S&P Global
Ratings

Global Debt Leverage

# If Stagflation Strikes, China Corporates Are Most Vulnerable

## A Stress Test Of 20,000 Unrated Corporates

**July 12, 2022**

*This report does not constitute a rating action*

### Key Takeaways

- **Asia more exposed.** Of the 20,000 mostly-unrated corporates we screened, those in Asia are more exposed to inflation and interest rate shocks than our Europe and North America subsamples.
- **China will have highest loss-makers.** In our severe stress test, the loss-maker (potential defaulter) ratio for the China sample jumps to 22% from 12% while the Asia ex-China sample's ratio rises to 20% from 12%. In comparison, the global average goes to 17% from 10%.
- **China's slowdown is a global concern.** Half of China's corporates are "highly indebted" or worse. The country makes up a worrying 31% of global corporate debt. Consequently, its slowdown is a concern not only to Chinese corporates but also the world.

*(This report is part two of three in the Global Debt Leverage July 2022 series)*

### China's Corporates Are The Elephant In The Global Corporate Debt Room


p--Projected. Each geography's sample debt is reweighted according to its corresponding total corporate debt amount as reported by the Institute of International Finance. Source: Institute of International Finance, S&P Global Ratings.


Credit Research

**Terence Chan, CFA**
terry.chan@spglobal.com

**David Tesher**
david.tesher@spglobal.com

**Eunice Tan**
eunice.tan@spglobal.com

**Christine Ip**
christine.ip@spglobal.com

**Yucheng Zheng**
yucheng.zheng@spglobal.com

Research Contributor

**Sushant Desai**

Corporate Ratings

**Barbara Castellano**
barbara.castellano@spglobal.com

Global Head of Analytical Research & Development

**Alexandra Dimitrijevic**
alexandra.dimitrijevic@spglobal.com

Global Head of Ratings Thought Leadership

**Ruth Yang**
ruth.yang2@spglobal.com

**Stress testing unrated corporates.** To get a broad overview of how global corporates might handle worsening conditions, we conducted a stagflation-related scenario stress test. The sample comprised 20,000 corporates (93% unrated) with debt totaling $37 trillion, representing 41% of total global corporate debt. Each corporate was categorized into four risk tiers: low, moderately low, moderately high, and high; with loss-makers (entities with negative EBITDA or funds from operations) a sub-set of the high category. The stagflation stress comprised slower GDP growth in the U.S., eurozone and China; higher energy, commodity and producer-price inflation; and higher interest spreads. A full description of the stress test can be found in our first of three articles on this exercise, "*Global Debt Leverage: If Stagflation Strikes, Loss-Making Corporates Will Double Globally*", published July 12, 2022.

**China pool most sensitive.** Comparing geographic regions, North America and Europe are projected to have 7% and 8% loss-makers by end-2022, slightly better than the global average of 10% (see table 2-1). These ratios rise to 11% and 14% in the severe scenario. Because many emerging markets (EM-19, excluding China and Russia) are benefiting from the commodity price boom, their loss ratio starts around the global average at 11% before going to 17%. Latin America from 11% to 18%, and Asia-Pacific ex-China, from 12% to 20%.

The higher-risk distribution of the China pool renders its loss-maker ratio more sensitive than the other regions. Its ratio roughly doubles from 12% to 22%. On a country-by-country basis, China still stands out (see table 2-2 for the top (based on GDP) 20 economies). France also has a significant increase and Mexico an even higher increase but these are explained by the idiosyncrasy of just a few large borrowers (in the case of France) or even one (in the case of Mexico) tipping into negative EBITDA or funds from operations (FFO).

Table 2-1

## Asia-Pacific Corporates More Sensitive Than Europe, Latin America Or North America

Stress scenario: Loss-makers (% of debt) for corporate sample by region

| Loss-makers (%) | Sample debt $ tril. | Sample count | Average risk tier | Actual 2021 | Baseline, 2022p | Intermediate shock, 2023p | Severe shock, 2023p |
|---|---|---|---|---|---|---|---|
| Global | 37.2 | 20,000 | 4.1 | 7% | 10% | 14% | 17% |
| APAC ex-CN | 8.2 | 9,109 | 4.3 | 9% | 12% | 17% | 20% |
| China | 8.6 | 3,448 | 4.3 | 7% | 12% | 19% | 22% |
| EM-19 | 3.1 | 3,360 | 4.0 | 9% | 11% | 14% | 17% |
| Europe | 8.1 | 3,770 | 4.1 | 6% | 8% | 12% | 14% |
| Latin America | 1.1 | 892 | 4.0 | 10% | 11% | 15% | 18% |
| North America | 10.4 | 2,233 | 3.9 | 5% | 7% | 9% | 11% |

Average risk tier is shown as a numeric equivalent where 1.5 = "low", 3 = "moderately low", 4 = "moderately high", 5.5 = "high". 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-19--19 emerging markets, namely Argentina, Brazil, Chile, Colombia, Egypt, India, Indonesia, Kazakhstan, 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.

Table 2-2

## China, France And Mexico Suffer Largest Percentage Point Increase In Loss-Makers

Stress scenario: Loss-makers (% of debt) for corporate sample by economy

| | | | | Distribution of risk tiers (% of debt), 2022p | | | | | Stress scenario shock: Loss-makers, 2023p | |
|---|---|---|---|---|---|---|---|---|---|---|
| Geography | Sample debt $ tril. | Sample count | Average risk tier | Low (1.5) | Moderately low (3) | Moderately high (4) | High (5.5) | Loss-makers | Intermediate | Severe |
| **APAC ex-CN** | **8.2** | **9,109** | **4.3** | **6%** | **11%** | **33%** | **38%** | **12%** | **17%** | **20%** |
| Australia | 0.5 | 452 | 4.2 | 6% | 14% | 41% | 29% | 11% | 14% | 16% |
| India | 0.6 | 816 | 4.3 | 2% | 7% | 52% | 27% | 13% | 15% | 19% |
| Indonesia | 0.2 | 261 | 4.1 | 7% | 16% | 41% | 25% | 11% | 12% | 13% |
| Japan | 2.9 | 1,868 | 4.3 | 7% | 11% | 30% | 40% | 12% | 16% | 19% |
| Korea | 1.2 | 2,876 | 4.2 | 4% | 17% | 29% | 42% | 7% | 10% | 12% |
| China | 8.6 | 3,448 | 4.3 | 6% | 12% | 23% | 46% | 12% | 19% | 22% |
| **EM-19** | **3.1** | **3,360** | **4.0** | **9%** | **15%** | **37%** | **28%** | **11%** | **14%** | **17%** |
| Saudi Arabia | 0.3 | 87 | 2.3 | 54% | 21% | 15% | 7% | 4% | 5% | 5% |
| **Europe** | **8.1** | **3,770** | **4.1** | **8%** | **16%** | **34%** | **33%** | **8%** | **12%** | **14%** |
| France | 1.6 | 498 | 4.1 | 8% | 17% | 34% | 35% | 6% | 13% | 16% |
| Germany | 1.5 | 334 | 4.4 | 3% | 10% | 31% | 47% | 9% | 11% | 12% |
| Italy | 0.5 | 212 | 4.4 | 2% | 11% | 38% | 46% | 3% | 8% | 11% |
| Netherlands | 0.3 | 85 | 3.7 | 24% | 10% | 35% | 20% | 11% | 12% | 15% |
| Spain | 0.4 | 108 | 4.3 | 8% | 6% | 34% | 40% | 12% | 15% | 17% |
| Switzerland | 0.5 | 170 | 3.6 | 15% | 33% | 28% | 16% | 7% | 10% | 11% |
| Turkey | 0.1 | 135 | 4.6 | 0% | 8% | 29% | 56% | 7% | 10% | 11% |
| United Kingdom | 1.7 | 1,099 | 4.2 | 6% | 15% | 34% | 32% | 13% | 14% | 16% |
| **Latin America** | **1.1** | **892** | **4.0** | **8%** | **21%** | **37%** | **22%** | **11%** | **15%** | **18%** |
| Brazil | 0.5 | 442 | 3.7 | 10% | 30% | 33% | 18% | 9% | 10% | 12% |
| Mexico | 0.3 | 119 | 4.2 | 6% | 7% | 46% | 15% | 26% | 43% | 44% |
| **North America** | **10.4** | **2,233** | **3.9** | **7%** | **18%** | **47%** | **20%** | **7%** | **9%** | **11%** |
| Canada | 0.8 | 310 | 4.1 | 4% | 13% | 49% | 29% | 5% | 6% | 9% |
| United States | 9.6 | 1,923 | 3.9 | 8% | 19% | 47% | 19% | 7% | 9% | 11% |

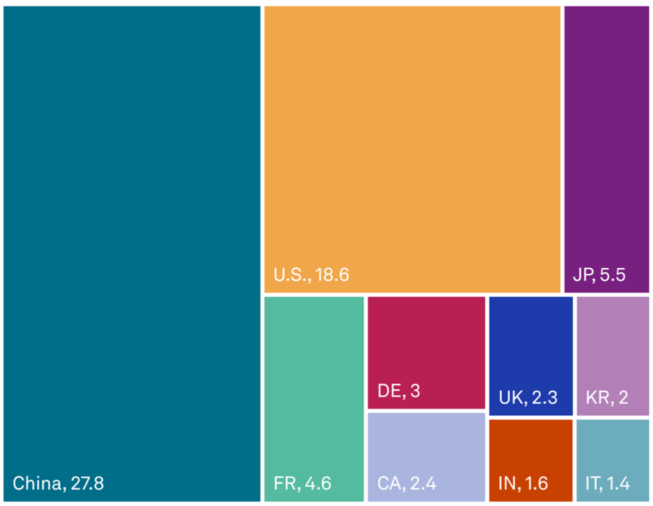
Average risk tier is shown as a numeric equivalent where 1.5 = "low", 3 = "moderately low", 4 = "moderately high", 5.5 = "high". This calculation is a rough ranking of credit risk that references an entity's debt-to-EBITDA and ratio of funds from operations to debt. Ratios are debt weighted. APAC ex-CN--Asia-Pacific excluding China. EM-19--19 emerging markets, namely Argentina, Brazil, Chile, Colombia, Egypt, India, Indonesia, Kazakhstan, 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. p--Projection. tril.--Trillion. Source: S&P Global Market Intelligence. Source: S&P Global Ratings.

**China's corporates are overindebted.** China's $28 trillion of corporate debt, equivalent to around 140% of GDP, is the largest among countries. In contrast, total U.S. corporate debt is $19 trillion or around 75% of GDP. The contrast is illustrated in chart 2-1. In addition, we assess that almost 50% of China's corporate debt is of high risk or worse, more than double the U.S.'s 19% ratio (see table 2-2).

Chart 2-1a

### Top Ten Geographies Based On Size Of Corporate Debt...

US$ tril.

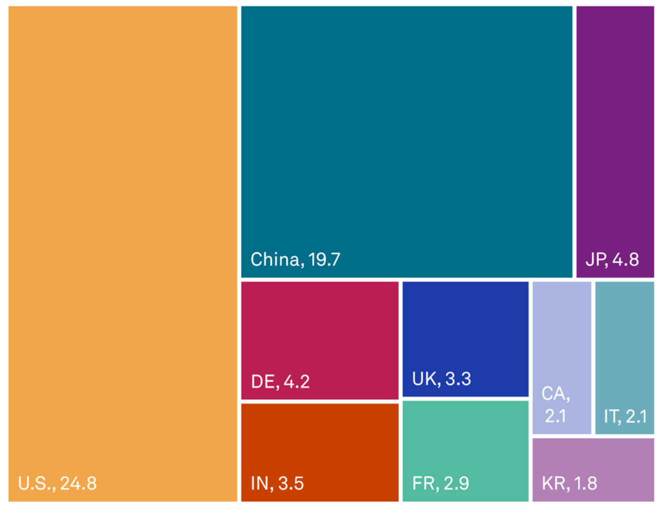



CA--Canada, DE--Germany. FR--France, IN--India, IT--Italy, JP--Japan, KR--Korea.
Data source: Institute of International Finance. Data as of 2021. Source: S&P Global Ratings.

Chart 2-1b

### ...And Their Corresponding Size Of Economy (GDP)

US$ tril.




CA--Canada, DE--Germany. FR--France, IN--India, IT--Italy, JP--Japan, KR--Korea.
Data source: Institute of International Finance. Data as of 2021. Source: S&P Global Ratings.

**Lockdowns have hit companies hard.** In 2021, the Chinese central government's crackdown on the property and technology sectors--the former contributing a large part to economic activity and the latter to innovation-driven growth--had already dampened economic prospects albeit unintentionally. In 2022, the government's "dynamic-zero" policy to fight the spread of COVID has led to long and widespread lockdowns of cities and towns. The poster child for such lockdowns was Shanghai, China's most vital financial hub and port city. The transport, retail, leisure and property sectors have seen the biggest hits on demand. Supply-chain disruptions for auto and technology are likely to persist.

**China's challenge is a global problem.** While our stress scenario is based on higher inflation and interest spreads, both of which may be dampened in a slowing economy such as China's, the point of the exercise is to assess the corporate sector's sensitivity to lower earnings and cashflow. With weakened demand for goods, China's corporates are certainly facing this challenge. With nearly a third of global corporate debt, China's challenge is the world's challenge.

## Stress Test of Rated Sovereigns

Our sovereign ratings team recently conducted a stress test involving two interest rate shock scenarios: a 100 basis point (bp) increase in the cost of refinancing central government debt, and a 300bp increase (see "*Take A Hike 2022: Which Sovereigns Are Best And Worst Placed To Handle A Rise In Interest Rates*," June 22, 2022). They found the first-order effects of rising rates look to be fiscally challenging for a minority of developed market (DM) sovereigns and at least six out of 19 emerging market (EM) sovereigns. For those EMs with annual gross refinancing needs above 10% of GDP and with rising cost of new debt (Brazil, Hungary, Ghana, Egypt, and Kenya) the uncertainty and direction of the Federal Reserve's rate policy will remain a key risk through to the end of 2022.

Sovereign Ratings

**Frank Gill**
frank.gill@spglobal.com

# Related Research

- Global Debt Leverage: If Stagflation Strikes, Still-Recovering Corporate Sectors Hit Hardest, 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
- White Paper: Introducing Our Credit Cycle Indicator, June 27, 2022
- Recession Risk And Ratings: What Recession Could Mean For European Speculative Grade Nonfinancial Corporates, June 23, 2022
- Take A Hike 2022: Which Sovereigns Are Best And Worst Placed To Handle A Rise In Interest Rates, June 22, 2022
- APAC Corporates: Inflation, Rate Strains Set In, June 21, 2022
- Searching For Stress Fractures: Evaluating The Impact Of Interest Rate And EBITDA Stresses On U.S. Speculative-Grade Corporates, May 25, 2022
- Default, Transition, and Recovery: The U.S. Speculative-Grade Corporate Default Rate Could Reach 3% By 2023 As Risks Continue To Increase, May 19, 2022
- China's COVID Policy To Further Weigh On Economy, Credit, May 16, 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

## Editor

Cathy Holcombe

## Digital Designers

Halie Mustow

Evy Cheung

# 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 20,000 corporates, of which 93% are unrated and 74% are listed. The sample total debt of US$37 trillion is equivalent to 41% 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 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.

## 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 61 geographies, which represent over 95% of world GDP:

- **Asia-Pacific:** Australia (AU), mainland China (CN), Hong Kong (HK), India (IN), Indonesia (ID), Japan (JP), Kazakhstan (KZ), 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.

### Revenue growth projections

For each corporate, we project revenue growth for 2022-2024 using a 1-to-1 mapping with nominal GDP growth across geographies.

## 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 four notional credit risk tiers--"low indebtedness", "moderately low indebtedness", "moderately high indebtedness" and "high indebtedness" as a proxy for credit risk. The sub-tier of "loss-makers" (entities returning negative EBITDA or negative FFO) is extracted from the "high indebtedness" tier.

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 and refinancing debt) 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.

**Scenario trigger**

The slowdown in growth among the major economies of the U.S., eurozone, and China is our scenario trigger, cascading into a sequence of repercussions on revenue, prices and interest rates. The growth slowdown assumptions are linked to S&P Global Ratings' June 2022 macroeconomic forecasts (see tables below) using the Global Link Model (GLM) to produce a reasonable set of consistent downside projections for the U.S., eurozone, and China over the period 2022-2024. Based on those, we further apply an intermediate scenario and a severe scenario related to energy and commodities prices, general inflation (particularly producer price index [PPI]), and interest rates, on company financials as detailed below. All told, our scenario endpoint implies stagflation conditions.

**Input inflation shock**

We use PPI as a proxy for input cost.

We assume an input cost pass-through rate of about 80% to arrive at net inflation at both geography- and sector-level, and any increase in cost of goods sold (COGS, inclusive of labor cost) absorbed by each corporate is the simple average of the two. In addition, sector-level inflation captures both the change in energy/commodities prices and general inflation, taking into account the cost breakdown by sector.

As aforementioned, each corporate's revenue growth is assumed to move in tandem with nominal GDP growth. For a few upstream sectors related to energy and commodities, we assume an additional increase in revenue as they tend to benefit from higher energy/commodities prices.

For the intermediate and severe scenarios, respectively, we reference the corresponding energy/commodities prices, PPI, and nominal GDP growth for 2022-2024 in the calculations.

**Interest rate shock**

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

The shock is applied on floating rate and maturing debt. 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 | 82 to 105 | 134 to 171 | 72 to 93 | 89 to 112 | 140 to 177 | 72 to 93 |
| Moderately low indebtedness | 147 | 238 | 111 | 176 | 278 | 111 |
| Moderately high indebtedness | 246 | 394 | 126 | 358 | 566 | 126 |
| High indebtedness | 386 to 738 | 620 to 1189 | 192 to 449 | 569 to 1001 | 900 to 1583 | 192 to 449 |