

CountryRisk.io

Rating Methodology

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Introduction

This document details the scope and methodology of CountryRisk.io's rating process. Our goal is simple: to bring greater transparency to the risk ratings of sovereign governments. This goal is in line with recent policy proposals from the European Union's Capital Requirements Directive (CRD)/Capital Requirements Regulation (CRR) and the international Financial Stability Board.

Core beliefs and guiding principles

CountryRisk.io's core belief is that sovereign ratings are a public good. Its guiding principles include:

Independence

CountryRisk.io is independent of any rating issuer or commercial credit rating agency.

Transparency

CountryRisk.io pursues the highest levels of transparency in its models and processes.

Structured framework

CountryRisk.io believes that a structured framework combining quantitative and qualitative factors is the best approach for analysing sovereign and country risk.

Constructive exchange

CountryRisk.io believes that multiple informed country risk views are superior to a single one. We also believe that a constructive exchange of perspectives improves the analysis.

Overview

CountryRisk.io focuses strictly on rating sovereign governments on a national level. Regional governments or quasi-sovereign entities are beyond CountryRisk.io's scope, although our rating process takes these entities' commitments into consideration when assessing a central government's obligations.

We define a credit rating as an assessment of a sovereign's probability of default, or the likelihood that it will fail to honour its obligations to commercial creditors in a timely manner. The criteria CountryRisk.io uses to assess a central government's willingness and ability to meet its debt obligations consist of a broad range of statistically determined indicators that are commonly cited in the literature on sovereign and country risk analysis.

In addition to quantitative economic and financial indicators, CountryRisk.io also considers selected qualitative indicators to augment its analysis. We believe this approach yields a more comprehensive risk analysis, since quantitative measures do not always fully capture all current or potential risks. One such qualitative assessment considers policymakers' independence, namely, whether they are able to implement monetary policies that maintain price stability without interference from the government. While central banks may generally appear to enjoy independence, their autonomy may be put to the test during periods of economic stress or instability. Assigning a likely level of independence for the central bank during difficult times is a qualitative judgement. Nonetheless, we believe it is highly relevant to assessing country risk.

CountryRisk.io places an emphasis on the sovereign's structural characteristics and fundamentals, reflecting a through-the-cycle perspective rather than concentrating on cyclical or short-term views. This approach precludes frequent fluctuations in the ratings, although an ensuing revision may be warranted if a sovereign undergoes significant changes that were unforeseen during the previous review.

CountryRisk.io strives to rate a wide range of sovereigns and it applies the same rating framework to all countries. Our rating methodology does not differentiate among economies based on their stage of economic development – that is, developed countries, emerging markets and frontier economies all are assessed according to the same framework. Similarly, the same methodology is applied regardless of the size of the country and its economy.

Sovereign versus country risk

It is useful to distinguish between sovereign risk and country risk since both terms are often used interchangeably. Although they are closely related, they measure different concepts. We define sovereign risk as the probability that a national government might default on its debt obligations. Country risk, on the other hand, includes transfer and convertibility (T&C) risk, which is defined as the risk that the government would impose capital and exchange controls that would impede the ability of the country's non-sovereign sector to convert local currency into foreign currency, inhibiting the ability of those borrowers to honour their obligations to foreign creditors. Transfer risk also includes events of force majeure, such as war, expropriation, revolution, civil disturbances or natural disasters.

Until recently, country risk generally had a broader focus than sovereign risk. In 2011, following the large-scale transfers and government financial support in response to the global financial and sovereign debt crises, the IMF called for a broader definition of sovereign risk.

CountryRisk.io's holistic approach to sovereign risk analysis is consistent with the IMF's recommendations. CountryRisk.io integrates macroeconomic fundamentals with elements that incorporate broader balance sheet developments, debt portfolio structure, portfolio and equity investors, cross-border linkages and the country's financial assets.

Foreign versus local currency ratings

The sovereign risk ratings derived with CountryRisk.io apply to both foreign currency (FCY) and local currency (LCY) risks. The local currency risk rating indicates the sovereign's ability and willingness to meet its obligations in its local (domestic) currency. The foreign currency risk rating reflects the sovereign's ability and willingness to service its debt in foreign currency. While this distinction in credit quality has recently narrowed, we believe differences remain that still warrant separate ratings.

In recent years, many sovereigns, particularly emerging market countries, have significantly deepened and broadened their domestic capital markets and liberalised their current and capital accounts, characteristics that did not always define these economies earlier. As a result, it was often easy to define the difference between local and foreign currency risk ratings. Now, in a number of emerging markets, significant reforms to their

domestic capital markets and balance of payments status have yielded rating upgrades. At the same time, these developments have also narrowed or eliminated the former gaps between local and foreign currency risk ratings.

Some observers have argued that separate ratings for local and foreign currency risk are no longer necessary. CountryRisk.io believes that a distinction between these ratings is still justified, as emerging and developed economies continue to exhibit inconsistencies, some quite significant, in fiscal, debt and monetary policies. External account improvements do not necessarily imply flexibility in fiscal accounts. A government's ability to improve its tax policies, or to exert influence on monetary policy via the money supply are, in our view, very likely to perpetuate the gap in the local and foreign currency ratings.

ESG ratings

CountryRisk.io offers a separate rating platform to generate country and sovereign risk ratings that explicitly account for environmental and social factors. We find that incorporating such risk factors alongside the traditional ones (e.g. economic growth prospects, fiscal and public debt, balance of payment flexibility), capture a more nuanced and comprehensive view of a country.

The ESG rating model shares the same objective (i.e. assessment of willingness and ability to repay government debt obligations) and the same methodological approach we've already described. The only difference is that two additional risk sections are included; namely, environmental and social risk. Governance risk indicators are already part of the standard model, in which ESG risk sections have a total weight of 40%.

Data

CountryRisk.io utilises primary data from national sources and also supports the use of data from international and regional multilateral institutions. CountryRisk.io encourages its users to base their analysis on the best available data, whatever the source.

The CountryRisk.io rating framework incorporates an assessment of the quality and timeliness of statistical data and whether it is in line with requirements set by the

IMF's Special Data Dissemination Standards (SDDS) or General Data Dissemination Standards (GDDS).

CountryRisk.io provides users with datasets for a wide range of countries. Users can also upload and share their own datasets, reflecting their views on the best available historical data and forecasts. The CountryRisk.io platform also facilitates a constructive exchange among users regarding the quality of the data used in rating analyses. CountryRisk.io's community features ensure that data quality concerns can be quickly raised and addressed.

The nine risk categories are weighted to reflect their relative importance for the final score. The risk score for each category ranges between 0% and 100%. They are aggregated to yield a total score. The categories and respective weights are as follows:

TABLE 1

Categories	FCY Weight	LCY Weight
Economic growth prospects	20%	20%
Political stability	5%	15%
Institutions and governance	5%	15%
Monetary stability	5%	15%
Banking sector strength	5%	5%
Fiscal account vulnerability	15%	10%
Public debt sustainability	15%	10%
Balance of payment flexibility	15%	5%
External debt sustainability	15%	5%

Quantitative assessment of indicators

Quantitative indicators are assessed by assigning values in a risk spectrum ranging from low to high. The risk spectrum is divided into several intervals and risk points are assigned to the individual intervals. For example, higher GDP per capita indicates a higher level of economic development and receives lower country credit risk score. Hence, in CountryRisk.io's framework, countries with lower GDP per capita receive more risk points than countries with higher GDP per capita (see **TABLE 2**).

The mapping of indicator values to risk points is not necessarily linear. This means that risk points for most indicators increase exponentially as the indicator weakens.

TABLE 2

GDP Per Capita (USD)	< 2000	2000 < 5000	5000 < 10000	10000 < 15000	15000 < 25000	25000 < 30000	≥ 30000
Risk Points	40	30	20	15	10	5	0

For some other indicators, a very high or a very low value translates into higher risk points. For instance, very high consumer price increases (hyperinflation) receives high risk points, but sharp consumer price declines (deflation) also receives risk points. The lowest risk point scores occur when annual consumer prices increase between 0% and 3%.

TABLE 3

Inflation Rate (5 Year Average)	< -5%	-5% < 0%	0% < 3%	3% < 5%	5% < 10%	≥ 10%
Risk Points	10	5	0	5	10	20

The risk intervals in CountryRisk.io are derived from economic literature, research, and statistical analysis. CountryRisk.io also compares the risk intervals by grouping them according to the average rating of S&P, Moody's and FitchRatings. **FIGURE 2** shows a boxplot (25 and 75 percentiles) of the corruption indicator, grouped by rating. The data source is the World Bank expressed as the percentile rank. For example, countries rated AAA on average by S&P, Moody's and FitchRatings have ranged between 92.3 and 97.6, with a median of 95.2. This is based on annual records since the World Bank initiated this indicator in 1996. **TABLE 4** shows further details the historical distribution of the indicator per rating.

FIGURE 2

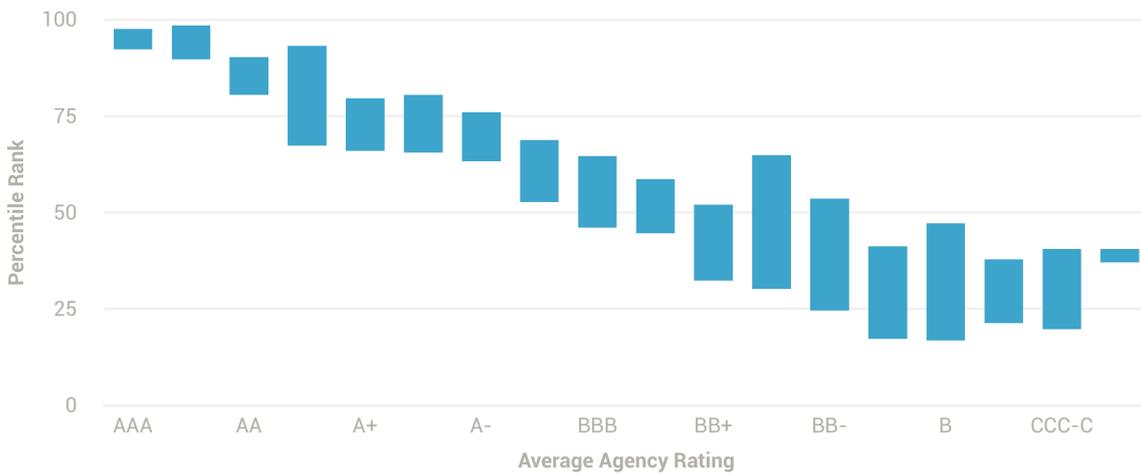


TABLE 4

Letter	Mean	Median	25% Percentile	75% Percentile	5% Percentile	95% Percentile	Observations
AAA	94.6	95.2	92.3	97.6	86.1	100.0	149
AA+	93.8	95.1	89.8	98.5	85.3	99.5	38
AA	83.6	84.6	80.5	90.2	65.8	95.2	46
AA-	79.7	82.6	67.3	93.2	57.5	98.5	34
A+	69.6	71.8	66.0	79.6	33.0	86.2	49
A	72.1	72.0	65.6	80.5	46.3	90.9	50
A-	68.9	70.2	63.3	76.0	40.3	87.9	43
BBB+	59.3	61.5	52.7	68.8	16.6	88.6	34
BBB	51.1	54.1	46.1	64.6	13.1	73.1	47
BBB-	49.7	52.2	44.6	58.7	12.6	68.3	56
BB+	44.1	43.9	32.4	52.1	12.6	84.8	59
BB	46.7	50.5	30.2	64.9	15.5	74.8	38
BB-	38.2	33.6	24.6	53.7	11.7	84.1	44
B+	31.8	31.3	17.3	41.3	4.6	74.4	36
B	33.3	29.2	16.9	47.2	8.0	71.6	37
B-	30.6	28.5	21.3	37.9	15.1	44.5	30
CCC-C	29.7	22.9	19.8	40.6	15.6	55.9	8
DDD-SD	37.2	39.5	37.1	40.6	18.5	41.7	9

All indicator assessments are defined on a stand-alone basis. This means the mapping table of an indicator value to risk points ignores how a country scores on other indicators.

All indicators that are mapped into risk intervals are detrended and stationarised, either by taking meaningful ratios like external debt-to-GDP, or by calculating growth rates, or by evaluating on a real (inflation-adjusted) basis in order to yield a meaningful comparison over time.

Translating total risk points into foreign and local currency letter ratings

CountryRisk.io follows the standard practice of summarizing risk ratings as a letter, ranging from AAA for lowest-risk countries to C for highest-risk countries. Countries that are currently in default on some or all of their obligations receive the rating D. We define default as having missed interest or principal payments, or both. **TABLE 5** summarises how total risk points are translated into a letter rating. A rating analysis that yields a total risk score of 88%, for example, is accorded a letter rating of CC.

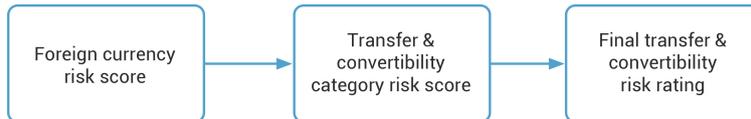
TABLE 5

FCY Risk Points Range		LCY Risk Points Range		Letter Rating	Risk Level	Interpretation
–	–			D	In Default	The country is currently in default on some or all of its obligations.
100,00	90,00	100,00	92,50	C	Speculative Grade	Very highly speculative credit quality and high default risk. Default can be avoided only in a favourable economic environment.
89,99	85,00	92,49	87,50	CC		
84,99	80,00	87,49	82,50	CCC		
79,99	75,00	82,49	77,50	B-	Speculative Grade	Highly speculative credit quality reflects elevated uncertainty about the country's ability and willingness to repay its obligations. While current financial obligations are honoured, a deterioration of the economic environment, external account, indebtedness or heightened political uncertainty all have the potential to challenge the country's capacity to honour its obligations.
74,99	70,00	77,49	72,50	B		
69,99	65,00	72,49	67,50	B+		
64,99	60,00	67,49	62,50	BB-	Speculative Grade	Speculative credit quality reflects uncertainty about the country's ability and willingness to repay its obligations. Issuer credit risk is vulnerable to unexpected changes.
59,99	55,00	62,49	57,50	BB		
54,99	50,00	57,49	52,50	BB+		
49,99	45,00	52,49	47,50	BBB-	Investment Grade	Good credit quality reflects a low expected credit risk. Unexpected changes in the domestic or global economic environment or structural changes are more likely to impair the credit quality.
44,99	40,00	47,49	42,50	BBB		
39,99	35,00	42,49	37,50	BBB+		
34,99	30,00	37,49	32,50	A-	Investment Grade	High credit quality with capacity and willingness to honour its obligations. That said, credit risk is susceptible to deterioration in the case of unexpected changes of the country's fundamentals or its economic outlook.
29,99	25,00	32,49	27,50	A		
24,99	20,00	27,49	22,50	A+		
19,99	15,00	22,49	17,50	AA-	Investment Grade	Very high credit quality with ample capacity and proven willingness to honour its obligations. Credit quality is only marginally weaker than the highest credit quality of AAA-rated issuers.
14,99	10,00	17,49	12,50	AA		
9,99	5,00	12,49	7,50	AA+		
4,99	0	7,49	0	AAA	Investment Grade	Highest credit quality accorded to the greatest capacity and willingness to honour its obligations. Credit quality is unlikely to be weakened by foreseeable events.

Translating total risk points into T&C risk ratings

A country's foreign currency sovereign risk rating, derived from CountryRisk.io's sovereign risk framework, serves as the basis for determining the country's Transfer and Convertibility Risk. A simplified schematic of the process is shown in **FIGURE 3**.

FIGURE 3



A series of qualitative questions determine the T&C category risk score, which ranges between 0% and -15%, and is added to the foreign currency risk score. As a result, the T&C category risk score can also be understood as a rating upgrade from the foreign currency rating. CountryRisk.io's assumption here is that capital and exchange controls become more likely when the probability of a sovereign default increases, and would probably lead to shortfalls in foreign exchange reserves.

The final T&C risk score yields a T&C risk rating, with the country assigned to one of seven incremental risk buckets. **TABLE 6** shows the Transfer and Convertibility Risk ratings that may be accorded to a country, their interpretations and related T&C risk point ranges.

TABLE 6

T&C Risk Points Range		Risk Rating	Interpretation
0	15	0	The probability of the government imposing capital or exchange controls is negligible.
15	30	1	The probability of the government imposing capital or exchange controls is minimal and unlikely.
30	45	2	The probability of the government imposing capital or exchange controls is limited and still unlikely.
45	60	3	The probability of the government imposing capital or exchange controls is moderate.
60	75	4	The probability of the government imposing capital or exchange controls is elevated, in the event of a default.
75	90	5	The probability of the government imposing capital or exchange controls is high, in the event of a default.
90	100	6	The probability of the government imposing capital or exchange controls is imminent.

Risk categories

Economic structure and growth prospects

A country's economic structure is one of the key determinants of its level of risk. The structure of the economy influences growth prospects and resilience, which in turn determine its flexibility to generate sustainable revenues and to service the government's obligations.

To assess a country's economic prospects, CountryRisk.io analyses historical and trend growth and fundamental long-term growth drivers, such as human capital, integration with the global economy and technological resources. An economy with a high GDP per capita or one with a favourable growth outlook is more likely to provide the government with stable tax revenues. Conversely, a country with limited prospects for increasing the per capita income of its citizens will likely experience persistent revenue shortfalls and therefore need to borrow regularly – either in its domestic capital markets or abroad – to bridge the inevitable deficits.

Diversity is also an important aspect of an economy's structure: a country that relies heavily on a single sector, like agriculture, is vulnerable to shocks brought on by poor weather or a decline in external demand. This is also true for economies that rely on commodity exports, which depend on the global growth cycle. Similarly, CountryRisk.io thinks that countries with overvalued currencies effectively overstate their GDP per capita, rendering their apparent capacity to generate revenues misleading. A rapid increase in credit growth, one that outpaces real GDP growth, will eventually lead an economy with an overvalued currency to a marked downturn as its credit bubble bursts.

TABLE 7 – INDICATORS AND ADJUSTMENT FACTORS IN THIS RISK CATEGORY

Indicators	Adjustment Factors
Income level	Size of the economy
Real GDP growth volatility	Diversity in economic structure
Fundamental growth driver: Savings	Natural resources
Fundamental growth driver: Human capital and education	Role of credit in economic growth prospects
Fundamental growth driver: Demographics	Currency valuation's impact on per capita GDP
Fundamental growth driver: Integration with the world economy	
Fundamental growth driver: Access to technology	
Fundamental growth drivers: Infrastructure	

Political stability

A country's political environment is fundamental to CountryRisk.io's analysis of risk, and we assess this factor with indicators that are primarily qualitative in nature. The system of government typically indicates its ability to create and implement policies that are conducive to stable growth and strong public finances. Democratic countries allow for checks and balances among its branches, which help to ensure an unbiased representation of citizens' concerns. In contrast, a dictatorship mainly serves the rent-seeking interests of a very small fraction of society at the expense of the majority.

CountryRisk.io also assesses social factors – for example, religious or ethnic divisions, economic incentives for social unrest, the military's role in politics, etc. – and weighs their relevance for a country's economic prospects. Ethnic or religious conflicts could lead to political instability and even civil war. Studies show that, in general, the potential for religious or ethnic conflict is highest in countries populated primarily by two polarized groups. More diverse societies appear less likely to experience destabilising internecine unrest. Studies also suggest that economic incentives for rebellion are likely in countries with a considerable share of income, at least twenty per cent, generated by the export of primary commodities.

In most cases, an active military presence in a country's politics is a destabilising factor. A history of civil war or external conflict is also an important consideration, since the root causes of such hostilities often persist even after the conflict end. This makes the risk of renewed conflict high, with the probability falling only marginally each year. Usually marked by the destruction of human, private and public capital, violent conflicts can hobble economic growth. If they are severe and prolonged, they are likely to damage an economy for years, undercutting the government's ability to implement policies favourable to growth.

TABLE 8 – INDICATORS AND ADJUSTMENT FACTORS IN THIS RISK CATEGORY

Indicators	Adjustment Factors
Quality of democracy	Impact of external organisations in policymaking
History of civil war or external conflict	
Religious conflict	
Ethnic strife	
Impetus for economic rebellion	
Influence of the military	
Strength of international ties	

Institutions and governance

Robust political institutions serve to anchor a country during times of economic instability and they mitigate concerns that a government might not service its debt. Countries with a strong legal system, established mechanisms to fight corruption, an effective government, a healthy regulatory regime, and political stability and transparency are accorded low risk points in CountryRisk.io's framework. In addition, this risk category also includes an indicator that assesses the overall ease of doing business.

TABLE 9 – INDICATORS AND ADJUSTMENT FACTORS IN THIS RISK CATEGORY

Indicators
Rule of law
Control of corruption
Government effectiveness
Regulatory quality
Voice and accountability
Political stability
Transparency
Ease of doing business

Monetary policy

Sound monetary policy is a foundation for stable growth and it tempers large swings in the economy during periods of stress. This indicator assesses the ability of monetary authorities to use tools at their disposal flexibly and independently, without interference from the government, whose goals may not be aligned with those of the central bank.

A growing number of central banks in advanced and emerging economies identify price stability as their primary monetary objective. Thus, a stable inflationary environment indicates the authorities' ability to achieve their goal. This is important as it minimises risks in related channels, such as the banking and financial sector as well as the exchange rate for its currency.

Other central banks choose to target a stable exchange rate, or allow the currency to fluctuate against a reference currency or basket of currencies. While a stable exchange rate is a legitimate target for a central bank, it also means that monetary authorities' lose considerable flexibility to use various tools that might become crucial when the exchange rate undergoes speculative attack. In such an environment, the central bank could take several actions, albeit growth-stifling, to defend the exchange rate. Or, in an extreme response, they could abandon their objective when foreign reserves are depleted or successive interest rate hikes burden the economy to an unacceptable degree.

A credible monetary policy and a solid track record for the policymakers go a long way to ensure stable inflation trends and growth in the money supply that is consistent with the economy's expansion. They also keep real interest rates in check, which, if they reach very high levels, are a sure precursor to a banking and financial crisis. The credibility issue becomes particularly important during crisis periods, when authorities may undertake exceptional temporary monetary measures to stabilise the economy. As necessary as these measures may be at the time, ultimately it will be the central bank's ability to exit them, at the appropriate time, that will ensure a lasting recovery.

One of the key adjustment factors in this risk assessment category includes, the level and persistence of deflation, if any. While falling prices in themselves are not necessarily bad – for example, when they result from technological advances or improved productivity – an economy is at risk when aggregate demand falls significantly faster than aggregate supply and prices spiral further downward. The degree of dollarisation is another adjustment factor here. Studies show that when dollarisation reaches roughly 60% of deposits, macroeconomic stability can be jeopardised in countries lacking sufficiently robust institutional, monetary and fiscal foundations.

The financial crisis of 2008 and the subsequent European sovereign debt crisis have prompted a reassessment of the linkages between the financial sector, the public sector and sovereign risk. While membership in a monetary union provides an anchor, each member country may not always be synchronised with the rest in terms of core monetary (credit, prices and wages) and fiscal variables.

CountryRisk.io considers membership in a monetary union as a key adjustment factor and assesses whether each member country's core monetary indicators are in line with those of other members. We also consider any potential risks that could spill over to other sectors in the economy.

Finally, CountryRisk.io examines a country's domestic financial market for potential sources of risks, whether from weak monetary policy or from the market's insufficient development. The size and depth of the local bond and equity markets are important as they reflect the public and private sectors' ability to raise funds at market-determined rates with transparent pricing.

The investor base in the local currency debt market is also important. A high proportion of foreign investors in the local currency debt market is common in the larger developed economies of the US, Japan, the UK and Germany. But the issue becomes critical for emerging market countries, whose markets are still shallow and often have restrictions in their current or capital accounts as well as inflexible exchange rate regimes.

TABLE 10 – INDICATORS AND ADJUSTMENT FACTORS IN THIS RISK CATEGORY

Indicators	Adjustment Factors
Consumer price development	Monetary policy track record
Inflation volatility	Money supply growth
Growth in domestic credit	Exchange rate system
Real interest rate	Dollarisation
	Membership in a monetary union
	Effectiveness of monetary policy via financial and capital markets

Banking sector strength

A strong and stable banking sector is important for efficient capital allocation in order to finance sustainable economic growth. History shows that past banking sector crises resulted in significant economic output losses, lower growth prospects and significant deterioration to sovereign credit quality due to contingent liabilities.

CountryRisk.io assesses the banking sector's strength and its risks to the sovereign by following the **CAMELS** approach:

1. **Capital adequacy (C):** The recent banking crises, particularly in advanced economies, added weight to the argument that more stringent capital requirements strengthen a banking system's stability, improve the efficiency of intermediation and reduce corruption in lending. The active use of capital buffers is prudent to protect depositors and creditors during periods of financial stress. The analyst is encouraged to assess the sovereign's regulations on the amount of capital a bank must hold and whether banks are required to identify the sources of funds counted as regulatory capital.
2. **Asset quality (A):** Asset quality is one of the most critical factors determining the overall health of a bank and, by extension, a sovereign's entire banking sector. Its loan portfolio and how loans are extended to borrowers are primary elements of a bank's overall asset quality. Loans typically comprise the majority of a bank's assets and carry the greatest amount of risk to their capital. Securities may also constitute a large portion of a bank's assets and they are accompanied by significant risks as well. The key indicator to monitor here is the ratio of non-performing loans to total loans.
3. **Management quality (M):** This parameter assesses both the board of directors' and management's ability to identify, monitor, control and mitigate the risks stemming from the bank's activities. Sound operations and full regulatory compliance are the focus here and the key areas include credit, market, liquidity, operational, legal, compliance and reputational risks.
4. **Earnings (E):** The ability to earn sustainable returns on assets determines the viability of any business. For banks, core earnings are critical, as are the bank's long-term earnings ability after discounting one-off events or fluctuations in net income. Analysts are encouraged to assess the quality and composition of earnings. Key ratios to watch are the trends and levels of the banking sector's return on equity (ROE) and return on assets (ROA).

5. **Liquidity and funding (L):** An assessment of the banking system's funding structure and liquidity situation helps to identify potential liquidity vulnerabilities in times of stress. Liquidity risk is the current and prospective risk to a bank's earnings or capital arising from its inability to meet its obligations without incurring unacceptable losses. The loan-to-deposit ratio is key indicator to monitor here. In addition, structural liquidity mismatches in banks' balance sheets – reflecting their portion of long-term, illiquid assets (structural positions) that are financed with short-term funding and non-core deposits – are all sources of systemic risk.
6. **Sensitivity to market risk (S):** This parameter measures the degree to which changes in market-based “prices” can reduce the banking sector's earnings or economic capital. These include interest rates, foreign exchange rates, commodity prices, or equity prices. Since little data is available for this factor, analysts are encouraged to use the World Bank database on Bank Regulation and Supervision. We would specifically draw their attention to the regulatory restrictions the banking sector faces in securities activities.

As with the other parameters in our rating framework, CountryRisk.io allows adjustment to these areas in order to express a comprehensive, nuanced view on the strength of a banking sector. These include assessments on loan concentration and related-party lending. We also consider potential contingent liabilities to the government in terms of its ability to support banks in difficult times, which is ultimately dictated by its fiscal strength.

There are several potential sources of funding to assure liquidity during times of stress, including liquidity facility arrangements with international institutions or central banks. Access to deep domestic capital market is another potential funding route, providing financing flexibility to the banking sector and reducing its reliance on foreign capital for funding. CountryRisk.io ascribes great importance to assessing currency and maturity mismatches, as these can quickly render banks vulnerable to liquidity and solvency risks when market liquidity in domestic and reserve currencies evaporate.

If banks commit similar mismatches across the board, an external shock such as a sudden reversal in capital flows could endanger the safety of the entire financial system. The 2008 global financial crisis underscored the gravity of maturity mismatches, not only in emerging market economies but also in those of developed markets. In emerging market economies with foreign currency liabilities, maturity mismatches create a more serious systemic risk since they are invariably accompanied by currency mismatches.

Using several factors, CountryRisk.io also assesses the regulatory environment. These include: (1) accounting and risk reporting standards; (2) classification of loans; (3) provisioning for loan losses; (4) bankruptcy code and workout programs; and (5) deposit insurance schemes.

While information may be available on the relevant regulator's website, the IMF Article IV Reports and the World Bank's database on banking regulation also provide general guidance in assessing these parameters. In addition, the history regulatory bodies' efforts to enforce rules that discipline problematic institutions should also be taken into account. This record allows the analyst to gauge how willing regulators are to preserve a stable financial environment.

Finally, CountryRisk.io assesses potential risks stemming from shadow banking activities.

TABLE 11 – INDICATORS AND ADJUSTMENT FACTORS IN THIS RISK CATEGORY

Indicators	Adjustment Factors
Capital adequacy	Access to funding
Asset quality	Asset / liability matching
Management quality	Related party lending
Earnings and profitability	Shadow banking
Liquidity	Regulation and supervision
Sensitivity to market risk	

Fiscal account vulnerability

The sustainability of a sovereign's fiscal deficits and debt is central to determining country risk. In the former, CountryRisk.io looks at the government's revenues and expenses and the underlying sources and uses of its income. The second part of the analysis, financing of the deficit, produces a fuller picture of the government's fiscal flexibility.

CountryRisk.io assesses the quality of the government's revenue base by looking at its size and various components – tax and non-tax – and judges each source's sustainability. A captive tax base guards against external shocks, such as natural disasters, declines in tourism, changes in terms of trade or foreign aid. In contrast, reliance on non-tax revenues increases revenue volatility and ultimately reduces fiscal flexibility.

Revenue trends are informative. To fund government spending without resorting to inflationary financing, the tax system's ability to raise revenue is vital. This implies a tax system that generates revenue increases and that grows in line with nominal income, without frequent changes in tax rates or the introduction of new taxes. A robust revenue and tax system enables construction of fiscal buffers and enhances flexibility. CountryRisk.io also reviews the government's willingness to increase revenue, as well as its dependence on privatisation and other one-off revenue sources, which may not be sustainable for the funding of future (recurring) expenditures.

A government's current and capital expenditures are central to assessing the quality and efficiency of its spending. Current expenditures consist of government wages and salaries, rents, transfer and interest payments, and subsidies. These tend to account for a large share of the government's total spending when the public sector is the primary employer and provider of goods and services, which is more common in emerging market economies than in advanced countries. Sizeable current spending reduces fiscal room to manoeuvre, rendering the government vulnerable to shocks since it cannot respond effectively when access to market financing becomes constrained. CountryRisk.io assesses the government's ability and willingness to rationalise this spending.

Superficially, capital spending consists of investment in infrastructure and other growth-enhancing programs. But this is a simplistic view because while long-term growth should be the underlying goal, governments often pursue investment projects to achieve short-term macroeconomic effects, like generating employment, or for political reasons. Under these circumstances, the long-term effects will be diluted. The trends in the headline expenditure are as telling as the shift in shares between current and capital expenditures over time.

Against this background, the budget should be comprehensive, realistic, fully financed and forward-looking. Off-budget items reduce the effectiveness of the budgetary policy, as do unrealistic and inconsistent macroeconomic assumptions. They also lead to frequent budget revisions during the fiscal year, which reduces its reliability and credibility. A fully financed budget reflects reasonable revenue projections and realistic financing provisions over the declared fiscal period.

Government balances should reflect sound fiscal management and the resolve needed to maintain solid fiscal positions. When analysing fiscal deficits, it is critical to look at their underlying causes to determine whether they are temporary or recurring. With recurring deficits, it may be useful to consider the independence of fiscal managers and their ability to ignore pressure from all levels of government – local, regional, provincial and national.

A fiscal consolidation framework is also important to anchor fiscal indicators and growth targets. While governments are likely to deviate from some targets during economic downturns or as a result of shocks, the analyst must consider the size of the shortfall as well as the speed and determination of the authorities to put its fiscal house in order again. A significant increase in deficits that is unaccompanied by a framework for adjustment may well drag the fiscal situation into an unsustainable decline.

Finally, CountryRisk.io considers a sovereign's relations with international organizations in three areas of policymaking. Countries that are members of multilateral institutions – whether supranational or a monetary union – and receive financing support in response to a fiscal or balance of payments crisis must adhere to the prescribed adjustment frameworks. This can be painful but it is essential to correct the unsustainable imbalances that have developed. The government's commitment to the conditions, if credible, helps to mitigate risk since policy measures becomes both more predictable and more effective.

TABLE 12 – INDICATORS AND ADJUSTMENT FACTORS IN THIS RISK CATEGORY

Indicators	Adjustment Factors
Fiscal balance	Quality of revenue base
Revenue collection efficiency	Flexibility to raise revenues
Trends in government revenue versus nominal GDP growth	Expenditure performance and quality
Quality of fiscal management	Government's willingness to cut spending
	Adherence to demanding external programs

Public debt sustainability

The sustainability of public debt becomes a serious concern when a government becomes to service its debt without significant fiscal adjustments. Analysing the sustainability public debt is multifaceted and its factors are dynamic. The first step is a thorough assessment of a country's current debt situation looking at factors like headline as well as other liabilities that are or may become reliant on the government, the currency and maturity structures, the composition of its borrowing rates, and the holders of its debt.

To assess the current level of debt, it is not sufficient to consider the government's own debt alone. The analysis must incorporate liabilities arising from state-owned enterprises (SOEs), public-private partnerships (PPPs), and pension and healthcare programs. As an example, although SOEs are quasi-government enterprises, they are expected to generate sufficient revenue for their own debt servicing. In fact, in many countries some or all SOE debt became the government's liability. As a result, these quasi-government enterprises are unable to borrow on foreign capital markets, leaving the government to do so on their behalf. These funds are sometimes called "on-lend" money, borrowed by the government and "lent" onward to an SOE. In the end, this sum only adds to the sovereign's headline debt. Absent any improvement in the SOE's financial position, the obligation rests fully on the government.

Generally, the higher the level of public debt, the more likely it is to become unsustainable. All else being equal, higher debt requires a higher primary surplus to stabilise it. But higher debt ratios are usually related to higher interest rates and imply servicing by an even higher primary balance. Research in the wake of the recent sovereign debt crises in Europe suggests that debt levels above 60% of GDP should trigger a thorough debt sustainability analysis for a sovereign.

Analysing debt sustainability, it is important to have realistic baseline assumptions concerning the country's growth rate, interest rate, and primary balance over a five- to ten-year period. For a comprehensive analysis, incorporating country-specific issues such as its vulnerability to shocks – whether economic, political or natural in origin – is also critical. Not only are these factors relevant to assessing baseline debt sustainability; they also deepen the risk analysis of potential stress scenarios. Higher interest rates, from changes in market sentiment or lower growth assumptions, for example, due to unfavourable debt dynamics, require upward adjustments in the primary balance to stabilise the debt ratio. All this could alter the initial assessment of debt sustainability. CountryRisk.io includes quite granular debt sustainability calculations and more simplified calculations for countries where limited available data prevents a more detailed assessment.

The other areas of vulnerability that should be considered are the size of the government's net assets, whether its debts are concessional or raised from the markets, whether market debt is borrowed on domestic or foreign capital markets, and whether the country can easily access funds from other sources. These observations are relevant to assessing potential refinancing concerns if debt dynamics were to deteriorate.

As a further element in its analysis, CountryRisk.io assesses the government's debt payment culture, which considers the degree to which policymakers are willing to prioritize servicing debt obligations and risking default. The analysis considers the sovereign's history of (a) arrears on bilateral official debt, (b) any public discourse that questions the legitimacy of debt contracted by a previous administration (odious debt), and (c) policy changes since the most recent default on commercial debt.

TABLE 13 – INDICATORS AND ADJUSTMENT FACTORS IN THIS RISK CATEGORY

Indicators	Adjustment Factors
Size of total government debt to GDP	Government assets
Size of debt servicing to tax revenues	Access to official funding
Public external debt service to exports	Market access
Public debt profile	Contingent liabilities
Uncertainty of baseline projections	Government's debt payment culture

Balance of payment flexibility and external debt sustainability

CountryRisk.io's analysis of a country's external position considers its external liquidity and the viability of its external debt.

Conventional wisdom states that persistently large current account deficits, about 5% of GDP, are unsustainable. History reveals mixed findings, however, as a number of countries have been able to run large current account deficits for years while avoiding external crises. Others, however, have suffered considerably.

CountryRisk.io applies a framework that considers the fundamentals underlying the current account as well as indicators from the capital account. The framework also examines potential areas of vulnerability in the country's economic structure, macro-economic policy and political economy that could heighten external account instability.

CountryRisk.io uses several metrics to measure external liquidity, including import coverage and external financing requirements as a percentage of foreign exchange reserves. Import coverage, expressed in numbers of months, depicts the adequacy of foreign exchange reserves to pay for imports. We regard external financing requirement as a more robust indicator.

This indicator is the sum of a country's current account balance, short-term external debt, principal (amortization) payments and interest payments divided by its foreign exchange reserves, excluding gold and other illiquid external assets. Clearly, a country that is running current account deficits and faces large short-term payments due over the next twelve months is likely to run into liquidity issues without adequate useable foreign exchange reserves.

The situation is even less favourable when a country's export base is narrow or highly dependent on commodity imports. That risk is reduced if the composition of trade and trading partners is diversified.

The composition of a country's external liabilities can be another potential area of vulnerability. Here again CountryRisk.io distinguishes between debt and equity, and between instruments for each. In general, foreign investors bear part of the burden in equity financing, which allows asset price adjustments to absorb at least some part of negative shocks. However, debt that is financed in a foreign currency places most of the burden on the borrower through the depreciation of the domestic currency, assuming that it does not default.

The structure of equity and debt liabilities is equally important. Comparing portfolio investments and foreign direct investments (FDI), the former is often regarded as

potentially more volatile. When assessing debt, CountryRisk.io looks at the maturity and interest structures, as well as the currency composition. Short-term maturities increase rollover risk, as do a bunching of maturities. A high proportion of foreign-currency-denominated debt to total debt (public and private), or a high prevalence of floating interest rates, renders the country vulnerable to external shocks.

The openness of the capital account can be a double-edged sword. On the one hand, it exposes the country to volatile capital flows. However, it also allows the country to adopt policies to adjust to adverse external shocks. A relatively closed capital account shields the country from the vagaries of foreign capital flows but may cause considerable imbalances in the economy and lead to a crisis in a fixed exchange rate regime.

The flexibility of the exchange rate and a country's exchange rate policy are closely linked. Time and again, history has shown that countries pursuing a fixed exchange rate regime are prone to speculative attacks precipitated by external shocks. Against this backdrop, the level of the real effective exchange rate becomes a useful barometer of sustainability. Meanwhile, a real appreciation of the exchange rate is not a cause of concern if fundamentals, such as improvements in productivity or more favourable terms of trade, support the increase

Nonetheless, a persistent real appreciation of the exchange rate in a fixed or managed exchange rate regime may indicate conflicting monetary and exchange rate policies that will eventually result in overvaluation. Capital controls combined with high domestic interest rates typically support this overvaluation. Dynamics can worsen quickly, with the sustainability of the current account soon vulnerable to slowing economic activity brought on by higher interest rates, while exports decline due the appreciating currency. The subsequent widening in the current account deficit and decline in foreign exchange reserves reinforce the expectation of a devaluation, further weakening the ability of the country to defend its external imbalances.

In recent years, the large capital inflows into many emerging market economies have produced an appreciation in their real exchange rates. For some countries, improvements in their fundamentals provided an anchor. For others, large capital inflows have excessive short-term effects, which ultimately lead to increased exchange rate volatility and current account imbalances.

The indicators and adjustment factors in the “Balance of payment flexibility” risk category are listed below.

TABLE 14 – INDICATORS AND ADJUSTMENT FACTORS IN THIS RISK CATEGORY

Indicators	Adjustment Factors
Current account balance	Diversification of the export base and markets
Export performance	Share of net fuel imports to total imports
Real effective exchange rate valuation	Fluctuations in the terms of trade
International investment and current account position	Non-debt creating sources of foreign exchange
	Liberalisation of the capital account
	Quality of foreign investments

The indicators and adjustment factors in the “External debt sustainability” risk category are listed below.

TABLE 15 – INDICATORS AND ADJUSTMENT FACTORS IN THIS RISK CATEGORY

Indicators	Adjustment Factors
Total net external debt to GDP	Expected trend in foreign exchange reserves
Net external debt to exports	History of default
Size of short-term external debt to FX reserves	Risk of a sudden stop to capital inflows
Interest payments on external debt to exports	Reserve currency status
External debt profile	
Import coverage	
External financing requirements	

Environment (ESG rating model only)

The impact of weather-related disasters, consequences of fragmented institutions or weak social cohesion are factors that could weigh on the government’s ability or willingness to honour its sovereign debt obligations. Since the associated direct (e.g. loss of capital or

economic output) and indirect costs (e.g. migration) of environmental and social risk factors can be large enough to severely affect an economy, integrating environmental, social and governance - ES(G) - risk drivers into country and sovereign assessment process is useful. We put the (G) into parenthesis because factors like rule of law, corruption or government effectiveness have always been an integral part of CountryRisk.io's standard framework.

Integrating ESG factors into sovereign credit ratings is especially valuable for better credit differentiation among less developed countries, where factors like the quality of the education or health system, or vulnerability to environmental risks, add more granular information. In contrast, such factors could lead to smaller changes—if any—among highly rated countries.

Environmental

Within the context of sovereign credit risk assessments, environmental factors are typically considered as inputs for production or as assets of the sovereign that could (implicitly) be used as collateral for debt obligations. For resource-rich economies from which significant revenue and wealth are derived, the degradation or weakening of their natural endowment could impact their sovereign ratings. Although this is likely to be a medium-term risk, one needs to consider mitigating factors that could maintain the sovereign's current rating. This might include, for instance, policies to diversify the economy and reduce its reliance on a single revenue source.

Other environmental issues to consider include the quality of the environment and its impact on public health, such as healthcare costs resulting from untamed air pollution, natural disasters like hurricanes or drought, or catastrophic accidents like a nuclear incident. All of these could put pressure on the sovereign's credit ratings through a number of channels including lower output, increased public debt and deficit or a marked contraction in exports.

TABLE 16 – INDICATORS AND ADJUSTMENT FACTORS IN THIS RISK CATEGORY

Indicators	Adjustment Factors
Climate change vulnerability	Environmental policies
CO2 emissions	Exposure to natural disasters
Renewable energy	
Protected areas	
Protection of biodiversity	

Indicators	Adjustment Factors
Freshwater stress	
Material footprint	
Quality of environmental data	

Social (ESG rating model only)

The relevance of social considerations might not seem to weigh heavily in the context of sovereign ratings. However, basic services to a country's citizens are integral to ensuring social cohesion, which in turn reflects the quality of a nation's institutions and its policymaking strength. Indeed, as set out in the standard country risk framework, inadequate services will over time undermine fiscal finances, which could put pressure on the country's ratings.

Within the ESG sovereign risk model, the social risk factor is split into three subgroups: Education, Health and Social Inclusion & Equality.

Education

A key task of the government is to provide education to its citizens; including schools and universities, apprenticeship programs and basic research and development. Education spurs the level of human capital available, but the quality of education is critical to enabling citizens to switch professions as circumstances require. Education also tends to be an important factor for social cohesion. Learning is a life-long activity that will be facilitated by new technologies, and has a huge potential to reduce the risk of parts of society being left behind.

TABLE 17 – INDICATORS AND ADJUSTMENT FACTORS IN THIS RISK CATEGORY

Indicators	Adjustment Factors
Literacy rate	Education policies
Youth literacy rate	
Primary enrolment ratio	
Secondary enrolment ratio	
Tertiary enrolment ratio	

Indicators	Adjustment Factors
Children out of school	
Pupil-teacher ratio	
Teacher quality	
Quality of education data	

Health

Like education, access to healthcare is integral for economic development and progress. Ultimately, the quality of a population's health is reflected in changes in life expectancy. Rising healthcare costs can put a substantial strain on public finances and create a drag on productivity. So, effective public healthcare systems are crucial to improving both public health and public finances. Examples of indicators for calculating a country's health risk score include the immunisation rate, access to clean water and sanitation and the impact of air pollution on health.

TABLE 18 – INDICATORS AND ADJUSTMENT FACTORS IN THIS RISK CATEGORY

Indicators	Adjustment Factors
Life expectancy	Public health policies
Mortality of infants and children	
Prevalence of tuberculosis	
Prevalence of health conditions with children under five	
Access to improved sanitation	
Water services	
Medical services	
Immunisation	
Public health expenditure	
Quality of health data	

Poverty, Inclusion and Equality

An economy can only thrive if each citizen has the ability to participate in societal and economic process in a fair and equal way. First, inclusion refers to the ability to access not

just education and healthcare but also the banking system, labour market and democratic processes such as elections. Second, equality means ensuring a level playing field and removing unfair discrimination for everyone.

TABLE 19 – INDICATORS AND ADJUSTMENT FACTORS IN THIS RISK CATEGORY

Indicators	Adjustment Factors
Poverty and hunger	Social policies
Population living in slums	
Battle related death	
Crime	
Financial inclusion	
Social inclusion	
Human rights	
Unsentenced detainees	
Gender equality	
Income equality	
Access to electricity	
Internet access	
Unemployment	
Youth unemployment	
Strength of social safety nets	

Transfer & convertibility risk

The T&C risk score assesses the incentives and the costs versus benefits of the government introducing capital or exchange controls. While capital and exchange controls offer some advantages to the government – preserving foreign exchange reserves and limiting capital outflows in times of stress – capital controls typically have a negative impact on the private sector. Widespread corporate sector defaults on external or foreign-currency debt, loss of access to foreign sources of financing and international suppliers and customers, constitute a severe burden on the private sector, and by extension on the sovereign (e.g., through declining tax revenues, higher social expenditures, increasing

contingent liabilities). In general, countries that have strong institutions and that are well integrated into the world economy, whether through trade or financial linkages, are less likely to introduce capital controls.

TABLE 20 – INDICATORS AND ADJUSTMENT FACTORS IN THIS RISK CATEGORY

Indicators
Monetary union member
Currency substitution
Offshore centre
Size of total external trade
Exchange rate flexibility
Size of private sector external debt, or reliance of the private sector on international capital markets
History of imposing exchange or capital controls
Strength of institutions