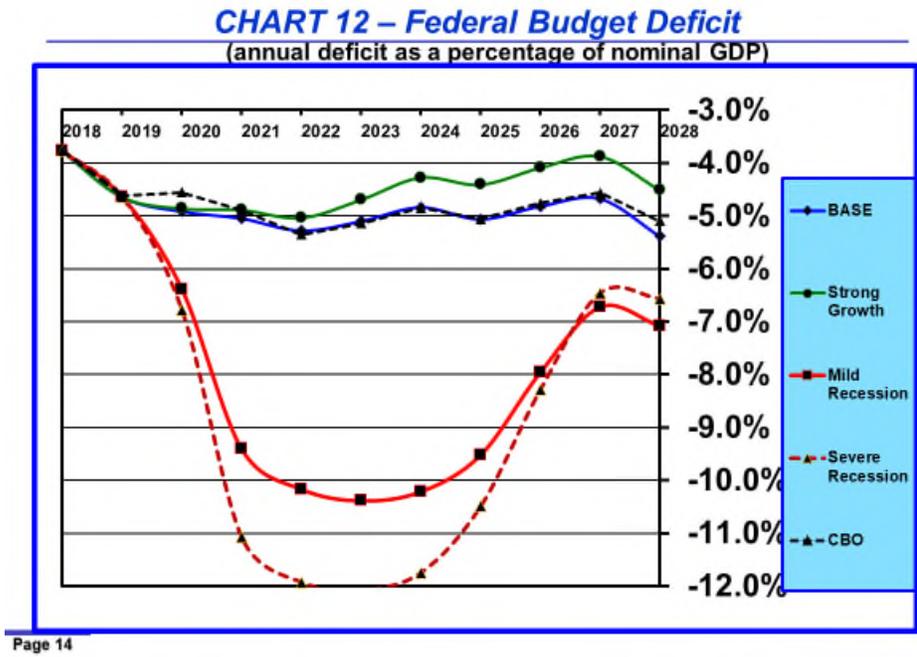
What should be of greater interest in **Chart 11** is that both the **MILD RECESSION** and the **SEVERE RECESSION** result in substantial downside pressure on the 10-year Treasury Note yield. And, this downside pressure persists well after recovery commences.

If you have high conviction that recession probability is high in the next several quarters, you should give serious consideration to buying long duration high quality bonds.



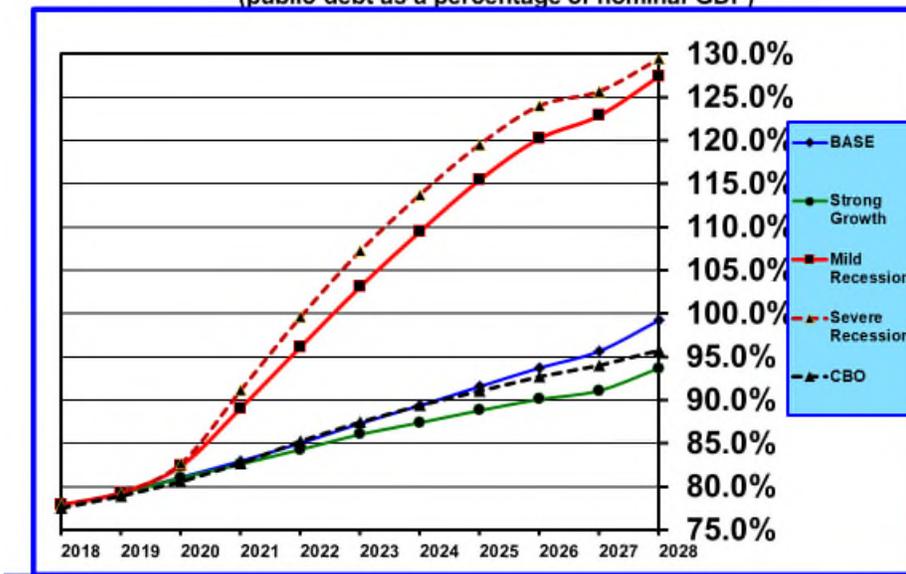
11. Federal Budget Deficit

Charts 12 and 13, which depict the annual federal budget deficit as a percentage of nominal GDP (Chart 12) and the ratio of the cumulative federal budget deficit to nominal GDP (Chart 13), are alarming.



According to **CBO** projections shown in **Chart 12**, and assuming GDP growth consistent with potential, the annual budget deficit is expected to oscillate around a level of approximately 4.6 percent annually for the next 10 fiscal years. However, the cumulative deficit according to **CBO**, shown in **Chart 13**, will rise from 79.0 percent in 2019 to 95.8 percent in 2028. **CBO** has stated that its projections probably understate the upside risk because it assumes many of the Trump personal income tax cuts, which are scheduled for repeal after 2015, will likely be extended.

CHART 13 – Cumulative Federal Budget Deficit
(public debt as a percentage of nominal GDP)



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What is alarming about **Charts 12** and **13** is what happens to annual budget deficits and the cumulative deficit, if either a **MILD RECESSION** or a **SEVERE RECESSION** occurs. In the case of a **MILD RECESSION**, the annual deficit jumps to 10.6 percent in fiscal 2023. The peak budget deficit during the Great Recession was 9.8 percent in fiscal year 2009. Remember that the **MILD RECESSION** is only half as severe as the Great Recession. The fact that the peak deficit is higher in the **MILD RECESSION** stems directly from the much high starting point, 4.6 percent in fiscal 2019, compared to 1.1 percent in fiscal 2007.

But, what is even worse is that when recovery occurs, the annual budget deficit does not return to the 4.6 percent level but to a much higher level of over 7.0 percent.

As for the cumulative budget deficit shown in **Chart 13**, it simply explodes and by 2026 rises well above 100 percent of nominal GDP – to a level that rivals Italy’s current deficit. Although the U.S. as the world’s reserve currency probably can handle this large a debt-to-GDP ratio without financial disaster ensuing, nonetheless, with an aging population and mushrooming entitlements, it would hasten the day of reckoning.