SOVEREIGN RATING METHODOLOGY

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OVERVIEW AND SCOPE

The present methodology has been developed by Beyond Ratings and applies to sovereign governments – hereafter referred to as "sovereigns" – as well as to monetary authorities. The main goal of this methodology is to define in a transparent way the methodological framework used by Beyond Ratings for its rating activity on above-mentioned entities. The ratings derived from this methodology apply to sovereign issuers as well as to issues from the same entities.

In the context of rating activities, a sovereign is defined as a central government – generally at national or federal level – which has primary authority in determining the institutional and economic frameworks over the recognized[1] jurisdiction in which it operates. In most cases, a sovereign has jurisdiction over its borders, control of its balance of payments and determines the currency it uses. Monetary authorities – *e.g.*, central banks – generally benefit from the same rating as the sovereigns to which they are attached (see section F for the specific case of supranational monetary authorities).

The sovereign is the highest authority and has, *de facto*, the power to enforce its authority over the jurisdiction it governs. Private creditors therefore have very often limited legal recourse in the case where the sovereign is unable or unwilling to reimburse its debt. It is the same at international level, given the limits of international law and its enforceability towards sovereigns. Therefore, sovereign credit risk assessment must take into account, as much as possible, not only financial capacity but also the sovereign issuer's willingness to reimburse debt. That said, the issuer's credit rating (ICR) assigned by Beyond Ratings does not reflect the financial ability and willingness to reimburse certain types of debt obligation such as obligations towards:

- Other governments e.g. Paris Club debt or intergovernmental debt;
- Supranational entities, such as the IMF or the World Bank;
- Local or regional authorities;
- Public sector companies or entities.

Finally, Beyond Ratings defines a credit default from rated sovereign entities as failure to service debt in accordance with its original terms or a distressed debt exchange (*cf.* "Beyond Ratings - Rating Definitions" for more details on the conditions leading to a credit default event).

[1] Recognized by international standards such as those of the World Bank, the International Monetary Fund (IMF) or the United Nations (UN). Nevertheless, we might consider some government not recognized by above-mentioned international standards as sovereign states. In particular this is the case for Taiwan or the Special Autonomous Region of Hong Kong which belongs, using said international standards, to the People's Republic of China.

SOVEREIGN RATING METHODOLOGY

We developed our sovereign rating methodology (SRM) to encompass the most comprehensive representation of sovereign issuers' credit risk. As such, it relies on the following fundamental principles:

- A holistic integration of all the factors likely to affect the financial ability and/or willingness of a sovereign to reimburse its debt on time and in full. Those factors are assessed through two major components of creditworthiness: an economic and financial profile on the one hand, and a sustainability profile on the other hand, the latter reflecting the performance in the Environmental, Social and Governance fields (ESG);
- A risk assessment based on a double evaluation, both quantitative and qualitative. The quantitative evaluation is run through econometric models;
- The taking into account of assessment factors both retrospective and prospective. The former represents historical metrics for sovereign creditworthiness as identified by academic literature and our own statistical works. The latter regroup both the expectation of future performance for certain historical metrics, as forecasted or modelled, and the identification of new risk metrics linked to the appearance of emerging structuring trends.

The inclusion of ESG criteria in a structured fashion within a specific profile for sovereign risk assessment represents a major methodological innovation. It reflects the manner in which these long-term issues, long considered strictly extra-financial, increasingly prove to be more material financially, and thus likely to weaken or improve a sovereign issuer's financial ability and/or willingness to reimburse its debt. The impact of the sustainability profile on our quantitative indicative rating could be up to eight notches. This evolution is perceived today both by investors and regulators:

- **In 2017, Over 120 investors signed the UN-PRI statement on ESG in Credit Rating:** *"We recognize that environmental, social and governance (ESG) factors can affect borrowers' cash flows and the likelihood that they will default on their debt obligations. ESG factors are therefore important elements in assessing the creditworthiness of borrowers."*
- In 2018, the European Commission Action Plan on Financing Sustainable Growth both acknowledged that it remains unclear to what extent sustainability factors are being considered by existing Credit Rating Agencies (CRAs) and invited the regulator (ESMA) to promote solutions which would ensure that CRAs fully integrate sustainability and long-term risks. This evolution is particularly strong with regards to emerging financial risks associated with Climate change issues, as illustrated by the recommendations of The Task Force on Climate Change Related Financial Disclosure (TCFD), and the launch in early 2018 of the international Central Banks and Supervisors Network for Greening Financial Systems (NGFS).

A. GENERAL FRAMEWORK

Our sovereign credit risk analysis rests on the quantitative and qualitative assessment of two profiles characterizing creditworthiness: the economic and financial profile on the one hand, the sustainability profile on the other. Those two profiles are structured around four pillars for the economic and financial profile, and three pillars for the sustainability profile. Finally, each pillar consists of several risk themes, themselves comprising several variables. (See Table 1 below and sections C and D for more details on indicators comprised in each risk theme).

Table 1: Pillars and Themes by Profiles

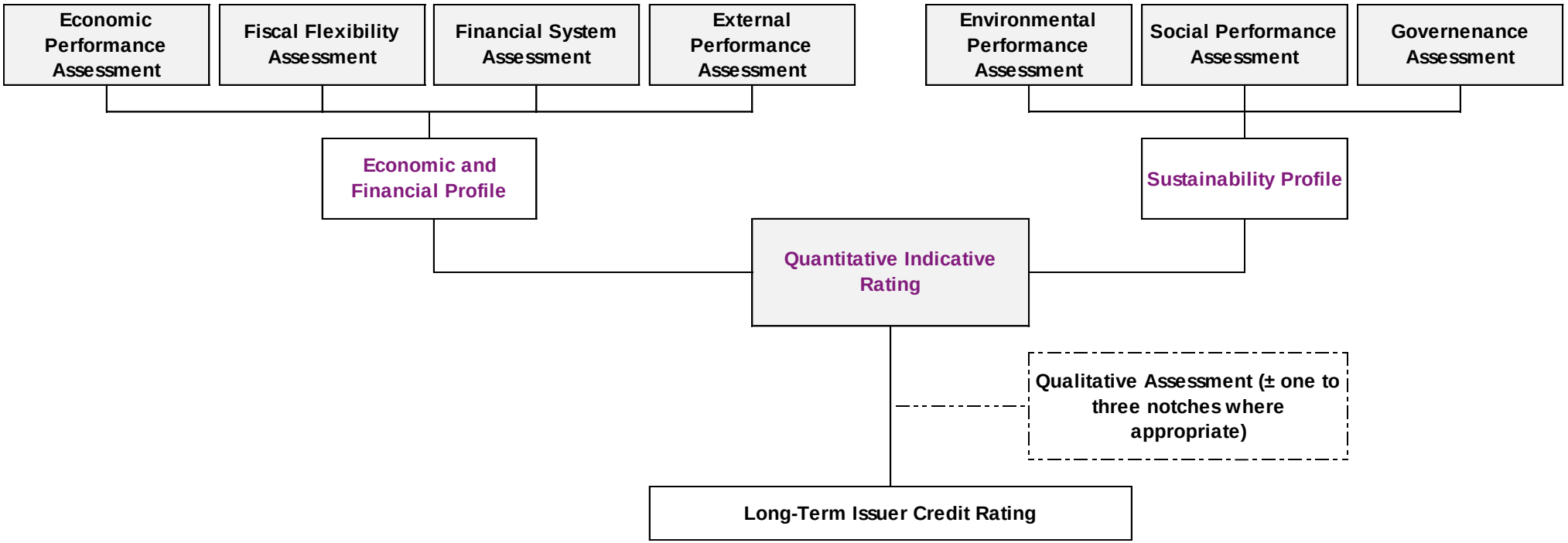
Sustainability Profile		Economic and Financial Profile	
Pillar	**Theme**	**Pillar**	**Theme**
Environmental Performance: **Energy**	Energy Policy	**Economic Performance**	Economic Prosperity
	Fossil Fuel Risks		Monetary Policy
	Energy Independence		Economic Activity
Environmental Performance: **Climate**	Physical Risks	**Fiscal Flexibility**	Debt Burden
	Transition Risks		Fiscal Policy
Environmental Performance: **Resources**	Natural Resources		Budget Balance
	Air and Water	**Financial System**	Capital Adequacy
Social Performance	Human Capital		Credit Gap
	Health		Credit Quality
	Societal	**External Performance**	External Balance Sheet
	Inequality		Foreign Direct Investment
	Employment		Exchange Rate
Governance	Control of Corruption		
	Government Effectiveness		
	Rule of Law		
	Regulatory Quality		
	Voice and Accountability		
	Political Stability and Absence of Violence		

The quantitative analysis produces an indicative quantitative rating. The qualitative analysis enables adjustment of this indicative quantitative rating within the limit of plus or minus three notches.

The rating obtained following this qualitative assessment is the long-term issuer credit rating (LT ICR thereafter). Beyond Ratings has decided to assign one issuer credit rating to each rated issuer, rather than separate foreign and local currency issuer credit ratings (cf. “Beyond Ratings - Rating Definitions” for more details).

These principles are illustrated in Figure 1 below.

Figure 1: Sovereign Rating Methodology: The Broad Picture



The methodology developed by Beyond Ratings rests for a significant part on a quantitative and systematic approach. Indeed, through our seven pillars of assessment for sovereign risk, 78 indicators are evaluated quantitatively for more than 145 sovereigns. The following section presents in more details the characteristics of the quantitative approach proposed by Beyond Ratings, it focuses on the advanced statistical and econometric techniques used in the context of our sovereign risk rating activity.

Principles for the Quantitative Indicative Rating

The quantitative indicative rating is derived from the crossover of the scores obtained on each of the two main profiles (economic & financial, and sustainability). The score of each of these two profiles is itself the result of the score obtained for each of its underlying pillars. The detailed score calculation methodology per pillar is presented in the following sections. It rests on various statistical transformations on performance indicators and econometric models.

The crossover, of profile scores thus obtained, is carried out using the matrix presented in Figure 2 hereafter. It leads to the quantitative indicative rating. The rigorous and systematic process that leads to the quantitative indicative rating allows for the availability of quantitative elements over the long-term and continuously

Figure 2: From Profile Scores to Quantitative Indicative Ratings

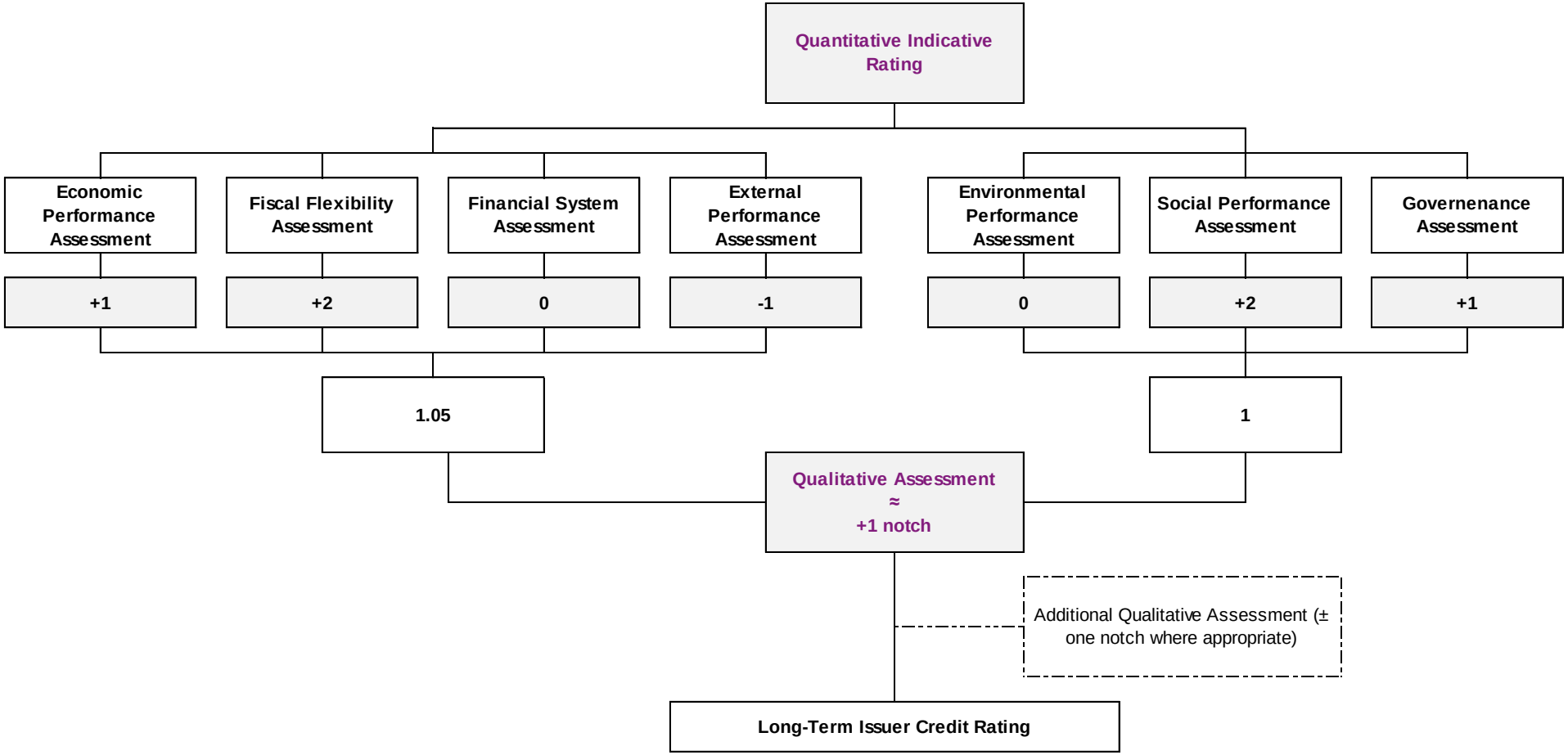
		Economic and Financial Profile										
	Scores	[100;65]	]65;60]	]60;55]	]55;50]	]50;45]	]45;40]	]40;37.5]	]37.5;35]	]35;32.5]	]32.5;30]	]30;0]
Sustainability Profile	[100;75]	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+
	]75;70]	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB
	]70;65]	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-
	]65;60]	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+
	]60;55]	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B
	]55;50]	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-
	]50;45]	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC
	]45;40]	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC	CC
	]40;0]	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC	CC	C

Principles for the Qualitative Rating

The qualitative rating is carried out by the analysts in charge of the sovereign rating. It consists for each pillar in assessing the sovereign's performance using a number of generic or specific indicators. This assessment results in a score per pillar ranging from -2 and +2. Sections C and D hereafter present the framework of qualitative indicators used per pillar. The qualitative assessment per pillar is determined as the median of the assessments assigned for each of that pillar's indicators. We subsequently compute the weighted average of those medians per risk profile using the weightings derived from the quantitative assessment for each pillar in each of the two profiles[2]. Thereafter, the mean between the two profiles gives us the adjustment of the quantitative indicative rating that we deem necessary from a qualitative viewpoint. Such adjustment can encompass up to two notches, upwards as well as downwards. In the Figure 3 below which shows an illustrative example, we raise the quantitative indicative rating by a notch to incorporate our qualitative assessment.

[2] The weightings for pillars in in the qualitative assessment can differ from the weightings set derived from the quantitative assessment, in order to highlight the weak signals coming from a specific pillar for the qualitative assessment. Weak signals are defined here as sudden trend changes – often downwards – for a pillar with a lighter relative weight and/or on a specific risk theme or even on a few isolated indicators. Indeed, the bringing to the fore of weak signals can lead to highlighting potential contagion effects from one pillar to others within a limited timeframe.

Figure 3: A Shared and Transparent Qualitative Assessment Process (Illustrative Example)



B. QUANTITATIVE FRAMEWORK

As part of the SRM developed by Beyond Ratings, we have put in place a quantitative and systematic approach based on 78 indicators split between seven pillars of sovereign risk rating. Beyond Ratings assesses– depending on data availability – each indicator since the beginning of 1999 until the contemporary period, and this on a quarterly basis. Each of the 78 indicators is the outcome of numerous transformations – systematic to a large extent – based on raw data. We discuss this quantitative framework in a bottom-up way, in order to detail those transformations that enable to go from raw data to score for the economic and financial profile as well as for the sustainability profile. Thereafter, we aggregate all indicators at the level of the pillar from which they depend, in order to obtain an aggregated score by pillar. That aggregation derives from advanced econometric techniques which we will discuss later. Finally, we aggregate the scores from each pillar in the profile from which they depend, in order to obtain an aggregated score per profile – *i.e.*, economic & financial as well as sustainability.

From Raw Data to Indicators

Figure 4: From Raw Data to Indicators

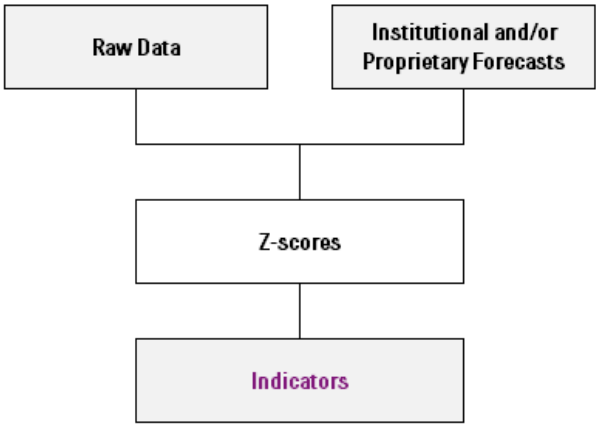


Figure 4 illustrates the general framework through which we transform raw data into indicators. First and in most cases, a given raw datum – to which we join, when appropriate, forecasts from international institutions and/or proprietary ones[3] – is transformed in "z-scores" for each country and each date. The "z-scores transformation" amounts to centring and reducing the raw datum for a given country at a given date, depending on the mean and the standard deviation for all countries at that same date. That first transformation enables to assess the relative performance or relative risk linked to a raw datum while disconnecting it from the scale on which that same datum is recorded. Second, the z-scores are transformed into continuous scores on an interval ranging from 0 to 10 included in accordance with the cumulated distribution of a standard normal distribution – 0 representing the worst score and 10 the best. That second transformation enables us, in the end, to calculate scores which we call indicators. Given the various optimums associated to

[3] For forecasts from international institutions and/or proprietary ones, Beyond Ratings uses the current forecasts for the current year/quarter of analysis, *e.g.*, forecasts for real GDP growth per capita or consumer price inflation figures for Q4 2018 are taken into account if no raw data is available at this point of time.

raw data, one should distinguish three different cases establishing the general framework for this second transformation:

(i) The optimum for that raw datum is a maximum: the higher the value for the raw data, the higher the value for the corresponding z-score and the higher the indicator.
(ii) The optimum for that raw datum is a minimum: the lower the value for the raw data, the lower the value for the corresponding z-score and the higher the indicator.
(iii) The optimum for that raw datum is the centre for the distribution, *i.e.*, the mean: the higher (lower) the value for the raw data, the higher (lower) the value for the corresponding z-score and the weaker the score. The indicator converges towards its maximum when the raw data has a value near the distribution mean (*i.e.*, when the z-score value is near 0).

In some cases, the general framework detailed above applies in a different way. Indeed, some data have associated optimums which differ, depending on which income group has been assigned to the country (see Detailed Optimum Scoring Principles for more details on the scoring principles for each indicator).

In some other cases, the general framework detailed above does not apply at all and the raw data are directly transformed into indicators over an interval ranging from 0 to 10 included.

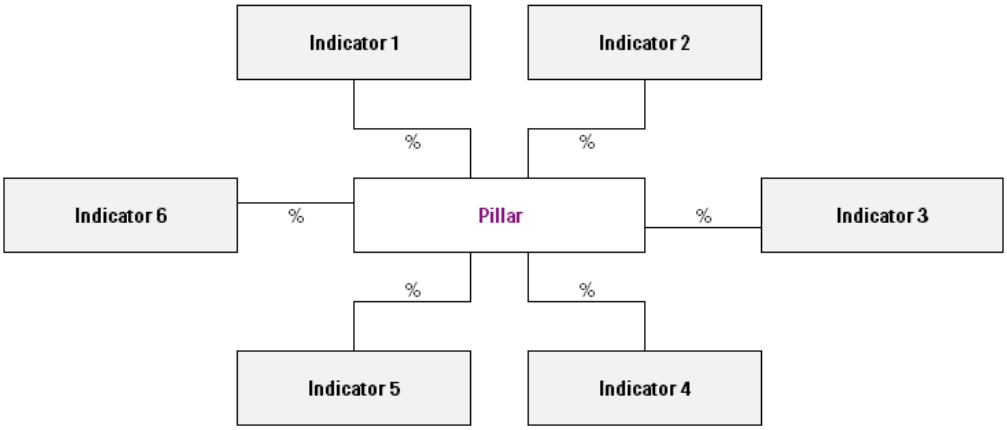
Besides in most cases, we operate a third and last transformation – called linear dilatation– which allows us to systematically rescale our indicators so that the minimum indicator is effectively 0 and the maximum indicator is 10.

Finally, each score for each indicator for each country at each date corresponds to the average of the score of the current quarter and the scores of the three-preceding quarters, weighted under a rule giving a preference for the present. We call this time smoothing, or memory smoothing effect. Such smoothing enables, in particular, to keep some memory over the recent period and to smooth potential threshold effects or very erratic data. As a result, a jump observed on an isolated data should not wrongly impair the stability of the rating (*i.e.*, it avoids too abrupt transitions from one notch to another in our rating scale). Nevertheless, the preference for the present rule makes possible the anticipation of turning points.

From Indicators to Pillars

Figure 5 below illustrates the systematic approach developed by Beyond Ratings as part of its SRM to assign a score to a pillar based on its underlying indicators. This is a simple and fictional example with six indicators. Each of the seven pillars comprises a certain number of indicators (6 to 18, depending on the pillar). That approach enables, in the end, to adjust each indicator, in order to aggregate them afterwards to derive a score in the form of a weighted average. Such score reflects the structural dynamics which could potentially impact the sovereign risk.

Figure 5: From Indicators to Pillars

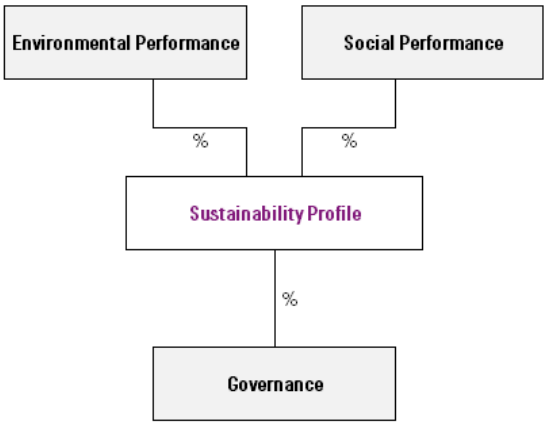


In order to obtain a set of weightings per pillar, *i.e.*, intra-pillar weights, one must determine the econometric framework in which we operate. We estimate the weights for each indicator for each pillar thanks to an econometric modelling called Partial Least Squares (PLS) with Variable Importance in Projection (VIP) score added on. At this stage, it is important to note that we estimate intra-pillar weights depending on the level of development of the country whose sovereign depends, *i.e.*, each country belongs to the group of advanced economies or to that of emerging market and developing economies. This dichotomy is established on the basis of the classification produced by the IMF in the framework of its World Economic Outlook[4].

Once we have estimated the coefficients thanks to the PLS modelling, and the VIP scores for each indicator within each pillar, we normalize those scores under a significance constraint in order to obtain a weighting set with a 100% sum for each pillar.

From Pillars to Profile

Figure 6: From Pillars to Profiles



Finally, we estimate global weighting set per profile, *i.e.*, inter-pillar weights per profile (see Figure 6 for an example applied to the sustainability profile). To do so, we adopt the same

[4] The main criteria used by the IMF to classify the world into advanced economies and emerging market and developing economies are (i) per capita income level, (ii) export diversification – so oil exporters that have high per capita GDP would not make the advanced classification because around 70% of its exports are oil, and (iii) degree of integration into the global financial system. This classification is updated once a year.

econometric framework as for the intra-pillar weights estimates. For the sustainability profile, inter-pillar weights are the same whether a country is considered as advanced economy or emerging market and developing economy, while for the economic and financial profile, inter-pillar weights are different depending on the level on development of the country. Inter-pillar weightings estimate per profile, derived from econometric regressions, have been marginally modified to grant them more or less importance from a prospective point of view and to impart some pedagogical qualities to them. Table 2 relates the weightings sets that Beyond Ratings has chosen for its SRM.

Table 2: Inter-Pillar Weights by Profiles

Sustainability Profile		Economic and Financial Profile		
Pillar	**Weight**	**Pillar**	**Weight for Advanced Economies**	**Weight for Emerging Market and Developing Economies**
Environmental Performance	30%	**Economic Performance**	40%	40%
Social Performance	30%	**Fiscal Flexibility**	30%	25%
Governance	40%	**Financial System**	20%	10%
		External Performance	10%	25%

In sections C and D below, we intend to review the whole range of indicators which are part of the quantitative rating model, pillar by pillar and them by them. In total, 78 indicators comprise the quantitative rating model (see "Beyond Ratings – Data Sources" for more details on the data sources retained). For each pillar, we determine the link which we estimate is relevant between the various risk themes within each pillar and sovereign risk. The shared and transparent framework in which Beyond Ratings has formulated its SRM enables us to determine the weights for each pillar in each of the two risk profiles, as well as the weight of each theme in each pillar.

Detailed Optimum Scoring Principles

In that section, we assign a score to each indicator. The manner in which the scores are granted differs depending on the indicator considered. To help understanding, the following is a list of the various ways in which scores are assigned:

(i) **Maximum**: the optimum of the distribution is a maximum, *i.e.*, the higher the value of the indicator, and therefore the higher the value of the associated z-score, the higher the score and *vice versa*.

(ii) **Minimum**: the optimum of the distribution is a minimum, *i.e.*, the lower the value of the indicator, and therefore the lower the value of the associated z-score, the higher the score and *vice versa*.
(iii) **Average**: the optimum of the distribution is an average, *i.e.*, the closer to the average the value of the indicator, and therefore the higher the value of the associated z-score, the higher the score.
(iv) **By peers**: in some cases, we compare indicators between countries in the same group of level of development in accordance with the IMF classification.
(v) **Relative ad hoc**: the optimums of the distribution are different in accordance with the IMF classification.
(vi) **Absolute ad hoc**: a specific scoring rule has been put in place to better take into account the specificities of the indicator.

Besides we intend reviewing the whole range of indicators which are part of the qualitative rating, pillar by pillar. In total, 35 indicators comprise the qualitative assessment (see « Beyond Ratings – Data Sources » for more details on data sources retained). For each pillar, we determine the indicators which we estimate are relevant to include, in order to better assess the sovereign risk with regards to each country's specific situation. We assign a score (*i.e.*, an integer number between -2 and 2) in accordance with the score scale for each indicator, -2 being judged as very negative and +2 as very positive. The rationale for each score is indicated in in the score scales. A nil score (0, *i.e.*, neutrality of the indicator with regards to sovereign risk) is assigned when the indicator in question does not match any of the criteria outlined in the score scale. Beyond Ratings may find it advisable not to consider some data if they are deemed unreliable or may eliminate entire profile subcomponents if the data become unavailable.

C. SUSTAINABILITY PROFILE

Environmental Performance Assessment

Quantitative Assessment

Assessment Guidelines

National economy competitiveness and financial asset performance are strongly affected by energy prices, availability of natural resources, of which primarily energy, and climate related issues. Assessing financial materiality of energy & climate drivers on GDP, external position, government debt and corporate exposure provides a new angle to understand a country's economic and financial prospects.

Theme: Energy

Energy is indispensable to economic activity. Although it accounts for a mere 10% of the total GDP on a cost basis, any disruption in the energy supply chain has direct and indirect consequences on all other sectors of the economy. In a context of increasing fossil fuels tensions, new technology challenges, and increased global competition, countries are not exposed to the same nature – and level of risk. In addition, the increasing pace of events linked to climate change puts a new pressure on economic systems, infrastructures and the availability of resources and production factors. The Energy theme considers the impacts of energy stresses on national economies, apprehending the relation between energy demand and supply and their interactions with the rest of the economy. Three drivers are considered:

- Energy policy, which is representative of how sovereign entities address energy issues including energy production, distribution and consumption;
- Fossil fuel risks composite indicators represent the level of both short- and long-term risks related distinctly to the country's coal, oil and gas supplies;
- Energy independence measures the country's self-sufficiency in terms of energy and electricity supply. The higher the energy independence of a country, the less affected it should be from shocks to international energy markets (however shocks could affect producers on other pillars, *e.g.*, economic performance or external performance).

Sub-theme: **Energy Policy**

Indicator: **Electricity Access** Optimum**:** Maximum

The electricity access measures the percentage of population with largely uninterrupted access to decentralised or grid power. Electricity is particularly necessary for human activities and, as the most efficient energy vector, cannot be easily replaced by other forms of energy. Electricity access gives a strong indication of a country's energy poverty status and the degree of constraint exerted by energy, as a production factor, on the whole economic system, and as such is a governmental priority. Electricity access data are collected from international sources, industry and national surveys.

Indicator: **Fuel Subsidy** Optimum: **Relative ad hoc**

The fuel subsidy indicator measures the aggregate level of implied taxation or subsidy of automotive fuels at the national level for end consumers. It is calculated by comparing national gasoline and diesel retail prices, weighted by consumption, to international wholesale prices. The fuel subsidy indicator may reflect direct energy fiscal policy decisions as well as any action taken by a government to modify competitiveness between fossil fuels and other energy sources (*e.g.*, lowering the cost of fossil fuel energy production, raising the price received by energy producers, or lowering the price paid by energy consumers).

Indicator: **Energy Consumption**	Optimum: **Maximum by peers**

The energy consumption measures the degree of energy over- or under- consumption against a standard determined by the country's level of income based on an extensive geographical coverage of about 200 countries. It captures various drivers, from structural (climate conditions, population density, population concentration), to cyclical (economic cycles) and to technological (energy and overall efficiencies). The standard level is econometrically estimated, based on the whole sample of countries over the period starting from 2000. Each country is then attributed a ranking depending on its performance relative to the GDP per capita level.

Indicator: **Decarbonized Electricity Mix**	Optimum: **Maximum**

Decarbonized sources of electricity are the main available options to improve the energy system's climate impact. The decarbonized electricity mix indicator calculates the percentage of decarbonized primary sources, nuclear, hydro, solar, wind, geothermal and biomass, in total electricity production. The decarbonized electricity mix share is particularly relevant as it captures the degree of consistency of the energy system and the national energy policy with the global aim to limit the long-term increase in the average world temperatures compared to pre-industrial levels.

Sub-theme: **Fossil Fuel Risks**

Indicator: **Coal Composite Indicator**	Optimum: **Maximum**

The coal composite indicator measures the level of security of coal supply, integrating both short-term and long-term components. Short-term considerations include the level of independence based on total primary production and consumption and the share of coal in total primary consumption. The long-term component is based on an estimate of the depletion of coal ultimate domestic reserves. Ultimate reserves represent the best estimate of what will ultimately be extracted from beginning to end of the country's coal production. Such estimates are reassessed as required based on past production, newer techniques, energy policy and improving geological estimates.

Indicator: **Oil Composite Indicator**	Optimum: **Maximum**

The oil composite indicator measures the level of security of oil supply, integrating both short-term and long-term components. Short-term considerations include the level of independence based on total primary production and consumption and the share of oil in total primary consumption. The long-term component is based on an estimate of the depletion of oil ultimate domestic reserves. Ultimate reserves represent the best estimate of what will ultimately be extracted from beginning to end of the country's oil production.

Such estimates are reassessed as required based on past production, newer techniques, energy policy and improving geological estimates.

Indicator: **Gas Composite Indicator**	Optimum: **Maximum**

The gas composite indicator measures the level of security of gas supply, integrating both short-term and long-term components. Short-term considerations include the level of independence based on total primary production and consumption and the share of gas in total primary consumption. The long-term component is based on an estimate of the depletion of gas ultimate domestic reserves. Ultimate reserves represent the best estimate of what will ultimately be extracted from beginning to end of the country's gas production. Such estimates are reassessed as required based on past production, newer techniques, energy policy and improving geological estimates.

Sub-theme: **Energy Independence**

Indicator: **Energy Independence**	Optimum: **Maximum**

The energy independence measures the extent to which the country is self-sufficient in terms of energy resources and produces enough energy to meet its domestic consumption. This indicator measures the overall energy independence and, symmetrically, dependence, as the percentage of total primary energy production to consumption.

Indicator: **Electricity Independence (1st level)**	Optimum: **Maximum**

The electricity independence (1st level) measures the extent to which the country is self-sufficient in terms of electricity supply. The indicator measures the overall electricity independence and, symmetrically, dependence, as the percentage of electricity production to consumption. This indicator is referred to as 1st level as it ignores the degree of independence of primary fuels used in the domestic power sector for electricity generation. As such, this indicator provides a measure of the short-term electricity supply risk.

Indicator: **Electricity Independence (2nd level)**	Optimum: **Maximum**

The electricity independence (2nd level) measures the extent to which the country is self-sufficient in terms of electricity supply, aggregating the electricity independence (1st level) indicator and the degree of independence of primary thermal fuels used in the domestic power sector for electricity generation. By convention, electricity supply from nuclear, hydro, solar, wind and geothermal plants, is considered to be 100% independent. This indicator is referred to as 2nd level as it provides a measure of the long-term electricity supply risk.

Theme: Climate

Every year, the level of global CO2 emissions increases. Climate change impacts are already visible, contributing to the increasing number of extreme natural events, such as severe storms, cold waves, droughts, or floods. These events disrupt the economy and potentially stress a country's financial and political stability. Moreover, climatic stakes are increasingly prevalent in international affairs and negotiations.

The Climate theme assesses the exposure of countries to climate risks and measures the financial materiality of these risks, also considering the specific context of each country. The Task Force on Climate-Related Financial Disclosures (TFCD)[5] divides climate-related risks into two major categories[6]:

- Risks related to the physical impacts of climate change, which may have financial implications such as direct damage to infrastructures and indirect impacts from market disruptions. Such damages affect a country's capital stock. The country's economic performance is also vulnerable to climate change through numerous sectors: health, food, ecosystem services, human habitat, water and infrastructure. Such damages harm economic growth;
- Risks related to the transition to a lower-carbon economy, that may entail extensive governmental implication to address mitigation and adaptation requirements, with varying financial impacts.

Sub-theme: **Climate Physical Risk**	
Indicator: **Health Sector Vulnerability**	Optimum**: Minimum**

The health sector vulnerability captures the country's vulnerability of public health to climate change, in terms of the spread of contagious diseases and provision of health services. The calculation includes an exposure component (projected change of number of deaths from climate change induced diseases, projected change in vector-borne diseases due to change in length of transmission season), a sensitivity component (dependency on external resource for health services, slum population) and an adaptive capacity component (medical staff, access to improved sanitation facilities).

Indicator: **Food Sector Vulnerability**	Optimum: **Minimum**

The food sector vulnerability captures the country's vulnerability to climate change, in terms of food demand and production, nutrition trends and rural population. The calculation includes an exposure component (projected change of agricultural cereal yields, projected population change), a sensitivity component (food import dependency, rural population) and an adaptive capacity component (agriculture technological capacity, child malnutrition).

Indicator: **Ecosystem Services Sector Vulnerability**	Optimum: **Minimum**

The ecosystem services sector vulnerability captures the country's vulnerability of natural capital to climate change. Its importance comes from the human reliance upon ecological resources to support lives and livelihoods. The calculation includes an exposure component (projected change of terrestrial biome distribution, projected change of marine biodiversity), a sensitivity component (dependency on natural capital, ecological footprint) and an adaptive capacity component (protected biomes, engagement in international environmental conventions).

[5] Established in December 2015 by the Financial Stability Board upon request of the G20 countries, to tackle the issue of how the financial sector can address climate challenges through better disclosure.
[6] Refer to "Recommendations of the task-Force on Climate-Related Financial Disclosures", June 2017. TCFD: Final report.

Indicator: **Human Habitat Sector Vulnerability**	Optimum: **Minimum**

The human habitat sector vulnerability captures the country's vulnerability of human living conditions to climate change, in terms of weather extremes, urban development, demography, and transport infrastructure. The calculation includes an exposure component (projected change in heat waves, projected change of flood hazard), a sensitivity component (urban concentration, age dependency ratio) and an adaptive capacity component (quality of trade and transport infrastructure, proportion of paved roads).

Indicator: **Water Sector Vulnerability**	Optimum**: Minimum**

The water sector vulnerability captures the country's vulnerability of fresh water supplies to climate change. The calculation includes an exposure component (projected change in yearly rainfall, projected change in yearly groundwater recharge), a sensitivity component (freshwater withdrawal rate, water dependency ratio) and an adaptive capacity component (dam storage capacity, access to reliable drinking domestic water supplies).

Indicator: **Infrastructure Sector Vulnerability**	Optimum: **Minimum**

The infrastructure sector vulnerability captures the country's vulnerability of coastal and energy infrastructure to climate change, in terms of general preparedness to climate-related natural disasters, coastal hazards, and energy supply challenges. The calculation includes an exposure component (projected change of hydropower generation capacity, projected change linked to sea level rise and potential storm surge impacts), a sensitivity component (dependency on imported energy, population living less than 5 meters above sea level) and an adaptive capacity component (electricity access, preparedness to climate-related nature disasters).

Indicator: **Temperature Trend**	Optimum: **Minimum**

The temperature trend aims to capture the country's geographic specificity when quantifying climate change through national variables. Temperature trends are assumed to be most representative of climate change within a country and susceptible to generate a physical risk and a potential stress on sovereign risk. This indicator estimates the deviation from the long-term evolution of temperatures.

Indicator: **Rainfall Trend**	Optimum: **Minimum**

The rainfall trend aims to capture the country's geographic specificity when quantifying climate change through national variables. Rainfall trends are assumed to be most representative of climate change within a country and susceptible to generate a physical or sovereign risk. This indicator estimates the deviation from the long-term evolution of rainfalls.

Sub-theme: **Climate Transition Risk**

Indicator: **GHG Emissions vs International Benchmark**	Optimum**: Maximum by peers**

The GHG (Green House Gases) emissions vs international benchmark measure the deviation of actual GHG emissions from the standard defined by the country's level of income. It captures key drivers:

- Structural (climate conditions, population density, population concentration, GDP structure);
- Cyclical (economic cycles);
- Energy (energy balance structure, energy domestic prices);
- Technological (energy and overall efficiency).

The standard level is econometrically estimated, based on a sub-sample of *c.* 130countries over the period starting from 2000. Each country is then attributed a ranking depending on its relative performance.

Indicator: **Imported GHG Emissions**	Optimum: **Minimum**

The imported GHG emissions measure the volume of GHG emissions which do not originate from domestic economic activity but are embedded in external trade. The imported GHG emissions capture the extent to which the country is exposed to the adverse risk of transition to a lower-carbon economy due to its dependence on imports of carbon intensive materials, products and services. In addition to capturing the risk of exposure to structural shifts of international trade resulting from the worldwide implementation of climate policies as requested by the 2015 Paris agreement, the imported GHG emissions capture the risk of exposure to the introduction of carbon border tax adjustments.

Theme: Resources

Natural resources provide essential services to an economy, notably the provision of food, fibres, clean air and purified water. These services may be considered as indispensable for any economy, beyond the material inputs for industry, and constitute therefore a risk channel that merits particular attention.

Sub-theme: Natural Resources

Indicator: **Natural Resource Sector Growth**	Optimum**: Maximum**

The natural resource sector growth is a measurement of the added value growth rate in percentage of various natural resource-related economic sectors, including agriculture, forestry, hunting and fishing. Aggregates are based on constant 2010 U.S. dollars. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources.

Indicator: **Food Price Exposure Risk Index**	Optimum: **Minimum**

The Food price exposure risk index gives an indication of how the economy is affected by a change of international food prices compared to recent past (5-year mean). For food net exporters, a price increase will be favourable while it will disadvantage food net importers

(and conversely for price decreases). The more the food trade balance is unbalanced, the more the country is affected.

Indicator: **Food Import Concentration Risk Index**	Optimum: **Minimum**

The food import concentration risk index measures the diversity of commercial partners for food import. The higher the number of partners, the lower the dependency and the lower the concentration risk.

Indicator: **Food Export Concentration Risk Index**	Optimum: **Minimum**

The Food export concentration risk index measures the diversity of commercial partners for food export. The higher the number of partners, the lower the dependency and the lower the concentration risk.

Sub-theme: **Air & Water**

Indicator: **Water Productivity**	Optimum: **Maximum**

Water productivity refers to the water intensity of the economy. It is calculated as the ratio of the country's GDP in constant 2010 USD to the total freshwater withdrawal. The higher the water productivity, the lower the water use per economic value produced.

Indicator: **Air Pollution**	Optimum: **Minimum**

The air pollution corresponds to the average level of exposure of a nation's population to concentrations of suspended particles measuring less than 2.5 microns in aerodynamic diameter, which are capable of penetrating deep into the respiratory tract and causing severe health damage. Exposure is calculated by weighting mean annual concentrations of PM2.5 by population in both urban and rural areas.

Qualitative Assessment

Climate Mitigation National Policy Risk

Score Scale	Positive Assessment Rationale	Negative Assessment Rationale	Score Scale
Highly Positive **+2**	Very low risk of inconsistency of the Climate Mitigation National Policy with the Paris agreement (2°C target)	Very high risk of inconsistency of the Climate Mitigation National Policy with the Paris agreement (2°C target)	**Highly Negative** **-2**

Slightly Positive **+1**	Low risk of inconsistency of the Climate Mitigation National Policy with the Paris agreement (2°C target)	High risk of inconsistency of the Climate Mitigation National Policy with the Paris agreement (2°C target)	**Slightly Negative** **-1**

Additional Assessment Rationale

The Paris agreement on Climate Change from COP21 in 2015 is a key milestone for the continuation of the international climate negotiations as it sets:

- The ambition to limit the global temperature rise to less than 2°C and to target the threshold of 1.5°C compared to the pre-industrial era;
- The universal nature of the approach;
- The formulation of voluntary national emission mitigation strategies (Nationally Determined Contribution) specifying the lines of action, the means to be implemented and the target of GHG emissions to be reached in 2030.

An NDC (Nationally Determined Contribution) target – or the absence of expressed target –is therefore highly representative of a country's GHG emissions mitigation strategy. As of April 11th, 2018, 175 out of 197 signatory countries have ratified the Paris agreement[7].

The climate mitigation national policy risk assesses the risk a country runs in not engaging in a strategy consistent with the key objective of the Paris agreement. The climate mitigation national policy risk is derived from the GHG emissions to 2030 NDC target and GHG emissions to 2030 2°C target sub-indicators.

The GHG emissions to 2030 NDC target measure the ratio of a country's total GHG emissions for a given year to its official NDC target (if properly expressed). This captures the country's distance to achieving its own national pledge.

The GHG emissions to 2030 2°C target measure the ratio of a country's total GHG emissions for a given year to an estimated 2°C compliant GHG emissions target. The estimation of the 2°C compliant target is derived from the CLAIM© proprietary methodology[8] allowing to determine fair future GHG emissions rights by country. The methodology integrates 15 variables deemed necessary and sufficient and is based on UN population long term projections.

Combining the GHG emissions to 2030 NDC target and GHG emissions to 2030 2°C target allows to determine four key cases:

- Countries with a view and a potential to grow GHG emissions with respect to both the NDC and the 2°C targets respectively;
- Countries with a view and a need to reduce GHG emissions with respect to both the NDC and the 2°C targets respectively;
- Countries with a view to grow GHG emissions with respect to the NDC and with a need to reduce GHG emissions with respect to the 2°C target;
- Countries with a view to reduce GHG emissions with respect to the NDC and with a potential to grow GHG emissions with respect to the 2°C target

[7] See https://unfccc.int/process/the-paris-agreement/status-of-ratification.
[8] For more information on the CLAIM© methodology, please refer to: "National Carbon Reduction Commitments: Identifying the Most Consensual Burden Sharing". Dec. 2017. Gaël Giraud, Hadrien Lantremange, Emeric Nicolas and Olivier Rech.

The four key cases are split into eight sub-cases and scored distinctly. The additional assessment is derived from the quintiles of the distribution of scores of the climate mitigation national policy risk for all countries of the geographical coverage.

The case of an absence of NDC target, preventing from precisely positioning a country based on the GHG emissions to 2030 NDC target and GHG emissions to 2030 2°C target, is attributed a [-2] additional assessment. The rationale is that a country deliberately not providing a GHG emissions NDC 2030 target should not benefit from a higher additional assessment than that of any country providing a quantified GHG emissions NDC 2030 target.

In the framework of a 5-year credit risk assessment, the lower the value of the climate mitigation national policy risk, the higher the risk that a country and its economy will bear the negative consequences of not engaging in a national strategy consistent with the objectives of the Paris agreement, both in absolute and relative terms in the context of a globalized world economy.

Sources: Beyond Ratings based on United Nations, United Nations Framework on Climate Change Convention (UNFCCC), Primaphist, World Resources Institute (WRI), World Bank and national sources.

Decarbonized Electricity Mix Outlook

Score Scale	Positive Assessment Rationale	Negative Assessment Rationale	Score Scale
Highly Positive +2	Very high share of decarbonized energy sources in electricity generation expected over the medium term	Very low share of decarbonized energy sources in electricity generation expected over the medium term	**Highly Negative -2**
Slightly Positive +1	High share of decarbonized energy sources in electricity generation expected over the medium term	Low share of decarbonized energy sources in electricity generation expected over the medium term	**Slightly Negative -1**

Additional Assessment Rationale

The decarbonized electricity mix outlook provides a forward-looking extension of the decarbonized electricity mix, part of the Quantitative Assessment. This indicator builds on up-to-date detailed bottom-up market data covering electricity generation plants plans, constructions, commissioning and retirements allowing to estimate for each country the total share of decarbonized electricity sources in total electricity generation over the medium term, about 3 to 5 years ahead, depending on availability of data.

The additional assessment is derived from the quintiles of the statistical distribution of the values of the decarbonized electricity mix outlook for all countries of the geographical coverage.

Sources: Beyond Ratings based on Enerdata and national sources.

Natural Capital Stock			
Score Scale	**Positive Assessment Rationale**	**Negative Assessment Rationale**	**Score Scale**
Highly Positive +2	The country benefits from a very important natural capital stock and ranks among the richest countries in this category.	The country's natural capital stock is very low, ranking among the poorest countries in this category.	**Highly Negative -2**
Slightly Positive +1	The country benefits from an important natural capital stock and ranks among relatively rich countries in this category.	The country's natural capital stock is low, ranking among relatively poor countries in this category.	**Slightly Negative -1**
Additional Assessment Rationale			
Natural capital includes all types of ecological assets that provide ecosystem services to the economy. It includes natural and as well as semi-natural ecosystems, and natural resources such as water resources and non-fuel minerals. The natural capital stock is a monetary estimation of this capital and includes current as well as potential capacities. This indicator provides an insight into a type of assets that are usually non-valuated while they represent a significant potential for sustainable growth and resilience, particularly in a resource-constrained context.			

Natural Capital Trend			
Score Scale	**Positive Assessment Rationale**	**Negative Assessment Rationale**	**Score Scale**
Highly Positive +2	The country's natural capital stock shows a significant long-term growth.	The country's natural capital stock shows a significant long-term decline.	**Highly Negative -2**
Slightly Positive +1	The country's natural capital stock shows a moderate long-term growth or no growth.	The country's natural capital stock shows a moderate long-term decline.	**Slightly Negative -1**
Additional Assessment Rationale			
Natural capital stock, which includes different types of ecological assets, provides crucial ecosystem services to the economy and constitutes an important potential of sustainable growth and resilience, in particular in a resource-constrained context. It is therefore			

necessary to watch the long-term trend of this stock given that an impoverishment trend will threaten the sustainability of the country's development while an enrichment, on the contrary, will provide significant opportunities.

Natural Capital at Risk			
Score Scale	**Positive Assessment Rationale**	**Negative Assessment Rationale**	**Score Scale**
Highly Positive **+2**	The risk associated to the country's natural capital is very low.	The risk associated to the country's natural capital is very significant.	**Highly Negative** **-2**
Slightly Positive **+1**	The risk associated to the country's natural capital is low.	The risk associated to the country's natural capital is significant.	**Slightly Negative** **-1**
Additional Assessment Rationale			
The natural capital at risk distinguishes the country's different ecological assets and the different dangers associated. The calculated risk is a combination of four elements: (i) the economy exposure, (ii) the ecological asset exposure, (iii) the level of danger and (iv) the country's resilience capacity. Categories of dangers include climate risk, energy risk, resource depletion risk, pollution risk and external risk.			

E adjusted GDP			
Score Scale	**Positive Assessment Rationale**	**Negative Assessment Rationale**	**Score Scale**
Highly Positive **+2**	E adjusted GDP / actual GDP >= 20% Environmental performance (high energy efficiency, appropriate transportation infrastructures, low level of pollution…) will probably foster economic growth and ensure healthy population	E adjusted GDP / actual GDP <= -20% Economic growth can be highly affected by the poor environmental performance (Energy inefficiency, low infrastructure development…) and health could be impacted by pollution.	**Highly Negative** **-2**
Slightly Positive **+1**	20% > E adjusted GDP / actual GDP >= 10%.	-20% < E adjusted GDP / actual GDP <= -10% Environmental performance might slow down economic	**Slightly Negative** **-1**

Environmental performance should support economic growth and/or improve global health.	growth and/or deteriorate global health.

Additional Assessment Rationale

The environmentally-adjusted GDP is a metric that indicates the actual environmental performance of a country. Indeed, for a given GDP (PPP) level, a standard environmental performance is expected. The gap between reported GDP and environmentally-adjusted GDP represents to what extent the country is able to transform wealth and prosperity into long-term environmental performance (appropriate and efficient infrastructures, low pollution level, food independence…), a prerequisite for long lasting growth and healthy population (lower health expenditures).

This metric covers key elements that support growth and health (not exhaustive list):

- Climate Change;
- Energy Efficiency;
- Energy Infrastructures;
- Pollution;
- Biodiversity;
- Water Infrastructures;
- Agriculture & Food;
- Transport Infrastructures.

Analysis at sub-pillar level may add insight into the actual situation in terms of strengths and weaknesses.

Social Performance Assessment

Quantitative Assessment

Assessment Guidelines

Our Sovereign Risk Methodology measures the sovereign risk through a social performance assessment. It is based on an evaluation of human capital & innovation, health, inequality, societal performance and employment. Human capital & innovation is a measurement of the country's capacity to generate new technologies and high value-added production. Health is built as a measurement of the country's capacity to keep healthy its population, and thus its labour force. Inequality is a measurement of dispersion of income distribution and wealth within the country. Societal performance is a measurement of the country's progress in terms of the society's freedom. Finally, employment is a measurement of the country's capacity to provide a job for the entire working population, and then maximising the potential output.

Beyond Ratings methodology of Sovereign risks assessment is thus based on following hypothesis:

- A high (low) human capital & innovation level will underline a high (low) capacity to generate new technologies and raise the country's potential output;
- A high (low) health level will underline a high (low) capacity to maintain the population productive, and then improve the country's external fiscal performance at medium and long-term;
- A low (high) inequality level will underline a low (high) exposure to socio-political risks such as social unrest, riots or civil war which can weigh on the country's creditworthiness;
- A high (low) societal performance will underline a high (low) capacity to generate inclusive growth and development;
- A high (low) employment will underline a high (low) capacity to provide a job for the entire working population, and then maximising the potential output.

Theme: **Human Capital & Innovation**	
Indicator: **Research and Development**	Optimum**: Maximum**

Expenditures for research and development are current and capital expenditures (both public and private) on creative work undertaken systematically to increase knowledge, culture, and society improvement, and the use of knowledge for new applications. R&D covers basic research, applied research, and experimental development. It is expressed as a share of GDP.

Indicator: **Researchers**	Optimum: **Maximum**

Researchers in R&D are professionals engaged in the conception or creation of new knowledge, products, processes, methods, or systems and in the management of the projects concerned. It is expressed per million people.

Indicator: **Size of High-Technology Sector**	Optimum: **Maximum**

High-technology exports are products with high R&D intensity, such as in aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery. Expressed as share of manufactured exports.

Indicator: **Education Expenditures**	Optimum: **Maximum**

General government expenditures on education (current, capital, and transfers) are expressed as a percentage of GDP. It includes expenditures funded by transfers from international sources to government. General government refers to local, regional and central governments.

Theme: **Health**	
Indicator: **Life Expectancy**	Optimum: **Maximum**

Life expectancy at birth indicates the number of years a new born infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life.

Indicator: **Health Expenditures**	Optimum: **Maximum**

Total health expenditure is the sum of public and private health expenditure. It covers the provision of health services (preventive and curative), family planning activities, nutrition activities, and emergency aid designated for health but does not include provision of water and sanitation.

Indicator: **Hospital Beds**	Optimum: **Maximum**

Hospital beds include in-patient beds available in public, private, general, and specialized hospitals and rehabilitation centres. In most cases beds for both acute and chronic care are included.

Indicator: **Physicians**	Optimum: **Maximum**

Physicians include generalist and specialist medical practitioners. It is expressed per 1,000 people.

Theme: **Societal**

Indicator: **Internet Access**	Optimum: **Maximum**

Internet users are individuals who have used the Internet (from any location) in the last 12 months. Internet can be used via a computer, mobile phone, personal digital assistant, games machine, digital TV etc. It is expressed per 1,000 people.

Indicator: **Urbanisation Rate**	Optimum: **Maximum**

Urban population refers to people living in urban areas as defined by national statistical offices. The data are collected and smoothed by the United Nations Population Division.

Indicator: **Female Labour Force Participation**	Optimum: **Maximum**

The female to male labour force participation rate (from national sources) is a good proxy of the place of women in the society. Labour force participation rate is the proportion of the population aged 15 and older that is economically active: all people who supply labour for the production of goods and services during a specified period.

Theme: **Inequality**

Indicator: **GINI Index**	Optimum: **Minimum**

Gini index measures the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution. A Lorenz curve plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest individual or household. The Gini index measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. Thus, a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality.

Indicator: **Poverty Rate**	Optimum: **Minimum**

Poverty headcount ratio at USD 1.90 a day is the percentage of the population living on less than USD 1.90 a day at 2011 international prices.

Indicator: **Income Distortion Index**	Optimum: **Minimum**

The income distortion index corresponds to the share of income held by the top 10% richest households in a country.

Indicator: **Social Contributions**	Optimum: **Maximum**

Social contributions include social security contributions by employees, employers, and self-employed individuals. They also include actual or imputed contributions to social insurance schemes operated by governments. It is expressed as a share of government revenue.

Theme: **Employment**

Indicator: **Unemployment Rate**	Optimum: **Minimum**

The unemployment rate is calculated as the number of persons who are unemployed during the reference period given as a percent of the total number of employed and unemployed persons (*i.e.*, the labour force) in the same reference period[9].

Indicator: **Youth Unemployment Rate**	Optimum: **Minimum**

The youth unemployment rate refers to the share of the labour force ages between 15 and 24 without work but available for and seeking employment.

Indicator: **Total Labour Force Participation Rate**	Optimum: **Maximum**

The labour force participation rate is the proportion of the population ages 15 and older that is economically active: all people who supply labour for the production of goods and services during a specified period.

[9] More precise definitions are available on the website of the International Labour Organization (ILO): http://www.ilo.org/ilostat-files/Documents/description_UR_EN.pdf.

Qualitative Assessment

Gini Ratios Corrected by Redistribution Effects			
Score Scale	**Positive Assessment Rationale**	**Negative Assessment Rationale**	**Score Scale**
Highly Positive +2	Significantly low Gini ratio (taking into account redistribution effects) compared with other countries of similar Governance scores and improving trend.	Significantly high Gini ratio (taking into account redistribution effects) compared with other countries of similar Governance scores and deteriorating trend.	**Highly Negative -2**
Slightly Positive +1	Low Gini ratio (taking into account redistribution effects) compared with other countries of similar Governance scores and relatively stable level.	High Gini ratio taking into account redistribution effects) compared with other countries of similar Governance scores and relatively stable level.	**Slightly Negative -1**

Additional Assessment Rationale

Inequalities can have notable socio-political and economic costs. In a research work published in June 2017, we found for example that income inequality is highly negatively correlated with the level of human capital – as measured by this educational composite index – even once a country's level of economic development is taken into account. With this framework, we also found the level of human capital to be a good predictor of a nation's long-term growth. This suggests that economic inequality could deteriorate growth prospects by undermining the quality of education reached and hence the accumulation of human capital (Beyond Ratings (2017), "Inequality, Human Capital and Growth"). Beyond potential economic costs, high levels of inequality can also carry social and political risks.

Age structure of the population			
Score Scale	**Positive Assessment Rationale**	**Negative Assessment Rationale**	**Score Scale**
Highly Positive +2	• Birth rate ensures generational renewal; • High participation rate of senior citizens in the workforce.	• Lack of birth for an adequate generational renewal; • High pressure from pensions and retirements benefits.	**Highly Negative -2**

Slightly Positive **+1**	• Generation renewal; • Normal pensions pressure trend.	• Lack of birth for an adequate generational renewal; Or: • High pressure from pensions and retirements benefits.	Slightly Negative **-1**

Additional Assessment Rationale

The age structure of the population in general and, especially, the ratio working-age population to total population is a relevant indicator to assess the weight of the inactive population in the potential economic growth. Two kinds of situations may occur:

i. Retired (and nearly-retired) workers are disproportionately important in comparison with active people;
ii. Youth is abnormally large compared with the rest of the population.

In the first situation, a growing part of the economy is captured by pensions and retirements benefits and is not available for investments anymore; additional investments in health structures are thus necessary. Lastly, a sovereign may face a lack of working population in the short- to medium-term to finance pensions and retirement benefits.

In the second situation, the government has to increase its investments for schools and courses to ensure future well trained and skilled working force. In the medium-term, this is a disadvantage because it requires a high level of expenses and a risk of instability but in the longer term this is a strength for potential growth.

Migration trends are included in the analysis as they can partially offset issues related to low birth rates or aging population.

S adjusted GDP

Score Scale	Positive Assessment Rationale	Negative Assessment Rationale	Score Scale
Highly Positive **+2**	S adjusted GDP / actual GDP >= 20% Social performance (healthy population, high human capital level…) will probably foster economic growth	S adjusted GDP / actual GDP <= -20% Economic growth can be highly affected by the poor social performance (unhealthy population, poor educational level…)	**Highly Negative** **-2**
Slightly Positive	20% > S adjusted GDP / actual GDP >= 10%.	-20% < S adjusted GDP / actual GDP <= -10%	**Slightly Negative**

+1	Social performance should support economic growth	Social performance might slow down economic growth	**-1**

Additional Assessment Rationale

The socially-adjusted GDP is a metric that indicates the actual Social performance of a country. Indeed, for a given GDP (PPP) level, a standard social performance is expected. The gap between reported GDP and socially-adjusted GDP represents to what extent the country is able to transform wealth and prosperity into long-term social performance strands (health, education, equality) that are prerequisites for long lasting growth.

This metric covers key elements that support growth (not exhaustive list):

- Employment;
- Economic Inequality;
- Labour & Social Protection;
- Innovation & Human Capital;
- Education;
- Demographics - Life Conditions;
- Health Infrastructure;
- Health Issues.

Analysis at sub-pillar level may add insight into the actual situation in terms of strength and weaknesses.

Governance Assessment

Quantitative Assessment

Assessment Guidelines

Our Sovereign Risk Methodology measures the sovereign risk through a governance performance assessment. It is based on an evaluation of control of corruption, government effectiveness, political stability & absence of violence, regulatory quality, rule of law and voice & accountability. Control of corruption is built as a measurement of the extent to which public power is exercised for private gain. Government effectiveness is built as a measurement of the quality of public services. Political stability & absence of violence is built as a measurement of the likelihood that the government will be destabilized. Regulatory quality is built as a measurement of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. Rule of law is built as a measurement of the extent to which agents have confidence in and abide by the rules of society. Finally, voice & accountability is built as a measurement of the extent to which a country's citizens are able to participate in selecting their government.

Beyond Ratings methodology of Sovereign risks assessment is thus based on following hypothesis:

- A high (low) control of corruption will entail a high (low) capacity to prevent corruption, and then to have an institutional framework promoting undistorted competition and private investment;

- A high (low) government effectiveness will produce a high (low) capacity to provide public services with a high quality, and then to have an institutional framework promoting productive public and private investment;
- A high (low) political stability & absence of violence will yield a low (high) likelihood that the government will be destabilized, and then undermine its creditworthiness;
- A high (low) regulatory quality goes hand and hand with a high (low) capacity to implement sound policies and promote private sector development, and then to have an institutional framework promoting private investment;
- A high (low) rule of law will maintain (let slip) the rules of the society, and thus an institutional framework conductive to private investment and sustainable broad-based economic growth;
- A high (low) voice & accountability will underline a high (low) capacity for country's citizen to participate in selecting their government as well as high (low) freedom of expression, freedom of association, and a free media, and then to have an institutional framework promoting private investment.

Indicator: **Control of Corruption**	Optimum**: Maximum**

Control of corruption captures the extent to which public power is not exercised for private gain, including both petty and grand forms of corruption, as well as avoiding the "capture" of the state by elites and vested interests. The more corruption there is in the country, the weaker the indicator.

Indicator: **Government Effectiveness**	Optimum**: Maximum**

Government effectiveness captures the 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.

Indicator: **Political Stability & Absence of Violence**	Optimum**: Maximum**

Political stability & absence of violence captures the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means. The more the political power is unstable and the more violence there is in the country, the weaker the indicator.

Indicator: **Regulatory Quality**	Optimum**: Maximum**

Regulatory quality captures the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development and limit negative externalities from commerce.

Indicator: **Rule of Law**	Optimum**: Maximum**

Rule of law captures the extent to which agents have confidence in and abide by the rules of society, and in particular the ability to enforce property rights, the quality of the police and the courts, as well as the level of crime and violence.

Indicator: **Voice & Accountability**	Optimum**: Maximum**

Voice & accountability captures the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.

Qualitative Assessment

Global Peace Index

Score Scale	Positive Assessment Rationale	Negative Assessment Rationale	Score Scale
Highly Positive +2	The performance in the index is continuously and significantly higher than average compared with other countries of similar Governance scores (before the qualitative assessment).	-The performance in the index is continuously and significantly below average compared with other countries of similar Governance scores (before the qualitative assessment).	**Highly Negative -2**
Slightly Positive +1	The performance in the index is continuously but moderately higher than average compared with other countries of similar Governance scores (before the qualitative assessment).	The performance in the index is continuously but moderately below average compared with other countries of similar Governance scores (before the qualitative assessment).	**Slightly Negative -1**

Additional Assessment Rationale

Peace is highly correlated with socio-political stability, economic development and more sustainable institutions. It is, thus, particularly important to analyse “negative peace”, which is done yearly by the Global Peace Index (GPI). The GPI defines negative peace as “the harmony achieved by the absence of violence or the fear of violence” based on 23 quantitative and qualitative indicators in 3 categories: ongoing domestic and international conflict, societal safety and security (*i.e.*, the “level of harmony or discord within a nation”) and militarisation.

The country ranking that we build on this basis allows us to vet our quantitative governance or socio-political analysis in the case of countries presenting very different levels of risks compared with our quantitative results. Although the GPI includes quantitative indicators, it

is also based on a number of qualitative assessments (*e.g.* intensity of organised internal conflict, relations with neighbouring countries, level of violent crime, ease of access to small arms and light weapons, etc.), which is consistent with the present qualitative approach.

Source: Vision of Humanity.

Freedom in the World			
Score Scale	**Positive Assessment Rationale**	**Negative Assessment Rationale**	**Score Scale**
Highly Positive +2	The performance in the index is continuously and significantly higher than average compared with other countries of similar Governance scores (before the qualitative assessment).	The performance in the index is continuously and significantly below average compared with other countries of similar Governance scores (before the qualitative assessment).	**Highly Negative -2**
Slightly Positive +1	The performance in the index is continuously but moderately higher than average compared with other countries of similar Governance scores (before the qualitative assessment).	The performance in the index is continuously but moderately below average compared with other countries of similar Governance scores (before the qualitative assessment).	**Slightly Negative -1**

Additional Assessment Rationale

The Freedom in the World annual survey measures the degree of political rights and civil liberties at country or territory level. These elements are to be considered, given the socio-political risks that can be associated with low performance on these factors. Low levels of political rights and civil liberties can for example translate into instability issues.

On this basis, countries are categorised as either free, partly free or not free. Various questions are answered to assess performance, based on several subcategories within each category:

- Political rights subcategories: Electoral Process, Political Pluralism and Participation, and Functioning of Government;
- Civil liberties subcategories: Freedom of Expression and Belief, Associational and Organizational Rights, Rule of Law, and Personal Autonomy and Individual Rights.

It can be noted that score changes are mainly driven by annual developments (*e.g.* elections, political decisions, etc.) corresponding to positive or negative evolutions. Overall, the questions addressed deal with some qualitative aspects.

Source: Freedom House.

Corruption Perception Index			
Score Scale	**Positive Assessment Rationale**	**Negative Assessment Rationale**	**Score Scale**
Highly Positive +2	Significantly high score compared with other countries of similar Governance scores and improving trend.	Significantly low score compared with other countries of similar Governance scores and deteriorating trend.	**Highly Negative -2**
Slightly Positive +1	High score compared with other countries of similar Governance scores and relatively stable level.	Low score compared with other countries of similar Governance scores and relatively stable level.	**Slightly Negative -1**

Additional Assessment Rationale

Corruption can represent significant economic and social costs, as evidenced by several studies (*e.g.*, Dreher, Axel and Thomas Herzfeld (2005), "The economic costs of corruption: a survey and new evidence", Thurgau Institute of Economics, Switzerland / IMF (2016), "Corruption: Costs and Mitigating Strategies"). According to some estimates, these costs represent no less than 5% of global GDP (OECD, CleanGovBiz (2014), "The Rationale for fighting corruption"), and corruption issues also carry socio-political risks. Costs are for example related to the following elements (OECD, CleanGovBiz (2014)):

- Corruption increases the cost of doing business;
- Corruption leads to waste or the inefficient use of public resources;
- Corruption excludes poor people from public services and perpetuates poverty;
- Corruption corrodes public trust, undermines the rule of law and ultimately delegitimises the State.

Transparency International provides a complementary resource to analyse exposure to corruption issues, as "the misuse of public power for private benefit". Its approach ranks countries "by their perceived levels of corruption, as determined by expert assessments and opinion surveys", which also provides a more qualitative assessment of corruption-related risks in consistency with our Qualitative Assessment framework.

Source: Transparency International.

Institutional Profiles			
Score Scale	**Positive Assessment Rationale**	**Negative Assessment Rationale**	**Score Scale**

Highly Positive +2	The Institutional Profile of the country reveals a high performance on each main institutional function.	The Institutional Profile of the country reveals a low performance on each main institutional function.	**Highly Negative -2**
Slightly Positive +1	The Institutional Profile of the country reveals a high performance on most of institutional functions.	The Institutional Profile of the country reveals a low performance on most of institutional functions.	**Slightly Negative -1**

Additional Assessment Rationale

The "Institutional Profiles Database[10]" (IPD) provides an original measure of countries' institutional characteristics through composite indicators built from survey data. Considering that long-term growth would be promoted less by episodes of rapid growth than by States' ability to withstand external shocks, the database was designed in order to facilitate and stimulate research on the relationship between institutions, long-term economic growth and development. The database covers 9 institutional functions ((i) political institutions, security, (ii) law and order, control of violence, (ii) functioning of public administrations, (iv) free operation of markets, (v) coordination of stakeholders, strategic vision, innovation, (vi) security of transactions and contracts, (vii) market regulations, (viii) openness, (ix) social dialogue and social mobility) and 4 sectors ((i) public institutions, civil society, (ii) markets for goods and services, (iii) capital market, (iv) labour market and social relations). Each indicator is scored on a scale from a minimum 0 to a maximum 4.

Press / Document Review

Score Scale	Positive Assessment Rationale	Negative Assessment Rationale	Score Scale
Highly Positive +2	Significant exposure to positive political events, opportunities and strengths based on a qualitative assessment of governance-related information available on the country. This analysis can encompass both structural issues and elements present in the news flow.	Significant exposure to negative political events, risks and weaknesses based on a qualitative assessment of governance-related information available on the country. This analysis can encompass both structural issues and elements present in the news flow.	**Highly Negative -2**
Slightly Positive	Moderate exposure to positive political events, opportunities and strengths based on a	Moderate exposure to negative political events, risks and weaknesses based	**Slightly Negative**

[10] Sources: Directorate General of the French Treasury, the French Economy Ministry, CEPII http://www.cepii.fr/institutions/EN/download.asp

+1	qualitative assessment of governance-related information available on the country. This analysis can encompass both structural issues and elements present in the news flow.	on a qualitative assessment of governance-related information available on the country. This analysis can encompass both structural issues and elements present in the news flow.	**-1**

Additional Assessment Rationale

The analysis of governance-related factors requires to go beyond quantitative data to capture some of the weaknesses and strengths of countries, in particular those reflecting their stability, institutional resilience or the strength of their geopolitical positions. This requires an analysis of relevant documentary sources that can include various press or media documents, reports, books and other resources analysing both the background of countries (*e.g.* historical, geographical, cultural, social, economic or geopolitical background) and significant events of interest (*e.g.* press articles). This analysis should, thus, relate to all the factors of the governance analysis.

Sources: various media, reports, books and other resources being relevant to assess sovereign entities' governance

G adjusted GDP

Score Scale	Positive Assessment Rationale	Negative Assessment Rationale	Score Scale
Highly Positive	G adjusted GDP / actual GDP >= 20%	G adjusted GDP / actual GDP <= -20%	**Highly Negative**
+2	Governance performance (political stability, low level of violence, high business rights) will probably foster economic growth	Economic growth can be highly affected by the poor governance performance (political instability, poor democratic life, low safety…)	**-2**
Slightly Positive	20% > G adjusted GDP / actual GDP >= 10%.	-20% < G adjusted GDP / actual GDP <= -10%	**Slightly Negative**
+1	Governance performance should support economic growth	Governance performance might slow down economic growth	**-1**

Additional Assessment Rationale

The governance-adjusted GDP is a metric that indicates the actual governance performance of a country. Indeed, for a given GDP (PPP) level, a standard governance performance is expected. The gap between reported GDP and governance-adjusted GDP represents to

what extent the country is able to transform wealth and prosperity into long-term governance performance strands (democracy, business rights, corruption…) that are prerequisites for long lasting growth. This metric covers key elements that support growth and country stability (not exhaustive list):

- Business Rights;
- Corruption;
- Democratic Life;
- Political effectiveness;
- Political Stability;
- Security.

Analysis at sub-pillar may add insight into the actual situation in terms of strength and weaknesses.

D. ECONOMIC & FINANCIAL PROFILE

Economic Performance Assessment

Quantitative Assessment

Assessment Guidelines

Our Sovereign Risk Methodology measures the exposure to sovereign risk through current economic activity, economic prosperity along with future dynamics. We assess current economic activity with the real per capita gross domestic product (GDP) growth rate, the inflation rate measured by the consumer price index (CPI) and the unemployment rate. GDP growth and interest rates are key determinants of a government's debt dynamics. Unemployment has bearing on potential output and may call for higher government expenditures. For governments with limited fiscal space, rising imbalances can increase borrowing costs and thus the probability of a sovereign default. Then, we assess economic prosperity with different metrics such as GDP and GNI per capita, adjusted net national income or the size of government. High income per capita implies that labour is engaged in high-value-added activities (though this is not necessarily the case for commodity producers) and hence that the economy is less vulnerable and better able to absorb adverse shocks. On the one hand, a large public sector usually results in higher taxes, which lowers the disposable income. This can lead to an increase in fiscal deficits in recessions. On the other hand, a strong public sector will play a role of economic and social buffer in cyclical downturns. This can lead to greater resilience to shocks. Last, monetary policy directly affects debt sustainability through its influence on effective financing costs.

The Beyond Ratings methodology of Sovereign risks assessment is thus based on the following hypotheses:

- A favourable (unfavourable) economic performance engenders a stronger (weaker) real GDP growth rate, and lower (higher) risk premia on interest rates;
- A favourable (unfavourable) monetary policy will maintain consumer prices at (well above or below) a target rate and will foster a stable financial condition;
- Together they will engender a more (less) favourable automatic debt dynamic;
- A high (low) level of economic prosperity would raise (reduce) fiscal flexibility.

Theme: **Economic Activity**

Indicator: **CPI Inflation Rate** Optimum**: Ad hoc by peers**

The consumer price index (CPI) measures the weighted average of prices of a basket of consumer goods and services, such as transportation, food and medical care. Changes in the CPI reflect changes associated with the cost of living and allow to identify periods of inflation, deflation, or reflation.

Indicator: **Unemployment Rate** Optimum: **Minimum**

The unemployment rate is calculated as the number of persons who are unemployed during the reference period given as a percent of the total number of employed and unemployed persons (*i.e.*, the labour force) in the same reference period. It is a lagging indicator,

meaning that it generally rises or falls in the wake of changing economic conditions, rather than anticipating them. More precise definitions are available on the website of the International Labour Organization (ILO): http://www.ilo.org/ilostat-files/Documents/description_UR_EN.pdf.

Indicator: **Real GDP Growth Rate per capita**	Optimum: **Maximum by peers**

The real gross domestic product (GDP) growth rate measures economic growth and is expressed as a percentage that shows the rate of change for a country's GDP from one period to another, typically from one year to the next. It is usually calculated by adding together private consumption, investment, public spending and exports net of imports (the “expenditures approach”). The real GDP growth rate is a more useful measure than the nominal GDP growth rate due to the fact that it takes into account the effect that price movements have on economic data. The real GDP growth rate is a "constant currency" figure, and therefore provides a consistent measure, one that is not subject to being distorted by changing prices. In order to eliminate the contribution from increased labour inputs, it is expressed on a per capita basis to capture better growth generated by productivity gains.

Theme: **Economic Prosperity**

Indicator: **Adjusted Net National Income**	Optimum: **Maximum**

Adjusted net national income refers to gross national income minus consumption of fixed capital and natural resources depletion. It represents an alternative measure of GDP particularly useful in monitoring low-income resource-rich economies.

Indicator: **Size of Government**	Optimum: **Maximum**

The size of government is measured by the general government expenditures. The expenditures of government institutions on collective services includes services rendered by companies and organizations which are compensated from the state budget. Such included services should nevertheless meet the needs of the community or of particular population groups and not the private households. - Such measure is an indication of a government’s policy in delivering public goods and services (including defence) and providing social protection.

Indicator: **USD GDP per Capita**	Optimum: **Maximum**

GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in constant 2010 U.S. dollars.

	Optimum: **Maximum**

Indicator: **GNI per Capita**	Optimum: **Maximum**

Gross National Income (GNI) is the sum of value added by all resident producers plus any product taxes (less subsidies) not included in the valuation of output plus net receipts of primary income (compensation of employees and property income) from abroad. The GNI per capita is divided by the midyear population and is expressed in USD (using the World Bank Atlas method).

Theme: **Monetary Policy**	
Indicator: **Monetary Policy Rate**	Optimum: **Minimum**

The central bank policy rate is the rate that is targeted by the central bank to implement or signal its monetary policy stance. Monitoring the monetary policy rate can give us forward-looking information on the central bank's inflation expectations, especially for inflation targeting policy. The sound conduct of monetary policy can anchor inflation expectations, decreasing price signal distortions and thus improving investment decision-making and with it growth. Well anchored inflation expectations can also keep related risk premia in check and thus help with government debt dynamics.

Indicator: **Broad Monetary Aggregate (YoY % change)**	Optimum: **Maximum**

In its comprehensive measure, broad money M3 includes currency, deposits with an agreed maturity of up to two years, deposits redeemable at notice of up to three months and repurchase agreements, money market fund shares/units and debt securities up to two years. It is measured as a year-on-year percentage change.

Qualitative Assessment

Vulnerability to Economic Shocks

Score Scale	Positive Assessment Rationale	Negative Assessment Rationale	Score Scale
Highly Positive +2	The share in world GDP is greater than 1%. It is accompanied by a real GDP growth volatility less than 2.5%.	The share in world GDP is less than 1%. It is accompanied by a real GDP growth volatility greater than 10%.	**Highly Negative -2**
Slightly Positive +1	The share in world GDP is greater than 1%. It is accompanied by a real GDP growth volatility strictly greater than 2.5% and less than 5%.	The share in world GDP is less than 1%. It is accompanied by a real GDP growth volatility greater than 5%.	**Slightly Negative -1**
Additional Assessment Rationale			

Vulnerability to economic shocks is assessed through 2 indicators:

- The share in world GDP may reflect the relative greater vulnerability of small and medium economies when there are not compensating policy measures. These economies can be impacted harder by an idiosyncratic shock and/or an exogenous economic shock.
- The real GDP growth volatility (calculated as the 10-year moving standard deviation of real GDP annual average changes), which reflects the long-term capacity of the sovereign to tolerate a given level of indebtedness. Long periods of economic instability make the economy and public finances much more vulnerable to shocks and hence prone to interruptions in sovereign debt service. This indicator is.

Real GDP Growth Outlook			
Score Scale	**Positive Assessment Rationale**	**Negative Assessment Rationale**	**Score Scale**
Highly Positive +2	Real GDP growth outlook for a country is on an upward trend and better than that of its rating peer group.	Real GDP growth outlook for a country is on a downward trend and weaker than that of its rating peer group.	**Highly Negative -2**
Slightly Positive +1	Real GDP growth outlook for a country is on an upward trend and weaker than that of its rating peer group.	Real GDP growth outlook for a country is on a downward trend and better than that of its rating peer group.	**Slightly Negative -1**

Additional Assessment Rationale

The real GDP growth outlook refers to the real GDP growth forecasts up to five years for the economy according to the latest IMF World Economic Outlook report (published twice a year in April and October) and our own forecasts for systemic economies. This indicator is relevant for economic performance and for the assessment of creditworthiness.

Cyclical Economic Trend Index			
Score Scale	**Positive Assessment Rationale**	**Negative Assessment Rationale**	**Score Scale**
Highly Positive +2	All of the three indicators that comprise this index are positive (strictly above 50 for the manufacturing PMI).	All of the three indicators that comprise this index are negative (strictly below 50 for the manufacturing PMI).	**Highly Negative -2**
Slightly Positive	Two of the three indicators that comprise this index are positive	Two of the three indicators that comprise this index are	**Slightly Negative**

+1	(strictly above 50 for the manufacturing PMI).	negative (strictly below 50 for the manufacturing PMI).	**-1**

Additional Assessment Rationale

Our Cyclical economic trend index is composed of three cyclical indicators:

- 3-month moving average of the year-on-year percentage change of industrial production
- 3-month moving average of the year-on-year percentage change of retail sales
- 3-month moving average of the manufacturing Purchasing managers index (PMI) level.

This is a good proxy of current and near-term economic performance, which is relevant in assessing rating, outlook and potential watch on a sovereign.

Inflation Outlook

Score Scale	Positive Assessment Rationale	Negative Assessment Rationale	Score Scale
Highly Positive **+2**	Inflation outlook for a country is on an upward trend and approaches the Central Bank target or an implicit target set around 2% for advanced economies and around 4% for emerging and developing economies (if no inflation targeting is made explicit by the Central Bank).	Inflation outlook for a country is on a downward trend and deflationary pressures are at work. OR: Inflation outlook for a country is on an upward trend and strong inflationary pressures are at work.	**Highly Negative** **-2**
Slightly Positive **+1**	Inflation outlook for a country is on a downward trend and approaches the Central Bank target or an implicit target set around 2% for advanced economies and around 4% for emerging and developing economies (if no inflation targeting is made explicit by the Central Bank).	Inflation outlook for a country is on a downward or on an upward trend but moves away from the Central Bank target or an implicit target set around 2% for advanced economies and around 4% for emerging and developing economies (if no inflation targeting is made explicit by the Central Bank).	Slightly Negative **-1**

Additional Assessment Rationale

The inflation outlook refers to the headline consumer price index forecasts up to five years (average year-on-year percentage change) for the economy according to the latest IMF

World Economic Outlook report (published twice a year in April and October) and our own forecasts for systemic economies. This indicator is relevant for economic performance and for the assessment of creditworthiness.

Alternative Measures of Inflation Composite Index			
Score Scale	**Positive Assessment Rationale**	**Negative Assessment Rationale**	**Score Scale**
Highly Positive +2	In the case of moderate inflation: The 6-month moving average of the composite index is positive and above its 3-year moving average.	In the case of deflation: The 6-month moving average of the composite index is negative and below its 3-year moving average. OR: In the case of strong inflation: The 6-month moving average of the composite index is positive and above its 3-year moving average.	**Highly Negative -2**
Slightly Positive +1	The 6-month moving average of the composite index is positive but below its 3-year moving average.	The 6-month moving average of the composite index is negative but above its 3-year moving average.	**Slightly Negative -1**

Additional Assessment Rationale

Alternatives measures of inflation include, but are not limited to, Harmonised index of consumer prices (HICP) from Eurostat, core HICP and core Consumer price index (CPI), headline and core Personal consumption expenditures (PCE) prices, notably for the United States, as well as GDP deflator. All these measures are expressed on a year-on-year percentage change and can be combined, if available, to create a composite index of alternative measures of inflation. This is a good proxy of current and near-term economic performance, which is relevant in assessing rating and outlook on a sovereign.

Broad Money Supply to Gross Public Debt Spread			
Score Scale	**Positive Assessment Rationale**	**Negative Assessment Rationale**	**Score Scale**
Highly Positive +2	The spread between broad money supply and gross public debt (in % of GDP) is positive and gross public debt to GDP	The spread between broad money supply and gross public debt (in % of GDP) is negative and gross public	**Highly Negative -2**

	ratio is smaller than that of its rating peer group.	debt to GDP ratio is higher than that of its rating peer group.	
Slightly Positive **+1**	The spread between broad money supply and gross public debt (in % of GDP) is positive and gross public debt to GDP ratio is higher than that of its rating peer group.	The spread between broad money supply and gross public debt (in % of GDP) is positive and gross public debt to GDP ratio is smaller than that of its rating peer group.	**Slightly Negative** **-1**

Additional Assessment Rationale

The Broad money supply to gross public debt spread indicator is expressed as a ratio to the GDP of a given economy. This ratio is notably used as a proxy for the level of financial intermediation in an economy.

Fiscal Flexibility Assessment

Quantitative Assessment

Assessment Guidelines

Our Sovereign Risk Methodology measures the exposure to sovereign risk through government finances assessment. It is based on an evaluation of fiscal policy, budget balance and debt burden, as well as contingent liabilities posed by government-owned entities and the financial sector. We gauge fiscal policy by the government's long-term capacity to service its debt and we consider variables such as gross general government debt, general government structural balance, and general government revenue. Budget balance is built as a measurement of the country's capacity at shorter term to generate sustainable budget outturn. Finally, debt burden is used as a measurement of the interest rate pressure, which could undermine the country's government debt sustainability.

Beyond Ratings methodology of Sovereign risks assessment is thus based on following hypothesis:

- A strong (weak) fiscal policy will result in a low (high) level of general government indebtedness and produce a structural trend or capacity to generate positive or sustainable budget balance;
- The lower (higher) the government debt burden, the less (greater) pressure on the automatic debt dynamic;
- A favourable (unfavourable) budget balance will reduce (raise) the positive contribution of primary balance to the automatic debt dynamic.

Theme: **Fiscal Policy**

Indicator: Change in **Gross Government Debt (% of GDP)**	Optimum**: Minimum by peers**

The general government gross debt consists of the entire stock of government debt owed to domestic or foreign creditors that require payment (interest and/or principal) at dates in the future. Here we focus on the gross government debt change in terms of percentage points of GDP.

Indicator: **Government Revenue (% of GDP)**	Optimum: **Maximum**

The government revenue consists of taxes, social contributions, grants, distributions from public enterprises outside the consolidation of the general government and other revenue. Revenue in excess of expenditures usually increases government's net worth, which is the difference between its assets and liabilities. It is expressed as a share of GDP.

Theme: **Budget Balance**

Indicator: **Government Overall Balance (% of GDP)**	Optimum: **Maximum by peers**

The general government overall balance refers to the net lending or borrowing position of the general government, *i.e.* the difference between revenues and total expenditures (IMF definition).

Indicator: **Government Primary Balance (% of GDP)**	Optimum: **Maximum by peers**

The general government primary balance is the government overall balance excluding net interest payments (interest expenditure minus interest revenue), as defined by the IMF. It is expressed as a share of GDP.

Theme: **Debt Burden**

Indicator: **Interest Rate**	Optimum: **Minimum**

The interest rate is the average yield of issues with original maturity of 10 years and over.

Indicator: **Interest Payments (% of Revenue)**	Optimum: **Minimum**

Interest payments include interest payments on government debt. Revenue corresponds to general government revenue.

Qualitative Assessment

Interest Rate to GDP Growth Differential (IRGD)

Score Scale	Positive Assessment Rationale	Negative Assessment Rationale	Score Scale
Highly Positive +2	Real GDP growth rate is continuously higher than average real interest rate paid by the sovereign (IRGD negative). It is combined with positive primary balance.	Real GDP growth rate is continuously lower than average real interest rate paid by the sovereign (IRGD positive). It is combined with negative primary balance.	**Highly Negative -2**
Slightly Positive +1	Real GDP growth rate is continuously higher than average real interest rate paid by the sovereign (IRGD negative). It is combined with negative primary balance.	Real GDP growth rate is continuously lower than average real interest rate paid by the sovereign (IRGD positive). It is combined with positive primary balance.	**Slightly Negative -1**

Additional Assessment Rationale

Given a simple debt sustainability assessment framework[11], debt will stabilize if primary surplus is equal to interest payments[12]. This assumes that no contingent liabilities materialize, exchange rate movements do not affect the burden of foreign currency denominated debt, and no other stock/flow adjustments occur. If GDP growth rate is continuously higher than interest rate, with a positive primary balance, the debt burden will fall ceteris paribus[13]. If GDP growth rate is continuously higher than interest rate with a negative primary balance, sustainability constraint would be respected if primary deficit isn't larger than interest rate to GDP growth differential. If GDP growth rate is continuously lower than interest rate, with a negative primary balance, debt dynamic isn't under control and sustainability constraint can't be respected. However, if GDP growth is continuously lower than interest rate, sustainability constraint can be respected if it is accompanied with a primary surplus which is equal or higher than automatic debt dynamic.

Budget Balance Adequacy to the Economic Cycle

Score Scale	Positive Assessment Rationale	Negative Assessment Rationale	Score Scale
Highly Positive +2	If evolution of budget balance is positive while the output gap is positive, the government drives	If evolution of budget balance is positive while the output gap is negative, the	**Highly Negative -2**

[11] Escolano, M. J., 2010, A practical guide to public debt dynamics, fiscal sustainability, and cyclical adjustment of budgetary aggregates, International Monetary Fund.

[12] If $D_t = (1 + i_t)D_{t-1} - P_t$ with D_t the amount of debt at time t, i_t average real interest rate paid by the State, P_t the primary balance, debt should thus be stable if $P_t = i_t D_{t-1}$.

[13] If we divide previous equation by GDP at time t, we thus obtain: $d_t = (1 + \gamma_t)d_{t-1} - p_t$, with $\gamma_t = \frac{i_t - g_t}{1+g_t}$, g_t as the GDP growth rate.

	a fiscal countercyclical contraction.	government drives a fiscal procyclical contraction.	
Slightly Positive **+1**	If evolution of budget balance is negative while the output gap is negative, the government drives a fiscal countercyclical expansion.	If evolution of budget balance is negative while the output gap is positive, the government drives a fiscal procyclical expansion.	**Slightly Negative** **-1**
Additional Assessment Rationale			
As GDP growth rate is an important contribution factor to the government debt dynamic, budget balance adequacy to the economic cycle should be assessed. If evolution of structural budget balance is positive (*i.e.*, an increase of budget balance surplus or a decrease of budget balance deficit) while the economic cycle is favourable (*i.e.*, the output gap is positive), the government drives a fiscal countercyclical contraction, which allows it to diminish the general government debt-to-GDP ratio. If evolution of budget balance is negative (*i.e.*, a decrease of budget balance surplus or an increase of budget balance deficit) while the economic cycle is unfavourable (*i.e.*, the output gap is negative), the government drives a fiscal countercyclical expansion, which support economic activity until the return of growth. If the evolution of budget balance is positive while the economic cycle is unfavourable, the government drives a fiscal procyclical contraction, which will hamper the economic activity and its return to growth. If evolution of budget balance is negative while the economic cycle is favourable, the government drives a fiscal procyclical expansion, which will increase the government debt-to-GDP ratio.			

Debt Stabilising Primary Balance			
Score Scale	**Positive Assessment Rationale**	**Negative Assessment Rationale**	**Score Scale**
Highly Positive **+2**	Primary balance is equal to or higher than the debt-stabilizing primary balance, while IRGD is negative.	Primary balance is lower than the debt-stabilizing primary balance, while IRGD is positive.	**Highly Negative** **-2**
Slightly Positive **+1**	Primary balance is equal to or higher than the debt-stabilizing primary balance, while IRGD is positive.	Primary balance is lower than the debt-stabilizing primary balance, while IRGD is negative.	**Slightly Negative** **-1**
Additional Assessment Rationale			
In the framework previously described, there is a debt-stabilizing primary general government balance which stabilizes the general government debt-to-GDP ratio[14]. If GDP			

[14] Such as: $p_t = \gamma_t d_{t-1} = \frac{i_t - g_t}{1+g_t} d_{t-1}$.

growth is higher than the interest rate, the general government could have a primary deficit[15] and nevertheless stabilize or reduce its debt-to-GDP ratio. If GDP growth is lower than the interest rate, a primary surplus equal, at least, to the debt-stabilizing primary balance is necessary in order to keep the debt-to-GDP ratio unchanged.

Government Expenditures Breakdown			
Score Scale	**Positive Assessment Rationale**	**Negative Assessment Rationale**	**Score Scale**
Highly Positive **+2**	The total government expenditures remain stable or decrease (in % of GDP) and simultaneously we observe: • a stable or increasing share of net investment; • a stable or decreasing share of current expenditures; • a stable or decreasing share of retirement benefits; • a stable or decreasing share of interest payments.	The total government expenditures increase (in % of GDP) and simultaneously we observe: • a stable or decreasing share of net investment; • a stable or increasing share of current expenditures; • a stable or increasing share of retirement benefits; • a stable or increasing share of interest payments.	**Highly Negative** **-2**
Slightly Positive **+1**	The total government expenditures increase (in % of GDP) and simultaneously we observe: • a stable or increasing share of net investment; • a stable or decreasing share of current expenditures; • a stable or decreasing share of retirement benefits; • a stable or decreasing share of interest payments.	The total government expenditures remain stable or decrease (in % of GDP) and simultaneously we observe: • a stable or decreasing share of net investment; • a stable or increasing share of current expenditures; • a stable or increasing share of retirement benefits; • a stable or increasing share of interest payments.	**Slightly Negative** **-1**

[15] Maximum equal to $\gamma_t d_{t-1}$

Additional Assessment Rationale
Whereas a decrease of total government expenditures could increase the budget surplus or decrease the budget deficit, the path to achieve this fiscal adjustment matters. Indeed, a decrease of government expenditures due to a decrease of net investment could undermine future public debt sustainability, as it favoured an improvement of budget balance at time t while compromising future output growth. On the contrary, an increase of total government expenditures due to an increase of net investment, with at least a decreasing share of current expenses, or retirement benefits or interest payments, could improve future output growth and then, future revenues. A careful assessment of the "quality" of investments and current expenditures should be carried out to confirm the sustainability of the global expenditure's pathway. Moreover, this will be analysed in the light of cyclical elements, like automatic stabilizers that affect expenditures (*e.g.* rise of unemployment benefits in downturns).

Net Debt			
Score Scale	**Positive Assessment Rationale**	**Negative Assessment Rationale**	**Score Scale**
Highly Positive **+2**	Government owns a large amount of financial assets, which is illustrated by a net general government debt-to-GDP ratio far lower than its gross debt-to-GDP ratio (difference greater than 20 pp) and the gross debt-to-GDP ratio is under 100% (for developed countries) and 60% (for emerging countries).	Government doesn't own a large amount of financial assets, which is illustrated by a general government net debt-to-GDP ratio equivalent to the gross debt-to-GDP ratio (difference under 20 pp), and the gross debt-to-GDP ratio is above 100% (for developed countries) and above 60% (for emerging countries).	**Highly Negative** **-2**
Slightly Positive **+1**	Government doesn't own a large amount of financial assets, which is illustrated by a general government net debt-to-GDP ratio equivalent to the gross debt-to-GDP ratio (difference under 20 pp), but the gross debt-to-GDP ratio is under 100% (for developed countries) and 60% (for emerging countries).	Government owns a large amount of financial assets, which is illustrated by a general government net debt-to-GDP ratio far lower than its gross debt-to-GDP ratio (difference greater than 20 pp), but the gross debt-to-GDP ratio is above 100% (for developed countries) and	**Slightly Negative** **-1**

		above 60% (for emerging countries).	

Additional Assessment Rationale
Where the government owns financial assets, the assessment of net general government debt can provide powerful insight given that these assets could be used if needed to pay debt. Specific quantitative or qualitative adjustments could be applied in determining which assets have to be considered, more particularly to focus on financials assets with an ascertainable market value (*e.g.* loans to government-owned entities should be excluded, while external financial assets could be included under quality and liquidity criteria)

Market Perception			
Score Scale	**Positive Assessment Rationale**	**Negative Assessment Rationale**	**Score Scale**
Highly Positive +2	Spreads[16] of foreign currency sovereign debt have fallen by more than 200 basis points (bps) in one year.	Spreads of foreign currency sovereign debt have increased by more than 200 bps in one year.	**Highly Negative -2**
Slightly Positive +1	Spreads of foreign currency sovereign debt have fallen, but by less than 200 bps in one year.	Spreads of foreign currency sovereign debt have increased by less than 200 bps in one year.	**Slightly Negative -1**

Additional Assessment Rationale
As interest payments can affect the debt service burden, assessment of sovereign spreads can help to determine a potential pressure on sovereign debt by financial market. This measure only applies to debt denominated in foreign (actively traded) currencies.

Financial System Assessment

Quantitative Assessment

Assessment Guidelines

[16] Spreads refers to sovereign bond spreads at a 10-year maturity. They represent the difference in yield between the benchmark yield of a given country and the benchmark yield of the United States Treasuries. For the United States, the comparison is made with the benchmark yield of the German Bund.

Our Sovereign Risk Methodology measures the sovereign risk's exposure to a financial crisis through financial system assessment. It is based on an evaluation of credit quality, capital adequacy, and credit gap. Credit quality is built as a measurement of the country's financial system exposure to non-performing loans. Capital adequacy is built as a measurement of the country's financial system exposure to risk through regulatory tiers 1 capital to risk weighted assets ratio. Credit gap is built as a measurement of the country's financial system exposure to the build-up of excessive credit.

Beyond Ratings methodology of Sovereign risks assessment is thus based on following hypothesis:

- A high (low) credit quality will underline a low (high) risk of exposure to non-performing loans;
- A high (low) capital adequacy will reduce (raise) the exposure to financial risk;
- A high (low) credit gap will raise (reduce) the exposure to the build-up of excessive credit.

Theme: **Credit Quality**	
Indicator: **Bank Nonperforming Loans to Gross Loans Ratio**	Optimum: **Minimum by peers**

Bank nonperforming loans to total gross loans ratio is calculated as the value of nonperforming loans (NPLs) divided by the total value of the loan portfolio (including NPLs and before the deduction of specific loan-loss provisions) This ratio is a measure of bank health and efficiency by identifying problems with asset quality in the loan portfolio.

Theme: **Capital Adequacy**	
Indicator: **Regulatory Tier 1 Capital to Risk-Weighted Assets**	Optimum: **Maximum by peers**

The Tier 1 capital ratio is the ratio of a bank's core equity capital to its total risk-weighted assets. Risk-weighted assets are the total of all assets held by the bank weighted by credit risk according to a formula determined by the Regulator (usually the country's central bank). It is a key measure of a bank's financial strength that has been adopted as part of the Basel III Accord on bank regulation.

Theme: **Credit Gap**	
Indicator: **Credit to GDP Gap**	Optimum: **Minimum by peers**

The credit-to-GDP gap is defined as the difference between the credit-to-GDP ratio and its long-run trend, and captures the build-up of excessive credit in a reduced form fashion. Basel III uses this gap between the credit-to-GDP ratio and its long-term trend as a guide for setting countercyclical capital buffers. Boro and Lowe (2002, 2004)[17][18]. first documented its property as a useful early warning indicator for banking crises.

[17] Borio, C and P Lowe (2002): "Assessing the risk of banking crises", BIS Quarterly Review, December, pp 43-54.

[18] _____ (2004): "Securing sustainable price stability: should credit come back from the wilderness?", BIS Working Papers, no 157.

Qualitative Assessment

Household Credit-to-GDP Gap			
Score Scale	**Positive Assessment Rationale**	**Negative Assessment Rationale**	**Score Scale**
Highly Positive +2	Household credit-to-GDP has been close to its long-term trend for more than three years, pointing to a durable balanced financial growth.	Household credit-to-GDP has strongly outpaced its long-term trend for more than three years, pointing to an important financial imbalance.	**Highly Negative -2**
Slightly Positive +1	Household credit-to-GDP has been close to its long-term trend for less than three years, pointing to a currently balanced financial growth.	Household credit-to-GDP has strongly outpaced its long-term trend for less than three years, pointing to an increasing financial imbalance.	**Slightly Negative -1**

Additional Assessment Rationale

The household credit-to-GDP gap is calculated as the difference between the credit-to-GDP ratio and its long-term trend. The gap widens if the increase in the credit-to-GDP ratio strongly outpaces the trend for some time, pointing to a possible financial imbalance. As indicated by Bank of International Settlements[19], "while higher household debt boosts consumption and output growth in the short run, too much of it can lower output growth in the medium to long-term. Excessive household debt has also been found to herald banking crises". We do not consider commercial and industrial debt for the time being.

Residential Property Price Gap			
Score Scale	**Positive Assessment Rationale**	**Negative Assessment Rationale**	**Score Scale**
Highly Positive +2	Residential property prices have been close to their long-term trend for more than three years, pointing to a durable balanced financial growth.	Residential property prices have strongly outpaced their long-term trend for more than three years, pointing to an	**Highly Negative -2**

[19] Aldasoro, I., Borio, C. E., and Drehmann, M., 2018, Early warning indicators of banking crises: expanding the family.

		important financial imbalance.	
Slightly Positive **+1**	Residential property prices have been close to their long-term trend for less than three years, pointing to a currently balanced financial growth.	Residential property prices have strongly outpaced their long-term trend for less than three years, pointing to an increasing financial imbalance.	**Slightly Negative** **-1**

Additional Assessment Rationale

The property price gap is defined as the deviation of inflation-adjusted property prices from its trend. If the increase in the property price outpaces the long-term trend, this could be pointing to a possible financial imbalance and / or a housing bubble.

Household Debt Service Ratio

Score Scale	Positive Assessment Rationale	Negative Assessment Rationale	Score Scale
Highly Positive **+2**	Household debt service ratio has been below its long-term trend for more than three years, pointing to a durable balanced financial growth.	Household debt service ratio has strongly outpaced its long-term trend for more than three years, pointing to an important financial imbalance.	**Highly Negative** **-2**
Slightly Positive **+1**	Household debt service ratio is below its long-term trend since less than three years, pointing to a currently balanced financial growth.	Household debt service ratio for the household sector has strongly outpaced its long-term trend for less than three years, pointing to an important financial imbalance.	**Slightly Negative** **-1**

Additional Assessment Rationale

Household debt service ratio measures interest payments and amortisations as a percentage of household disposable income. As high credit growth feeds into higher debt service down the road, debt service ratio rise during credit booms.

External Performance Assessment

Quantitative Assessment

Assessment Guidelines

Within this pillar, risks are measured according to the status of the country's currency, as countries with a reserve-currency[20] are compared to other countries that benefit from the same status, and countries with a non-reserve currency are compared to other countries with the same status. Our methodology measures the country's exposure to external liabilities through the external balance sheet assessment, exchange rate policy measurement and Foreign Direct Investments (FDI). External debt balance sheet indicators measure the current external debt sustainability. Exchange rate policy is built as a measurement of the country's exposure to exchange rate volatility.

Beyond Ratings methodology of Sovereign risks assessment is thus based on following hypothesis:

- Strong (weak) FDI inflows will decrease (rise) the liquidity risk;
- A sustainable (unsustainable) external balance sheet will reduce (rise) the exposure to external performance shock;
- A favourable (unfavourable) exchange rate policy will reduce (rise) the positive contribution of exchange rate to the automatic public debt dynamic.

Theme: **External Balance Sheet**	
Indicator: **Gross External Debt (% of GDP)**	Optimum**: Minimum by peers**[21]

Total external debt is debt owed to non-residents. Total external debt is the sum of public, short- and long-term debt, and use of IMF credit. Short-term debt includes all debt having an original maturity of one year or less and interest in arrears on long-term debt. It is expressed as a share of GDP.

Indicator: **Short-term Gross External Debt** (only for emerging market and developing economies)	Optimum: **Minimum by peers**

This indicator is estimated through a ratio of all short-term external debt to total external debt.

Indicator: **Foreign-currency denominated external debt (only for emerging market and developing economies)**	Optimum: **Minimum by peers**

The percentage of external long-term public and publicly-guaranteed debt contracted in foreign currency.

Indicator: **External debt to Exports ratio**	Optimum: **Minimum by peers**

[20] Defined according to the tri-annual BIS trade volume report.
[21] Reserve currency countries vs. non-reserve currency countries.

Outstanding amount of debt owed to non-residents, expressed as a share of merchandise exports.

Indicator: **Net International Investment Position (% of GDP) (only for advanced economies)**	Optimum: **Maximum by peers**

A net international investment position (NIIP) is a nation's stock of foreign assets minus its foreign liabilities. The Net International Investment Position (NIIP) is related to Net Foreign Asset (NFA), which is defined as the value of overseas assets owned by a nation's resident minus the value of domestic assets owned by non-residents. The NIIP can therefore be regarded as a nation's balance sheet with the rest of the world at a specific point in time. NIIP includes overseas assets and liabilities held by the public and private sector. A negative NIIP figure indicates that a nation's liabilities to non-residents exceed its residents' holdings of assets in other countries, while a positive NIIP figure indicates that its residents' holdings of assets in other countries exceed its liabilities to non-residents. Most nations release NIIP figures quarterly.

Indicator: **Interest Payments on External Debt, Share of Exports (only for emerging market and developing economies)**	Optimum: **Minimum by peers**

Interest payment for debt owed to non-residents, expressed as share of merchandise exports.

Theme: **Foreign Direct Investment**

Indicator: **Foreign Direct Investment (% of GDP) (only for emerging market and developing economies)**	Optimum: **Maximum by peers**

Foreign direct investment (FDI) refers to investment by non-residents in real assets in the reporting country. FDI often is longer term and more permanent that portfolio investment, as it frequently includes an element of business control. It is expressed as a share of GDP.

Theme: **Exchange Rate**

Indicator: **FX Reserves in Months of Import (only for emerging market and developing economies)**	Optimum: **Maximum by peers**

The stock of foreign exchange reserves expressed in months of imported goods. It shows how many months of imports of goods could be purchased using these reserves.

Indicator: **FX Reserves in USD (only for emerging market and developing economies)**	Optimum: **Maximum by peers**

Reserves of foreign exchange excluding gold and expressed in USD terms held by central banks and monetary authorities. It is expressed as a year-on-year percentage change.

Indicator: Exchange Rate Volatility vis-à-vis the USD (only for advanced economies)	Optimum: **Minimum by peers**

The exchange rate volatility vis-à-vis the United States Dollar (USD) reflects how rapidly the exchange rate fluctuates against the USD. The more it fluctuates, the more external imbalances are likely to impact the economy of a country. It is expressed as an average of the annualized standard deviation of the weekly percentage change. In order to take into account, the specifics of the different exchange rate regimes, we grant a bonus to countries whose currency is floating and a penalty to countries whose currency is not floating (i.e., crawling or fixed peg). The exchange rate regime of a country is derived from the Classification of Exchange Rate Arrangements and Monetary Policy Frameworks published by the IMF.

Qualitative Assessment

Default Track Record

Score Scale	Positive Assessment Rationale	Negative Assessment Rationale	Score Scale
Highly Positive +2	No default episode has occurred since 1990, even towards non-commercial creditors (*i.e.*, other governments, supranational, local and regional governments and public-sector enterprises).	A default episode has occurred in the last five years towards commercial creditors.	**Highly Negative -2**
Slightly Positive +1	No default episode has occurred since 1990 towards commercial creditors.	A default episode has occurred in the last five to ten years towards commercial creditors or in the last five years towards non-commercial creditors.	**Slightly Negative -1**

Additional Assessment Rationale

Given that a recent default episode can sometimes be attributed to a sovereign's lack of willingness to pay more than its lack of financial resources, the adjustment to the rating of default episodes can be ease if we assess that the default is not symptomatic of structural weaknesses in the sovereign's political ability and willingness to mobilise resources to honour its financial commitments.

Commodity Dependence			
Score Scale	**Positive Assessment Rationale**	**Negative Assessment Rationale**	**Score Scale**
Highly Positive +2	Country with a broadly diversified economy (*i.e.*, exports are well diversified).	Country with a poorly diversified economy (*i.e.*, exports are not diversified at all).	**Highly Negative -2**
Slightly Positive +1	Country with a more narrowly diversified economy (*i.e.*, exports are well diversified).	Country with a quite poorly diversified economy (*i.e.*, exports are not well diversified).	**Slightly Negative -1**
Additional Assessment Rationale			
The greater the reliance on commodities for export receipts, the greater the vulnerability to terms-of-trade or external shocks and, ceteris paribus, the weaker the sovereign creditworthiness is. One the one hand, this is particularly the case where the country depends mainly on a single commodity, such as oil, precious metal, poorly diversified agriculture, etc., rather than several different commodities that offer more diversification. This is also the case for a single service, such as tourism. On the other hand, we can reserve a different judgment for oil-exporting countries undergoing economic change.			

Vulnerability to Exogenous Shock			
Score Scale	**Positive Assessment Rationale**	**Negative Assessment Rationale**	**Score Scale**
Highly Positive +2	The balance of payments of the country is well balanced in terms of its currency, its maturity and its contribution by sector of the economy. Moreover, the trade structure and the financial markets are well diversified.	The balance of payments of the country is greatly imbalanced in terms of its currency, its maturity and its contribution by sector of the economy. Moreover, the trade structure and the financial markets are poorly diversified.	**Highly Negative -2**
Slightly Positive +1	The balance of payments of the country is well balanced in terms of its currency, its maturity and its contribution by sector of the economy. However, the trade	The balance of payments of the country is greatly imbalanced in terms of its currency, its maturity and its contribution by sector of the economy. However, the trade	**Slightly Negative** -1

	structure and the financial markets are poorly diversified.	structure and the financial markets are well diversified.	

Additional Assessment Rationale

Vulnerability to exogenous shock reflects potential adverse shocks to key sectors notably in terms of trade partners, creditors, capital markets or unforeseen events that can affect the resilience of a country's balance of payments and capacity to meet its external debt service obligations. If these are material and not captured elsewhere in our SRM, we will include a qualitative adjustment there.

Exchange Rate Regime			
Score Scale	**Positive Assessment Rationale**	**Negative Assessment Rationale**	**Score Scale**
Highly Positive +2	Country whose currency is a reserve currency (USD, EUR, JPY, GBP, CAD, AUD and CHF according to the IMF COFER database).	Country without local currency (*i.e.*, the country uses the currency of another country).	**Highly Negative -2**
Slightly Positive +1	Eurozone member states with a weaker degree of financial integration and reserve currencies that were recently included in the Special drawing rights (SDR) basket. We also include countries with an actively traded or free-floating currency.	Country with fixed currency regime (*e.g.*, hard peg (dollarization or currency board), conventional pegged arrangement, heavy intervention in the foreign exchange rate market.	**Slightly Negative -1**

Additional Assessment Rationale

Sovereign debt crises have often been associated with a currency collapse and financial crisis due to inappropriate exchange rate policies that have failed to adjust to shocks and/or are inconsistent with other economic policies. Although a fixed exchange rate regime may be the optimal arrangement for countries with certain characteristics, the experience of economic and sovereign debt crises since the mid-1990s suggests that fixed and pegged exchange-rate regimes can be especially damaging to the economy and sovereign creditworthiness. We assign the score of 0 when the country exchange rate regime is: Managed float, crawling pegs, crawl-like arrangements, floating with a short track record or challenged by the effect of interest rates on capital flows, soft pegs other than conventional pegs and country with intermittent intervention in foreign exchange market. Exchange-rate regime definitions come from the IMF System Annual Report on Exchange Arrangements And Exchange Restrictions.

Net Foreign Assets (NFAs) Position			
Score Scale	**Positive Assessment Rationale**	**Negative Assessment Rationale**	**Score Scale**
Highly Positive +2	The country is in a creditor position (*i.e.*, positive NFAs) and in an upward trend (*i.e.*, the year-on-year percentage change is positive).	The country is in a debtor position (*i.e.*, negative NFAs) and in a downward trend (*i.e.*, the year-on-year percentage change is negative).	**Highly Negative -2**
Slightly Positive +1	The country is in a creditor position (*i.e.*, positive NFAs) and in a downward trend (*i.e.*, the year-on-year percentage change is negative).	The country is in a debtor position (*i.e.*, negative NFAs) and in an upward trend (*i.e.*, the year-on-year percentage change is positive).	**Slightly Negative -1**

Additional Assessment Rationale

The NFAs account for the country's financial position with respect to the rest of the world. The NFAs position is defined as the international reserves of the central bank and foreign assets (*i.e.*, public and private debt and equity) of the country less public and private gross external liabilities, expressed as a percentage of GDP. A country in a creditor position (*i.e.*, positive NFAs) has a greater level of external flexibility than a country in a debtor position (*i.e.*, negative NFAs). Regarding euro area countries, a special attention should be paid on imbalances within Eurosystem. This will be monitored through evolution of TARGET 2 analysis.

Given the reserve currency nature of the US dollar, the debtor position of the US is not considered as a negative factor regarding the country's creditworthiness.

E. SUPRANATIONAL MONETARY AUTHORITIES

As stated at the beginning of this document, monetary authorities such as central banks generally benefit from the same rating as the sovereign to which they are attached. However, the specific cases of supranational monetary authorities require to take into account the rating of several sovereigns. These entities which are linked to multiple sovereigns, as for instance the European Central Bank, are rated at a level between the member state with the highest rating and the average rating of the entire area weighted by the share of GDP of each country that are under the jurisdiction of the supranational monetary authority. The determination of the rating within this range is based on a qualitative assessment of the credibility of the central bank's monetary policy.

RELATED CRITERIA AND RESEARCH

Criteria:

- "Beyond Ratings – Rating Definitions", March 2019.

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