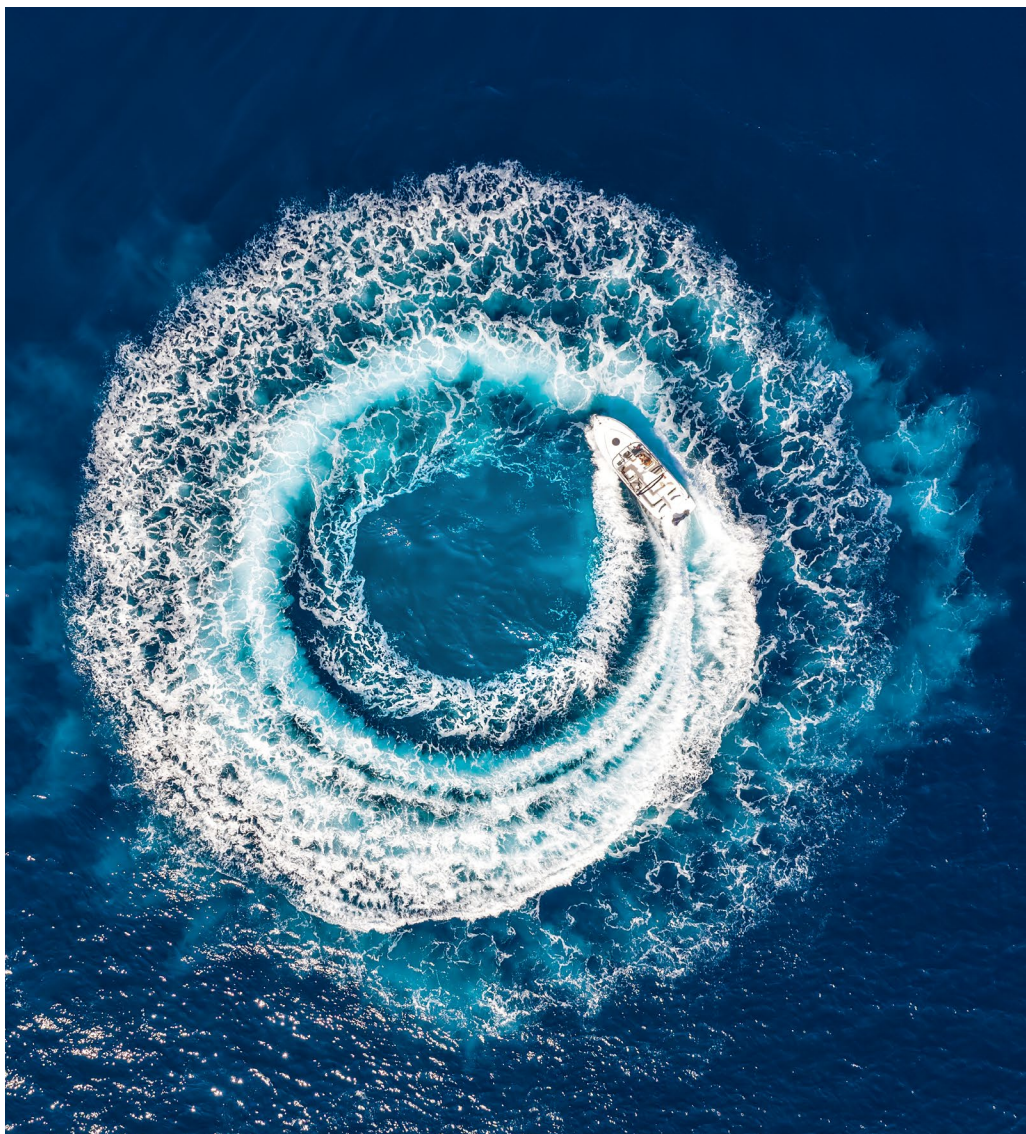


Next Debt Crisis: Will Liquidity Hold?

March 12, 2019



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Key Takeaways

- **Crisis.** The next global downturn is unlikely to be as severe as 2008-2009 given that contagion risk from higher government and Chinese corporate leverage is limited (see section 1).
- **Transmission.** We're watching market movements on U.S. speculative-grade (e.g. "cov-lite") and Chinese corporates (section 2). Global capital flows could amplify investor reaction in these segments.
- **Ratings.** Notwithstanding a low interest rate environment, higher leverage has seen issuer ratings trend down globally over the past decade (see sections 3, 4 and 5).

Will the next financial crisis be as bad as 2008-2009? Global debt is certainly higher and in many cases riskier than a decade ago. Nonetheless, the likelihood of a widespread investor exodus is contained, in S&P Global Ratings' view. The increased debt is largely driven by advanced-economy sovereign borrowing and domestic-funded Chinese companies, thus mitigating contagion risk.

That's not to say there is no vulnerability. A perfect storm of realized risks across geographies and asset classes could trigger a systemically damaging downturn. This downside scenario reflects an increased reliance on global capital flows and functioning secondary market liquidity.

It also reflects bottom-up risks, given that many speculative-grade corporate borrowers have obtained financing on reasonably good terms for much of the past decade. In looking at 11,947 corporates, we find the proportion of companies having aggressive or highly leveraged financial risk has risen slightly, to 61%. While defaults in recent years have been low, this could change.

Section 1. Next Crisis?

Global debt-to-GDP leverage is higher in June 2018 (see table 1) than in June 2008 (234% versus 208%) (see chart 1). Sectors with above-average debt-to-GDP ratios include advanced countries' governments and Chinese nonfinancial corporates (see table 1 comparing 2018 versus 2008).

Our economists see the risk of a U.S. recession in the next 12 months at 20%-25% (see "*Economic Research: U.S. Business Cycle Barometer*," published on RatingsDirect on Feb. 20, 2019).

Nonetheless, we believe the next global debt crisis is unlikely to be as severe as the one in 2008-2009. The risk of contagion (a requisite for a full-blown crisis) is mitigated by high investor confidence in major Western governments' hard currency debt. The high ratio of domestic funding for Chinese corporate debt also reduces contagion risk. (The terms credit and debt include both domestic and foreign debt).

Rising debt. The two main sources driving the growth in debt leverage have been advanced-country governments and, perhaps less well appreciated, Chinese corporates. The potential contagion risk from these areas can be managed if not contained:

- Major advanced country governments retain some ability to tax, providing some reassurance to investors on credit prospects in a downturn.
- The Chinese corporate debt buildup represents a very high credit risk, but a substantial portion of debt is owed by state-owned enterprises (SOE):
 - China's economy remains centrally managed and the government has levers to pull.
 - Most Chinese debt is domestically sourced, implying a limited direct external contagion risk.

Next Debt Crisis: Will Liquidity Hold?

Table 1

Absolute Debt (\$) And Debt-To-GDP (%) By Geography, June 2018

US\$ bil.	Nonfinancial corporates			Governments			Households			Total		
	Debt-to-GDP (%)			Debt-to-GDP (%)			Debt-to-GDP (%)			Debt-to-GDP (%)		
	June 2018	June 2008		June 2018	June 2008		June 2018	June 2008		June 2018	June 2008	
Advanced economies	41,902	90%	91%	48,581	104%	71%	33,849	72%	81%	124,332	266%	243%
U.S.	14,857	74%	72%	19,537	98%	61%	15,304	77%	97%	49,698	249%	230%
Japan	4,969	100%	103%	10,580	213%	147%	2,849	57%	59%	18,398	371%	308%
France	3,886	143%	114%	3,021	112%	67%	1,601	59%	47%	8,508	314%	227%
U.K.	2,303	84%	96%	3,003	110%	44%	2,362	86%	93%	7,669	280%	232%
Germany	2,161	56%	56%	2,593	67%	64%	2,045	53%	60%	6,799	174%	180%
Italy	1,448	71%	78%	2,934	144%	105%	836	41%	39%	5,218	256%	222%
Canada	1,910	116%	84%	1,220	74%	53%	1,649	100%	80%	4,778	290%	217%
Spain	1,313	95%	125%	1,519	110%	36%	841	61%	82%	3,672	265%	243%
Australia	1,013	74%	81%	544	40%	9%	1,655	121%	109%	3,212	235%	198%
Other	8,042	133%	151%	3,630	60%	64%	4,707	78%	105%	16,378	270%	321%
Emerging markets	28,818	97%	59%	13,801	47%	36%	11,470	39%	23%	54,153	183%	117%
China	20,292	155%	93%	6,232	48%	28%	6,582	50%	19%	33,105	253%	140%
Korea	1,582	100%	95%	621	39%	23%	1,519	96%	74%	3,721	235%	192%
India	1,140	45%	45%	1,739	69%	72%	282	11%	11%	3,161	125%	127%
Brazil	692	40%	33%	1,504	87%	61%	462	27%	18%	2,658	153%	112%
Other	5,113	42%	37%	3,706	30%	26%	2,625	21%	19%	11,507	94%	82%
Global	70,720	93%	82%	62,445	82%	62%	45,319	59%	65%	178,484	234%	208%

Color key: Blue indicates less (better) than 0.5 standard deviation below the mean for that sector; rust, more (worse) than 0.5; peach between blue and rust. Data source: Bank for International Settlements.

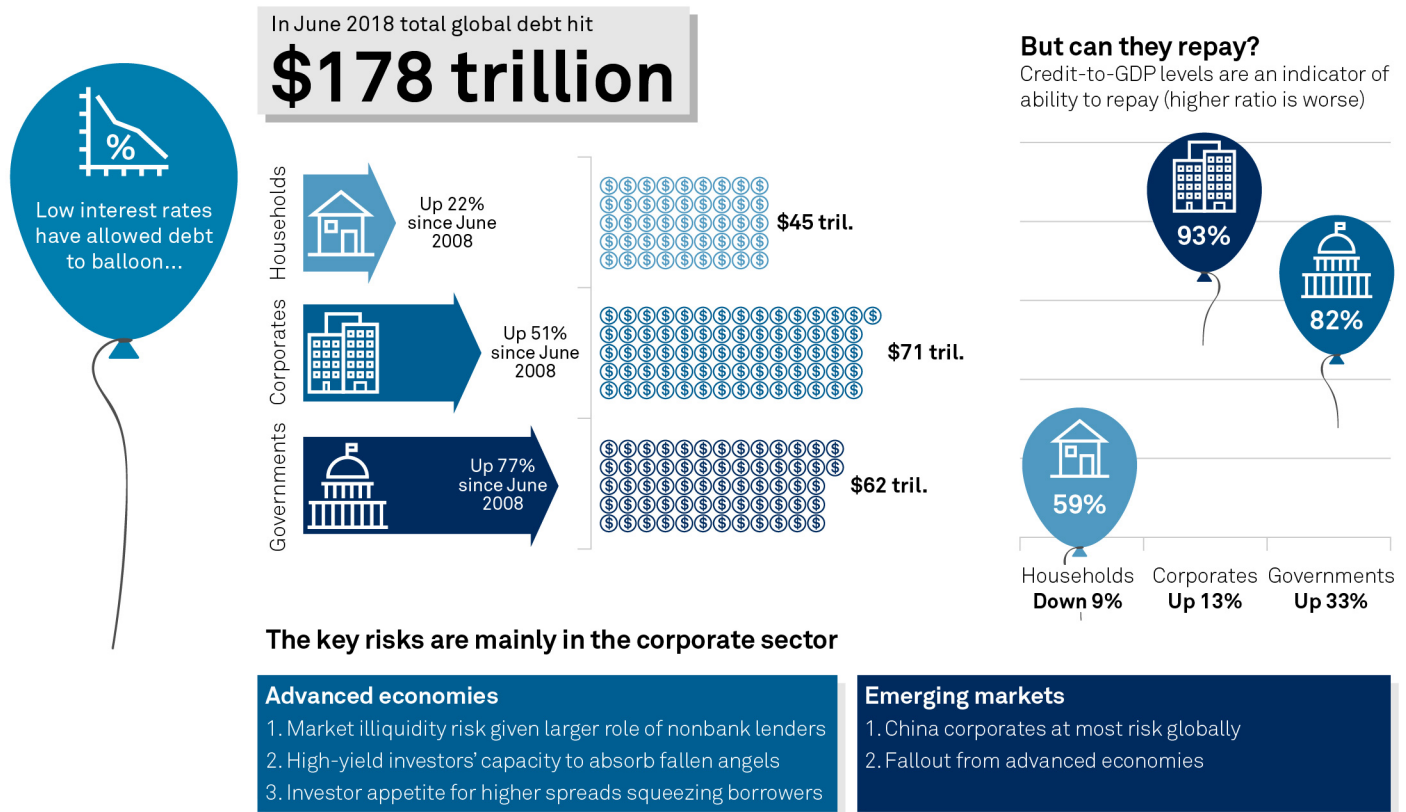
Credit conditions. Risks include escalating trade tensions (e.g. U.S.-China, Brexit), financing squeezes (e.g. December 2018's U.S. speculative-grade issuance collapse), emerging market vulnerabilities (e.g. capital flows), China's overleverage, populist sentiment, and cybersecurity.

Market dynamics. Many changes in regulations and market infrastructure have been effected to address identified vulnerabilities that led to the 2008-2009 crisis. Still, change inevitably creates incentives for new business models and new risks, with technology advances also playing a part. While it's impossible to predict with certainty how financial risks will materialize, the following developments are cautionary:

- An extended period of low real interest rates in developed markets has led investors to migrate towards less traditional and more specialized products such as derivatives, exchange traded funds (ETFs), private debt, leveraged finance, and infrastructure.
- Globalization has significantly increased developing countries' savings--and international capital flows as global fund managers put that money to work. The scale of the flows could create disorderly markets in event of an exogenous shock:
 - Market liquidity in a benign economic environment could prove illusory. Reduced capital behind market-making capacity and algorithmic trading could exacerbate market volatility.
 - Investment mandates and capital constraints may compel funds into forced sales.

Chart 1

Global Debt Of Corporates, Governments And Households And Key Risks



Note: Fallen angels refers to issuer ratings lowered to speculative grade from investment grade.

Policy response. The room to maneuver and willingness to coordinate may have diminished compared with a decade ago. Advanced-country governments have used up a lot of policy headroom with quantitative easing (QE), and interest rates in the major economies remain below "normal".

A return to QE is possible. But this risks going the route of Japan in the past two decades where risk-return signals seem mixed, government debt-to-GDP stratospheric, and economic growth sluggish.

Policy coordination among global authorities may become problematic in a more confrontational and distrusting political environment. Ensuring U.S. dollar liquidity through the provision of swap lines between the Federal Reserve and foreign central banks is critical for instance.

Likely downturn. Governments can delay a credit downturn with low interest rates or pump priming (e.g. increased fiscal expenditure). But not all structural issues arising from 2008-2009 were fully resolved. For example, while banks generally seem better capitalized, there are still weaknesses (e.g. in southern Europe).

Note: Speculative grade in this article also refers to unrated debt qualifying as such.

Section 2. Key Risks: Market Capacity, China's Corporates

Higher debt. Rather than deleveraging after 2008-2009, global borrowers instead increased indebtedness (see table 2). Credit growth among advanced economies' governments (particularly the U.S.) and emerging-market corporates (particularly in China) were the main drivers.

Table 2

Global Total Debt, June 2018

	Nonfinancial corporates			Governments			Households			Total		
	Increase since June 2008			Increase since June 2008			Increase since June 2008			Increase since June 2008		
US\$ bil.	%			%			%			%		
Advanced economies	41,902	4,301	11%	48,581	19,068	65%	33,849	224	1%	124,332	23,593	23%
Eurozone	14,115	-70	0%	12,920	2,802	28%	7,680	-1,362	-15%	34,715	1,370	4%
U.S.	14,857	4,344	41%	19,537	10,572	118%	15,304	1,019	7%	49,698	15,935	47%
Other	12,930	27	0%	16,124	5,694	55%	10,864	567	6%	39,918	6,288	19%
Emerging markets	28,818	19,549	211%	13,801	8,147	144%	11,470	7,878	219%	54,153	35,607	192%
China	20,292	16,244	401%	6,232	5,026	417%	6,582	5,775	716%	33,105	27,033	445%
Other	8,527	3,305	63%	7,569	3,120	70%	4,888	2,103	76%	21,047	8,574	69%
Global	70,720	23,850	51%	62,445	27,258	77%	45,319	8,103	22%	178,484	59,200	50%

Data source: Bank for International Settlements.

U.S. corporates. While U.S. nonfinancial corporates didn't boost leverage, they are vulnerable to market risks. About 60% of U.S. corporate debt is sourced from the markets (see table 3). (U.S. structured finance now only plays three-quarters of the role it had during 2008-2009, as measured by the percentage of debt outstanding).

Table 3

Outstanding In U.S. Debt Capital Markets, June 2018 Versus 2008

US\$ bil.	June 2018	% of total	2008	% of total
Treasuries	14,972	36%	5,784	19%
Mortgage-related securitizations	9,484	23%	9,467	30%
Corporate bonds	9,079	22%	5,501	18%
Municipal bonds	3,857	9%	3,667	12%
Federal Agency securities	1,900	5%	3,211	10%
Asset-backed securitizations (of which)	1,551	4%	1,831	6%
- CDO/CLO	754	2%	978	3%
- Automobile	216	1%	140	0%
- Student loans	177	0%	238	1%
- Credit card	124	0%	316	1%
Money market	1,052	3%	1,600	5%
Total	41,893	100%	31,061	100%

Source: Securities Industry and Financial Markets Association.

Section 2A. Market Capacity Risk

In this credit cycle, we see market capacity risk as a challenge for nonfinancial corporates, given changes since 2008 of lender market risk, debt ratings distribution, and the interest rate environment especially for speculative-grade and other riskier forms of debt. Indeed, we expect global bond issuance to marginally decline in 2019 (see “*Credit Trends: Global Financing Conditions: Bond Issuance Is Expected To Decline 0.6% In 2019*,” Jan. 31, 2019).

Lender market risk. The increased role of nonbank lenders and somewhat lesser role of financial institutions (market makers) in recent years (see chart 2) heightens the possibility of a market liquidity squeeze should a credit downturn occur.

Banks’ Intermediary Role Diminished

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Share. Banks’ share of credit to the private sector (corporates and households) has declined in all major regions, except for the U.S. (see chart 2). Regulators’ desire to make the banking system more robust played a key part here.

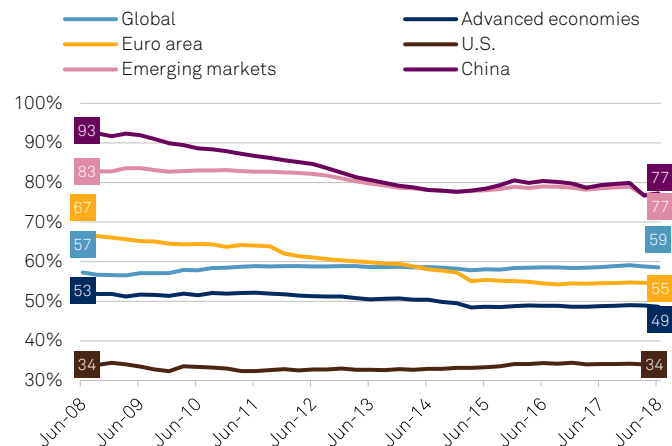
U.S. The U.S. ratio is traditionally low because of well-developed debt markets (see chart 3).

Implication. Nonfinancial corporates may face less funding stability given that they are more exposed to market investor sentiment.

Note: The higher global ratio seems incongruous but it’s caused by the larger contribution of emerging markets raising the weighted average.

Chart 2

Bank Credit To Private Sector, June 2008 To June 2018



Data source: Bank for International Settlements.

As the Securities Industry and Financial Markets Association (SIFMA) describes it: “Post-crisis regulatory constraints on balance sheets, such as the Volcker Rule, have resulted in many bank-affiliated dealers dramatically reducing inventory and market making capabilities, to the detriment of some fixed income activities” (see SIFMA’s “*2019 Outlook*,” Dec. 17, 2018).

While banks, with their loan provisions and capital, should be able to absorb worsening asset quality, it’s less clear that other investors are as well-placed.

For example, collateralized loan obligations (CLO). Based on S&P/LSTA Leveraged Loan Index, 79% of the U.S. leveraged loan par outstanding of \$1.14 trillion are “covenant light” (i.e., they contain few protective covenants) implying greater recovery risk for lenders (see chart 3). Indeed recoveries could be lower during the next downturn given debt structure trends of fewer junior debt components and a greater portion of the capital structure being institutional first-lien term loans and as indicated by our recovery ratings (see “*Leveraged Finance: A 10-Year Lookback At Actual Recoveries And Recovery Ratings*,” Feb. 5, 2019).

Simply put, most nonbank investors do not seem well-prepared to withstand a credit market shock.

Cov-Lite Market's Late-Cycle Behavior

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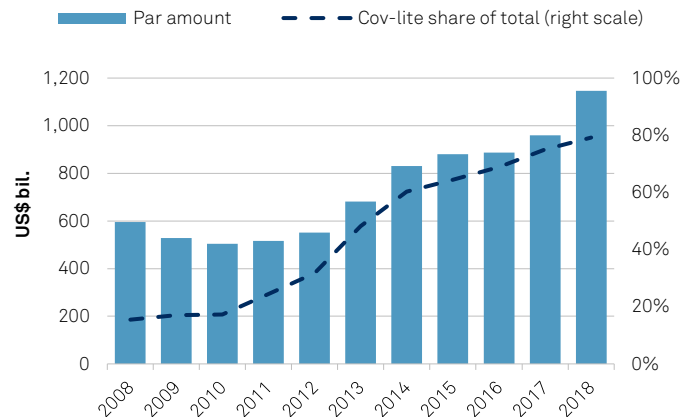
Cov-lite. In earlier credit cycles, lenders were only willing to offer covenant-light (“cov-lite”) packages to the strongest issuers. Recently, however, large corporate loans are prominent in increased issuance (see chart 3). Indeed, 80% of leveraged loans outstanding are cov-lite, up from 15% a decade ago.

Spread. Lenders have been accepting lower spreads for more highly leveraged deals. It would appear that underwriting standards became looser and spreads tighter due to intense competition in the market.

*LCD is part of S&P Global Market Intelligence, a sister division of S&P Global Ratings.

Chart 3

S&P/LSTA U.S. Leveraged Loan Index: Total Par Outstanding And Cov-Lite Share



Source: LCD, an offering of S&P Global Market Intelligence; S&P/LSTA Leveraged Loan Index chart as of Jan. 16, 2019.

‘BBB’ transition risk. The absolute amount of debt in the ‘BBB’ rating category has grown 170% since 2008 (see chart 4). The problem isn’t so much the transition risk in percentage terms but in absolute dollars.

Increased Volume Of U.S. ‘BBB’ Debt

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Leverage. We estimate only 11% of ‘BBB’ issuers to be leveraged* above 4x at end-2018 (see chart 4), declining to about 5% this year.

Consumer products. Outside the more stable real estate investment trust (REIT) and regulated utility sectors, consumer products, due to M&A, stands out with a larger percentage leveraged above 4x.

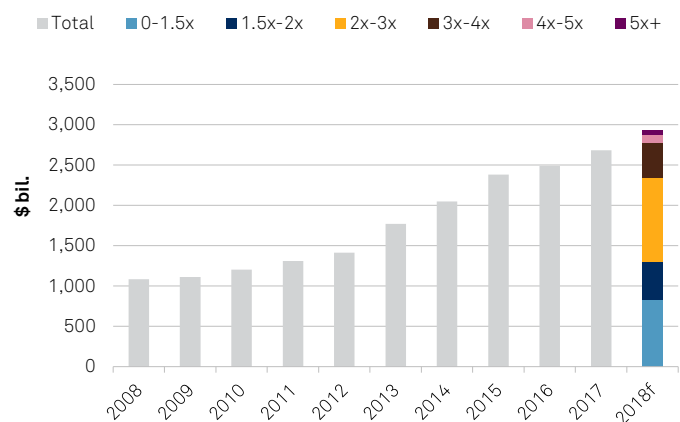
Scenario. If the severity of the next downturn were similar to the Great Recession, potential “fallen angel” debt could be \$200 billion–\$250 billion.

Note: see “Credit FAQ: When The Cycle Turns: ‘BBB’ Downgrade Risks May Be Overstated,” published Dec. 3, 2018.

*Measured by debt-to-EBITDA (earnings before interest, tax and depreciation and amortization expense).

Chart 4

Growth In ‘BBB’ Rating Category Debt (2008–2018); Debt/EBITDA 2018



Note: Includes privately rated companies. f--Forecast as of Nov. 28, 2018. EBITDA--earnings before interest, tax and depreciation and amortization expense.

Next Debt Crisis: Will Liquidity Hold?

The speculative-grade market isn't as deep as the investment-grade one, and the dollar amount of fallen angels—i.e., entities downgraded from investment-grade status—could temporarily stress the liquidity and increase the volatility of the speculative-grade market as the market adjusts to downgraded debt.

Further, insurance companies and asset managers may need to mark-to-market such fallen angels, with even remaining 'BBBs' marked down because of prices recognized from stressed sales.

Spread risk. In recent years, investors chased yield to improve returns amid very low interest rates ("search for yield"). This has caused some investors to move into the speculative-grade space. Meanwhile, borrowers, such as U.S. corporates (see chart 5), enjoyed low interest costs despite still-high leverage.

Many institutional investors appear close to their quota (investment mandate) of speculative-grade debt. A large dollar amount of fallen angels may squeeze liquidity in this market segment.

U.S. Yield Trends Bifurcate

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Bifurcation. U.S. corporates (unlike other sample pools) show a distinct pattern of debt servicing against debt-to-GDP before 2012 and after (see chart 5).

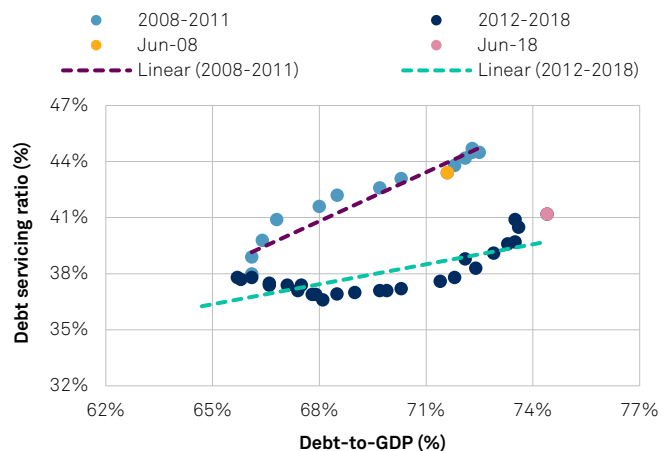
Lower. Presuming overall credit quality held steady, the pattern implies that U.S. corporate borrowers serviced lower yields for given leverage levels in the last five years compared with before.

Sensitivity. This observation implies that U.S. corporates may be more sensitive, compared with other corporate sample pools, to lenders seeking a reversion to higher yields.

Note: We had discussed the yield reversion risk in our "[Track The Fed But Watch The Spread](#)," article published Jan. 4, 2017.

Chart 5

U.S. Corporates Credit/GDP And Debt Servicing, June 2008–June 2018



Data source: Bank for International Settlements.

Next Debt Crisis: Will Liquidity Hold?

The period of favorable yields has supported credit quality and low default rates (see charts 6 and 7).

High Risk Yet Low Defaults

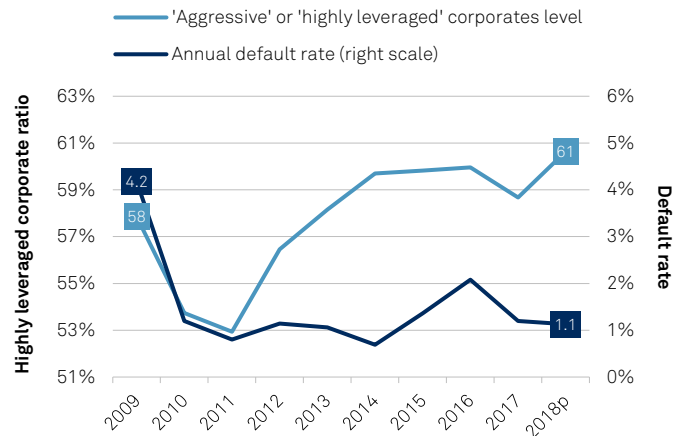
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- We estimate that the financial risk of global corporates (based on a sample of 11,947 corporates, rated and unrated) worsened slightly from 2009-2018 (see chart 6).
- The ratio of corporates we consider as having aggressive or highly leveraged financial risk rose slightly, to 61% from 58%, yet defaults in recent years have been low.
- We argue that the easy money and low interest rates have suppressed defaults.

Chart 6

Global Corporate Sample: 'Aggressive' Or 'Highly Leveraged' Ratio And Ratings Default Rate, 2009 To 2018p



p--projected. Corporate sample data source: S&P Global Market Intelligence. Default data source: S&P Global Fixed Income Research.

Default Rates Correlation With Yields

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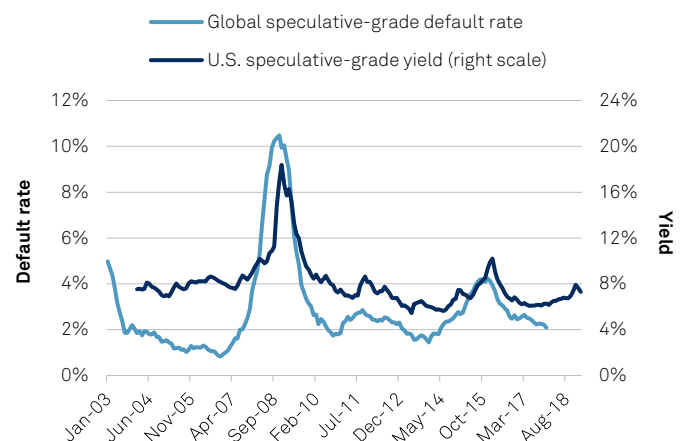
- Chart 7 demonstrates the correlation between the blended spec-grade yields and global corporate default rates*.
- We selected spec-grade yield, as defaults are less likely to come from investment grade.
- We expect the U.S. trailing-12-month spec-grade corporate default rate to reach 3.1% by December, up from 2.4% at year-end 2018 and on par with 3.1% at year-end 2017.

*Our corporate default rates here include financial corporations but they tend on average to have lower default rates than nonfinancial corporations.

Note: see "Default, Transition, and Recovery: Amid Growing Challenges, The U.S. Speculative-Grade Corporate Default Rate Is Set To Rise To 3.1% By December 2019," published Feb. 15, 2019.

Chart 7

Global Speculative-Grade Default Rates* Vs. U.S. Speculative-Grade Yield



*Default rates lagged by 12 months to illustrate correlation. Data as of Dec. 31, 2018. Source: S&P Global Fixed Income Research, S&P Global Market Intelligence CreditPro.

Section 2B. Chinese Corporates

We have been highlighting the risk of China's nonfinancial corporates' debt buildup for several years (see "*China Credit Spotlight: Significant Financial Risks Fan The Flames For China's Top Corporates*," Sept. 10, 2012).

The problem relates to the declining investment return on each dollar of debt. With China's economic slowdown (see "*Economic Research: China's Slowdown--This Time Is Different*," Feb. 1, 2019), corporate profitability is increasingly stressed (see "*The Big Chill In China: Weaker Profitability To Hit Corporate Debt Servicing*," Jan. 21, 2019).

China's Debt-Fueled Corporates

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Slowdown. Our proprietary tracker suggests China's growth is at its lowest since early 2016.

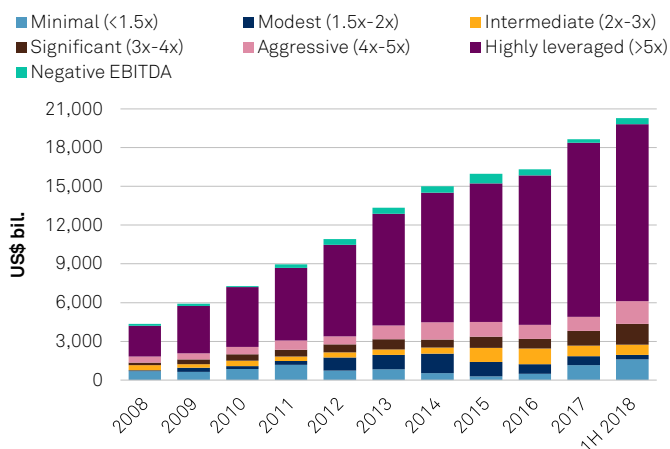
Leverage. As chart 8 shows, the amount of debt of a sample of corporates (see section 3) has generally increased.

Margins. Weakening demand and external uncertainties will crimp margins this year.

Outlook bias. We expect debt serviceability to decline and deleveraging to stall. Our ratings outlook bias is tilted to the negative.

Chart 8

China Corporates Debt And Sample Debt/EBITDA Risk Categories, June 2008-June 2018



Debt amount data source: Bank for International Settlements. Sample data source: S&P Global Market Intelligence.

Section 3. Global Leverage: 12% Higher Than In 2008

Section 3A. Overview: Debt Grows 50%

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Credit-to-GDP. The total debt of global nonfinancial borrowers hit \$178 trillion in June 2018, up 50% from June 2008 (see table 1). This is equivalent to a 234% debt-to-GDP ratio*, up 12% (see chart 9).

Emerging. The emerging markets generated 60% of new debt. Their credit-to GDP ratio rose an astonishing 56%, to 183%.

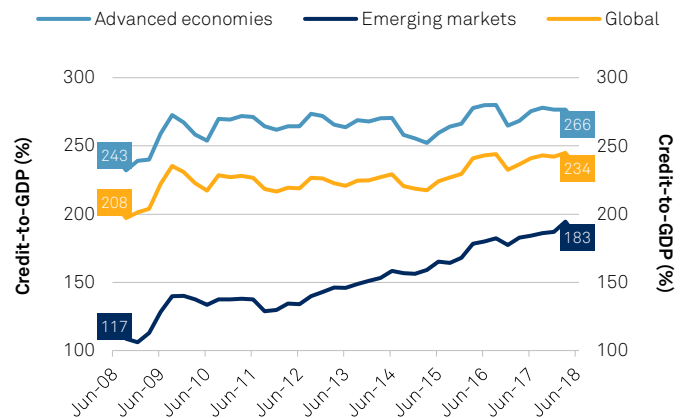
Advanced. In the meantime, advanced economies raised their debt-to-GDP ratio to 266% from 243%.

*Total credit includes corporates, governments and households.

Note: This phenomenon is not new, see our *"Global Corporate Credit: Debt Has Outpaced Income Growth Since 2009,"* article published Jan. 13, 2016.

Chart 9

Advanced And Emerging Economies: Credit-To-GDP, June 2008-June 2018



Data source: Bank for International Settlements.

Section 3B. Sector: Governments Debt Buildup

Sectors. Among the nonfinancial corporates, governments and household sectors, governments contributed \$27 trillion (46%) of new debt; corporates, \$24 trillion (40%); and households, \$8 trillion (14%) (see table 1).

Governments. Their debt-to-GDP ratio* rose by one-third to 82% from 62% (see chart 10).

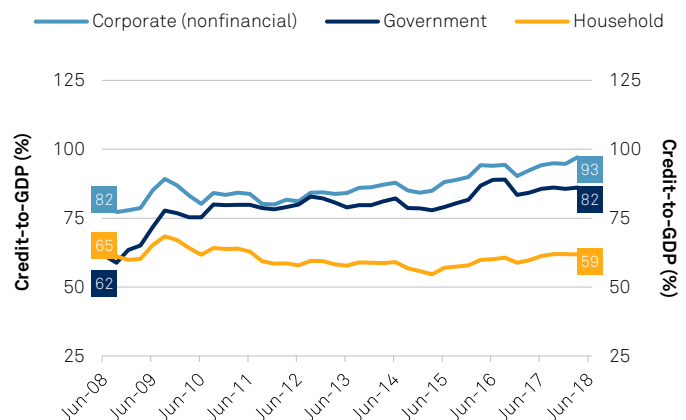
Corporates. Here the ratio increased 13%, to 93% from 82%.

Households. After the crisis, the sector decreased indebtedness 9%, to 59% from 65%.

*An implicit limitation of computing debt-to-GDP for sectors is the assumption that GDP is distributed to each proportionately.

Chart 10

Global Sectors: Debt-To-GDP (%), June 2008-June 2018



Data source: Bank for International Settlements.

Governments

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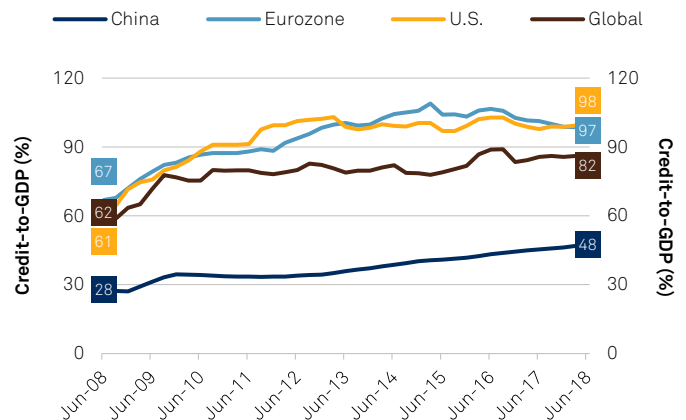
- **Growth.** In bolstering their economies, the advanced countries' governments added the most absolute debt (\$19.1 trillion), raising their credit-to-GDP* by half (see chart 11).
- **Absolute debt.** In absolute terms, the U.S. led the way by growing \$10.6 trillion; China was next at \$5 trillion, and Eurozone, \$2.8 trillion.
- **Credit-to-GDP.** China grew 71% from a low base; U.S., 60%; and Eurozone, 45%.
- **Size.** U.S. and Eurozone government debt are now almost equivalent to their GDPs.

Credit herein includes both domestic and foreign debt.

See Appendix 4 for a chart showing government debt-to-GDP by country.

Chart 11

Governments: Debt-To-GDP (%), June 2008-June 2018



Data source: Bank for International Settlements.

Corporates

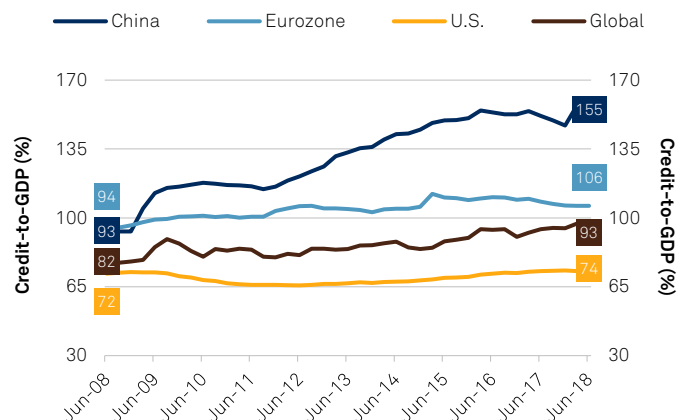
Want to know more? Then please contact:

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gregg.lemos-stein@spglobal.com

- **Driver.** For corporates, emerging markets were the primary driver of global growth.
- **China.** In turn, China (see chart 12), whose indebtedness grew two-thirds, to 155%, has driven the emerging markets.
- **Eurozone.** In US\$ equivalent terms, the region's fall in absolute GDP saw the ratio, despite flat absolute debt, rise to 106%.
- **U.S.** Corporate indebtedness is largely flat. Cash holdings seem high, but it is concentrated in the top 1% (see Appendix 1).

Chart 12

Corporates: Debt-To-GDP (%), June 2008-June 2018



Data source: Bank for International Settlements.

Next Debt Crisis: Will Liquidity Hold?

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Studying the debt-servicing ratios (DSR)* for households and corporates (see Appendix 3), we found that in general, the DSR trends correlate with their debt-to-GDP ones.

We note the convergence for most advanced countries' households towards similar DSRs although admittedly Netherlands, Australia, Denmark, and Norway have relatively high DSRs.

U.S. corporates show an interesting bifurcation of their DSR and debt-to-GDP relationship (see chart 13).

*DSR is the ratio of the sum of interest payments and amortizations divided by income, where income is the sum of gross disposable income and gross interest payments. See further sampling in Appendix 3.

Households

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Winston Chang, New York, +1-212-438-8123, winston.chang@spglobal.com

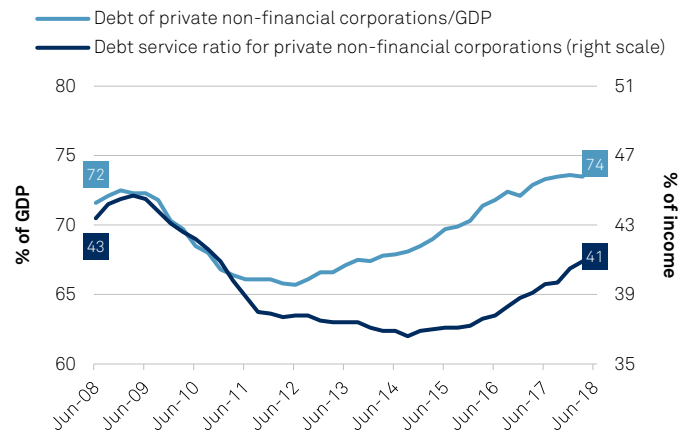
- **Eurozone.** Households conservatively decreased debt by \$1.3 trillion. Their debt-to-GDP fell 4% to 58% (see chart 14).
- **U.S.** Here households increased their debt by \$1.0 trillion, but the faster GDP growth saw the debt-to-GDP fall a massive 21% to 77%.
- **Emerging markets.** Households pushed leverage up by 78% as consumption grew.
- **China.** Its ratio grew an astounding 170% to 50%. At this pace, China's households could reach the global average within three years.

In passing, we note that households in the Netherlands, Australia, Denmark, and Norway still have DSRs higher (riskier) than the advanced economies' average (see Appendix 3).

Above, we excluded financial intermediaries to avoid double counting, but we show chart 15 for completeness.

Chart 13

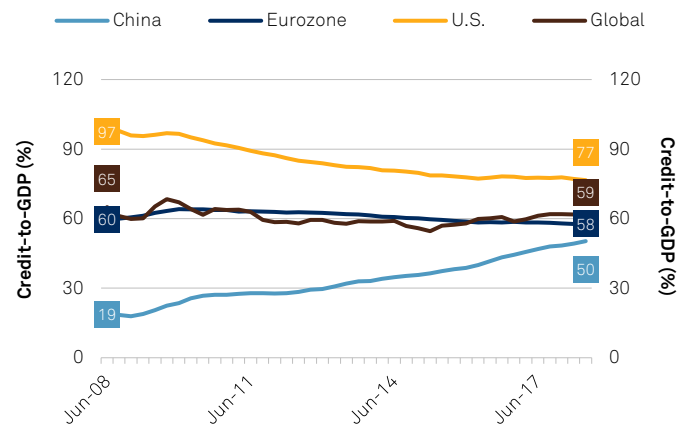
U.S. – Corporates: Debt Service Ratio (%), June 2008–2018



Data source: Bank for International Settlements.

Chart 14

Households: Debt-To-GDP (%), June 2008–June 2018



Data source: Bank for International Settlements.

Financial Corporations

Want to know more? Then please contact:

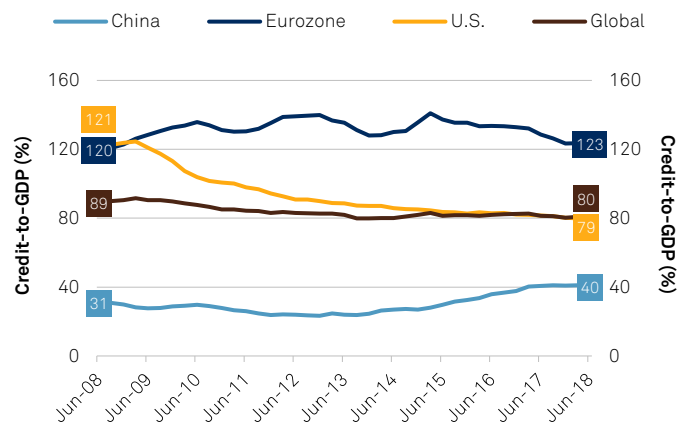
Alex Birry, London, +44-20-7176-7108, alexandre.birry@spglobal.com

- **Global.** Financial corporations' debt-to-GDP ratio* has fallen to 80% from 89% implying reduced reliance on debt funding in addition to greater disintermediation (see chart 15).
- **U.S.** U.S. financial corporations were the primary driver for the reduction, with their ratio dropping one-third to 79%.
- **Eurozone.** The ratio for the Eurozone is marginally up at 123% from 120%.
- **China.** The lending dominance of banks in China sees the ratio there up a third to 40%.

*This chart uses International Institute of Finance (IIF) data which may differ from Bank for International Settlements data (see Appendix 2 for discussion).

Chart 15

Financial Corp.: Debt-To-GDP (%), June 2008-June 2018



Data source: Institute of International Finance.

Section 3C. Economies: Emerging Markets Comprise A Third

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Higher risk. Prima facie, global credit is riskier because the component of emerging markets risk is double what it was in 2008 (see chart 16).

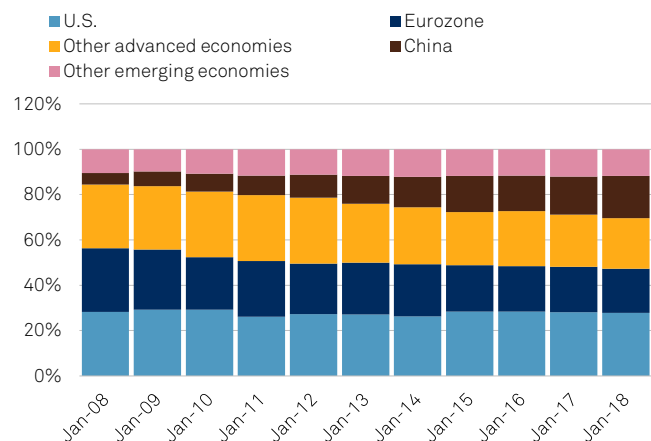
Emerging. Emerging markets now contribute 31% of global credit, compared to 15% in June 2008. This was largely driven by China.

Advanced. The share of advanced economies shrunk 18% over the period, with the U.S. holding on to its share, the Eurozone's* down by 30%, and other advanced countries, down 21%.

*The reason why the Eurozone's debt-to-GDP still went up is that its share of global GDP fell faster than that of global credit

Chart 16

Regions: Contribution To Credit (%), June 2008-June 2018



Data source: Bank for International Settlements.

Major Economies

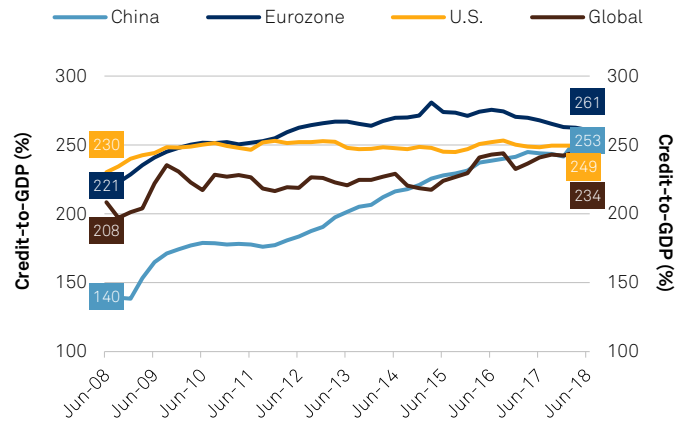
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- **China.** Its debt-to-GDP rose 81% to 253% from 140% (see chart 17). 253% is very high for an emerging market – such levels being more common for advanced ones.
- **Eurozone.** Its debt-to-GDP rose 18%, to 261% from 221% despite lackluster economic growth.
- **U.S.** Meanwhile the U.S.'s rose a relatively conservative 8% to 249% from 230%.
- **Most indebted.** China is now more indebted than the U.S.

Chart 17

Key Economies: Credit-To-GDP, June 2008-June 2018



Data source: Bank for International Settlements.

Section 4. Corporates: Financial Risk Is Higher

In the preceding section, we discussed leverage in terms of averages but of course the distribution (e.g. skewness) of risk influences the likelihood of credit transition.

Corporates. We examined a single global cohort of 11,947 nonfinancial corporates (rated and unrated) for changes in financial risk between full fiscal year 2009 to first fiscal half 2018. Data were sourced from S&P Market Intelligence.

- We assess each corporate's financial risk profile by combining the percentage assessments of two credit ratios: debt-to-earnings before interest, tax and depreciation and amortization expense (EBITDA) and funds from operations (FFO)-to-debt ratios.
- FFO is computed by deducting net interest expense and income tax expense from EBITDA. To compare with debt-to-GDP data, we used gross debt figures, rather than net off cash as we usually do.
- We then categorize the financial risk as: minimal; modest; intermediate; significant; aggressive; or highly leveraged (see Appendix 5).
- To assist readers to better comprehend these risk categories, we have attempted to match the financial risk categories against business risk categories (not addressed in this exercise) to arrive at possible credit estimate equivalent ranges (see table 4).

Caveat. Obviously, credit estimate equivalencies should be treated with caution given the approach is simplistic and does not consider other credit factors.

Table 4

Combining Financial Risk And Business Risk To Arrive At Credit Estimate Equivalents

Business risk descriptors	Financial risk descriptors					
	Minimal	Modest	Intermediate	Significant	Aggressive	Highly leveraged
Excellent	aaa/aa+	aa	a+/a	a-	bbb	bbb-/bb+
Strong	aa/aa-	a+/a	a-/bbb+	Bbb	bb+	bb
Satisfactory	a/a-	bbb+	bbb/bbb-	bbb-/bb+	bb	b+
Fair	bbb/bbb-	bbb-	bb+	Bb	bb-	b
Weak	bb+	bb+	bb	bb-	b+	b/b-
Vulnerable	bb-	bb-	bb-/b+	b+	b	b-

Source: S&P Global Ratings' "Criteria | Corporates | General: Corporate Methodology," table 3.

Section 4A. Overview: Debt-To-EBITDA Higher

Debt/EBITDA Up, FFO/Debt Flat.

Leverage. The average leverage for first fiscal half 2018 of the corporate sample is slightly up compared to fiscal year 2009 (see chart 18).

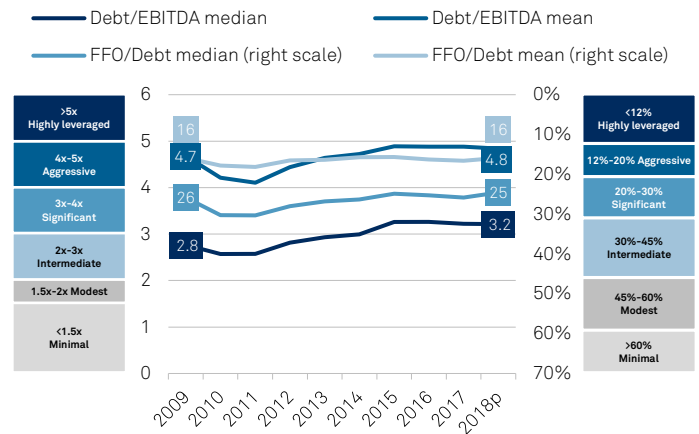
Ratios. The debt-to-earnings before interest, tax, depreciation and amortization (EBITDA) median went up to 3.2 times (x) from 2.8x while funds from operations (FFO)-to-debt improved marginally to 25% from 26%*.

Discrepancy. The apparent discrepancy between debt-to-EBITDA and FFO-to-debt trends is explained by the latter being after net interest expense. Low interest rates post-crisis has supported FFO.

*Leverage ratios are debt-weighted averages of categorized debt/EBITDA and FFO/debt ratios for a corporate sample. Funds from operations--EBITDA less net interest expense less tax.

Chart 18

Sample: Leverage Ratios, 2009 To 2018p



p--projected. Country data (debt-weight). Source: Bank for International Settlements (BIS). Sample data source: S&P Global Market Intelligence. Other source: S&P Global Ratings.

By Count, Corporates Drift To Higher Risk.

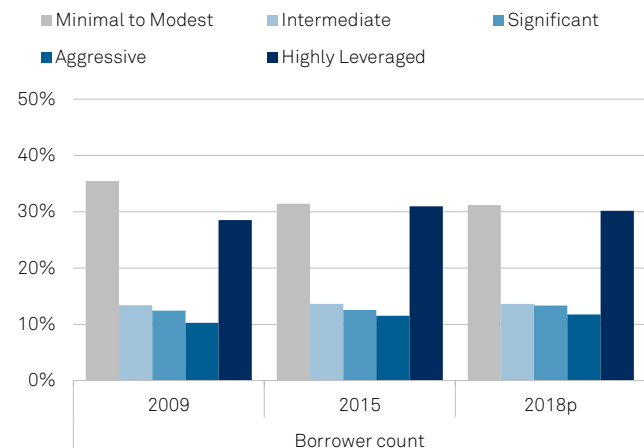
Barbell. Chart 19 shows the barbell distribution by financial risk category of the corporate sample using borrower count.

Shift. There is a clear shift from the top end toward higher-risk categories.

(We selected 2015 as the intermediate year to study, as previous charts had indicated that some stabilization of risk had begun that year.)

Chart 19

Sample: Distribution By Borrower Count, 2009, 2015, 2018p



p--projected. Country data (debt-weight). Source: Bank for International Settlements (BIS). Sample data source: S&P Global Market Intelligence. Other source: S&P Global Ratings.

Similarly, By Debt Amount, Corporates Worse.

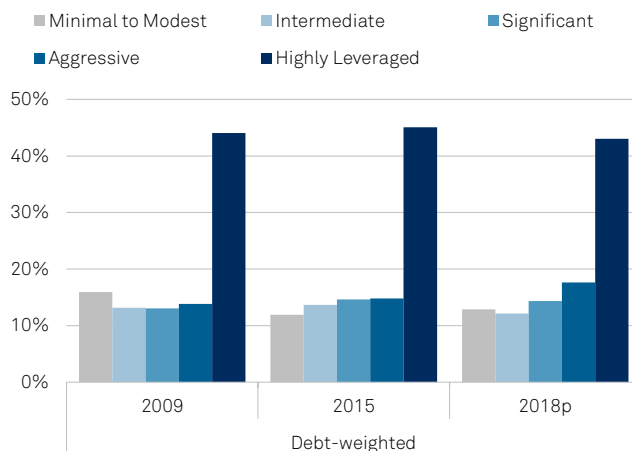
Skew. Chart 20 shows the negatively skewed distribution by financial risk category of the corporate sample using debt amounts.

(The skew isn't unexpected, as higher risk categories tend to contain relatively higher debt).

Shift. Again, as with borrower count, we see a shift of debt toward higher-risk categories, although the highly leveraged (worst) category is somewhat stable.

Chart 20

Sample: Distribution By Debt Amount, 2009, 2015, 2018p



p--projected. Country data (debt-weight). Source: Bank for International Settlements (BIS). Sample data source: S&P Global Market Intelligence. Other source: S&P Global Ratings.

Section 4B. Economies: China Takes Center Stage

Drilling down into the key geographic regions (see chart 22), we find that the higher risk is driven by emerging markets, particularly Asia, and especially China. Risk improved slightly for the U.S. and Europe. China's corporate debt is larger than the Eurozone plus the U.K. and the U.S. At an estimated 29% of global corporate debt, China is the elephant in the room.

Two-Fifths Of Aggressive And Highly Leveraged Corporate Debt Is Chinese.

China rising. The sample indicates that Chinese corporates now make up about two-fifths of the world's aggressive and highly leveraged debt (see chart 21).

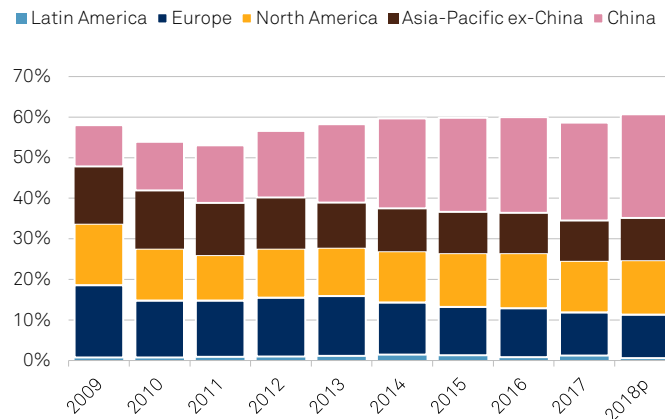
Most risk. China has the highest-risk corporate sector among the major economies.

Business risk. If we presume China, as an emerging market, presents a higher business profile risk than Europe or the U.S., then logically corporate risk globally is higher than in 2009.

Linkage. We note, however, China is much less connected with the rest of the world, from a financial markets perspective, than, say, the U.S. is.

Chart 21

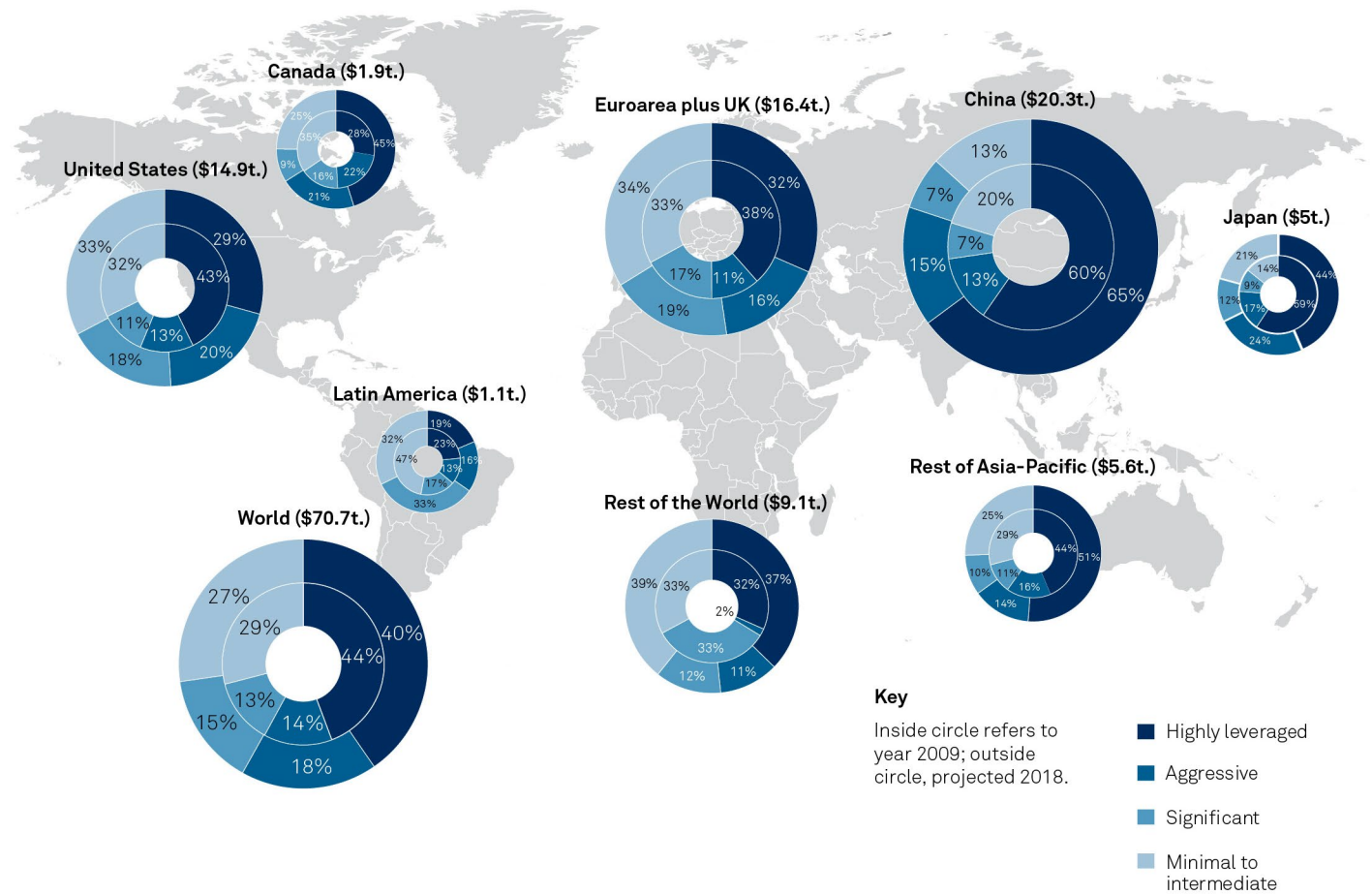
Corporates: Regional Contribution To Global 'Aggressive' And 'Highly Leveraged' Levels, 2009 To 2018p



p--projected. Country data (debt-weight). Source: Bank for International Settlements (BIS). Sample data source: S&P Global Market Intelligence. Other source: S&P Global Ratings.

Chart 22

Global Corporate Sample: Leverage Distribution By Region, 2009 Versus 2018p



p--projected. Country data (debt-weight) source: Bank for International Settlements (BIS). Sample data source: S&P Global Market Intelligence. Other source: S&P Global Ratings.

Section 5. Rating Trends: Down Over The Past Decade

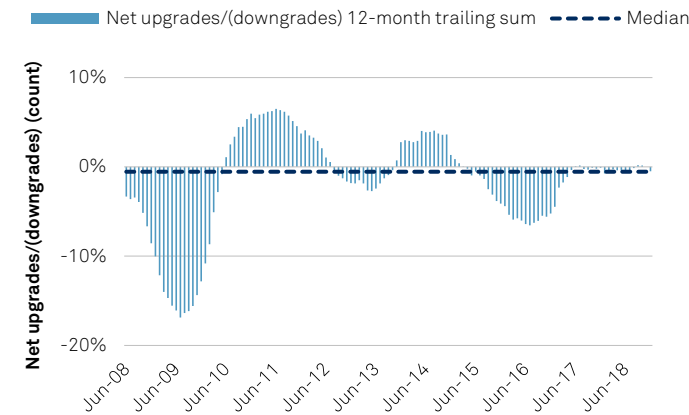
Want to know more? Then please contact:
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Given the observations in the preceding sections, how have our sovereign and corporate ratings portfolios trended in the past 10 years? The median lines in charts 23 to 25 show that more financial services and sovereign entities have been downgraded than upgraded, as downgrades have just slightly outnumbered upgrades.

Additionally, in terms of corporate industries, the median credit ratings by industry either declined or remained unchanged (see chart 26). In short, the credit risk of the pool of rated corporate, financial services, and sovereign entities have in general worsened through a combination of downgrades and an influx of newly assigned ratings, the majority of which have been speculative grade.

Chart 23

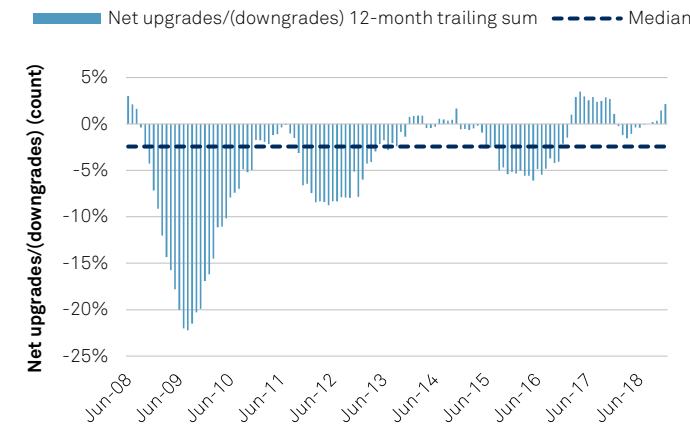
Corporates: Net Upgrades/(Downgrades), 2008-2018



Source: S&P Global Market Intelligence CreditPro.

Chart 24

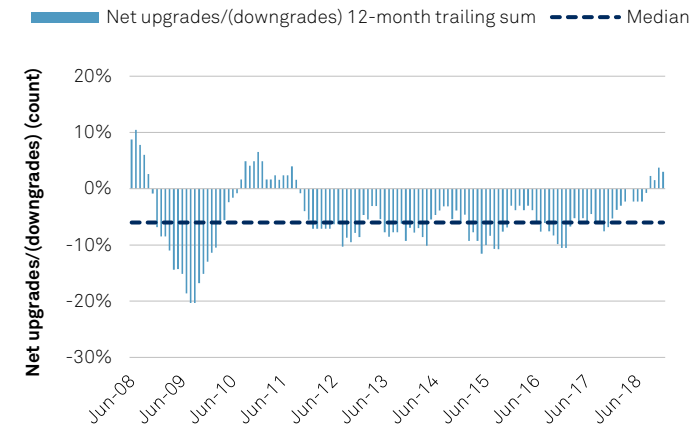
Financial Institutions: Net Upgrades/(Downgrades), 2008-2018



Source: S&P Global Market Intelligence CreditPro.

Chart 25

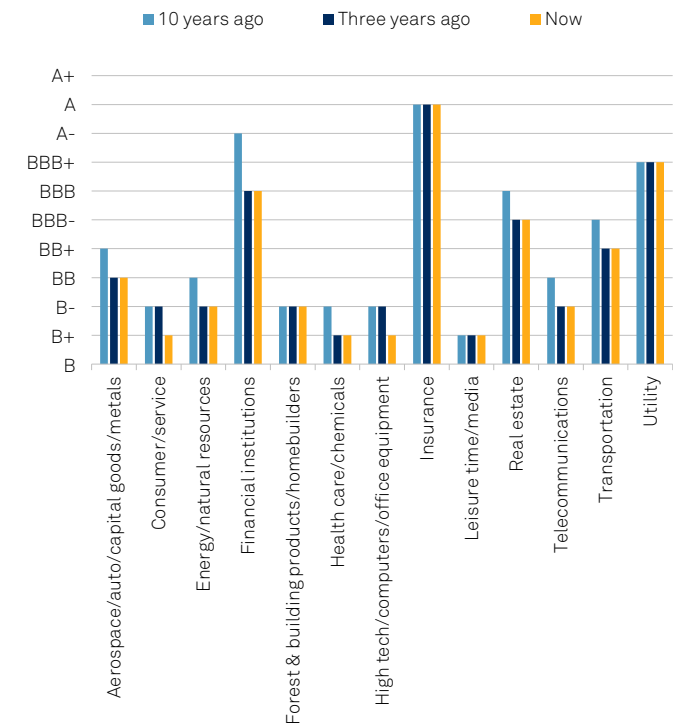
Sovereigns: Net Upgrades/(Downgrades), 2008-2018



Source: S&P Global Market Intelligence CreditPro. Also see "Sovereign Ratings History," published Jan. 7, 2019.

Chart 26

Median Ratings Across Corporate Industries, 2008, 2015 And 2018



Source: S&P Global Ratings' "Credit Trends: Global Corporate And Sovereign Credit Outlook: Ratings Are Poised To Remain Stable In 2019 But Could Become Vulnerable Should The Credit Cycle Turn," published Jan. 12, 2019.

Related Research

- Economic Research: U.S. Business Cycle Barometer, Feb. 20, 2019
- Default, Transition, and Recovery: Amid Growing Challenges, The U.S. Speculative-Grade Corporate Default Rate Is Set To Rise To 3.1% By December 2019, Feb. 15, 2019
- Countdown To Brexit: Rating Implications Of A No-Deal Brexit, Feb. 6, 2019
- Leveraged Finance: A 10-Year Lookback At Actual Recoveries And Recovery Ratings, Feb. 5, 2019
- Economic Research: China's Slowdown--This Time Is Different, Feb. 1, 2019
- Credit Trends: Global Financing Conditions: Bond Issuance Is Expected To Decline 0.6% In 2019, Jan. 31, 2019
- The Big Chill In China: Weaker Profitability To Hit Corporate Debt Servicing, Jan. 21, 2019
- Credit Trends: Global Corporate And Sovereign Credit Outlook: Ratings Are Poised To Remain Stable In 2019 But Could Become Vulnerable Should The Credit Cycle Turn, Jan. 12, 2019
- Sovereign Ratings History, Jan. 7, 2019
- Parker Drilling And CMC Di Ravenna File For Bankruptcy, Pushing The Global Corporate Default Tally To 80, Dec. 14, 2018
- Credit Conditions: Global Conditions Are Tightening As Trade And Economic Worries Mount, Dec. 5, 2018
- Credit FAQ: When The Cycle Turns: 'BBB' Downgrade Risks May Be Overstated, Dec. 3, 2018
- U.S. Corporate Cash Hit \$2.1 Trillion In 2017 But Tax Reform May Usher In The Era Of The Great Unwinding, June 26, 2018
- Default, Transition and Recovery: 2017 Annual Global Corporate Default Study And Ratings Transitions, Apr. 5, 2018
- Track The Fed But Watch The Spread, Jan. 4, 2017
- Global Corporate Credit: Debt Has Outpaced Income Growth Since 2009, Jan. 13, 2016
- Global Corporate Credit: Twin Debt Booms Pose Risks As Companies Seek US\$57 Trillion Through 2019, July 15, 2015
- China Credit Spotlight: Significant Financial Risks Fan The Flames For China's Top Corporates, Sep. 10, 2012

Appendix 1. U.S. Corporates: Cash Holdings

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Regarding U.S. corporates' high levels of gross debt, some observers have argued that high cash balances mitigate this. Well, yes and no.

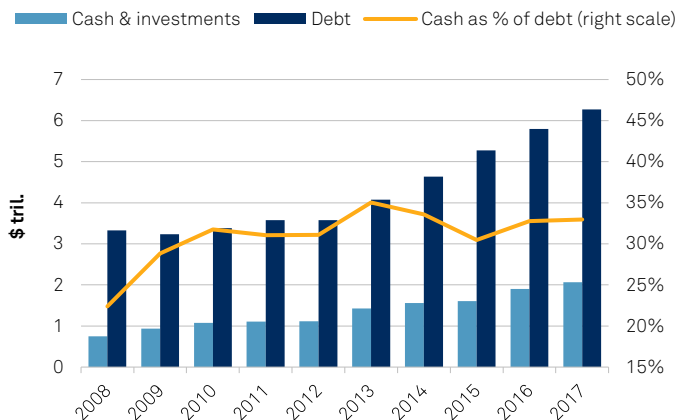
In our "*U.S. Corporate Cash Hit \$2.1 Trillion In 2017 But Tax Reform May Usher In The Era Of The Great Unwinding*," article published June 26, 2018, we noted that the cash and investments held by S&P Global Ratings' universe of rated U.S. nonfinancial corporate issuers rose by 9% to \$2.1 trillion in 2017.

However, the top 1% control more than half of this cash pile with the technology industry alone accounting for 45% of the total. More telling, while we are starting to compile 2018 financial results, we are likely to find that cash balances decreased for the first time during 2018 as corporates initiated huge share repurchases in the aftermath of the U.S. tax reform.

Total debt outstanding among U.S. nonfinancial corporates stood at \$6.3 trillion as of 2017, having risen roughly \$2.7 trillion over the past five years (see chart 1-1). As it stands, cash as a percentage of debt is at 33% for U.S. corporates overall, flat compared to 2016.

Chart 1-1

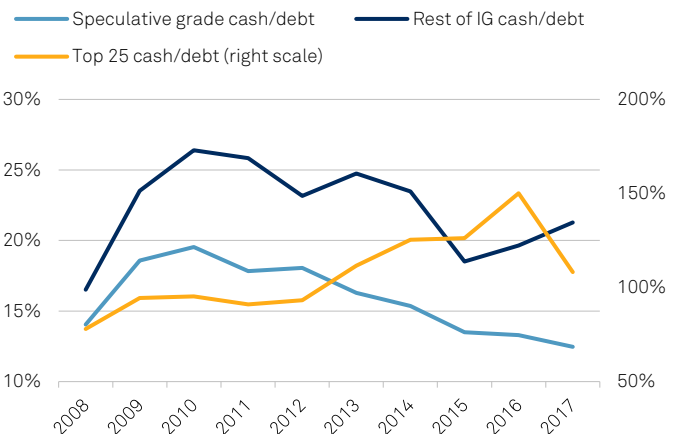
Rated U.S. Corporate Debt Exceeds \$6 Trillion



Source: S&P Global Ratings' "*U.S. Corporate Cash Hit \$2.1 Trillion In 2017 But Tax Reform May Usher In The Era Of The Great Unwinding*," published June 26, 2018.

Chart 1-2

Cash-To-Debt Ratios Near Decade Lows For The 99%



Source: S&P Global Ratings' "*U.S. Corporate Cash Hit \$2.1 Trillion In 2017 But Tax Reform May Usher In The Era Of The Great Unwinding*," published June 26, 2018.

Removing the top 25 cash holders, such as Apple Inc. and Microsoft Corp., from the equation paints a more sobering picture, however. Speculative-grade borrowers, for example, reached a new record-low cash-to-debt ratio of just 12% in 2017, lower than the 13% reported in 2016 and even below the 14% reported in 2008 during the Great Recession (see chart 1-2).

Said differently, these borrowers have \$8 of debt for every \$1 of cash. We note these borrowers, many sponsor-owned, borrowed significant amounts under extremely favorable terms to finance their buyouts without effectively improving their liquidity profiles.

Appendix 2. Data Sources: BIS And IIF

Compilation of global debt data is always challenging and dependent on definitions and assumptions.

- In this article, we use primarily Bank for International Settlements (BIS) data and, to a limited extent, Institute of International Finance (IIF).
- We used BIS data because they provide debt servicing ratios for selected countries and sectors and IIF for their data on financial corporations.
- BIS and IIF numbers may differ from those we apply in assigning our credit ratings e.g. sovereign credit ratings.

In general, we found the IIF numbers to be higher than the BIS ones, in particular for emerging markets (EM) (see tables 2-1 and 2-2).

- **Advanced countries.** Both the BIS and IIF share the same list of 22 mature market countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, and the United States.
- **Emerging markets.** The BIS and IIF pools have an overlap of 21 emerging economies: Argentina, Brazil, Chile, China, Colombia, Czech Republic, Hong Kong, Hungary, India, Indonesia, Israel, Malaysia, Mexico, Poland, Russia, Saudi Arabia, Singapore, South Africa, South Korea, Thailand and Turkey. To which, the IIF has added another nine economies to its pool: Egypt, Ghana, Kenya, Lebanon, Nigeria, Pakistan, Philippines, Ukraine and United Arab Emirates.

Similar trends. The trends based on BIS and IIF numbers are generally similar (see table 2-3, and charts 2-1, 2-2, 2-3 and 2-4) to those using the BIS ones. Admittedly, the IIF data for global households shows flat leverage (see chart 2-4) rather than improving leverage for the BIS pool (see chart 2-3). That said, we would still conclude that our overall views on broad credit trends contained in this article are sound.

Table 2-1

Global Total Debt, June 2018: BIS Vs IIF

US\$ bil.	Bank for international settlements data				Institute of international finance data			
	Corporates	Governments	Households	Total	Corporates	Governments	Households	Total
Advanced economies	41,902	48,581	33,849	124,332	42,311	50,545	34,162	127,018
Eurozone	14,115	12,920	7,680	34,715	14,226	13,217	7,701	35,144
U.S.	14,857	19,537	15,304	49,698	14,790	20,539	15,381	50,710
Other	12,930	16,124	10,864	39,918	13,296	16,789	11,079	41,164
Emerging markets	28,818	13,801	11,470	54,153	32,593	15,502	12,192	60,287
China	20,292	6,232	6,582	33,105	22,655	6,599	6,806	36,060
Other	8,527	7,569	4,888	21,047	9,938	8,903	5,386	24,227
Global	70,720	62,445	45,319	178,484	74,904	66,047	46,354	187,305

Data sources: Bank for International Settlements (BIS), Institute of International Finance (IIF).

Table 2-2

Increase In Total Debt, June 2008 To June 2018: BIS Vs IIF

US\$ bil.	Bank for international settlements data				Institute of international finance data			
	Corporates	Governments	Households	Total	Corporates	Governments	Households	Total
Advanced economies	4,301	19,068	224	23,593	4,665	19,504	539	24,708
Eurozone	-70	2,802	-1,362	1,370	49	2,982	-1,342	1,690
U.S.	4,344	10,572	1,019	15,935	4,280	11,233	1,017	16,531
Other	27	5,694	567	6,288	335	5,289	864	6,487
Emerging markets	19,549	8,147	7,878	35,607	22,695	9,408	8,469	40,572
China	16,244	5,026	5,775	27,033	18,467	5,395	5,999	29,861
Other	3,305	3,120	2,103	8,574	4,227	4,013	2,470	10,710
Global	23,850	27,258	8,103	59,200	27,359	28,912	9,008	65,280

Data sources: Bank for International Settlements (BIS), Institute of International Finance (IIF).

Table 2-3

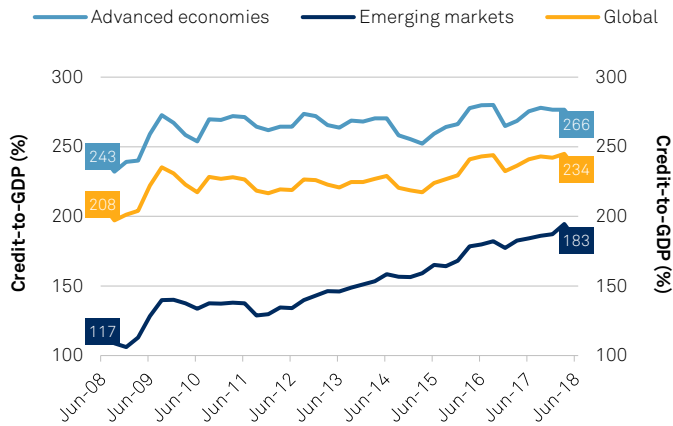
Percentage Increase In Total Debt, June 2008 To June 2018: BIS Vs IIF

US\$ bil.	Bank for international settlements data				Institute of international finance data			
	Corporates	Governments	Households	Total	Corporates	Governments	Households	Total
Advanced economies	11%	65%	1%	23%	12%	63%	2%	24%
Eurozone	0%	28%	-15%	4%	0%	29%	-15%	5%
U.S.	41%	118%	7%	47%	41%	121%	7%	48%
Other	0%	55%	6%	19%	3%	46%	8%	19%
Emerging markets	211%	144%	219%	192%	229%	154%	227%	206%
China	401%	417%	716%	445%	441%	448%	743%	482%
Other	63%	70%	76%	69%	74%	82%	85%	79%
Global	51%	77%	22%	50%	58%	78%	24%	53%

Data sources: Bank for International Settlements (BIS), Institute of International Finance (IIF).

Chart 2-1

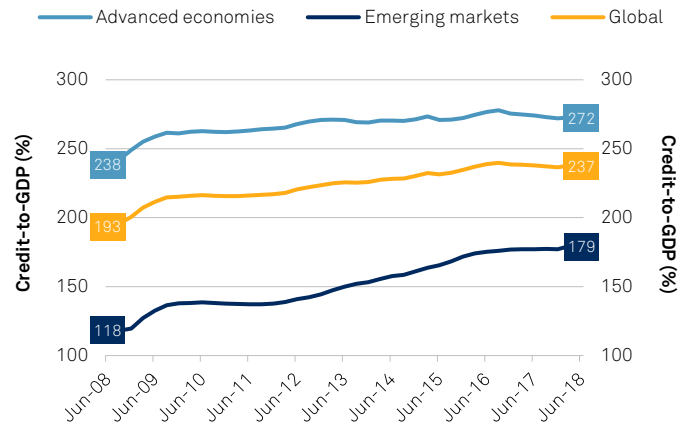
BIS: Advanced and Emerging Economies: Credit-To-GDP, June 2008-June 2018



Data source: Bank for International Settlements.

Chart 2-2

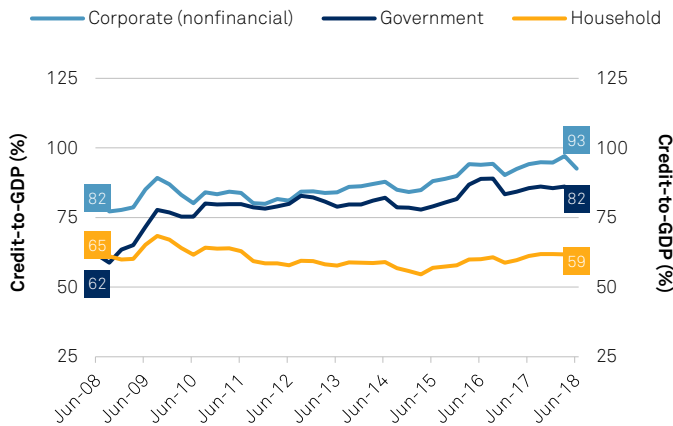
IIF: Advanced and Emerging Economies: Credit-To-GDP, June 2008-June 2018



Above data excludes financial corporates. Data source: Institute of International Finance.

Chart 2-3

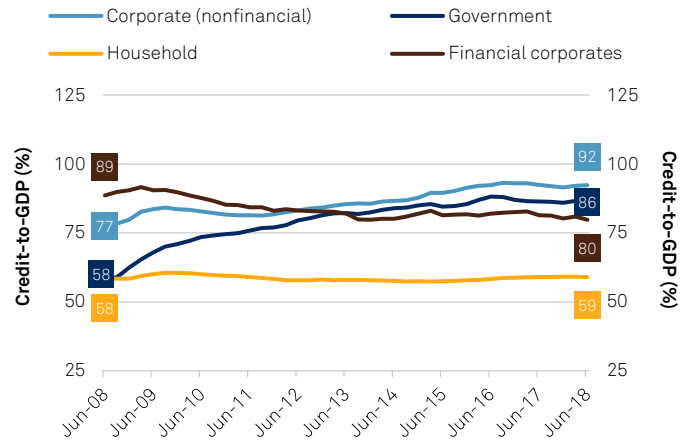
BIS: Global Sectors: Debt-To-GDP (%), June 2008-June 2018



Data source: Bank for International Settlements.

Chart 2-4

IIF: Global Sectors: Debt-To-GDP (%), June 2008-June 2018



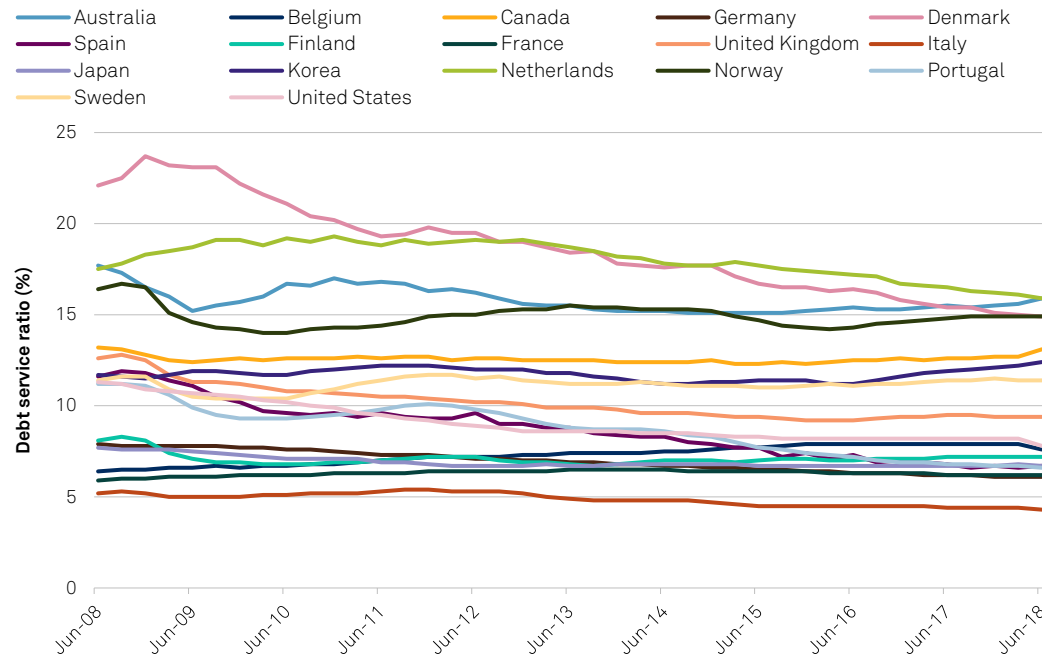
Data source: Institute of International Finance.

Appendix 3. Debt Servicing Ratios: Sample Countries

Studying the debt servicing ratios (DSR)* for households (see chart 3-1) and corporates (see chart 3-2), we found that in general, the DSR trends correlate with their debt-to-GDP ones.

Chart 3-1

Global Households: Debt Service , June 2008-June 2018



Data source: Bank for International Settlements.

Corporates. We took a sample of four of the largest advanced economies (Germany, Japan, United Kingdom, and United States) and four of the largest emerging markets (Brazil, China, India, and Mexico) to further study the DSR for corporates.

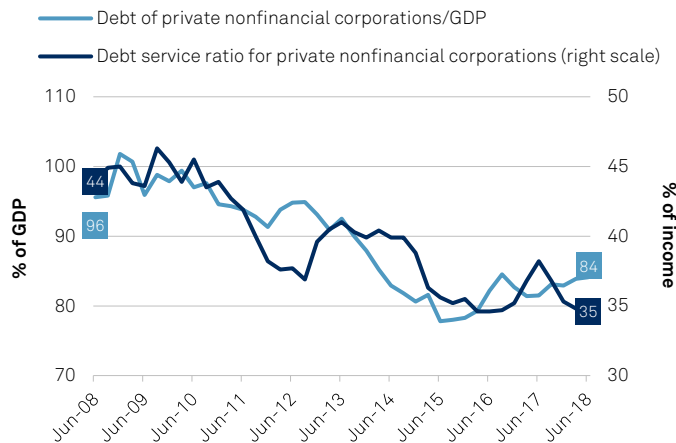
(DSR is the ratio of the sum of interest payments and amortizations divided by income, where income is the sum of gross disposable income and gross interest payments. Data sourced from the Bank for International Settlements).

As charts 3-3 to 3-5 show, for Germany, Japan and United Kingdom, the DSR trends for corporates correlate with those of credit-to-GDP. However, the DSR and debt-to-GDP for U.S. corporates showed some divergence (see chart 3-6).

- For Germany and Japan’s corporates, the credit-to-GDPs and DSRs are little changed from 2008 although we note that Japan’s low borrowing rate environment allows its corporates to enjoy lower DSR despite a debt-to-GDP higher than Germany.
- United Kingdom’s corporates have gone more conservative on credit relative to GDP. Their DSR has declined, although admittedly their debt-to-GDP is still higher than Germany’s.

Chart 3-5

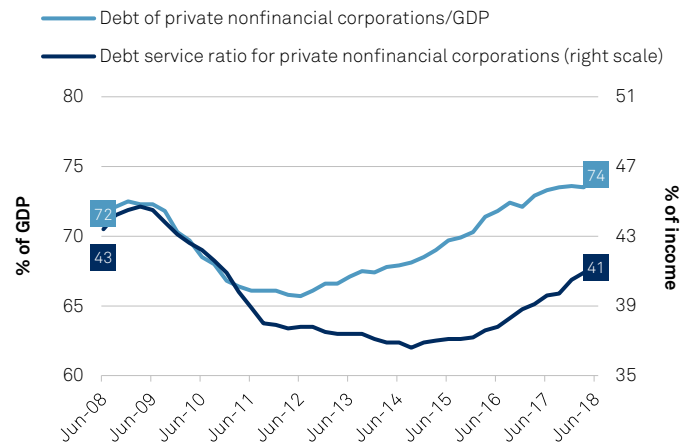
United Kingdom – Corporates: Debt Service Ratio (%), June 2008–June 2018



Data source: Bank for International Settlements.

Chart 3-6

United States – Corporates: Debt Service Ratio (%), June 2008–June 2018



Data source: Bank for International Settlements.

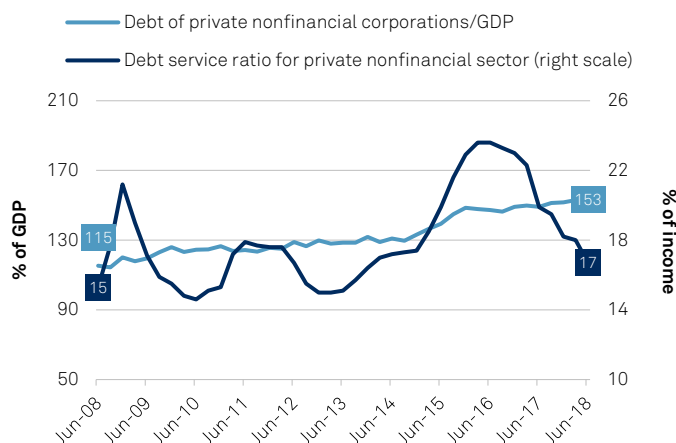
For the emerging markets, data limitations require us to use private nonfinancial sector DSRs as a proxy for corporates. We suggest this approach is feasible given the still relatively limited size of household debt in such markets.

Charts 3-7 to 3-10 show that the DSR trend for corporates in Brazil, China, India and Mexico moved in tandem with debt-to-GDP (albeit Brazil's shows more volatility).

- Brazil and China's corporates are at similar debt-to-GDP and DSR levels.
- India's ratios rose and fell back to where it started over the decade. Meanwhile Mexico's continued to rise over the period.

Chart 3-7

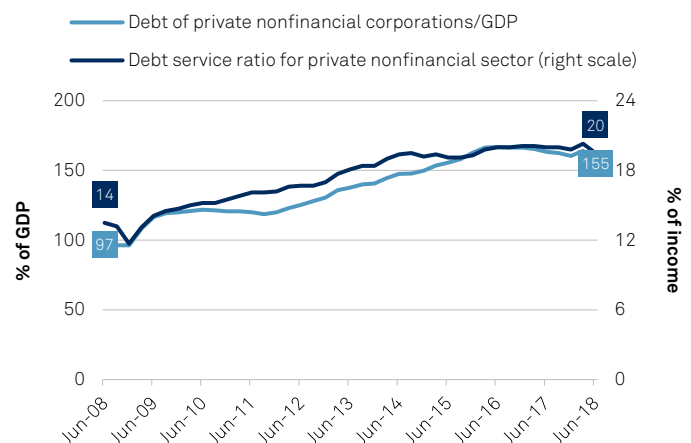
Brazil – Corporates: Debt Service Ratio (%), June 2008–June 2018



Data source: Bank for International Settlements.

Chart 3-8

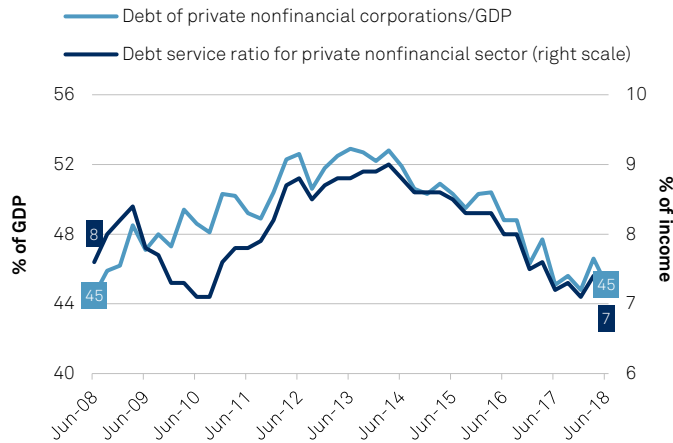
China – Corporates: Debt Service Ratio (%), June 2008–June 2018



Data source: Bank for International Settlements.

Chart 3-9

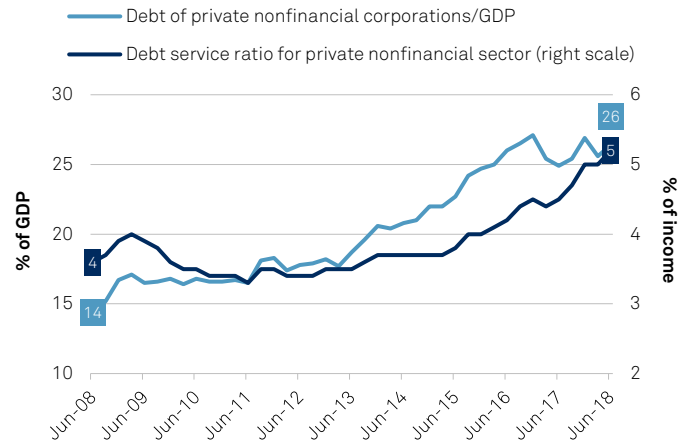
India – Corporates: Debt Service Ratio (%), June 2008–June 2018



Data source: Bank for International Settlements.

Chart 3-10

Mexico – Corporates: Debt Service Ratio (%), June 2008–June 2018



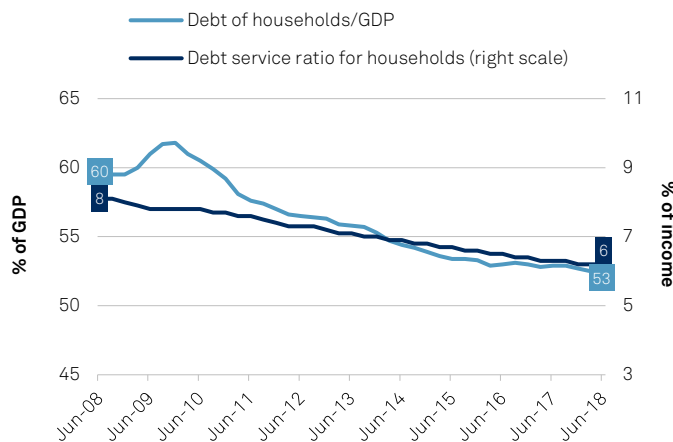
Data source: Bank for International Settlements.

Households. We also studied the debt servicing ratios (DSR) for households in the advanced economies. Absence of data availability did not allow us to look at those of the emerging markets.

Charts 3-11 to 3-14 compares Germany, Japan, United Kingdom and the U.S.'s DSR against credit-to-GDP. The trends are generally aligned, with the DSR percentages about one-eighth to one-ninth the credit-to-GDPs.

Chart 3-11

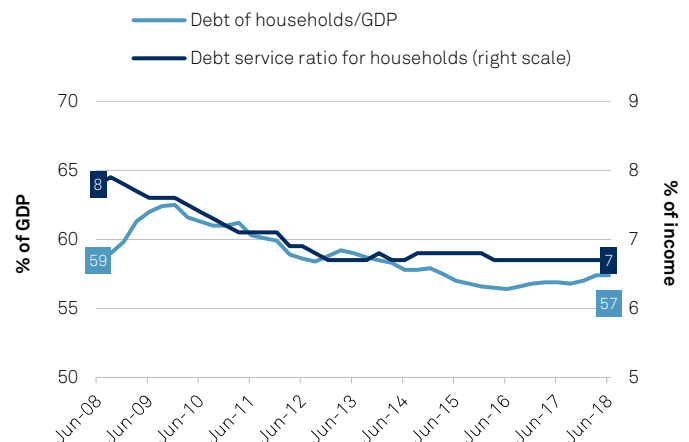
Germany – Households: Debt Service Ratio (%), June 2008–June 2018



Data source: Bank for International Settlements.

Chart 3-12

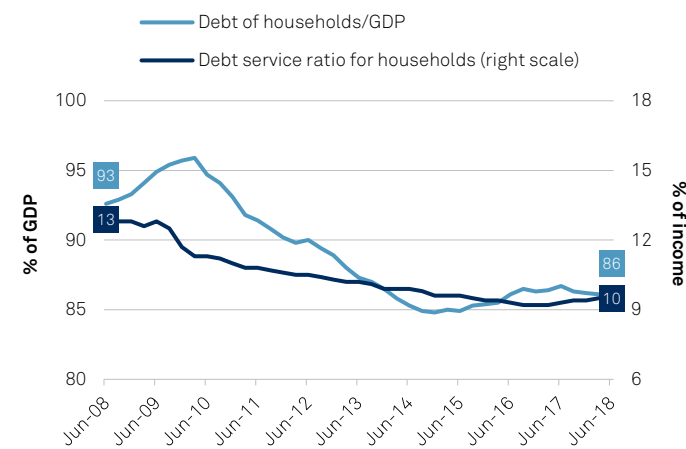
Japan – Households: Debt Service Ratio (%), June 2008–June 2018



Data source: Bank for International Settlements.

Chart 3-13

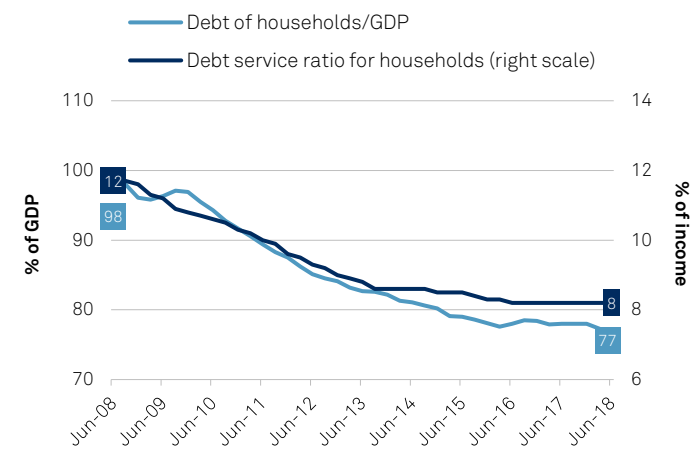
United Kingdom – Households: Debt Service Ratio (%), June 2008–June 2018



Data source: Bank for International Settlements.

Chart 3-14

United States – Households: Debt Service Ratio (%), June 2008–June 2018



Data source: Bank for International Settlements.

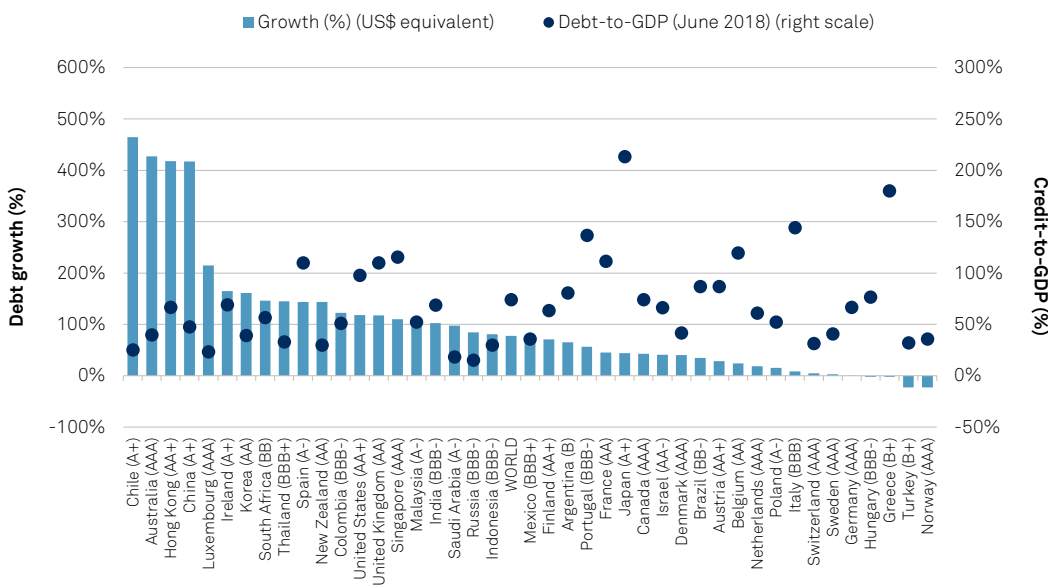
Appendix 4. Governments: Debt Growth And Credit-To-GDP

Want to know more? Then please contact:
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In respect of governments debt growth, chart 4-1 highlights that many governments with relatively low debt-to-GDP ratios (countries on left of chart) were able to grow their debt at a much faster rate than those governments with higher ratios. Obviously, this is a generalization.

Chart 4-1

General Government Debt: Growth And Credit-To-GDP, June 2008 To June 2018



Ratings in brackets are S&P Global Ratings' foreign currency ratings on sovereigns at Dec. 31, 2018. Data source: Bank for International Settlements.

Appendix 5. Corporate Sample: Financial Risk Categories

Cash flow/leverage analysis is the foundation for assessing a company's financial risk profile. We assess cash flow/leverage as (1) minimal; (2) modest; (3) intermediate; (4) significant; (5) aggressive; or (6) highly leveraged. Here, we combine the percentage assessments of two credit ratios: debt-to-earnings before interest, tax and depreciation and amortization expense (EBITDA) and funds from operations (FFO)-to-debt ratios. These ratios are debt-weighted. FFO is computed by deducting net interest expense and income tax expense from EBITDA. For each ratio, there is an indicative cash flow/leverage assessment that corresponds to a specified range of values as shown in Table 5-1.

Table 5-1

Cash Flow/Leverage Analysis Ratio Thresholds

	Real estate		Utilities		Other sectors	
	FFO/debt (%)	Debt/EBITDA (x)	FFO/debt (%)	Debt/EBITDA (x)	FFO/debt (%)	Debt/EBITDA (x)
Minimal	Greater than 20	Less than 2.5	35+	Less than 2	60+	Less than 1.5
Modest	15-20	2.5-4.5	23-35	3-Feb	45-60	1.5-2
Intermediate	15-Sep	4.5-7.5	13-23	4-Mar	30-45	3-Feb
Significant	9-Jul	7.5-9.5	13-Sep	5-Apr	20-30	4-Mar
Aggressive	Less than 7	9.5-13	9-Jun	6-May	20-Dec	5-Apr
Highly leveraged		Greater than 13	Less than 6	Greater than 6	Less than 12	Greater than 5

Source: S&P Global Ratings' "Criteria | Corporates | General: Corporate Methodology," tables 17 and 19, Nov. 19, 2013; and "Criteria | Corporates | Industrials: Key Credit Factors For The Real Estate Industry," table 1, Nov. 19, 2013.

However, basing any analysis on two ratios is a simplification as it doesn't take into account other quantitative and qualitative factors). It's effectively a *ceteris paribus* ('all other things being equal') assumption. To avoid under- or over- representing some countries, we have where appropriate re-weighted financial ratios using Bank for International Settlements debt data ("BIS-reweighted").

Side-Bar: U.S. Corporate Slightly Better Leverage Versus Higher Credit-To-GDP

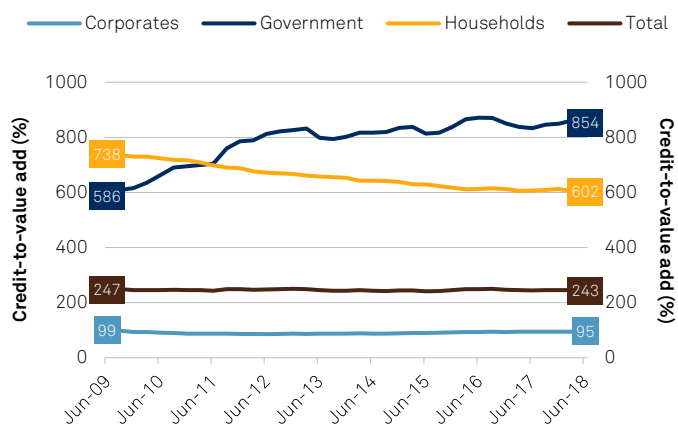
Reconcile. For the more technically minded, here we seek to reconcile the U.S. corporate sample's slightly better leverage and U.S. corporate debt-to-GDP rising.

Constraint. Applying debt-to-GDP to sectors presumes that GDP is distributed proportionately.

Value-add. But a sector may capture a slightly bigger share of GDP value-add over time. The U.S. corporate sector did this. Chart 5-1 shows the U.S. corporates' credit-to-value-add ratio improved -- which tallies with the sample's findings.

Chart 5-1

U.S. Corporates: Credit-To-Value Add, June 2008-June 2018



p--projected. GDP value-add data: U.S. Bureau of Economic Analysis (BEA). Sample data source: S&P Global Market Intelligence. Other source: S&P Global Ratings.

Next Debt Crisis: Will Liquidity Hold?

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