Credit Strategy

Assessing corporate credit vulnerabilities: in search of optimal leverage

Credit Analysis

14 October 2019

Credit Strategy
United States

US corporate debt to GDP ratio has steadily increased over the past 40 years, fueled by the secular decline in inflation and interest rates: the high debt is not a bubble

Chatter about a corporate credit bubble is widespread. Much of the focus is on recent increases in the outstanding debt in investment grade bonds, leveraged loans, and CLOs, as well as company leverage ratios. Currently, there is $10.5 trillion of total corporate debt outstanding, which constitutes roughly 50% of US GDP, the highest debt to GDP ratio in corporate credit history. This may be remarkable, but it is not necessarily cause for alarm. Due to historically low interest rates the aggregate corporate debt service ratio (coupon*debt/US GDP) of 2.6% is close to the lows of the past 40 years. Market turbulence in late 2018, when the 10yr treasury yield exceeded 3.0%, suggests corporate credit vulnerability to higher interest rates. The Fed seems to have understood this when it pivoted to easing in 2019.

The secular growth of corporate debt is due to a confluence of interrelated factors, including: Reaganomics, deregulation, globalization, demographics, technology, the central bank put, Basel bank capital rules

The recent rise of corporate credit is considered in the secular context of 40 years of declining interest rates/inflation, where numerous factors coincided: Reaganomics (make deficits great again); deregulation, which spawned financial services industry growth, along with increased use of various forms of leverage to generate adequate returns; globalization, including the rise of China; aging demographics, with ever-increasing pension requirements; rapid technology advances, which have displaced workers but revolutionized information, inventory and supply chain management; the (originally titled) Greenspan put, where central banks regularly floor excessively painful deleveraging. For better or worse, debt and leverage have become essential, but manageable, features of survival in the modern era.

Optimizing leverage: basic corporate finance

Rising debt/leverage ratios are worthy of attention. However, basic corporate finance considers the concept of optimal capital structure or leverage, where companies seek the right mix of debt and equity in order to maximize shareholder value and minimize the overall cost of capital. The proximate cause of the GFC was excess leverage at numerous interconnected checkpoints, including homeowners, banks, GSEs, and structured vehicles. The homeowner inevitably deleveraged, and it rippled through the global financial system in daisy chain fashion. Post-crisis regulation pushed the system back to a point of optimal leverage. The GFC's key lesson/reminder is that optimizing leverage is essentially a trial and error process, where overshoots to the upside and to the downside naturally occur and create business cycles. When the current cycle finally enters recession, leveraged loans will experience lower defaults but relatively higher losses than in past cycles; HY bond defaults/losses will be about the same. BBB downgrade risk in recession is lower than past cycles, but would impact HY spreads. Chances of corporates triggering a GFC repeat are very low, due to systemic reforms.

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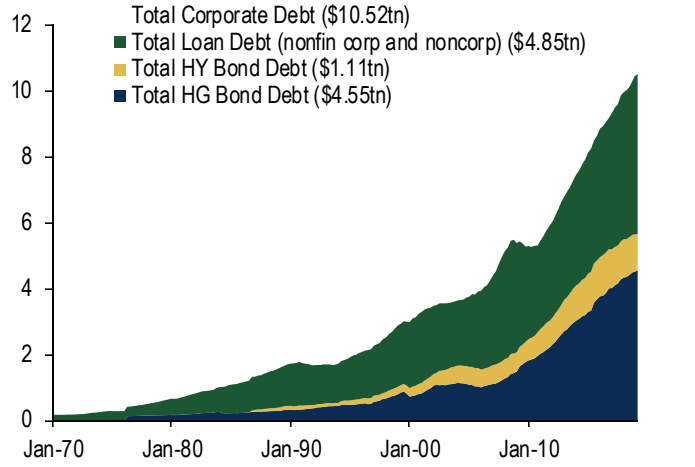
1. Introduction

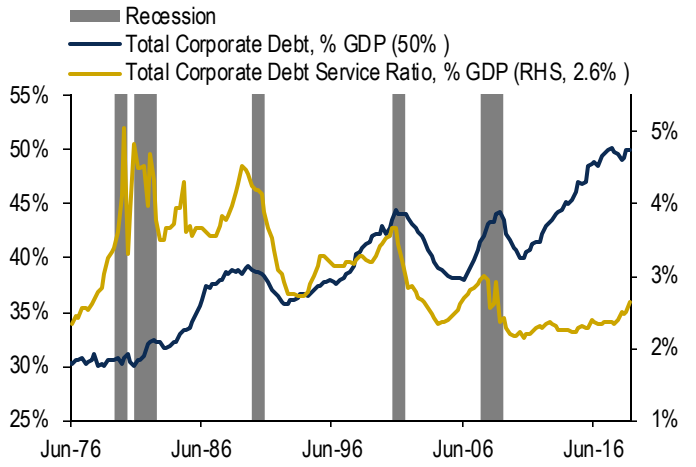
US nonfinancial corporate debt has grown significantly in the wake of the 2008 Great Financial Crisis (GFC). Total outstanding bond and loan debt is now $10.5 trillion, up from $5.3 trillion at the end of 2009 (Chart 1). Total nonfinancial corporate debt to GDP has risen from 42% to 50% over the same timeframe (Chart 2), although the debt service ratio of 2.6% is relatively low. The debt growth, which has been especially pronounced in investment grade (IG) bonds and loans (Chart 3), has raised varying degrees of concerns among policy makers, risk takers, and the media. Left out of the conversation are the benefits of persistently lower interest rates (Chart 4).

Chart 1: Nonfinancial business debt, $tns



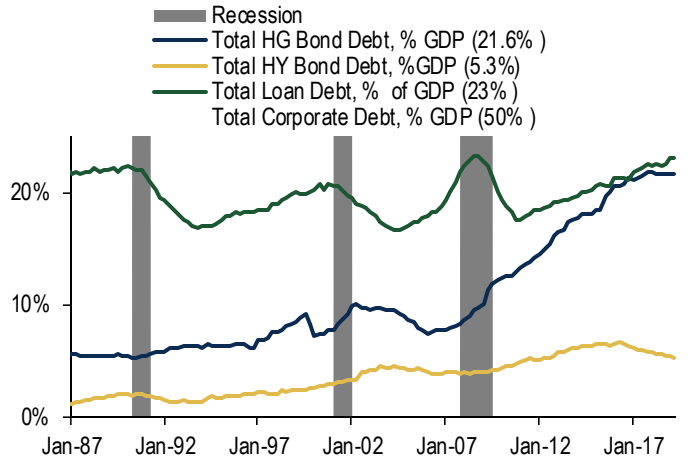
Source: BofA Merrill Lynch Global Research, Federal Reserve, Preqin, ICE Data Indices, LLC *Note: Data is through 1Q19

Chart 2: Nonfinancial business debt, % GDP



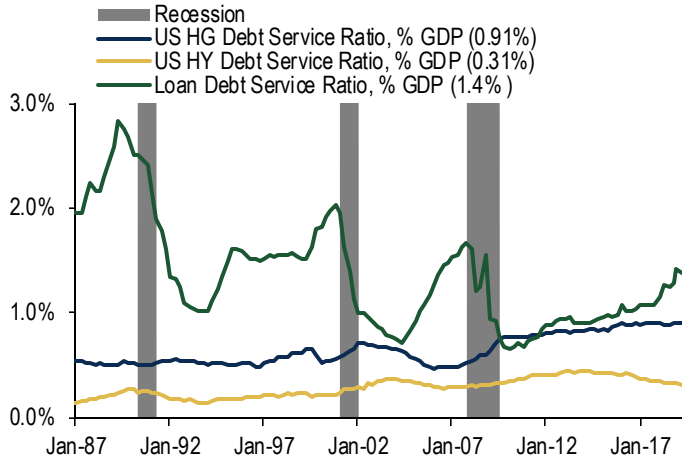
Source: BofA Merrill Lynch Global Research, Federal Reserve, Preqin, National Bureau of Economic Research, Bureau of Economic Analysis, ICE Data Indices, LLC *Note: Data is through 1Q19

Chart 3: Nonfinancial business debt, % of GDP



Source: BofA Merrill Lynch Global Research, Federal Reserve, Preqin, National Bureau of Economic Research, Bureau of Economic Analysis, ICE Data Indices, LLC *Note: Data is through 1Q19

Chart 4: Nonfinancial business debt service ratio, % GDP



Source: BofAML Merrill Lynch Global Research, Federal Reserve, Preqin, National Bureau of Economic Research, Bureau of Economic Analysis, ICE Data Indices, LLC *Note: Data is through 1Q19

To address the validity of these concerns, this note considers the recent growth in both a secular and cyclical context. We reach the following conclusions:

1. Elevated corporate debt is a natural byproduct of the modern financial and economic "system" that was introduced into the United States roughly 40 years ago, along with technological and demographic evolution. Key features of the modern economic system, which emerged from the stagflation of the 1970s, included supply side economics (lower taxes (= more government debt), less regulation), globalization and highly responsive central banks. All of these factors have at least coincided with a secular decline in inflation and interest rates. The economic literature is mixed on whether there is inflation causality associated with these various factors.

2. Global debt levels, including corporate debt, are high primarily because, quite simply, up to now, it has worked: it has become increasingly cheap to borrow money and inexpensive to service the debt (at least during good times). The US public sector has led the way. Three other reasons are: 1) deregulation (bank disintermediation) has made borrowing easier; 2) low economic growth rates, which may in part be the result of high debt levels, necessitate higher leverage in order to generate adequate returns, which aging populations need; 3) the central bank put, which first surfaced after the 1987 stock market crash, limits downside risks associated with high debt levels, with obvious moral hazard implications. There most likely is a feedback loop involved here: declining rates have encouraged more borrowing and more borrowing has required ever-lower rates.

3. Corporate debt had three significant advantages when it came to growth in this cycle: 1) it was not mortgage debt, which means it did not face the same level of credit scrutiny and government intervention that mortgages did in the post-crisis era (for example, massive mortgage litigation expenses); 2) with the Fed buying large portions of the US treasury and agency MBS markets, corporates offered relatively high risk-adjusted yields; 3) having deleveraged significantly after the early 2000s recession, corporate debt went into and ultimately came out of the GFC with relatively low leverage ratios and a reasonably good performance track record.

4. Leverage ratios for corporate debt have moved higher in this economic expansion, which has now lasted a record 123 months. A key part of the leverage is share buybacks. Since early 2016, after a bout of pronounced corporate credit weakness, an aggregate measure of leverage, corporate debt to GDP, has leveled off at roughly 50%. Leverage is still far lower than mortgage debt to GDP heading into the GFC (peaked at 74%) and is well below today's public debt to GDP of 103%. The largest component of corporate credit growth has been in IG bonds. **No recession is currently forecasted, but when one inevitably comes, perhaps from an exogenous factor such as the US-China trade war, it will force deleveraging of the corporate sector, just as it has in past economic cycles.**

5. Low interest rates have limited the rise in aggregate debt service ratios (coupon*Debt/GDP). The combined IG/HY bond DSR of 1.23% is well below the 20- and 40-year averages of 1.46% and 1.8%. Corporate loan debt service ratios are at elevated levels of 1.4%, above the 20-year average of 1.2% but below the 40-year average of 1.62%. The combined bond and loan aggregate debt service ratio is currently 2.60%, which is the 20-year average but below the 40-year average of 3.10%.

6. The key takeaway on the aggregate corporate debt service ratio is that it likely has reached or tested what the peak allowable level is for the debt-laden US economy in this cycle. The late 2018 market selloff and the Fed's early 2019 policy pivot to easing were a signal and a response that the economy and corporate debt market could not absorb any further rate hikes. Recession very likely would have been triggered if the pivot had not occurred. Given the persistent escalation of US-China trade tensions, whether the Fed bought the economy enough time by pivoting remains to be seen.

7. Not surprisingly, if recession occurs at some point in the future, IG bonds will experience increased ratings downgrades. In past downturns, 10%-20% of BBB bonds could potentially fall into HY. In this cycle, however, a number of large companies in this rating category, many of whom opted to move down in rating to get more leverage of their balance sheets, have already taken steps to deleverage their balance sheets after the scare of 2016. As a result, we think fallen angel risk is lower than in past cycles. That said, given that the BBB market has grown to roughly $3 trillion, if that fallen angel rate drops to say just 5%, that still implies $150 billion in additional supply due to downgrades into a market that will see roughly $200 billion in issuance this year. In addition to credit concerns for HY in a recession, this fallen angel supply would be a source of material spread widening pressure. Overall, we do not see fallen angels exerting meaningful spread widening pressure on IG bonds and remain bullish on the BBB sector, which should deliver positive total returns in the lower yield environment associated with policy easing.

8. In recession, HY bonds and leveraged loans naturally will see increased downgrades and defaults from current levels. This is particularly noteworthy in loans where erosion in quality of credit and covenants is likely to cause a meaningful proportional increase in credit losses versus previous cycles. In loans, we think recoveries will drop from 65% to 50% in the next cycle but that annual defaults could drop from 8% to 7%; this means net losses will increase from 2.8% to 3.5%. In bonds, we see annual defaults moving from 15% to 10% and recoveries dropping to 40% to 30%, with net losses going from 9.0% to 6.5%. Credit events are apt to be more idiosyncratic or industry-specific than systemic. Industries such as healthcare, tech and energy could be exposed to some combination political, trade and cyclical risks. Depending on cause and depth of a recession, we see spread widening potential similar to 2001-2002.

9. CLOs, backed by leveraged loans, have little in common with the subprime mortgage CDOs associated with the financial crisis, other than they are both securitizations. Rating agencies have over 100 years of experience rating corporate credits, and have seen performance through multiple economic cycles. In contrast, the subprime MBS had at best only a few years of performance data with no economic cycle experience. These over-levered MBS were then structurally levered further into CDOs and then had additional levels of leverage applied through credit derivatives. None of that is present with CLOs.

10. In the wake of the GFC, policymakers undertook numerous policy initiatives to ensure the stability of the global financial system. These included 1) Dodd-Frank, 2) designation of systemically important financial institutions (which resulted in increased bank capitalization), and 3) Basel III, which is a work in progress. The resultant post-GFC deleveraging of the global financial system is expected to minimize contagion effects and downside risks associated with corporate deleveraging, when the inevitable recession finally comes. **This point is important: due to post-crisis policy initiatives, we do not believe elevated corporate debt levels will have systemic implications in a recession. Individual creditors will be hurt, but the pain will not spread.**

11. As response to recession, the Fed is expected to cut interest rates and implement other monetary policy tools, such as quantitative easing, yield curve targeting, etc. We do not expect the Fed to implement a negative nominal interest rate policy, because of its harmful potential for the banking system. Given its success in responding to the GFC, we think the Fed has adequate ammunition to address recession. While credit spreads would no doubt initially widen, high quality bond yields likely will move lower, offering positive total return potential. Distressed credit opportunities will emerge, offering significant return potential to the capital awaiting these distressed opportunities.

12. The key challenge facing the Fed – and the corporate credit market – at this stage of the secular cycle is whether the secular disinflationary wave is over and inflation is poised to make a sustained move higher in the years ahead, similar to the 1970s. This stagflation scenario, of course, would constrain the Fed's ability to cut interest rates and employ other measures to "fix" the economy, as it has in the downturns of the past 35 years. Avoiding this stagflation scenario has no doubt been front and center as an operating principle for the Fed since the disastrous 1970s experience. Our baseline view is that the secular, disinflationary wave is not yet over (if not far from over) and that the Fed will be able to successfully respond to a cyclical downturn.

13. Whether the US will return to stagflation and higher interest rates in the years ahead most likely will be decided by the US electorate, which would need to vote in a radical policy shift that puts an end to the Reagan era. The New Deal era of President Roosevelt lasted roughly 50 years, from 1929 through 1980. Eventually, under duress, it gave way to the disinflationary Laissez Faire era of President Reagan. This era, which is now almost 40 years old, has delivered enormous prosperity to the United States, even if that prosperity has been unevenly distributed and not shared by all. Given that the unemployment rate is at a 50-year low and inflation has been running at approximately just 1.8%, we do not believe the electorate is ready to put an end to the secular wave ushered in by Reaganomics, in spite of its real or perceived faults. This view, of course, is up for debate.

In the sections that follow, we:

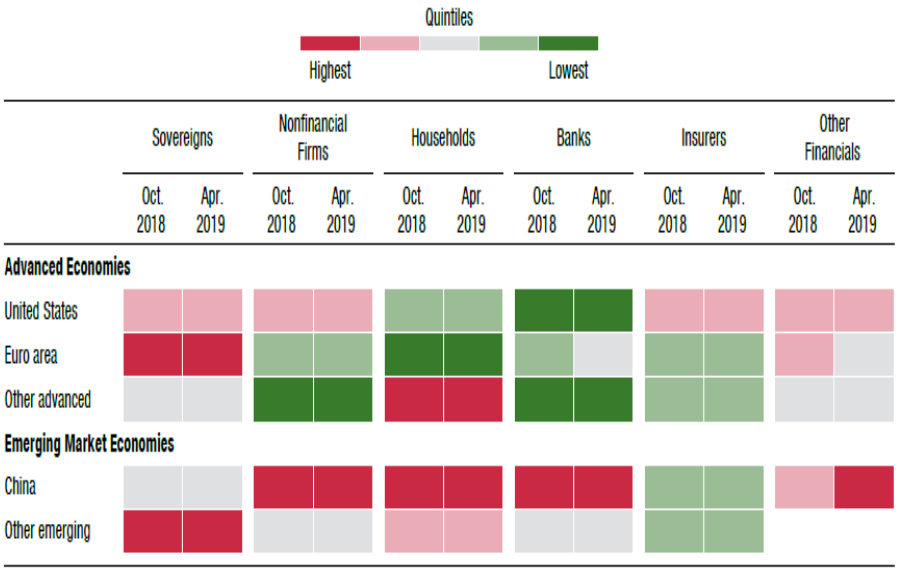
- briefly summarize some details on what has gathered attention around the growth of corporate debt in this cycle, as well as some mitigating factors (Section 2);
- discuss how this debt cycle fits within the longer term secular cycle that began around 1980 (Section 3); and
- explore the corporate debt market in detail and consider how the various sub-markets - investment grade bonds, high yield bonds, leveraged loans, and CLOs - might fare in the context of an economic downturn (Section 4).

2. The headline-grabbing, cyclical view: the concerning and the more positive news

We provide two examples of recent headline events where respected market observers, the IMF and the Fed, express concern about corporate debt levels. However, in both instances, they go on to highlight some positives or mitigating factors, ending up with what we think is an appropriately balanced view on the risks associated with corporate debt.

In its April 2018 Global Financial Stability Report, the IMF placed US nonfinancial corporate debt in the second highest financial vulnerabilities ranking among global economic sectors, basically a 4 out of 5, where 5 is the most financially vulnerable (Chart 5). As context, Chinese corporates, households and banks all were given a 5 out of 5 ranking – most vulnerable.

Chart 5: Financial Vulnerabilities by Sector and Region



Source: Bank for International Settlements; Bank of Japan; Bloomberg Finance L.P.; China Insurance Regulatory Commission; European Central Bank; Haver Analytics; IMF, Financial Soundness Indicators database; S&P Global Market Intelligence; S&P Leveraged Commentary and Data; WIND Information Co.; and IMF staff calculations.

Conversely, but very importantly, US banks were given a 1 out of 5 financial vulnerability ranking, highlighting what we think is a very important point with respect to contagion risk: due to post-crisis recapitalization, US banks are exceptionally well-positioned to manage a recession, which will minimize contagion risk when or if credit events do occur. In addition, the IMF said the following about US corporates:

- "The share of debt at firms with weak debt-service capacity and significant liquidity and rollover risks, or with excessive net leverage relative to profits, is now broadly lower than both a few years ago and before the financial crisis in most global economies."

Similarly, a sample headline on rising corporate debt came in the May 20, 2019 Wall Street Journal: "Fed Chairman Powell Warns of Economic Risks from Rising Business Debt." The article stated the following:

- Chair Powell said recent corporate borrowings shared a few very broad parallels with the subprime-mortgage boom. Debt has hit new highs due in part to "aggressive underwriting" using financial vehicles that sell different pieces of debt to different investors, often outside the banking sector, he said.

However, on the more positive side, the article also correctly noted (in our opinion):

- At the same time, Mr. Powell pushed back against some of the more alarmist views about corporate borrowing, calling some comparisons to the subprime-mortgage crisis "not fully convincing." Mr. Powell said the financial system today "appears strong enough to handle potential business-sector losses, which was manifestly not the case a decade ago with subprime mortgages."

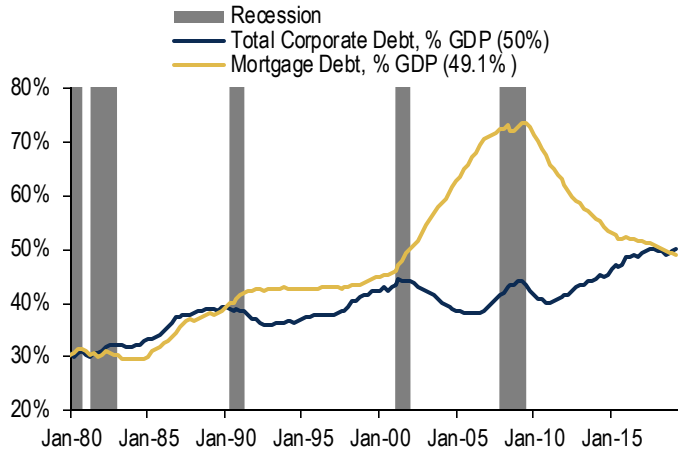
And, also on a positive and correct note:

- Moreover, the increase in business debt reflects a steady "upward plod" over a long expansion, he said, as opposed to the spike in mortgage lending between 2004 and 2006. While the mortgage boom was fueled in part by a housing bubble, business credit doesn't appear to be rising because of an asset bubble.

- "Seen this way, the current situation looks typical of business cycles," he said. "The mortgage credit boom was, because of its magnitude and speed, far outside historical norms."

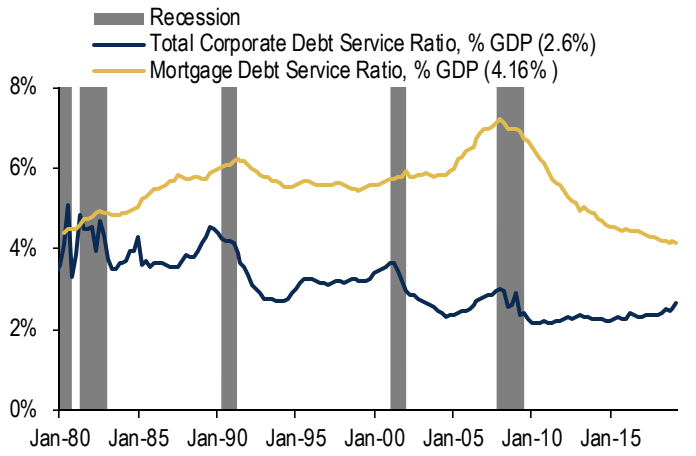
Supporting Chair Powell's latter comments, Chart 6 and Chart 7 provide comparisons of the corporate and mortgage debt stories, first showing the comparable debt to GDP ratios and then showing aggregate debt service ratios (DSR) for each sector (coupon*debt/GDP).

Chart 6: Mortgage debt and corporate debt, % GDP



Source: BofA Merrill Lynch Global Research, Federal Reserve, Preqin, National Bureau of Economic Research, Bureau of Economic Analysis, ICE Data Indices, LLC *Note: Data is through 1Q19

Chart 7: Mortgage debt service ratio and corporate debt service ratio, % GDP



Source: BofAML Merrill Lynch Global Research, Federal Reserve, Preqin, National Bureau of Economic Research, Bureau of Economic Analysis, ICE Data Indices, LLC *Note: Data is through 1Q19

Chart 6 shows the velocity of the rise of mortgage debt in the early 2000s: after hovering just below 45% for most of the 1990s, mortgage debt to GDP jumped to 73% by 2008, a 28pp rise. In a similar 8-year post-crisis period, corporate debt to GDP jumped from 40% to 50%, for just a 10 pp rise. Moreover, corporate debt grew in a significantly lower and more accommodative interest rate environment and the bulk of the corporate debt rise was driven by the high quality IG sector.

In Chart 7, the mortgage DSR (which includes a principal amortization component) jumped from 5.5% pre-2000 to a peak of 7.0% in 2008. Meanwhile, the corporate DSR, benefitting particularly from the low coupon on the large IG bond segment, is just 2.6%. Chair Powell's comment that corporates are expanding consistent with a normal business cycle is evident, as is the comment that mortgages were outside historical norms in the pre-crisis era.

While high for the cycle, the corporate DSR of 2.6% is still quite low when considered in the context of the past 40 years. We will discuss this further in the investment grade bond section, but there is a strong argument to be made that corporate issuers have rationally used cheap financing rates to lever their balance sheets and, more importantly, optimize their capital structures.

We now turn to the long term secular view of debt and interest rates, which we think is critical to understanding both how we've arrived at a point of elevated corporate debt levels (hint: it's worked well so far) and how corporate debt may fare at the end of the current economic cycle.

3. The secular, long term view: 1929-1979; 1980-present

3.1 The modern era: rising debt and the search for optimal leverage

Elevated corporate debt is a natural byproduct of the modern financial and economic "system" that was introduced into the United States roughly 40 years ago, coincident with the election of Ronald Reagan as US President. Key features of the modern economic system, which emerged from the stagflation of the 1970s, included: 1) supply side economics (aka Reaganomics: lower taxes (= more government debt), less regulation), 2) globalization and 3) highly responsive central banks. Technology and demographics also played key roles in the evolution of debt over the past 40 years.

The economic literature is mixed on the contribution of these various factors to the secular decline in inflation and interest rates (see Globalization and Global Disinflation, Rogoff (2003); China's Impact on US Inflation, Amiti, Choi (2013); Deflation and the Third Globalization, Holt (2015); Technological Progress, Globalization and Low-inflation: Evidence from the United States, Lv, Liu, Xu (2019). We'll just say they have coincided. Lower rates, in turn, have made it attractive, if not essential for survival, for all sectors of the economy - government, corporates and households - to increase debt.

Higher debt levels naturally raise concerns among the thrifty and prudent. But debt is an essential part of growth and expansion. Too much debt is dangerous, too little debt can be stultifying, limiting growth potential: the goal for every borrower is to reach an optimal level of debt, where debt service is manageable and the debt affords new horizons for the borrower, such as a home for households and business expansion for companies.

The 2008 GFC was a painful reminder that too much debt or leverage can be devastating and that determining optimal leverage is essentially a trial and error process. The excess leverage errors are typically what create downturns in business cycles.

We now provide a survey of some of the key events of the past 40-50 years that have resulted in the rise of debt and the ongoing, experimental search for optimal leverage.

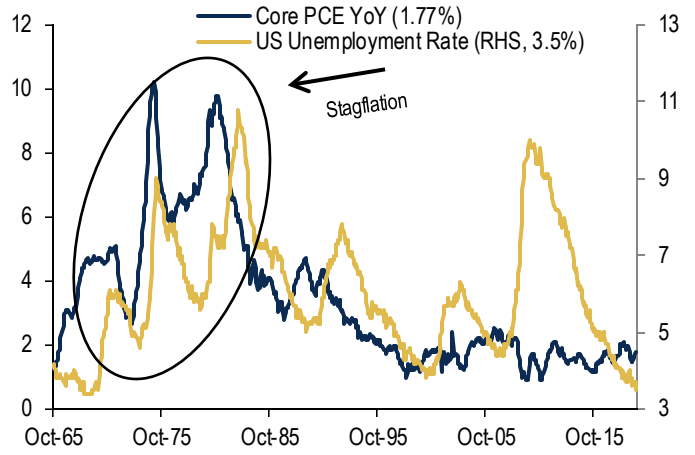
3.2 The disinflationary stew of economics, politics, policy, technology, and demographics

Interest rates, inflation and employment

The starting point for the secular wave discussion is the long-term view of inflation, unemployment and interest rates.

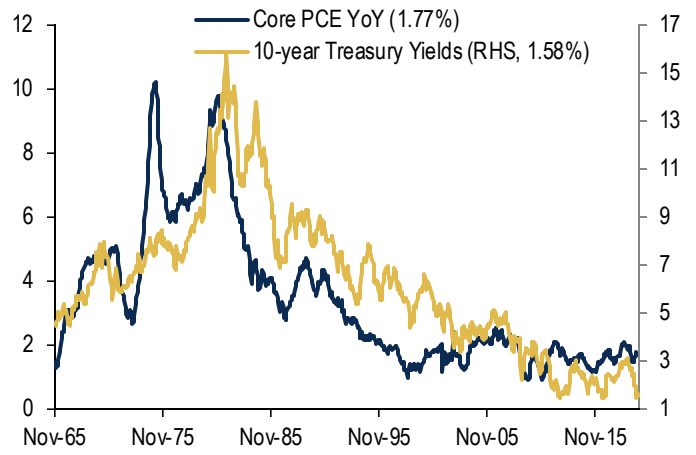
In Chart 8, we focus on the "stagflation" environment of the 1970s and early 1980s, where both inflation (10% peak in 1974) and unemployment (10.7% peak in 1982) were high. Chart 9 shows that high inflation and resultant monetary policy tightening under Paul Volcker steadily pushed interest rates higher, with the 10yr treasury yield peaking at almost 16% in 1981. Contrast these with today's readings: 1.8% inflation, 3.5% unemployment, and 1.5% 10yr treasury yield; consider which environment is more conducive to expanded corporate sector borrowing.

Chart 8: Stagflation: high unemployment, high inflation. Today is low unemployment, low inflation



Source: BLS

Chart 9: 10-year Treasury yield peaked at 16% in 1982 after the inflationary 1970s. Now at 1.5%



Source: Bloomberg, BLS

The Misery Index gives way to Reaganomics

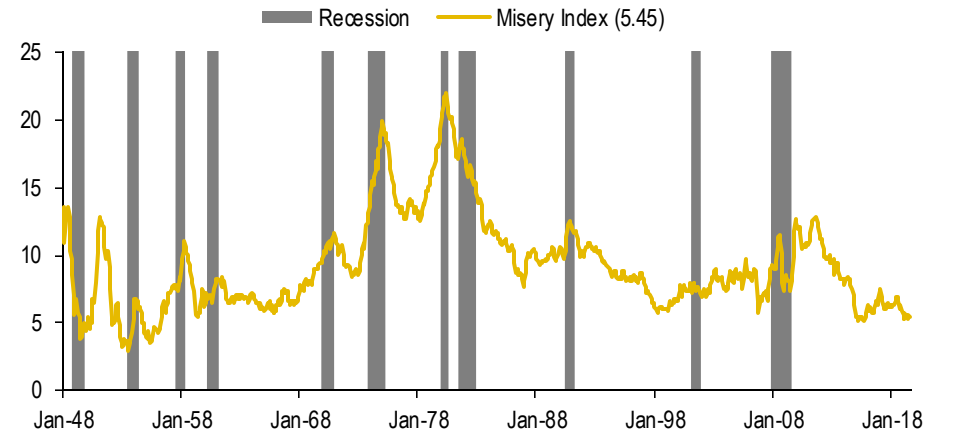
Table 1 presents, by post-war President, a version of the inflation/unemployment data known as the Misery Index: unemployment + inflation. Chart 10 shows the history. Without commenting on its usefulness as an economic gauge, we present it to simply highlight what followed the 1970s in terms of politics and economic policies. Under Presidents Nixon, Ford, and Carter, the Misery Index rose from 7.80 to an all-time high of 21.98 under Carter, in June 1980, just before the 1980 election.

Table 1: Misery index by presidential administration

President	Time Period	Average	Low	High	Start	End	Change
Harry Truman	1948–1952	7.88	03.45 – Dec 1952	13.63 – Jan 1948	13.63	3.45	-10.18
Dwight D. Eisenhower	1953–1960	9.26	02.97 – Jul 1953	10.98 – Apr 1958	3.28	9.96	5.68
John F. Kennedy	1961–1962	7.14	06.40 – Jul 1962	08.38 – Jul 1961	8.31	6.82	-1.49
Lyndon B. Johnson	1963–1968	6.77	05.70 – Nov 1965	08.19 – Jul 1968	7.02	8.12	1.10
Richard Nixon	1969–1974	10.57	07.80 – Jan 1969	17.01 – Jul 1974	7.80	17.01	9.21
Gerald Ford	1974–1976	16.00	12.66 – Dec 1976	19.90 – Jan 1975	16.36	12.66	-3.70
Jimmy Carter	1977–1980	16.26	12.60 – Apr 1978	21.98 – Jun 1980	12.72	19.72	7.00
Ronald Reagan	1981–1988	12.19	07.70 – Dec 1986	19.33 – Jan 1981	19.33	9.72	-9.61
George H. W. Bush	1989–1992	10.68	09.64 – Sep 1989	14.47 – Nov 1990	10.07	10.30	0.23
Bill Clinton	1993–2000	7.80	05.74 – Apr 1998	10.56 – Jan 1993	10.56	7.29	-3.27
George W. Bush	2001–2008	8.11	05.71 – Oct 2006	11.47 – Aug 2008	7.93	7.39	-0.54
Barack Obama	2009–2016	8.83	05.06 – Sep 2015	12.87 – Sep 2011	7.83	6.77	-1.06
Donald Trump	2017–Apr 2019	6.29	05.32 – Feb 2019	7.44 – Feb 2017	7.30	5.60	-1.70

Source: Bureau of Labor Statistics, Misery Index

Chart 10: Misery Index



Source: National Bureau of Economic Research, Bureau of Labor Statistics, Misery Index

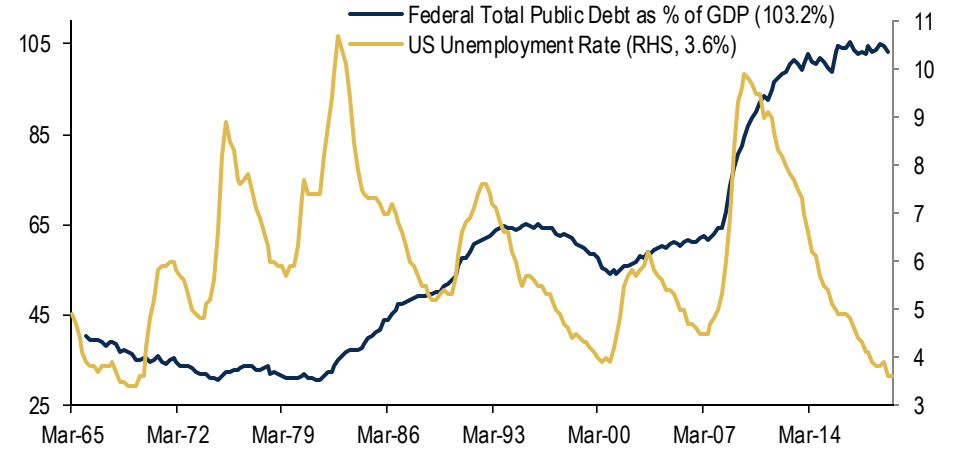
The high Misery Index of the 1970s effectively paved the way for the 1980 election of Ronald Reagan, who promised an overhaul of the New Deal policies that had dominated the US since the Great Depression and, which Reagan argued, ultimately led to the economic misery of the 1970s. The cornerstone of the Reagan pitch, referred to as supply side economics or "Reaganomics," was deregulation and lower taxes.

Note that almost 40 years later, under President Donald Trump, the average Misery Index is 6.29, the lowest of any post-war president. Proponents of Reaganomics likely would argue that this is proof that the Reagan revolution succeeded. In the interest of understanding how the secular wave that at least coincided with Reaganomics might eventually end, we later consider what opponents might consider its flaws, high debt levels and income and wealth inequality.

Reaganomics: lower taxes (= higher debt)

Lower taxes and less regulation were supposed to unleash enough economic growth to enable the tax cuts to pay for themselves. The public debt to GDP data (Chart 11) suggests a somewhat different outcome. The public debt to GDP ratio bottomed in September 1981 at 30.6% and has since increased to 103.2% in June 2019. All four subsequent periods of declining unemployment rates (1982-1989, 1992-2000, 2003-2006, 2009-present) were coincident with rising public debt to GDP ratios.

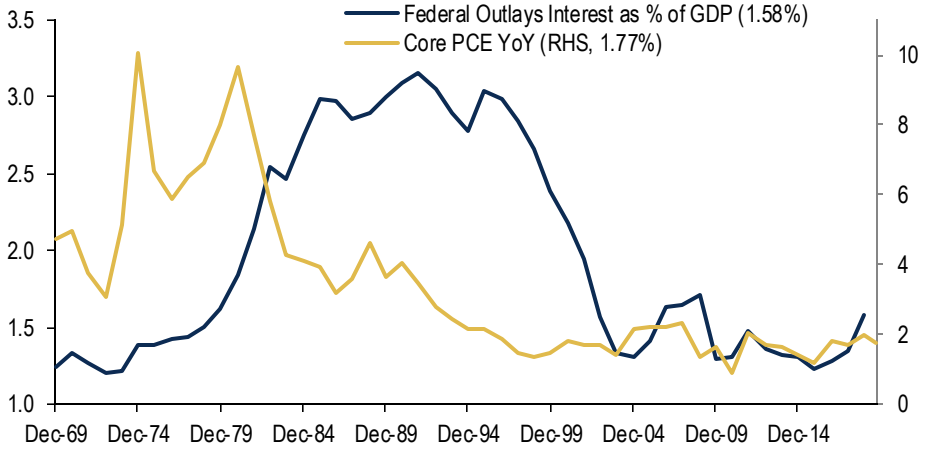
Chart 11: Public debt to-GDP has risen since the 1970s stagflation era. Sharp rises in response to high unemployment



Source: OMB, BLS

The uncomfortable truth associated with using public debt to reduce unemployment is the potentially high interest costs of servicing that debt. This was indeed the case in the 1980s and 1990s, when interest rates and inflation remained high by today's standards, as interest costs rose to about 3% (Chart 12). In the years after inflation was "defeated" in the mid-1990s, dropping below 2%, public interest costs have approximately averaged a "manageable" 1.5%. While it goes unstated as a policy objective for the Federal Reserve, we see this as the elephant in the room on monetary policy: it's in nobody's interest in the US to see this cost go meaningfully higher.

Chart 12: High public debt service dropped from 3% to 1.5% after inflation "deflated" in mid-1990s



Source: OMB, BLS

Vice President Dick Cheney reportedly said to the budget-conscious Treasury Secretary Paul O'Neill: "Reagan proved deficits don't matter." Whether true or not, judging by the post-Reagan growth in public debt and the sustainably low interest cost, this would appear to be a widely shared government view. If the record low Misery Index reading in Chart 10 is an accurate gauge, the populace is happy with the outcome.

For the purposes of this paper, the takeaway from this section is that the modern US economy is essentially a "pay as you go" structure: as long as interest rates remain low, high debt levels seem to work; they have so far. Low inflation and a central bank backstop when things go wrong are needed. Public sector debt is likely to grow after downturns while private sector debt is likely to shrink, as forced deleveraging occurs, but the private sector can benefit from the public sector's need to keep interest rates low.

High debt levels may in fact be part of what keeps interest rates and inflation low. We may have seen evidence of that phenomenon when market turbulence escalated along with the Fed's 2018 interest rate hikes.

We now consider some other developments of the 1970s-1980s that, again, at least coincided with the secular inflation/interest rate decline. We consider these as factors that may or may not be present in the future. To the extent causality may exist with inflation, these may represent future risks to persistently low or declining interest rates.

Tax Reform

We highlight the two major pieces of tax legislation in the 1980s, known as the Reagan tax cuts:

- Economic Recovery Act of 1981 – Reduced marginal tax rates 23% over three years; reduced maximum rate from 70% to 50% and maximum capital gains rate from 28% to 20%. Faster write-off of capital expenditures under simplified rules; most equipment written off over 5 years, structures over 15 years. Increased Keough annual contribution limit to $15,000.

- Tax Reform Act of 1986 – Lowered top marginal tax rate to 28%. Reduced top corporate marginal tax rate to 34%.

Deregulation

The push for deregulation started before the Reagan era even began, most notably The Airline Deregulation Act of 1978, which passed with bipartisan support and began an era of disruption in that industry. Financial services deregulation also began in the 1970s, but picked up steam in the Reagan and subsequent administrations. Below are the highlights of 25 years of financial deregulation that preceded the financial crisis (from A Short History of Financial Deregulation in the United States, Sherman (2009)):

- 1978, Marquette vs. First of Omaha – Supreme Court allows banks to export the usury laws of their home state nationwide and sets off a competitive wave of deregulation, resulting in the complete elimination of usury rate ceilings in South Dakota and Delaware, among others.

- 1980, Depository Institutions Deregulation and Monetary Control Act – Legislation increases deposit insurance from $40,000 to $100,000, authorizes new authority to thrift institutions, and calls for the complete phase-out of interest rate ceilings on deposit accounts.

- 1982, Garn-St. Germain Depository Institutions Act – Bill deregulates thrifts almost entirely, allowing commercial lending and providing for a new account to compete with money market mutual funds. This was a Reagan administration initiative that passed with strong bi-partisan support.

- 1987, FSLIC Insolvency – GAO declares the deposit insurance fund of the savings and loan industry to be insolvent as a result of mounting institutional failures.

- 1989, Financial Institutions Reform and Recovery Act – Act abolishes the Federal Home Loan Bank Board and FSLIC, transferring them to OTS and the FDIC, respectively. The plan also creates the Resolution Trust Corporation to resolve failed thrifts.

- 1994, Riegle-Neal Interstate Banking and Branching Efficiency Act – This bill eliminated previous restrictions on interstate banking and branching. It passed with broad bipartisan support.

- 1996, Fed Reinterprets Glass-Steagall – Federal Reserve reinterprets the Glass-Steagall Act several times, eventually allowing bank holding companies to earn up to 25 percent of their revenues in investment banking.

- 1998, Citicorp-Travelers Merger – Citigroup, Inc. merges a commercial bank with an insurance company that owns an investment bank to form the world's largest financial services company.

- 1999, Gramm-Leach-Bliley Act – With support from Fed Chairman Greenspan, Treasury Secretary Rubin and his successor Lawrence Summers, the bill repeals the Glass Steagall Act completely.
- 2000, Commodity Futures Modernization Act – Passed with support from the Clinton Administration, including Treasury Secretary Lawrence Summers, and bi-partisan support in Congress. The bill prevented the Commodity Futures Trading Commission from regulating most over-the-counter derivative contracts, including credit default swaps.
- 2004, Voluntary Regulation – The SEC proposes a system of voluntary regulation under the Consolidated Supervised Entities program, allowing investment banks to hold less capital in reserve and increase leverage.

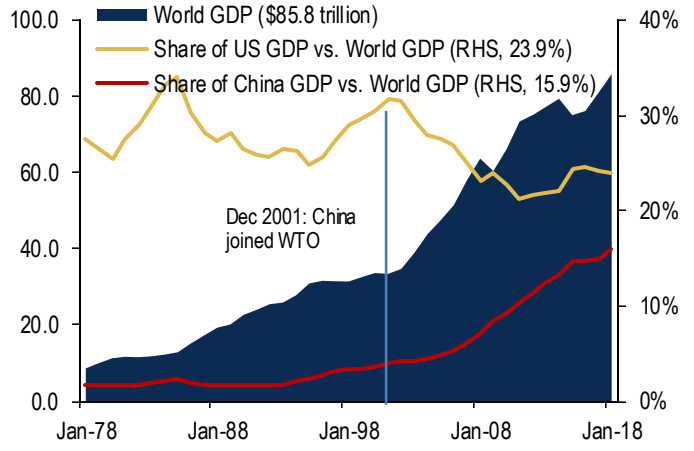
Globalization: the rise of China and the current conflict

The 21st century rise of China economic power is of course a well-known story at this point. The roots of this story lie in two key events of the 1970s:

- 1972: President Nixon visits China
- 1979: US-China Joint Communique' on Diplomatic Relations; Deng Xiaoping, the initiator of China's Reform and Opening-up Policy, visits the US.

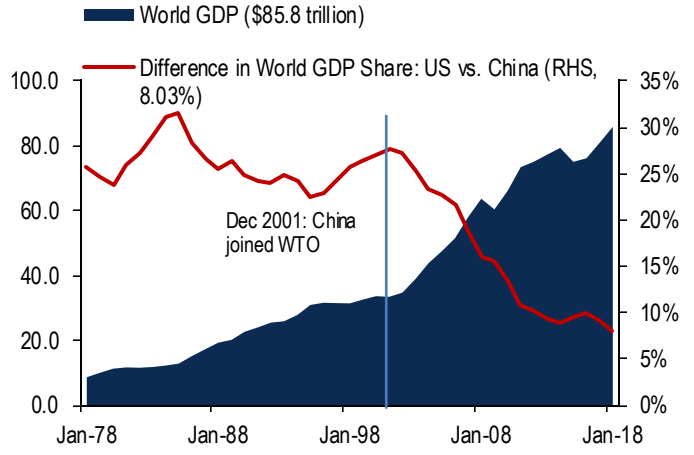
The evolution of this story is best told by the growth in world GDP over the subsequent years and the US and China's respective shares of that world GDP (Chart 13). Chart 14, which shows the differences in these shares, again along with the world GDP, highlights the current growing conflict between the US and China, as well as the conflict between the pro-globalization and anti-globalization camps. We also highlight the 2001 entry of China into the WTO as another key event.

Chart 13: World GDP up sharply since China joined WTO in 2001. China is the primary beneficiary



Source: World Bank Group

Chart 14: Collapse in relative shares in world GDP driving the rise in US - China tensions



Source: World Bank Group

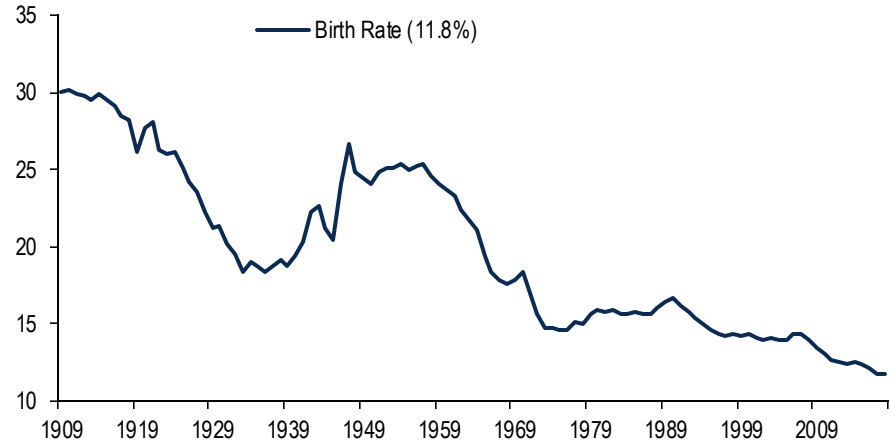
Very simply, the dramatic growth in world GDP in the past 20-40 years is consistent with the globalization argument: everybody wins as the pie dramatically expands. The collapsing share between the US and China supports the anti-globalization argument: China has disproportionately benefitted at the US expense and, perhaps more importantly, the US is at risk of losing its #1 position, which brings with it geopolitical implications.

How the current US-China conflict is resolved likely will play a large role in determining the ultimate course of the secular wave. It already is impacting the post-GFC cyclical expansion. For now, the conflict has exerted downward pressure on interest rates and is steadily pushing the global economy towards recession. Longer term, to the extent globalization has played a role in the benign outcome associated with high debt levels in this secular wave, there may be more severe adverse consequences from the conflict. One possibility is higher interest rates/inflation that makes debt service far more difficult.

Demographics of aging; pension requirements

The stagflation of the 1970s did not just lead to a record high Misery Index. It also coincided with a plunge in the US birth rate (Chart 15), to a cyclical low birth rate of 14.6 children in 1976, which had been as high as 26.6 just after WW2 in 1947 and 25.2 when the economy was expanding in 1953. As the economy recovered in the 1980s, the birth rate gradually climbed back to 16.7 by 1990, and then steadily declined to a low of 11.8 by 2018.

Chart 15: The US birth rate



Source: CDC

Needless to say, with declining birth rates, the US population has steadily aged, creating increased challenges for the pay-as-you go social security system that relies on young workers to support the elder population. Globally, although challenged, the US fares relatively well in growing its youth. Table 2 shows Japan leading the way in terms of aging and Germany not far behind. Between 1980 and 2050, Japan's over 65 population will increase four-fold, going from 9% to 37%.

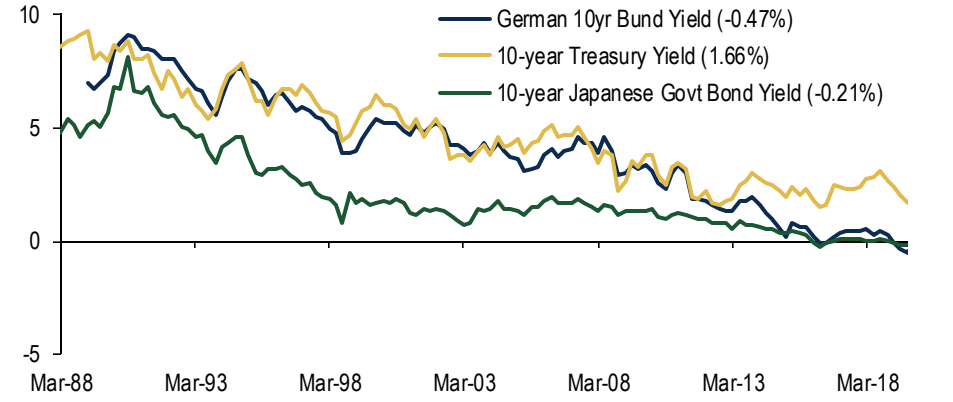
Table 2: Japan leads the way higher in aging; Germany close behind

Country	1980	2015	2050
Japan	9%	26%	37%
Italy	13%	22%	33%
Germany	16%	21%	33%
Spain	11%	19%	35%
US	12%	15%	21%
Australia	10%	15%	22%
Russian Federation	10%	14%	20%
China	5%	9%	24%
Brazil	4%	8%	23%
India	4%	6%	13%
Average	9%	15%	26%

Source: UN DESA

The data suggest a connection between aging and interest rates/inflation, perhaps due to productivity effects associated with older or retired workers. Chart 16 shows Japan interest rates leading the way lower in the last 20 years, as birth rates plunged after the 1989 Nikkei stock market crash. Germany decoupled from the US and has caught up to Japan in recent years. US interest rates are higher, but the trend is lower.

Chart 16: Japan interest rates lead the way lower in the last 20 years; Germany close behind



Source: Bloomberg

Aging populations highlight one of the key investment forces over the past 20-40 years, pension funds. With global yields collapsing, pension funds have been forced to "reach for yield" in order to meet their pension fund liabilities, paving the way for the development of markets such as high yield bonds in the 1980s, and later on, leveraged loans, CLOs and alternative investments, which employ various forms of balance sheet and structural leverage to generate additional yield.

Technology

Here we highlight a few key technology developments in the run-up to the 1980s, in the context of technology's extraordinary influence on inflation or disinflation:

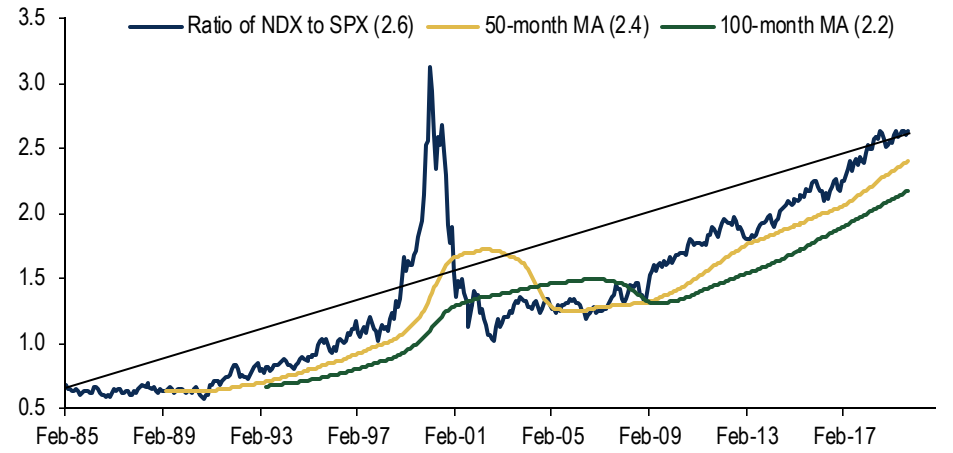
- Arpanet (1969), the Advanced Research Projects Agency precursor to the internet, which connected four university computers
- Intel first microprocessor (1971); a milestone in the history governed by Moore's law: the number of transistors on a chip doubles every year while the cost of computing is halved (think deflation)
- C structured programming language (1972); an essential development in software history
- Microsoft founded (April 4, 1975, Albuquerque, NM); 1981: MS-DOS, Microsoft Disk Operating System
- Apple (April 1, 1975, Cupertino, Ca); Apple II (1977)

While all of these technologies were fairly primitive by today's standards, they were the seeds of the exponential growth that followed. The subsequent evolution and disruptive power of technology is way beyond the scope of this note. However, as one example, the disinflationary Amazon effect on retail is of course well known at this point.

We also highlight the importance of technology advances in fields such information, inventory and supply chain management and what those advances have meant to the adaptive development of the modern financial and economic systems. Expansions have lasted longer on average as technology has enabled better inventory management. Central banks have better information, data and techniques at their disposal as they navigate the evolving economic and financial system.

For the purpose of this note, where both disinflationary forces and the concept of trial and error on leverage are important, we fast forward a few years, and consider the relative performances of the NASDAQ 100 and the S&P 500 since 1985. On a logarithmic scale, Chart 17 shows the ratio of NDX to SPX growing from 0.56 in 1985 to 2.63 in 2019, a remarkable 4.7x multiple on the increase.

Chart 17: Technology disruption: NDX is up 4.7x relative to SPX since 1985. Adapted after boom-bust and is now on more stable glide path



Source: Bloomberg

The linear trend line of the NDX-SPX ratio emphasizes the inexorable disruptive power of technology in the modern economy: if it has been disinflationary in the past 40 years, the trend line suggests it will continue to be so going forward. On leverage, the boom-bust of the late 1990s-early 2000s highlights the role of trial and error in the modern economy. The corporate sector learned from that experience and deleveraged; based on the linear trend line, the tech sector appears to be on a more sustainable relative glide path.

Tech's boom-bust provided regulatory grist for the mill. Sarbanes-Oxley followed within a couple of years of the bust, essentially correctively pushing back to some degree on the Reagan era push for deregulation. The overall economic cost-benefit analysis of the legislation is beyond this paper's scope. However, relative to this paper's topic, corporate credit vulnerabilities, it likely had a long-lasting benefit, as it forced conservatism on reported earnings. Skaife, Collins, Kinney, LaFond (2006) indicated that borrowing costs were much lower for companies that improved their internal control, by between 50 and 150 basis points.

The legislative response is an example of how the system of Reaganomics has learned and evolved from mistakes. It may well have optimized the corporate debt outcome in what came just a few years later, the housing bubble and subprime mortgage crisis, when the tech bubble was repeated on a much larger scale. Regulators learned from the GFC experience too and forced recapitalization of the banking system. We now turn to the bank regulatory evolution that had its roots in the 1970s.

Basel bank capital accords

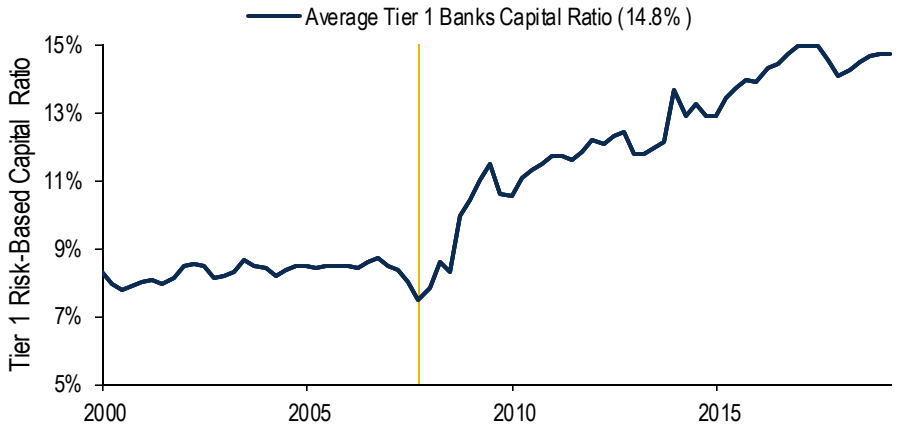
An important motivation for this 40-year survey is to emphasize the role that trial and error learning has played in the evolution of the modern financial economic system. The modern bank regulatory framework known as the Basel accords had its roots in the surprise and rapid 1974 liquidation of the small German bank, Herstatt Bank. In response to the event, the BIS (Bank for International Settlements) established the Basel Committee on Bank Supervision to develop a protocol to manage and prevent such events.

In the ensuing years the Committee went on to establish the Basel I (1988), Basel II (2004) and Basel III (2011-2021) bank capital rules. Similar to Sarbanes-Oxley, compliance has been complex and expensive and the rules are a pushback against the impulse to deregulate. Nonetheless, the 2008 GFC highlighted the need to continue attempts to reform, improve and learn from mistakes, a process that is not unlike technological innovation. The system is adapting and evolving, with the finalization of the Basel III post-crisis regulatory reforms a multi-stage, iterative process:

- Basel III: Finalising post-crisis reforms (December 2017)
- Minimum capital requirements for market risk (January 2016, revised January 2019)
- Liquidity Coverage Ratio (January 2013)
- Net Stable Funding Ratio (October 2014)
- Basel III: A global regulatory framework for more resilient banks and banking systems (revised version June 2011)

Dodd-Frank provided additional new regulation for the financial system. For example, Chart 18 shows the dramatic rise in the "Big Six" US banks Tier 1 Capital after the financial crisis. Again, similar to Sarbanes-Oxley, there is the possibility that the latest round of rules contains necessary adjustments and guard rails, which will ultimately dampen systemic volatility and risk. That, of course, is the intent.

Chart 18: "Big Six" Average Tier 1 Banks Capital Ratio



Source: Federal Reserve, Russell Sage Foundation
Note: Unweighted average of Tier 1 risk-based capital ratios of JPMorgan, Citi, Bank of America, Wells Fargo, Goldman Sachs and Morgan Stanley. Goldman Sachs and Morgan Stanley began reporting in 2009.

It may also be viewed as a form of financial repression, which effectively forces banks to underwrite the vast public sector debt that has come in the age of deregulation, by virtue of the skewed risk-based capital and liquidity rules that favor government debt. In this context, the Basel bank capital rules may be driving the push to lower risk-free yields that also support corporate borrowers.

Also, by continuing to rely on rating agencies in assessing capital requirements, the rules have helped drive the rise in structured products such as CLOs and dis-intermediated banks as lenders. Specifically, banks have become more apt to hold high quality C&I loans on their books while ceding leveraged loans to the capital markets, and subsequently investing in the AAA tranche of the CLOs backed by those loans. As a result, given the robust post-GFC AAA credit enhancement for CLOs, banks have moved to a much safer risk position relative to corporate lending.

Next we turn to another trial and error story of the past 40 years, the 1980s rise and fall of the junk bond market. This story brings us closer to understanding the vulnerabilities in today's corporate credit market.

Private equity, venture capital, leveraged buyouts, and junk bonds

Leveraged buyouts (LBOs) existed prior to the 1980s, but on a small scale. However, the 1980s saw a significant pickup in LBO activity along with growth of high yield bonds, or junk bonds. In a review of the 1980-1990 high yield debt market, the Federal Reserve Bank of Cleveland (1990) noted three drivers of the market's growth:

1) overall growth in the economy, which contributed to the rapid expansion of both equity and debt during the 1980s;

2) the substitution of credit market debt for bank loans in the balance sheets of middle-market customers who had not previously enjoyed access to the bond market;

3) the wave of leveraged restructuring induced by the Tax Reform Act of 1986, which provided a strong impetus for increased leverage between 1986 and 1989.

The Cleveland Fed also cited advances in information technology and the ability for investors to monitor the performance of smaller companies directly.

Along with mutual funds, insurance companies and pension funds provided the bulk of the capital to the high yield bond market, dis-intermediating banks. One exception to this was the small but important presence of savings & loans institutions, or thrifts, which were allowed to invest by virtue of the 1982 Garn-St. Germain Depository Institutions Act.

The high yield market collapsed in 1989-1990, when the 1980s' dominant high yield bond underwriter, Drexel Burnham Lambert, collapsed, high yield defaults began to escalate, and the 1989 Financial Institutions Reform and Recovery Act forced thrifts to withdraw from the market as investors.

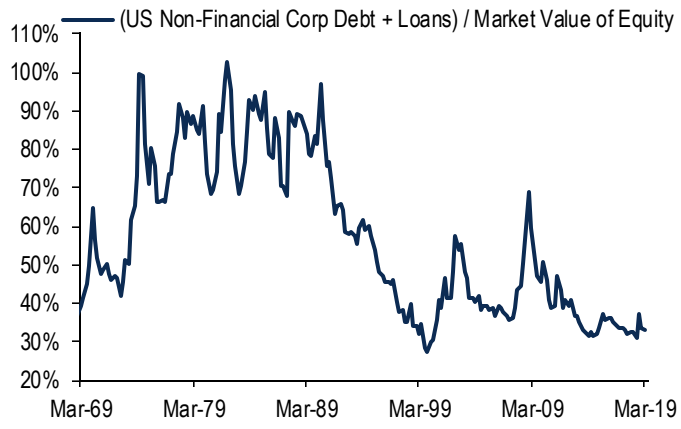
However, once again taking up the themes of innovation, trial and error, and technological advances, the 1980s high yield market established private equity as a long term player in the modern financial system. Similar to the re-tooling of tech companies in the wake of the tech bubble and the regulatory framework in the wake of the housing crisis, private equity and venture capital firms evolved and adapted in the 1990s and 2000s and have grown into an increasingly dominant force in the provision of capital.

Before moving on, we note one additional point related to the high yield market, which has significance in today's market: capital structure optimization. The Cleveland Fed noted the following in 1990: "during a period when the value debt on the corporate balance sheet grew by 150%, the market value of equity grew by 175%, so that the debt-to-equity ratio actually declined slightly over the past 10 years."

This point is especially relevant and critical to the topic of this paper, corporate credit vulnerabilities. **Chart 19 shows that 30 years later, corporate debt-to-equity is near the lowest levels of the past 50 years.** Echoing the Cleveland Fed, debt levels have increased but equity valuations, by virtue of PE multiple expansion as interest rates have come down, have increased even more. In this sense, the question of whether there is a credit bubble is really a question of whether there is an equity bubble.

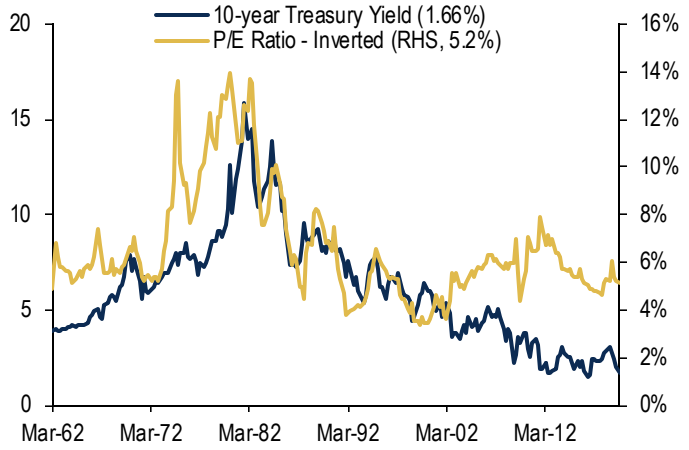
The Chart 20 historical comparison of the S&P 500 PE multiple (inverted, to give the earnings yield) relative to the 10yr treasury suggests equities currently look cheap to bonds: as has been the case throughout the post-GFC era, the earnings yield is well above the 10yr yield. It is possible earnings expectations are currently too high and the 10yr-equity gap will close as those expectations come down. We will visit earnings in our discussion on the corporate sections that follow. But there is no reason here to believe that equity valuations are excessively high, which says that debt-to-equity ratios can be sustained at low levels.

Chart 19: US corporate debt to equity is currently very low



Source: Federal Reserve, BofA Merrill Lynch Global Research

Chart 20: S&P earnings yield has come down along with secular decline of interest rates. Currently equities look cheap to bonds although earnings expectations may need to come down

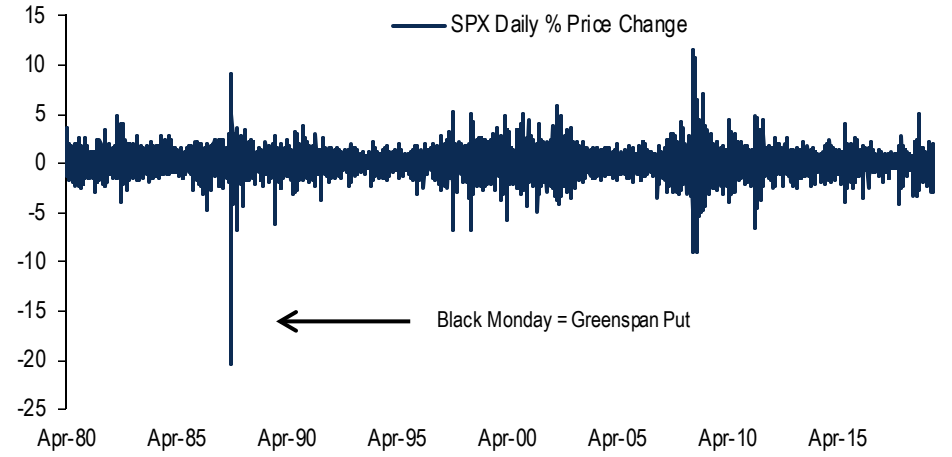


Source: Bloomberg

The central bank put: the backstop for too much cyclical leverage; MTBF extending

The financial markets and the economy are of course closely connected. Central banks need to be mindful of the impact of financial market volatility on the real economy, due to consumer confidence and wealth effects. Chart 21 shows the history of 1-day percentage changes in the S&P 500 index. The 1-day crash on Black Monday, October 19, 1987 still stands as the largest 1-day percentage change over the past 50 years.

Chart 21: 1-day percentage changes in the S&P 500 index



Source: Bloomberg

In contrast to the Great Depression, the Fed, under Alan Greenspan, responded aggressively, announcing: "The Federal Reserve System, consistent with its responsibilities as the nation's central bank, affirmed today its readiness to serve as a source of liquidity to support the financial and economic system." The so-called Greenspan or central bank put was introduced. Numerous instances of the backstop emerged over the subsequent 30 years, including the set of extraordinary responses from the Fed in response to the 2008 GFC.

The appropriateness and moral hazard of the responses are of course a topic of extensive debate. Some might say the Fed regularly fuel bubbles through this response and that the 2008 crisis was the largest and most painful example of that. From the more pragmatic side, we consider what the full set of policies in the modern era has achieved, lifting a concept from supply chain management, mean time between failure (MTBF), or in this case between recessions.

While it's no doubt difficult to dismiss the significance and depth of the 2008 crisis, the historic duration of the subsequent expansion is also quite noteworthy. The long history of GDP growth shows that recessions are becoming less common and the time between recessions is on average extending (Chart 9); the MTBF is steadily increasing, which, in the world of system engineering, is a good thing. Again, considering the trial and error process, central banks are learning, adapting, evolving and becoming more creative in the modern system. The length of the current expansion may suggest that the lessons learned from 2008 were exceptionally valuable and useful.

With respect to the current cycle, we see the central bank put as still in effect and likely to emerge once again, if the current US-China trade disputes escalates into something more meaningful.

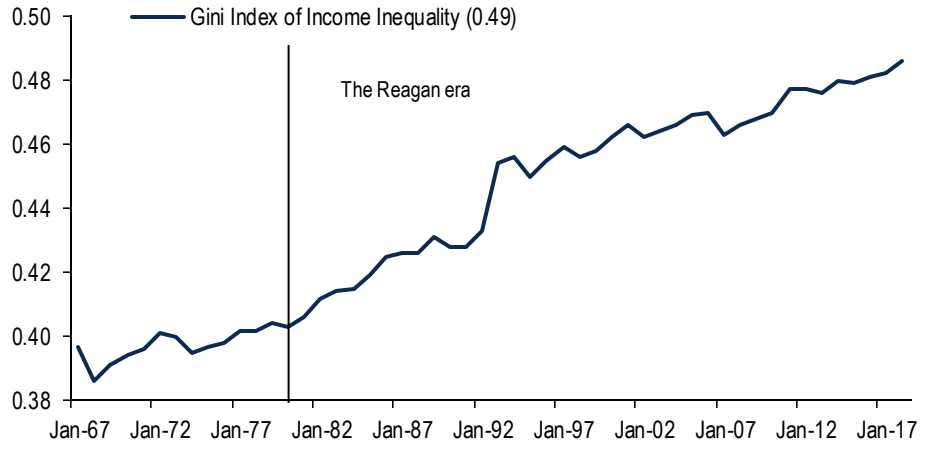
3.3 The pitfalls of the modern era and growing source of political risk: income and wealth inequality

The original nickname for Reaganomics was "trickle down" economics. The pie was meant to grow and everyone was supposed to benefit as it did; the benefits at the high end of the economic spectrum were supposed to flow down to the low end. Looking back on whether that has been delivered, the discussion pretty much reflects the earlier discussion on globalization and US-China trade. The pie has no doubt grown and US household wealth has grown exponentially. But the gains have not been equally shared.

Similar to trade, this has created resentment and dissatisfaction. As we noted earlier, the record low Misery Index, reflecting low unemployment and low inflation, suggests to us that the probability of radical policy change, which casts off the economic policies of the last 40 years and brings an end to the secular wave, is low. But we also acknowledge that the pressure for change is building. Without commenting on whether good or bad, we simply present the data on income and wealth inequality that may lead to change.

Chart 22 shows the history of income inequality. It indeed shows a steady rise in income inequality since the Reagan election in 1980 and even a slight upswing in 2018. Importantly, however, income inequality was on the rise prior to 1980 as well, even in the stagflation of the 1970s. We should also note that while income inequality is touted as a negative outcome of capitalism, there are many who see it as the natural evolutionary course of events.

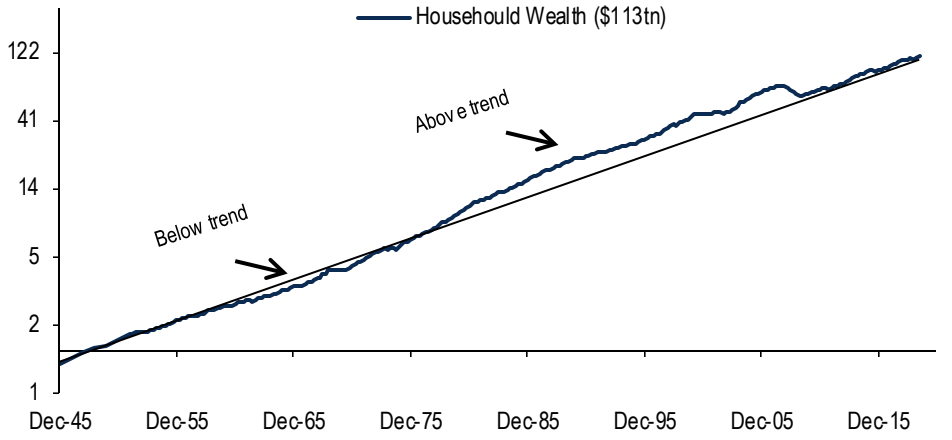
Chart 22: Income inequality was already rising before Reagan



Source: Census

Chart 23 shows that US household wealth has grown exponentially (the natural process) since 1950. The current value is $113 trillion. Growth was below trend prior to Reagan and above trend after Reagan. It reverted back to trend after the GFC and arguably is on a very healthy and stable path forward.

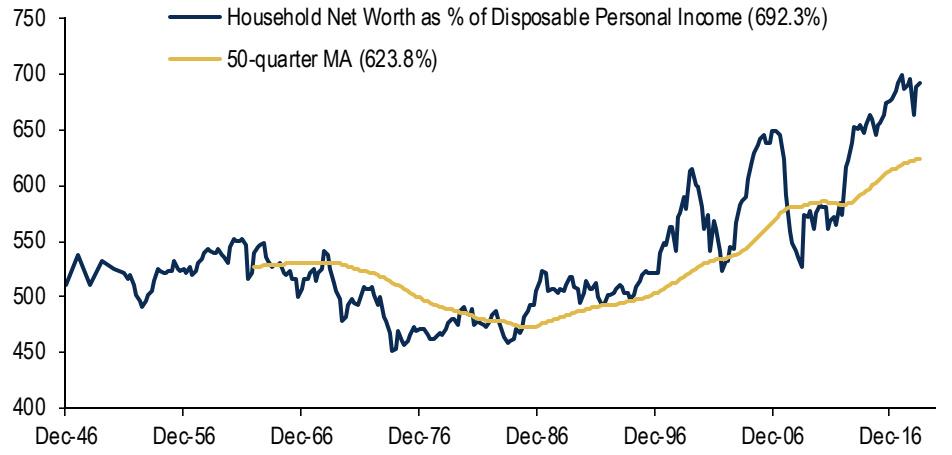
Chart 23: Household wealth ($113 trillion) has grown exponentially since 1950. Growth was above trend after Reagan but reverted back to trend after the GFC



Source: Federal Reserve

Chart 24 shows a slightly different view of the wealth data, household wealth as a % of disposable income, along with the 25-year average. Recall from Chart 18 that the income data is already subject to unequal distribution considerations. This view further highlights some of the concerns over the distribution of the gains in the modern economic system: wealth has increased far more quickly than income, with the 50-quarter moving average reversing course in 1986, when the historic tax legislation was enacted.

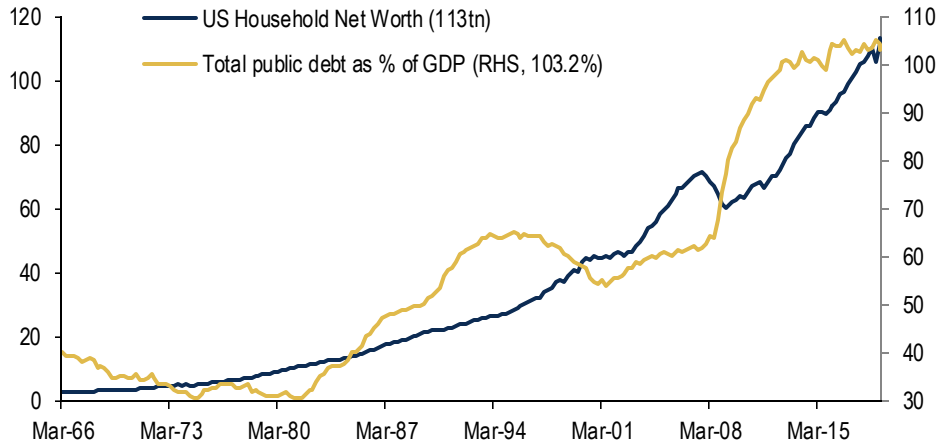
Chart 24: Household wealth as % of income grew dramatically after Reagan. In the minds of some, capital benefitted at the expense of labor



Source: Bloomberg

In the language of at least one version of political economy, this latter view of the wealth gains effectively says: capital has benefitted at the expense of labor. In times past, that was a call to revolution or, at a minimum, political change. Chart 25 provides additional fodder for discontent: the wealth gains have been fueled by steady increases in the (fully democratized) public debt to GDP ratio. While not a base case, we do not dismiss the potential for radical political change in the years ahead.

Chart 25: The US wealth gains have been fueled by the steady rise in public debt to GDP



Source: Federal Reserve

3.4 Status quo for the 2020 election: higher growth; possible trade settlement, more tax cuts to boost re-election chances; more risk-on investing

Assuming politics are at least status quo through November 2020, we provide some economics (Table 3 and Table 4) and rates views (Table 5) that will be relevant for the next year. With interest rates (10yr treasury yield) now roughly 150 bps lower than a year ago, we will not be surprised to see stimulus offered in the form of additional tax cuts (more public debt), in order to juice the economy going into election. Remember, the Reagan era policies are not yet over. The worst of the US-China trade dispute likely should be over in 2020.

Table 3: US GDP forecast

	Historical	Quarterly Forecast						Average Quarterly			
	2Q 19	3Q 19	4Q 19	1Q 20	2Q 20	3Q 20	4Q 20	2017	2018	2019	2020
Real GDP (QoQ, % SAAR)	2.1	2.1	1.3	1.3	1.5	1.7	1.7	2.4	2.9	2.3	1.5
Real GDP (YoY)	2.3	2.1	2.1	1.7	1.5	1.4	1.5				

Source: BofA Merrill Lynch US Economics Research

Table 4: Other key macro indicators and inflation forecast

	Historical		Annual Forecast	
Monthly Averages	2017	2018	2019	2020
Nonfarm Payrolls (Avg mom change, 000s)	179	223	146	114
Civilian Unemployment Rate (%)	4.4	3.9	3.7	3.7
Civilian Participation Rate (%)	62.8	62.9	63.1	63.1
Core PCE Chain Prices (% YoY)	1.6	1.9	1.7	2.2
CPI, Consumer Prices (% YoY)	2.1	2.4	1.8	2.2
CPI ex Food & Energy (% YoY)	1.8	2.1	2.2	2.6

Source: BofA Merrill Lynch US Economics Research

Table 5: Rates forecast

	Historical			Quarterly Forecast			
(% EOP)	2017	2018	2Q19	3Q19	4Q19	1Q20	2Q20
Fed Funds	1.25-1.50	2.25-2.50	2.25-2.50	1.25-1.50	1.25-1.50	1.25-1.50	1.25-1.50
Fed effective	1.33	2.40	2.40	1.38	1.38	1.38	1.38
3-Month LIBOR	1.69	2.81	2.32	1.80	1.50	1.50	1.50
2-Year T-Note	1.88	2.49	1.75	1.25	1.25	1.25	1.30
5-Year T-Note	2.21	2.51	1.77	1.25	1.25	1.25	1.35
10-Year T-Note	2.41	2.68	2.01	1.25	1.25	1.25	1.40
30-Year T-Bond	2.74	3.01	2.53	1.50	1.40	1.30	1.45

Source: BofA Merrill Lynch US Rates Research

4. Corporates: some challenges, but manageable in a low rate environment; will flourish if risk-on returns in 2020

Review of the big picture and what-ifs for recession scenario

We start the corporate assessment with a summary from the prior section. The business cycle is not dead. Although not expected for next year, the current, record long expansion will eventually come to an end; when it does, corporate credit events will increase. The Fed, armed with more and more experience and improved analytical and regulatory capabilities, will intervene as necessary, and most likely will be successful in helping to moderate a downturn should one emerge.

In a downturn, most of the corporate credit will benefit from already low debt servicing costs, but some companies will of course have too much leverage to make it through without downgrade or default.

The biggest risk to a relatively benign outcome is the end of the secular wave of declining inflation. We do not see that as likely, however a radical political shift away from the policies of the last 40 years would make it more likely.

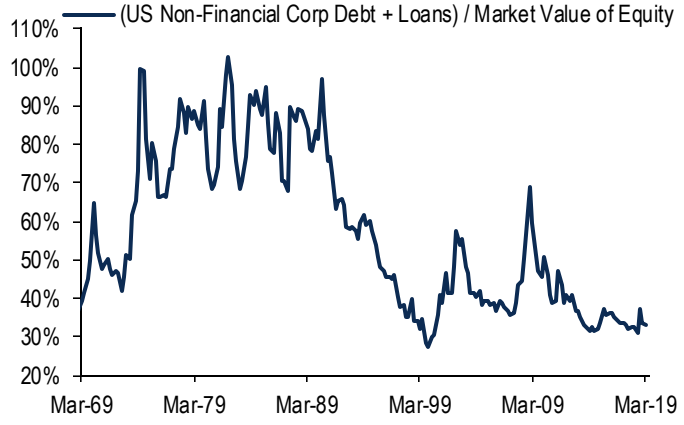
Turning to corporates at the aggregate level, we start with perhaps the most important consideration of all, profits, and re-visit the low aggregate debt-to-equity chart already discussed. Chart 26 shows corporate profitability as a share of GDP. While off the historically high levels of 2011, when GDP was in the early stages of recovery, the profit picture has stabilized in recent years at levels above the entire pre-crisis history.

Chart 27, again, shows that the aggregate debt-to-equity ratio of the corporate sector is near 50-year lows. The biggest risk to a radical change in this ratio is a sharp decline in equity valuations. Given high earnings yields relative to the 10yr treasury yield, we do not see that as likely, even in a recession, which would likely see the 10yr treasury yield decline further.

Chart 26: High US corporate profits as share of GDP

Source: Bureau of Economic Analysis, BofA Merrill Lynch Global Research

Chart 27: US corporate debt to equity is currently very low



Source: Federal Reserve, BofA Merrill Lynch Global Research

Individual sector analysis in a cyclical context: spreads, ratings, leverage, earnings

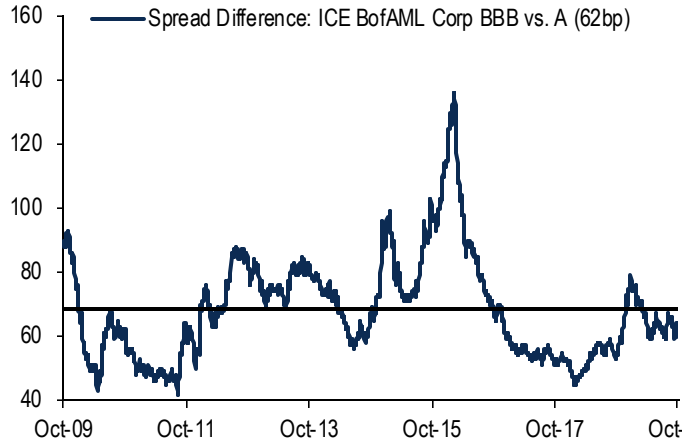
Investment grade

We start with spread history for the investment grade sector (Chart 28). At 120 bps, the spread is 24 bps inside the 10yr average but 32 bps wide of the tights seen in early 2018, before the US-China conflict escalated and the Fed hiked rates four times before easing twice, for a net increase of 50bps. Some of the pronounced widening at year end has been retraced. Chart 29 shows a similar picture for the BBB-A spread. In Chart 30, we see earnings and revenue growth are still positive, but have slowed over the past year. With QE and interest rate cuts returning to the picture in response to the slowing of the global economy, we see the performance of US IG bonds over the past year as testament to incredibly supportive technicals, in the form of inflows. IG bonds remain a primary source of quality yield in a world starved for yield.

Chart 28: Investment grade index spread has retraced some but not much of the late 2018 widening. Reflective of some credit and some liquidity concerns

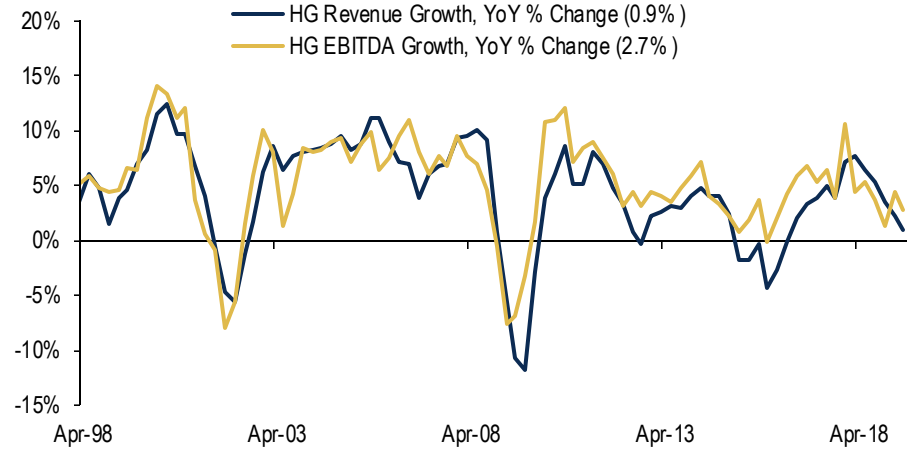
Source: ICE Data Indices, LLC

Chart 29: BBB-A spread retracement in 2019 suggests credit concerns are appropriately priced



Source: ICE Data Indices, LLC

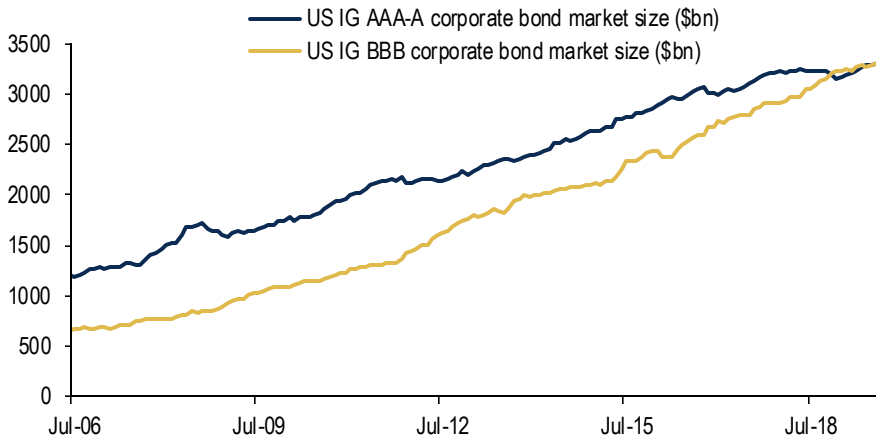
Chart 30: Revenue and EBITDA growth for the HG market



Source: BofA Merrill Lynch Global Research

A prominent IG story in 2018, but has since faded for direct market participants, was the rise in BBB credit bonds in recent years. Chart 31 shows the rise in BBB bonds relative to the AAA-A segment; it is now half the IG market. We have argued that the reason for this is simple capital structure optimization (see "Optimal capital structure theory"). In a world of low yields and low spreads, it has made sense from a shareholder perspective to increase leverage, migrating from low A rating to high BBB for example, and accept moderately higher spreads.

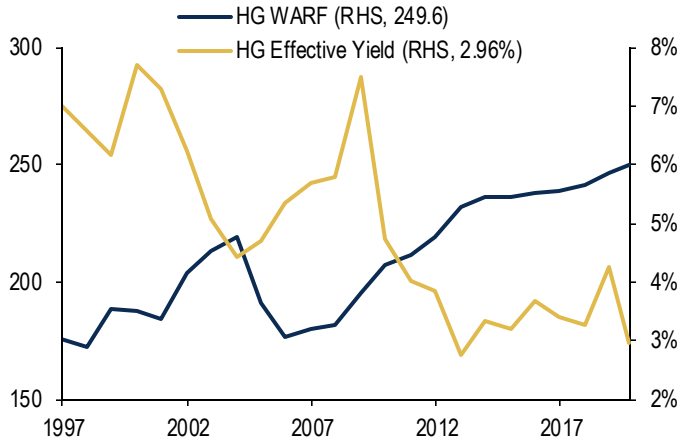
Chart 31: BBBs have grown to half the size of the HG market



Source: ICE Data Indices, LLC, BofA Merrill Lynch Global Research

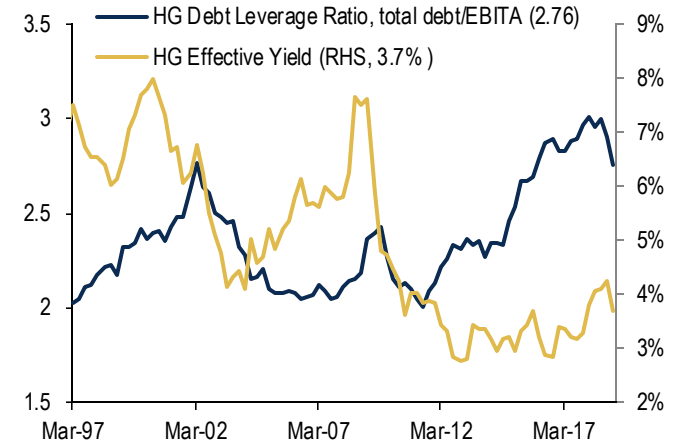
Chart 32 shows a weighted average ratings factor (WARF) view of the IG market. Since 2010, the rise in the WARF suggests an aggregate ratings migration from low A3 to high BBB1. The downward migration is largely an industrial story; financials have migrated upwards. Chart 33 is a similar view, showing the rise in leverage for the IG market, reflecting the voluntary ratings migration as the expansion has extended. Particularly noteworthy is the decline in leverage over the past year.

Chart 32: The weighted average ratings factor (WARF) of the IG market



Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC
Note: the effective yield is as of 9/30/2019

Chart 33: Leverage vs effective yield for the HG market



Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC
Note: the effective yield is as of 9/30/2019

This reflects the voluntary move on the part of numerous BBB companies to begin to deleverage their balance sheets. Largely, these are companies that determined they had gone too far in leveraging their balance sheet and opted to dial the leverage back. Table 6 shows a list of companies that have already undertaken debt-friendly moves. We see this as an extraordinarily positive move for management to undertake these moves in a "search for optimal leverage."

Table 7 ends this section with our weighting recommendations by industry. Autos are clearly a concern, particularly in the context of the US-China trade dispute.

Table 6: BBB-rated DM companies that took debt friendly action since November 1th, 2017

Ticker	Name	Sector	BBB index bonds ($bn)	Debt Friendly Action Date	Debt Friendly Action	Ratings at the time	Outlooks at the time	Current ratings	Current outlooks
M	Macy's	Retail	4	(43,066)	Voluntary debt tender	Baa3 / BBB- / BBB	S / S / S	Baa3 / BBB- / BBB	S / S / S
ENBCN	Enbridge	Energy	14	43081	Introduced 3-year plan with deleveraging targets	Baa2 / BBB+ / BBB+	S / S / S	Baa2 / BBB+ / BBB+	P / S / S
VZ	Verizon	Telecom	66	(43,123)	Committed to use tax reform windfall for deleveraging	Baa1 / BBB+ / A-	S / S / S	Baa1 / BBB+ / A-	P / P / S
DELL	Dell Technologies	Technology	21	43168	Guided to $4-5bn of debt reduction in FY19	Baa3 / BBB- / BBB-	NA / S / S	Baa3 / BBB- / BBB-	NA / S / S
KSS	Kohl's Corp	Retail	1	(43,192)	Tender and open market purchases	Baa2 / BBB- / BBB	S / S / S	Baa2 / BBB / BBB	S / S / S
WHR	Whirlpool Corp	Consumer Products	3	43215	Asset sales for deleveraging	Baa1 / BBB / BBB	S / S / S	Baa1 / BBB / BBB	S / S / S
KMI	Kinder Morgan	Energy	29	(43,249)	Trans Mountain asset sale proceeds to reduce debt	Baa3 / BBB- / BBB-	S / S / S	Baa2 / BBB / BBB	S / S / S
ETP	Energy Transfer	Energy	35	43313	GP/LP roll-up that served as a backdoor dividend cut	Baa3 / BBB- / BBB-	S / S / S	Baa3 / BBB- / BBB-	S / S / S
NWL	Newell Brands	Consumer Products	6	(43,368)	Began series of asset sales for deleveraging	Baa3 / BBB- / BBB-	S / S / S	Baa3 / BBB- / BB+	S / N / S
CPB	Campbell Soup	Food & Bev	6	43382	Began series of asset sales for deleveraging	Baa2 / BBB- / NA	S / S / NA	Baa2 / BBB- / BBB	N / S / N
ABIBB	Anheuser-Busch InBev	Food & Bev	63	(43,398)	50% dividend cut	A3 / A- / BBB	N / S / S	Baa1 / A- / BBB	S / NW / S
GE	General Electric	Industrial Products	45	43403	Dividend cut to 1 cent	A2 / BBB+ / A	N / S / N	Baa1 / BBB+ / BBB+	S / S / N
BPL	Buckeye Partners	Energy	3	(43,406)	Asset sale and dividend cut to repay balance sheet	Baa3 / BBB- / BBB-	S / S / S	Baa3 / BBB- / BBB-	NW / NW / NW
T	AT&T	Telecom	93	43433	Committed to deleveraging	Baa2 / BBB / A-	S / S / S	Baa2 / BBB / A-	S / S / S
AAP	Advance Auto Parts	Retail	1	(43,494)	Voluntary short-term debt tender	Baa2 / BBB- / NA	S / S / NA	Baa2 / BBB- / NA	S / S / NA
KHC	Kraft Heinz	Food & Bev	24	43517	36% dividend cut	Baa3 / BBB / BBB-	S / S / S	Baa3 / BBB / BBB-	S / S / S
KR	Kroger	Retail	11	(43,537)	Asset sales for deleveraging	Baa1 / BBB / NA	S / S / NA	Baa1 / BBB / NA	S / S / NA
STZ	Constellation Brands	Food & Bev	9	43542	Asset sales for deleveraging	Baa3 / BBB / NA	S / S / NA	Baa3 / BBB / NA	S / S / NA
K	Kellogg	Food & Bev	5	(43,556)	Asset sales for deleveraging	Baa2 / BBB / BBB-	S / S / S	Baa2 / BBB / BBB-	S / S / S
IMBLN	Imperial Brands	Tobacco	5	43585	Premium Cigars asset sales for deleveraging	Baa3 / BBB / BBB	S / S / S	Baa3 / BBB / BBB	S / S / S
TSN	Tyson Foods	Food & Bev	10	(43,592)	Committed to deleveraging with cash flows or short-term liquidity options	Baa2 / BBB / BBB	S / S / S	Baa2 / BBB / BBB	S / P / S
VOD	Vodafone Group	Telecom	21	43599	40% dividend cut and sale of NZ business	Baa2 / BBB+ / BBB+	N / S / S	Baa2 / BBB+ / BBB+	N / NW / NW
MYL	Mylan	Health Care	9	(43,672)	Merger with Pfizer's generic business Upjoin	Baa3 / BBB- / BBB-	S / S / N	Baa3 / BBB- / BBB-	S / D / N

Source: BofA Merrill Lynch Global Research, Bloomberg, ICE Data Indices, LLC

Table 7: BofAML High Grade Sector Views and sector % of market value

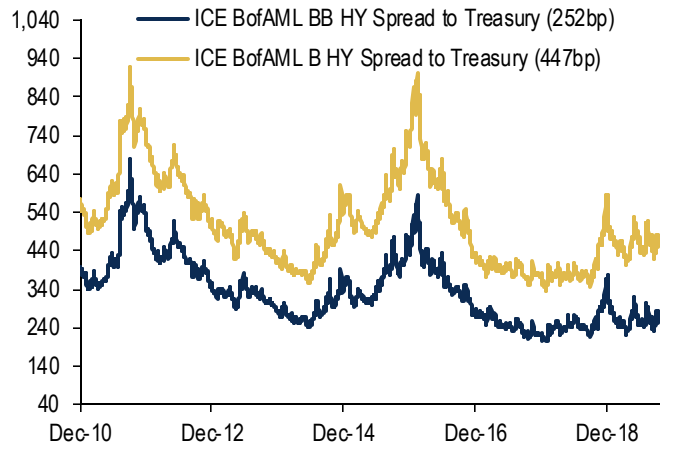
Breakdown by Industry	Sep-19	Sector Views
Health Care	9.14%	Marketweight
Utilities	8.36%	Marketweight
Food, Bev, & Bottling	4.23%	Marketweight
REITs	2.38%	Marketweight
Tobacco	1.06%	Marketweight
Energy	11.32%	Overweight
Basic Materials	4.67%	Overweight
Telecom	4.25%	Overweight
Insurance	4.09%	Overweight
Media & Entertainment	3.19%	Overweight
Banks/Brokers	22.16%	Underweight
Technology	7.54%	Underweight
Retail	3.23%	Underweight
Industrial Products	2.89%	Underweight
Automobiles	2.54%	Underweight
Transportation	2.39%	Underweight
Aerospace/Defense	1.73%	Underweight
Consumer Products	1.01%	Underweight

Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC

High yield bonds

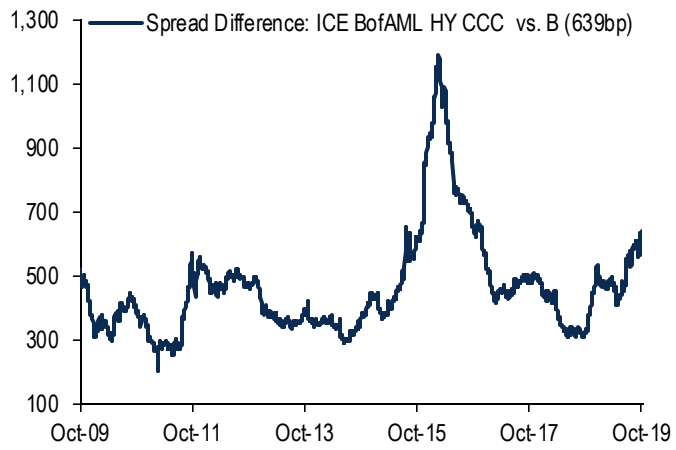
The cyclical story for high yield bonds is less benign, although still by no means alarming. Currently, it is a hybrid of "reach for yield" benefitting BB and B segments and outright credit concerns, or at least liquidity concerns, pressuring CCC spreads wider. Chart 34 shows relative spread stability in the BB and B sectors throughout 2019, after the year end widening of spreads in 2018, while Chart 35 shows continued CCC-B credit curve steepening in 2019. Overall, the pictures suggest limited concern over fallen angel risk at the high end of the market – for now. We think the market is correct in that assessment.

Chart 34: BB and B HY spreads



Source: ICE Data Indices, LLC

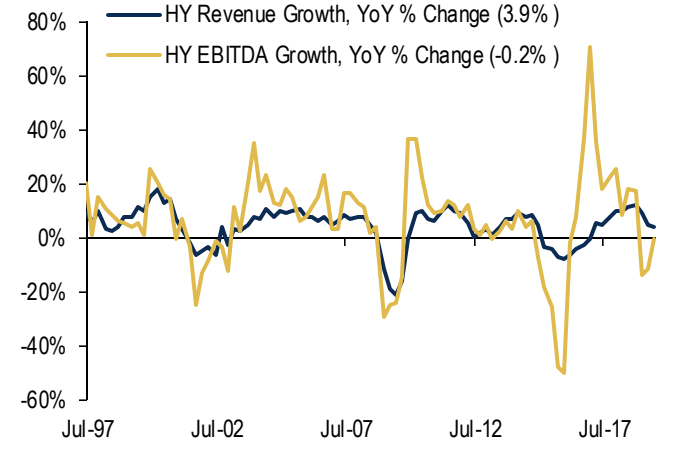
Chart 35: The spread difference between CCC and B HY increased in 2019



Source: ICE Data Indices, LLC

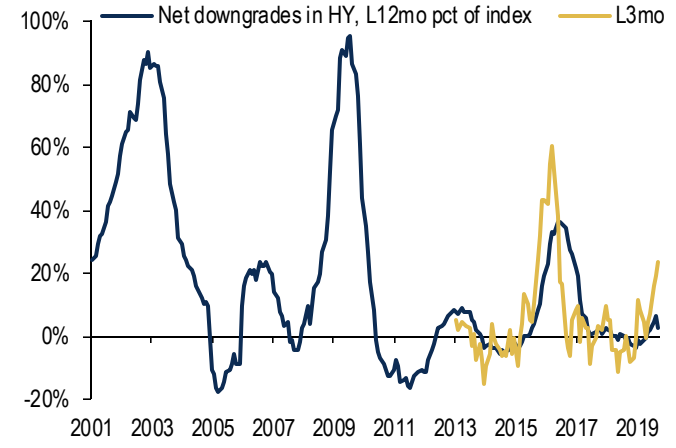
Earnings growth has slowed materially over the past year (Chart 36), as post-2017 tax reform normalization occurred. The current market consensus forecast is for a return to the 12%-13% range a year from now, roughly coincident with the 2020 election. That seems reasonable from a political standpoint, to optimize economic recovery close to election, but trade remains a wildcard. Consistent with recent declines in earnings, downward ratings pressure has become more evident (Chart 37).

Chart 36: Revenue and EBITDA growth for the HY market



Source: BofA Merrill Lynch Global Research

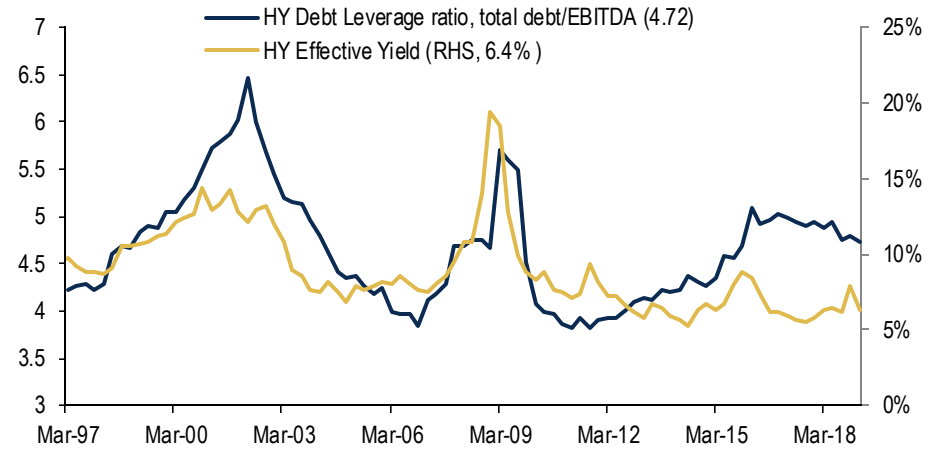
Chart 37: Net downgrades in HY



Source: BofA Merrill Lynch Global Research

Leverage in high yield (Chart 38) has declined modestly since peaking in 2016, at the height of the energy bust. Arguably, if the expected recovery in earnings is achieved, leverage may well be on a modest cyclical path lower. However, similar to the investment grade story, further declines in high yield bond yields as part of a global reach for yield might provide some modest incentive to maintain leverage.

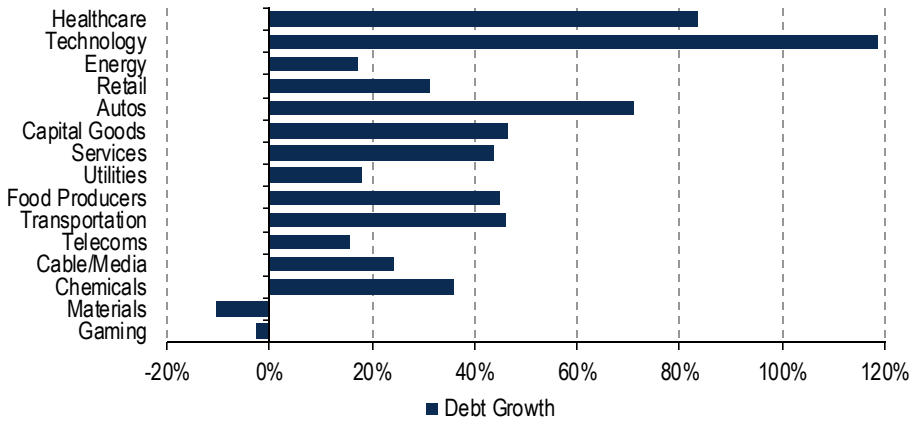
Chart 38: Leverage vs effective yield for the HY market



Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC
Note: the effective yield is as of 3/31/2019

Debt growth by sector (Chart 39) over the past five years offers some insight into potential trouble spots in the event of a downturn. Tech and healthcare have experienced the highest growth rates by far, with autos a distant third. Given some of the demographic and technology trends discussed in the prior section, the growth leadership of tech and healthcare is rational: this is still the future for the US economy. However, because of their growth, they are subject to political risk and, in the case of tech, trade risk. If unforeseen changes occur on these fronts, these sectors could be exposed, at a minimum, to headline risk. Similar to IG, the auto sector is exposed to global economic trends related to trade.

Chart 39: Debt growth by sector, last 5yrs pct of initial debt outstanding



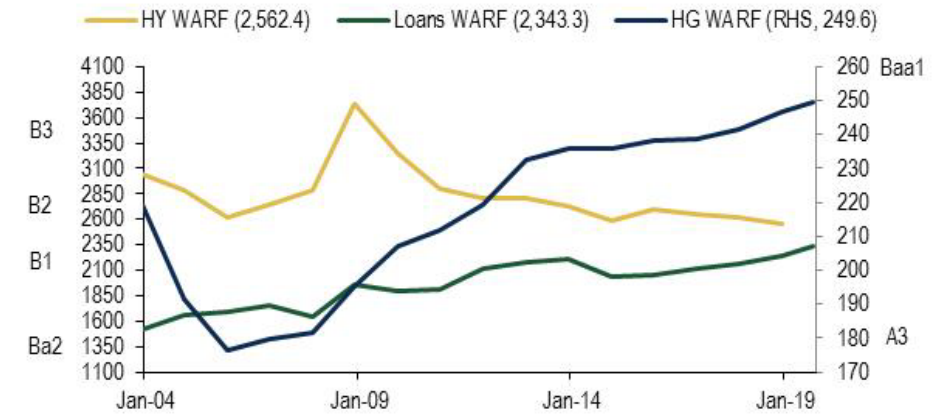
Source: BofA Merrill Lynch Global Research

For now, defaults are expected to remain in the 4% vicinity. In recession, depending on the depth, we could see a rise to the 10%-15% range. Recoveries in the event of a default cycle would likely be lower than in the past because of covenant deterioration. We are especially concerned with asset covenants rather than maintenance covenants and think recoveries will drop from 40% to 35%.

Leveraged loans

Discussion of the high yield bond market in this cycle has to be considered in the context of the growth of leveraged loans. As some of the early discussion back in Chart 3 showed, high yield bonds have not exhibited much relative growth in recent years. Whatever growth it did see was set back by the energy shakeout in 2015-2016. Much of what in the past might have come through the bond market has come through loans. We see this in Chart 40, where the weighted averaging rating factors (WARF) for each market have converged over time.

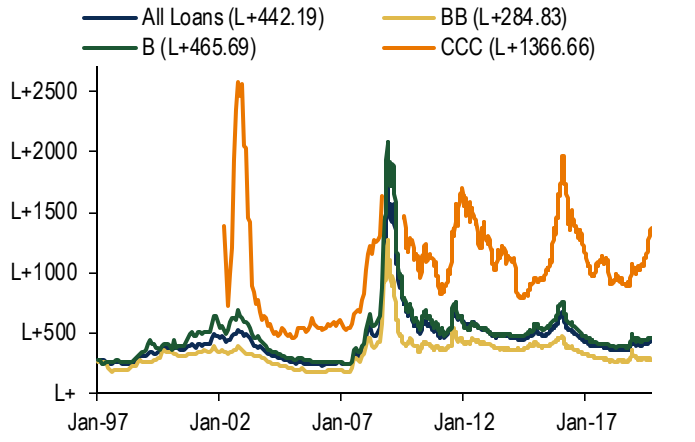
Chart 40: Weighted Average Rating Factor (WARF) for all three sectors



Source: BofA Merrill Lynch Global Research, Moody's, S&P LCD ICE Data Indices, LLC

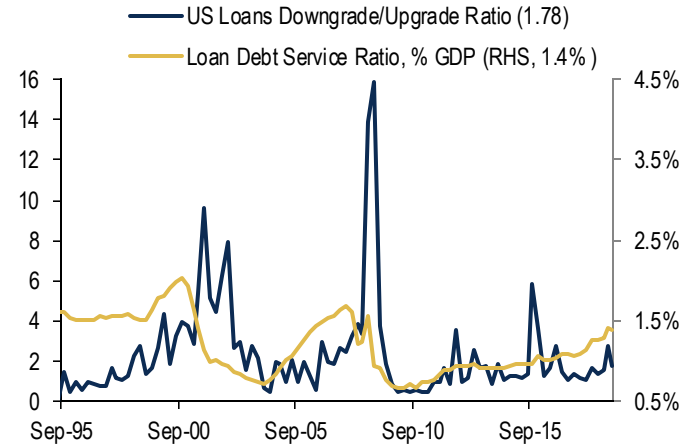
Similar to HY bonds, spreads have been reasonably well behaved at the BB and B level, but are facing significant widening pressure at the CCC level (Chart 41). Also similar to HY, downgrade pressure is on the rise as the downgrade to upgrade ratio is moving steadily higher (Chart 42). Some reversal in the economic growth picture over the next year might help turn this trend around.

Chart 41: Loan spreads relatively stable in 2019 with the exception of CCC, which is steadily moving wider.



Source: S&P LCD

Chart 42: The ratio of US loans downgrade/upgrade

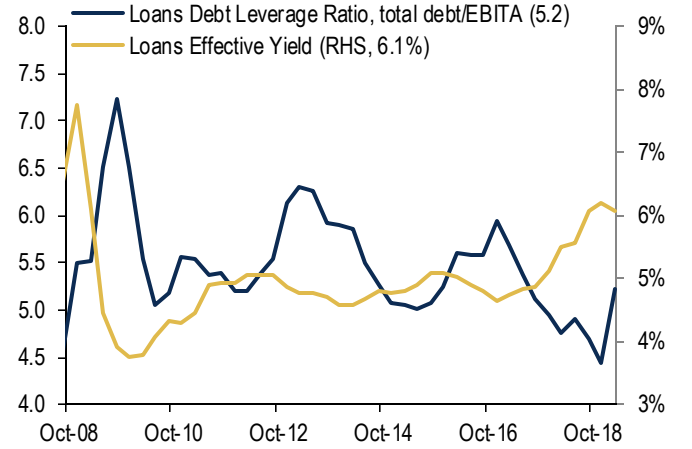


Source: BofA Merrill Lynch Global Research, Moody's, Federal Reserve

Elsewhere (see "Corporate Loan Primer: Understanding the evolving ecosystem"), we have discussed the rise of private credit lending in recent years, in the context of what is now a $5 trillion loan market. We concluded in that note that the sector that is likely to face the most challenges within loans is the syndicated (institutional) loan market, where the buildup of leverage and amount outstanding through this cycle has been substantial, not bank loans which are increasingly being made in the form of high quality C&I loans. We see private credit as a sector where the creditors have direct touch with the borrowers and hence better positioned to protect their interests in periods of distress. We do not see that sector as a source of contagion risk.

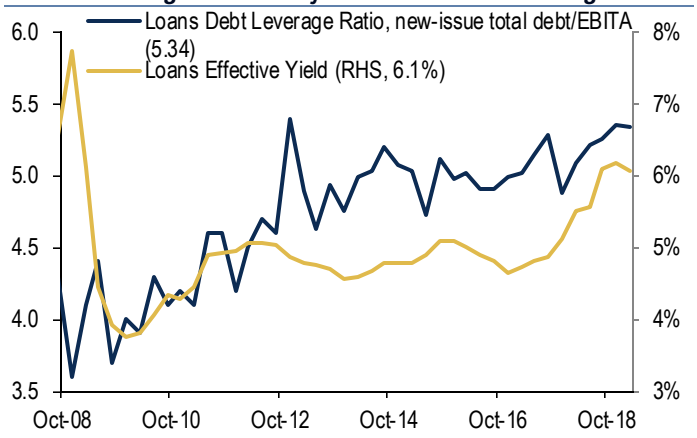
We show two views of leverage in the leveraged loan market. In Chart 43, we consider the entire market leverage, which is now below the peak levels seen in early 2016. Notably market leverage has come down in recent years as yields on loans have moved higher along with Libor. Chart 44 shows new issue leverage, which has been steadily moving higher and grabbing headlines. Similarly, the steady loss of covenants in this cycle (Chart 45) has gained attention.

Chart 43: Leverage vs effective yield for the overall leveraged loan market



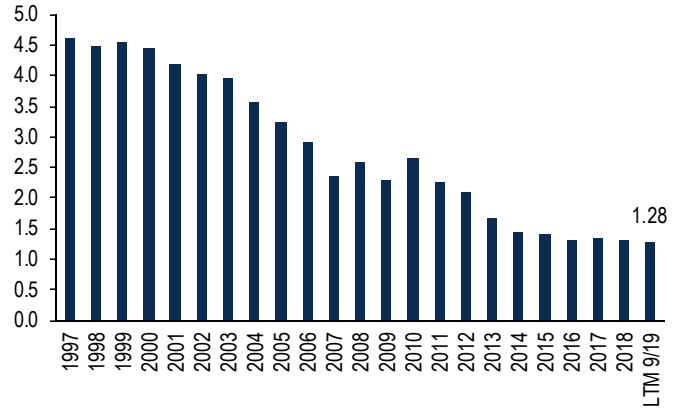
Source: BofA Merrill Lynch Global Research, Federal Reserve, S&P/LCD

Chart 44: Leverage vs effective yield for the new issue leveraged loans



Source: BofA Merrill Lynch Global Research, Federal Reserve, S&P/LCD

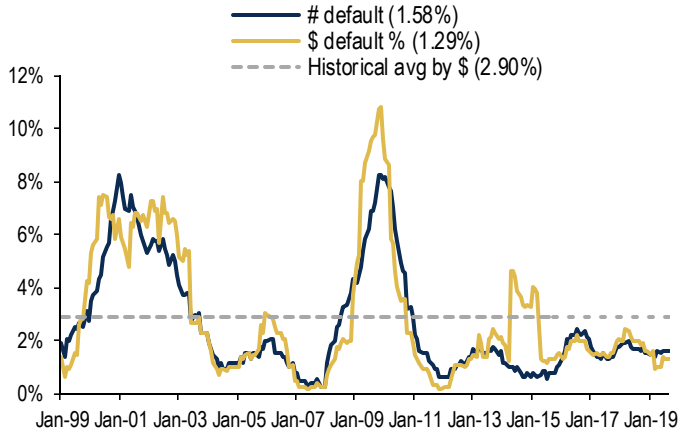
Chart 45: Average number of covenants by year of issuance



Source: BofA Merrill Lynch Global Research, S&P LCD (as of 1H19)

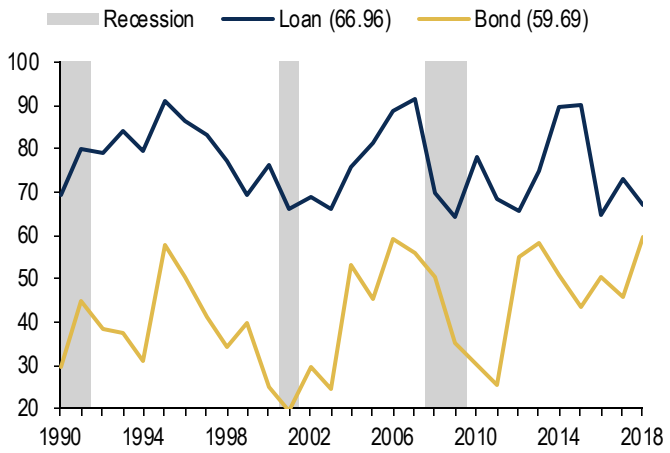
Chart 46 shows the recent default cycles for loans. This cycle remains benign. In the event of recession, we think the next default cycle is likely to be more similar to the 2001-2003 cycle, with annual defaults running at about 7%, down from 8%. This cycle may be more protracted however. The loss of covenants should lead to lower recoveries on defaults. We think recoveries will drop from 70% to 50% in the next downturn. Chart 47 shows the history of recoveries for loans and HY bonds. Similar to ratings there has been convergence between bonds and loans in this cycle.

Chart 46: S&P/LSTA LLI default rates



Source: BofA Merrill Lynch Global Research, S&P LCD (as of February 2019 ME)

Chart 47: HY loan versus bond recoveries by emergence year

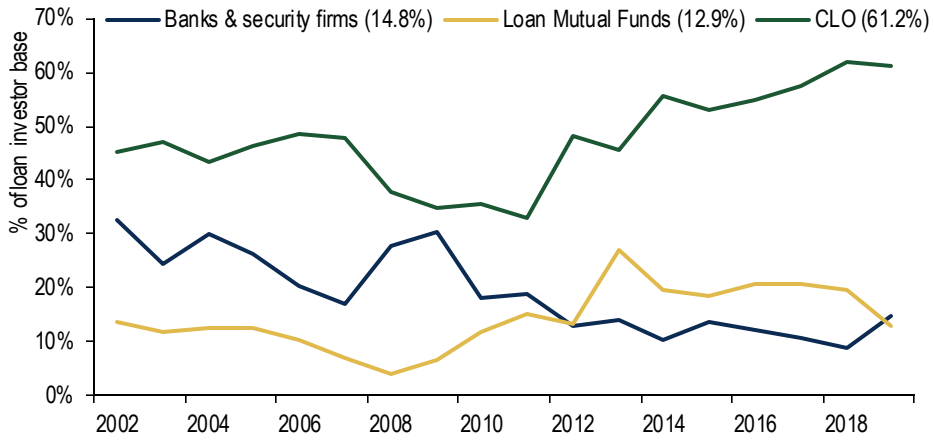


Source: S&P US Recovery study as of Dec 2018

Loans and CLOs: CLOs are NOT CDOs

Another source of concern for loans has been the increased reliance on CLOs as the takeout for new issue (Chart 48); the share is now 60%. The concern is that there will be a repeat of what happened with CDOs in the lead up to the GFC. We will touch on CLOs next, but we emphasize that other than that they are both securitizations with "collateralized" and "obligations" as part of their acronym, there is very little in common between CDOs and CLOs.

Chart 48: CLOs continue to support ~60% of the loan market in 2019



Source: BofA Merrill Lynch Global Research, S&P LCD

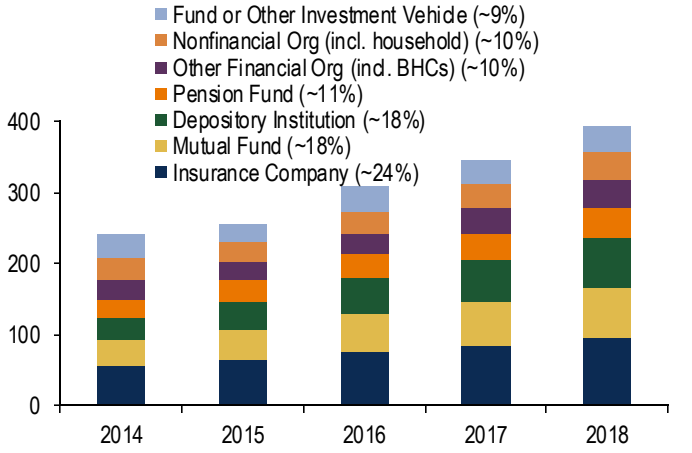
One simple difference is that rating agencies have been rating corporate credit for almost 100 years now, observing performance through multiple cycles; they had maybe 2-3 years of data at best to work with when rating subprime MBS, which were then repackaged into levered vehicles, CDOs. The room for error was enormous. Another important distinction is that there is no longer credit derivative activity – and layers of leverage – related to either subprime MBS or CDOs.

CLOs: not a canary in the coalmine

We finish with a discussion on CLO market trends. As a reminder, CLOs are arbitrage vehicles which manage a pool of leveraged loans with a capital structure that ranges from AAA bonds down to BB or even single B bonds and an equity tranche. Essentially, CLOs provide structural leverage to a range of investor types, including banks (including notably Japanese banks), insurance companies, investment managers, hedge funds and private equity/CLO managers.

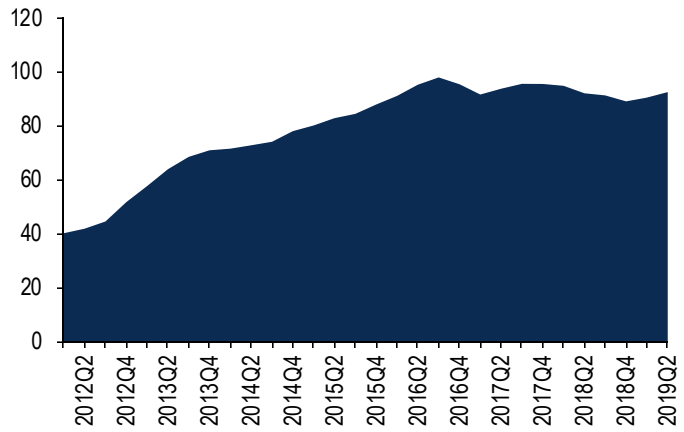
Chart 49 through Chart 52 provide some perspective on these investor allocations to the market. Banks are predominantly at the AAA part of the capital structure; insurance companies are in AAA but may go deeper down in credit; investment managers can be found across the capital structure, depending on the investment mandate; other investor groups reach for yield at the bottom of the capital structure.

Chart 49: US holdings ($bn) of US CLOs domiciled in the Cayman Islands, by investor type (excludes US CLOs domiciled in the US)



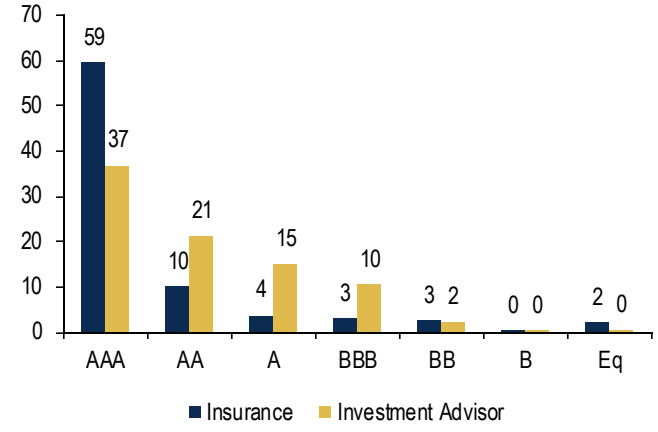
Source: Treasury International Capital. Note that the 2018 percentages were not available in the study and were simply extrapolated from 2017

Chart 50: US banks' quarterly CLO holdings data ($bn)



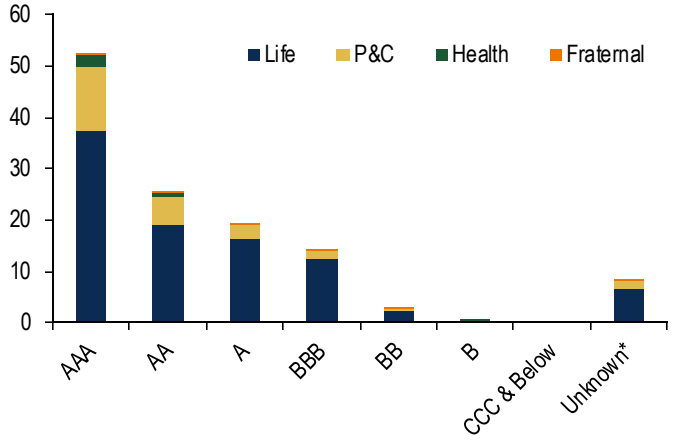
Source: BofA Merrill Lynch Global Research

Chart 51: Insurance companies' and investment advisors' US CLO holdings data ($bn)



Source: BofA Merrill Lynch Global Research, Intex, Bloomberg

Chart 52: US insurance companies' exposure to CLOs as of 2018 YE by rating and company type ($bn)



Source: NAIC

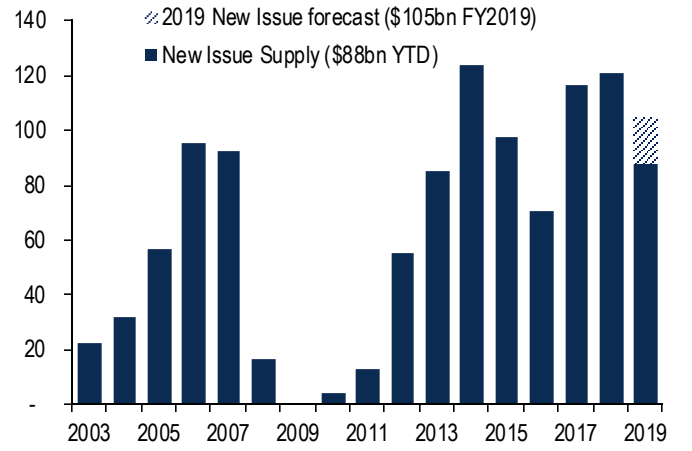
The most complete dataset on US CLO investor base thus far comes from the Treasury International Capital (TIC) system, where the Fed estimates that 88% of the approximately $616bn US CLO market were held by US investors as of 2018YE while the rest were held by foreign investors. The latest US investor breakdown was provided as of 2017YE for CLOs domiciled in the Cayman Islands, according to which more than 70% of the US investor base are real-money investors such as banks, insurance companies, as well as mutual and pension funds.

The conclusion we drew in a recent report (see "Who are the CLO investors") is that the broad range of investor types have extensive experience understanding the structures, the management style, and the loan collateral and are prepared to hold CLOs through a downturn. While not all may end up as buy and hold investors, the investment thesis/plan for many investors is to do exactly that.

One of the reasons CLOs have been so successful in the post-GFC era is that the equity tranches from CLO 1.0, CLOs originated before the crisis, performed exceptionally well. The median equity IRR for all pre-crisis CLOs ended up at roughly 15%, with a wide range around that. Only a small percentage actually experienced negative returns. Essentially, by locking in term funding at exceptionally cheap pre-crisis spreads, CLO 1.0 equity was able to take advantage of distressed pricing of leveraged loans in the wake of the crisis.

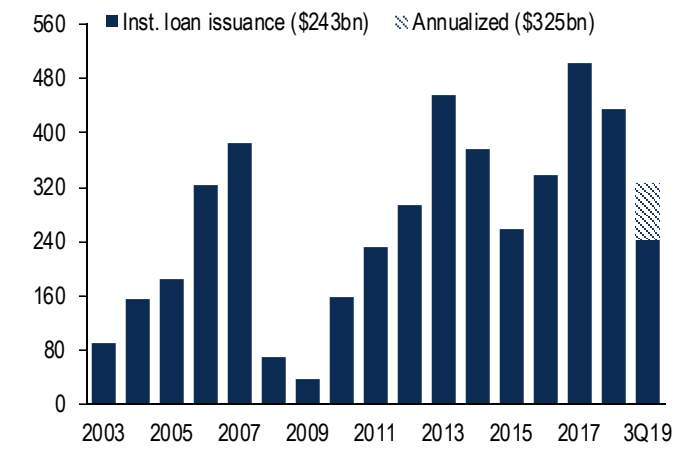
This experience resonated with post-crisis investors, which, along with other factors, helped drive the resurgence of issuance seen in Chart 53. Chart 54 shows that the growth of CLOs largely mirrored the growth in leveraged loan issuance. We view the issuance growth as symbiotic and, as noted earlier, very different from the subprime MBS-CDO growth of the pre-crisis era.

Chart 53: US CLO issuance over time...



Source: BofA Merrill Lynch Global Research

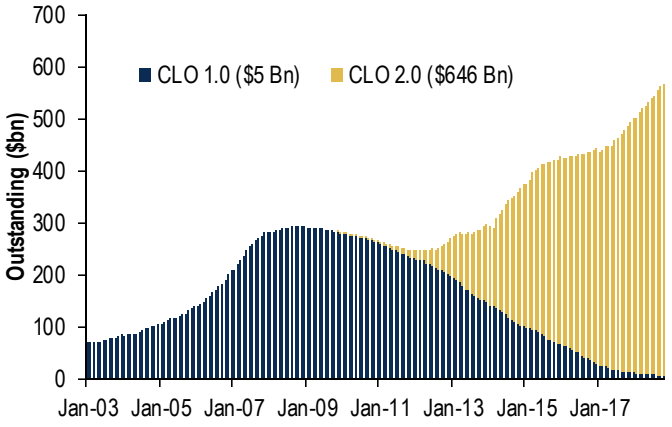
Chart 54: ...has mirrored institutional loan issuance



Source: S&P LCD

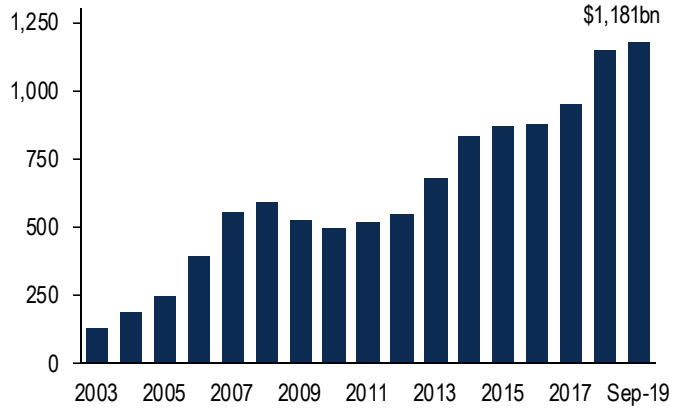
With such robust issuance, the outstanding US CLO market has more than doubled in size since 2010 and now totals around $652bn across broadly syndicated and middle market deals (Chart 55). This echoes similar trends in the US institutional loan market, which has grown at a similar rate and now totals over $1.2tn, according to S&P LCD (Chart 56).

Chart 55: Outstanding CLOs over time, pre- vs. post-crisis



Source: BofA Merrill Lynch Global Research

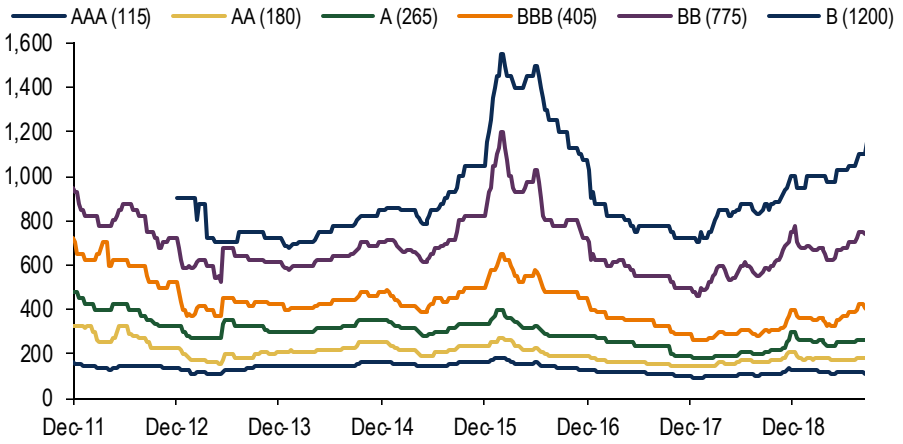
Chart 56: Outstanding par amount of S&P/LSTA LLI



Source: S&P LCD

The time series of spreads on the debt tranches is shown in Chart 57. The spread performance is similar to what we have seen in the corporate bond and leveraged loan markets this year: higher rated credits have exhibited relative stability this year while lower rate credits have seen more pronounced spread widening, similar to CCC HY bonds and loans.

Chart 57: Generic US CLO 2.0 secondary spread levels



Source: BofA Merrill Lynch Global Research

Fundamentally, we think the BB bonds at a yield of L+775 are very attractive. However, the wide spread likely reflects liquidity considerations, or perhaps just irrational fundamental concerns, that are showing up in CCC bonds and loans. We think how the story plays out will depend on how the economic story turns out in 2020 and whether recession concerns subside.

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