

BOND MARKET CLASSIFICATION FRAMEWORK

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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 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	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	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	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	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	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 of the Euro Zone. Otherwise, if a country is not member of the Euro Zone, 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, we determine to which country a company belongs by screening their primary listing. Second, we calculate 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	Oman
Angola	Ghana	Pakistan
Argentina	Guatemala	Panama
Armenia	Honduras	Paraguay
Azerbaijan	Hungary	Peru
Bahamas	Iceland	Philippines
Bahrain	India	Qatar
Barbados	Indonesia	Romania
Belarus	Iraq	Russian Federation
Belize	Jamaica	Saudi Arabia
Bolivia	Jordan	Serbia
Brazil	Kazakhstan	South Africa
Bulgaria	Kenya	Sri Lanka
Cameroon	Korea Republic	Suriname
Chile	Kuwait	Taiwan
China	Lebanon	Tajikistan
Colombia	Malaysia	Thailand
Congo Republic	Maldives	Trinidad and Tobago
Costa Rica	Mauritius	Tunisia
Croatia	Mexico	Turkey
Czech Republic	Mongolia	Ukraine
Dominican Republic	Montenegro	United Arab Emirates
Ecuador	Morocco	Uruguay
Egypt	Namibia	Uzbekistan
El Salvador	North Macedonia	Vietnam
Gabon		Zambia



3.3. LOCAL CURRENCY EMERGING BOND MARKETS

Local Currency Universe

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

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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