

BOND MARKET CLASSIFICATION FRAMEWORK

Version 1.3

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1. OVERVIEW

This guideline describes the framework used to classify bond markets according to their respective levels of market development. Based on the framework presented below, countries/markets can be classified as Developed, Emerging or Frontier.

Solactive AG ('Solactive') will consider the following factors as criteria for its hard currency (USD and EUR currencies) universe in their annual market development review:

| | Developed | Emerging | Frontier |
|---|---|--|--|
| Member States of the European Union whose currency is the Euro | Member States of the European Union whose currency is the Euro | Member States of the European Union whose currency isn't the Euro | Member States of the European Union whose currency isn't the Euro |
| OR | or | | |
| Economic Development | GNI per capita Countries that fall in the top third of the World Bank Gross National Income per Capita universe | Countries that fall in the top 90% of the World Bank Gross National Income per Capita universe | Countries that don't fall in the top 90% of the World Bank Gross National Income per Capita universe |
| | Human Development Index Countries with an HDI score equal or greater than 0.70 | Countries with an HDI score equal or greater than 0.55 | or Countries with an HDI score lower than 0.55 |
| Capital Market Liquidity | Market capitalization Countries must fall into the top 55% of the FactSet universe of stocks screened by domestic market capitalization | | |
| | Average daily volume (ADV) Countries must have a minimum of 6-month ADV of USD 52.8 mm of the FactSet universe of stocks | | |
| Capital Market Structure | Short Selling Must be allowed in the country | | |
| | Capital Repatriation No capital repatriation or surrender requirements on capital transactions | | |
| | Stable economic environment Main currency of debt issuance | | |
| Existence of bond market | Sovereign rating Countries must have a sovereign rating from either S&P or Moody's | Countries must have a sovereign rating from either S&P or Moody's | Countries don't have a sovereign rating from either S&P or Moody's |
| | Bonds outstanding Countries must have any bonds outstanding currently in hard or local currency | Countries must have any bonds outstanding currently in hard or local currency | or Countries don't have any bonds outstanding currently in hard or local currency |

Moreover, the following factors will be considered as criteria for its local currency (domestic currencies different than USD or EUR) universe in their annual market development review:

| | Developed | Emerging | Frontier |
|---|---|--|--|
| Member States of the European Union whose currency is the Euro | Member States of the European Union whose currency is the Euro | Member States of the European Union whose currency isn't the Euro | Member States of the European Union whose currency isn't the Euro |
| OR | or | | |
| Economic Development | GNI per capita Countries that fall in the top third of the World Bank Gross National Income per Capita universe | Countries that fall in the top 90% of the World Bank Gross National Income per Capita universe | Countries that don't fall in the top 90% of the World Bank Gross National Income per Capita universe |
| | Human Development Index Countries with an HDI score equal or greater than 0.70 | Countries with an HDI score equal or greater than 0.55 | or Countries with an HDI score lower than 0.55 |
| Capital Market Liquidity | Market capitalization Countries must fall into the top 55% of the FactSet universe of stocks screened by domestic market capitalization | | |
| | Average daily volume (ADV) Countries must have a minimum of 6-month ADV of USD 52.8 mm of the FactSet universe of stocks | | |
| Capital Market Structure | Short Selling Must be allowed in the country | | |
| | Capital Repatriation No capital repatriation or surrender requirements on capital transactions | | |
| | Stable economic environment Main currency of debt issuance | | |
| Existence of bond market | Sovereign rating Countries must have a sovereign rating from either S&P or Moody's | Countries must have a sovereign rating from either S&P or Moody's | Countries don't have a sovereign rating from either S&P or Moody's |
| | Bonds outstanding Countries must have any bonds outstanding currently in its local currency | Countries must have any bonds outstanding currently in its local currency | or Countries don't have any bonds outstanding currently in its local currency |
| Local currency considerations | Pricing There must be pricing for local currency issues | There must be pricing for local currency issues | There isn't pricing for local currency issues |
| | Clearing At least one of the local issues of the country is cleared by Euroclear or Clearstream | At least one of the local issues of the country is cleared by Euroclear or Clearstream | or None of the local issues of the country are cleared by Euroclear or Clearstream |



All countries that do not fall into Developed or Emerging markets according to the above framework, will be considered for classification as Frontier. Countries can only be classified under one category of market development i.e. a country classified as Developed cannot be Emerging or Frontier.

Solactive reviews its Bond Market Classification on an annual basis in September. Countries that used to meet the binding criteria but that do not so at the time of the most recent annual review are considered for reclassification. Intra-annual extraordinary committee meetings will be held to respond to extraordinary events leading to a potential reclassification in between review periods.

2. CRITERIA OF BOND MARKET CLASSIFICATION

According to the present framework, a bond market will be classified automatically as developed if the country is Member State of the European Union whose currency is the Euro. Otherwise, it will be considered for either Emerging or Frontier classification.

2.1. ECONOMIC DEVELOPMENT

GNI per capita is the standard measure used by the World Bank to classify countries according to their income levels. Solactive builds on data provided by the World Bank to measure relative levels of economic development to classify bond markets.

Data source: World Bank www.worldbank.org

According to this framework a bond market will be considered as Developed if its GNI falls in the top third of the universe provided by World Bank and Emerging if its GNI falls on the top 90%. If a country fails to meet this criterion or if its GNI data is not available, it will automatically be classified as Frontier.

The Human Development Index (HDI) is a composite measure of life expectancy, level of education and economic development published annually by the United Nations Development Programme. The UN classifies 189 countries according to their HDI in Very High Human Development (1 – 0.800), High Human Development (0.700 – 0.799), Medium Human Development (0.550 – 0.699), Low Human Development (\leq 0.549).

Data source: United Nations Human Development Reports hdr.undp.org

Thus, a bond market will be considered for classification as Developed if its HDI score is equal or greater than 0.70 and Emerging if the score is equal or greater than 0.55. If the country does not fulfill this criterion or if data is not available then it will be classified as Frontier.



2.2. CAPITAL MARKET LIQUIDITY

Size and liquidity of markets are typically associated with ease of trade and market efficiency. The degree of country development tends to be associated with larger and more liquid capital markets. For this reason, Solactive calculates the market capitalization of the domestic stock exchanges by taking into account companies' primary listing. This is done in two steps. First, Solactive determines to which country a company belongs by screening their primary listing. Second, Solactive calculates the combined market cap of all companies that are part of a country. In addition, countries' liquidity is measured by 6-month Average Daily Volume (ADV). According to the above framework, as of September 2019, countries with a minimum market capitalization of USD 36.0 bn can be considered for classification as Developed.

Data source: FactSet www.factset.com

2.3. CAPITAL MARKET STRUCTURE

In the context of Developed countries that are not members of the Euro Zone, factors such as short selling and ease of capital movements are assessed in order to understand the sophistication of capital markets.

Short selling, or the possibility of selling a security that is not currently owned by the seller, is relevant for risk management practices. Short selling is associated with market efficiency and gives an indication of the level of development and flexibility of the stock market.

To check for ease of transactions in the global financial economy, the presence of capital repatriation and surrender requirements is investigated. These relate to the obligation of residents to repatriate proceeds of international capital transactions. Countries with less restrictions tend to be more integrated in the global financial economy.

Data source: International Monetary Fund, Annual Report on Exchange Arrangements and Exchange Restrictions – IMF www.imf.org

Additionally, the main currency of debt issues, whether domestic or hard currency, is taken into account, as well as the overall issuance activity. The ability to raise debt capital denominated in domestic currency is an indicator of economic stability of a country. Also, the credit rating of each country is taken into consideration in order to gain more insight into the specific economic environment.

2.4. EXISTENCE OF BOND MARKET

Credit ratings express the issuer's likelihood to fulfill its financial obligations. Moreover, for an issuer to possess a rating, different areas are evaluated to determine creditworthiness, such as: institutional environment, economics prospects, international transactions, liquidity and indebtedness, fiscal and monetary policy performance, among others.

Data source: www.spglobal.com/ratings/en/



This comprehensive analysis provides evidence of the existence of a debt market for a particular country. Consequently, if a country possesses a sovereign rating from either S&P or Moody's and it has any issues outstanding it will be considered either as Emerging or Developed (if further requirements are satisfied).

2.5. LOCAL CURRENCY CONSIDERATIONS

Additionally, for the local currency universe of Emerging bond markets, further criteria are required, in order to ensure not only the existence of issues outstanding but the tradability of the instruments in international markets.

Therefore, a country will be considered Emerging or Developed (if further requirements are satisfied) for the local currency universe if at least one of its local currency issues is priced and at least one of the local currency issues is cleared by either Euroclear or Clearstream.

2.6. EXTRAORDINARY MARKET CONDITIONS

In certain situations, the classification criteria pursuant to section 2.1 to 2.5 do not reflect the complete economic environment of a bond market (e.g. openness to foreign investors, market infrastructure, etc.) and would lead to an incomplete assessment of a bond market's classification (extraordinary market environment).

In case of an extraordinary market environment additional criteria must be considered when classifying a bond market. As this is a discretionary decision, a committee composed of staff from Solactive AG (the "Committee") is responsible for making reasonable decisions regarding the classification of a country in case an extraordinary market environment exists. Such decision will be made in accordance with the "Solactive Guideline Relating to the Exercise of Expert Judgement or Discretion", which is available on Solactive's website www.solactive.com.



3. BOND MARKET CLASSIFICATION

3.1. DEVELOPED BOND MARKETS

Developed Bond Markets

| | |
|-----------|-----------------|
| Australia | Lithuania |
| Austria | Luxembourg |
| Belgium | Malta |
| Canada | Netherlands |
| Cyprus | New Zealand |
| Denmark | Norway |
| Estonia | Poland |
| Finland | Portugal |
| France | Singapore |
| Germany | Slovak Republic |
| Greece | Slovenia |
| Hong Kong | Spain |
| Ireland | Sweden |
| Israel | Switzerland |
| Italy | United Kingdom |
| Japan | United States |
| Latvia | |



3.2. HARD CURRENCY EMERGING BOND MARKETS

Hard Currency Universe

| | | |
|--------------------|-----------------|----------------------|
| Albania | Georgia | Pakistan |
| Angola | Ghana | Panama |
| Argentina | Guatemala | Paraguay |
| Armenia | Honduras | Peru |
| Azerbaijan | Hungary | Philippines |
| Bahamas | Iceland | Qatar |
| Bahrain | India | Romania |
| Barbados | Indonesia | Saudi Arabia |
| Belarus | Iraq | Serbia |
| Belize | Jamaica | South Africa |
| Bolivia | Jordan | Sri Lanka |
| Brazil | Kazakhstan | Suriname |
| Bulgaria | Kenya | Taiwan |
| Cameroon | Korea Republic | Tajikistan |
| Chile | Kuwait | Thailand |
| China | Lebanon | Trinidad and Tobago |
| Colombia | Malaysia | Tunisia |
| Congo Republic | Maldives | Turkey |
| Costa Rica | Mauritius | Ukraine |
| Croatia | Mexico | United Arab Emirates |
| Czech Republic | Mongolia | Uruguay |
| Dominican Republic | Montenegro | Uzbekistan |
| Ecuador | Morocco | Vietnam |
| Egypt | Namibia | Zambia |
| El Salvador | North Macedonia | |
| Gabon | Oman | |



3.3. LOCAL CURRENCY EMERGING BOND MARKETS

Local Currency Universe

| | |
|--------------------|----------------|
| Argentina | Korea Republic |
| Brazil | Malaysia |
| Chile | Mexico |
| China | Peru |
| Colombia | Philippines |
| Costa Rica | Romania |
| Czech Republic | South Africa |
| Dominican Republic | Taiwan |
| Hungary | Thailand |
| Iceland | Turkey |
| Indonesia | Ukraine |
| Kazakhstan | Uruguay |

4. DISCLAIMER

In classifying countries according to common economic, financial and institutional characteristics, Solactive uses a variety of data sources as set out above. Solactive does not claim or imply that any of said data sources endorse the use of these data. Solactive does not offer any express or implicit guarantee or assurance either with regard to the classification of countries nor the accuracy of the method described herein. To the extent possible, Solactive waives any liability for reliance upon the bond market classification system and its results.

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