S&P Global Ratings

Global Debt Leverage

# Cash Flow Negative Corporates Could Double In 2023

## A Stress Test Of 20,000 Unrated Corporates

**Dec. 12, 2022**

*This report does not constitute a rating action*

### Key Takeaways

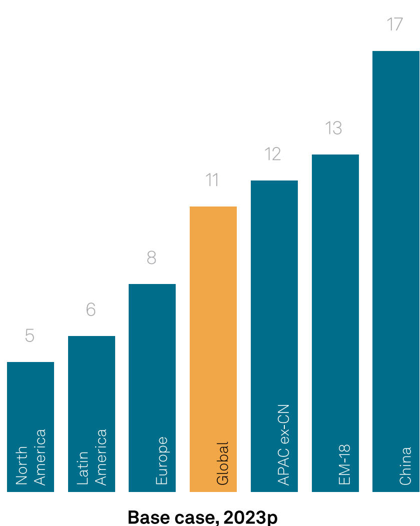
- **Worsening conditions in 2023 could temper this year's tentative rebound in average earnings.** Our stress tests show less-creditworthy corporates are still vulnerable. Under our base case, cash flow negative firms would rise to 11%, from 8% in 2021.
- **Severe stress test shows double trouble.** We've repeated the tests we last did in July. In our severe test in which interest spreads and inflation increase by 300 bp each, the cash flow negative ratio doubles to 16%.
- **China corporates remain most vulnerable.** As we expected, the cash flow negative ratio of this cohort rises the most under stress (in percentage point terms). This is followed by Asia-Pacific ex-China and emerging markets, then Europe and North America.

Chart 1

Cash Flow Negative Corporates Double In Our Severe Inflation-Interest Stress Test

**Base case envisages more adverse conditions in 2023**

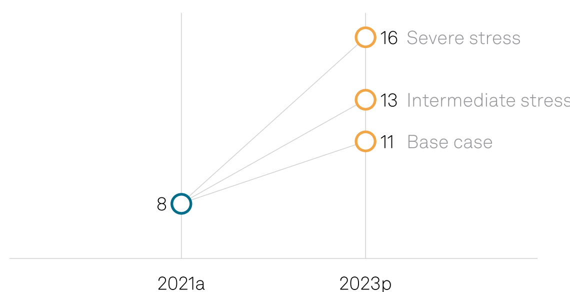
Cash flow negative corporates, global sample (%)




**Stress test outcomes are still stark**

Stress factors

Cash flow negative corporates, global sample (%)




Note: Stress factors shown in the above infographic relate to the severe stress test. APAC--Asia-Pacific. Ex-CN--Excluding China. EM-18--Emerging markets-18. bp--Basis points. a--Actual. p--Projection. Source: S&P Global Ratings.

Credit Research

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# What We Think

**A shadow hangs over global corporates heading into 2023.** As the Russia-Ukraine war drags on and major central banks continue to fight inflation, global corporates face a triple-whammy of lower growth, squeezed margins, and deteriorating financing conditions in 2023 (see "Global Credit Outlook 2023: No Easy Way Out," published Dec. 1, 2022). Earnings rebounded for many corporates in 2021 and early 2022 on pent-up demand amid the pandemic recovery and a greater ability to pass on higher input costs to customers. But the positive momentum is fading, given rising borrowing costs and a deepening cost-of-living crisis for consumers.

**In our base case, cash flow negative corporates will increase by a third by 2023.** To get a broad overview of how global unrated corporates are faring, we looked into a global sample of 20,000 nonfinancial corporates (89% unrated). Our base-case projection sees cash flow negative corporates rising to 11% of the sample in 2023 from 8% in 2021, given a trifecta of a global slowdown, cost overhang from the current round of inflation, and higher interest rates.

**Inflation-interest stress test highlights vulnerabilities.** Although we expect cost inflation to ease in 2023, price pressures could linger if supply problems drag on, biting further into earnings. In our severe stress test, we assume additional producer price inflation of 300 basis points (bp) over our base case in 2023; and half that for the intermediate stress test.

Meanwhile, stickier inflation could prompt investors to demand higher interest spreads to preserve real returns. Correspondingly, we also stressed average interest spreads by 300 bp over our base case in 2023 for the severe stress test, and half that for the intermediate one. Corporates deemed to be at low and moderately low risk are subject to lesser stress amounts, and those in the high-risk category a greater amount.

**Cash flow negative corporates could double in severe stress.** In the severe stress test, the debt-weighted ratio of cash flow negative corporates doubled to 16% in 2023, from 8% in 2021 (see table 1). Under stress, the China subsample's cash flow negative ratio rises the most in terms of percentage point movements, to 27% from 12%. Asia-Pacific ex-China is close behind, at 14% from 8%. Europe and North America fare better, at 11% and 7%, from 7% and 4% respectively.

Table 1

## Stress Test: Every Region Will See A Lot More Corporate Cash Flow Negatives In 2023

Cash flow negatives (% of debt) for corporate sample by region

| Cash flow negatives (%) | Sample debt ($ tril.) | Sample count | Average risk tier | Actual 2021 | Baseline, 2022p | Baseline, 2023p | Intermediate shock, 2023p | Severe shock, 2023p |
|---|---|---|---|---|---|---|---|---|
| Global | 42 | 20,000 | 4.2 | 8% | 9% | 11% | 13% | 16% |
| APAC ex-CN | 7 | 8,097 | 4.2 | 8% | 9% | 12% | 13% | 14% |
| China | 16 | 5,284 | 4.7 | 12% | 14% | 17% | 23% | 27% |
| EM-18 | 3 | 3,441 | 4.0 | 9% | 10% | 13% | 13% | 14% |
| Europe | 7 | 2,838 | 3.9 | 7% | 7% | 8% | 10% | 11% |
| Latin America | 1 | 755 | 3.8 | 6% | 6% | 6% | 7% | 8% |
| North America | 10 | 2,466 | 3.6 | 4% | 4% | 5% | 5% | 7% |

Average risk tier is shown as a numeric equivalent where 1.5 = “low”, 3 = “moderately low”, 4 = “moderately high”, 5.5 = “high”, 7 = "cash flow negative". This calculation is a rough ranking of credit risk that references an entity's debt-to-EBITDA and ratio of funds from operations to debt. Ratios are debt weighted. p--Projection. APAC ex-CN--Asia-Pacific excluding China. EM-18--18 emerging markets, namely Argentina, Brazil, Chile, Colombia, Egypt, India, Indonesia, Malaysia, Mexico, Nigeria, Peru, Philippines, Poland, Saudi Arabia, South Africa, Thailand, Turkey, and Vietnam; we examine China separately due to the vastness of its debt volume. tril.--Trillion. Original data source: S&P Global Market Intelligence. Source: S&P Global Ratings.

**Countries with already-high corporate leverage most vulnerable.** Corporates are navigating an enormous debt overhang (see "Global Debt Leverage: How Heavy Is The World's Debt Burden?", published Nov. 21, 2022), a result from the "lower for longer" decade and cheap money enabled by low interest rates during the pandemic (see charts 2a and 2b). The global slowdown would acutely hit geographies where corporate leverage is already elevated. China, in particular, merits special attention.

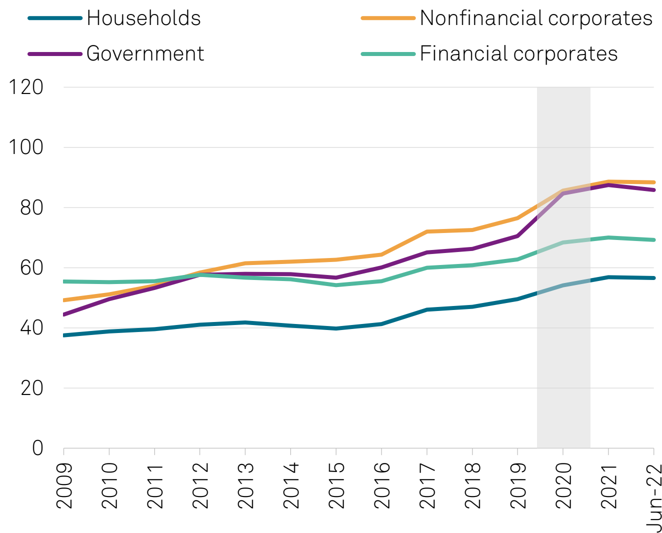
China's corporate leverage merits special attention.

In the decade through June 2022, China's nonfinancial corporate debt-to-GDP grew by 20% to reach a staggering 123%. With China's corporate debt of $27 trillion equivalent to 31% of the global total, the Chinese government faces a very difficult task in resolving the debt overhang, without causing economic chaos (for further details, see "Global Debt Leverage: China's SOEs Are Stuck In A Debt Trap," published Sept. 20, 2022).

Chart 2a

## Global Debt Has Crept Up Over The Past Decade

Global debt (tril. US$), 2009 to June 2022

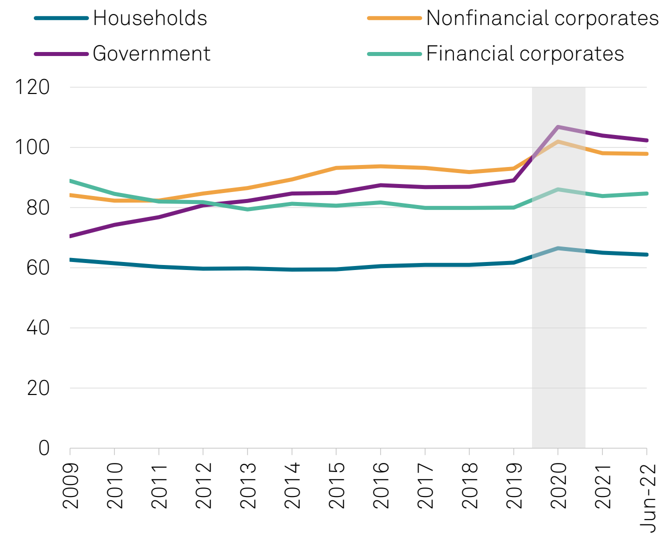



Shaded area refers to the 2020 COVID pandemic breakout.
Data source: Institute of International Finance.

Chart 2b

## Leverage Levels Remain Elevated

Global debt-to-GDP (%), 2009 to June 2022




Shaded area refers to the 2020 COVID pandemic breakout.
Data source: Institute of International Finance.

# Scenario Assumptions

Our stress test scenario applies the following assumptions (see Appendix for details):

We test for a 300 bp rise in cost of goods sold...

1. **General inflation shock.** Our base case is for producer price index (PPI) inflation to ease in the second half of 2022 and continuing into 2023. In our stress scenario, however, global inflation persists in 2023, driven by supply problems despite efforts of central banks around the world in hiking policy rates. In this scenario, cost pressures could persist for corporates. Subsequently, we applied stress to the corporates' cost of goods sold (COGS).
   - Intermediate stress: We applied 150 bp of additional inflation over the 2023 base case.
   - Severe stress: We applied 300 bp of additional inflation over the 2023 base case.
   - Corporates' ability to pass higher costs on to customers: We use our analytical teams' regional assumptions on cost pass-through rate on a sector-by-sector basis.
2. **Base interest rates.** We factor in incremental base interest rates (akin to central bank policy rates) over 2021 of: 220 bp for the 2022 average; 450 bp for the 2023 average; and 425 bp for the 2024 average. Our assumptions reflect our view that central banks will keep raising policy rates in 2023 and ease them slightly in 2024 as the momentum of inflation abates.

   Since China's central bank is moving in the opposite policy direction, for the China sample we applied the following over the 2021 level: a decrement of 30 bp for 2022 (accounting for the two rate cuts of 10 bp each that had taken place earlier this year), and a flat level for 2023 and 2024.

...and a 300 bp average rise in interest spreads.

3. **Interest spread shock.** The interest spread shock reflects our expectation that investors will demand higher returns to compensate for higher-than-expected inflation in 2023. We shock interest spreads by:
   - 150 bp in 2023 for the intermediate stress;
   - 300 bp in 2023 for the severe one.

   The spread figures mentioned above are averages with the specific spread shock differing based on the risk category of the corporate. The spread shock is applied only on floating rate, maturing debt (which presumably will be refinanced), and new borrowing.

**Bulk of nonfinancial corporates face foreign exchange risk**
Although not part of the stress test scenario, foreign exchange (forex) volatility has picked up as the U.S. dollar strengthened since mid-2022, a source of pain for corporates in terms of imported inflation. It also has implications on entities with substantial dollar-denominated debt obligations. This will be felt keenly in regions and geographies where local currency depreciation against the dollar has been acute (e.g., Asian corporates, see "*Asia-Pacific's Strong-Dollar Problem: Inconvenience Today, Headache Tomorrow,*" Nov. 10, 2022).

## Risk Categorization

**Sampling and risk categorization.** We drew a sample of financials for 20,000 nonfinancial corporates (89% unrated, 84% listed, total debt: $42 trillion) from S&P Global Market Intelligence's CapitalIQ database. This is equivalent to 48% of total global nonfinancial corporate debt (based on Institute of International Finance data) as of June 2022.

**Five risk categories.** For each corporate, we calculate its debt-to EBITDA and funds from operations (FFO) to debt ratios. After adding in country and industry sector risks, we assign the corporate to a risk category: low, moderately low, moderately high, high, and cash flow negative (when either FFO or EBITDA are negative). (FFO equals EBITDA less net interest and tax expense. Adjusted debt equals gross debt less 75% of cash equivalents. See Appendix for details).

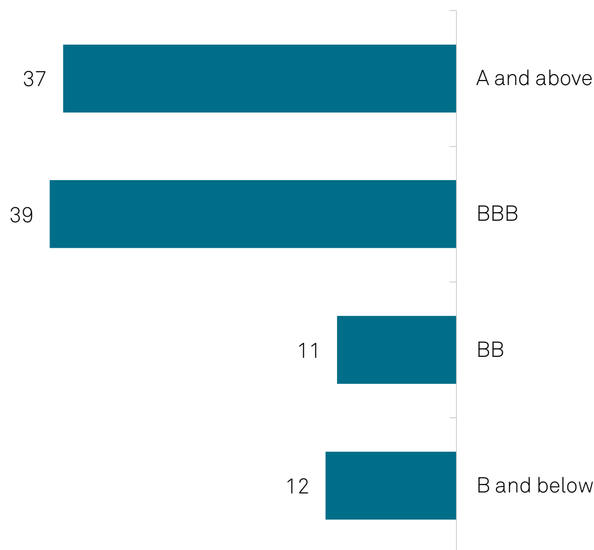
**Ratios are debt weighted.** In computing regional and global ratios, country components are reweighted based on total actual country debt (source: Institute of International Finance).

**Sample debt risk worse than our rated portfolio.** On a debt basis (rather than issuer count), the corporate sample (mostly unrated) is generally of lesser credit quality than our rated nonfinancial corporate portfolio. The rated portfolio's implied debt is three-quarters investment-grade (although half by issuer count) (see chart 3a). Although not strictly a like-for-like comparison, the sample's debt risk distribution is more pyramidal with over two-thirds moderately high risk or worse (see chart 3b).

Chart 3a

### Our Rated Corporate Debt Portfolio Is Three-Quarters Investment Grade...

Percent (%)

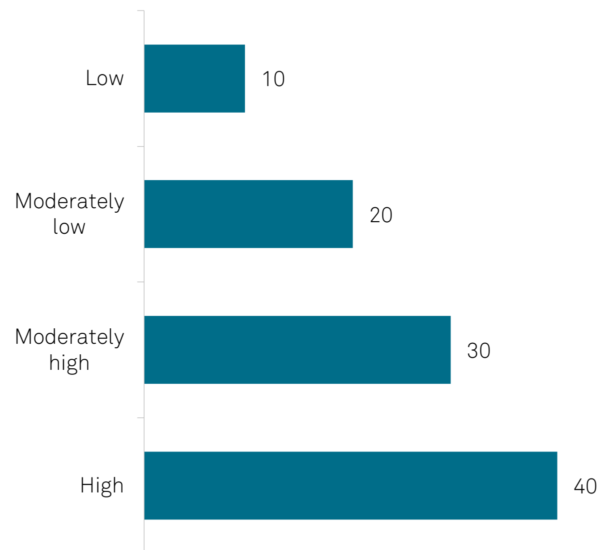



Data as of July 1, 2022. Source: S&P Global Ratings.

Chart 3b

### ...Whereas Over Two-Thirds Of Sample Debt Is Moderately High Or Worse

Percent (%)




The "high" category includes cash flow negative corporates. Sample financials data as of first half 2022. Source: S&P Global Ratings.

# Scenario Outcomes

Cash flow negative ratio could double to 16% by 2023.

**Base-case conditions are challenging.** We project the cash flow negative ratio to rise to 9% by end-2022 from 8% in 2021 (see chart 4a). Given the overhang of debt in the high-risk category, corporates easily tip into cash flow negative territory under stress. Consequently, we project cash flow negative corporates to rise two-thirds to 13% by 2023 (see chart 4b) under intermediate stress, and in the severe scenario, double to 16% (see chart 4c).

**Interest spreads stress drives cash flow negative transitions.** The question is which stress factor has a greater impact on cash flow negative transitions--higher interest spreads or cost inflation. Unsurprisingly, the interest spread stress has a relatively greater impact (see chart 5). With central banks around the world (except China) hiking policy rates, and lenders demanding higher spreads to compensate for greater risks, interest costs have surged for corporates. This is sobering, given the widespread accumulation of nonfinancial corporate debt that has taken place during the "lower for longer" decade.

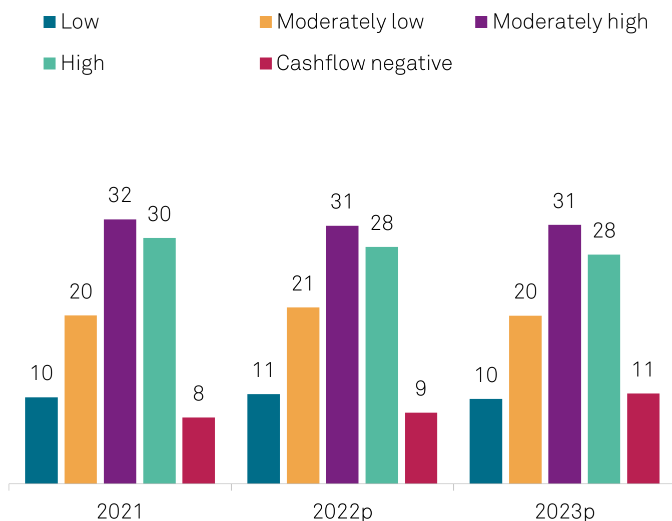
On the other hand, the inflation hit is relatively muted, given we expect PPI inflation to come down in 2023 in our baseline. Although the intermediate and severe inflation stress assumptions imply cost inflation remains sticky, this shock is moderated by the degree to which the corporates can pass additional higher costs to customers.

**Not all cash flow negative entities will default.** Naturally, not all cash flow negative corporates become nonperforming loans (NPLs) or defaults. 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.

Chart 4a

### Even In Our Base Case, Cash Flow Negatives Rise A Third By 2023

Global corporate sample (% of debt)

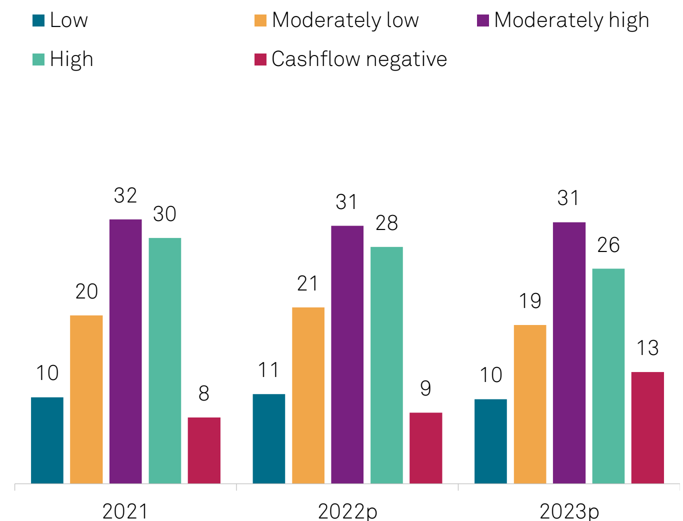



Ratios are debt weighted. p--Projection. Data source: S&P Global Market Intelligence.
Source: S&P Global Ratings.

Chart 4b

### In The Intermediate Scenario, Cash Flow Negatives Are Up Two-Thirds By 2023

Global corporate sample (% of debt)

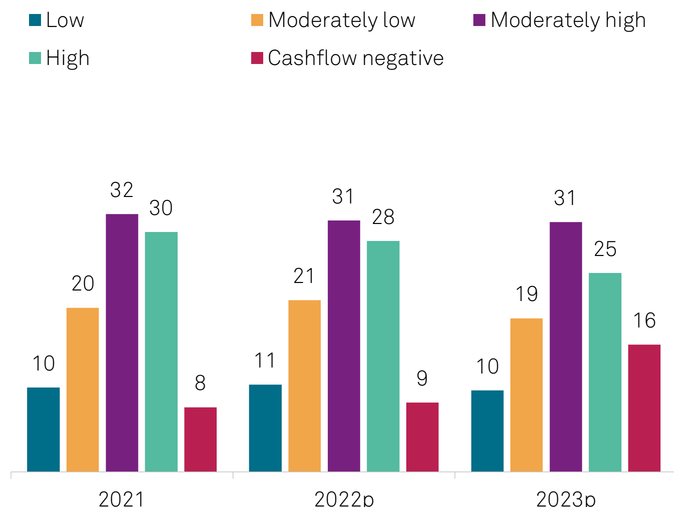



Ratios are debt weighted. p--Projection. Data source: S&P Global Market Intelligence.
Source: S&P Global Ratings.

Chart 4c

### In The Severe Scenario, Cash Flow Negatives Double By 2023

Global corporate sample (% of debt)

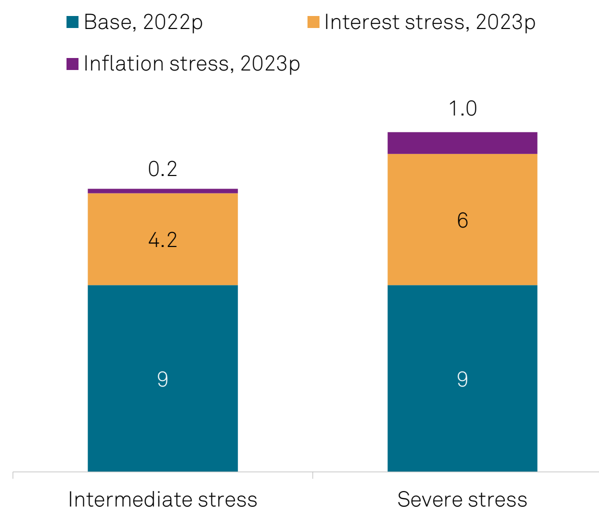



Ratios are debt weighted. p--Projection. Data source: S&P Global Market Intelligence.
Source: S&P Global Ratings.

Chart 5

### Interest Stress Drives Cash Flow Negative Transitions

Cash flow negatives (% of debt)




Ratios are debt weighted. p--Projection. Data source: S&P Global Market Intelligence.
Source: S&P Global Ratings.

## Geography Outcomes

**Among the regions, Asia more vulnerable.** We found the Asia ex-China and China sub-samples more vulnerable than the Europe and North America subsamples. We project the cash flow negative ratio for Asia ex-China and China would be 9% and 14% in the 2022 base case. These rise to 14% and 27% in the severe stress by 2023 (see table 2 and chart 6).

Asia is more vulnerable to shocks.

Table 2

### Geography: Compared To Other Regions, Asia-Pacific's Cash Flow Negative Corporates Increase The Most

Cash flow negatives (% of debt) for corporate sample by region

| Cash flow negatives (%) | Sample debt ($ tril.) | Sample count | Average risk tier | Baseline, 2022p | Baseline, 2023p | Intermediate shock, 2023p | Severe shock, 2023p |
|---|---|---|---|---|---|---|---|
| Global | 42 | 20,000 | 4.2 | 9% | 11% | 13% | 16% |
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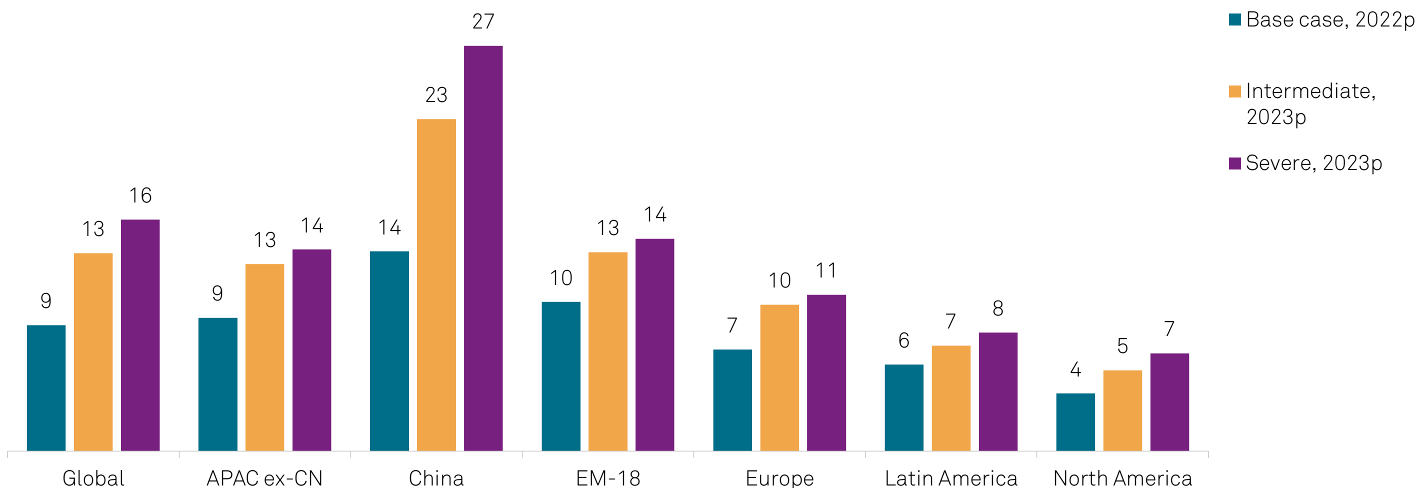
Average risk tier is shown as a numeric equivalent where 1.5 = "low", 3 = "moderately low", 4 = "moderately high", 5.5 = "high", 7 = "cash flow negative". This calculation is a rough ranking of credit risk that references an entity's debt-to-EBITDA and ratio of funds from operations to debt. Ratios are debt weighted. p--Projection. APAC ex-CN--Asia-Pacific excluding China. EM-18--18 emerging markets, namely Argentina, Brazil, Chile, Colombia, Egypt, India, Indonesia, Malaysia, Mexico, Nigeria, Peru, Philippines, Poland, Saudi Arabia, South Africa, Thailand, Turkey, and Vietnam; we examine China separately due to the vastness of its debt volume. tril.--Trillion. Original data source: S&P Global Market Intelligence. Source: S&P Global Ratings.

Chart 6

## Asia Sample's Cash Flow Negatives Rise The Most Under Inflation And Interest Rate Stress

Cash flow negatives (% of debt)




Ratios are debt weighted. p--Projection. APAC--Asia-Pacific. Ex-CN--Excluding China. EM-18--Emerging markets-18. Data source: S&P Global Market Intelligence. Source: S&P Global Ratings.

In contrast, Europe's ratios move up to 11% from 7% and North America's to 7% from 4%. Latin America's moves to 8% from 6% (admittedly, the sample may not be wholly reflective of the situation due to limited reported financials). The emerging markets' outcome of 14% from 10% is a blend of parts of Asia ex-China, Latin America, and Middle East and Africa (not shown).

## Industry Outcomes

**Stage of recovery drives industry divide.** Globally, consumer discretionary, industrials and real estate sectors have not fully recovered from the COVID years and are more vulnerable to credit headwinds. In the severe stress, the cash flow negative ratio for consumer discretionary rises to 17%, for industrials to 28%, and for real estate to 32% (see table 3 and chart 7).

Slow-recovering sectors hit hardest.

Table 3

## Sectors: Industrials And Real Estate Suffer Largest Increase In Cash Flow Negatives

Cash flow negatives (% of debt) for corporate sample by GICS sector

| | | | | Distribution of risk tiers (% of debt), 2022p | | | | | Stress scenario shock: Cash flow negatives, 2023p | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Sample debt | Sample count | Average risk tier | Low | Moderately low | Moderately high | High | Cash flow negatives | Intermediate | Severe |
| Global | **$42 tril.** | **20,000** | **4.2** | **11%** | **21%** | **31%** | **28%** | **9%** | **13%** | **16%** |
| Communication services | $3,098 bil. | 824 | 4.1 | 7% | 11% | 52% | 25% | 4% | 5% | 6% |
| Consumer discretionary | $4,156 bil. | 3,187 | 4.3 | 7% | 23% | 26% | 32% | 12% | 15% | 17% |
| Consumer staples | $2,287 bil. | 1,437 | 3.9 | 12% | 24% | 38% | 23% | 4% | 5% | 6% |
| Energy | $3,144 bil. | 673 | 3.8 | 0% | 45% | 37% | 17% | 1% | 2% | 2% |

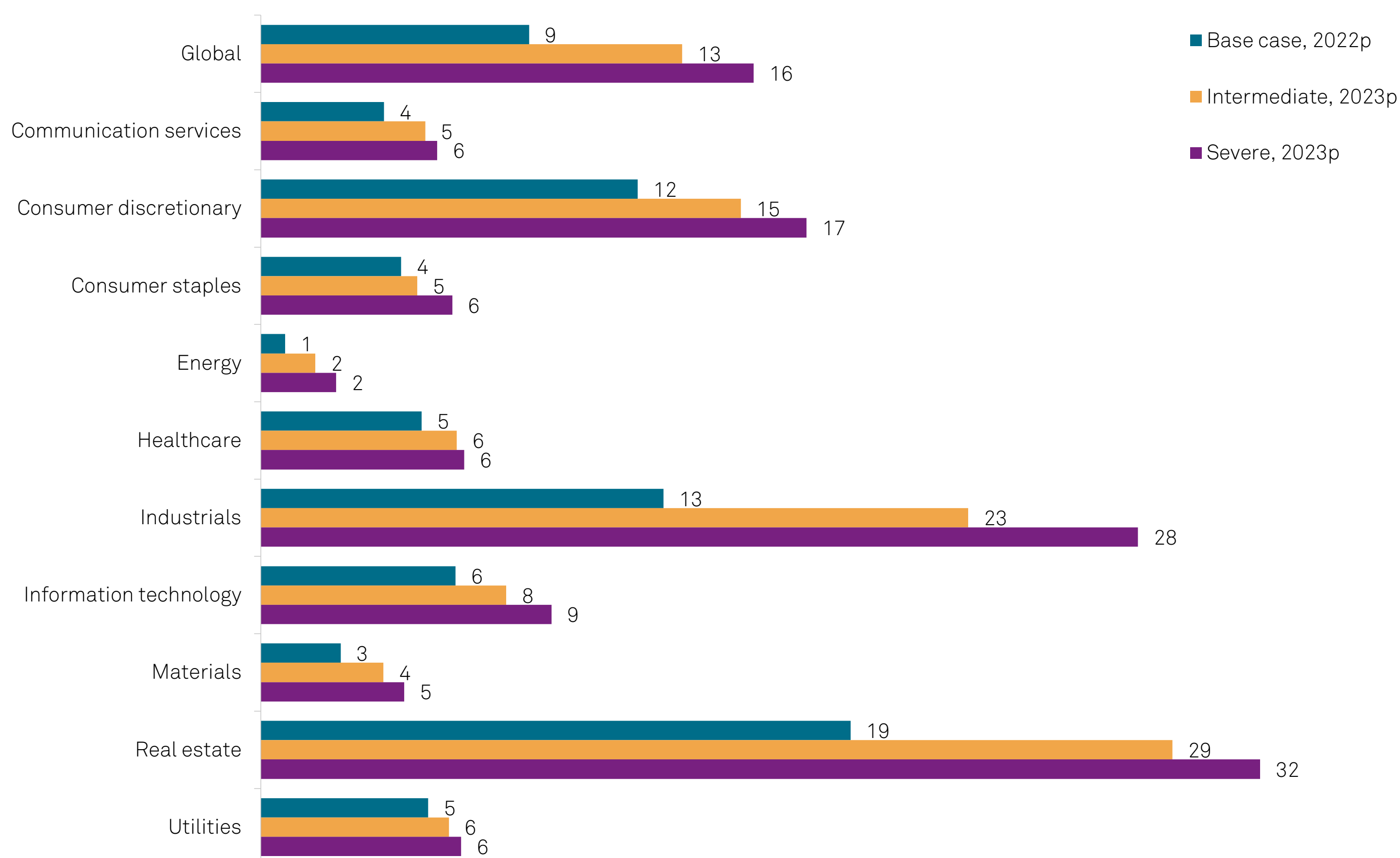
| | Sample debt | Sample count | Average risk tier | Distribution of risk tiers (% of debt), 2022p | | | | | Stress scenario shock: Cash flow negatives, 2023p | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Low | Moderately low | Moderately high | High | Cash flow negatives | Intermediate | Severe |
| Healthcare | $1,924 bil. | 1,233 | 3.3 | 30% | 25% | 26% | 13% | 5% | 6% | 6% |
| Industrials | $12,547 bil. | 5,408 | 4.7 | 4% | 7% | 21% | 55% | 13% | 23% | 28% |
| Information technology | $1,946 bil. | 2,149 | 3.7 | 10% | 44% | 31% | 9% | 6% | 8% | 9% |
| Materials | $3,185 bil. | 2,390 | 3.9 | 4% | 31% | 43% | 20% | 3% | 4% | 5% |
| Real estate | $4,735 bil. | 1,734 | 4.7 | 1% | 16% | 31% | 34% | 19% | 29% | 32% |
| Utilities | $5,123 bil. | 965 | 3.0 | 38% | 24% | 32% | 0% | 5% | 6% | 6% |

GICS = Global Industry Classification Standard (GICS®) was developed by S&P Dow Jones Indices. Average risk tier is shown as a numeric equivalent where 1.5 = “low”, 3 = “moderately low”, 4 = “moderately high”, 5.5 = “high”, 7 = "cash flow negative". This calculation is a rough ranking of credit risk that references an entity's debt-to-EBITDA and ratio of funds from operations to debt. Ratios are debt weighted. The industrials sector includes capital goods, commercial and professional services, and transportation entities. p--Projection. bil.--Billion. tril.--Trillion. Source: S&P Global Market Intelligence, S&P Global Ratings.

Chart 7

## Real Estate, Industrials, And Consumer Discretionary More Vulnerable To Interest And Inflation Stress

Cash flow negatives (% of debt)




p--Projection. Ratios are debt weighted. The industrials sector includes capital goods, commercial and professional services, and transportation entities. Data source: S&P Global Market Intelligence. Source: S&P Global Ratings.

# Related Research

- Global Credit Outlook 2023: No Easy Way Out, Dec. 1, 2022
- Global Debt Leverage: How Heavy Is The World's Debt Burden?, Nov. 21, 2022
- Asia-Pacific's Strong-Dollar Problem: Inconvenience Today, Headache Tomorrow, Nov. 10, 2022
- Global Debt Leverage: China's SOEs Are Stuck In A Debt Trap, Sept. 20, 2022
- Global Debt Leverage: If Stagflation Strikes, Still-Recovering Corporate Sectors Hit Hardest, July 12, 2022
- Global Debt Leverage: If Stagflation Strikes, China Corporates Are Most Vulnerable, July 12, 2022
- Global Debt Leverage: If Stagflation Strikes, Loss-Making Corporates Will Double Globally, July 12, 2022
- Global Credit Conditions: Resurfacing Credit Headwinds, June 30, 2022
- Global Debt Leverage: How A 300bp Rise In Inflation And Interest Rates Could Hit Borrowers, Dec. 7, 2021
- Global Debt Leverage: Spreads, Costs Shocks May Double Rate Of Loss-Making, June 22, 2021

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# 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 first half 2022.

The sample comprises 20,000 corporates, of which 89% are unrated and 84% are listed. The sample total debt of US$42 trillion is equivalent to 48% of estimated global corporate debt at end-June 2022 (as reported by the Institute of International Finance).

## Caveats

The data have a statistical bias toward nonfinancial corporates that are listed and had reported their latest financials at the date of sample extraction. Consequently, some industry sectors or geographies may be over or underrepresented, on a debt-weighted basis, in the sample compared with the actual global population.

As this exercise in in US$ equivalent, it does not account for foreign exchange rate changes, which may benefit entities whose debt is largely in domestic currency.

Parent companies and their subsidiaries are treated separately in this exercise.

## Sample industry coverage

The global sample contains 74 industry sectors: aerospace and defense; air freight and logistics; airlines; aluminum; auto components; automobiles; building products; coal and consumable fuels; commercial and professional services; commodity chemicals; construction and engineering; construction materials; copper; distributors; diversified chemicals; diversified consumer services; diversified metals and mining; diversified real estate activities; diversified REITs; electric utilities; electrical equipment; fertilizers and agricultural chemicals; food and staples retailing; food, beverage and tobacco; gas utilities, gold; health care equipment and services; health care REITs; hotel and resort REITs; hotels, restaurants and leisure; household and personal products; household durables; independent power and renewable electricity producers; industrial conglomerates; industrial gases; industrial REITs; integrated oil and gas; internet and direct marketing retail; leisure products; machinery; marine; media and entertainment; metal and glass containers; multiline retail; multi-utilities; office REITs; oil and gas drilling; oil and gas equipment and services; oil and gas exploration and production, oil and gas refining and marketing; oil and gas storage and transportation; paper and forest products; paper packaging; pharmaceuticals, biotechnology and life sciences; precious metals and minerals; real estate development; real estate operating companies; real estate services; residential REITs; retail REITs; road and rail; semiconductors and semiconductor equipment; silver; software and services; specialized REITs; specialty chemicals; specialty retail; steel; technology hardware and equipment; telecommunication services; textiles, apparel and luxury goods; trading companies and distributors; transportation infrastructure; water utilities.

The engineering and construction sector includes commercial construction and engineering, construction support services, heavy construction, prefabricated buildings and components and specialty contract work subsectors.

## Sample geographic coverage

The global corporate sample covers 60 geographies, which represent over 95% of world GDP:

- **Asia-Pacific:** Australia (AU), mainland China (CN), Hong Kong (HK), India (IN), Indonesia (ID), Japan (JP), Korea (KR), Malaysia (MY), New Zealand (NZ), Pakistan (PK), Philippines (PH), Singapore (SG), Taiwan (TW), Thailand (TH), Vietnam (VN).
- **Europe:** Austria (AT), Belgium (BE), Cyprus (CY), Czech Republic (CH), Denmark (DK), Estonia (EE), Finland (FI), France (FR), Germany (DE), Greece (GR), Hungary (HU), Ireland (IE), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Netherlands (NL), Norway (NO), Poland (PL), Portugal (PT), Slovakia (SK), Slovenia (SI), Spain (ES), Sweden (SE), Switzerland (CH), Turkey (TR), Ukraine (UA), United Kingdom (UK).
- **Latin America:** Argentina (AR), Brazil (BR), Chile (CL), Colombia (CO), Mexico (MX), Peru (PE).
- **Middle-East, Africa:** Egypt (EG), Ghana (GH), Israel (IL), Kenya (KE), Nigeria (NG), Saudi Arabia (SA), South Africa (ZA), United Arab Emirates (AE).
- **North America:** Canada (CA), United States of America (US).

## Growth assumptions

### Debt growth projections

We applied corporate debt growth rates estimated by our analytical teams for 2022-2024 by region.

### Revenue growth projections

We applied corporate revenue growth rates estimated by our analytical teams for 2022-2024 by region.

## Notional credit risk tiers

For 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" as a proxy for credit risk.

The distribution of notional credit risk tiers by geography and sector presented in this article are all debt weighted. In addition, the distribution by region (which includes multiple geographies) is further reweighted according to each geography's total corporate debt amount reported by Institute of International Finance.

## 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.
- Debt here is adjusted debt, for which we deduct 75% of cash equivalents from gross debt.

### All sectors except for real estate and utilities

| Tier | FFO to debt (%) | 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

| Tier | FFO to debt (%) | 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

| Tier | FFO to debt (%) | 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 (on floating rate, refinancing, and new debt) in 2023 only.

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

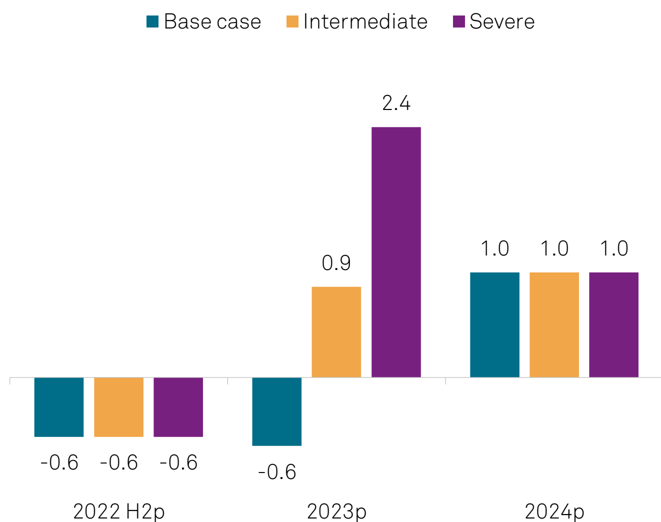
We use PPI as a proxy for input cost. Our intermediate stress entails a 150 bp increase in global PPI in 2023 above the baseline, and for the severe stress, 300 bp (see chart A1-1).

We applied our analytical teams' assumptions on input cost pass-through rate by region and sector, to arrive at net inflation.

Chart A1-1

Scenario: Cost Inflation Persists In 2023

Cost change from prior year (%)

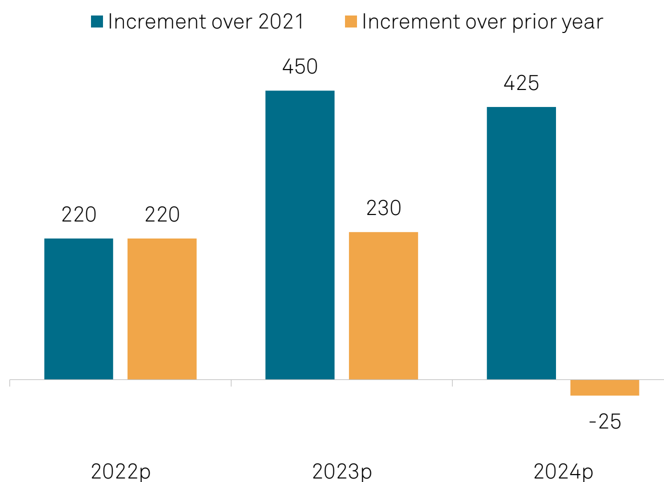



These projections are only for this scenario exercise, not for rating assessments.
p--Projected. Source: S&P Global Ratings.

Chart A1-2

Scenario: Policy Rates Up In 2023

Base interest rate, basis points (bp)




These projections are only for this scenario exercise, not for rating assessments.
p--Projected. Source: S&P Global Ratings.

### Interest rate shock

Our severe interest rate shock in 2023 entails an upward shift of the interest spread curve, averaging 300 bp across credit risk tiers on top of the base case, applying larger increments towards the riskier categories (see chart A2). For the intermediate scenario, our interest spread shock averages 150 bp.

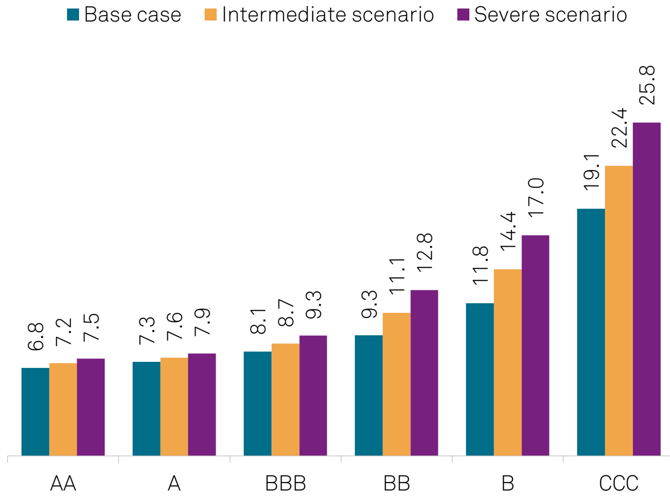
The shock is applied on floating rate and maturing debt (see chart A3). We assume that the additional risk premium demanded by investors for a given credit risk tier is the same regardless of industry sector, geography, or currency of debt.

| Tier | Incremental spreads vs. 2021 median levels Intermediate scenario | | | Incremental spreads vs. 2021 median levels Severe scenario | | |
|---|---|---|---|---|---|---|
| | 2022 | 2023 | 2024 | 2022 | 2023 | 2024 |
| Low indebtedness | 31 to 54 | 87 to 122 | 29 to 51 | 31 to 54 | 123 to 155 | 29 to 51 |
| Moderately low indebtedness | 73 | 183 | 69 | 73 | 244 | 69 |
| Moderately high indebtedness | 88 | 322 | 83 | 88 | 496 | 83 |
| High indebtedness | 158 to 431 | 526 to 1053 | 149 to 407 | 158 to 431 | 789 to 1386 | 149 to 407 |

Chart A2

## Scenario: Spreads Shock Props Up Yields In 2023

Percent (%)

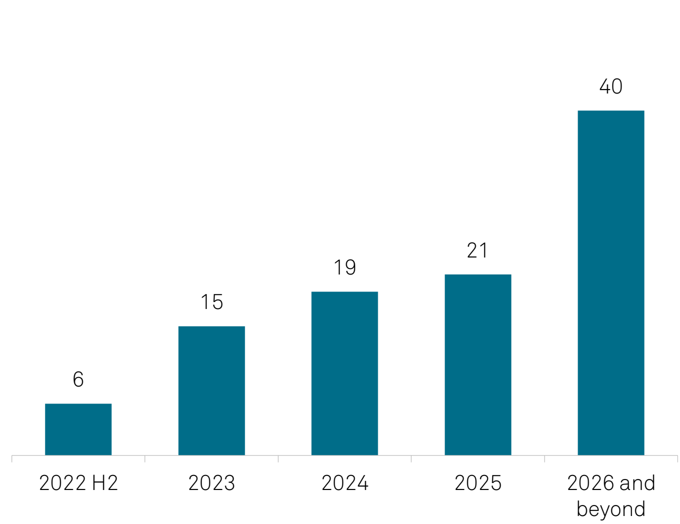



This chart shows assumptions for 2023 only. These projections are only for this scenario exercise, not for rating assessments. p--Projected. Source: S&P Global Ratings.

Chart A3

## Debt Maturity Profiles Are Well Spread

Assumed global debt maturity profile (%)




Includes rated bonds, loans, and revolving credit facilities. Source: S&P Global Ratings.

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