Note: The following is an abridged version of "Learning from a Century of US Recessions" published Jan. 20, 2019.

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US Economics Analyst

Learning from a Century of US Recessions

- Investors have become more concerned about recession risk in recent months, as financial conditions have tightened and growth has slowed. On the surface, the worry is understandable, as soft landings are exceedingly rare in US history.
- During the "Great Moderation" period before 2007, many economists were hopeful that various structural and policy changes had made the economy fundamentally less recession-prone. While this view took a serious hit in the crisis and the subsequent deep recession, we think many aspects of the Great Moderation are still intact, and some have even strengthened.
- A review of the last century of US recessions highlights five major causes: industrial shocks and inventory imbalances; oil shocks; inflationary overheating that leads to aggressive rate hikes; financial imbalances and asset price crashes; and fiscal tightening.
- The first three causes of recession have become structurally less threatening, in our view. Better inventory management and the shrinking output share of the most cyclical sectors have reduced the impact of industrial fluctuations. The decline in the economy's energy intensity and the rise of shale have reduced the impact of oil price shocks. And better monetary policy has led to a flatter and more anchored Phillips curve, reducing the risk of inflationary overheating.
- The fourth cause, financial risk, has been the main source of recent recessions. Old risks could reemerge, and the growing financialization of the economy or shocks from abroad could create new risks. But for now, regulation and private sector restraint in the post-crisis environment have kept financial risk subdued.
- The fifth cause, fiscal policy, has historically meant major postwar demobilizations on a scale not seen since the Korean War. But here too, new risks could emerge in an era of political polarization, uncertainty, and dysfunction.
- Overall, the changes underlying the Great Moderation appear intact, and we see the economy as structurally less recession-prone today. While new risks could emerge, none of the main sources of recent recessions—oil shocks, inflationary overheating, and financial imbalances—seem too concerning for now. As a result, the prospects for a soft landing look better than widely thought.

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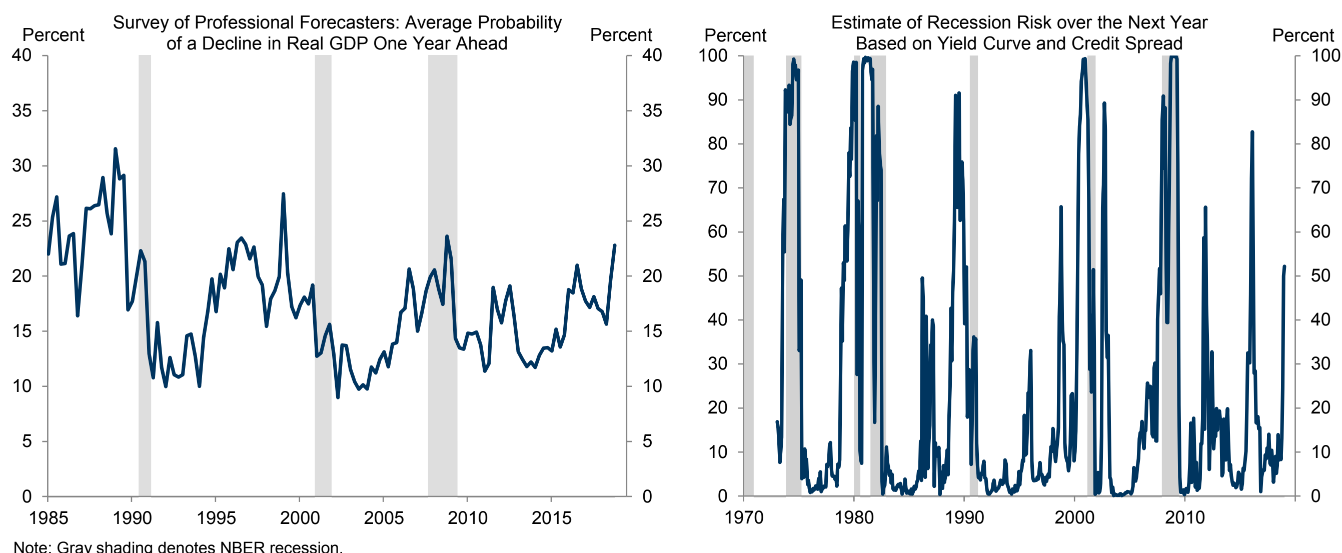
Learning from a Century of US Recessions

As financial conditions have tightened and growth has slowed in recent months, both economists and investors have become more concerned about the risk of a recession in 2020 or even in 2019. Consensus forecasts now put the odds of a decline in GDP one year ahead at almost 25%—toward the top of end of the historical range—while an estimate of recession risk based on market variables stands at roughly 50%, as shown in Exhibit 1.

Exhibit 1: Consensus Forecasts and Market Pricing Indicate Rising Concern about Recession



Source: Federal Reserve, Goldman Sachs Global Investment Research

On the surface, the worry is understandable, as soft landings are exceedingly rare in US economic history. Historically, the US unemployment rate—a convenient summary measure of the state of the business cycle—either declines gradually or rises sharply, with little in between.

During the "Great Moderation" period before 2007, many economists were hopeful that this pattern might be overcome, and argued that various structural and policy changes had made the economy fundamentally less recession-prone. This view took a serious hit in the crisis and the subsequent deep recession, and it has been voiced less since. But we think many aspects of the Great Moderation are still intact, and some have even strengthened.[1]

In this week's *Analyst*, we look back at 100 years of US recessions to identify the main sources of risk. We then examine how these risks have evolved over the decades, where they stand today, and what this means for the prospects of achieving a soft landing in the years ahead.

[1] Charlie Himmelberg, "The Greater Moderation," Global Markets Analyst, January 30, 2018.

The Long View

We start by identifying the key contributors to the 18 official US recessions over the last 100 years, building on our earlier analysis. We rely on a range of historical materials, including the sources used for the National Bureau of Economic Research's original classification of US business cycles.[2]

Exhibit 2 highlights the five major causes of US recessions since World War I: (1) industrial sector shocks and inventory imbalances; (2) oil supply shocks that reduce real income and generate inflationary pressures; (3) inflationary overheating that leads to an aggressive tightening of monetary policy; (4) financial imbalances and asset prices crashes; and (5) fiscal tightening.

As we will show, the first three recession causes are structurally less likely than they were in previous decades. The fourth remains an important threat in principle but seems to be in abeyance at present. The fifth has historically most often meant major post-war demobilizations of a size not seen in half a century, but could take new forms in the future.

Exhibit 2: Five Key Causes of US Recessions Since WW1

	Key Contributors to NBER-Dated US Recessions				
Recession	Industrial	Oil	Monetary	Financial	Fiscal
Aug 1918					■
Jan 1920			■		■
May 1923	■				
Oct 1926	■				
Aug 1929				■	
May 1937			■		■
Feb 1945					■
Nov 1948	■				
Jul 1953					■
Aug 1957			■		
Apr 1960			■		
Dec 1969			■		■
Nov 1973		■	■		
Jan 1980		■	■		
Jul 1981			■		
Jul 1990		■	■	■	
Mar 2001				■	
Dec 2007				■	

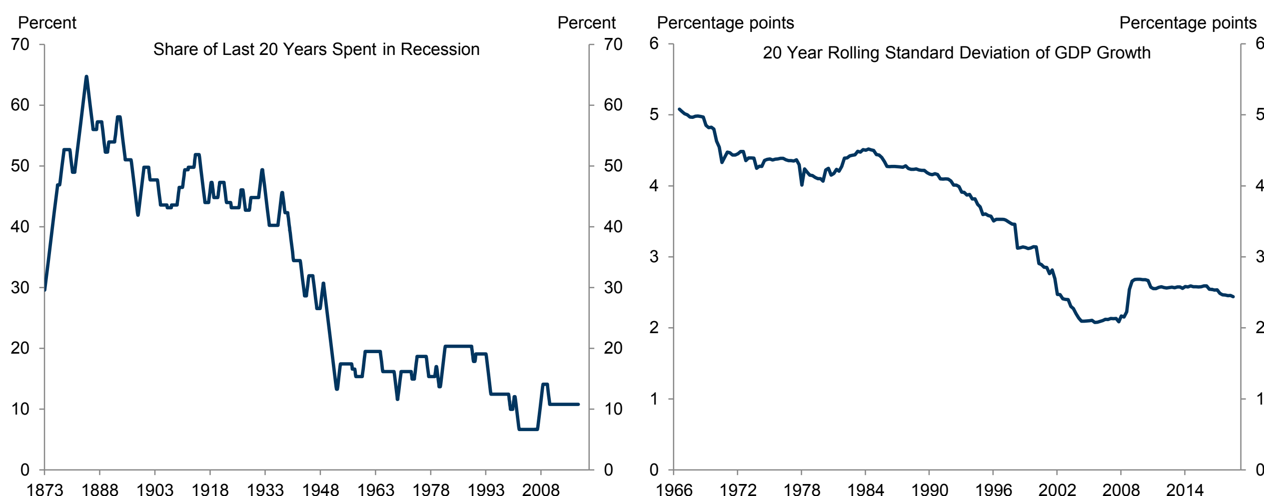
Source: Goldman Sachs Global Investment Research

[2] In particular, we use Willard Long Thorp, The Annals of the United States of America, 1926; Wesley C. Mitchell, Business Cycles as Revealed by Business Annals, 1926; Arthur Burns and Wesley Mitchell, Measuring Business Cycles, 1946; Victor Zarnowitz, Business Cycles: Theory, History, Indicators, and Forecasting, 1992; Marc Labonte and Gail Makinen, "The Current Economic Recession: How Long, How Deep, and How Different From the Past?", 2002; and additional sources specific to individual recessions.

The Great Moderation Revisited

The US economy has spent a declining share of time in recession over the course of history, with an especially sharp drop after World War II, as shown on the left of Exhibit 3. In the late 1990s, economists began to notice that the volatility of US output had fallen further starting in the mid-1980s, as shown on the right of Exhibit 3, a phenomenon that became known as the Great Moderation.

Exhibit 3: The Volatility of US Output Declined Sharply in the Mid-1980s



Source: NBER, Department of Commerce, Goldman Sachs Global Investment Research

Our classification of the causes of recession sheds light on this improvement in the economy's cyclical performance. In particular, we will show that the first three causes of recession noted above—industrial shocks, oil shocks, and inflationary overheating—have become structurally less threatening.

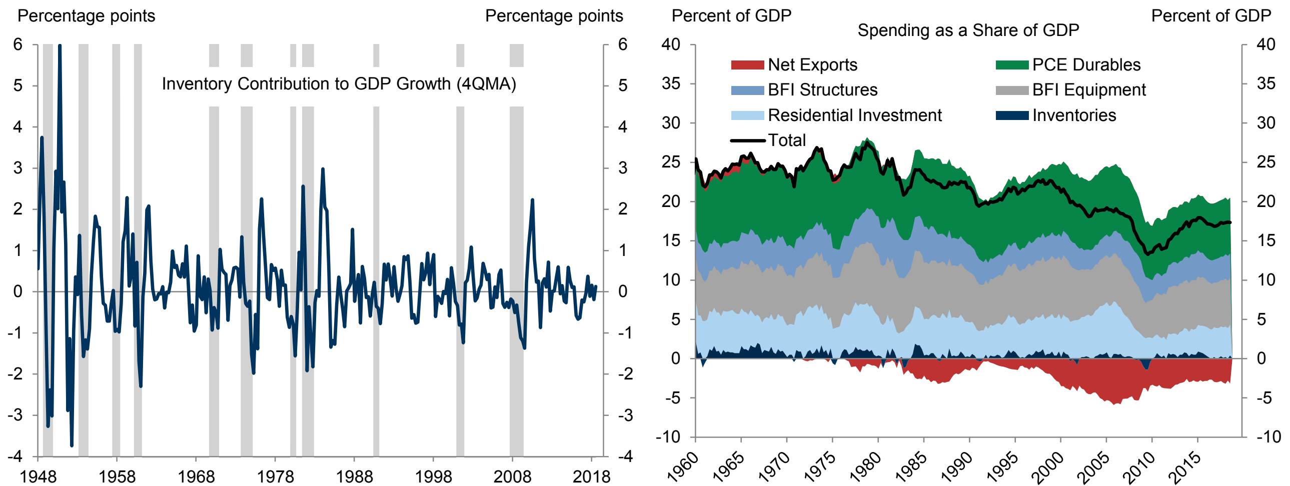
The Declining Cyclicality of US Industry

Early investigations of the Great Moderation found that reduced volatility in the durable goods sector had contributed the most to the reduced volatility of GDP after the mid-1980s. Much of this decline was due to improved technology and supply-chain management techniques which enabled companies to more accurately forecast final demand and hold a lower volume of inventories, reducing the amplitude of inventory cycles and ultimately production volatility (Exhibit 4, left).[3]

In addition, the most cyclical sectors of the economy have declined as a share of GDP (Exhibit 4, right), in part because the US has offshored production in these sectors. On top of this longer-term structural decline, activity in each of these sectors has made only a limited cyclical rebound as a share of GDP in this expansion and remains near the bottom end of the historical range observed just prior to past recessions.

[3] James A. Kahn, Margaret M. McConnell, and Gabriel Perez-Quirós, "On the Causes of the Increased Stability of the US Economy," Federal Reserve Bank of New York Economic Policy Review, 2002; Steven J. Davis and James A. Kahn, "Interpreting the Great Moderation: Changes in the Volatility of Economic Activity at the Macro and Micro Levels," Journal of Economic Perspectives, 2008.

Exhibit 4: A Secular Decline and Only Limited Cyclical Rebound in the Cyclical Parts of the Economy

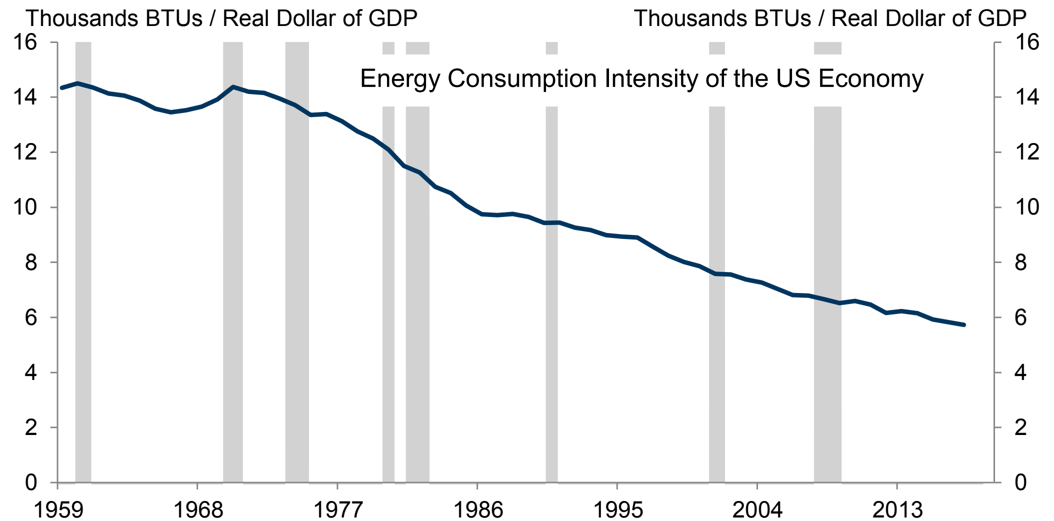


Source: Department of Commerce, Goldman Sachs Global Investment Research

Diminished Sensitivity to Oil Shocks in the New Oil Order

The OPEC embargo in 1973 led to the first in a series of US recessions in which oil price spikes reduced real incomes and sparked inflationary pressures. But the US economy's vulnerability to oil shocks is much smaller today, for three reasons. First, the energy intensity of GDP has declined over the decades, as shown in Exhibit 5, reducing the gross effect of oil price fluctuations on the economy.

Exhibit 5: The Energy Intensity of the US Economy Has Declined Steadily



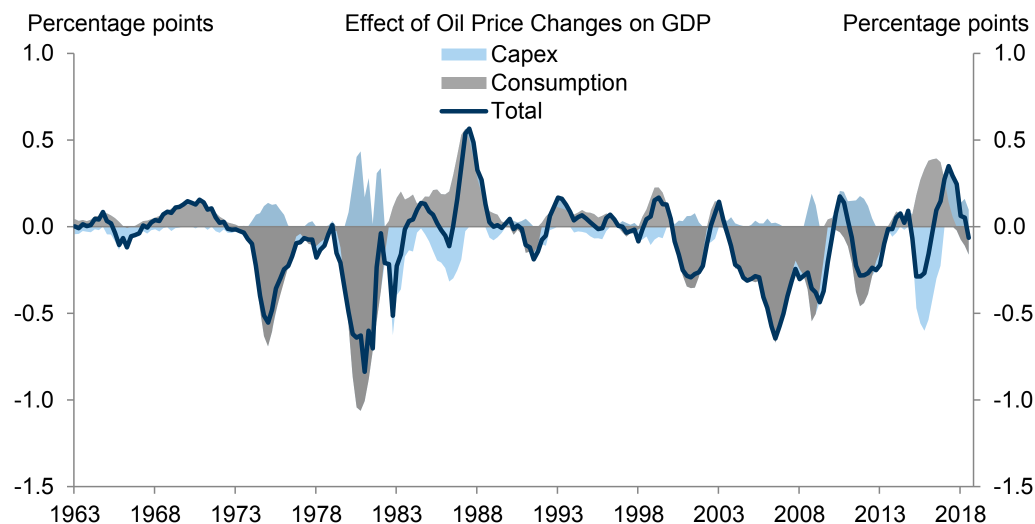
Source: Department of Energy, Goldman Sachs Global Investment Research

Second, rising domestic energy production and a shrinking petroleum trade deficit under the New Oil Order have made the net effect of oil price fluctuations on US GDP more neutral. While oil price spikes still reduce household real income and weigh on

consumption, they now cause a much larger offsetting rise in domestic energy investment than before, softening the net effect on GDP, as shown in Exhibit 6.

Third, oil price fluctuations are likely to be smaller in magnitude because of the flexible supply response from US shale.

Exhibit 6: With the Rise of Shale, Energy Price Fluctuations Have a More Neutral Net Effect on US GDP



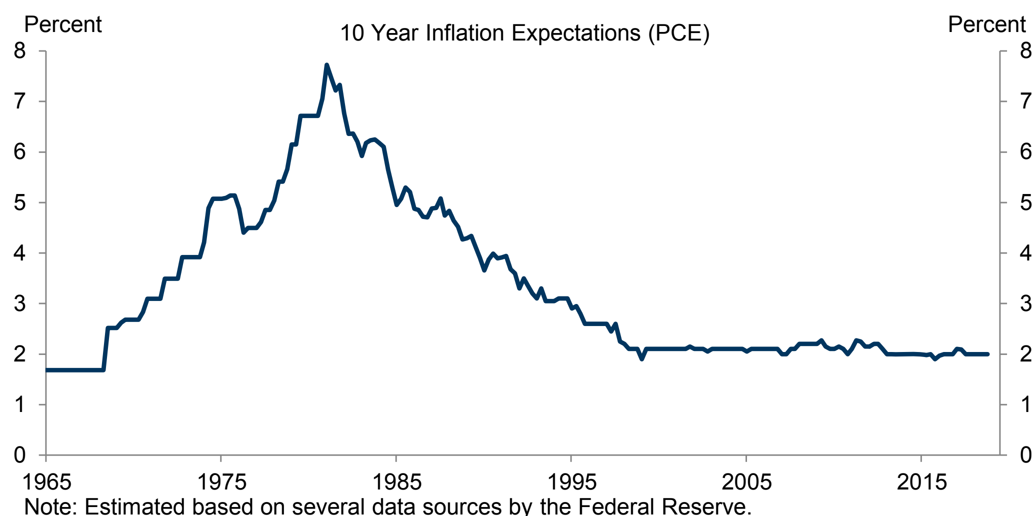
Source: Department of Commerce, Goldman Sachs Global Investment Research

Monetary Policy and the Taming of Inflation

The most important structural change is the improvement in monetary policy that has flattened the Phillips curve and firmly anchored inflation expectations on the Fed's 2% target, as shown in Exhibit 7.[4] These changes have reduced the risk of a large inflation overshoot and enabled the Fed to show more patience in the face of a moderate amount of labor market overheating.

[4] For a discussion of the role of monetary policy, see Ben Bernanke, "The Great Moderation," February 20, 2004.

Exhibit 7: Improvements in Monetary Policy Have Anchored Inflation Expectations on the 2% Target



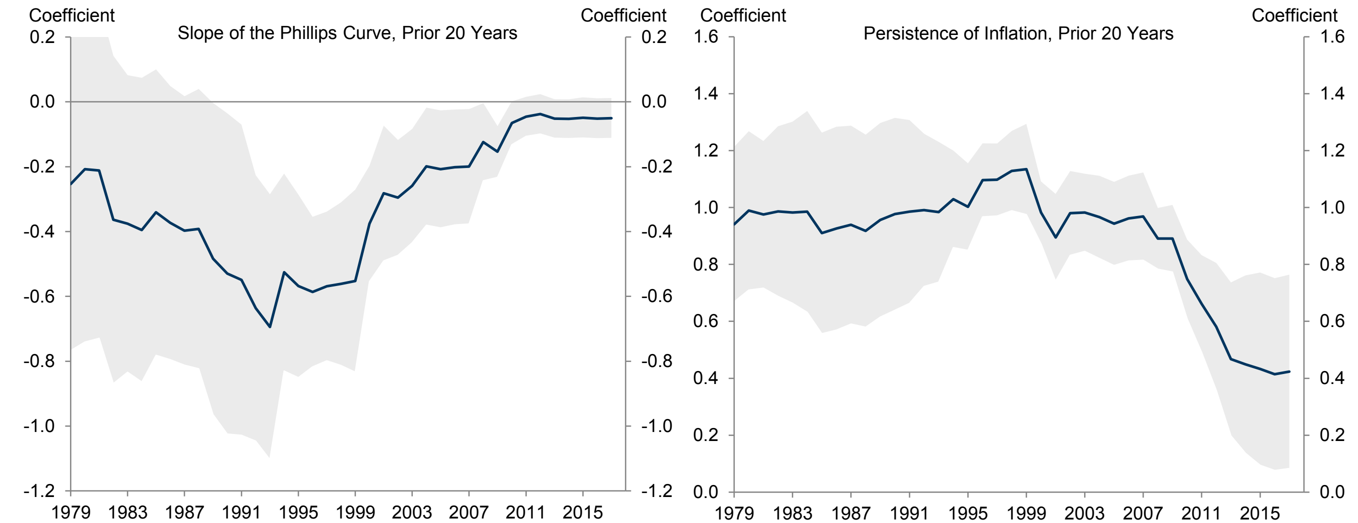
Source: Federal Reserve, Goldman Sachs Global Investment Research

In past decades, labor market overheating generated substantial inflationary pressure, as shown on the left of Exhibit 8. High inflation tended to persist, as shown on the right of Exhibit 8, because inflation expectations were poorly anchored and adaptive to recent experience.[5] As a result, persistent labor market overheating led to accelerating inflation, forcing the Fed to respond with aggressive rate hikes.

Today, a flatter and more anchored Phillips curve has changed this dynamic. While overheating is still likely to raise inflation—i.e. there is still a Phillips curve—it is now likely to result in modestly rather than sharply above-target inflation and it is much less likely to lead to accelerating inflation, at least provided that inflation expectations remain anchored. This allows the Fed to run a (somewhat) high-pressure labor market indefinitely as long as it is willing to accept a slightly higher inflation rate.

[5] The estimates in Exhibit 9 are from Daan Struyven and David Choi, "The Monetary Policy Response to Uncertainty," US Economics Analyst, September 15, 2018.

Exhibit 8: A Flatter and More Anchored Phillips Curve Reduces the Risk of Inflationary Overheating



Note: The gray shading represent 90% confidence intervals. Point estimates of NAIRU come from the CBO, while the confidence interval comes from Staiger, Stock, Watson (1997). We estimate the Phillips curve by regressing core PCE inflation on a constant, lagged inflation, and the CBO unemployment gap. We use annual data in rolling sample of 20 years.

Source: Goldman Sachs Global Investment Research

Financial Restraint in the Post-Crisis Economy

As economists first took note of the Great Moderation twenty years ago, some—including the GS team at the time—cautioned that the new era had a dark side: long periods of expansion can foster the buildup of leverage and financial imbalances in the private sector, making the economy more vulnerable to credit crunches.[6] Credit crises and asset bubbles have been the main source of recession risk in the US since then, and an IMF study found that financial crises were also a fairly common cause of recent recessions across other advanced economies, even before 2008.[7]

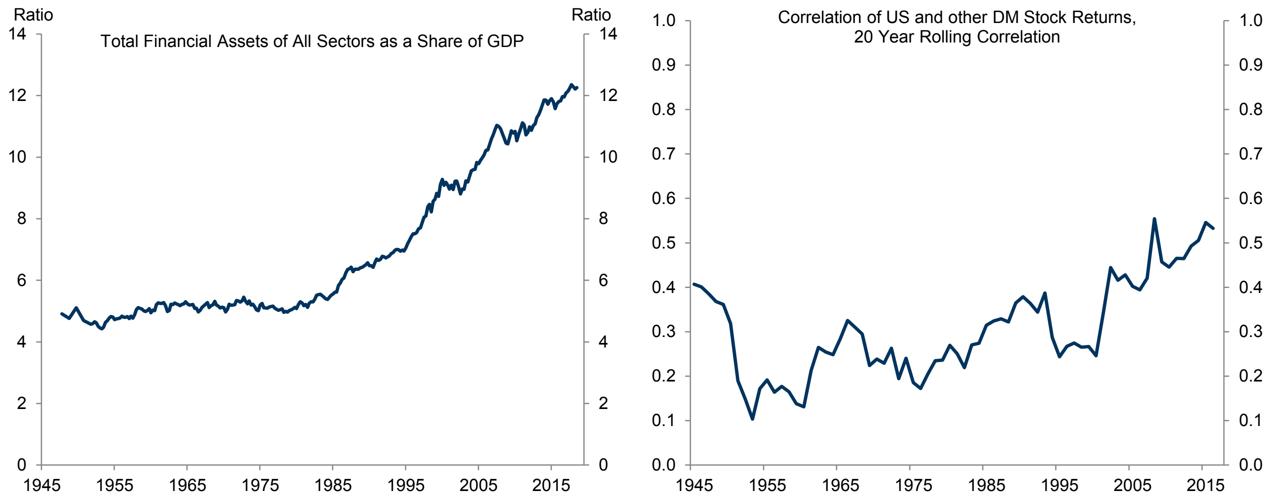
Financial risk, the fourth major cause of US recessions in our classification above, remains an important threat in principle. The classic risks of financial imbalances and asset bubbles could re-emerge, and both the growing financialization of the US economy and the increased global transmission of financial shocks, shown in Exhibit 9, could present new risks.[8]

[6] William C. Dudley and Edward F. McKelvey, "The Dark Side of the Brave New Business Cycle," Goldman Sachs Global Economics Paper, October 18, 1999; Hyman Minsky, "The Financial Instability Hypothesis," The Jerome Levy Economics Institute of Bard College, Working Paper No. 74, May 1992.

[7] International Monetary Fund, "World Economic Outlook," April 2009.

[8] See "Òscar Jordà, Moritz Schularick, and Alan M. Taylor. "Macrofinancial History and the New Business Cycle Facts," NBER Macroeconomics Annual 2016.

Exhibit 9: Growing Financialization and Increased Sensitivity to Foreign Financial Shocks Create Risks

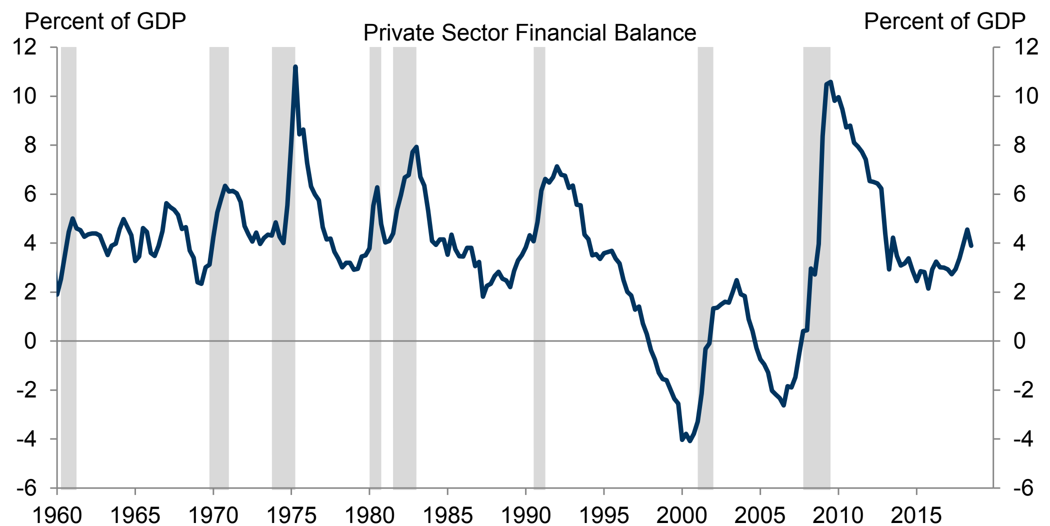


Source: Federal Reserve, Jorda, Schularick, and Taylor, Goldman Sachs Global Investment Research

But risk from financial imbalances seems to be in abeyance at present, partly because of crisis-induced caution on the part of households, firms, and regulators. Although risk asset prices have risen very substantially since 2009, valuations do not look excessive to us given the substantial rise in earnings, the recent drop in equity and corporate bond prices, and still-low real bond yields.

More importantly, the private sector remains in very good financial shape and looks much less vulnerable to a decline in asset prices or a tightening in lending standards than in the last couple of cycles. Exhibit 10 shows that the private sector is still running a large financial surplus of 4% of GDP, a roughly average level historically and an unusually benign reading this deep into an expansion.

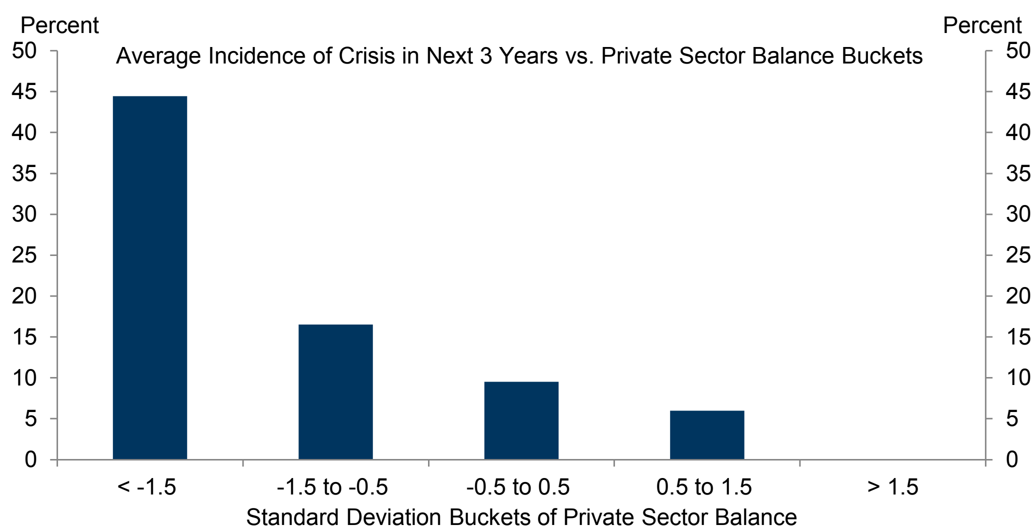
Exhibit 10: The Private Sector is Running a Large Surplus, a Sharp Contrast with the Last Two Cycles



Source: Federal Reserve, Goldman Sachs Global Investment Research

This is comforting because the private sector financial balance has been a very good predictor of financial crises, as shown in Exhibit 11, and at average levels indicates fairly limited risk. Moreover, it is not only the household sector that runs a surplus but also the nonfinancial corporate sector, which is reassuring given the concerns around leveraged loans and corporate credit more broadly.

Exhibit 11: At Roughly Average Levels, the Private Sector Financial Balance Indicates Low Crisis Risk



Source: Goldman Sachs Global Investment Research

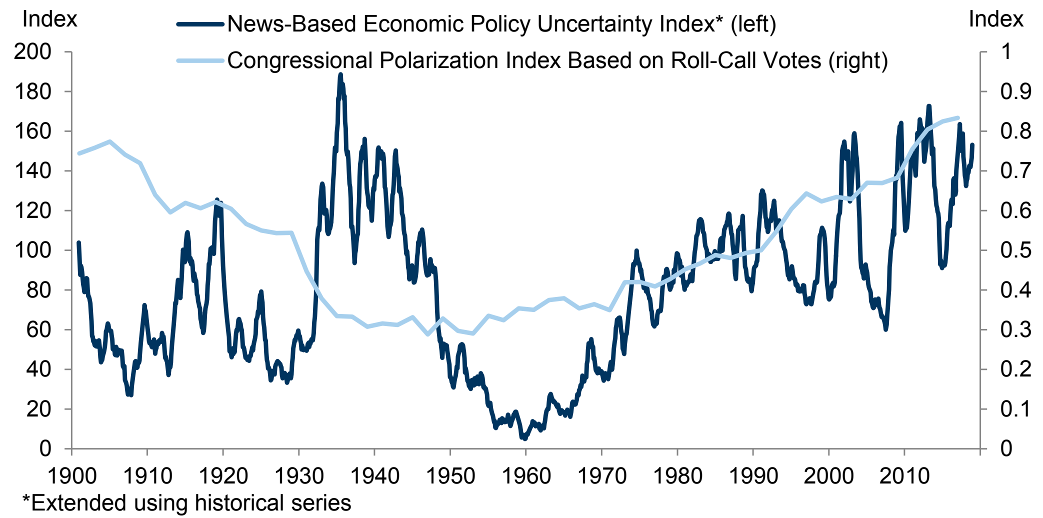
New Fiscal Policy Risks in an Era of Political Dysfunction

The fifth major historical cause of US recessions, fiscal tightening, has generally meant major post-war demobilizations of a size not seen since the Korean War. But here too, new risks could emerge.

On day 30 of the longest government shutdown in US history, it need hardly be argued that Washington is plagued by dysfunction. This dysfunction has created new economic risks arising from events such as shutdowns and debt ceiling fights that can have substantial effects on financial conditions and growth. The underlying causes are deep and the consequences are serious: Exhibit 12 shows that political polarization has reached new highs, contributing to a long-run rise in economic policy uncertainty.[9]

[9] Alec Phillips, "How Nothing Gets Done in Washington," US Economics Analyst, February 13, 2015.

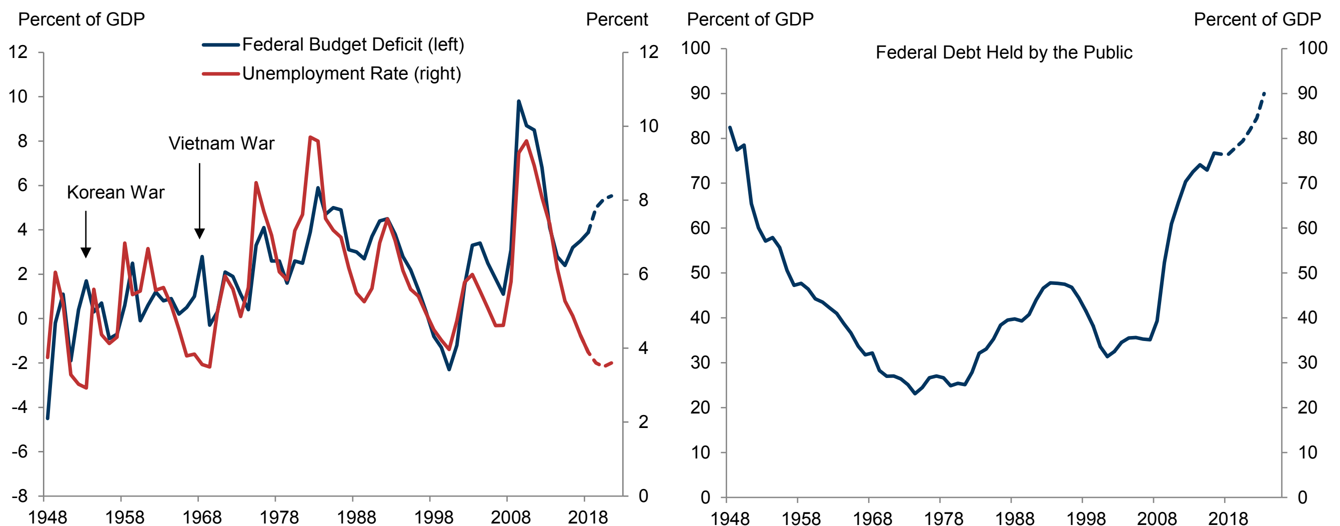
Exhibit 12: Rising Polarization and Policy Uncertainty Highlight US Political Dysfunction



Source: Baker, Bloom, and Davis PolicyUncertainty.com, Lewis, Poole, Rosenthal, Boche, Rudkin, and Sonnet VoteView.com

This political dysfunction coupled with the increasingly unsustainable path of government finances shown in Exhibit 13 also raises the risk that fiscal policy will be less effective in combatting future downturns. The US has historically relied less on automatic stabilizers and more on discretionary countercyclical fiscal policy than most other advanced economies, making it more vulnerable to the possibility that party discord or a perceived lack of fiscal space could constrain fiscal stimulus in the future when needed.

Exhibit 13: Higher Government Deficits and Debt Could Limit the Fiscal Response to Future Downturns



Source: Department of Commerce, Department of Labor, Congressional Budget Office, Office of Management and Budget

Better Prospects for a Soft Landing

The changes underlying the Great Moderation appear largely intact, and some have even strengthened. A look back at 100 years of US recessions suggests that several of the most important historical causes are less threatening today. While some new risks have emerged, on net we see the US economy as structurally less recession-prone than in the past.

More immediately, none of the three main sources of recent recessions—oil shocks, inflationary overheating, and financial imbalances—look too concerning at present. The shale revolution has made oil supply more elastic and reduced the net impact of oil price shocks on the US economy. Inflation remains near target despite the low unemployment rate, and a flatter and more anchored Phillips curve limits the risk of an overshoot large enough to force the Fed to respond as aggressively as in the past. And the private sector is still running a large financial surplus, a striking contrast with the last two expansions and a reassuring sign that financial crisis risk remains subdued in the more cautious and restrained post-2008 environment.

As a result, we think the prospects for a soft landing in the next few years are better than widely thought, and considerably better than the historical odds would suggest this deep into an expansion.

Jan Hatzius

David Mericle

Disclosure Appendix

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We, Jan Hatzius, Alec Phillips, David Mericle, Spencer Hill, Daan Struyven, Brian Chen, David Choi, Blake Taylor and Ronnie Walker, hereby certify that all of the views expressed in this report accurately reflect our personal views, which have not been influenced by considerations of the firm's business or client relationships.

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