UNISDR
The United Nations Office for Disaster Risk Reduction

GAR
Global Assessment Report on Disaster Risk Reduction
2013

Briefing Paper prepared for the Global Assessment Report on Disaster Risk Reduction 2013

The EIU Methodology

EIU (Economist Intelligence Unit)

Geneva, Switzerland, 2013

OVERVIEW

The operational risk model provides a standard framework for the analysis provided on Risk Briefing, a service designed by the Economist Intelligence Unit to help executives manage international business risks. It quantifies the risks to business profitability in each of the countries covered by the service. In these assessments the Economist Intelligence Unit takes into account present conditions and our expectations for the coming two years.

Twenty-four additional indices, in which indicators are weighted to reflect the concerns of a range of investors covering seven industrial sectors, provide more targeted risk assessments.

STRUCTURE OF THE MODEL

The operational risk model considers ten separate risk criteria:

- security
- political stability
- government effectiveness
- the legal and regulatory environment
- macroeconomic risks
- foreign trade and payments issues
- labour markets
- financial risks
- tax policy
- the standard of local infrastructure

In considering each of these criteria, we examine a number of indicators. There are 66 in all, but the number of risk indicators in each category ranges from four (tax policy) to ten (legal and regulatory). The Economist Intelligence Unit assesses each of the 66 indicators over a forecast horizon of two-calendar years.

MEASUREMENT

We assess the ten criteria on a scale of 0-100, with 0 indicating very little risk to business profitability and 100 indicating very high risk. Each of the 66 indicators within the main criteria is scored on a scale from 0 (very little risk) to 4 (very high risk). Each indicator is given the same weight within its category in the standard scores, and the overall assessment is a simple average of the scores for the ten categories. In addition, separate ratings are available for 24 sub-sectors from seven industries, in which the weightings and overall assessment are adjusted to reflect the particular concerns of that sub-sector.

None of the 180 countries assessed earns a score of 0 or 100. This reflects the fact that risks are present even in the least risky countries and that even at the other end of the scale the risks could yet increase.

QUANTITATIVE VERSUS QUALITATIVE FACTORS

As the product looks forward and as we forecast future risk rather than simply extrapolate present trends into the future, qualitative indicators (e.g. the risk that capital controls will be applied in time of crisis), rather than quantitative, dominate the model. Even so, almost half of the indicators are based on quantitative data (e.g. crime statistics), and are mostly drawn from recognised national and international statistical sources. The comparability of the qualitative assessments is made more rigorous by the extensive guidance provided to analysts on each indicator, the ability of analysts constantly to view the scoring for other countries and oversight by the Risk Briefing regional heads.

RESOURCES

Ultimately, the ratings and scores for the operational risk model are driven by the expert opinion of our analysts working in regional teams. These analysts have a wide range of open and closed sources at their disposal. One of the main closed sources is our network of in-country experts who provide detailed, regular information on conditions within a country. The business operating risk model also draws on the existing analytic work already developed at the Economist Intelligence Unit through its Country Risk Model (available through the Country Risk Service) and business environment rankings model (available through the Country Forecasts).

The use of open sources is extensive and includes country-specific sources such as central bank reports, statistical yearbooks and country websites. International open sources include publications from the UN, CIA, IMF, World Bank, Heritage Foundation, International Institute for Management Development, International Labour Organisation, US Social Security Administration, World Economic Forum, Interpol and the US Commerce Department.

DESCRIPTION OF THE RISK BRIEFING CATEGORIES

This section outlines briefly what each risk category addresses:

Security risk - is the physical environment sufficiently secure?

Political stability risk - what is the degree to which political institutions are sufficiently stable to support the needs of businesses and investors?

Government effectiveness risk - does the political culture foster the ability of business to operate effectively?

Legal & regulatory risk – what is the risk that the legal system will fail to safeguard investment?

Macroeconomic risk - is the economy stable and predictable?

Foreign trade & payments risk - what are the risks to getting inputs/money into or out of country?

Financial risk – to what extent do financial markets provide adequate support and what is the risk that financial instability could disrupt business operations?

Tax policy risk - are taxes low, predictable and transparent?

Labour market risk – to what degree are labour market factors likely to disrupt business operations?

Infrastructure risk – what is the risk that infrastructure deficiencies will cause a loss of income?

RISK SCENARIOS

For 120 of the 180 countries covered by Risk Briefing, the operational risk scores and ratings are supplemented by brief articles pinpointing the most important threats to business operations. There are at least two and as many as four risk scenarios for each of the ten risk categories covered by the service.

Risk Briefing's risk scenarios describe potential developments that might substantially change the business operating environment over the coming two years. The items analyse the drivers and inhibitors, provide the context and potential timing of events and occasionally conclude with recommended action.

Scenarios are evaluated according to the probability of their occurrence and the potential impact on business profitability should they occur. Probability and impact judgements are made on a five-point scale. The product of these two indicators, in a range of 1 to 25, is presented as a scenario's risk intensity score. Scenarios are presented in a country watchlist, headed with a table that can be ranked by impact, probability and intensity, and by risk category.

INDUSTRY RISK INDICES

The operational risk model also has industry sub-sector scores, which are derived by applying weightings to the 66 risk indicators comprising the basic model. The weightings were developed by the Economist Intelligence Unit's risk team and chief industry analysts, drawing on broad sectoral expertise.

Factors considered in reaching the weightings include the following:

- **How centralised is the production and supply chain?**
- **To what extent is the business intensive in labour, skills and capital?**
- **Does the business rely on cross-border trade in goods?**
- **To what extent is the business reliant on local finance?**
- **To what extent is the business reliant on the domestic market?**
- **How exposed is the business to domestic regulation and public policy?**
- **Does the business operate substantial local operations and facilities?**
- **Does a high social-political profile expose the business to reputational damage?**
- **Does the presence of senior expatriate executives render the business vulnerable to security threats?**
- **How reliant is the business on valuable intellectual property?**

Using this framework, weightings are set on a scale from 1 to 5 to reflect each indicator's importance to investors. The overall score and rating is the sum of the weighted scores of each of the indicators.

The weighting of each risk category in the overall score depends on the weightings of the indicators within it--so if security risk indicators are weighted lower on average than macroeconomic risk indicators, security risk will have a lower weighting in the overall country score. By contrast, in the standard version, each category has an equal weighting in the overall score.

As in the standard model, the scores for each risk category are expressed on a scale of 0-100. In the industry-specific models, the category scores are a weighted sum of the indicators in each category.

Industry scores are directly comparable both to each other and to Risk Briefing's standard scores and ratings.

The industry risk ratings cover 24 sub-sectors belonging to seven industries: energy, healthcare, travel and transport, technology, automotive, consumer goods and financial services.

NATURAL DISASTER RISK CONSIDERATIONS

Natural disaster risk has been omitted from the EIU's operational risk model in the past.

However, it has become increasingly apparent that companies are becoming acutely aware of the impact that natural disasters and climate change-related incidents are having on their businesses. Recent events such as the devastating tsunami in Japan and floods in Bangkok have highlighted the vulnerability of companies' supply chains, and there has been considerable demand from corporate clients for natural disaster risk to be separated out and made a particular area of focus, with equal significance to the other risk categories already within the Risk Briefing model.

In recent years, the EIU has made considerably advanced efforts to incorporate natural disaster risk within its operational risk model, and also has some experience of having done similar work as part of a custom research project, where a company commissioned a specific piece of research that looked directly at this issue when assessing operational risk in a given market for over thirty countries.

A core proposal for incorporating natural disaster risk into the EIU's operational risk model has now been accepted and we are currently looking at different sources for analysts to use in such an assessment, one of which includes for example, the Centre for Research on the Epidemiology of Disasters (CRED), a WHO collaborating body which categorises natural disasters by frequency and impact.

January handbook

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Managing editor: John Bowler *January 31st 2014*

Regulation of the Country Risk Service

The sovereign ratings of The Economist Intelligence Unit's Country Risk Service (CRS) are regulated in accordance with EU Regulation (EC) No. 1060/2009 of September 16th 2009, on credit rating agencies, as amended by Regulation (EU) No. 513/2011 of the European Parliament and of the Council of May 11th 2011 and Regulation (EU) No. 462/2013 of the European Parliament and of the Council of May 21st 2013 (hereinafter called EU Regulations).

Rating frequency

To comply with EU regulations governing unsolicited sovereign ratings, from January 1st 2014 CRS will issue new scheduled ratings no more than three times in a calendar year (January-December). The annual publishing schedule for CRS reports with updated ratings will be published in advance on The Economist Intelligence Unit's Regulatory Affairs website. As provided for by the regulations, we will publish an updated rating outside the preannounced schedule (an out-of-cycle rating) if warranted in the interests of timeliness.

Report frequency and content

For the 77 countries listed below, CRS will publish 12 reports a year. Three of these reports will contain updated ratings, updated text and tables, additional text analysing the five rating categories (sovereign, currency, banking sector, political risk, economic structure) and sections on the external financing requirement and external debt. The other nine reports will affirm the most recent ratings and contain updated text and tables.

Algeria
Angola
Argentina
Australia
Azerbaijan
Bahrain
Bangladesh
Bolivia
Bosnia and Hercegovina
Brazil
Bulgaria
Cambodia
Chile
China
Colombia
Costa Rica
Croatia
Cuba
Czech Republic
Dominican Republic
Ecuador
Egypt
Ghana
Guatemala
Hong Kong
Hungary
India
Indonesia
Iran
Iraq
Israel
Jamaica
Jordan
Kazakhstan
Kenya
Kuwait
Lebanon
Libya
Macedonia
Malaysia
Mexico
Morocco
Mozambique
Myanmar
New Zealand
Nicaragua
Nigeria
Oman
Pakistan
Panama
Papua New Guinea
Peru
Philippines
Poland
Qatar
Romania
Russia
Saudi Arabia
Serbia
Singapore
Slovakia
South Africa
South Korea
Sri Lanka
Sudan
Syria
Taiwan
Tanzania
Thailand
Tunisia
Turkey
Uganda
Ukraine
United Arab Emirates
Venezuela
Vietnam
Zambia

For the 23 countries listed below, CRS will publish four reports a year. Three of these reports will contain updated ratings, updated text and tables, additional text analysing the five rating categories (sovereign, currency, banking sector, political risk, economic structure) and sections on the external financing requirement and external debt. The other report will affirm the most recent ratings and contain updated text and tables.

Botswana
Cameroon
Côte d'Ivoire
El Salvador
Equatorial Guinea
Estonia
Ethiopia
Gabon
Honduras
Latvia
Lithuania
Malawi
Mauritius
Moldova
Namibia
Paraguay
Senegal
Slovenia
Trinidad and Tobago
Uruguay
Uzbekistan
Yemen
Zimbabwe

For the 28 countries listed below, CRS will publish four reports a year. Three of these reports will contain updated ratings, updated text and tables. The other report will affirm the most recent ratings and contain updated text and tables.

Albania
Austria
Belarus
Belgium
Canada
Congo (Brazzaville)
Cyprus
Denmark
Democratic Republic of Congo
Finland
France
Germany
Greece
Ireland
Italy
Japan
Mongolia
Netherlands
Norway
Portugal
Seychelles
Sierra Leone
Spain
Sweden
Switzerland
Turkmenistan
United Kingdom
US

The *Risk Ratings Review* is produced 12 times every year. It provides an updated list of the ratings (sovereign, currency, banking sector, political, economic structure and country risk) of all countries covered in the standard CRS subscription service. Countries whose ratings have changed in the previous month are identified, with supporting analysis. There is a Watchlist of countries that warrant monitoring owing to important political and economic developments.

Guide to the CRS ratings model

Objective

The CRS publishes comparable and regularly updated country credit risk ratings. The ratings provide an objective assessment of the risks facing institutions lending money, financing trade or conducting other types of business that expose them to crossborder credit or financial risk.

Risk categories and definitions

The CRS publishes scores and ratings for six risk categories (sovereign risk, currency risk, banking sector risk, political risk, economic structure risk and country risk). The scores and ratings for these risk categories are informed by a range of variables divided into five sections: politics/institutions; economic policy; economic structure; the economic cycle; and liquidity and financing.

Sovereign risk measures the risk of a build-up in arrears of principal and/or interest on foreign- and/or local-currency debt that is the direct obligation of the sovereign or guaranteed by the sovereign. The sovereign risk rating is informed by scores for a combination of political, policy, cyclical and structural variables.

Currency risk measures the risk of a maxi-devaluation against the reference currency (usually the US dollar, sometimes the euro). A maxi-devaluation is considered a devaluation of 25% or more in nominal terms over the next 12-month period. The currency risk rating is informed by scores for a combination of political, policy, cyclical and structural variables.

Banking sector risk gauges the risk of a systemic crisis whereby bank(s) holding 10% or more of total bank assets become insolvent and unable to discharge their obligations to depositors and/or creditors. A banking crisis is deemed to occur even if governments restore solvency through large bail-outs and/or nationalisation. A run on banks facing a temporary lack of liquidity rather than underlying solvency problems is not deemed to constitute a crisis, provided that public confidence in the banking system is quickly restored. Banking crises are typically associated with payment difficulties in the corporate or household sectors; bursting of asset price bubbles; and currency and/or maturity mismatches. The rating can therefore serve as a proxy for the risk of a systemic crisis in the private sector. The banking sector risk rating is informed by scores for a combination of political, policy, cyclical and structural variables.

Political risk evaluates a range of political factors relating to political stability and effectiveness that could affect a country's ability and/or commitment to service its debt obligations and/or cause turbulence in the foreign-exchange market. The political risk rating informs the ratings for sovereign risk, currency risk and banking sector risk.

Economic structure risk is derived from a series of macroeconomic variables of a structural rather than a cyclical nature. Consequently, the rating for economic structure risk will tend to be relatively stable, evolving in line with structural changes in the economy. The economic structure risk rating informs the ratings for sovereign risk, currency risk and banking sector risk.

Overall country risk is derived by taking a simple average of the scores for sovereign risk, currency risk and banking sector risk.

Rating model characteristics and structure

The model is of the signalling variety, providing "point-in-time" rather than "through-the-cycle" ratings. It works on a rolling 12-month time horizon. This approach enables us to estimate a probability of default (PD) on sovereign debt during the following 12 months. The PD is estimated on the basis of the default experience associated with each score and rating band during a test period (1997-2005).

A point-in-time approach is consistent with the design of the model, which comprises a number of indicators that fluctuate with the economic cycle, such as GDP growth, inflation, credit growth and the fiscal balance.

The model comprises 61 indicators and is divided into five sections: politics/institutions; economic policy; economic structure; the economic cycle; and financing and liquidity. The number of indicators in each section varies but is at least ten.

The model contains two types of indicator: qualitative and quantitative. Of the 61 indicators in the model, 30 are quantitative and 31 are qualitative. For each indicator (with the exception of indicator 61) there is a menu of five possible scores, ranging from 0 (least risky) to 4 (most risky).

Qualitative indicators are scored in accordance with the judgment of the country analyst. The answers to the qualitative indicators are checked by secondary analysts to ensure consistent assessment across countries.

Quantitative indicators are scored on the basis of regularly updated macroeconomic and financial data. The data are drawn from a variety of sources, including the IMF, the World Bank, the OECD and national sources. A list of standard sources is published on page 15.

We use a combination of monthly, quarterly and annual data, drawing on higher-frequency data where available, for example consumer prices, foreign-exchange reserves and exchange rates.

In the case of annual data, we construct moving averages to estimate values in the current quarter. For example, when we run the model in the first quarter of year T, our estimate of the external debt stock is a weighted average of the stock at the end of year T-1 (75%) and our estimate of the stock at the end of year T (25%). When we run the model in the second quarter of year T, our weights change to T-1 (50%) and year T (50%).

The scores for the quantitative indicators are generated automatically by applying thresholds to the data. For example, the score for the indicator relating to the fiscal balance in the latest 12-month period ranges from 0 for countries running surpluses or a balanced budget to 4 for countries where the deficit exceeds 5% of GDP.

Indicators 1 and 61 are conceptually different from other indicators in the model in that they do not address specific, identified risk factors but are general in nature. They are intended to be used sparingly and require explanatory annotation by the analyst.

Indicator 1 provides scope for the analyst to express a degree of confidence about the baseline assumptions underlying the model. The default option is that the baseline assumptions appear safe. If the analyst wishes to qualify the level of confidence about the baseline assumptions and changes the default score by one point (for example, from 1 to 2), this will affect the answers to five quantitative indicators in the model (indicators 16, 36, 42, 45, 49, 51), pulling down their respective scores by a single point, provided that they are not already scoring the maximum of 4.

Indicator 61 is an adjustment factor. Analysts can use the adjustment factor to improve or worsen the score of any of the five risk categories if they deem that the model fails to capture a fundamental factor affecting a country's creditworthiness. For example, if a sovereign wealth fund holds assets that are not captured by foreign-exchange reserves data and that could be liquidated to meet debt-service commitments, analysts can use the adjustment factor to make an improvement to the sovereign score.

The scores and ratings for sovereign, currency and banking sector risk are determined by a weighted combination of the scores of indicators in the five different sections of the model. For example, indicators relating to the government's commitment to pay, the public debt/GDP ratio and the fiscal balance in the current year have heavy weightings for sovereign risk, whereas indicators relating to the real effective exchange rate, the current account of the balance of payments and the real interest rate have heavy weightings for currency risk.

In the case of political risk and economic structure risk, the scores and ratings are determined by a weighted combination of the scores in the relevant section of the model. The political risk rating is informed solely by indicators grouped under politics/institutions (indicators 2-11). The economic structure risk rating is informed solely by indicators grouped under economic structure (indicators 23-32).

Versions of the rating model

There are three versions of the model: a standard version (used for emerging markets and some developed economies such as South Korea); an industrialised country model; and a variant of the industrialised country model for countries in the euro area. The euro area model has the same quantitative thresholds and weights as the developed country model but in the text of some indicators identifies risks specifically related to membership of the single currency.

Ideally, a single model would have served for all countries. But we decided that different models were needed to reflect the fact that emerging markets have traditionally faced constraints on borrowing beyond the short term in their own currencies. They accordingly tend to have relatively high amounts of foreign-currency debt, which leaves their debt dynamics sensitive to devaluations. By contrast, developed countries typically have fluid access to financing in their own currencies, which insulates their debt dynamics from devaluations.

Indicators in the standard model

Indicators in the standard model are listed below.

1. Risk to baseline assumptions

Politics/institutions

2. External conflict
3. Governability/social unrest
4. Electoral cycle
5. Orderly transfers
6. Event risk
7. Sovereignty risk
8. Institutional effectiveness
9. Corruption
10. Corruption in the banking sector
11. Commitment to pay

Economic policy

12. Quality of policymaking/policy mix
13. Monetary stability
14. Use of indirect instruments
15. Real interest rates
16. Fiscal balance/GDP
17. Fiscal policy flexibility
18. Transparency of public finances
19. Domestic debt
20. Unfunded pension & healthcare liabilities
21. Exchange-rate regime
22. Black-market/dual exchange rate

Economic structure

23. Income level
24. Official data (quality/timeliness)
25. Current-account balance, 48 months
26. Volatility of GDP growth
27. Reliance on a single goods export
28. External shock/contagion
29. Public debt/GDP
30. Gross external debt/GDP
31. Default history
32. Financial regulation & supervision

Macroeconomy/cyclical

33. Real OECD GDP growth
34. Credit as % of GDP, growth
35. Real GDP growth, 48 months
36. Real GDP growth, 12 months
37. Inflation, 48 months
38. Inflation, direction
39. Trade-weighted real exchange rate
40. Exchange-rate misalignment
41. Exchange-rate volatility
42. Export receipts growth, 12 months
43. Current-account balance, 12 months
44. Asset price bubble

Financing and liquidity

45. Transfer and convertibility risk
46. IMF programme
47. International financial support
48. Access to financing
49. Gross external financing requirement
50. Debt-service ratio
51. Interest due/exports
52. External short-term debt/fx reserves
53. % change, fx reserves, actual
54. Net external debt/exports
55. FDI/gross financing requirement
56. Import cover
57. OECD short-term interest rates
58. Non-performing loans
59. Banks' credit management
60. Banks' foreign asset position
61. Adjustment factor (if required)

The difference in approach between emerging markets and developed countries is chiefly found in the financing/liquidity section of the model. In the standard model this section contains a number of indicators relating to external liquidity (for example, the debt-service ratio and foreign-exchange reserves/gross external financing requirement). In the developed country and euro area models, these are replaced by liquidity indicators relating to the public sector (for example, the term structure of the public debt market and the public sector's gross financing needs).

Indicators in the developed country model

The differences between the indicators in the developed country model and the standard model are listed below:

19. Primary fiscal balance
30. Net external asset position
49. Public borrowing requirement
50. Public borrowing requirement trend
51. Government interest payments/revenue
52. Public debt term structure
53. Public debt currency structure
54. Public debt market liquidity
55. FDI/current-account balance
56. Government deposits/interest payments level
60. Yield curve

The euro area model is essentially the same as the developed country model, but with adjustments in the text of some of the indicators that capture any risks deriving specifically from a country's membership of economic and monetary union (EMU). For example, in the euro area model indicator 13 relating to monetary stability addresses the question of inflation convergence as follows: "Are there institutional and structural factors (liberalised product, service and labour markets) in place to underpin price stability and avert the risk of inflation and deflation within this country (as opposed to within the euro zone as a whole)?"

Indicators in the euro area model

The indicators in the euro area model are the same as those in the industrialised country model, with the following exceptions:

12. Interest rate convergence
13. Inflation convergence
46. Excessive deficit procedure
47. International financial support
48. Access to financing

All euro area countries have the same score and rating for currency risk, as these are generated by a euro area model that aggregates data from all member states of the single currency (netting out intra-euro area flows in the balance of payments).

Notwithstanding these differences, the three versions of the model have similar characteristics and structure, and the ratings are intended to be broadly comparable across all countries covered by the Country Risk Service.

Ratings bands

The rating scale runs from 0 to 100, and is divided into ten bands.

Score	0-12	9-22	19-32	29-42	39-52	49-62	59-72	69-82	79-92	89-100
Band	AAA	AA	A	BBB	BB	B	CCC	CC	C	D

To reduce the risk of frequent band changes for countries whose score is close to the cusp of two bands, there is a buffer zone encompassing scores ending with the digits 9, 0, 1 and 2 (for example, 39, 40, 41, 42). Within this zone, the analyst has discretion whether to assign the lower or higher letter grade.

Sovereign rating band characteristics

Characteristics of countries in the different sovereign rating bands are summarised as follows.

AAA Capacity and commitment to honour obligations not in question under any foreseeable circumstances.

AA Capacity and commitment to honour obligations not in question.

A Capacity and commitment to honour obligations strong.

BBB Capacity and commitment to honour obligations currently but somewhat susceptible to changes in economic climate.

BB Capacity and commitment to honour obligations currently but susceptible to changes in economic climate.

B Capacity and commitment to honour obligations currently but very susceptible to changes in economic climate.

CCC Questionable capacity and commitment to honour obligations. Patchy payment record.

CC Somewhat weak capacity and commitment to honour obligations. Patchy payment record. Likely to be in default on some obligations.

C Weak capacity and commitment to honour obligations. Patchy payment record. Likely to be in default on significant amount of obligations.

D Very weak capacity and commitment to honour obligations. Poor payment record. Currently in default on significant amount of obligations.

Since the model that generates the overall scores and ratings is large (61 indicators), the hurdle rate for achieving an AAA rating is high (scores of 0 for most of the individual indicators). This partly explains the lower number of sovereigns rated AAA by The Economist Intelligence Unit. Similarly, achieving a score in the 90s requires scores of 4 on most of the individual indicators.

Rating model specification

The specification of the model (including the wording and thresholds for each indicator) were informed by The Economist Intelligence Unit's collective experience and expertise in assessing country credit risk since the early 1980s.

To test the relevance of indicators, we conducted an analysis of past crises. Indicators were tested for significance both on their own and in combination with other indicators. This enabled us to formulate a preliminary specification of the model. As well as identifying which indicators to include, the specification encompassed the calibration of thresholds and the weight to assign to each indicator in respect of each of the five risk categories. The model specification was refined as we tested its performance against past crises. This was an iterative process. Results of the back-testing are provided below.

Back-testing the sovereign ratings

The model's sovereign ratings were back-tested for the period January 1997-December 2005.

Scores for quantitative indicators were generated from historical data. We have a fairly full set of data, which enables us to generate answers for most quantitative indicators for most countries.

Qualitative indicators are more problematic. Where qualitative indicators in our previous model (in use from January 1997 to March 2006) are the same or similar to those in the current model, we have used the scores in our database.

Where we did not have an equivalent indicator in the previous model, we either applied our current score as a constant (for indicators relating to structural characteristics of the political system or economy) or we assigned scores on the basis of a quantitative formula. For example, in indicator 59 relating to the quality of banks' credit management, we took the rate of credit expansion in the previous 24 months and set thresholds that attempt to distinguish between a healthy and a risky rate of credit growth.

Adopting these procedures for scoring the model, we back-tested the model for on a monthly basis from the start of 1997.

The sovereign risk scores recorded during the back-testing were checked against The Economist Intelligence Unit's sovereign default database (SDD). The SDD is a binary database that assigns a score of 1 to countries experiencing a sovereign default or episode of fiscal stress and a score of 0 to non-default countries.

We divided the countries into the following three categories:

- Category 1: countries that default within 12 months;
- Category 2: countries currently in default; and
- Category 3: countries currently not in default and do not default within 12 months.

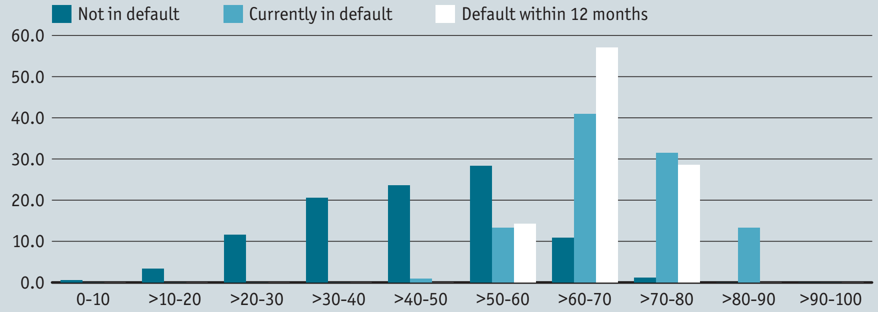
Category 1 is used to determine whether the model has predictive power in signalling a default. If the model does have predictive power, it will generate a relatively poor score for a country before the default occurs.

Category 2 encompassed the bulk of defaulters. These are serial defaulters that were already in default in January 1997, for which we therefore did not have a score 12 months prior to the default event.

For the period 1997-2005, we ran the model on a monthly basis on a dataset comprising 120 countries. We lacked data to run the model for the entire period for all countries.

The scores for the three categories of countries were compared with a view to determining whether there was a statistically significant difference between them. We found this to be the case, as shown in the following graph, which charts the distribution of scores for the three categories of sovereign described above.

Distribution of sovereign scores
(%)



Source: The Economist Intelligence Unit.

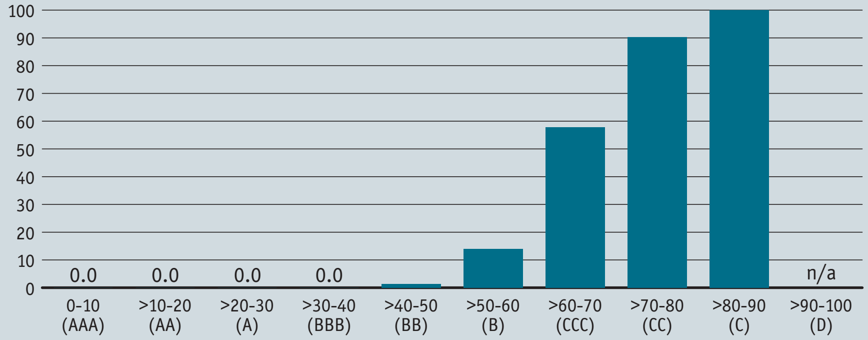
During the test period there were only seven new default events (that is, countries in Category 1). However, we had a decent number of countries currently in default (Category 2). These were serial defaulters (typically African and Latin American sovereigns) that were already in default in January 1997, the first month of the database.

We estimated a probability of default associated with each ten-point interval in the 0-100 rating scale by summing the number of countries in Category 1 and Category 2 and expressing this number as a percentage of the total incidence of scores in that range.

As the probability of default chart shows, the probability of default came out at zero up to scores in the >30-40 range, rising to 1.4% for scores in the >40-50 range, and reaching 100% in the >80-90 range.

Note that in our model-based rating system, a D rating indicates a score in the range >89-100, rather than default, which is the convention in the rating systems of the main rating agencies.

Sovereign probability of default (PD)
(average PD associated with each 10-point score range; %)



Source: The Economist Intelligence Unit.

A problem in conducting analysis of sovereign defaults is the scarcity of default events, both in absolute terms and in relative terms. By comparison, the database for corporate defaults is much more extensive, allowing a greater level of confidence about the statistical validation of any results obtained through back-testing.

The problem of low default incidence is compounded in the case of industrialised countries that—until Greece's debt restructuring in 2012—had unblemished records of servicing their debts. These countries cluster towards the less risky end of the scale. Because they have no default experience, mapping from a score to a probability of default is problematic. In other words, while a score in the range 0-10 will indicate stronger credit indicators than a score in the range 11-20, the probability of default associated with each range, based on past experience, is the same (0%).

Sovereign ratings generated by the live model

To assess the live performance of the ratings model, in terms of both accuracy and stability, we undertook the following analysis:

- analysis of the ratings of countries in the run-up to default;
- correlations between credit default swap (CDS) spreads and ratings in countries where CDS spreads are available; and
- movements between bands and transition matrices.

The period of analysis from 2006-13 encompasses three distinct phases. The period leading up to the financial crisis was characterised by one of abundant global liquidity, a rapid expansion of credit in many countries and a mispricing of risk. This gave way to a period of extreme risk aversion following the collapse of Lehman Brothers in late 2008. Since 2009 there has been a period of subdued recovery held back by deleveraging as excesses built up during the credit boom have been worked off. In this last phase, concerns about debt have become focused on the developed world, notably the euro zone where flaws in the design of monetary union have been exposed. In 2012 Greece became the first developed country to default on its debt in decades. Other euro zone member states would probably have defaulted without large official loans.

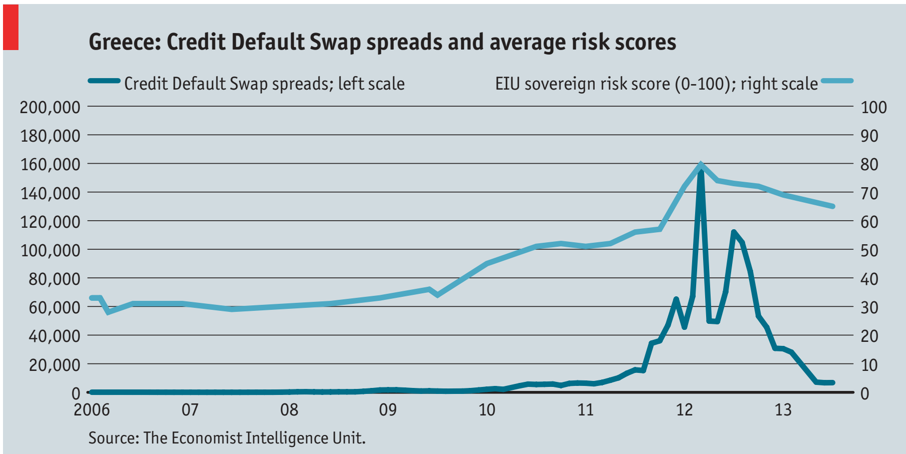
In the period 2006-13 we identified five sovereign default events in the set of countries covered by the standard CRS service: Côte d'Ivoire (April 2010), Ecuador (June 2009), Greece (March 2012), Jamaica (January 2010), Nicaragua (June 2008).

The simplest measure of the discriminatory power of the model is to take the ratings of sovereigns that have defaulted one year prior to default and compare them with the scores of sovereigns that remained free from payment difficulties. This is the approach that we adopted in backtesting the model.

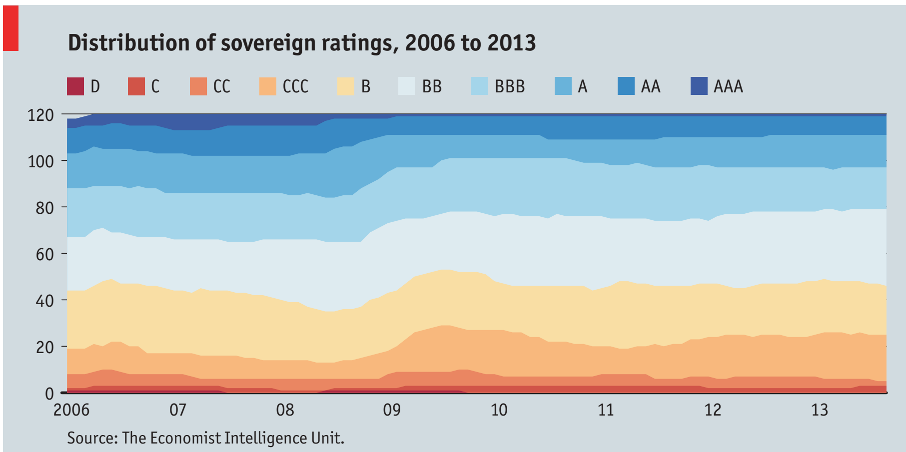
Of the five defaults, Côte d'Ivoire, Jamaica and Nicaragua were CC-rated 12 months before default, Ecuador was CCC-rated, and Greece was B-rated.

To put this in context, over the period as a whole and for all sovereigns covered by the standard CRS service, CC ratings fell into the tenth (lowest) decile, CCC ratings spanned the ninth and tenth deciles and B ratings spanned the sixth, seventh and eighth deciles. With the exception of Greece, which experienced a two-band downgrade from B to CC, there were no large changes in the scores in the run-up to the defaults.

When we compared our sovereign ratings with CDS spreads, a market measure of creditworthiness, we found evidence of a positive correlation between our sovereign scores and CDS spreads (better scores were associated with lower CDS spreads). Our analysis also suggested that the ratings had the desirable property of leading rather than lagging market movements. The correlation between ratings and CDS spreads held across the years and broadly supports an ordinal ranking in line with market perceptions of creditworthiness. It should be noted that, although broadly true, there are some exceptions where sovereigns with similar CDS spreads have different ratings grades. We will look into this and publish our findings in the future.

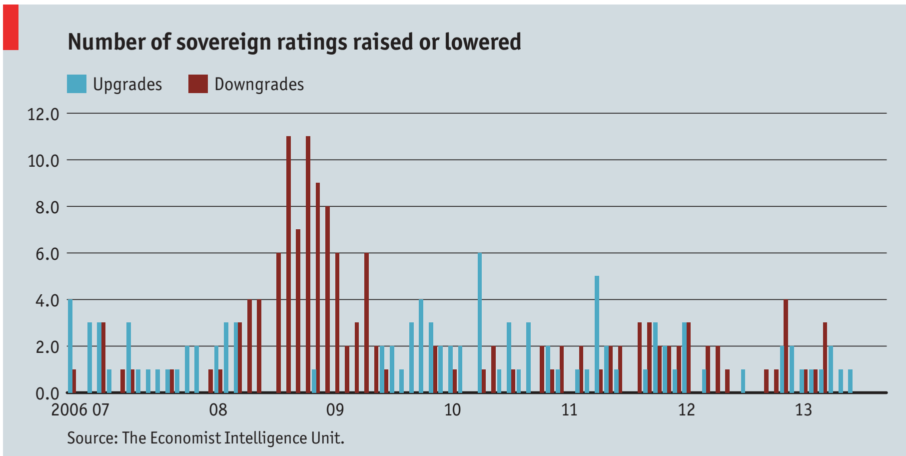


In the case of Greece, the only defaulting sovereign for which CDS data are available, the sovereign score and rating were correlated with CDS spreads. A regression of the sovereign score against the log of the CDS spread explained 80% of the variation when entered contemporaneously. The one-year lag and two-year lags are also significant when entered individually (with R-squares of 55% and 50% respectively), supporting the case that the sovereign scores/ratings lead rather than lag CDS spreads.



Stability is a valued attribute of ratings, although the point-in-time nature of The Economist Intelligence Unit's approach is inevitably less stable than through-the-cycle approaches. The number of sovereigns within each risk grade has remained broadly constant through the period 2006-13, with the exception of the AAA grade, which has shrunk markedly. The largest proportional increases are in the BB and CCC grades.

During the period, 103 upgrades were made versus 142 downgrades. Many of the downgrades start from the middle of 2008 and are concentrated within the following 12-month period.



Transition matrices provide a more formal analysis of ratings stability. The following table shows the average of annual transition matrices for the period 2006-13. Over the period the ratings exhibit a fair degree of stability. The D band is an exception, but only two countries were in this category during the period. Most band changes within a calendar year are associated with a one-band change, and the highest percentage of two-band changes within a ratings grade was less than 3%. Within the individual years, 2008 was the most volatile.

Transition matrix, average of annual transition matrices (2006-13)

Score end-period	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
Score start period										
AAA	**84.5**	15.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AA	0.0	**88.0**	11.4	0.6	0.0	0.0	0.0	0.0	0.0	0.0
A	0.0	3.6	**79.6**	14.1	2.7	0.0	0.0	0.0	0.0	0.0
BBB	0.0	0.0	3.9	**83.2**	12.9	0.0	0.0	0.0	0.0	0.0
BB	0.0	0.0	0.4	5.3	**78.9**	14.3	0.8	0.4	0.0	0.0
B	0.0	0.0	0.0	0.0	13.8	**71.4**	14.3	0.5	0.0	0.0
CCC	0.0	0.0	0.0	0.0	1.2	13.5	**81.1**	4.3	0.0	0.0
CC	0.0	0.0	0.0	0.0	0.0	0.0	24.4	**68.3**	7.3	0.0
C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.9	**81.0**	7.1
D	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	50.0	**0.0**

Standard sources

Note. Even if a series is based on an international source, national data may frequently be used to update or supplement it. All estimates and forecasts are Economist Intelligence Unit data unless otherwise indicated. All annual series relate to calendar years unless otherwise stated in the data sources and definitions page at the back of each CRS report.

Asian Development Bank	*Key Indicators of Asian and Pacific countries*
Bank for International Settlements (BIS)	*BIS Quarterly Review* *Consolidated cross-border claims of reporting banks in all currencies and local claims in non-local currencies* *External positions of reporting banks vis-à-vis individual countries*
Inter-American Development Bank	*Economic and Social Progress in Latin America*
International Energy Agency (IEA)	*Oil Market Report (oilmarketreport.org)*
International Monetary Fund (IMF)	*Balance of Payments Statistics Yearbook* *Direction of Trade Statistics (Quarterly and Yearbook)* *Global Financial Stability Report* *Government Finance Statistics Yearbook* *International Financial Statistics (Monthly)* *International Financial Statistics Yearbook and Country Notes* *World Economic Outlook*
Oil and Gas Journal	*Oil and Gas Journal*
Organisation for Economic Co-operation and Development (OECD)	*Economic Surveys* *Financial Market Trends* *Geographical Distribution of Financial Flows to Aid Recipients* *Main Economic Indicators* *Monthly Statistics of International Trade* *Quarterly National Accounts* *Statistics of Foreign Trade Series A and B*
Petroleum Economist	*Petroleum Economist (www.petroleum-economist.com)*
United Nations (UN)	*Demographic Yearbook* *FAO Statistical Yearbook* *Human Development Report* *International Trade Statistics Yearbook* *Monthly Bulletin of Statistics* *National Accounts Statistics* *Statistical Yearbook*
World Bank	*International Debt Statistics* *World Development Report* *World Development Indicators* *Global Economic Prospects*

Definitions

The list of definitions below follows the same order as that in the back tables of CRS reports.

Key risk indicators

Single goods export dependence Largest single goods export (2-digit SITC code) as a percentage of total goods exports.

Gross public debt/GDP Gross public debt as a percentage of GDP.

Gross external debt/GDP Gross external debt as a percentage of GDP.

Interest & principal arrears Interest & principal arrears on external debt as a percentage of external debt.

Net external debt/exports Gross external debt net of foreign-exchange reserves as a percentage of exports.

Primary fiscal balance Primary fiscal balance as a percentage of GDP required to stabilise the public debt/GDP ratio in the current calendar year. This is calculated on the basis of the actual or estimate of the public debt/GDP ratio at the end of the previous year and The Economist Intelligence Unit forecasts for nominal GDP growth and nominal interest rates in the current year.

Gross external financing requirement Foreign-exchange reserves as a percentage of the gross external financing requirement (medium- and long-term principal repayments due on external debt, plus short-term external debt due, minus the current-account balance). Note: a current-account surplus reduces the gross external financing requirement. A gross external financing surplus (that is, a current-account surplus that is greater than the sum of repayments due on short-, medium- and long-term external debt) is indicated by a negative sign for this ratio.

External short-term debt Foreign-exchange reserves (excluding gold) as a percentage of external short-term debt over the last 12 months.

Foreign-exchange reserves Change in foreign-exchange reserves (excluding gold) over the last six months.

Banks' net foreign asset position Banks' net foreign asset position as a percentage of total foreign assets.

Bank credit to private sector/GDP Change in bank credit to private sector as a percentage of GDP over the last 36 months (expressed in percentage points).

Equity market Change in the equity market index over the last 24 months.

Average real money-market interest rates Average real money-market interest rates over the last 12 months.

Fiscal balance/GDP Fiscal balance as a percentage of GDP over the last 12 months.

Interest payments on public debt Interest payments due on public debt as a percentage of government revenue over the last 12 months.

US$ export receipt growth US$ export receipt growth over the last 12 months.

Current-account balance/GDP Current-account balance as a percentage of GDP over the last 12 months.

Debt service due/exports Debt service due on external debt as a percentage of exports of goods, non-factor services, income and workers' remittances over the last 12 months.

Interest due/exports Interest payments due on external debt as a percentage of exports of goods, non-factor services, income and workers' remittances over the last 12 months.

Average import cover (months) Total foreign-exchange reserves (including gold) divided by imports of goods and non-factor services over the last 12 months.

Banks' loan-deposit spread (percentage points) Banks' average loan-deposit spread (percentage points) over the last 12 months.

Change in bank credit to private sector Change in bank credit to private sector over the last 12 months.

Change in total credit to private sector Change in total credit to private sector over the last 12 months.

Average current-account balance/GDP Average annual current-account balance as a percentage of GDP over the last 48 months.

Average GDP growth Average annual GDP growth over the last 48 months.

Average inflation rate Average annual consumer price inflation rate over the last 48 months.

Change in real trade-weighted exchange rate Change in the real trade-weighted exchange rate over the last 48 months.

The rating grade peer group is based on the sovereign rating. Median rather than mean values are calculated for each of the peer groups in order to reduce the impact of outliers. For some indicators in the form of ratios (such as foreign-exchange reserves/gross external financing requirement), the denominator may be close to zero, which will generate high values.

Data points in the table are either actuals or estimates. Actuals are typically used for monthly data series, such as monetary aggregates, interest rates, consumer prices and foreign-exchange reserves. Estimates are used for annual data and are calculated on a rolling quarterly basis. For example, in first-quarter reports, the estimate is based on a 25% weighting for the current year and a 75% weighting for the previous year. In second-quarter reports, the weighting changes to 50% for the current year and 50% for the previous year.

Quarterly indicators

Exchange rate (average) National currency per US dollar, period average. Standard source: IMF, *International Financial Statistics (IFS).*

Exchange rate (end-period)	National currency per US dollar, end-quarter. Standard source: *IFS*.
Consumer prices (average)	Percentage change in consumer price index (three-month average) compared with year-earlier period. Standard sources: *IFS*; national statistics.
Money supply M1	Percentage change in total supply of notes and coins plus demand deposits at end-quarter compared with year-earlier period. Standard sources: *IFS*; national statistics.
Money supply M2	Percentage change in M1 plus quasi-money at end-quarter compared with year-earlier period. Standard sources: *IFS*; national statistics.
Industrial production	Percentage change in real output from mining, manufacturing, construction and utilities compared with year-earlier quarter. Standard sources: World Bank, *World Tables* (*WT*); OECD, *Quarterly National Accounts* (*QNA*); UN, *National Accounts Statistics* (*NAS*); national statistics.
Real GDP	Percentage change in GDP at constant market prices compared with year-earlier quarter. Standard sources: *IFS; WT*; national statistics.
Petroleum production	Average barrels/day ('000). Standard sources: International Energy Agency (IEA), *Monthly Oil Market Report*; *Oil and Gas Journal*; *Petroleum Economist*.
Budget revenue	General or central government receipts. Standard sources: IMF, *IFS*; *Government Finance Statistics Yearbook (GFSY)*; national statistics.
Budget expenditure	General or central government outlays. Standard sources: *IFS*; *GFSY*; national statistics.
Budget balance	General or central government revenue minus expenditure. Standard sources: *IFS*; *GFSY*; national statistics.
Primary budget balance	General or central government revenue minus expenditure net of interest charges. Standard sources: *GFSY;* national statistics.
Public debt	Gross public debt. Standard sources: *IFS*; national statistics.
Public debt by residence	Public debt held by national and foreign residents. Standard sources: *IFS*; national statistics.
Public debt by currency	Public debt denominated in national and foreign currency. Standard sources: *IFS*; national statistics.
Goods: exports	Exports of goods, US$, free-on-board (fob) basis, US$. Standard source: *IFS*.
Goods: imports	Imports of goods, US$, free-on-board (fob) basis, or cost, insurance, freight (cif) basis, US$. Standard source: *IFS*.

Trade balance	Merchandise exports less merchandise imports, US$. Standard source: *IFS*.
Current-account balance	Trade balance, plus net services, plus net income, plus net current transfers, US$. Standard source: *IFS*.
Inward direct investment	Net flows of direct investment capital into the country, US$. Standard source: *IFS*.
Total reserves	Total reserves, including foreign exchange, gold, reserve position with the IMF and Special Drawing Rights (SDRs) at end-quarter, US$. Standard source: *IFS*.
Foreign-exchange reserves	Reserves (less gold), including foreign exchange, reserve position with the IMF and Special Drawing Rights (SDRs) at end-quarter, US$. Standard source: *IFS*.
Gold, national valuation	Gold reserves (national valuation) at end-quarter, US$. Standard source: *IFS*.
External assets with BIS banks	External assets with BIS-reporting banks vis-à-vis all sectors, at end-quarter, US$. Standard source: Bank for International Settlements (BIS), *External positions of reporting banks vis-à-vis individual countries*.
External liabilities to BIS banks	External liabilities owed to BIS-reporting banks vis-à-vis all sectors, at end quarter, US$. Standard source: BIS, *External positions of reporting banks vis-à-vis individual countries*.
Short-term liabilities to BIS banks	Consolidated crossborder claims in all currencies and local claims in local currencies of up to and including one year, US$. Standard source: BIS, *Consolidated claims of reporting banks on individual countries*.
Commercial banks' foreign assets	Foreign assets held by domestic commercial banks at end-quarter, US$. Standard source: *IFS*.
Commercial banks' foreign liabilities	Foreign liabilities of domestic commercial banks at year-end, US$. Standard source: *IFS*.
Commercial banks' net foreign assets	Foreign assets held by domestic commercial banks less their foreign liabilities at year-end, US$. Standard source: *IFS*.
Commercial banks' claims on public sector	Commercial bank's claims on the public sector, at end-quarter, local currency. Standard source: *IFS*.
Commercial banks' claims on private sector	Commercial bank's claims on the private sector, at end-quarter, local currency. Standard source: *IFS*.
Lending interest rate	Commercial banks' average lending rates, usually on short- and medium-term loans. Standard sources: *IFS*; national statistics.
Deposit interest rate	Commercial banks' deposit rates, for demand, time or savings deposits. Standard sources: *IFS*; national statistics.

Economic structure

Nominal GDP
Gross domestic product (GDP) at current market prices, in national currency units and US$. Standard sources: IMF, *International Financial Statistics (IFS)*; World Bank, *World Development Indicators* (*WDI*); national statistics.

Real GDP
GDP at constant market prices, in national currency units. Standard sources: *IFS*; *WDI*; national statistics.

Real GDP growth
Percentage change in real GDP compared with previous year. Standard sources: *IFS*; *WDI*; national statistics.

Real private consumption growth
Percentage change in real private consumption expenditure compared with previous year. Standard sources: OECD, *Quarterly National Accounts* (*QNA*); UN, *National Accounts Statistics* (*NAS*); national statistics.

Real government consumption growth
Percentage change in real government consumption expenditure compared with previous year. Standard sources: *WDI*; *QNA*; *NAS*; national statistics.

Real fixed investment growth
Percentage change in real gross domestic fixed investment expenditure compared with previous year. Standard sources: *WDI*; *QNA*; *NAS*; national statistics.

Real exports of goods and services growth
Percentage change in real value of exports of goods and non-factor services expenditure over previous year. Standard sources: *WDI*; *QNA*; *NAS*; national statistics.

Real imports of goods and services growth
Percentage change in real value of imports of goods and non-factor services expenditure compared with previous year. Standard sources: *WDI*; *QNA*; *NAS*; national statistics.

Agricultural growth
Percentage change in real agricultural output, including livestock, forestry and fishing sectors, compared with previous year. Standard sources: *WDI*; *QNA*; *NAS*; national statistics.

Industrial growth
Percentage change in real output from mining, manufacturing, construction and utilities compared with previous year. Standard sources: *WDI*; *QNA*; *NAS*; national statistics.

Manufacturing growth
Percentage change in real manufacturing output compared with previous year. Standard sources: *WDI*; *QNA*; *NAS*; national statistics.

Services growth
Percentage change in real output of services sectors compared with previous year. Standard sources: *WDI*; *QNA*; *NAS*; national statistics.

Gross domestic fixed investment/GDP
Nominal gross domestic fixed investment as a percentage of nominal GDP at market prices. Standard sources: *IFS*; *WDI*; national statistics.

Exports of goods and services/GDP Exports of goods and non-factor services as a percentage of nominal GDP at market prices. Standard sources: *IFS*; national statistics.

Imports of goods and services/GDP Imports of goods and non-factor services as a percentage of nominal GDP at market prices. Standard sources: *IFS*; national statistics.

Gross national savings/investment Gross national savings as a percentage of gross domestic investment. Standard sources: *IFS*; *WDI*; national statistics.

Agriculture/GDP Agricultural output, including livestock, forestry and fishing, as a percentage of nominal GDP. Standard sources: *WDI*; *NAS*; *QNA*; national statistics.

Industry/GDP Mining, quarrying, manufacturing, construction and utilities outputs as a percentage of nominal GDP. Standard sources: *WDI*; *NAS*; *QNA*; national statistics.

Services/GDP Services sector output as a percentage of nominal GDP. Standard sources: *WDI*; *NAS*; *QNA*; national statistics.

Petroleum production Average barrels/day ('000). Standard sources: IEA, *Oil Market Report*; *Oil and Gas Journal*; *Petroleum Economist*.

Petroleum reserves Year-end proven petroleum reserves, m barrels. Standard source: *Oil and Gas Journal*.

Population Mid-year estimate of population in millions. Standard sources: *IFS*; UN, *Demographic Yearbook*; national statistics.

Population growth Population growth rate compared with previous year. Standard sources: *IFS*; *Demographic Yearbook*; national statistics.

Labour force Economically active population in millions. Standard sources: UN, *FAO Statistical Yearbook*; national statistics.

GDP per head (US$ at PPP) GDP in US dollars at purchasing power parity, divided by population.

Recorded unemployment Recorded official unemployment as a percentage of total labour force. Standard sources: OECD, *Main Economic Indicators*; International Labour Organisation (ILO), *Yearbook of Labour Statistics*; national statistics.

Public finances

Budget revenue

General or central government receipts, in nominal terms and as a percentage of GDP. Standard sources: IMF, *Government Finance Statistics Yearbook* (*GFSY*); *International Financial Statistics* (*IFS*); OECD, *Main Economic Indicators*; national statistics.

Budget expenditure

General or central government outlays, in nominal terms and as a percentage of GDP. Standard sources: *GFSY*; *IFS*; *Main Economic Indicators*; national statistics.

Budget balance

General or central government receipts minus expenditure, in nominal terms and as a percentage of GDP. Standard sources: *GFSY*; *IFS*; *Main Economic Indicators*; national statistics.

Government debt interest payments

General or central government interest payments, in nominal terms and as a percentage of GDP. Note that for some OECD countries interest payments are reported net of interest received on financial assets. Standard sources: *GFSY*; *IFS*; *Main Economic Indicators*; national statistics.

Primary budget balance

General or central government receipts minus expenditure net of interest payments, in nominal terms and as a percentage of GDP. Standard sources: *GFSY*; *IFS*; *Main Economic Indicators*; national statistics.

Public debt

Total public debt. Standard sources: national statistics; *IFS*.

Public debt by residence

Public debt broken down by residency of holder (national and foreign). Standard sources: *IFS*; national statistics.

Public debt by currency

Public debt broken down by currency denomination (national and foreign). Standard sources: *IFS*; national statistics.

Average maturity

Average maturity (years) of marketable public debt. Standard source: national statistics.

Average interest rate

Average interest rate of marketable public debt. Standard source: national statistics.

Repayments of public debt

Repayments of marketable public debt, by maturity. Short-term, up to one year; medium- and long-term, more than one year. Standard source: national statistics.

Exchange rates, interest rates and prices

Exchange rate (average)

Exchange rate of national currency against US dollar, euro and yen, period average. Standard source: IMF, *International Financial Statistics* (*IFS*).

Exchange rate (end-period)

Exchange rate of national currency against US dollar, euro and yen, end-period. Standard source: *IFS*.

Real effective exchange rate Index of real effective trade-weighted exchange rate, based on consumer prices, average.

Lending interest rate Commercial banks' average lending rates, usually on short- and medium-term loans, average. Standard sources: *IFS*; national statistics.

Deposit interest rate Commercial banks' deposit rates, for demand, time or savings deposits, average. Standard sources: *IFS*; national statistics.

Long-term bond yield Long-term bond yield, average. Standard sources: *IFS*; national statistics.

Money market interest rate Interest rate on money market securities, average. Standard sources: *IFS*; national statistics.

Money market spread over US T-bills Spread of money market securities over equivalent US Treasury bills, basis points. Standard sources: *IFS*; national statistics.

Long-term spread over money market rate Spread of long-term bond yields over money market interest rates, average. Standard sources: *IFS*; national statistics.

Real money market interest rate Real interest rate on money market securities, average. Standard sources: *IFS*; national statistics.

Real long-term bond yield Real long-term bond yield, average. Standard sources: *IFS*; national statistics.

Consumer prices (average) Percentage change in consumer price index, over previous year, average. Standard sources: *IFS*; national statistics.

Consumer prices (end-period) Percentage change in consumer price index, over previous year, end-period. Standard sources: *IFS*; national statistics.

Financial sector

Bank loans Bank loans to the private and public sector. Does not include bank holdings of bonds or other securities.

Bank deposits Total deposits held by the banking sector.

Banking assets Total assets of the banking sector.

Loans/assets Bank loans as a percentage of total bank assets.

Total lending by banking & non-banking financial sector Total lending (including loans and holdings of securities) by banking and non-banking financial sector.

Total lending to private sector Total lending (including loans and holdings of securities) by banking and non-banking financial sector to the private sector.

Total lending per head (US$) Total lending (including loans and holdings of securities) by banking and non-banking financial sector divided by population.

Total lending/GDP Total lending (including loans and holdings of securities) by banking and non-banking financial sector expressed as a percentage of GDP.

Stock of domestic credit Total domestic credit extended to public sector, private sector and financial institutions.

Domestic credit growth Percentage change in total domestic credit at year-end over previous period. Standard sources: *IFS*; national statistics.

Stock of money M1 Total stock of notes and coins plus demand deposits at year-end over previous year. Standard sources: *IFS;* national statistics.

Stock of money M2 Total stock of M1 and quasi-money at year-end over previous year. Standard sources: *IFS*; national statistics.

Stock of money M1 (% change) Percentage change in total supply of notes and coins plus demand deposits at year-end over corresponding previous period. Standard sources: IMF, *International Financial Statistics (IFS)*; national statistics.

Stock of money M2 (% change) Percentage change in M1 plus quasi-money at year-end over corresponding previous period. Standard sources: *IFS*; national statistics.

Secondary exchange rate (average) Secondary exchange rate used for specific transactions or black-market exchange rate, expressed in national currency per US dollars. Standard sources: *IFS*; national statistics.

Current account

Current-account balance Trade balance, plus net services, plus net income, plus net current transfers, US$. Standard source: IMF, *International Financial Statistics (IFS).*

Goods: exports Merchandise exports of goods, free-on-board (fob) basis, US$. Standard source: *IFS.*

Goods: imports Merchandise imports of goods, fob basis, US$. Standard source: *IFS.*

Trade balance Merchandise exports of goods less merchandise imports of goods, US$. Standard source: *IFS.*

Services: credit Payments received for services rendered to overseas residents and companies, US$. Standard source: *IFS.*

Services: debit Payments made for services rendered to domestic residents and companies, US$. Standard source: *IFS.*

Services balance Services credit less services debit, US$. Standard source: *IFS*.

Primary income: credit Payments received in respect of foreign investments, including interest, profit and dividends, plus all forms of employee compensation, US$. Standard source: *IFS*.

Compensation of employees and investment income, US$. Standard source: *IFS*.

Primary Income: debit Payments abroad in respect of foreign-owned investments in the domestic economy, including interest, profit and dividends, plus all forms of employee compensation, US$. Standard source: *IFS*.

Primary income balance Primary income credit less income debt, US$. Standard source: *IFS*.

Secondary income credit All inward current transfers, including workers' remittances, except those received to finance balance-of-payments needs, US$. Standard source: *IFS*.

Workers' remittances Repatriated earnings by overseas workers, US$. Standard source: World Bank, *International Debt Statistics*.

Secondary income debit All outward current transfers paid by the reporting country, including workers' remittances and aid abroad, US$. Standard source: *IFS*.

Secondary income balance Secondary income credit less secondary income debit, US$. Standard source: *IFS*.

International liquidity

Total international reserves Foreign-exchange reserves, reserve position with the IMF, Special Drawing Rights (SDRs) and gold reserves (national valuation), at year-end, US$.

Foreign-exchange reserves Foreign-exchange reserves, reserve position with the IMF and SDRs at year-end, US$. Standard source: IMF, *International Financial Statistics (IFS)*.

Gold (national valuation) Gold reserves (national valuation) at year-end, US$. Standard source: *IFS*.

Total reserves (net of IMF credits & loans) Foreign-exchange reserves, reserve position with the IMF, SDRs and gold reserves (national valuation), net of total credits and loans outstanding to the IMF, at year-end, US$.

Commercial banks' foreign assets Foreign assets held by domestic commercial banks at year-end, US$. Standard source: *IFS*.

Commercial banks' foreign liabilities Foreign liabilities of domestic commercial banks at year-end, US$. Standard source: *IFS*.

Commercial banks' net foreign assets Foreign assets held by domestic commercial banks less their foreign liabilities at year-end, US$. Standard source: *IFS*.

Months of import cover Total reserves divided by imports of goods and non-factor services expressed in months.

Foreign payment and liquidity indicators

Current-account balance Trade balance, plus net services, plus net income, plus net current transfers, expressed as a percentage of GDP. Standard source: IMF, *International Financial Statistics (IFS).*

Trade balance Merchandise exports of goods less merchandise imports of goods, expressed as a percentage of GDP. Standard source: *IFS*.

Services balance Services credit less services debit, expressed as a percentage of GDP. Standard source: *IFS*.

Income balance Income credit less income debt, expressed as a percentage of GDP. Standard source: *IFS*.

Current transfers balance Current transfers credit less current transfers debit, expressed as a percentage of GDP. Standard source: *IFS*.

Foreign-exchange reserves/short-term debt Foreign-exchange reserves expressed as a ratio of short-term debt, at year-end. Standard sources: *IFS;* World Bank, *International Debt Statistics (IDS).*

Foreign-exchange reserves/gross external financing requirement Foreign-exchange reserves as a ratio of the gross external financing requirement (current-account balance plus principal due on public and private medium- and long-term debt and IMF debits, and short-term debt falling due in the current year, at year-end). Standard sources: *IFS*; *IDS*.

Capital flight Current-account balance plus the change in international reserves, minus the change in total external debt stock (not adjusted for the effects of cross-currency valuation changes), minus net direct investment.

External trade

Main destinations of exports Major export markets as a percentage of total exports of goods, usually on a free-on-board (fob) basis. Standard sources: IMF, *Direction of Trade Statistics (DOTS)*; national statistics.

Main origins of imports Major import suppliers as a percentage of total imports of goods, usually on a cost, insurance and freight (cif) basis. Standard sources: *DOTS*; national statistics.

Principal exports Principal merchandise exports as a percentage of total exports of goods on a fob basis. Standard source: national statistics.

Principal imports Principal import products as a percentage of total imports of goods on a cif basis. Standard source: national statistics.

Export volume of goods Percentage growth in the volume of exports of goods.

Import volume of goods Percentage growth in the volume of imports of goods.

Export prices Percentage growth in the US-dollar export price index of goods. Standard sources: *IFS*; World Bank, *World Tables* (*WT*); national statistics.

Import prices Percentage growth in the US-dollar import price index of goods. Standard sources: *IFS*; *WT*; national statistics.

Terms of trade Ratio of the export price index to the import price index (1990=100).

External financing requirement

Gross financing requirement Current-account balance plus principal due on public and private medium- and long-term debt and IMF debits, and short-term debt falling due in the current year, US$. Standard sources: IMF, *International Financial Statistics* (*IFS*); World Bank, *International Debt Statistics* (*IDS*).

Medium- and long-term repayments due (incl IMF debits) Principal repayments due on medium- and long-term debt and IMF debits due, US$. Standard sources: *IDS*; national statistics.

Short-term debt due Stock of debt of original maturities of up to one year outstanding at the end of the previous year, US$. Standard sources: *IDS*; national statistics.

Medium- and long-term debt inflows Capital inflows generating medium- and long-term debt, consisting of commercial bank loans, official guaranteed loans and external bond issues, US$. Standard source: *IDS*.

IMF credit & loans Purchases under the General Resources Account and loan disbursements, US$. Standard source: *IFS*.

Short-term borrowing Inflows of debt of original maturities of up to one year, US$. Standard sources: *IDS*; national statistics.

Net portfolio investment (net of foreign-currency bonds) Non-residents' investment in the domestic economy in financial securities of any maturity, such as corporate securities, notes, money market instruments and financial derivatives, excluding foreign-currency securities, US$. Standard sources: *IFS*; Bank for International Settlements (BIS), *BIS Quarterly Review*.

Outward portfolio investment Residents' investment in a foreign country in financial securities of any maturity, such as corporate securities, bonds, notes, money market instruments and financial derivatives, US$. Standard source: *IFS*.

Net portfolio investment Inward portfolio investment (net of foreign-currency bonds) less outward portfolio investment, US$. Standard source: *IFS*.

Net direct investment flows Net flows of direct investment into the country net of net flows of direct investment capital out of the country, US$. Standard source: *IFS*.

Inward direct investment Net flows of direct investment capital into the country, US$. Standard source: *IFS*.

Outward direct investment Net flows of direct investment capital out of the country, US$. Standard source: *IFS*.

Increase in interest arrears Increase (if any) in interest arrears, US$. Standard source: *IDS*.

Increase in principal arrears Increase (if any) in principal arrears, US$. Standard source: *IDS*.

Other capital flows (net) Balancing item. Includes exceptional financing, net errors and omissions, counterpart to valuation changes, US$.

Change in international reserves Change in the stock of international reserves at year-end, US$. Net additions to reserves are indicated by a minus sign and vice versa. Standard source: *IFS*.

Flow of export credits (net) Net change in stock of official export credits, suppliers' credits and bank credits officially guaranteed or insured by an export credit agency, US$. Standard source: *IDS*.

External debt stock

Total external debt stock Total external debt stock, comprising public and publicly guaranteed long-term debt, private non-guaranteed debt, use of IMF credit and short-term debt, at year-end, US$. Standard source: World Bank, *International Debt Statistics (IDS)*.

Public medium- and long-term debt Disbursed external debt owed by the public sector or with a public guarantee, having an original or extended maturity of more than one year, at year-end, US$. Standard source: *IDS*.

IMF debt Debt outstanding to the IMF, comprising transactions within the General Resources Account and loans provided through the poverty reduction and growth facility (PRGF) and the exogenous shocks facility (ESF), at year-end, US$. Standard source: *IDS*.

Short-term debt Disbursed external debt owed by all sectors, having an original maturity up to and including one year, including capitalised interest arrears, at year-end, US$. Standard source: *IDS*.

Interest arrears Cumulative stock of unpaid interest charges due on medium- and long-term external debt at year-end, US$. Standard source: *IDS*.

Official interest arrears Unpaid interest charges on medium- and long-term external debt at year-end owed to official creditors, US$. Standard source: *IDS*.

Private interest arrears Unpaid interest charges on medium- and long-term external debt at year-end owed to commercial creditors, US$. Standard source: *IDS*.

Total debt/exports of goods and services Total external debt stock as a percentage of exports of goods, non-factor services, income and workers' remittances, US$ m. Standard sources: *IDS*; IMF, *International Financial Statistics (IFS)*.

Total debt/GDP Total external debt at year-end as a percentage of nominal GDP.

International reserves/ total debt Total international reserves as a percentage of total external debt stock. Standard sources: *IDS*; *IFS*.

Debt per head Total external debt divided by population, US$.

Net debt Total external debt less total international reserves, US$. Standard sources: *IDS*; *IFS*.

Net debt/exports of goods and services Total external debt less total international reserves as a percentage of exports of goods, non-factor services, income and workers' remittances.

Net debt/GDP Total external debt less total international reserves as a percentage of nominal GDP.

Total medium- and long-term debt Total debt having a maturity of more than one year owed to both official and commercial creditors at year-end, US$. Standard source: *IDS*.

Official creditors Medium- and long-term debt owed to official creditors at year-end, US$. Standard source: *IDS*.

Bilateral debt Official medium- and long-term debt owed to foreign governments, notably Paris Club members of official creditors, at year-end, US$. Standard source: *IDS*.

Multilateral debt Official medium- and long-term debt owed to multilateral institutions, excluding the IMF, at year-end, US$. Standard source: *IDS*.

Private creditors Public and private debt owed to commercial creditors, US$. Standard source: *IDS*.

Export credits Stock of official export credits, suppliers' credits and bank credits officially guaranteed or insured by an export credit agency, US$. Standard source: *IDS*.

Principal arrears Cumulative stock of overdue principal repayments on medium- and long-term external debt at year-end, US$. Standard source: *IDS*.

Official principal arrears Overdue principal repayments on medium- and long-term external debt at year-end owed to official creditors, US$. Standard source: *IDS*.

Private principal arrears Overdue principal repayments on medium- and long-term external debt at year-end owed to commercial creditors, US$. Standard source: *IDS*.

Liabilities to BIS banks Consolidated crossborder claims in all currencies and local claims in local currencies, broken down by maturity, US$. Standard source: Bank for International Settlements (BIS), *Consolidated claims of reporting banks on individual countries*.

External assets with BIS banks External assets held with BIS-reporting banks vis-à-vis all sectors, at end-quarter, US$. Standard source: BIS, *External positions of reporting banks vis-à-vis individual countries*.

External liabilities to BIS banks External liabilities owed to BIS-reporting banks vis-à-vis all sectors, US$. Standard source: BIS, *External positions of reporting banks vis-à-vis individual countries*.

External debt service

Total foreign debt service Principal repayments made on medium- and long-term debt, IMF debits and interest payments made on all external debt, US$. Standard source: World Bank, *International Debt Statistics* (*IDS*).

Medium- and long-term debt service Principal repayments made, plus interest payments made on all medium- and long-term debt, but excluding IMF debits and charges, broken down by official and commercial creditor, US$. Standard source: *IDS*.

IMF debits and charges Repurchases and repayment of loans to the IMF, plus charges on loans, US$. Standard sources: IMF, *International Financial Statistics (IFS)*; *IDS*.

Short-term debt (interest only) Interest payments made on short-term debt only, US$. Standard source: *IDS*.

Debt service due Principal repayments due on medium- and long-term debt and IMF debt, plus interest payments due on all external debt, US$. Standard source: *IDS*.

Debt-service ratio, paid Total external debt service paid as a percentage of exports of goods, non-factor services, income and workers' remittances.

Debt-service ratio, due Total external debt service due as a percentage of exports of goods, non-factor services, income and workers' remittances.

Debt service paid/GDP Total external debt service paid as a percentage of nominal GDP.

Total principal repayments Principal repayments made on medium- and long-term debt and IMF debits, US$. Standard source: *IDS*.

Medium- and long-term principal repayments Principal repayments made on medium- and long-term debt, broken down by official and commercial creditors, US$. Standard source: *IDS*.

IMF debits Repurchases and repayments of loans including transactions within the General Resources Account and repayment of loans relating to the poverty reduction and growth facility (PRGF) and the exogenous shocks facility (ESF), at year-end, US$. Standard source: *IDS*.

Principal repayments due Total principal repayments due on medium- and long-term debt and IMF debt, US$. Standard source: *IDS*.

Total interest payments Total interest payments made on total external debt, US$. Standard source: *IDS*.

Medium- and long-term interest payments Interest payments made on medium- and long-term debt, broken down by official and commercial creditors, US$. Standard source: *IDS*.

IMF charges Charges on IMF credits, US$. Standard sources: *IFS*; *IDS*.

Interest on short-term debt Interest payments made on short-term debt, US$. Standard source: *IDS*.

Interest payments due Total interest payments due on all external debt, US$. Standard source: *IDS*.

Interest paid/debt service paid Total interest payments made on total external debt as a percentage of total debt service paid. Standard source: *IDS*.

Interest paid/exports of goods and services Total interest payments made on total external debt as a percentage of exports of goods, non-factor services, income and workers' remittances.

Interest due/exports of goods and services Total interest payments due on total external debt as a percentage of exports of goods, non-factor services, income and workers' remittances.

Interest paid/GDP Total interest payments made on total external debt as a percentage of nominal gross domestic product.

Effective interest rate Interest payments made on medium- and long-term debt in current year as a percentage of medium- and long-term external debt at the end of previous year expressed as a percentage.

Effective maturity (years) Total medium- and long-term debt in the previous year divided by medium- and long-term principal repayments paid for the current year expressed in years.

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Regulatory affairs – indicators and weightings for emerging markets risk model

The Economist Intelligence Unit calculates its sovereign risk scores on the basis of a weighted model comprising 60 indicators. There are two model types, one primarily for emerging markets, the other for developed markets. The indicators and weightings for the two model types are listed below.

3 February 2014

Emerging Markets Developed Markets

Indicator	Weighting (%)
Politics/Institutions	
external conflict	1.8
governability/social unrest	1.8
electoral cycle	1.8
orderly transfers	1.8
event risk	1.8
sovereignty risk	1.8
institutional effectiveness	1.8
corruption	1.8
corruption/state intervention in banks	1.8
commitment to pay	5.5
Economic policy	
quality of policymaking/policy mix	0.9
monetary stability	0.9
use of indirect instruments	0.0
real interest rates	1.8
fiscal balance/GDP	2.7
fiscal policy flexibility	1.4
transparency of public finances	2.3
domestic debt	2.3
unfunded pension and healthcare liabilities	2.3
exchange-rate regime	0.5
black-market/dual exchange rate	0.5
Economic structure	
income level	1.4
official data (quality/timeliness)	0.9
current-account balance, 48 months	0.9
volatility of GDP growth	0.5
reliance on a single goods export	0.5

external shock/contagion	2.7
public debt/GDP	7.3
gross external debt/GDP	0.9
default history	7.3
financial regulation and supervision	0.0
Macroeconomy/cyclical	
real OECD GDP growth	0.9
credit as % of GDP, growth	0.0
real GDP growth, 48 months	0.9
real GDP growth, 12 months	1.8
inflation, 48 months	1.8
inflation, direction	0.9
trade-weighted real exchange rate	0.5
exchange-rate misalignment	0.9
exchange-rate volatility	0.5
export receipts growth, 12 months	0.9
current-account balance, 12 months	1.8
asset price valuation	0.9
Financing and liquidity	
transfer and convertibility risk	3.6
IMF programme	1.8
international financial support	0.9
access to financing	3.6
gross external financing requirement	2.7
debt-service ratio	1.4
interest due/exports	1.4
foreign-exchange reserves/external short-term debt	3.6
% change, foreign-exchange reserves, actual	2.7
net external debt/exports	1.4
foreign direct investment/gross financing requirement	1.4
import cover	1.4
OECD short-term interest rates	1.8
non-performing loans	0.9
banks' credit management	0.0
banks' foreign asset position	0.0

Emerging markets

Albania

Algeria

Angola

Argentina

Australia

Azerbaijan

Bahrain

Bangladesh

Belarus

Bolivia

Bosnia and Hercegovina

Botswana

Brazil

Bulgaria

Cambodia

Cameroon

Chile

China

Columbia

Congo (Brazzaville)

Costa Rica

Côte d'Ivoire

Croatia

Cuba

Czech Republic

Democratic Republic of Congo

Dominican Republic

Ecuador

Egypt

El Salvador

Equatorial Guinea

Estonia

Ethiopia

Gabon

Ghana

Guatemala

Honduras

Hong Kong

Hungary

India

Indonesia

Iran

Iraq

Israel

Jamaica

Jordan

Kazakhstan

Kenya

Kuwait

Latvia

Lebanon

Libya

Lithuania

Macedonia

Malawi

Malaysia

Mauritius

Mexico

Moldova

Mongolia

Morocco

Mozambique

Myanmar

Namibia

New Zealand

Nicaragua

Nigeria

Oman

Pakistan

Panama

Papua New Guinea

Paraguay

Peru

Philippines

Poland

Qatar

Romania

Russia

Saudi Arabia

Senegal

Serbia

Seychelles

Sierra Leone

Singapore

Slovakia

Slovenia

South Africa

South Korea

Sri Lanka

Sudan

Syria

Taiwan

Tanzania

Thailand

Trinidad and Tobago

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Regulatory affairs – indicators and weightings for developed market risk model

The Economist Intelligence Unit calculates its sovereign risk scores on the basis of a weighted model comprising 60 indicators. There are two model types, one primarily for emerging markets, the other for developed markets. The indicators and weightings for the two model types are listed below.

3 February 2014

Emerging Markets **Developed Markets**

Indicator	Weighting (%)
Politics/Institutions	
external conflict	1.9
governability/social unrest	1.9
electoral cycle	1.9
orderly transfers	1.9
event risk	1.9
sovereignty risk	1.9
institutional effectiveness	1.9
corruption	1.9
corruption/state intervention in banks	1.9
commitment to pay	5.8
Economic policy	
quality of policymaking/policy mix	1.0
monetary stability	1.0
use of indirect instruments	0.0
real interest rates	1.9
fiscal balance/GDP	2.9
fiscal policy flexibility	1.5
transparency of public finances	2.4
primary fiscal balance	2.4
unfunded pension and healthcare liabilities	2.4
exchange-rate regime	0.5
black-market/dual exchange rate	0.5
Economic structure	
income level	1.5
official data (quality/timeliness)	1.0
current-account balance, 48 months	1.0
volatility of GDP growth	0.5
reliance on a single goods export	0.5

external shock/contagion	2.9
public debt/GDP	7.8
net external asset position	1.0
default history	7.8
financial regulation and supervision	0.0
Macroeconomy/cyclical	
real OECD GDP growth	1.0
credit as % of GDP, growth	0.0
real GDP growth, 48 months	1.0
real GDP growth, 12 months	1.9
inflation, 48 months	1.9
inflation, direction	1.0
trade-weighted real exchange rate	0.5
exchange-rate misalignment	1.0
exchange-rate volatility	0.5
export receipts growth, 12 months	1.0
current-account balance, 12 months	1.9
asset price valuation	1.0
Financing and liquidity	
transfer and convertibility risk	3.9
IMF programme	1.9
international financial support	1.0
access to financing	3.9
public borrowing requirement	1.9
public borrowing requirement trend	1.0
government interest payments/revenue	1.0
public debt term structure	1.0
public debt currency structure	1.9
public debt market liquidity	1.0
foreign direct investment/current-account balance	1.0
government deposits/interest payments	1.0
OECD short-term interest rates	1.9
non-performing loans	1.0
banks' credit management	0.0
yield curve	0.5

Developed markets

Austria

Belgium

Canada

Cyprus

Denmark

Finland

France

Germany

Greece

Ireland

Italy

Japan

Netherlands

Norway

Portugal

Spain

Sweden

Switzerland

United Kingdom

United States of America