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Ratings

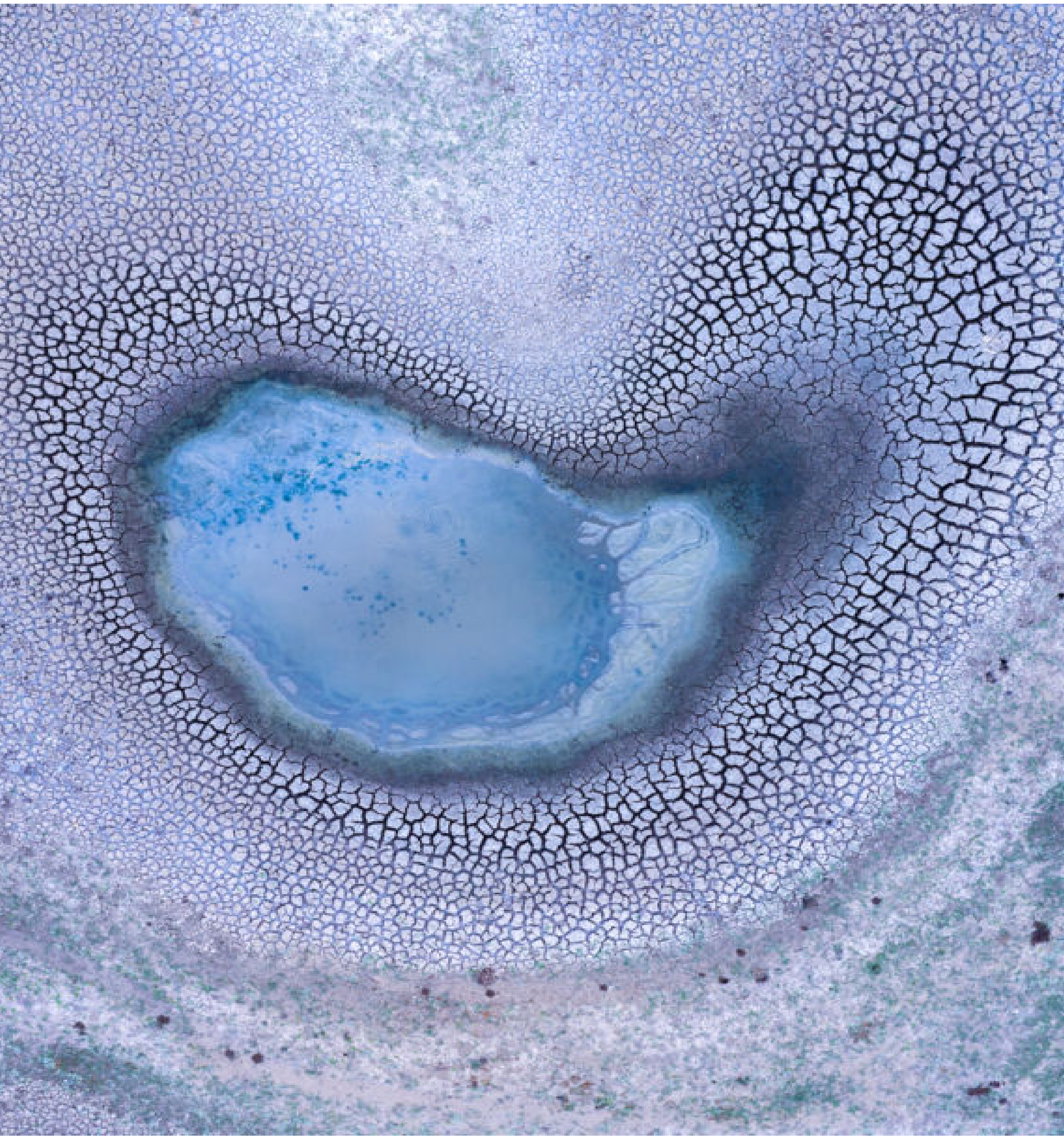
Global Debt Leverage

China's SOEs Are Stuck In A Debt Trap

Stress test shows bottom 90% of SOEs hold 45% of nonfinancial corporate debt

Sept. 20, 2022

This report does not constitute a rating action



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Key Takeaways

- Overleveraged: Our sample of China's state-owned enterprises (SOEs) show the bottom 90% are caught in a debt trap and will need outside help. They account for 45% of the country's nonfinancial corporate debt but generate only 15% of earnings.
- Tougher conditions: Our base case projects that 13% of Chinese corporates will be cash flow negative by 2023, from 9% in 2021; the figure triples to 28% in our worst-case scenario because of high indebtedness and low earnings.
- Warning signs: Real estate is not the only troubled sector. Our indicators show rising problems for industrials and consumer goods, too.

Many of China's state-owned enterprises (SOEs) are caught in a debt trap. S&P Global Ratings estimates that 90% of the bottom SOEs by revenue have had to borrow more to repay existing loans. That makes external intervention likely. Why? It's hard to see how these SOEs would be able to extricate themselves from their hefty debt burdens without such help, given the slowdown in the economy will make operations more challenging.

Why it matters: Corporate debt in China reached nearly US$29 trillion in the first quarter of 2022. To put this in perspective, the amount is roughly equivalent to the size of total U.S. government debt.

The most vulnerable: Public concern and the fundraising efforts of property developers have kept the media focused on real estate troubles. But our recent stress tests of 6,363 Chinese corporates, most of which are unrated, show the hardest hit won't be confined to just real estate. We see increasing warning signs emerging for industrials (including construction and engineering), consumer discretionary, and consumer staples. Low earnings and heavy debts are common strains.

Prognosis: We believe the corporate sector can escape the debt trap, but it will mean significant pain and perseverance. Importantly, the Chinese government still has capacity to extend support to SOEs, given it has much lower general government debt leverage than the U.S. and the eurozone.

A possible step: Chinese authorities may consider imposing a cap on the ratio of net debt to equity for all mid-to-large corporates. They did something similar for property developers included under the "three red lines" policy rolled out in August 2020. But it's uncertain whether the level of economic growth that would be acceptable to Beijing could be achieved while debt is being decreased.

Further help: The Chinese government had in recent years preferred to resolve corporate over-leveraging through market-driven initiatives. However, in an economic downturn, this approach becomes more difficult to execute.

Tightening screws: In our view, a credit correction is under way, in which lenders and investors will curb further lending to less-creditworthy borrowers. In turn, this may lead to increased nonperforming loans for banks and more defaults.

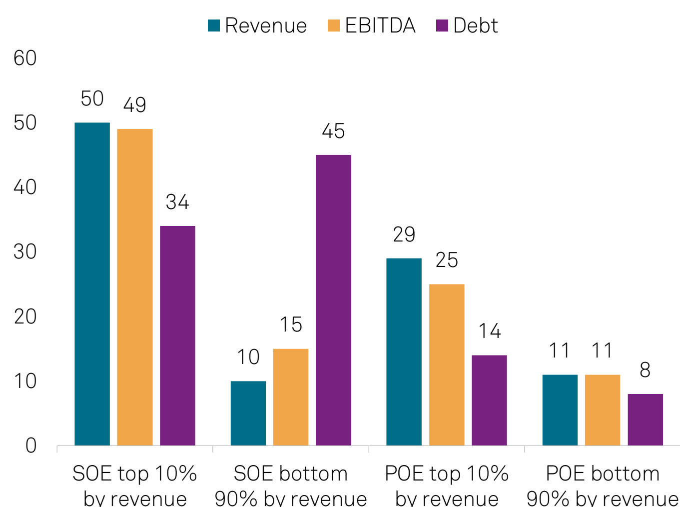
Who We Stress Tested

The 6,363 Chinese corporates we sampled (85% of which are unrated) comprise 2,177 SOEs and 4,186 privately owned enterprises (POEs). The bottom 90% of the SOE cohort account for 45% of the sample's gross debt but generate only 15% of the EBITDA (see chart 1). Indeed, the cohort's debt-to-EBITDA ratio is on average an astonishingly high 18x (see chart 2). Our assumptions and further details about the test are explained in sections 4 and 5. But here are the headline findings.

Chart 1

90% Of SOEs Have 45% Of Debt But 15% Of EBITDA...

Percent of sample



SOE--State-owned enterprises. POE--Privately owned enterprises. Data source: S&P Global Market Intelligence. Source: S&P Global Ratings.

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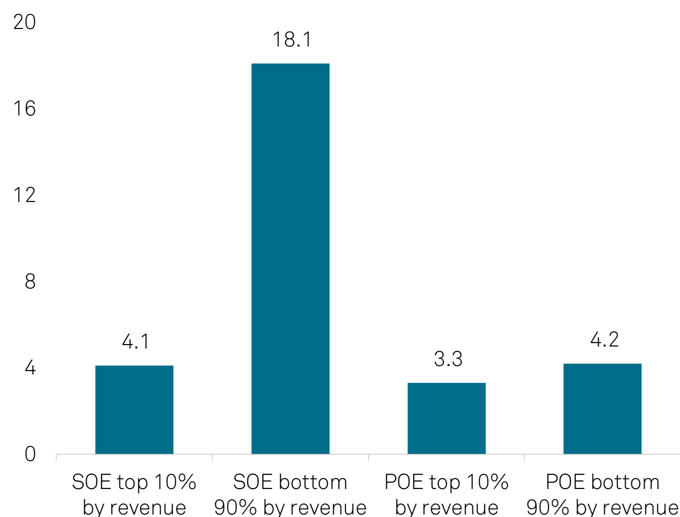
Chart 2

...Translating To A Very High 18x Debt/EBITDA Ratio

Debt/EBITDA (x)



Note: Adjusted debt is calculated by deducting 75% of cash equivalents from gross debt. SOE--State-owned enterprises. POE--Privately owned enterprises. Data source: S&P Global Market Intelligence. Source: S&P Global Ratings.

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The 6,363 corporates have debt totaling US$15.6 trillion, equivalent to 56% of China's total corporate debt of US$29 trillion. SOEs are a third of the sample by count but generate 64% of EBITDA and carry 76% of the debt.

Sample SOEs tend to be larger than the POEs, providing them with some market pricing power. This advantage is reflected in their cash flow negative ratio of just 7% in 2021 versus POEs' 17% (see table 1).

Even so, SOE profitability is not that high. Under stress, their debt and margin levels work against them. Our test of higher cost inflation involves a rise of up 150 basis points (bp) for intermediate stress and 300 bp for severe. We also factor in higher interest spreads of up to 200 bp for intermediate stress and 400 bp for severe.

Under these scenarios, SOE ratios rise faster than POEs' to arrive at the same 28%-29% level in the severe scenario. (Cash flow negative is when EBITDA less net interest and tax expense is less than zero.)

Table 1

China Corporates' Cash-Flow Negatives Rise By 2x-3x Under Our Stress Test

Cash-flow negatives (% of debt)

	Sample debt (tril. US$)	Baseline 2021	Baseline 2022p	Intermediate stress 2023p	Severe stress 2023p
Total sample	15.6	9%	12%	19%	28%
State-owned enterprises cohort	11.8	7%	10%	18%	28%
Privately owned enterprises cohort	3.8	17%	20%	25%	29%

p--Projected. Data source: S&P Global Market Intelligence. Source: S&P Global Ratings.

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Real estate's liquidity troubles have recently come to the fore.

In our severe scenario, the cash flow negative ratios of real estate more than double to 36% from 16%; industrials, 35% from 15%; consumer discretionary, 40% from 25%, and consumer staples, 27% from 20% (see table 2).

Table 2

Real Estate, Industrials, Consumers Have Highest Cash-Flow Negative Ratios Under Stress

Cash-flow negatives (% of debt) by GICS® sector

GICS® sector	Count	Debt (US$ tril.)	Base case, 2022p	Intermediate stress, 2023p	Severe stress, 2023p
Total sample	6,363	15.6	12%	19%	28%
Communication services	163	0.15	14%	15%	18%
Consumer discretionary	701	0.72	25%	31%	40%
Consumer staples	280	0.31	20%	24%	27%
Energy	130	0.84	1%	2%	2%
Healthcare	370	0.2	7%	14%	22%
Industrials	2,380	7.2	15%	24%	35%
Information technology	681	0.39	9%	11%	12%
Materials	829	1.3	4%	4%	13%
Real estate	598	2.9	16%	26%	36%
Utilities	231	1.6	3%	4%	10%

p--Projected. Source: S&P Global Ratings.

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1. Can China Escape Its Corporate Debt Trap?

Yes, though it won't be easy or quick. The Chinese authorities recognize that excessive corporate leverage is a "gray rhino" (highly probable, high impact, yet mostly ignored) threat to the economy. However, a way to tame the rhino has thus far proven to be elusive.

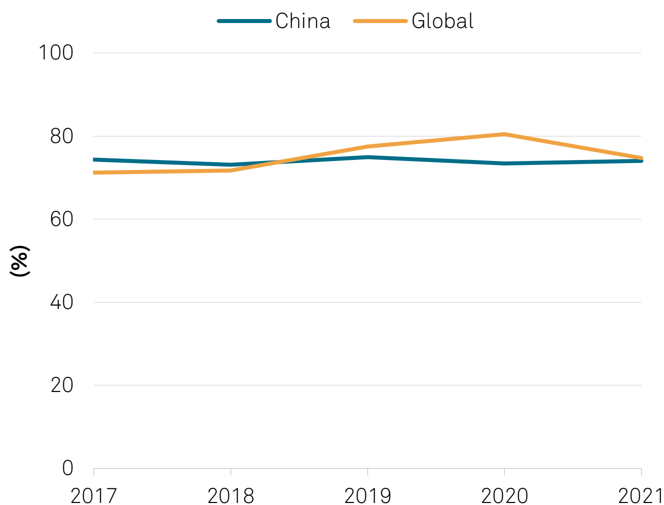
1-1. Not Leverage, Productivity

Our sample of 6,363 corporates in China (see section 4 for details) shows the country has an adjusted debt-to-equity ratio of 74% (i.e., after deducting 75% of cash equivalents from gross debt). That already matches the global average (see chart 3). The problem is more to do with productivity than the lack of equity, at least at the macro level. The return on capital (EBITDA over gross debt plus equity) for the China sample was 6.4% for 2021, about half the level of the global pool's 12.3% (see chart 4).

Chart 3

Balance Sheet Gearing Is Not The Issue...

Adjusted debt/equity (%)



Source: S&P Global Market Intelligence, S&P Global Ratings.

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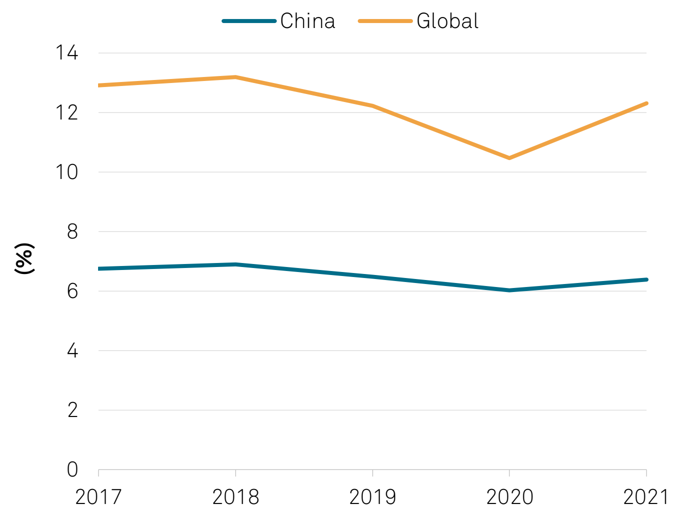
Chart 4

...Productivity Is The Problem

EBITDA/gross debt plus equity (%)



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1-2. Creative Destruction

China's central government seems bent on a form of "creative destruction" (destroying the old to make way for the new), preferring market-based solutions in resolving over-leveraged POEs through corporate actions such as debt restructurings.

We could see higher levels of problematic assets as this policy direction continues to pick up momentum. The capacity of China's banks to weather these changing conditions is uneven. Years of credit divergence and lingering pandemic issues have already eroded the financials of some of the weaker banks.

1-3. At Least A Decade

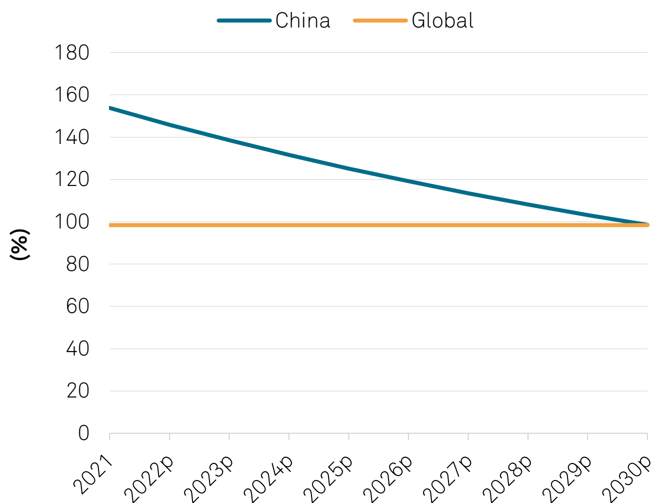
If China were to bring its corporate debt-to-GDP of 155% (see chart 5) down to the global ratio at end-2021 of 98% within a decade, about 5% of the debt amount, on an amortizing basis, would need to paid off or written down. In such a scenario, China's corporate adjusted debt-to-EBITDA would improve to 4.1x by 2030 (see chart 6). While 4.1x is still above the global 3.2x ratio at end-2021, it will be a third down from China's present 6.0x. (Note: In this scenario, we presume that, after 2024, new debt annual growth rates are the same as EBITDA.)

Assuming a 5% annual reduction of debt, it will take a decade to match global levels

Chart 5

The Global Level Could Be Matched In This Decade...

Nonfinancial corporate debt-to-GDP (%)



p--Projected. Source: Institute of International Finance, S&P Global Ratings.

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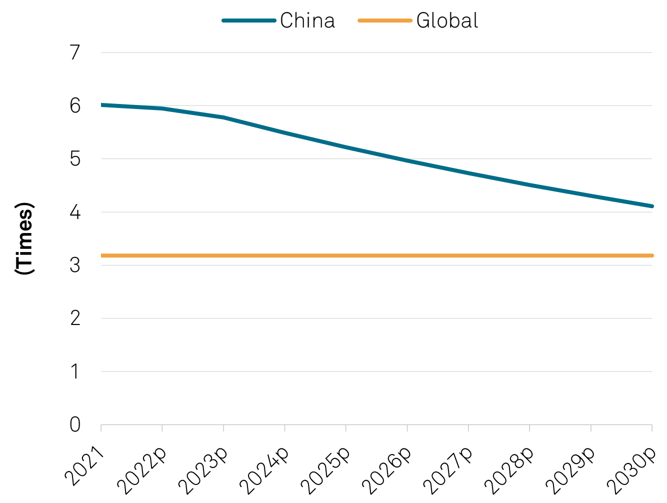
Chart 6

...If Debt Could Be Reduced By 5% p.a.

Adjusted debt/EBITDA (x)



p--Projected. Source: Institute of International Finance, S&P Global Ratings.

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Is the above scenario feasible? It would require the central government to either allow or put this into effect. It would not be the first time that the authorities have addressed less-productive debt in the system. (Note: Less-productive debt does not equal nonperforming loans (NPLs), merely that productivity is low.)

The last major exercise in dealing with NPLs was after the 1997-1998 Asian financial crisis. The government set up four state-owned distressed asset management companies to take over NPLs worth about Chinese renminbi (RMB) 1.4 trillion from the major state-owned commercial banks (see "China Banking's Two Faces," Nov. 25, 2003).

In 2002, we had estimated that the actual NPLs in China's banking system could be as high as 50% of total loans (see "China Banks Face Decade of Problem Loans Unless More Equity Injected," May 9, 2002). By 2012, China had managed to reduce the nonperforming asset ratio down to 1.6% (see "Banking Industry Country Risk Assessment: China," Jan. 9, 2014).

2. Global Comparative: China's Corporate Debt Is The World's Largest

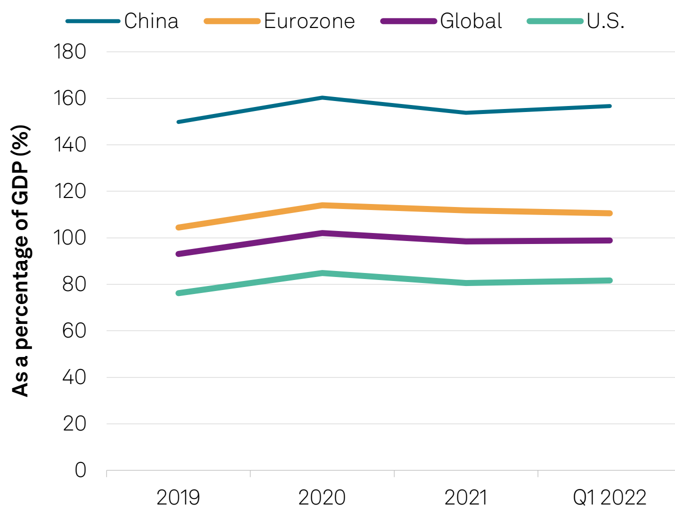
Chinese corporate debt -to-GDP ratio of 157% is twice that of U.S. corporates

China's corporate debt leverage, as measured by its debt-to-GDP ratio of 157%, is double that of the U.S. (82%) and half as much as the eurozone's (111%) (see chart 7). The sheer size of China's corporate debt is driven by the Chinese government's long-standing intent to have the corporate sector drive economic growth and innovation. Consequently, China's general government debt leverage is much less than the U.S. and the eurozone (see chart 8). That means, the central government could prop up the SOEs, which make up a substantial portion of China's corporate sector.

Chart 7

China's Corporate Leverage Worse Than Peers...

Nonfinancial corporate debt-to-GDP (%)



Source: Institute of International Finance.

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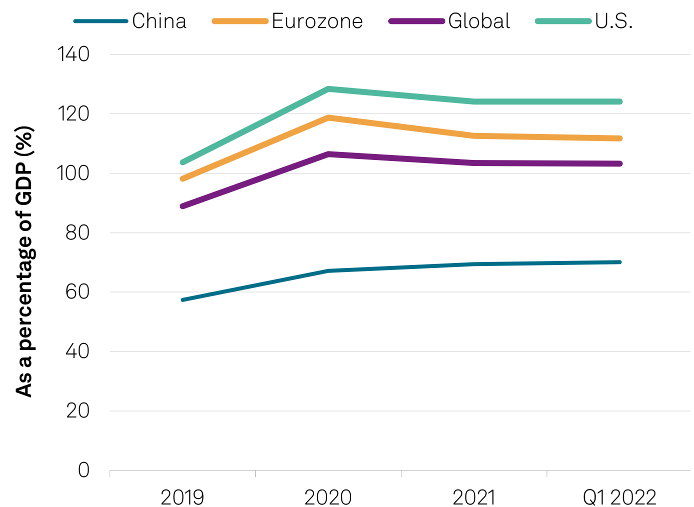
Chart 8

...But General Government Leverage Is Better

General government debt-to-GDP (%)



Note: Our computation of government debt for purposes of sovereign ratings may differ.
Source: Institute of International Finance.

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Credit Cycle Indicator points to rising stress. An early warning signal of potential credit stress is our proprietary Credit Cycle Indicator (CCI). The macro geographical CCI has five components: corporate and household debt leverage, equity and house prices, and our proprietary Financing Stress Indicator (FSI) (see "White Paper: Introducing Our Credit Cycle Indicator," published on June 27, 2022). Our preliminary results show the peaks in the CCI tend to lead credit stresses by six to 10 quarters.

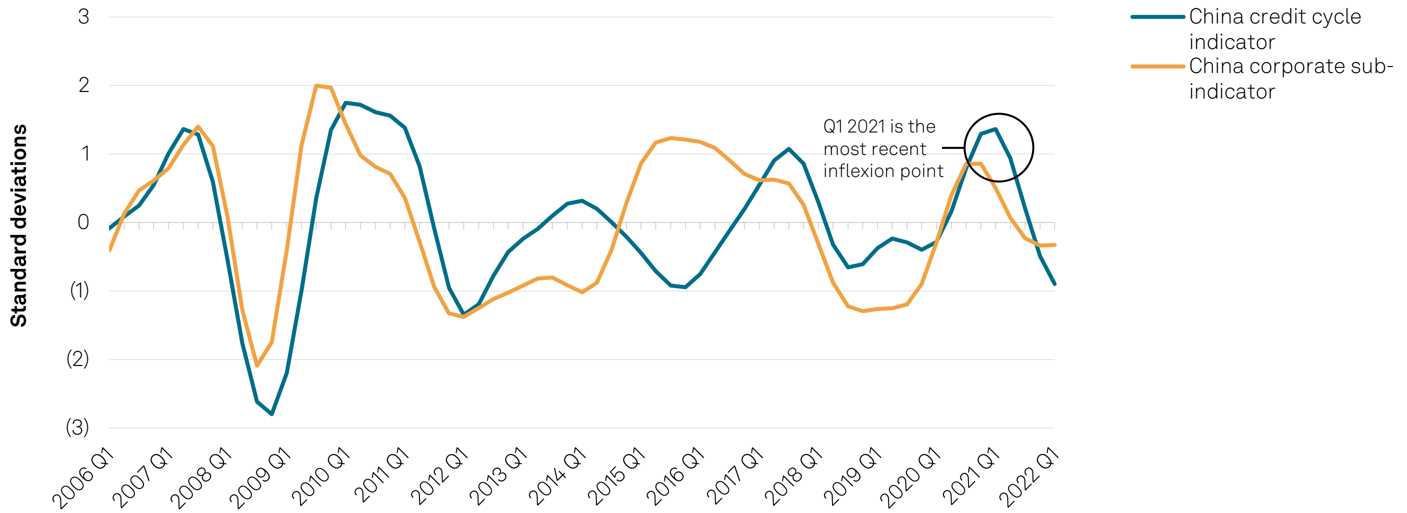
Moreover, when the CCI's upward trend is prolonged or the CCI nears upper thresholds, the associated credit stress tends to be greater. For the four quarters ended in Q1 2021, the China CCI trended up before reaching a peak of 1.4 standard deviations (compared with its historical average). This suggests potential heightened credit stress in late 2022 going into 2023 (see chart 9).

The CCI is now trending downwards, indicating a potential credit correction is under way. However, the impact of the buildup of nonperforming loans and defaults could linger beyond the stress period into 2023.

Chart 9

Credit Cycle Indicator's Q1 2021 Peak Warns Of Potential Stress In Late 2022 To Early 2023

China's Credit Cycle Indicator and its corporate sub-indicator



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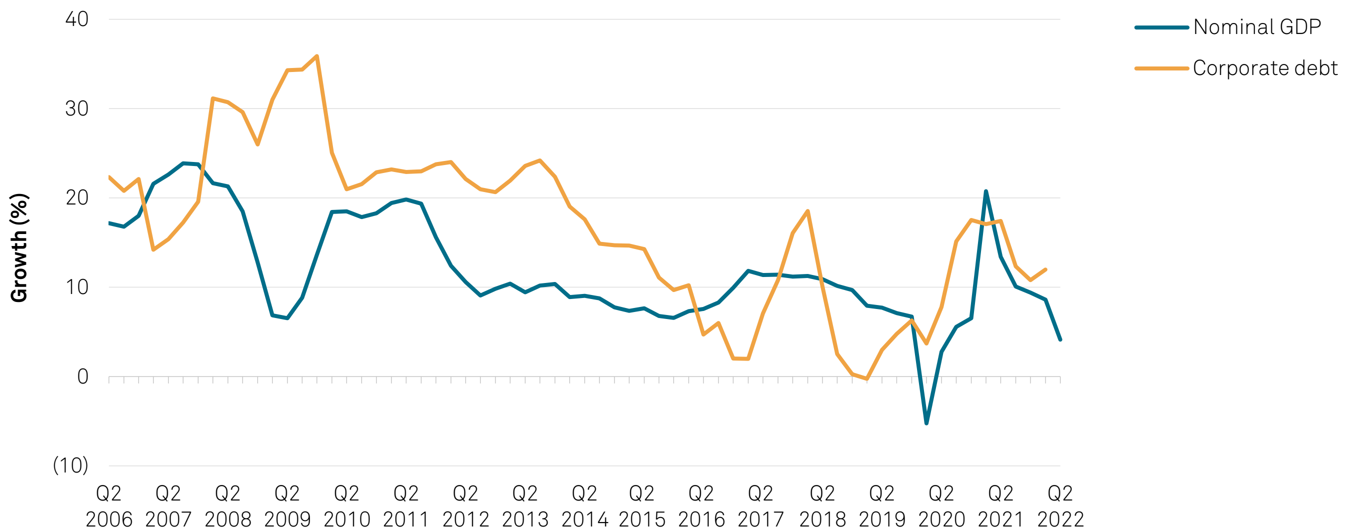
China's slowing GDP growth is increasing stress. After the rebound from the initial COVID shock of 2020, a combination of property development sector problems, regulatory crackdown on large tech companies, and the country's zero-COVID policies have seen China's nominal GDP growth rate slow sharply (see chart 10). Because of the high corporate debt growth rates (above nominal GDP growth rate) over the post-global financial crisis period of 2008-2015, China continues to suffer a corporate debt overhang. Corporate debt in China reached nearly US$29 trillion in the first quarter 2022, roughly the size of total U.S. government debt.

Chinese corporate debt of $29 trillion is the same size as total U.S. government debt

Chart 10

China's Recent Economic Slowdown Puts More Stress On Corporate Debt

Quarterly growth, year-on-year (%)



GDP data source: National Bureau of Statistics, CEIC calculations. Debt data source: Institute of International Finance. Source: S&P Global Ratings.

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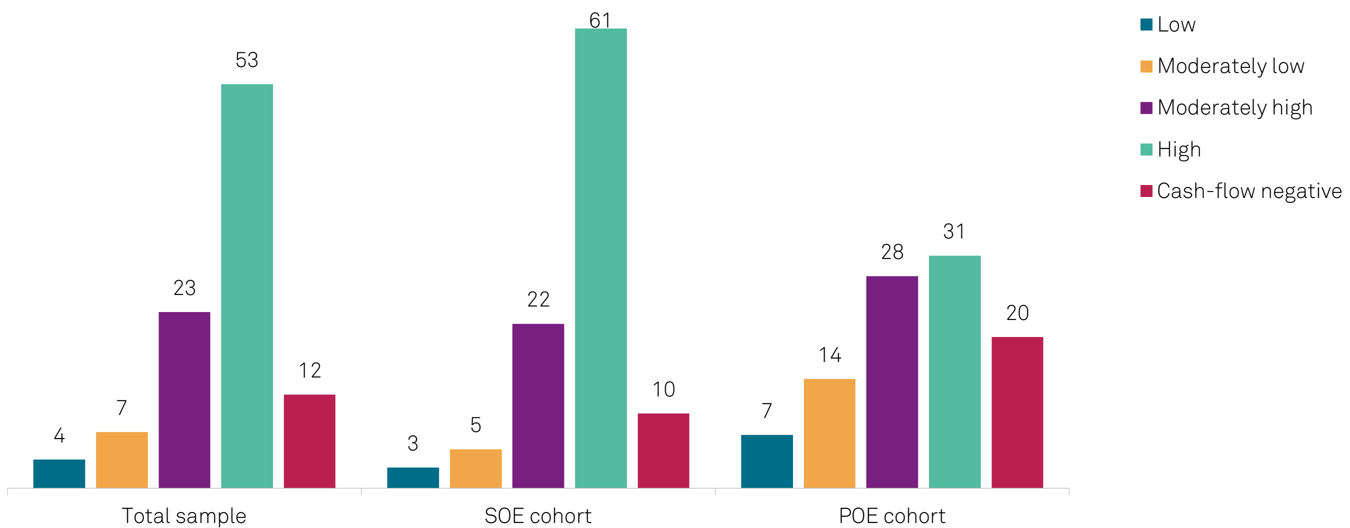
3. Sector Comparative: Midsize SOEs; Real Estate, Industrial, And Consumer Goods Are Most Risky

SOEs are on average riskier than POEs. Given that sample SOEs carry disproportionately more debt than POEs, it is not surprising that the risk distribution of the SOE cohort is worse than that of the POEs (see chart 11). We assess that 71% of the SOE cohort, on a debt-weighted basis, are of the high risk and cash-flow negative categories combined. In comparison, 51% of POEs are so classified. Admittedly, POEs have twice (20%) as many cash flow negatives as SOEs (10%).

Chart 11

China SOEs Are Generally Riskier Than POEs

Percentage of sample debt (%)



SOE--State-owned enterprises. POE--Privately owned enterprises. Source: S&P Global Ratings.

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Differences within the SOE and POE cohorts. Examining the cohorts by revenue decile, we note there is a Pareto principle at work, meaning a small percentage of the sample has a substantially disproportionate share of revenue. The top decile of sampled entities captures a large portion of revenue--83% for the SOE cohort and 72% for the POE cohort (see table 3).

The bottom 90% of SOEs has an astonishing high debt-to-EBITDA ratio of 18.1 times

The top decile of SOEs (large SOEs) is better placed than their smaller counterparts (the bottom 90%) in terms of leverage. The large SOEs' adjusted debt-to-EBITDA ratio is 4.1x, not far above the POE cohort average of 3.6x, while the bottom 90% SOEs have, as previously mentioned, an astonishingly high ratio of 18.1x. Our current ratings coverage mostly comprises large SOEs.

Table 3

Top Decile Of Corporates Captures The Lion's Share Of Revenue And Earnings

Share of revenue and debt (%) and average adjusted debt/EBITDA ratio (x) by revenue decile

Revenue percentile	Total sample share of revenue	Total sample share of debt	Total sample debt/ EBITDA (x)	SOE cohort share of revenue	SOE cohort share of debt	SOE cohort debt/ EBITDA (x)	POE cohort share of revenue	SOE cohort share of debt	POE cohort debt/ EBITDA (x)
Above 90th	80%	52%	4.1	83%	43%	4.1	72%	63%	3.3
80th	9%	14%	7.7	9%	15%	11	12%	14%	3.6
70th	4%	9%	11	3%	10%	16	6%	8%	4.1
60th	2%	7%	15	2%	8%	23	3%	4%	3.5
50th	2%	5%	16	1%	7%	27	2%	3%	4.2
40th	1%	5%	19	1%	5%	28	2%	3%	5.4
30th	1%	3%	20	0.5%	5%	36	1%	2%	5.8
20th	0.5%	2%	20	0.4%	3%	34	1%	1%	7.7
10th	0.3%	1%	17	0.3%	2%	29	0.5%	1%	6.0
Below 10th	0.1%	1%	330*	0.1%	1%	39	0.2%	1%	(23)
Total	**100%**	**100%**	**6.0**	**100%**	**100%**	**7.4**	**100%**	**100%**	**3.6**

*This figure is distorted by corporates with negative EBITDA. Note: Based on 2021 financials. Revenue decile thresholds are specific to each cohort. Adjusted debt amount is calculated by deducting 75% of cash equivalents from gross debt. SOE--State-owned enterprises. POE--Privately owned enterprises. Source: S&P Global Ratings.

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Central SOEs Are Stronger Than Local SOEs

Government capacity to potentially support differs. SOEs are nonfinancial corporates effectively owned or controlled by the central, provincial, city or other governments of mainland China. They can be categorized into central government SOEs and local government SOEs (including local government financing vehicles or LGFVs). The central government, being fiscally much stronger than the local governments, has more capacity to support its SOEs than do local governments.

Central SOEs have less leverage. Of the SOE cohort of 2,177 corporates, only 6% are central SOEs while 94% are local SOEs (see table 4). But the central SOEs generated 54% of the SOE cohort's EBITDA while carrying just 24% of adjusted debt, returning an adjusted debt-to-EBITDA ratio of 3.3x. In contrast, local SOEs generated 46% of cohort EBITDA yet carry 76% of adjusted debt. The local SOE average adjusted debt-to-EBITDA ratio is a more significant 12x. (Note: these figures vary from those of table 3 because not all central SOEs are in the top SOE decile by revenue and some local SOEs are in the top decile.)

Table 4

Central SOEs Tend To Be Less Leveraged Than Local SOEs

Share of debt and EBITDA (%) and average adjusted debt/EBITDA ratio (times)

SOE	Sample count	Adjusted debt (tril. US$)	EBITDA (tril. US$)	Count (%)	Adjusted debt (%)	EBITDA (%)	Adjusted debt/ EBITDA (times)
Central	132	2.3	0.71	6%	24%	54%	3.3
Local	2,045	7.3	0.61	94%	76%	46%	12.0
Total cohort	**2,177**	**9.6**	**1.32**	**100%**	**100%**	**100%**	**7.4**

SOE--State-owned enterprises. Based on 2021 financials. Adjusted debt amount is calculated by deducting 75% of cash equivalents from gross debt. Source: S&P Global Ratings.

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Industry sector concentration differs. The top three GICS sectors for sampled central SOEs, by absolute gross debt, are industrials, 34% (of which construction and engineering entities contribute 20% of central SOE debt); electric utilities, 32%; and energy, 12%. For local SOEs, the top two sectors are industrials, 62% (of which construction and engineering entities contribute 39% of local SOE debt, and transportation infrastructure firms, 13%); and real estate, 17%.

Some observers argue that local SOEs needed to borrow heavily to provide for local growth through construction and infrastructure. But this misses the point, in our view. Instead, the question should be: How are borrowings to be repaid from such poor returns on debt-funded assets?

Table 5

Consumer Discretionary And Staples Have The Most Cash-Flow Negatives

Risk category distribution (% of debt) by GICS® sector

GICS® sector		Count	Debt (tril. US$)	Low risk tier	Moderately low	Moderately high	High	Cash-flow negative
Total sample	**Total**	**6,363**	**15.6**	**4%**	**7%**	**23%**	**53%**	**12%**
	SOE	2,177	11.8	3%	5%	22%	61%	10%
	POE	4,186	3.8	7%	14%	28%	31%	20%
Communication services	**Total**	**163**	**0.15**	**48%**	**22%**	**5%**	**11%**	**14%**
	SOE	29	0.04	25%	40%	3%	9%	23%
	POE	134	0.1	59%	15%	5%	12%	10%
Consumer discretionary	**Total**	**701**	**0.72**	**9%**	**11%**	**15%**	**40%**	**25%**
	SOE	104	0.34	2%	9%	21%	47%	21%
	POE	597	0.38	15%	12%	9%	33%	30%
Consumer staples	**Total**	**280**	**0.31**	**14%**	**2%**	**10%**	**54%**	**20%**
	SOE	40	0.15	13%	1%	8%	75%	2%
	POE	240	0.16	14%	3%	12%	37%	34%
Energy	**Total**	**130**	**0.84**	**0%**	**27%**	**47%**	**25%**	**1%**
	SOE	52	0.73	0%	27%	43%	29%	1%
	POE	78	0.1	0%	21%	73%	3%	3%
Healthcare	**Total**	**370**	**0.2**	**14%**	**7%**	**16%**	**56%**	**7%**
	SOE	24	0.08	5%	13%	0%	78%	4%
	POE	346	0.12	20%	3%	26%	41%	10%
Industrials	**Total**	**2,380**	**7.2**	**2%**	**1%**	**8%**	**74%**	**15%**
	SOE	1,285	6.4	1%	1%	8%	77%	13%
	POE	1,095	0.79	7%	4%	11%	52%	26%
Information technology	**Total**	**681**	**0.39**	**3%**	**45%**	**12%**	**30%**	**9%**
	SOE	31	0.17	0%	39%	11%	45%	5%
	POE	650	0.21	6%	50%	14%	19%	12%
Materials	**Total**	**829**	**1.3**	**1%**	**11%**	**42%**	**42%**	**4%**
	SOE	110	0.75	0%	4%	41%	52%	3%
	POE	719	0.57	2%	19%	44%	29%	5%
Real estate	**Total**	**598**	**2.9**	**0%**	**6%**	**28%**	**51%**	**16%**
	SOE	349	1.7	0%	1%	19%	71%	10%
	POE	249	1.2	0%	12%	40%	24%	23%
Utilities	**Total**	**231**	**1.6**	**14%**	**16%**	**67%**	**0%**	**3%**
	SOE	153	1.4	14%	13%	71%	0%	2%
	POE	78	0.15	12%	43%	32%	0%	14%

Note: Based on 2022 projected financials. Calculations are rankings of credit risk referencing an entity's debt-to-EBITDA and ratio of funds from operations to debt. Ratios are debt weighted. SOE--State-owned enterprises. POE--Privately owned enterprises. Source: S&P Global Ratings.

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Sectors With Highest Ratios And Highest Absolute Debt

Consumer discretionary and staples sectors have the highest cash flow negative ratios. The ratio is 25% for consumer discretionary and 20% for staples (see table 5). However, dividing the sector sub-samples into SOE and POE cohorts shows some different results.

- Both SOEs and POEs don't perform well in consumer discretionary with 21% and 30% ratios, respectively.
- POEs are far worse off in consumer staples, with a 34% ratio compared with a mere 2% for SOEs. This may be due to the pricing power of SOEs in commodities.
- The most challenging sector for the SOE cohort is communication services, with a 23% ratio.
- For the POE cohort, the next two challenging sectors (after consumer discretionary and consumer staples) are industrials and real estate with ratios of 26% and 23%, respectively.

Industrials and real estate have the highest absolute cash flow negative debt. On an absolute debt basis, more than half of the SOE cohort's debt is in the capex-heavy industrials sector (see chart 12a). While only 13% of SOEs in the industrials sector are cash flow negatives (see table 5), the sheer size of borrowings translates to nearly three-quarters of cash flow negative SOE debt coming from industrials (see chart 12b).

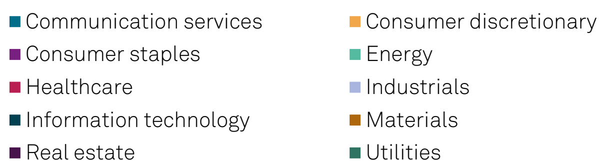
As mentioned, the SOE cohort contributes three-quarters of sample debt (see chart 11). This weightage can skew total sample outcomes. Unsurprisingly, nearly half of total sample debt and 55% of cash flow negatives comes from the industrials sector (see charts 13a and 13b).

For the POE cohort, the largest sector by absolute debt is real estate, making up 32% of cohort debt (see chart 14a). Given the industry's troubles in recent years, it is not surprising to see the sector contributing 37% to the POE cohort's cash flow negatives (see chart 14b).

Chart 12a

SOE: Industrials Make Up Over Half The Debt...

SOE cohort debt mix by GICS® sector



SOE--State-owned enterprises. Source: S&P Global Ratings.

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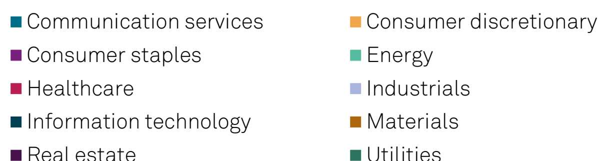
Chart 12b

...But Nearly Three-Quarters Of Cash-Flow Negatives

SOE cohort cash-flow negatives mix by GICS® sector



SOE--State-owned enterprises. Source: S&P Global Ratings.

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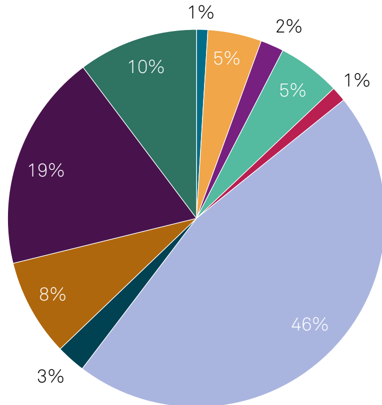
Chart 13a

Sample: Industrials Contribute Nearly Half The Debt...

Total sample debt mix by GICS® sector

- Communication services
- Consumer discretionary
- Consumer staples
- Energy
- Healthcare
- Industrials
- Information technology
- Materials
- Real estate
- Utilities



Source: S&P Global Ratings.
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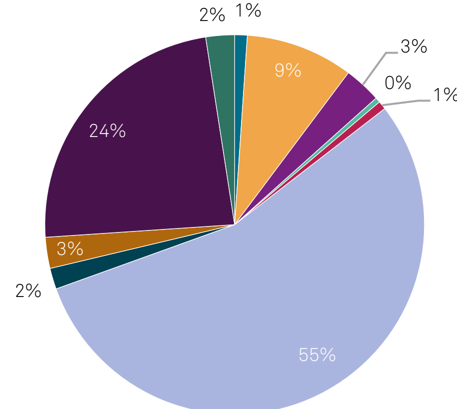
Chart 13b

...With Real Estate A Quarter Of Cash-Flow Negatives

Total sample cash-flow negatives mix by GICS® sector

- Communication services
- Consumer discretionary
- Consumer staples
- Energy
- Healthcare
- Industrials
- Information technology
- Materials
- Real estate
- Utilities



Source: S&P Global Ratings.
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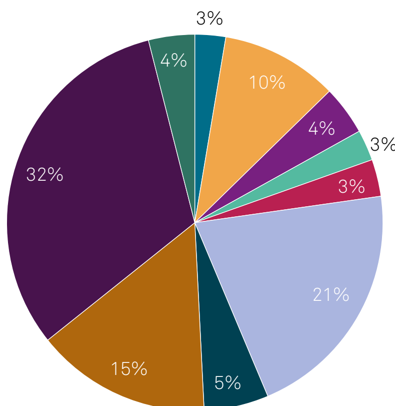
Chart 14a

POE: Real Estate Contributes A Third Of Debt...

POE cohort debt mix by GICS® sector

- Communication services
- Consumer discretionary
- Consumer staples
- Energy
- Healthcare
- Industrials
- Information technology
- Materials
- Real estate
- Utilities



POE--Privately owned enterprises. Source: S&P Global Ratings.
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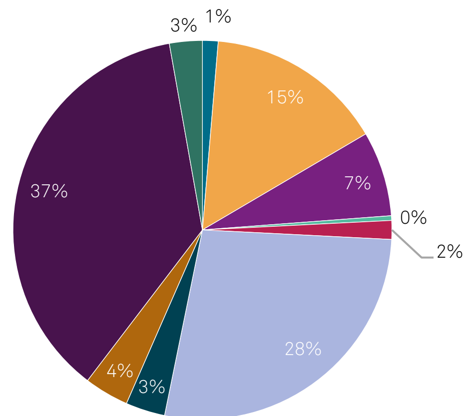
Chart 14b

...And Nearly Two-Fifths Of Cash-Flow Negatives

POE cohort cash-flow negatives mix by GICS® sector

- Communication services
- Consumer discretionary
- Consumer staples
- Energy
- Healthcare
- Industrials
- Information technology
- Materials
- Real estate
- Utilities



POE--Privately owned enterprises. Source: S&P Global Ratings.
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4. Sample Details

4-1. Sampling And Risk Categorization

In the sample, SOEs generate two-thirds of earnings but carry three-quarters of debt

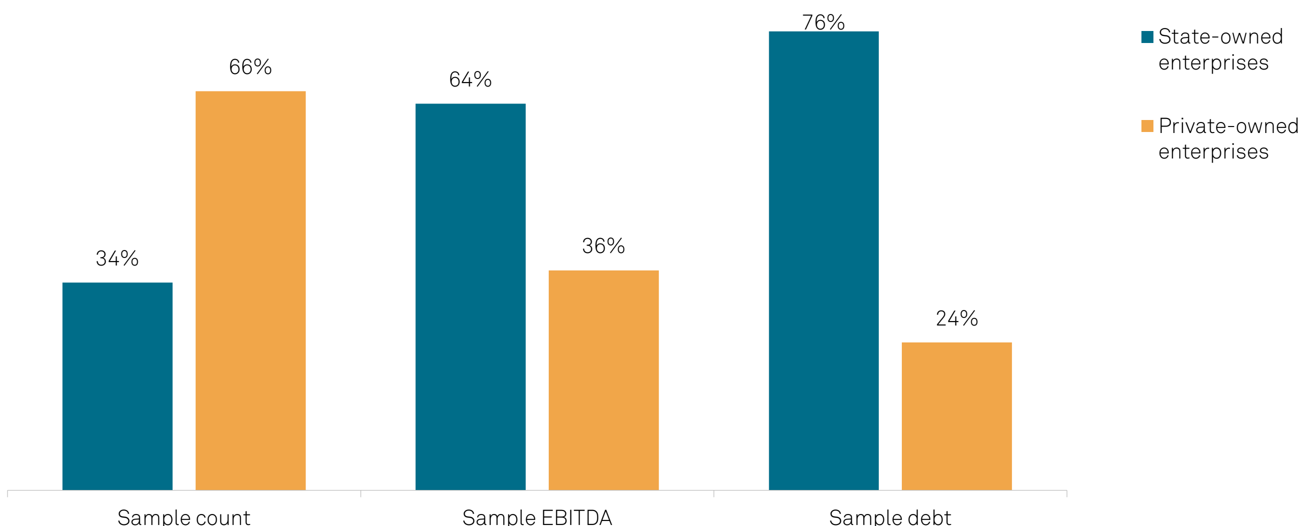
Sampling. The 6,363 corporates we tested are drawn from the Capital IQ database of S&P Global Market Intelligence. The sample debt of US$15.6 trillion is equivalent to 56% of total China corporate debt (US$29 trillion). POEs make up 4,186 or 66% by sample count while SOEs total 2,177 or 34% (see chart 15). SOEs generated 64% of total sample EBITDA but made up 76% of debt.

The sample mix of SOE and POE debt appears to be roughly representative of the wider population. This observation is based on the Chinese government's National Institute for Finance & Development's "*Debt Sustainability Under 'Triple Pressures'*," March 14, 2022. The report noted that SOE debt accounted for 60%-70%; among this, half is from local government financing vehicles.

Chart 15

SOEs Carry Three-Quarters Of Debt But Earn Just Two-Thirds Of EBITDA

Percentage of total sample (%)



Source: S&P Global Ratings.

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Five risk categories. For each corporate, we compute its debt-to EBITDA, and funds from operations (FFO) to debt ratios. We then factor in country and industry risks. We next assign the corporate to a risk category: low, moderately low, moderately high, high, and cash flow negative (when FFO is negative). The assessments on both SOEs and POEs are on a stand-alone basis--meaning that we do not factor in any expectation of implicit support from a government or parent company. (FFO equals EBITDA less net interest and tax expense. Adjusted debt equals gross debt less 75% of cash equivalents. See Appendix for details).

5. Stress Test Assumptions

Our stress test scenario applies the following assumptions:

In our severe stress scenario, we apply 300bp higher cost inflation and 400bp higher interest spreads in 2023

1. **Economic growth**. In our stress scenario, the widely anticipated rebound of China's economic growth rate does not materialize due to pessimistic business and consumer sentiment locally and significant economic downturns in other major economies globally. As a guide, we adapted the severe stress level of lower GDP growth from the Banking Sector Stress Test described in the People's Bank of China's (PBOC) "*Financial Stability Report 2021*," November 2021. These real GDP growth assumptions are shown in chart 16.

2. **Cost inflation**. In our stress scenario, global inflation continues into 2023, driven by aggregate supply problems despite the efforts of Western and other central banks raising policy rates and tightening their monetary stance. This cost-push inflation from offshore increases Chinese corporates' cost of goods sold (COGS). Our base-case producer price index inflation expectations are stressed by another 150 bp in 2022 and 300 bp in 2023 (see chart 17). No stress is applied in 2024. Our rating analytical teams' subjective opinions on each industry sector's ability to pass on higher input costs to customers (see table 6) was then applied against the stressed cost.

3. **Interest rates**. In both base and stressed cases, we assume that the policy rate will go down 30 bp for 2022. For the interest spread shock, we took inspiration from the "400 bps parallel upward shift in the non-financial corporate bond yield curve" stress of the Banking Sector Stress Test described in the PBOC's "*Financial Stability Report 2021*." Consequently, we applied a flat spread shock capped at 400 bp across the board as follows:

   - Intermediate scenario: we applied stress of by 10 bp over the 2022 base case, 200bp over the 2023 base case, and 100bp over 2024's (see chart 18).

   - Severe scenario: we applied stress of 50bp over the 2022 base case, 400bp over 2023's, and 200bp over the 2024 base case.

   We recognize that, in practice, SOEs have a cost of funding advantage over POEs. Our approach allows this advantage to be retained (see chart 19).

Table 6

Current Conditions Make It Hard For Some Consumer-Facing Industries To Pass On Costs

Cost pass-through capacity

Relative ability to pass on added costs to customers	Industry
Very high	Aerospace and defense, business and consumer services, health care services, transportation cyclical, technology hardware and software
High	Auto suppliers, chemicals, commodity and specialty, media and entertainment, metals and mining, oil and gas
Intermediate	Agribusiness and commodity foods, building materials, homebuilders and developers, retail and restaurants, telecommunications and cable, utilities
Moderate	Auto OEM, containers and packaging, engineering and construction, transportation infrastructure
Low	Consumer durables, capital goods, leisure and sports, pharmaceuticals

Note: Industries listed here referred to those covered by S&P Global Ratings and may not be the same as those in GICS®. OEM--Original equipment manufacturer. Source: S&P Global Ratings.

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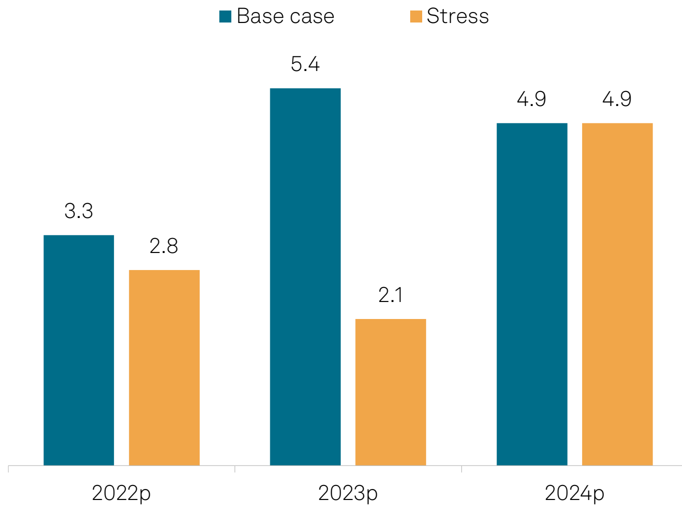
Chart 16

Stress Test: 2023 GDP Growth Lower Than 2022's

Real GDP growth (%)



Note: Projections are only for this stress test, not for rating assessments. p--Projected.
Source: S&P Global Ratings.

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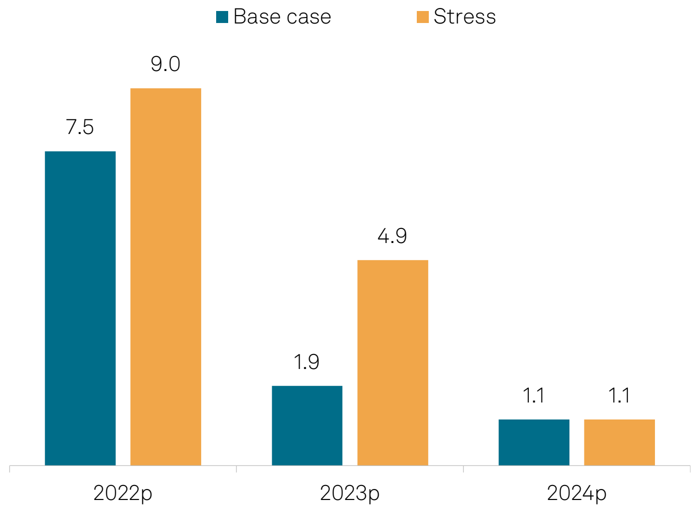
Chart 17

Stress Test: Cost Inflation Remains Sticky In 2023

Producer price index change from prior year (%)



Note: Projections are only for this stress test, not for rating assessments. p--Projected.
Source: S&P Global Ratings.

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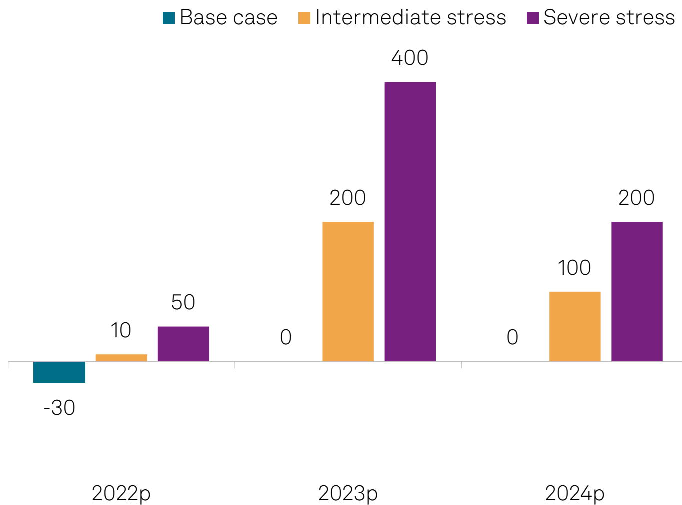
Chart 18

Stress Test: Interest Rates To Peak In 2023

Increment over 2021 levels (bp)



Note: Projections are only for this stress test, not for rating assessments. p--Projected.
Source: S&P Global Ratings.

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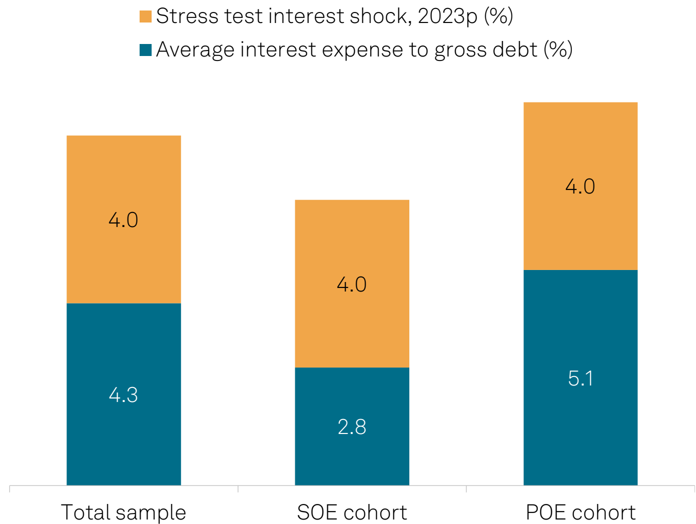
Chart 19

Stress Test: SOEs Retain Their Funding Advantage

(%)



Note: Projections are only for this stress test, not for rating assessments. p--Projected.
Source: S&P Global Ratings.

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6. Stress Test Outcomes

6-1. Base Case Conditions Are Already Challenging

Operating conditions in 2022 have been challenging and are likely to continue to be so going into 2023. Consequently, our base-case estimate sees the cash flow negative ratio for the total sample rise by half to 13% in 2023 from 9% in 2021 (see table 7 and chart 20). For the SOE cohort it rises to 11% from 7% (see chart 21) and POE cohort, 21% from 17% (see chart 22).

We already expect cash-flow negatives could rise to 12% from 9% in 2022

Table 7

Overhang In High-Risk Category Easily Tips Into Cash-Flow Negative Under Stress

% of debt sample

		Low to moderately high risk			High risk			Cash-flow negative		
		Base case	Intermediate stress	Severe stress	Base case	Intermediate stress	Severe stress	Base case	Intermediate stress	Severe stress
Total	2021	38	38*	38*	53	53*	53*	9	9*	9*
	2022p	34	32	31	53	55	54	12	14	15
	2023p	33	28	25	54	53	47	13	19	28
SOE	2021	32	32*	32*	61	61*	61*	7	7*	7*
	2022p	30	27	26	61	62	61	10	12	13
	2023p	28	24	22	61	58	50	11	18	28
POE	2021	56	56*	56*	28	28*	28*	17	17*	17*
	2022p	49	47	45	31	32	34	20	21	22
	2023p	48	39	34	31	36	37	21	25	29

*No stress was applied. SOE--state-owned enterprises. POE--Privately owned enterprises. p--Projected. Source: S&P Global Ratings.

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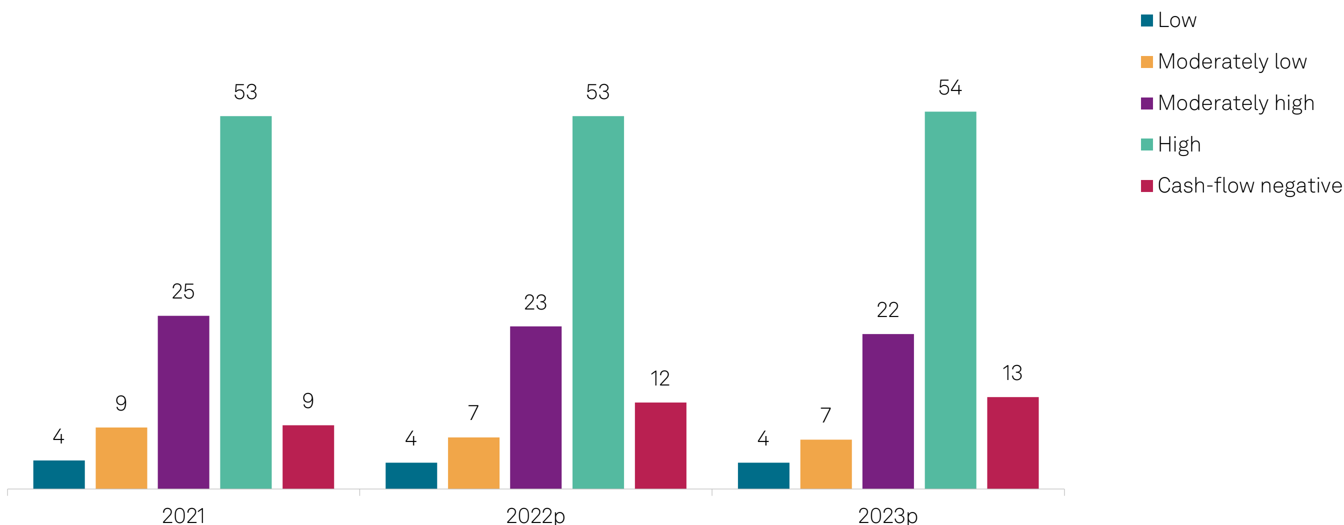
Chart 20

Base Case. Total Sample: Cash-Flow Negatives Rise By Half

Risk distribution (% of debt)

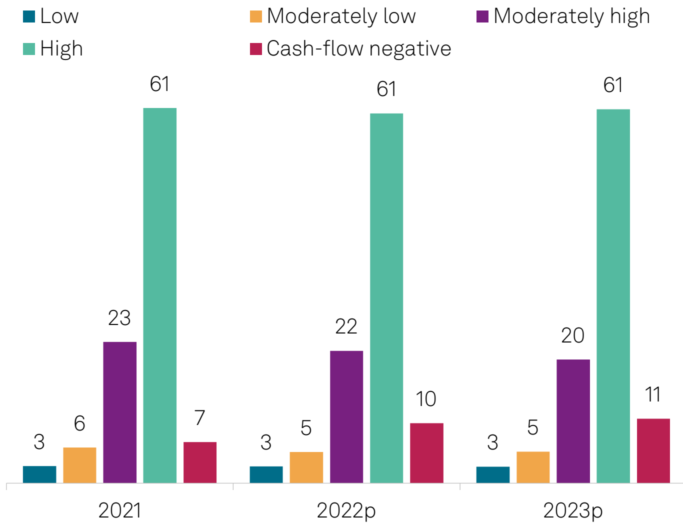


Note: Ratios are debt weighted. p--Projected. Source: S&P Global Market Intelligence, S&P Global Ratings. Copyright © S&P Global Inc. All Rights Reserved.

Chart 21

Base Case. SOE Cohort: Cash-Flow Negatives Rise By Half

Risk distribution (% of debt)



p--Projected. SOE--state-owned enterprises. Source: S&P Global Market Intelligence, S&P Global Ratings.

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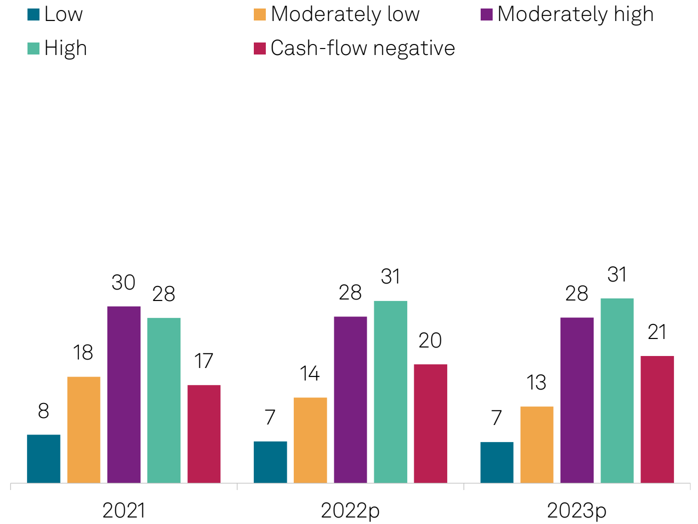
Chart 22

Base Case. POE Cohort: Cash-Flow Negatives Rise By A Third

Risk distribution (% of debt)



p--Projected. POE--Privately owned enterprises. Source: S&P Global Market Intelligence, S&P Global Ratings.

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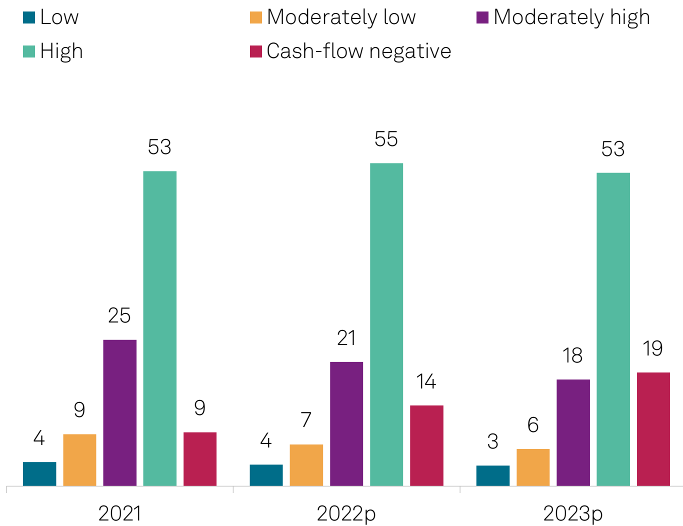
Chart 23

Intermediate Stress. Total Sample: Cash-Flow Negatives Rise Double

Risk distribution (% of debt)



p--Projected. Source: S&P Global Ratings.

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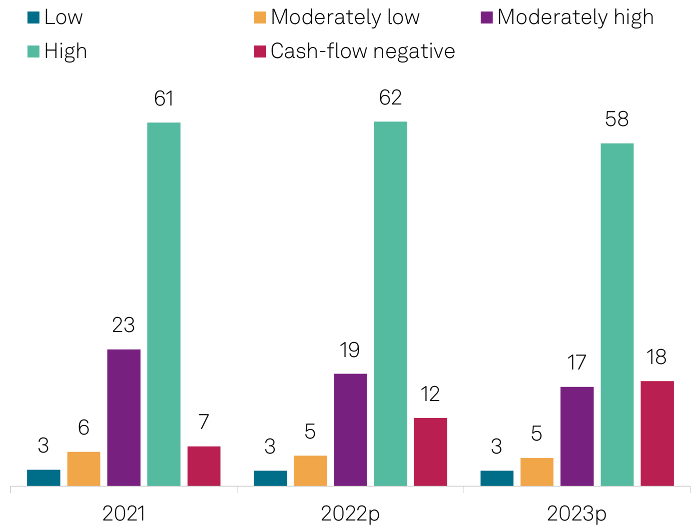
Chart 24

Intermediate Stress. SOE Cohort: Cash-Flow Negatives Rise More Than Doubles

Risk distribution (% of debt)



p--Projected. SOE--state-owned enterprises. Source: S&P Global Market Intelligence, S&P Global Ratings.

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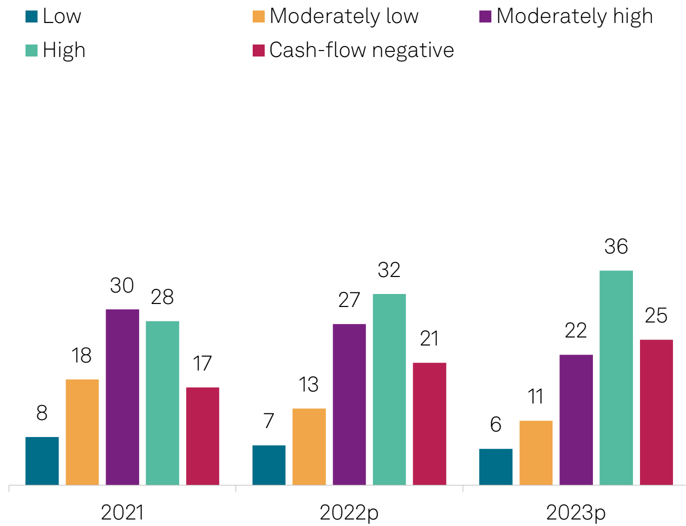
Chart 25

Intermediate Stress. POE Cohort: Cash-Flow Negatives Rise By Half

Risk distribution (% of debt)



p--Projected. POE--Privately owned enterprises. Source: S&P Global Market Intelligence, S&P Global Ratings.

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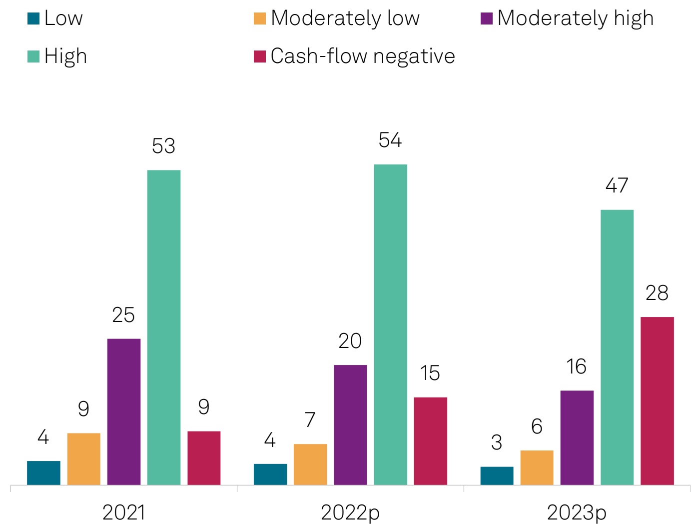
Chart 26

Severe Stress. Total Sample: Cash-Flow Negatives Triple

Risk distribution (% of debt)



p--Projected. Source: S&P Global Market Intelligence, S&P Global Ratings.

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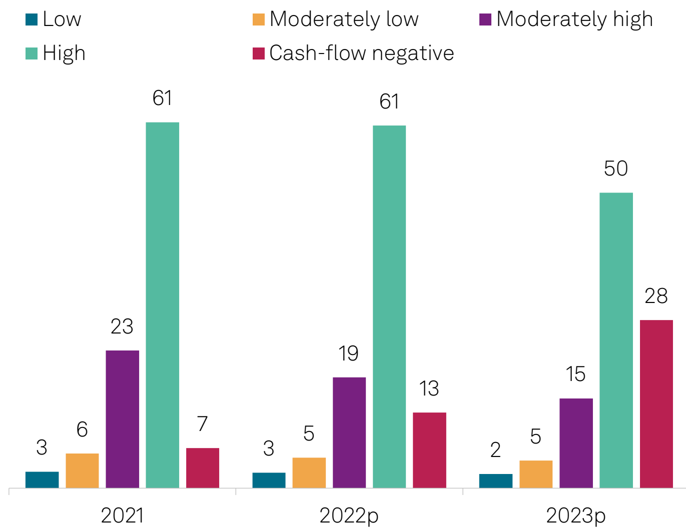
Chart 27

Severe Stress. SOE Cohort: Cash-Flow Negatives Rise Quadruple

Risk distribution (% of debt)



p--Projected. SOE--state-owned enterprises. Source: S&P Global Market Intelligence, S&P Global Ratings.

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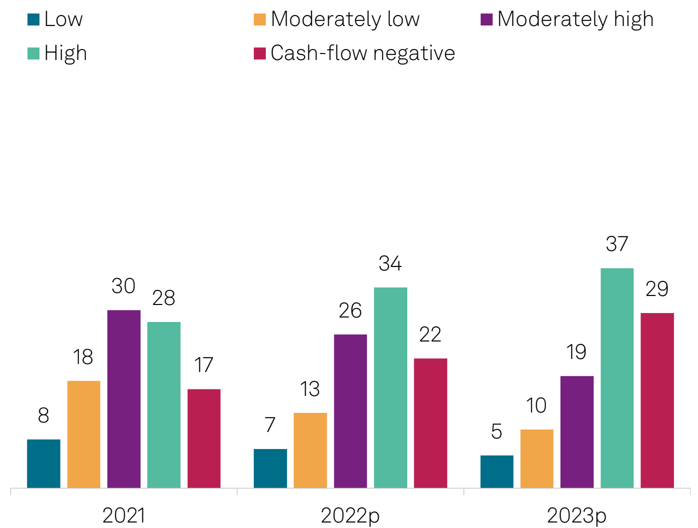
Chart 28

Severe Stress. POE Cohort: Cash-Flow Negatives Rise By Two-Thirds

Risk distribution (% of debt)



p--Projected. POE--Privately owned enterprises. Source: S&P Global Market Intelligence, S&P Global Ratings.

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6-2. Intermediate And Severe Stress Scenarios

There is a large overhang of high-risk category debt, mainly of SOEs, in the sample portfolio. Not surprisingly, under stress, some of the debt quickly tips over into the cash flow negative category.

- Under the intermediate stress scenario of 200 bp higher interest spreads, inter alia, in 2023, the cash flow negative ratio for the total sample doubles to 19% in 2023 from 9% in 2021 (see chart 23). For the SOE cohort it more than doubles to 18% from 7% (see chart 24) and for the POE cohort it rises by half to 25% from 17% (see chart 25).
- Under the severe stress scenario of 400 bp higher interest spreads, inter alia, in 2023, the cash flow negative ratio for the total sample to triples to 28% in 2023 from 9% in 2021 (see chart 26). For the SOE cohort it quadruples to 28% from 7% (see chart 27) and for the POE cohort it rises by two-thirds to 29% from 17% (see chart 28).

In the severe stress scenario, the sample cash flow negative ratio triples to 28% in 2023 from 9% in 2021

Not All Cash-Flow-Negative Entities Will Default

Naturally, not all cash flow negative corporates become nonperforming loans (NPLs) or default. Defaults are tied to the corporate's liquidity, which in turn is driven by the duration of losses, cash reserves, the ability to convert assets into cash, debt payments coming due, and willingness of financial and trade creditors to patiently wait for their money or a corporate turnaround.

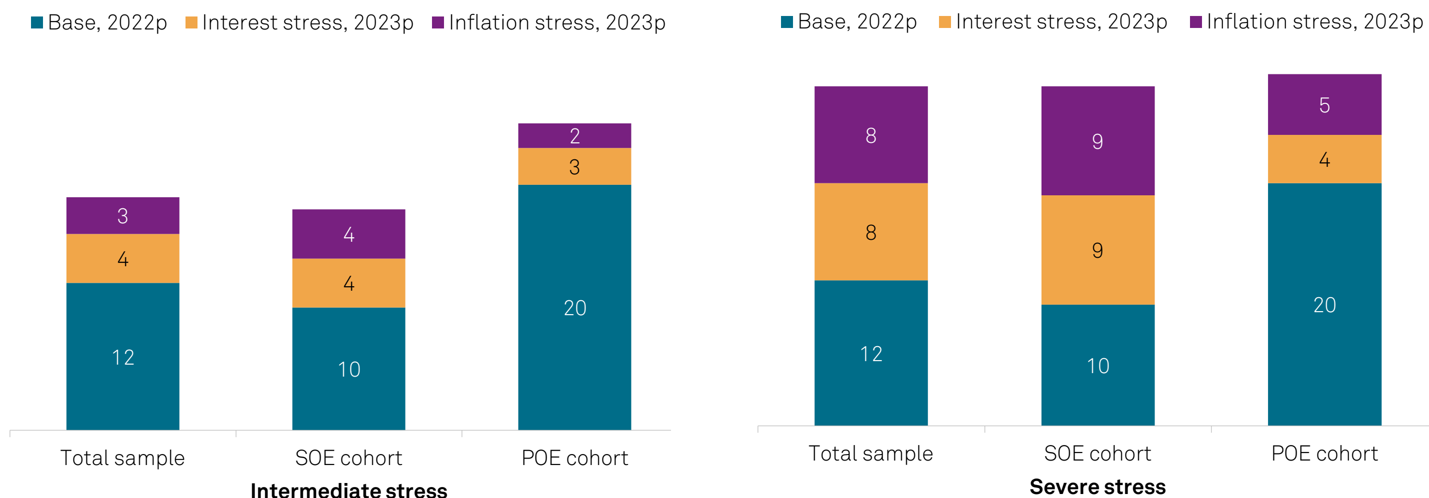
Interest Spreads And Inflation Costs Stress Have Similar Impact

The question is which stress factor--higher interest spreads or higher cost inflation--has a greater impact on cash flow negative transitions. The answer is both factors have similar effect (see chart 29). This outcome is not intentional but rather coincidental. The higher interest spread of 400 bp in 2023 under the severe stress scenario is applied against a corporate's floating-rate, maturing and new debt while the higher cost inflation of 300 bp in 2023 under the severe scenario is moderated by the degree which the corporate can pass such higher costs to its customers.

Chart 29

Interest Rate And Inflation Stresses Have Similar Effect On Cash-Flow Negative Transitions

Cash flow-negatives (% of sample debt)



Note: Ratios are debt weighted. p--Projected. SOE--State-owned enterprises. POE--Privately owned enterprises. Source: S&P Global Market Intelligence, S&P Global Ratings.
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6-3. Industry Outcomes

Not surprisingly, the cash flow negative ratios of the industrials and real estate sectors transit the most in percentage point under stress (see table 8). In the severe scenario, the industrials ratio more than doubles to 35% from 15% while real estate similarly jumps to 36% from 16%.

Cash flow negative ratios of industrials and real estate sectors transit the most under stress

Table 8

Industrials And Real Estate's Cash-Flow Negatives Ratios Transit The Most Under Stress

Cash flow-negatives (% of debt) by GICS® sector

GICS® sector		Count	Debt (US$ tril.)	Base case, 2022p	Intermediate stress, 2023p	Severe stress, 2023p
Total sample	**Total**	**6,363**	**15.6**	**12%**	**19%**	**28%**
	SOE	2,177	11.8	10%	18%	28%
	POE	4,186	3.8	20%	25%	29%
Communication services	**Total**	**163**	**0.15**	**14%**	**15%**	**18%**
	SOE	29	0.04	23%	23%	24%
	POE	134	0.1	10%	11%	14%
Consumer discretionary	**Total**	**701**	**0.72**	**25%**	**31%**	**40%**
	SOE	104	0.34	21%	25%	39%
	POE	597	0.38	30%	36%	41%
Consumer staples	**Total**	**280**	**0.31**	**20%**	**24%**	**27%**
	SOE	40	0.15	2%	8%	10%
	POE	240	0.16	34%	39%	43%
Energy	**Total**	**130**	**0.84**	**1%**	**2%**	**2%**
	SOE	52	0.73	1%	1%	2%
	POE	78	0.1	3%	3%	4%
Healthcare	**Total**	**370**	**0.2**	**7%**	**14%**	**22%**
	SOE	24	0.08	4%	16%	29%
	POE	346	0.12	10%	13%	16%
Industrials	**Total**	**2,380**	**7.2**	**15%**	**24%**	**35%**
	SOE	1,285	6.4	13%	22%	35%
	POE	1,095	0.79	26%	33%	39%
Information technology	**Total**	**681**	**0.39**	**9%**	**11%**	**12%**
	SOE	31	0.17	5%	6%	6%
	POE	650	0.21	12%	15%	17%
Materials	**Total**	**829**	**1.3**	**4%**	**4%**	**13%**
	SOE	110	0.75	3%	3%	15%
	POE	719	0.57	5%	6%	13%
Real estate	**Total**	**598**	**2.9**	**16%**	**26%**	**36%**
	SOE	349	1.7	10%	24%	39%
	POE	249	1.2	23%	29%	33%
Utilities	**Total**	**231**	**1.6**	**3%**	**4%**	**10%**
	SOE	153	1.4	2%	3%	9%
	POE	78	0.15	14%	15%	16%

SOE--state-owned enterprises. POE--Privately owned enterprises. Source: S&P Global Ratings. Copyright © S&P Global Inc. All Rights Reserved.

"Be Only Afraid Of Staying Still"

A Chinese proverb advises "*Be not afraid of being slow, be only afraid of staying still*". China's period of high GDP growth rates looks, for the foreseeable future, to be over. Many corporates will find it hard to grow their way out of their heavy debt. The authorities' task in resolving the debt overhang, without causing economic chaos, is very difficult. It will be a slow journey.

Related Research

- Global Debt Leverage: If Stagflation Strikes, China Corporates Are Most Vulnerable, July 12, 2022
- White Paper: Introducing Our Credit Cycle Indicator, June 27, 2022
- Global Debt Leverage: Can China Escape Its Corporate Debt Trap?, Oct. 19, 2021
- Banking Industry Country Risk Assessment: China, Jan. 9, 2014
- China Banking's Two Faces, Nov. 25, 2003
- China Banks Face Decade of Problem Loans Unless More Equity Injected, May 9, 2002

Appendix: Data And Approach

This appendix discusses the assumptions, data sources, and approach adopted in the article.

Corporate financials data source and sample	We drew our global sample of nonfinancial corporate financial data from S&P Global Market Intelligence's Capital IQ database. Financials are for fiscal year 2021. The sample comprises 6,363 mainland Chinese corporates, of which 85% are unrated and 56% are listed. The sample total debt of US$15.6 trillion is equivalent to 56% of estimated global corporate debt at end-December 2021 (as reported by the Institute of International Finance).
Caveats	The data have a statistical bias toward nonfinancial corporates that had reported their latest financials at the date of sample extraction. Consequently, some industry sectors may be over or underrepresented, on a debt-weighted basis, in the sample compared with the actual population. As this exercise is in US$ equivalent, it does not account for foreign exchange rate changes, which may benefit entities whose debt is largely in domestic currency.
Sample industry coverage	In this exercise, the sample of corporates are categorized into the ten industry sectors per the Global Industry Classification Standard (GICS®) developed by S&P Dow Jones Indices--namely communication services, consumer discretionary, consumer staples, energy, health care, industrials, information technology, materials, real estate, and utilities.
Sample geographic coverage	In this exercise, the geographic coverage of the sample of corporates is limited to mainland China (i.e., Hong Kong and Macao are excluded).
State-owned versus privately owned enterprises	State-owned enterprise (SOE) is a common term used for mainland Chinese nonfinancial corporates, listed or unlisted which are either owned, linked or effectively controlled by one or more of the central, provincial, city or other governments in mainland China. The controlling ownership of Chinese corporates are not always obvious. In this exercise, we drew on the experience of our International Public Finance analytical ratings team to help identify SOEs. We classify non-SOE corporates as privately owned enterprises (POEs).
Growth assumptions	For debt and EBITDA growth projections, we applied growth rates estimated by our analytical teams for 2022-2024.
Notional credit risk tiers	In this exercise, we determined notional credit risk tiers for each corporate in the sample. In this respect, our evaluation of the country, industry, and financial risks of the corporate sample is partially, but incompletely, borrowed from our Corporate Ratings methodology (see "Criteria/ Corporates/ General/ Corporate Methodology," Nov. 19, 2013). It is important to note that information limitations do not permit full application of such methodology. We categorized the corporates into five notional credit risk tiers--"low indebtedness", "moderately low indebtedness", "moderately high indebtedness", "high indebtedness", and "cash flow-negatives" category (entities returning negative FFO) as a proxy for credit risk. Distributions of risk tiers in this article are debt weighted.

Key ratios and thresholds

In this exercise, we assess financial risk based on the following ratios: debt-to-EBITDA and FFO-to-debt.

- EBITDA is earnings before interest, tax and depreciation and amortization expenses.
- FFO is funds from operations, which is calculated by deducting net interest expense and tax expense from EBITDA.
- Adjusted debt is after deducting 75% of cash equivalents from gross debt.

All sectors except for real estate and utilities

Risk tier	FFO to debt (%)	Adjusted debt to EBITDA (x)
Low indebtedness	Greater than 45	Less than 2
Moderately low indebtedness	30-45	2-3
Moderately high indebtedness	20-30	3-4
High indebtedness	Less than 20	Greater than 4

Real estate

Risk tier	FFO to debt (%)	Adjusted debt to EBITDA (x)
Low indebtedness	Greater than 15	Less than 4.5
Moderately low indebtedness	> 9-15	> 4.5-7.5
Moderately high indebtedness	> 7-9	> 7.5-9.5
High indebtedness	Less than 7	Greater than 9.5

Utilities

Risk tier	FFO to debt (%)	Adjusted debt to EBITDA (x)
Low indebtedness	Greater than 23	Less than 3
Moderately low indebtedness	13-23	3-4
Moderately high indebtedness	9-13	4-5
High indebtedness	Less than 9	Greater than 5

Stress scenarios

We shock the sample financials for rises in input cost-inflation and interest rates for 2022 to 2024. Our framework attempts to test the extent of the generalized presumption that input cost inflation and higher interest yields are detrimental to corporate credit quality. Essentially, this study considers the effects of such shocks on the financial risk profiles of corporates, taking account of their presumed debt-maturity profiles.

Input inflation shock

We use the producer price index (PPI) as a proxy for input cost.

We assume a range of input cost pass-through rates to arrive at net inflation at sector-level for increase in cost of goods sold (COGS, inclusive of labor cost) absorbed by each corporate.

Interest rate shock

Our severe interest rate shock in 2023 entails an upward parallel shift of the interest spread curve of 400 bp on top of the base case. For the intermediate scenario, our interest spread shock is 200 bp in 2023. The shock is applied on floating rate, refinanced and new debt.

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