



Sovereign Rating Methodology

Sovereign and Public Sector

27 September 2022

Contacts

Giacomo Barisone

Managing Director
Sovereign & Public Sector
+49 69 6677 389 22

g.barisone@scoperatings.com

Alvise Lennkh-Yunus

Executive Director
Sovereign & Public Sector
+49 69 6677 389 85

a.lennkh@scoperatings.com

Summary

This rating methodology explains Scope's approach to assigning sovereign credit ratings. The assessment continues to be based on five categories of sovereign risk: 'Domestic economic risk', 'Public finance risk', 'External economic risk', 'Financial stability risk' and ESG risks. The updates to the methodology published on 8 October 2021 include changes to the quantitative model and specifications for additional considerations.

Specifically, with this update we

- i) introduce minor changes to our quantitative model to remove the current bias in our calculations of economic growth and public debt scores, better assess revenue mobilisation of sovereigns and transition risks, increase the weight of demographics and governance, substitute the time series for income inequality, remove the change in gross financing needs for data availability reasons, and remove the debt trajectory variable given its lag and volatility;
- ii) clarify our treatment of official sector financial assistance; and
- iii) enhance our treatment of exceptional political/conflict risks.

The changes are not expected to affect existing sovereign ratings or any other ratings assigned by Scope.

Contents

Summary	2
1. Introduction	4
1.1 Rating definitions	5
1.1.1 Definition of a sovereign issuer.....	5
1.1.2 Definition of a sovereign default.....	5
1.1.3 Local- and foreign-currency ratings.....	5
1.1.4 Mapping from long-term to short-term ratings.....	5
1.1.5 Short-term local- and foreign-currency ratings	5
1.1.6 Model data and sources.....	5
2. Methodology	6
2.1 Overview.....	6
2.2 Domestic economic risk.....	7
2.3 Public finance risk.....	8
2.4 External economic risk.....	9
2.5 Financial stability risk.....	10
2.6 Environmental, social and governance risk.....	11
3. Core variable scorecard (CVS)	13
3.1 Forecasts and peer analysis	15
3.2 Reserve currency.....	15
4. Qualitative scorecard (QS)	16
5. Additional considerations	17
5.1 Official sector financial assistance	17
5.2 Political risks and conflicts	17
5.3 Extraordinary circumstances.....	18
6. Annex I: Quantitative variables (CVS)	19
7. Annex II: Qualitative variables (QS)	24
8. Annex III: Foreign vs local currency sovereign defaults	28
9. Annex IV: Country case study	30
10. Literature	31

1. Introduction

This credit rating methodology details our methodological approach and credit rating criteria for the ratings of sovereign issuers and their debt issuances.

Our ratings of a sovereign reflect our forward-looking assessment of its ability and willingness to honour debt obligations to private sector creditors in full and on time. Ratings are assigned to the issuer, i.e. the sovereign, and its debt instruments. We assign local-currency (LC) ratings and foreign-currency (FC) ratings using our long-term and short-term rating scales.

In assigning a sovereign issuer rating, we incorporate the significant factors affecting the risk of upholding timely and full payment of interest and principal in the future. Our rating methodology looks at a broad range of economic, fiscal, external, financial and ESG-credit related factors to assess the government's ability and willingness to service its debt obligations.

Our sovereign rating methodology adds analytical value through:

- a comprehensive analysis using both quantitative and qualitative determinants of sovereign risk;
- a forward-looking rating framework explicitly incorporating five-year forecasts;
- the inclusion of financial stability risk to explicitly account for risks stemming from the banking sector;
- the inclusion of credit risk in relation to environmental, social and governance aspects; and
- rigorous rating analysis using sophisticated scoring systems to enhance transparency.

The methodology provides a detailed explanation of our analytical framework and rating approach, including regarding the rationale for each key rating factor as well as more granular assessment criteria. The methodology is based on scorecards that allow a consistent assessment of the relative strength of rated sovereigns and enhance rating transparency and comparability. Our dual quantitative-qualitative approach is underpinned by sovereign and global financial stability risks that have emerged since the Global Financial Crisis.

To structure the rating process and ensure comparability across the peer group, we divide the sovereign analysis into five broad-based analytical categories, each of which contains quantitative and qualitative considerations:

1. Domestic economic risk
2. Public finances risk
3. External economic risk
4. Financial stability risk
5. Environmental, social and governance risk

We implement a core variable scorecard (CVS) as the first step for determining an indicative sovereign rating. The CVS aggregates the main components of the five rating categories and yields a score which is mapped to the long-term rating scale. For sovereigns with a reserve currency included in the IMF Special Drawing Rights basket, we adjust this indicative rating upward by 1-3 notches. We complement the quantitative CVS with a qualitative scorecard (QS) to account for analytical elements that cannot be captured within the CVS. The QS serves as a qualitative adjustment of the CVS indicative rating, with a possible adjustment of ± 3 notches except when additional considerations apply, as detailed in [Chapter 5](#).

Applying a formal and rigorous qualitative framework in the sovereign credit risk analysis has several benefits. First, it supplements our analysis of fundamental fiscal and macro-economic variables. We believe that a robust, qualitative framework helps with identifying changes in sovereign risk. Second, it allows us to assess the cascading impacts of alternative macroeconomic assumptions and policy responses as well as the availability and quality of the potential action and reactions of governments and institutions that may be material for sovereign credit risk. Scenario analysis based on tested causalities is also applied to a wide range of possible economic developments.

1.1 Rating definitions

1.1.1 Definition of a sovereign issuer

We define sovereigns as member states of the International Monetary Fund¹.

Our ratings assigned to sovereigns or their issuances apply only to the risks faced by private sector creditors. The rating does not reflect a sovereign's ability and willingness to service other types of obligations, such as:

- obligations to multilateral development institutions, such as the International Monetary Fund or the World Bank; or
- obligations to other governments (Paris Club debt or intergovernmental debt).

Our ratings do not refer to risks faced by these official sector institutions as they typically enjoy preferential treatment².

1.1.2 Definition of a sovereign default

Our [definition of default](#) is applicable to sovereign debt obligations. We will also treat the following events as a default:

- any debt exchange or distressed debt restructuring that includes, for example, an extension of maturities, a reduced principal amount, lower coupon or interest rates, a change in the currency payment³ or effective subordination;
- failure to service debt other than loans or bonds owed to private creditors by the sovereign; and
- missed coupon or principal repayment on non-sovereign debt benefiting from an irrevocable and unconditional guarantee issued by the sovereign.

1.1.3 Local- and foreign-currency ratings

We assign LC and FC ratings using our long-term and short-term rating scales.

The ability and willingness to pay in LC or FC debt is typically the same among investment-grade rated sovereigns (i.e. those rated BBB- and above). In rare cases for non-investment-grade rated sovereigns, we may assign a higher LC rating than the FC rating if default risk varies between FC and LC debts. In such cases, the following key factor(s) would need to be met:

- Weak external fundamentals and outstanding risks as associated with currency depreciation;
- Significant proportion of central government debt burden denominated in FC;
- Established domestic capital markets and stronger capacity to refinance debt in LC; and/or
- Past preferential treatment of its LC versus FC debt or a strong basis for future disparity in willingness to pay LC versus FC debt.

Finally, in exceptional circumstances, such as sanctions or extreme political developments, we could rate LC debt below FC debt. [Annex III](#) provides an overview of the default history of FC debt against LC debt.

1.1.4 Mapping from long-term to short-term ratings

We usually derive short-term ratings from the long-term ratings. The relevant elements for the differentials between LC and FC long-term ratings are the same for the short-term ratings. Accordingly, FC and LC short-term ratings are not always aligned.

1.1.5 Short-term local- and foreign-currency ratings

Our [rating definitions](#) provide five possible and overlapping short-term ratings over five long-term rating categories. The ability exclusive to a sovereign to create its own currency and obtain privileged market access typically results in higher financial flexibility and short-term solvency than for other issuers, for example, similarly rated corporates and financial institutions. As a result, for FC and LC short-term ratings, we will choose the higher of the two for sovereigns benefiting from an established reserve currency, sizeable foreign-exchange reserves or strong financial and policy flexibility. Conversely, we will choose the lower of the two for sovereigns with depleted reserves and low financial and policy flexibility.

1.1.6 Model data and sources

Our analysis is based predominantly on public information from a variety of sources. We may consider the confidential information submitted by sovereign issuers actively participating in the rating process. These sources include supranational organisations (such as the International Monetary Fund, the European Commission, the European Central Bank, the Organisation for Economic

¹ The one exception is Hong Kong.

² Preferred creditor status reflects the incentives of a borrowing sovereign to prioritise debt repayment to multilateral institutions. These incentives include continued access to funds, availability of cheaper terms with longer maturities and the threat of sanctions.

³ In the case of a currency redenomination that leads to a change in the payment terms of a debt obligation enacted by the sovereign that results in a financial loss (or significant inconvenience to receive payment in full and on time) to investors.

Cooperation and Development, the World Bank, and the Bank for International Settlements), national statistical offices, national central banks, other government agencies and ministries, and other generally accepted sources. We will not rate a sovereign if data is lacking in coverage or quality, or if issues place the utility of the data into question.

2. Methodology

2.1 Overview

Five risk categories are critical for our sovereign credit ratings: domestic economic risk, public finance risk, external economic risk, financial stability risk, and environmental, social and governance risk. For each risk category, we analyse a group of key quantitative and qualitative factors to capture the state of a sovereign's creditworthiness.

Figure 1: Five categories of sovereign credit risk

Core Variable Scorecard (quantitative)			Reserve currency*	Qualitative Scorecard		
Sovereign risk category	Sub-category	Variable				
Domestic economic risk (35%)	Wealth and size	GDP per capita Nominal GDP	+	1. Growth potential and outlook 2. Monetary policy framework 3. Macro-economic stability and sustainability		
	Growth, inflation and unemployment	Real GDP growth			Real GDP volatility	
		Inflation rate				
		Unemployment rate				
Public finance risk (20%)	Debt affordability	Interest payments/revenues			+	1. Fiscal policy framework 2. Debt sustainability 3. Debt profile and market access
	Debt dynamics	GG gross debt/revenues				
		GG gross debt/GDP				
External economic risk (10%)	International position	Net IIP/GDP			[+1; +3]	1. Current account resilience 2. External debt structure 3. Resilience to short-term shocks
	Current account	Current account balance/GDP				
	External debt sustainability	Reserves/imports				
Financial stability risk (10%)	Banking sector	Non-performing loans	+	1. Banking sector performance 2. Banking sector oversight and governance 3. Financial imbalances		
	Private sector	Tier 1 ratio				
		Private sector credit growth				
ESG risk (25%)	Environment	Transition risks	+	1. Environmental factors 2. Social factors 3. Governance factors		
		Natural disaster risks				
	Resource risks**					
	Social	Old-age-dependency ratio				
		Income inequality				
		Labour force participation				
Governance	WB governance indicators***					

* Positive adjustment to sovereigns whose currency is included in the IMF's SDR basket.

** Relation between a country's Ecological Footprint of Consumption and the biocapacity available within its borders.

*** Average of six World Bank Governance Indicators.

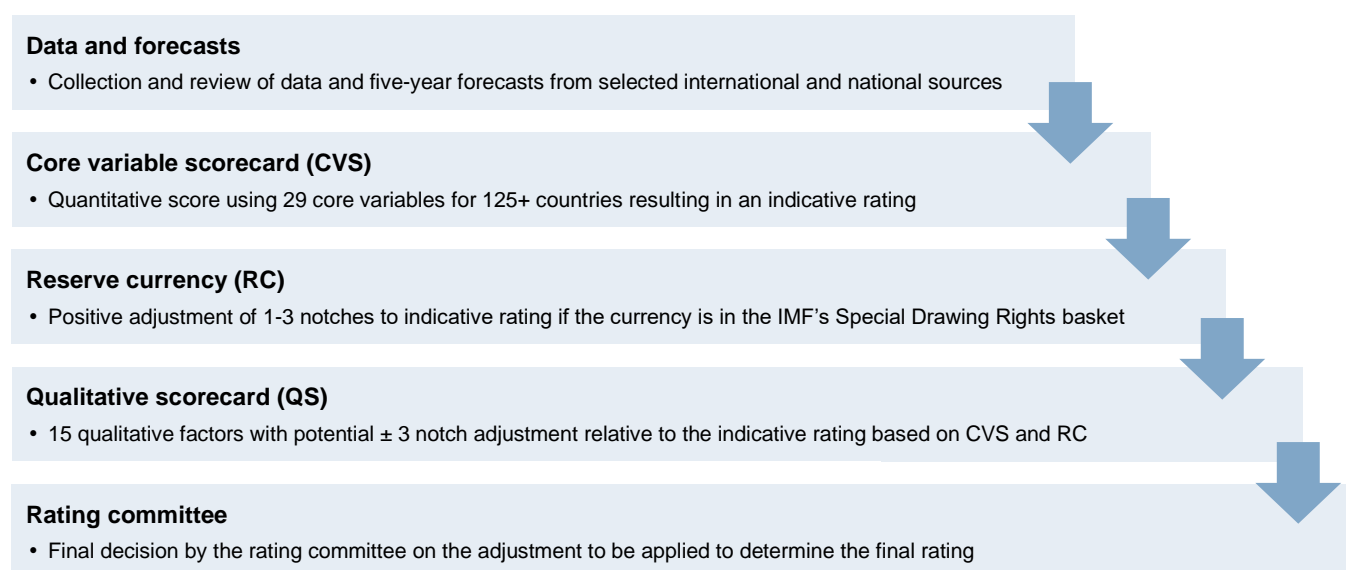
Source: Scope Ratings

The final rating is derived over five stages, including the recommendation to the rating committee. The first stage involves a rigorous review of data and forecasts. This review is based on historical data, estimates and projections on 29 economic, financial and political variables that we consider the most relevant. In the second stage, the quantitative CVS is used to calculate a first indicative rating, which is mapped to an indicative rating on the long-term rating scale. In the third stage, we adjust the indicative rating upward for sovereigns issuing in a global reserve currency included in the IMF's Special Drawing Rights basket⁴ to account for the associated benefits in a systematic and transparent manner.

The fourth stage involves the use of the qualitative QS to refine the analysis and identify an indicative rating, adjusting for sovereign-specific elements that cannot be captured within the CVS. Among these elements are assumptions about institutional and political risks, government attempts to manage the economy, and policy implementation. We use the QS to ensure rigorous, systematic and transparent analysis of qualitative forward-looking factors. The QS serves as a qualitative adjustment of the indicative CVS rating, with a potential adjustment range of ± 3 notches, except in extraordinary circumstances as detailed in [chapter 5](#). The fifth stage has the analyst presenting to the rating committee a rating recommendation based on the previous four stages. The rating committee decides on the final rating.

⁴ This is based on the IMF's Special Drawing Rights basket which currently includes the USD, EUR, JPY, GBP and RMB.

Figure 2: Sovereign rating process summary

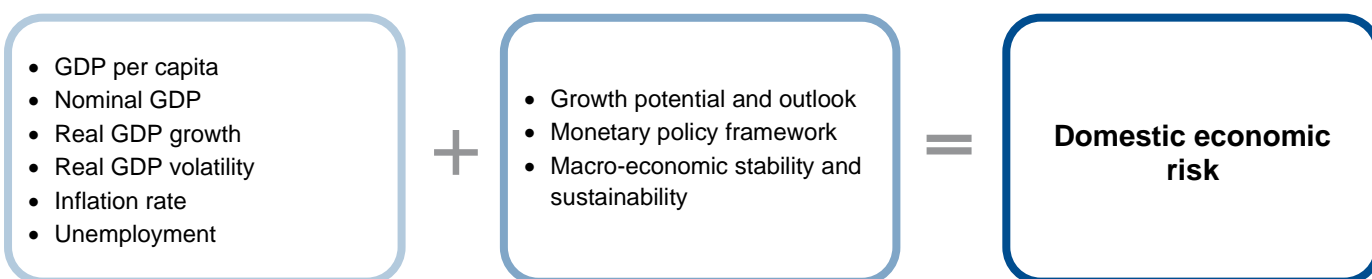


Source: Scope Ratings

In determining the final rating, the rating committee considers the sovereign's performance in each of the analytical categories within the CVS and QS. The committee also considers relevant rating aspects that are insufficiently captured in the previous analytical stages but have emerged in the rating committee discussion.

2.2 Domestic economic risk

Figure 3: Domestic economic risk



Source: Scope Ratings

Rationale and quantitative factors

The domestic economic risk factor focuses on the sovereign's ability to support sustainable long-term growth and adapt to a variety of shocks. A record of continued growth is a key indicator of a sovereign's ability to generate fiscal revenues. High domestic economic risk or weak economic prospects have proved decisive in past sovereign defaults⁵: many recent defaults and debt restructurings have resulted from years of adverse macro-economic developments and, for countries dependent on commodity exports, extended price drops of commodity prices.

The core quantitative factors measure the dynamics of the economy, expressed in real GDP growth rates and GDP volatility, as well as the country's economic resilience as reflected in GDP per capita and nominal GDP. Other core factors include inflation and unemployment. Further details on the rationale for the adoption of these variables in the CVS are addressed in [Annex I](#).

High per-capita incomes are associated with higher economic and financial wealth and suggest the predominance of high value-added activities in the economic structure (though not always applicable to countries which mainly export commodities). Economies

⁵ Tomz and Wright (2007) report that 62% of defaults over the last 200 years occurred in years where the level of output in the defaulting country was below its long-run trend.

with high nominal GDPs also tend to be more resilient to shocks. Volatile real GDP growth indicates economic imbalances, increasing uncertainty about a sovereign's ability to repay obligations in full and on time.

An economy with inflation rates that keep deviating from levels that can sustain economic growth, for example, sustained periods of deflation or double-digit inflation rates, indicate underlying distortions that are harmful for economic performance. High unemployment rates over extended periods point to structurally weak labour markets. Institutional barriers that impede labour re-allocation across economic activities may seriously hamper growth and weaken a country's ability to absorb shocks.

Qualitative factors

We complement the core indicators with qualitative considerations on a country's growth potential, monetary policy framework and macro-economic stability. We examine historical growth trends and the country's growth prospects in the medium to long term. This entails assessing a sovereign's robustness, flexibility and growth potential, in addition to assessing structural rigidities that may affect the sovereign's economic performance or make it more vulnerable to exogenous shocks.

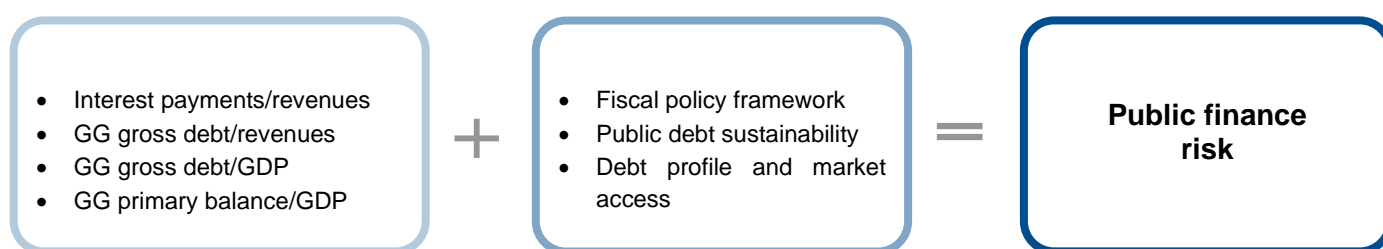
We also assess a country's monetary policy framework and foreign exchange policies. A sovereign's ability to pursue an efficient and coordinated set of policies may mitigate the risks of economic and financial shocks, supporting a faster economic recovery and more sustainable growth. We review the credibility and effectiveness of monetary policy based on the record of central banks in meeting objectives and responding to shocks. Independence of the central bank includes monetary authorities' degree of freedom in the timing and use of instruments, legally guaranteed independence from political interference, and budgetary independence.

We also consider aspects that can prevent a central bank from achieving its policies. Shallow and undiversified domestic financial systems and capital markets may constrain the effectiveness of monetary policy, with weak transmission mechanisms from the banking sector to the real economy. A rigid exchange rate regime⁶ may prevent a central bank from effectively influencing domestic currency rates. Policy objectives may conflict with the monetary policy of maintaining the exchange rate at set levels.

The macro-economic stability and sustainability assessment evaluates structural strengths and weaknesses conducive to a sovereign's growth prospects. We consider overreliance on a specific industry or economic activity to be a weakness. We measure an economy's diversification based on the proportion of valued added by sectors in the country's annual output. Overreliance on external markets also poses significant risks. Shortfalls in domestic savings may force a reliance on external funding and expose an economy to foreign investor sentiment, increasing vulnerability to external shocks.

2.3 Public finance risk

Figure 4: Public finance risk



Source: Scope Ratings

Rationale and quantitative factors

The analysis of public finance risk focuses on a sovereign's ability to maintain a strong balance sheet and repay maturing debt. We assess public finance strength using three key quantitative variables: the general government (GG) primary budget balance, interest payments as a percentage of budgeted revenues, and gross GG debt as a percentage of budgeted revenues and GDP. Further details on the rationale for the adoption of these variables in the CVS are addressed in [Annex I](#).

Many sovereign defaults are triggered by persistent fiscal imbalances⁷. For example, a period of budget deficits lasting longer than a period of economic downturn points to structural issues which, if not tackled, may lead to a build-up of debt and hinder the

⁶ Rigid exchange rate regimes include all regimes other than free-floating, as classified by the IMF in the publication 'Annual report on exchange arrangements and exchange restrictions'.

⁷ Baldacci et al. (2011) provide a comprehensive assessment of the determinants of fiscal stress periods, covering public debt default as well as near-default events.

sovereign's ability to service or refinance debt⁸. A persistent primary-budget deficit may also indicate a low capacity to service debt from own resources and an overreliance on markets to refinance.

We evaluate the GG primary balance and forecasts, as well as a sovereign's current and potential indebtedness by analysing debt levels and debt affordability ratios. Though both gross and net debt ratios are comprehensive measures of sovereign debt, the history of sovereign defaults (see [Annex III](#)) suggests that high debt levels do not necessarily lead to default. A key indicator that captures this is the debt affordability ratio, i.e. GG interest payments relative to budgeted revenues.

Qualitative factors

We complement the core fiscal risk variables with qualitative assessments on sovereign fiscal performance, debt sustainability, market access and funding sources. Our analysis of a sovereign's fiscal framework and budgetary performance evaluates a government's ability to generate revenues, plan and control expenditures, as well as the consistency, appropriateness and transparency of budgetary policies and processes, and their adequacy across various phases of the economic cycle and its synchronisation with monetary policy. We assess revenue flexibility as the ability to raise revenues through higher tax rates, an expansion of the tax base, or the sale of sovereign assets. Also important to the analysis are a sovereign's record of controlling expenditures, and the spending demands from an ageing population (pensions and healthcare).

The underlying drivers of sovereign debt dynamics are central to our analysis. We use a debt sustainability framework to assess a sovereign's ability to service debt under various stress scenarios. Public debt dynamics are analysed through medium- and long-term debt projections accompanied by sensitivity analyses. This enables us to examine the fiscal position of sovereigns, assessing their resilience to sudden episodes of fiscal stress that may occur following the materialisation of public finance or macro financial risks. Medium-term sustainability challenges are assessed by focusing on the sovereign's initial budgetary position, and the levels and projected development of its debt. Within the debt sustainability analysis, we also examine a sovereign's exposure to a wide range of contingent liabilities⁹ and assess the risk of their materialisation.

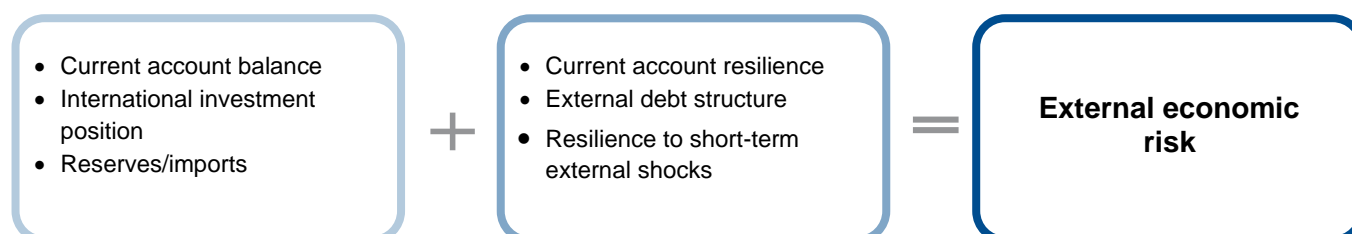
These include:

- contingent liabilities associated with the banking sector as well as state-guaranteed bank lending schemes
- contingent liabilities related to the non-financial sector, including government related entities
- explicit guarantees by the sovereign and other implicit off-budget commitments (pension obligations, extra-budgetary funds, securitisations and public-private partnerships) not included in the previous two groups

We also assess sovereign market access and the ability to issue under stress scenarios. We examine the composition, maturities, interest rates and currency structures of a sovereign's debt issues. Long maturities and durations make refinancing and interest rate shocks less likely. Conversely, significant foreign currency borrowings expose the sovereign to currency risk in times of financial and economic stress. Other areas of focus include, but are not limited to, the depth of the domestic capital market, access to concessional and multilateral sources of funding, and sovereign wealth funds.

2.4 External economic risk

Figure 5: External economic risk



Source: Scope Ratings

⁸ The defaults of Moldova in 2002, Greece in 2012 and most recently Ukraine in 2015 are examples of such types of sovereign defaults.

⁹ Bova et al. (2016) find that the average fiscal cost of a contingent liability realisation for the period 1990–2014 is 6% of GDP but costs can be as high as 40% for major financial sector bailouts.

Rationale and quantitative factors

The analysis of external economic risk focuses on the soundness and sustainability of a sovereign's external position and its resilience to external shocks. Persistent current account deficits, high external debt borrowing and overreliance on short-term funding are potential sources of external vulnerabilities, not only for emerging markets but in advanced countries as well. These vulnerabilities may reflect unsustainable consumption, asset price booms or a loss of competitiveness amplified by collapse in investor confidence and may lead to financial and economic crises and hence compromise sovereign creditworthiness.

Our core indicators for the external economic risk factors include the net international investment position, the current account balance, and reserves/imports coverage. Details on the rationale for the adoption of these variables in the CVS are addressed in [Annex I](#).

Qualitative factors

We adjust the external economic risk score by assessing current account vulnerabilities. Volatile current account receipts undermine a sovereign's ability to generate stable and reliable external revenues. Reliance on a single commodity (e.g. oil), a single service (e.g. tourism), or a single country for foreign worker remittances may expose the sovereign to shocks and sharp downturns of these commodity markets and respective countries.

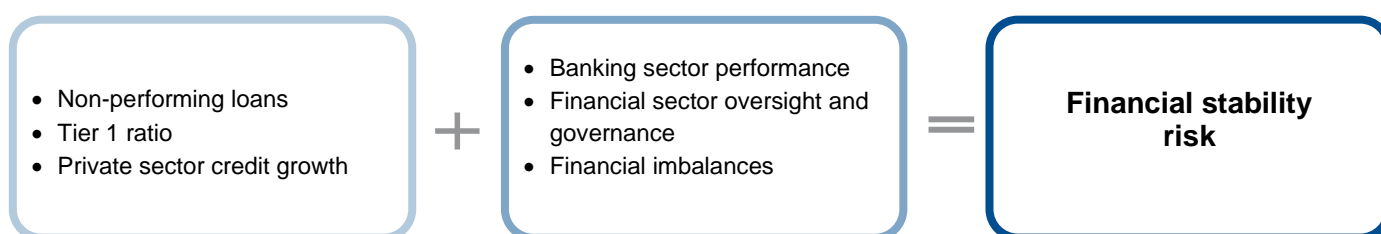
Emerging market economies are more exposed to 'original sin' problems and spill-over from financial markets¹⁰. Given a small domestic investor base, sovereigns that resort to substantial external borrowing are exposed to significant foreign currency risks. We evaluate the sustainability of external debt by focusing on the development and structure of external debt in both private and public sectors. This is assessed against assets available to make timely and full repayment. We pay specific attention to economic sectors – households, corporates, banks, or the public sector – that are responsible for any external debt overhang and the sustainability of funding sources for the accumulated debt. We also review potential spill-over of private debt onto public sector balance sheets.

We conduct our assessment of external debt positions in view of the sovereign's available external liquidity, such as international foreign-exchange reserves compared to external financing needs, including short-term external debt (original maturity short-term debt and current-year principal payments on long-term debt) and non-residents' deposits in domestic banks. A low external liquidity ratio may signal weakness in the ability of major economic sectors to withstand a temporary loss of investor confidence and hence in the sovereign's ability to service debt using domestic resources when external creditors decline to refinance.

Another important factor is the quality of the sources for external debt. Sovereigns with sizeable portions of current account deficits covered by foreign direct investments or equity in local companies are less prone to capital flight during financial market turbulence. Portfolio and other debt-like capital inflows may, however, result in an unsustainable build-up of external debt by sector. We also review access to international capital markets, especially for emerging markets, and the affordability of capital from such markets.

2.5 Financial stability risk

Figure 6: Financial stability risk



Source: Scope Ratings

Rationale and quantitative factors

The financial stability risk factor focuses on assessing the financial sector's overall strength and soundness, the effectiveness of regulation and supervision by the sovereign, and financial imbalances in the economy. The financial sector is critical to economic

¹⁰ 'Original sin' is the inability of emerging market economies to finance externally in domestic currency.

development, given its role as a collector of savings, as an intermediary between savers and borrowers, and as a provider of payment infrastructure. In this regard, we capture the key sources of systemic risk which may challenge macro-economic stability. There is significant empirical evidence of the link between systemic financial sector crises and sovereign defaults¹¹. The vulnerability of sovereigns to the strength of their financial sector has been prevalent in emerging market economies (currency crises, sudden stops) but also in advanced economies since the Great Financial Crisis.

Such crises may translate into sovereign debt crises through two channels of transmission. The first relates to the government's role to safeguard the financial system and the resulting materialisation of government-contingent liabilities adversely impacting fiscal sustainability¹². The second relates to the macro-economic situation at the time of a crisis. A crisis in the financial sector may trigger a severe recession that weakens the sovereign's fiscal position.

We also focus on the impact of a potential sovereign default on the solvency of financial institutions, given the losses these institutions may incur as a result of sovereign debt holdings and funding costs¹³. Although sovereigns and financial institutions may be independent, interdependencies create feedback loops: problems on one side can be amplified by negative feedback into the other. Under these circumstances, financial sector crises can weaken sovereign creditworthiness.¹⁴ Our core variables for assessing financial stability risks include non-performing loans, the Tier 1 ratio, and private sector credit growth. Details on the rationale for the adoption of these variables in the CVS are addressed in [Annex I](#).

Qualitative factors

We expand upon these variables by examining a country's overall financial sector performance. We analyse the main indicators of financial soundness including asset quality, profitability, liquidity and capital adequacy. A highly leveraged financial sector may be characterised by volatile funding structures with excessive reliance on wholesale funding or short-maturity instruments in foreign currencies. High leverage may expose a sovereign to large vulnerabilities that can undermine financial stability. Moreover, we assess the level of financial sector oversight as well as any macro-prudential policies aimed at reducing systemic risks by enhancing resilience to shocks and contagion.

We also examine the extent of an economy's financial imbalances related to variations in credit growth, high household and corporate debt and high asset prices as these may have a sizeable impact on sovereign creditworthiness. We focus on credit-growth dynamics, which are closely associated with financial crises and take into account a sovereign's financial development. For sovereigns with a low, but increasing, level of credit (typical in the developing world), rapid credit growth may point to a deepening of capital and financial markets, the emergence of new credit products, and an increase in the population's wealth and income.

We also examine the degree of private sector leverage as well as changes in asset prices to identify the potential for financial bubbles, especially for housing. Such bubbles, when burst, may have a long-term effect on economic activity. The danger of asset price bubbles is that they may be self-reinforcing, especially if fuelled by permissive financial leverage and lax credit standards¹⁵. Among the indicators we use are affordability ratios, household balance sheets and their impact on economic activity, and mortgage markets. Asset bubbles are also possible in stock and commodity markets.

2.6 Environmental, social and governance risk

This risk pillar comprises three separate risk categories: environmental, social and governance-related factors. Importantly, we recognise that environmental and social challenges are largely structural and likely to materialise over the longer term than the rating factors presented above. Still, they require an ambitious and timely policy response today and, as such, our qualitative assessments for environmental and social factors account for long-term considerations including the adequacy of current policies to tackle these challenges.

¹¹ See Balteanu and Erce (2014) and Correa and Sapriza (2014) for a detailed examination linking banking crises and sovereign defaults in emerging markets.

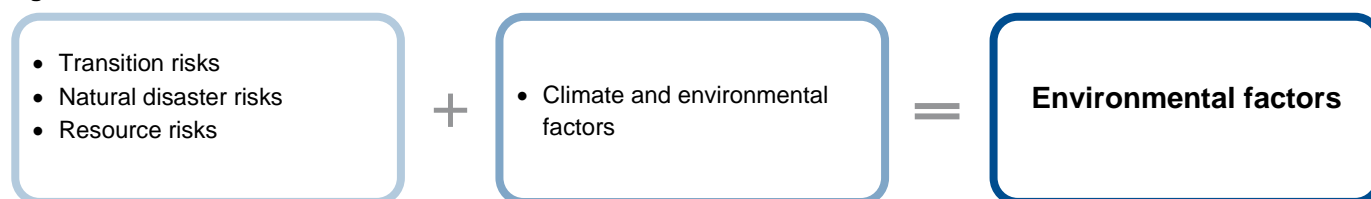
¹² Bova et al (2016) estimates of the fiscal costs of financial crises across advanced economies and emerging markets suggest between 5% and 15% of GDP.

¹³ Financial institutions highly exposed to the sovereign have shown larger increases in solvency risk, sharper reductions in loans and more noticeable rises in lending rates than institutions less exposed.

¹⁴ Financial institutions' exposure to domestic sovereign risk via government bond holdings amplified the transmission of stress to the banking system during the recent eurozone crisis. Altavilla, Pagano and Simonelli (2016) establish that sovereign exposure has a causal role in this amplification mechanism.

¹⁵ Reinhart and Rogoff (2014) find that two out of five real estate market downturns were associated with systemic banking crises in advanced economies.

Figure 7a: Environmental factors



Source: Scope Ratings

Rationale and quantitative factors

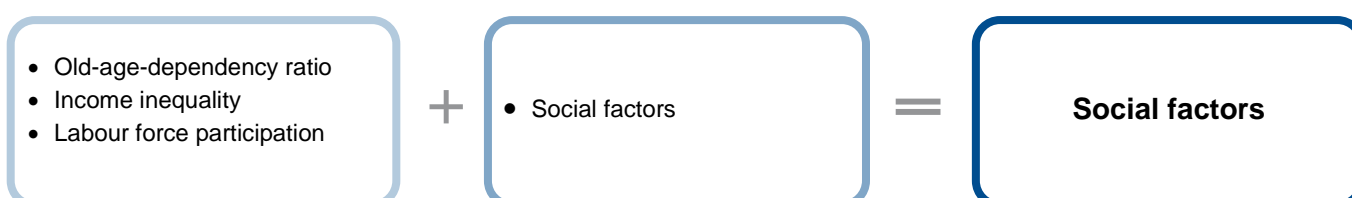
Environmental factors are increasingly relevant for sovereign credit risk and will impact both demand and supply in the decades to come and may even disrupt the entire economic and financial system¹⁶. Examples include rising costs from more frequent and extreme weather conditions as well as the structural change economies may have to undertake as and when policymakers and regulators adopt and expand carbon pricing mechanisms¹⁷. Natural resource constraints (resource-security) are also possible depending on a country's consumption and production, its trade relations facilitating access to raw materials, and available physical biocapacity within its borders¹⁸. Conversely, some sovereigns may also benefit from climate change.

Our core variables for assessing environmental risks include transition risks captured via CO₂ emissions per GDP and per capita, natural disaster risks as measured by the World Risk Institute, and resource risks measured by a country's ecological footprint of consumption relative to its biocapacity. Further details on the rationale for the adoption of these variables in the CVS are addressed in the [Annex I](#).

Qualitative factors

These variables, which capture a sovereign's current environmental risks, are complemented by our qualitative assessment of its government's willingness and ability to mitigate these risks. We assess environmental policy responses in view of the types of risks sovereigns face. For instance, transition risks should be met with ambitious climate mitigation while natural disaster risks are best addressed through climate adaptation.

Figure 7b: Social risk



Source: Scope Ratings

Rationale and quantitative factors

Social risks have a fundamental impact on economic development and social cohesion and can thus affect a sovereign's growth and public finance outlook as well as its political risks over the medium term. These risks therefore conceptually have an important interaction with other risk categories in our methodology, particularly, domestic economic risk, public finance risk and institutional and political risk. This part of the analysis focuses on persistent, structural features of an economy and society. Our core variables for assessing social risks include the old-age dependency ratio, income inequality as measured via the income share of the bottom 50%, and the labour force participation rate. Further details on the rationale for the adoption of these variables in the CVS are presented in the [Annex I](#).

¹⁶ Andersson, M., Baccianti, C. and Morgan, J. 2020. Climate change and the macro economy; ECB Occasional Paper Series.

¹⁷ De Nederlandsche Bank: The price of transition. An analysis of the economic implications of carbon taxing, October 2018.

¹⁸ UNEP, 2012. A new angle on sovereign credit risk

Qualitative factors

These variables, which capture a sovereign's current social risks, are complemented by our qualitative assessment of additional factors, which include those related to poverty, and the quality and sustainability of social systems and their implications for human capital formation. Finally, we form a view on governments' willingness and ability to mitigate these risks.

Figure 7c: Governance risk



Source: Scope Ratings

Rationale and quantitative factors

The analysis of governance factors, including institutional and (geo)political risks, focuses on the strength, soundness and stability of a country's political institutions. Sovereign defaults may be triggered by weak institutions, political instability, and an exposure to external conflicts which directly or indirectly affect the perceived willingness to service debt¹⁹. Our core indicators for institutional and political risks are the six governance indices compiled by the World Bank: control of corruption, the rule of law, the voice and accountability, governance effectiveness, political stability and absence of violence, and regulatory quality. Further details on the rationale for the adoption of these variables in the CVS are addressed in the [Annex I](#).

Qualitative factors

The quantitative variables are supplemented by assessments of qualitative factors that include recent events, policy, institutional and (geo)political risks and considerations that may materially affect sovereign creditworthiness. Our analysis emphasises the sovereign's ability to implement structural reforms and fiscal consolidation, which may be politically difficult. We also review policy risk and overall orientation, predictability, and efficacy of government policy, focusing on measures and initiatives most likely to impact economic and financial conditions. We also examine the frequency of changes in government and the sovereign's record in dealing with past political and economic crises.

Geopolitical risks can threaten economic growth. This may be mitigated by a sovereign's ability to contain risks associated with these low-probability but high-impact events. We assess geopolitical security risks that can disrupt economic activity through tensions with neighbouring countries that may lead to armed conflict. External conflicts or the threat of conflicts may reduce investment flows and be detrimental for business confidence, putting a strain on the balance of payments and internal policies.

3. Core variable scorecard (CVS)

We use our CVS model (CVS), a core variable scorecard (CVS), as the first step for determining an indicative sovereign rating. The CVS encompasses the five analytical categories we apply to sovereign ratings. While the CVS is not a predictive model of default, it does assess a sovereign's relative credit strengths and weaknesses, allowing for a comprehensive peer group analysis. Given the limited number of sovereign defaults, we believe a purely quantitative analysis cannot determine the probability of default as statistical models fail to capture qualitative factors that have led to sovereign defaults, for example, political decisions.

¹⁹ External conflict with Russia, coupled with a change in the country's leadership, contributed greatly to the default by Ukraine on a USD 18bn Eurobond in 2015. Other recent examples of defaults driven by political risk include Paraguay's debt restructuring in 2002-04 and Ecuador's default in 2008.

We have chosen 29 quantitative variables as the basis of a rigorous peer analysis. These were chosen based on empirical research, economic theory, academic studies on factors driving historical defaults²⁰, analytical judgment, and availability. We consider these indicators to be good predictors of default and fiscal distress and hence offer strong explanatory power.

To calculate the rating score within the CVS, we use a minimum-maximum algorithm to determine a rating score, which ranges from 1 to 100 as per the indicative rating, for each of the 29 indicators. We calculate the minimum and maximum of each rating indicator and place each sovereign within this range. Sovereigns with the strongest results for each rating indicator receive the highest rating score; sovereigns with the weakest results receive the lowest rating score.

For example, in the hypothetical situation where the positive (negative) outlier of a variable is identified as the value 1 (-8), the score of a variable with the value 0.5 (thus being close to the 'best' score) would be derived using the following calculation: $1 + 99 \times \frac{|X - \text{MIN}|}{\text{MAX} - \text{MIN}}$ or $1 + 99 \times \frac{|0.5 - (-8)|}{1 - (-8)} = 94.5$.

We use statistical analysis to exclude outliers (statistical noise) at either end of the distribution. The minimum-maximum calculation is based on a sample of more than 125 countries, covering 99% of sovereign debt issuance. We identify outliers based on the Median Absolute Deviation²¹, which adds (subtracts) the median of the absolute difference between each observation and the median of the full sample multiplied by a constant to (from) the median of the sample. Scores are aggregated using a weighted average score to generate an overall rating score. In a final step, we use the aggregated CVS score to determine the indicative rating as shown in the following table.

Figure 8: Five categories of sovereign credit risk (CVS)

Core Variable Scorecard (quantitative)			Reserve currency*	
Sovereign risk category	Sub-category	Variable		
Domestic economic risk (35%)	Wealth and size	GDP per capita	+	[+1; +3]
		Nominal GDP		
	Growth, inflation and unemployment	Real GDP growth		
		Real GDP volatility		
		Inflation rate		
Public finance risk (20%)	Debt affordability	Unemployment rate	+	
		Interest payments/revenues		
	Debt dynamics	GG gross debt/revenues		
		GG primary balance/GDP		
		GG gross debt/GDP		
External economic risk (10%)	International position	Net IIP/GDP	+	
	Current account	Current account balance/GDP		
	External debt sustainability	Reserves/imports		
Financial stability risk (10%)	Banking sector	Non-performing loans	+	
	Private sector	Tier 1 ratio		
ESG risk (25%)	Environment	Private sector credit growth	+	
		Transition risks		
		Natural disaster risks		
	Social	Resource risks**		
		Old-age-dependency ratio		
		Income inequality		
Governance	Labour force participation			
	WB governance indicators***			

* Positive adjustment to sovereigns whose currency is included in the IMF's SDR basket.

** Relation between a country's Ecological Footprint of Consumption and the biocapacity available within its own borders.

*** Average of six World Bank Governance Indicators.

Source: Scope Ratings

²⁰ These Include Reinhart and Rogoff (2009), Manasse and Roubini (2003) and Baldacci et al. (2011).

²¹ See 'Leys, C. et al. 2013. 'Detecting outliers: Do not use standard deviation around the mean, use absolute deviation around the median'.

The scores are in lower case to differentiate them from the final rating scores determined by the rating committee. We note that movements between indicative ratings are not immediate but executed after the analyst's review of CVS results and are documented and approved by a rating committee during review of the rating. The aim is to avoid scores which are at the limit of indicative ratings to move too rapidly and too frequently into another indicative rating thus creating unnecessary rating volatility.

Figure 9: Mapping CVS scores to indicative ratings

aaa	80.0-100.0	bb+	46.7-50.0
aa+	76.7-80.0	bb	43.3-46.7
aa	73.3-76.7	bb-	40.0-43.3
aa-	70.0-73.3	b+	36.7-40.0
a+	66.7-70.0	b	33.3-36.7
a	63.3-66.7	b-	30.0-33.3
a-	60.0-63.3	ccc	20.0-30.0
bbb+	56.7-60.0	cc	10.0-20.0
bbb	53.3-56.7	c	1.0-10.0
bbb-	50.0-53.3	d	No score

Source: Scope Ratings

3.1 Forecasts and peer analysis

The CVS incorporates historical, current and forward-looking data. As economic data and forecasts are revised and changed, we update the CVS continually, reviewing each country at least twice yearly. We use publicly available macro-economic and financial data with five-year forecasts for 11²² out of the 29 adopted variables (see [Annex I](#)). For these variables, we calculate a weighted average before deploying the rating algorithm, providing a single data point that includes the last year of historical data, current-year data and a five-year forecast. This algorithm uses a dynamic weighting process in which weights for T_0 and T_{+1} change over a calendar year. This is because data availability improves the quality of forecasts, resulting in an assignment of higher weight to T_{+1} at the end of a calendar year. We use forecasts to form a forward-looking opinion on sovereign risk. We adopt a through-the-cycle approach that goes beyond the current phase of the economic cycle, focusing on long-run performance. Consequently, we believe a rating is more likely to change when an economy undergoes a clear structural change or when the phase of the cycle has exposed fundamental weaknesses or strengths in sovereign creditworthiness.

The relation between quantitative indicators and sovereign risks may differ across countries. The CVS rating score does not represent a linear relationship between quantitative indicators and sovereign default risks. The scorecard acts primarily as a scoring tool to help form a recommendation for the rating committee. Essential to our approach are the indicative rating peer groups, which include the peers in the adjacent indicative ratings generated by the CVS. These allow comparative analysis across sovereigns and across time. This is essential to ensure consistency and provides the basis for the qualitative assessment in the QS.

3.2 Reserve currency

Global currencies are widely used in cross-border monetary operations, finance and trade. For the few issuing sovereigns, these currencies come with both benefits and costs and can therefore affect creditworthiness significantly. An international currency is much more than a foreign exchange reserve for central banks. It fulfils the three traditional functions of money for both private and public actors: a medium of exchange, a unit of account, and a store of value. An international currency provides a host of benefits for the issuing country. First, borrowing costs for the issuing sovereign are reduced due to high demand for its currency, increasing fiscal space and the ability to raise spending without materially affecting debt sustainability. In addition, domestic banks in the issuing country have access to the central bank's liquidity facilities, which translates into a competitive advantage over foreign banks. Domestic firms

²² Old-age dependency ratio is forecast through 2030.

also benefit as their exchange rate risks are lower than those of foreign firms. Finally, a global reserve currency can be used by the issuing country politically, for instance, via sanctions, bolstering the country's global hegemony.

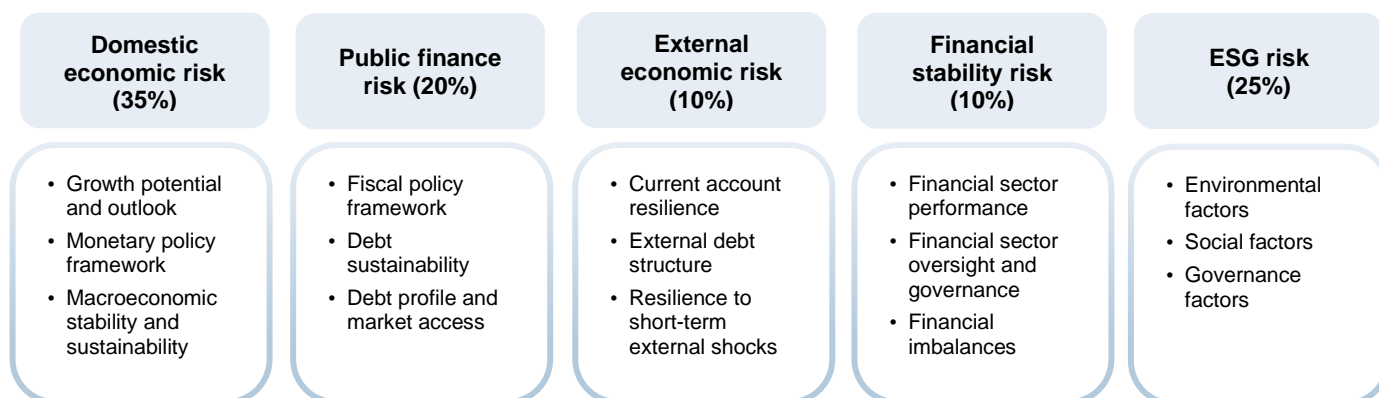
At the same time, an international currency has costs. During times of global distress, they can appreciate strongly due to their safe-haven status, adversely affecting the cost-competitiveness of domestic producers. In addition, the absence of credible fiscal rules, low borrowing costs and sustained demand for its debt securities may induce governments to pursue fiscal expansion, resulting in high public debt. Countries issuing international currencies also face policy constraints as strong debt movements can increase interest rate volatility, complicating monetary policymaking.

There is no accepted list of global currencies, but the closest official recognition is a currency's inclusion in the IMF's Special Drawing Right (SDR) basket, created as a supplementary international reserve asset²³. While the abovementioned costs are captured in our CVS, particularly via the public finance risk and external economic risk pillars, benefits can be substantial but difficult to quantify. Therefore, for the few sovereigns which issue in a global reserve currency as defined above, we adjust the indicative rating by a minimum of +1 and a maximum of +3 notches based on the weight the currency receives in the IMF's SDR basket²⁴. Specifically, currencies with a weight of around 30% (20%) or above receive +3 (+2) notches, otherwise +1 notch. For now, for a sovereign in the euro area monetary union, we adjust the currency's weight in the SDR basket by the capital held by the member state's central bank as a shareholder of the ECB. We could change our assessment depending on institutional progress made towards a fully-fledged capital markets union in Europe²⁵ and/or credible, permanent tools of the ECB allowing for policy interventions away from its capital key over the medium-to-long-term.

4. Qualitative scorecard (QS)

We complement the quantitative CVS with a qualitative scorecard (QS) to account for analytical elements not captured within the CVS. The QS is designed to expand on the CVS. It is organised into five complementary sections corresponding to the five analytical categories in the CVS (domestic economic risk, public finances risk, external economic risk, financial stability risk, and ESG risk). The weights in the QS are the same across each category.

Figure 10: Five categories of sovereign credit risk (QS)



Source: Scope Ratings GmbH

The QS is the analytical tool used to adjust the CVS indicative rating. An overall maximum adjustment range of ± 3 notches may be applied. The adjustments are aggregated, with each assessment weighted such that each risk pillar is worth one full rating notch while the overall assessment is capped at ± 3 notches. Each adjustment is the assessment of the relative strengths and weaknesses conducted in relation to peers with the same indicative rating, including the two adjacent ones (positive and negative). We document all steps of the process, including adjustment recommendations and their impact on the rating.

²³ As stated by IMF: 'Currencies included in the SDR basket have to meet two criteria: the export criterion and the freely usable criterion. A currency meets the export criterion if its issuer is an IMF member or a monetary union that includes IMF members, and is also one of the top five world exporters. For a currency to be determined "freely usable" by the IMF, it has to be widely used to make payments for international transactions and widely traded in the principal exchange markets. Freely usable currencies can be used in fund financial transactions'.

²⁴ As only a few sovereigns issue in global reserve currencies, capturing this benefit via the CVS would significantly skew the results for all other countries.

²⁵ Capital markets union: Final report by High-Level Forum pushes for the completion of the CMU.

The QS assessment includes a comprehensive review of the qualitative factors detailed in [Annex II](#). This includes but is not limited to an economic scenario analysis based on tested causalities, and a review of debt sustainability, fiscal and financial performance and policy implementation. Each category has three assessments for a total of 15. For each assessment, the analyst examines a given sovereign relative to its peer group. For this purpose, additional comparative analysis beyond the variables included in the CVS is conducted. The result is the implied QS notch adjustment, which is the basis for the analyst recommendation to the rating committee (see [Annex IV](#) for a country case study). The rating committee may adjust the rating beyond ± 3 notches under additional considerations not captured by the scorecard results.

5. Additional considerations

The rating committee may adjust the outcome of the CVS and QS to account for considerations or extraordinary circumstances not captured by our scorecards. Some examples are detailed below.

5.1 Official sector financial assistance

Here we look at sovereigns that are in discussions with the official sector regarding financial assistance, either on an ad hoc basis, or via established frameworks and initiatives. Key credit-relevant questions include whether i) official sector assistance²⁶ is contingent on either policy reforms only, including the credibility of the adjustments to the policy mix, or as a last resort on private sector involvement (in the form of debt restructuring, implying a financial loss) and the associated estimate in potential burden sharing between the official and private sectors; ii) the assessment of gross financing needs and debt sustainability analysis are conducted before or after the request for private sector involvement; and iii) the official sector considers that potential burden sharing between official and private sectors is voluntary or not.

Our assessment of these negotiations can be either credit positive, credit neutral or credit negative. The severity of debt vulnerabilities and the scale of restructuring are shaped by many country-specific factors and assessed case by case. Generally, depending on i) pre-restructuring economic and fiscal conditions; ii) public debt structure; and iii) the state of the banking system and financial depth, we will view the following elements positively:

- Formal requests to benefit from official financial assistance, regardless of conditionality and reviews; and/or
- Official assistance, which, with a high degree of confidence, is contingent not on private sector involvement but policy reform only.

Conversely, we would view negatively:

- Official assistance, which, with a high degree of confidence, is contingent on private sector involvement;
- Developments pointing to an imminent default before negotiations with the official sector end; and/or
- Failure of negotiations with the official sector that is likely to undermine debt servicing capacity in the long term.

Finally, situations where sovereigns are ineligible for, or indeed formally refuse to benefit from, restructuring frameworks or initiatives are credit-neutral.

5.2 Political risks and conflicts

Political risks related to domestic and external conflicts, including wars or tensions with or in neighbouring countries, whether chronic or acute, may materially weaken sovereign creditworthiness beyond the governance risks highlighted in our scorecards. When this risk driver is material, we will negatively adjust the final rating. Examples are sustained protests and violence, secession/independence movements, armed political opposition, military takeovers, sanctions, war, and domestic and international terrorism.

We also note that conflicts and political changes may directly or indirectly affect the perceived willingness of a sovereign to service debt. Sovereigns, unlike corporates or financial institutions issuers, are not subject to bankruptcy laws and enforcement procedures and, despite having sufficient resources available, can thus deliberately choose to not repay debt. Default decisions are thus highly influenced by political developments²⁷. Examples include defaults occurring during war time or significant transitions of power

²⁶ This typically includes bilateral sovereign and/or multilateral creditors such as the IMF, World Bank, development agencies or export credit agencies.

²⁷ Several empirical studies reviewed in Hatchondo and Martinez (2010) find that the proximity of elections, the turnover of government officials, increases in political instability, and less democratic political systems are statistically associated with a higher default probability.

(during which debt can be declared as 'odious'²⁸). We examine a sovereign's perceived willingness to pay by analysing its history of debt repayment, including to international donors and bilateral lenders.

5.3 Extraordinary circumstances

Finally, examples of extraordinary circumstances beyond official financial assistance and political conflicts are:

- a sovereign in crisis following a sharp economic downturn or financial crisis accompanied by a crisis of confidence, leading to a much higher default risk in the short term yet to be reflected in data or forecasts; and
- an exceptionally severe exogenous shock (natural disasters, sudden changes in market liquidity and capital flows) that strongly increases default risk.

We will communicate transparently these and any other extraordinary circumstances where the rating committee sees the need for greater adjustment flexibility (for example, capital controls, lack of capital market development) to incorporate sovereign fundamentals not captured by scorecard results.

²⁸ The concept of odious debts was coined by the jurist Alexander Sack (1929). Odious debts are defined by Sack as debts contracted and spent against the interests of the population of a state, without its consent, and with full awareness of the creditor. These include war debts, subjugated or imposed debts, and regime debts.

6. Annex I: Quantitative variables (CVS)

Variable	Description	Sources
Domestic economic risk		
Real GDP growth	Seven-year weighted average of real GDP growth using past, current, and five-year forecast data	IMF
Nominal GDP	Natural log of seven-year weighted average of Nominal GDP using past, current and five-year forecast data	IMF
Real GDP volatility	Standard deviation of real GDP growth using data for the past four years, current data and a five-year forecast	IMF
GDP per capita, current USD	Natural log of seven-year weighted average of GDP per capita using past, current and five-year forecast	IMF
Inflation rate	Seven-year weighted average of inflation rate using past, current, and five-year forecast, adjusted for developing/developed sovereigns	IMF
Unemployment rate	Most recent data on unemployment rate	WB
Public finance risk		
Primary balance % GDP	Seven-year weighted average of primary balance as a percentage of GDP using past, current and five-year forecast data	IMF
Interest payments on debt % revenues	Seven-year weighted average of interest payments on debt as a percentage of revenues using past, current and five-year forecast data; assessed in non-linear form	IMF
Gross debt % GDP	Seven-year weighted average of gross debt as a percentage of GDP using past, current and five-year forecast data; assessed in non-linear form	IMF
Gross debt % revenues	Seven-year weighted average of gross debt as a percentage of GDP using past, current and five-year forecast data; assessed in non-linear form	IMF
External economic risk		
International investment position % GDP	Most recent data on international investment position as a percentage of GDP; if unavailable, the historical cumulative current account used as a proxy	IMF, EWN
Current account % GDP	Seven-year weighted average of current account as a percentage of GDP using past, current and five-year forecast	IMF
Reserves/imports	Most recent data on reserves expressed in terms of the number of months of imports of goods and services	WB, national statistical offices and central banks
Financial stability risk		
Non-performing loans % total loans	Most recent data on non-performing loans as a percentage of total loans	IMF, national statistical offices and central banks

Variable	Description	Sources
Tier 1 capital % risk-weighted assets	Most recent data on Tier 1 capital % risk-weighted assets	IMF, national statistical offices and central banks
Private sector credit growth	Three-year change in private sector credit, based on two-year average	WB
Environmental (E), social (S) and governance (G) risk		
E: Transition risks	Fossil CO ₂ Emissions per USD 1,000 of GDP (tonnes) and GHG emissions per capita	EDGAR
E: Natural disaster risks	Most recent data from World Risk Indicator; assessed in non-linear form	WRI
E: Resource risks	Log of most recent data on Ecological Footprint of Consumption relative to biocapacity within a country's borders	Global Footprint Network
S: Old-age dependency ratio	Past and long-term weighted average of old-age dependency ratio; assessed in non-linear form	UN
S: Income inequality	Latest data on income share of bottom 50%; if unavailable, regional average used as proxy	WID
S: Labour force participation	Latest data on labour force participation	WB
G: Control of corruption	Latest data on control of corruption	WB
G: Voice and accountability	Latest data on voice and accountability	WB
G: Rule of law	Latest data on rule of law	WB
G: Governance effectiveness	Latest data on governance effectiveness	WB
G: Political stability and absence of violence	Latest data on political stability and absence of violence	WB
G: Regulatory quality	Latest data on regulatory quality	WB

Source: Scope Ratings.

Quantitative indicators	Definition	Rationale
Domestic economic risk		
Wealth and size 1. GDP per capita, current USD 2. Nominal GDP	1) GDP per capita is equal to gross domestic product divided by the population 2) Nominal GDP on a USD basis	1) The higher the GDP per capita, the broader the potential tax base the sovereign can rely on to pay its obligations. Moreover, a higher per-capita income is associated with higher economic (stock of human and physical capital) and financial wealth (stock of financial assets) 2) Nominal GDP is used to account for a sovereign's economic resilience
Growth, inflation and unemployment 1. Real GDP growth 2. Real GDP volatility 3. Inflation rate 4. Unemployment rate	1) Real GDP growth is defined as annual percentage growth rate of GDP at constant prices 2) Real GDP volatility is equal to the standard deviation of real GDP growth 3) The inflation rate is the yearly percentage change in the consumer price index 4) Unemployment refers to the share of the labour force that is without work but available for and seeking employment	1) A country's ability to generate sustainable long-term growth is important for its creditworthiness. We use a fixed threshold of 0% to identify negative outliers. 2) Highly volatile real GDP growth indicates the presence of imbalances in the economy and increases uncertainty about a sovereign's ability to repay obligations fully and on time 3) Long periods of high inflation (higher than 10%) undermine the credibility of the local currency as a main store of value; conversely, deflation (inflation of below 0%) undermines economic growth through its detrimental effect on consumption and business confidence. We use fixed thresholds between 1.5% and 2.5% to identify positive outliers. 4) High unemployment, which is usually associated with a significant structural component, points to an inflexible labour market, can seriously hamper growth and weaken the country's ability to adapt to new challenges.
Public finance risk		
Debt affordability 1. Interest payments on debt % revenues 2. General government gross debt % revenues	1) Interest payments include interest payments on government debt to domestic and foreign residents, including long-term bonds, long-term loans, and other debt instruments 2) Gross debt is defined as a government's total outstanding debt instruments	1) Interest payments as a share of budget revenue displays a sovereign's ability to service its debt. We use a fixed threshold of 1.5% to identify positive outliers. 2) The gross debt ratio is a universal and comprehensive measure of sovereign indebtedness; relative to revenues it places the emphasis on the ability to mobilise revenues. We use a fixed threshold of 50% to identify positive outliers.
Debt dynamics 1. Primary balance % GDP 2. General government gross debt % GDP	1) Primary balance is defined as overall balance excluding net interest payments (interest expenditure minus interest revenue) 2) Gross debt is defined as a government's total outstanding debt instruments	1) A persistent primary budget deficit indicates a sovereign's low capacity to service its debt from own resources and an overreliance on markets to refinance 2) A persistent rise in a government's debt to GDP ratio indicates a combination of a low capacity to consolidate public finances and/or weak growth prospects. We use a fixed threshold of 15% to identify positive outliers.

Quantitative indicators	Definition	Rationale
External economic risk		
External debt sustainability 1. International investment position % GDP 2. Current account balance % GDP 3. Reserves/imports	1) The net international investment position is the difference between the external financial assets and external financial liabilities of a country's residents as a percentage of GDP. 2) The current account balance is the sum of net exports of goods and services, net primary income, and net secondary income. 3) The number of months' worth of imports that can be purchased by a country if there is a sudden stop of foreign exchange due to a payment shock	1) Recent crises have underscored the importance of external assets and liabilities as an important indicator of external vulnerability. 2) Large and persistent current account deficits signal the risk of depletion of net foreign assets/liquidity/foreign-exchange reserves, indicating weak international competitiveness. They also signal a shortage of domestic savings in the economy, which is covered by capital inflows from non-residents 3) Sovereigns whose currencies are not widely used often mitigate associated external risks through the availability (and use) of their reserves.
Financial stability risk		
1. Non-performing loans % total loans 2. Tier 1 ratio % risk-weighted assets 3. Private sector credit growth	1) A loan is non-performing when i) payments of interest and principal are past due by 90 days or more; ii) at least 90 days of interest payments have been capitalised, refinanced or delayed by agreement; or iii) payments are less than 90 days overdue but there is good reason to doubt that payments will be made in full 2) The Tier 1 ratio measures a bank's core capital relative to its risk-weighted assets. 3) Private sector credit growth is defined as the three-year change in the outstanding credit to the private sector relative to GDP.	1,2) Banks' risky operations could pose a threat to macro-economic stability given the banking sector's role as a collector of savings, intermediary between savers and borrowers, and a payment infrastructure provider. 3) Excessive private sector credit growth could serve as an early warning for a banking crisis. It points to the build-up of financial vulnerabilities within the economy. We use fixed thresholds at 25% (0%) to identify negative (positive) outliers.
Institutional and political risk		
Environment 1. Transition risks 2. Natural disaster risks 3. Resource risks	1) Fossil fuel-based CO ₂ emissions per USD 1,000 of GDP (tonnes) and per capita 2) Score of World Risk Index which measures disaster risk due to extreme natural events. It is calculated through the multiplication of exposure and vulnerability. Exposure covers threats to the population and other protected entities due to earthquakes, cyclones, floods, droughts and rising sea levels. Vulnerability is comprised of three components: i) susceptibility, which describes the structural characteristics and framework conditions of a society and indicates the likelihood of suffering from harm in an extreme natural event; ii) coping, which comprises the various abilities of societies to minimise the negative impacts of natural hazards and climate change through direct action and available resources; and iii) adaptation, which includes measures and strategies dealing with and attempting to address the negative impacts of natural hazards and climate change in the future. 3) Resource risks: a country's ecological footprint of consumption relative to its biocapacity	1) Transitional risks refer to the likely economic and fiscal costs due to policy and regulatory actions to foster carbon-free economies. As and when policymakers and regulators adopt and expand carbon pricing mechanisms, economies and societies with a higher share of carbon-intensive industries and consumption patterns are likely to face higher i) economic costs, which include the structural change economies may have to undergo; and ii) fiscal costs, which include direct expenditures, investments and subsidies. In addition, the impact on sovereign risk may further materialise via trade channels when trade barriers for carbon-intensive products adversely impact domestic industries not subject to carbon-pricing at home. 2) Sovereigns more exposed to natural disasters may face higher economic and fiscal costs due to more frequent and extreme weather conditions. 3) Sovereigns with limited resources may face natural resource constraints (resource-security), which may vary depending on a country's consumption and production and the available physical biocapacity within its borders. This risk may also be affected by i) trade policies; and ii) the availability and substitutability of raw resources. We use a fixed threshold of 0, that is, countries with a biocapacity surplus, to identify positive outliers.

Quantitative indicators	Definition	Rationale
Social 1. Old-age dependency ratio 2. Income inequality 3. Labour force participation	1) Ratio of population aged 65+ per 100 of the population aged 15-64 2) Income share of the bottom 50% 3) Labour force participation: labour force divided by total working-age population	1) The old-age dependency ratio indicates the share of the population dependent on the workforce, thus capturing the demographic challenges a sovereign is likely to face. 2) Income inequality may lead to low social mobility (hindering human capital formation) and high social conflicts and corruption that impede sustainable economic growth and development. 3) The share of an economically active population affects economic growth not only directly by adding to total output but also indirectly by lowering hysteresis and contributing to a dynamic labour market.
Governance 1. Control of corruption 2. Voice and accountability 3. Rule of law 4. Governance effectiveness 5. Political stability and absence of violence 6. Regulatory quality	Perceptions of (the extent to which) 1) Control of corruption: public power is exercised for private gain, including both petty and grand forms of corruption, as well as the 'capture' of the state by elites and private interests 2) Voice and accountability: a country's citizens' ability to participate in selecting their government, in addition to freedom of expression, freedom of association, and a free media 3) Rule of law: agents have confidence in and abide by the rules of society, in particular the quality of contract enforcement, property rights, the police, and the courts; likelihood of crime and violence 4) Government effectiveness: quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies 5) Political stability and absence of violence/terrorism: likelihood of political instability and/or politically motivated violence, including terrorism 6) Regulatory quality: ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development	1, 2, 3, 4, 5, 6) Favourable levels of world government indicators can strengthen the institutional environment in regard to corruption, property rights, public and private interests, freedom of speech, and crime and violence, and can enhance governments' commitment to pursue structural reforms.
Reserve currency		
Reserve currency	1) Currency is included in the IMF's basket for special drawing rights.	1) Sovereign bonds issued in currencies with global use in international capital markets enjoy higher liquidity in times of crisis and have a robust secondary market.

Source: Scope Ratings.

7. Annex II: Qualitative variables (QS)

Variable	Description	Rationale
<i>All notch adjustments are taken in comparison with peers in the quantitatively derived indicative rating group</i>		
1 Domestic economic risk		
1.1 Growth potential and outlook	An examination of a country's medium- to long-term growth potential and outlook	Medium- and long-term growth potential contributes to a sovereign's capacity to generate revenues and repay debt, in particular its innovative capacity, business environment, and human/physical capital accumulation
1.2 Monetary policy framework	Assesses the coherence, credibility and effectiveness of a monetary policy framework, including the effectiveness of prudential regulation in generating sustainable growth, stemming macro-economic imbalances and supporting crisis resolution	Ineffective monetary policies characterised by a weak monetary policy transmission mechanism increase the risk of too high or too low growth, macro-economic imbalances and bubbles, too high or too low inflation, exchange rate volatility, and financial market shocks.
1.3 Macro-economic stability and sustainability	Assesses macro-economic imbalances arising from weak economic diversification and/or labour market rigidities	Sustainable economic growth increases resilience to adverse economic shocks and the ability to recover quickly following a shock.
2 Public finances risk		
2.1 Fiscal policy framework	Captures the fiscal framework and ability of the government to generate revenues, plan and control expenditure as well as assesses the consistency and appropriateness of budgetary policies and processes	The fiscal framework is key to preserving public debt sustainability and ensuring growth-friendly fiscal policies, mitigating the effects of economic downturns and shocks
2.2 Debt sustainability	Assesses the fiscal position of a sovereign under a number of scenarios and its resilience under sudden episodes of fiscal stress that may occur following the materialisation of economic, fiscal or financial risks	Debt dynamics are analysed to assess medium- to long-term sustainability challenges, including contingent liabilities
2.3 Debt profile and market access	Assesses sovereign's financing needs, debt composition, maturity, interest rate, and currency structure. This includes cash holdings and other liquid assets (sovereign wealth funds), the depth of the domestic capital markets, access to international capital markets, and access to concessional and multilateral sources of financing (including the safety net funds for a country member of a monetary union).	A sovereign with low financing needs, a debt structure characterised by a long maturity and a high share of fixed-rated debt will be less exposed to refinancing risk and interest rate shocks. Uninterrupted access to internal and external sources of funding allows debt to be rolled over. Liquid government assets can be sold to service debt if required.
3 External economic risk		
3.1 Current account resilience	Assesses financing of current account and development of external imbalances arising from a non-diversified and/or narrow range of export markets, reliance on remittances	Current account volatilities, if not counterbalanced, can put pressure on the local currency
3.2 External debt structure	Assesses structure, composition, maturity, and ownership of external debt in both the public and private sectors	High external private-sector debt may undermine foreign investors' confidence in the economy, resulting in a decline in capital inflows and net outflows

Variable	Description	Rationale
3.3 Resilience to short-term external shocks	Evaluates short-term liabilities of all sectors of the economy against liquid short-term assets and shows the ability to continue foreign exchange debt servicing if external markets are closed. For sovereigns with a reserve currency, this adjustment is only used under exceptional circumstances to avoid double-counting.	Sufficient internal foreign exchange sources boost resilience to market volatility and temporary shutdown in external markets.
4 Financial stability risk		
4.1 Banking sector performance	Analyses main macro and micro-prudential indicators of financial soundness including asset quality, profitability, liquidity, and capital adequacy. Scope's banking team analysts contribute to providing a detailed assessment.	Weak funding structure, capital buffers, and stretched liquidity can undermine financial stability.
4.2 Banking sector oversight and governance	Evaluates policy measures to minimise systemic risks and support the banking system. This includes macro-prudential rules and policies as well as bank regulation standards that enhance resilience to shocks and contagion.	Strong financial sector oversight and sound corporate governance arrangements are a critical pillar of financial stability.
4.3 Financial imbalances	Evaluates the implications of financial imbalances for banks, in particular credit-fuelled growth, private sector indebtedness, sovereign-bank nexus and asset bubbles	Financial imbalances pose a material risk to macro-economic stability.
5 ESG risk		
5.1 Environmental factors	Assesses a country's vulnerability to environmental risks as well as its government's ability and commitment to address these risks, in particular the sectoral dependence on transition risks, supply chain-related risks and reliance on energy-intensive consumption.	Transition, physical and resource risks can have a profound impact on countries' economic structures and developments with governments important in facilitating an appropriate policy and investment response.
5.2. Social factors	Assesses a country's demographic trends, income inequality, effectiveness of the education and health system and other social considerations as well as policy responses to discriminatory practices or regulatory hurdles to social inclusion	Social considerations can have important consequences for a country's growth potential, fiscal developments or political risks over the medium term
5.3 Governance factors	Assesses impact of major political events and policy decisions as well as geopolitical and civil security risks	Level of political risk and policy orientation as well as conflicts could cause deviation in the country's fundamentals.

Source: Scope Ratings.

Adjustment under QS

1 Domestic economic risk

1.1 Growth potential and outlook

Strong (+1 notch)	Average (0 notches)	Weak (-1 notch)
Strong outlook, good growth potential	Average outlook, growth potential	Weak outlook/growth potential under trend

1.2 Monetary policy framework

Strong (+1 notch)	Average (0 notches)	Weak (-1 notch)
Good policies, effective implementation	Adequate policies and implementation, effective	Poor policies/implementation, ineffective

1.3 Macro-economic stability and sustainability

Strong (+1 notch)	Average (0 notches)	Weak (-1 notch)
Strong stability, only minor imbalances	Average stability, imbalances under control	Weak stability, imbalances problematic

2 Public finance risk

2.1 Fiscal policy framework

Strong (+1 notch)	Average (0 notches)	Weak (-1 notch)
Strong fiscal flexibility; appropriate fiscal stance	Average fiscal flexibility	Limited fiscal flexibility; inadequate fiscal stance

2.2 Debt Sustainability

Strong (+1 notch)	Average (0 notches)	Weak (-1 notch)
Strong sustainability	Sustainable past end of rating period	Weak sustainability

2.3 Debt profile and market access

Strong (+1 notch)	Average (0 notches)	Weak (-1 notch)
Very good debt structure and access	Average	Poor access, weak structure

3 External economic risk

3.1 Current account resilience

Strong (+1 notch)	Average (0 notches)	Weak (-1 notch)
Strong financing, well diversified	Average access, adequate financing	Weak access, concentrated

3.2 External debt structure

Strong (+1 notch)	Average (0 notches)	Weak (-1 notch)
Debt/imbalances manageable	Debt/ imbalances largely unproblematic	Debt/ imbalances problematic

3.3 Resilience to short- and long-term external shocks

Strong (+1 notch)	Average (0 notches)	Weak (-1 notch)
Shocks have small effect; management good	Shocks have an average effect; adequate management	Vulnerable to shocks; management problematic



Sovereign Rating Methodology

Sovereign and Public Sector

Adjustment under QS

4 Financial stability risk

4.1 Financial sector performance

Strong (+1 notch)	Average (0 notches)	Weak (-1 notch)
Very good performance	Average performance	Weak performance

4.2 Financial sector oversight and governance

Strong (+1 notch)	Average (0 notches)	Weak (-1 notch)
Strong	Average	Weak

4.3 Financial imbalances

Strong (+1 notch)	Average (0 notches)	Weak (-1 notch)
Very good, limited imbalances	Average, some imbalances	Weak, significant imbalances

5 ESG risk

5.1 Environmental factors

Strong (+1 notch)	Average (0 notches)	Weak (-1 notch)
Limited exposure; largely effective and coherent environmental, climate, energy policies	Average, partially effective policies, some contradictions	High vulnerability; Weak and partially ineffective policies, at times contradictory policies

5.2 Social factors

Strong (+1 notch)	Average (0 notches)	Weak (-1 notch)
Largely effective and coherent policies on demographic and social issues	Average	Weak and partially ineffective policies, at times contradictory policies

5.3 Governance factors

Strong (+1 notch)	Average (0 notches)	Weak (-1 notch)
Stable political environment; moderate exposure to geopolitical risks	Average political environment	Weak political environment; problematic policy decisions

Source: Scope Ratings.

8. Annex III: Foreign vs local currency sovereign defaults

The history of defaults on foreign-currency versus local-currency rated debt is limited. This indicates a lack of a uniform relationship between the denomination of debt and the likelihood of default. A historical analysis of defaults conducted by the Bank of Canada and the Bank of England reviews the annual number and volume of defaults in 1960-2019 on both local- and foreign-currency debt, tracking bank loans and bonds. As banks withdrew from sovereign lending over the past 25 years, defaults on foreign-currency bonds (rather than loans) have increased.

Figure 10: Number of sovereigns in default (to private creditors)

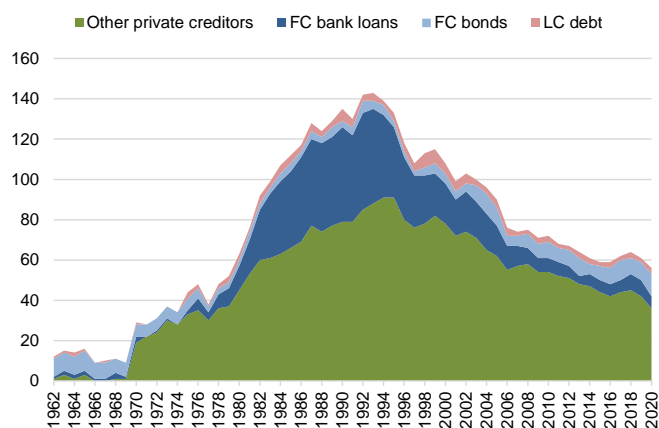
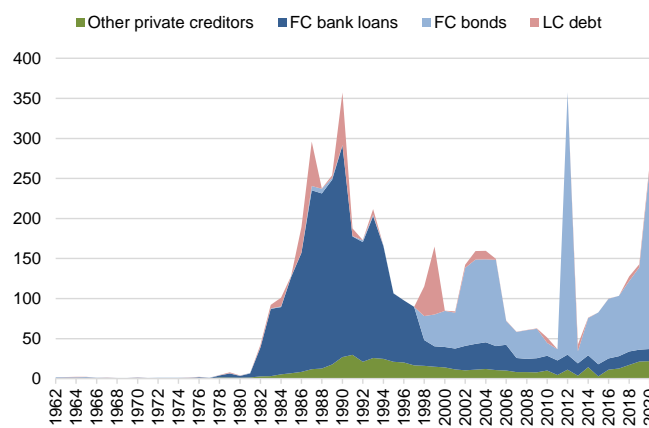


Figure 11: Total debt in default, USD bn (to private creditors)



Sources: Bank of Canada, Bank of England, Scope Ratings

On this basis, we have identified 28 major sovereign defaults on foreign and local-currency debts since 1998. The limited sample does not indicate a uniform relationship between the denomination of debt and the likelihood of default.

Sovereign defaults on foreign-currency vs local-currency rated debt (1998-2020)

Country	Year	FC default	LC default	Amount	Comments
Venezuela	1998	Yes	No	USD 128m	Technical default due to administrative factors; resolved quickly
Ukraine	1998	No	Yes	USD 1.3bn	Moratorium on debt service for bearer bonds owned by anonymous entities
Indonesia	1998	Yes	No	USD 1.5bn	Balance-of-payment crisis worsened by managed exchange regime, banking crisis
Ecuador	1998	No	Yes	USD 6.6bn	Missed payment followed by distressed exchange
Russian Federation	1998	Yes	Yes	USD 65bn	Balance-of-payment crisis triggered by sharp fall in commodity prices; currency crisis worsened by managed exchange rate regime and very short-term maturity of foreign exchange sovereign debt; banking crisis triggered by sharp devaluation of local currency
Cote d'Ivoire	2000	Yes	No	USD 2bn	Defaulted on these bonds after a coup in 1999
Ukraine	2000	Yes	No	USD 2.5bn	Balance-of-payment and currency crises, triggered by depleting foreign exchange reserves, dependency on import fuel and heavy reliance on foreign exchange funding
Argentina	2001	Yes	Yes	USD 90 - 100bn	Currency crisis worsened by dollar peg; banking crisis sparked by deposit freeze; pro-cyclical fiscal policy led to an unsustainable debt burden
Moldova	2002	Yes	No	USD 75m	Current-account deterioration led to currency crisis, triggered by secession from the former USSR and the Russian crisis in 1998
Uruguay	2003	Yes	No	USD 5bn	Crisis in the main trade partner and investor (Argentina), with balance-of-payments crisis due to currency devaluation in Argentina; run on bank, natural disasters impacting agriculture
Dominican Republic	2005	Yes	No	USD 1.1bn	Corruption scandal in the third-largest bank sparked a run on that bank, leading to significant costs for the sovereign due to banking sector recapitalisation, deteriorated public finances
Belize	2006, 2012	Yes	No	USD 540m	Unsustainable public debt levels with unfavourable repayment schedule (step-up coupons); weak economic performance due to slowdown in tourism and decline in domestic oil production; unwillingness to pay
Ecuador	2008	Yes	No	USD 3.1bn	Dependence on commodity prices; currency peg; high dollarisation of the economy and loose fiscal policy; unwillingness to pay
Jamaica	2010	Yes	Yes	USD 7.5bn	Unsustainable public debt burden with high interest payments, combined with weak economic performance
Greece	2012 twice	Yes	Yes	EUR 199bn	Public debt surged in March and December 2012 due to undocumented off-balance-sheet government operations; economic recession resulting in poor tax collection; unaffordable debt service; lost investor confidence; banking crisis
Cyprus	2013	Yes	Yes	USD 1.6bn	Banking crisis coupled with economic recession and deteriorated public finances
Argentina	2014	Yes	No	USD 40bn	Mainly associated with willingness to pay, based on legal difficulties resolving the original default in November 2001
Ukraine	2015	Yes	No	USD 18bn	Geopolitical conflict with Russia; currency and banking crises triggered by structural economic problems and weak institutions
Mozambique	2017	Yes	No	USD 720m	Currency crisis caused by a drop in commodity prices; incomplete data on the government's off-balance-sheet activities; constrained access to concessional funding due to misreporting
Venezuela	2017	Yes	No	USD 200m	Economic crisis, hyperinflation, and declining oil production undermined Venezuela's capacity to pay its coupon payment on two government bonds
Barbados	2018	Yes	Yes	USD 255m	High debt levels, low and falling international reserves and meagre growth led to selective default on external debt and restructuring with domestic and foreign lenders.
Argentina	2019	Yes	Yes	USD 13.4bn	Increasing debt levels, heightened rollover risks, large external financing needs and falling international reserves, together with a political crisis, led to a technical default in August 2019 and the process of restructuring Argentina's debts.
Argentina	2020	Yes	Yes	USD 72.7bn	Increasing debt levels, heightened rollover risks, large external financing needs and falling international reserves
Belize	2020	Yes	No	USD 629m	Belize's fiscal and external positions worsened from already weak levels.
Ecuador	2020	Yes	No	USD 17.6bn	Deteriorating economic outlook, tight liquidity position and rising social and political pressures, also given public health crisis
Lebanon	2020	Yes	Yes	USD 37.5bn	Years of political instability and economic mismanagement resulted in the inability to honour debt
Suriname	2020	Yes	No	USD 713m	The economy contracted by more than 12% in 2020, increasing fiscal woes and depleting foreign exchange reserves.

Source: Database of sovereign defaults (2021), Bank of Canada, Sturzenegger and Zettelmeyer (2007), Lazard Research (2016), Scope Ratings.



Sovereign Rating Methodology

Sovereign and Public Sector

9. Annex IV: Country case study

CVS and QS results for a hypothetical country

Core Variable Scorecard (quantitative)					Qualitative Scorecard				
Sovereign risk category	Sub-category	Variable	Score/ indicative rating	Reserve currency*	Qualitative adjustment	Strong	Neutral	Weak	
Domestic economic risk (35%)	Wealth and size	GDP per capita	68 (a+)	+	+	1. Growth potential	0.33	0.00	-0.33
		Nominal GDP							
	Growth, inflation and unemployment	Real GDP growth							
		Real GDP volatility							
Public finance risk (20%)	Debt affordability	Interest payments/revenues	55 (bbb)	+	+	1. Fiscal policy framework	0.33	0.00	-0.33
		GG gross debt/revenues							
	Debt dynamics	Primary balance/GDP							
		GG gross debt/GDP							
External economic risk (10%)	International position	Net IIP/GDP	38 (b+)	+	[+1; +3]	1. Current account resilience	0.33	0.00	-0.33
	Current account	Current account balance/GDP							
	External debt sustainability	Reserves/GDP							
Financial stability risk (10%)	Banking sector	Non-performing loans	49 (bb+)	+	+	1. Banking sector performance	0.33	0.00	-0.33
	Private sector	Tier 1 ratio							
ESG risk (25%)	Environment	Transition risks	59 (bbb+)	+	+	1. Environmental factors	0.33	0.00	-0.33
		Natural disaster risks							
		Resource risks**							
	Social	Old-age-dependency ratio				2. Social factors	0.33	0.00	-0.33
		Income inequality							
	Governance	Labour force participation				3. Governance factors	0.33	0.00	-0.33
WB governance indicators***									
						Sum of adjustments		-0.66	

Indicative rating	bbb+
Reserve currency adjustment	N/A
Sum of QS adjustments (notches)	-1
Final rating recommendation	BBB

* Positive adjustment to sovereigns whose currency is included in the IMF's SDR basket.

** Relation between a country's Ecological Footprint of Consumption and the biocapacity available within its own borders.

*** Average of six World Bank Governance Indicators.

To calculate the rating score within the CVS, we use a minimum-maximum algorithm to determine a rating score for each of the 29 indicators. We calculate the minimum and maximum of each rating indicator and place each sovereign within this range. Sovereigns with the strongest results for each rating indicator receive the highest rating score; sovereigns with the weakest results receive the lowest rating score. The score result translates to an indicative rating that is always presented in lower case rating notes. Within the QS assessment the analyst conducts a comprehensive review of the qualitative factors. This includes but is not limited to economic scenario analysis and a review of debt sustainability, fiscal and financial performance and policy implementation. Each category has three assessments for a total of 15. For each assessment, the analyst examines a given sovereign relative to its peer group. For this purpose, additional comparative analysis beyond the variables included in the CVS is conducted. These assessments are then aggregated using equal weights. The result is the implied QS notch adjustment, which is the basis for the analyst recommendation to the rating committee.

10. Literature

- Afonso, A., Gomes, P. and Rother P., (2007) 'What "hides" behind sovereign debt ratings?', ECB discussion paper.
- Aiyar, S and C Ebeke (2018), 'Inequality of opportunity, inequality of income and economic growth', IMF WP/19/34.
- Altavilla, C., Pagano, M., and Simonelli, S. (2016), 'Bank Exposures and Sovereign Stress Transmission', Working Paper 11, European Systemic Risk Board.
- Andersson, M., Baccianti, C. and Morgan, J. 2020. Climate change and the macro economy; ECB Occasional Paper Series
- 'An Examination of Emerging Markets Sovereign Defaults' (2016), Lazard Emerging Markets Debt Research.
- Armstad, M., and Packer, F., (December 2015), 'Sovereign ratings of advanced and emerging economies after the crisis', BIS Quarterly Review.
- Baldacci, E., et al., (May 2011), 'Assessing Fiscal Stress', IMF working paper.
- Balteanu, I., and Erce, A., (November 2014), 'Linking banking crises and sovereign defaults in emerging markets' Bank of Spain Working Paper.
- Beers, D., and Mavalwalla, J., (2016), 'Database of Sovereign Defaults', Bank of Canada Technical Report No. 101.
- Beers, D. et. al. (2021), BoC–BoE Sovereign Default Database: What's new in 2021?
- Bhatia, A.B., (2002); 'Sovereign credit rating methodology (an evaluation)', IMF working paper.
- Bova, E., Ruiz-Arranz, M., Toscani, F., and Ture, H., (2016), 'The Fiscal Costs of Contingent Liabilities: A New Dataset Prepared', IMF working paper, Fiscal Affairs Department.
- Cecchetti, S. McCauley, R and McGuire P (2012), Interpreting TARGET2 balances. Monetary and Economic Department BIS Working Papers No 393
- Claessens, S., Kose, M.A., Laeven, L., and Valencia F., Eds. (2014), 'External Imbalances and Financial Crises' in 'Financial Crises: Causes, Consequences, and Policy Responses', Chapter 6: 193- 206.
- Cohen, B., Koch C., and Parise, G. (2016), 'Highlights of global financing flows BIS', BIS Quarterly Review, September 2003.
- Correa, R., Sapriza, H., (May 2014), 'Sovereign Debt Crises', Board of Governors of the Federal Reserve System International Finance Discussion Papers.
- Cuadra, G., and Sapriza H. (2008), 'Sovereign Default, Interest Rates and Political Uncertainty in Emerging Markets', Journal of International Economics 76(1): 78-88.
- De Nederlandsche Bank. (2018): The price of transition. An analysis of the economic implications of carbon taxing
- De Paoli, B., Hoggarth, G., Saporta, V., (2016), 'Costs of sovereign default', Bank of England research and analysis.
- Engler, P., and Steffen, C., (August 2015), ECB Working Paper Series: 'Sovereign risk, interbank freezes, and aggregate fluctuations', No 1840.
- ESRB (2016). Too Late, too Sudden: Transition to a Low-carbon Economy and Systemic Risk.
- Hatchondo, J. C. and L. Martinez (2010), The politics of sovereign defaults, Economic Quarterly, 96, 291-317.
- Laeven, L., and Valencia,F., (2013), 'Systemic Banking Crises Database', *IMF Economic Review* 61(2): 225–270.
- 'Leys, C. et al. 2013. 'Detecting outliers: Do not use standard deviation around the mean, use absolute deviation around the median'
- Manasse, P., Roubini, N., and Schimmelpfennig, A., (2003), 'Predicting sovereign debt crisis', IMF.
- Martinez, L. Roch, F., Roldan, F., Zettelmeyer, J., (2022), 'Sovereign Debt', IMF Working Paper 22/122.
- Ostry, J. et al. (2018), 'Economic Gains from Gender Inclusion: New Mechanisms, New Evidence', IMF SDN 18/06.
- Reinhart, C., Rogoff, K., (2009), This Time Is Different: Eight Centuries of Financial Folly, Princeton University.
- Reinhart, C., Rogoff, K., (2014), 'Financial and Sovereign Debt Crises: Some Lessons Learned and Those Forgotten', in S. Claessens, M.A. Kose, L. Laeven, and F. Valencia Eds.
- Sack A., (1929), 'The Effects of State Transformations on their Public Debts and Other Financial Obligations', Paris, Recueil Sirey.
- Sturzenegger, F., and Zettelmeyer, J., (2007), 'Debt Defaults and Lessons from a Decade of Crises', MIT University Press.
- Tomz, M., and Wright, M. L. J. (2007), 'Do Countries Default in 'Bad Times?', Journal of the European Economic Association 5(2-3): 352-360.
- UNEP, 2012. A new angle on sovereign credit risk



Sovereign Rating Methodology

Sovereign and Public Sector

Scope Ratings GmbH

Headquarters Berlin

Lennéstraße 5
D-10785 Berlin

Phone +49 30 27891 0

Oslo

Karenslyst allé 53
N-0279 Oslo

Phone +47 21 09 38 35

Frankfurt am Main

Neue Mainzer Straße 66-68
D-60311 Frankfurt am Main

Phone +49 69 66 77 389 0

Madrid

Paseo de la Castellana 141
E-28046 Madrid

Phone +34 91 572 67 11

Paris

10 avenue de Messine
FR - 75008 Paris

Phone +33 6 6289 3512

Milan

Via Nino Bixio, 31
20129 Milano MI

Phone +39 02 30315 814

Scope Ratings UK Limited

London

52 Grosvenor Gardens
London SW1W 0AU

Phone +44 20 7824 5180

info@scoperatings.com

www.scoperatings.com

Disclaimer

© 2022 Scope SE & Co. KGaA and all its subsidiaries including Scope Ratings GmbH, Scope Ratings UK Limited, Scope Fund Analysis GmbH, Scope Innovation Lab GmbH and Scope ESG Analysis GmbH (collectively, Scope). All rights reserved. The information and data supporting Scope's ratings, rating reports, rating opinions and related research and credit opinions originate from sources Scope considers to be reliable and accurate. Scope does not, however, independently verify the reliability and accuracy of the information and data. Scope's ratings, rating reports, rating opinions, or related research and credit opinions are provided 'as is' without any representation or warranty of any kind. In no circumstance shall Scope or its directors, officers, employees and other representatives be liable to any party for any direct, indirect, incidental or other damages, expenses of any kind, or losses arising from any use of Scope's ratings, rating reports, rating opinions, related research or credit opinions. Ratings and other related credit opinions issued by Scope are, and have to be viewed by any party as, opinions on relative credit risk and not a statement of fact or recommendation to purchase, hold or sell securities. Past performance does not necessarily predict future results. Any report issued by Scope is not a prospectus or similar document related to a debt security or issuing entity. Scope issues credit ratings and related research and opinions with the understanding and expectation that parties using them will assess independently the suitability of each security for investment or transaction purposes. Scope's credit ratings address relative credit risk, they do not address other risks such as market, liquidity, legal, or volatility. The information and data included herein is protected by copyright and other laws. To reproduce, transmit, transfer, disseminate, translate, resell, or store for subsequent use for any such purpose the information and data contained herein, contact Scope Ratings GmbH at Lennéstraße 5 D-10785 Berlin.