MSCI ESG GOVERNMENT RATINGS

Sovereign Ratings

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• Market Drivers and Use Cases
• Materiality of ESG Factors
• Product Philosophy and Framework
• Research Process and Scoring Methodology
**MARKET DRIVERS**

**ESG Integration in fixed income asset class**
- DM/EM funds
- ESG FI indexes

**Understand extra-financial risks & opportunities that may become material**

**Some specific triggers:**
- 2008 financial crisis
- Arab spring
- Corruption & political instability
- Global commodity market crash

**Understand ‘Country Risk’**
CLIENT USE CASES

Additional Data
• Country specific ESG data to inform strategy, country allocation
• Research, reports used by Sovereign analysts as supplementary data source

Bond Funds
• DM government bond fund – EU only, applies maximum allocations based on ESG rating
• EM government bond fund – Political governance scores establish eligibility
• Quantitative – optimization strategy using ESG scores

Fixed Income Indexes
• ESG ratings inform Barclays MSCI ESG Fixed Income Indices
  • Sustainability – ‘BBB’ rating minimum;
  • ESG weighted – tilt or weighting factor based on rating applied
MATERIALITY OF ESG FACTORS

Comparison of ESG and Financial Ratings
CONVERGENCE OF ESG & SOVEREIGN RATINGS

EM Credit Upgrades

Uruguay

A

B1

Panama

Baa3

Baa2

Credit Rating (Moody's)

ESG Rating (MSCI)

EM Credit Downgrades

Bahrain

A2

Baa2

South Africa

A3

Baa1

Credit Rating (Moody's)

ESG Rating (MSCI)

EUROZONE CREDIT DOWNGRADES

Eurozone - ESG = 'AA' +

0 out of 5 countries downgraded

Eurozone - ESG = 'A'

4 out of 5 countries downgraded; average credit downgrade 3 notches

Eurozone - ESG = 'BBB'

6 out of 6 countries downgraded; average credit downgrade 7 notches

Credit Rating (Moody's)
EVIDENCE THAT ESG FACTORS IMPACT SOVEREIGN RISK IN THE LONG RUN

• In 2008, eight countries in this zone
• Five countries Egypt, Italy, Portugal, Spain and Tunisia received downgrade
• Three countries China, Morocco and Singapore retained their rating

X-axis: Difference between ESG score and Credit rating score at the beginning of year 2008.

Y-axis: % of the countries receiving credit rating downgrade / upgrade during 2008-2012 (i.e. in the span of five years)

*Calculated as the difference between ESG Rating and Credit Rating on a homogenized numeric scale.
Source: Credit Ratings from Fitch Sovereign Rating History (www.fitchratings.com)
PRODUCT PHILOSOPHY AND FRAMEWORK
Our Government Ratings help investors assess the long-term competitiveness of national and sub-national economies

- Identifies **ESG risks** affecting a country’s value creation process – long-term sustainability of output and growth

- Identifies **countries with strong ESG fundamentals** that are likely to outperform in the long run

- **Differentiates** countries that are otherwise similar based on financial and fiscal characteristics

- Emphasizes **quantifiable benchmarking of performance** over qualitative assessment of policies, using a **transparent methodology**
MSCI ESG GOVERNMENT RATINGS

FEATURES
• 198 Countries + 45 Local Authorities
• Ratings, scores, raw data, reports
• Annual review and monthly monitoring
• Customization tools

Exclusions
Indexes (EM, DM, Equity, FI)
Risk monitoring
ESG integration for sovereign and government bonds
Understand country risk
### MSCI ESG SOVEREIGN RATINGS - FRAMEWORK

<table>
<thead>
<tr>
<th>Pillar</th>
<th>Risk Factor</th>
<th>Exposure sub-factor</th>
<th>Management Sub-factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental</td>
<td>Natural resource risk</td>
<td>o Energy security risk</td>
<td>o Energy resource management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o Water resources</td>
<td>o Water resource management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o Productive land and mineral resources</td>
<td>o Resource conservation</td>
</tr>
<tr>
<td></td>
<td>Environmental externalities and vulnerability risk</td>
<td>o Vulnerability to environmental events</td>
<td>o Environmental performance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o Environmental externalities</td>
<td>o Management of environmental externalities</td>
</tr>
<tr>
<td>Social</td>
<td>Human capital risk</td>
<td>o Basic human capital</td>
<td>o Basic needs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o Higher education and technology-readiness</td>
<td>o Human capital performance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o Knowledge capital</td>
<td>o Human capital infrastructure</td>
</tr>
<tr>
<td></td>
<td>Economic environment risk</td>
<td>o Economic environment</td>
<td>o Wellness</td>
</tr>
<tr>
<td>Governance</td>
<td>Financial governance risk</td>
<td>o Financial capital</td>
<td>o Financial management</td>
</tr>
<tr>
<td></td>
<td>Political governance risk</td>
<td>o Institutions</td>
<td>o Political rights and civil liberties</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o Judicial and penal system</td>
<td>o Corruption control</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o Governance effectiveness</td>
<td>o Stability and peace</td>
</tr>
</tbody>
</table>

- 1-10 underlying data points per sub-factor
- Ratings and score with 9 years of history for 198 countries/regions (99% of traded sovereign debt)
- Weight-setting tool allows clients to re-weight risk factors based on their own views
- 98 data points evaluated to compute 27 sub-factors
Online profiles, scores, and ratings for 198 Countries/regions
  - As part of Government Ratings, ESG assessment of 45 Local Authorities is also available
Sovereign Screen available for 198 countries
Data feed, bond matching for sovereign and quasi-sovereign entities
Excel scoring file with customizable weights and peer set comparisons
Raw data available on request

**KEY ESG PERFORMANCE METRICS**

<table>
<thead>
<tr>
<th>Environmental Parameters</th>
<th>Denmark</th>
<th>Global</th>
<th>N. Eur. 3</th>
<th>DM 4</th>
<th>Rating Peers ('AA' countries)</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy consumption per capita (kgoe/capita/year)</td>
<td>3,048</td>
<td>3,350</td>
<td>4,960</td>
<td>4,240</td>
<td>4,821</td>
<td>↑</td>
</tr>
<tr>
<td>Energy intensity (2011 $-ppl per kgoe)</td>
<td>14.1</td>
<td>8.9</td>
<td>10.1</td>
<td>11.1</td>
<td>10.2</td>
<td>↑</td>
</tr>
<tr>
<td>Proven fossil and nuclear fuel reserves (TJ/person)</td>
<td>0.9</td>
<td>19.2</td>
<td>2.1</td>
<td>10.2</td>
<td>17.2</td>
<td>↓</td>
</tr>
<tr>
<td>Renewable energy (% of total energy consumption)</td>
<td>8%</td>
<td>5%</td>
<td>13%</td>
<td>8%</td>
<td>10%</td>
<td>↓</td>
</tr>
</tbody>
</table>

**Social Parameters**

| Income inequality (GINI, higher => more inequality) | 26.9 | 36.8 | 30.1 | 33.7 | 30.0 | ↓ |
| Infant mortality rate (per 1000 live births) | 2.9 | 13.1 | 3.2 | 3.3 | 3.4 | ↑ |
| Life expectancy (years, at birth) | 80.3 | 75.2 | 80.8 | 81.5 | 81.5 | ↑ |
| Young and old age support ratio | 0.36 | 0.23 | 0.32 | 0.34 | 0.31 | ↑ |

**Governance Parameters**

| Public debt (% of GDP) | 46% | 58% | 56% | 81% | 50% | ↑ |
| Political governance score (out of 10) | 9.5 | 5.9 | 8.8 | 8.5 | 9.3 | ↓ |
RESEARCH PROCESS AND SCORING METHODOLOGY
RESEARCH PROCESS

1. Identify Risk Factors:
   - Determine Country Level Risk Factors & Weights

2. Exposure & Management Sub-Factors:
   - Define exposure & management sub-factors under each Risk Factor

3. Data Collection:
   - Use credible data sources e.g. UN, World Bank, IMF etc.

4. Analysis & Rating:
   - Country Scores & Ratings

5. Reality Check:
   - Ratings Review Committee Approval
Case Example: Germany

Step 1: Data point scores
- Water Withdrawal (% of internal resources): 0.0
- Water Withdrawal per capita: 6.0
- Water Stress: 6.8

Step 2: Sub-factor scores
- Water Resource Management (6%): 4.3
- Energy Resource Management (6%): 5.1
- Resource Conservation (6%): 4.8

Step 3: Risk-factor scores
- Natural Resource Risk Management (18%): 4.7
- Environmental Externalities and Vulnerability Risk Management (7%): 5.9

Step 4: Pillar scores
- Environmental Risk Management (25%): 5.1
- Social Risk Management (25%): 9.3
- Governance Risk Management (50%): 8.3

Step 5: Final scores
- ESG Risk Management: 7.7
• Local Authorities
  – German States
  – Australian States & Territories
  – Major Canadian Provinces
  – Select US States
  – Select Swiss Cantons

• Agencies

• Supranationals
  – European Community
  – European Union
  – European Financial Stability Fund
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MATERIALITY OF ESG FACTORS

Some case studies
**CONVERGENCE OF ESG & SOVEREIGN RATINGS**

### EM Credit Upgrades

- **Uruguay**
  - Credit Rating (Moody's): A
  - ESG Rating (MSCI): A

- **Panama**
  - Credit Rating (Moody's): Baa2
  - ESG Rating (MSCI): A

### EM Credit Downgrades

- **Bahrain**
  - Credit Rating (Moody's): B1
  - ESG Rating (MSCI): Baa3

- **South Africa**
  - Credit Rating (Moody's): Baa1
  - ESG Rating (MSCI): Baa3

### EUROZONE CREDIT DOWNGRADES

**Eurozone - ESG = 'AA' +**

- 0 out of 5 countries downgraded

**Eurozone - ESG = 'A'**

- 4 out of 5 countries downgraded; average credit downgrade 3 notches

**Eurozone - ESG = 'BBB'**

- 6 out of 6 countries downgraded; average credit downgrade 7 notches
POLITICAL RIGHTS AND CIVIL LIBERTIES – ECONOMIC STABILITY

Underlying Indicators
- Strength of institutions
- Press freedom
- Stability and peace
- Judicial system, rule of law
- Government effectiveness
- Corruption perception
- Control of corruption
- Political rights
- Civil liberties

Higher incidence of conflict

Political Rights and Civil Liberties

Median value (Political Rights and Civil Liberties)

Weak Political Rights and Civil Liberties

Strong Political Rights and Civil Liberties

Unemployment Rate

Median value (Unemployment Rate)

Low Unemployment Rate

High Unemployment Rate

Weak Political Rights and Civil Liberties

Strong Political Rights and Civil Liberties

Political Rights and Civil Liberties

Unemployment Rate
Analysis performed on low and lower middle income countries with high economic growth during 1990-2000.

- It is found that 7 out of 11 countries with improving political governance during 1996-2000 could sustain the high growth rates during 2000-2010 also.

- Similarly 7 out of 9 countries with deteriorating political governance witnessed fall in their average GDP growth during 2000-2010.

Horizontal Axis: Political governance score trend (between 1996 and 2000)

Vertical Axis: Change in the 10 year average GDP growth rate (2000-2010 vs. 1990-2000)
Analysis done on countries in MSCI country universe shows that countries with moderate to high income inequality have a higher level of political instability and violence.
HIGH ENERGY RESOURCE DEPLETION → UNSUSTAINABLE ECONOMIC GROWTH

**Underlying Indicators**

- Energy resources (TJ per capita)
- Energy efficiency ($/ kg oil equiv.)
- Renewable energy (%)
- Energy imports (%)
- Water resources (m³ per capita)
- Water withdrawal (%)
- Water stress (% territory)
- Productive land (ha per capita)
- Net agricultural products imports (% of GDP)
- Mineral resources (USD per capita)
- Energy resource depletion (% of GNI)
- Mineral resource depletion (% of GNI)

*difference between maximum annual GDP growth rate and minimum annual GDP growth rate during 2005-2013*
Natural wealth (USD per capita) is calculated as the sum of per capita fossil fuel, mineral and agriculture/forest wealth. Natural resource depletion is the sum of net forest depletion, energy depletion, and mineral depletion.
MSCI ESG Sovereign Ratings reflects how countries’ exposure to and management of environment, social, and governance risks could impact the value creation process, and thus the long-term sustainability of their economies.

**Value creation process (Resources – Enablers – Performance)**

**ESG risks factors facing countries**
- Natural resource risk
- Environmental externalities and vulnerability risk
- Human capital risk
- Economic environment risk
- Political governance risk
- Financial governance risk
MSCI ESG GOVERNMENT RATINGS FRAMEWORK – SIX RISK FACTORS

Natural Resources
- The risk of not having and not managing the natural resources

Environmental Vulnerability and Externalities
- The risk of a country’s resources and enabling environment being vulnerable to environmental events (e.g. infrastructure), and exposed to environmental externalities

Human Capital
- The risk of not having balanced and productive human capital

Economic Environment
- The risk of not having conducive economic environment to utilize the resources effectively

Financial Governance
- The risk of not having sufficient financial capital to manage the resources and aforementioned risks

Political Governance
- The risk of not having an effective political governance structure to manage/support value creation process

Environmental
- Energy security, water stress
- Sustainable economic growth
- Food security
- Pressure on trade balances
- Security of physical assets
- Health impacts of pollution
- Vulnerability to extreme weather events
- Biodiversity

Philippines: annual cost of typhoons 4% of GDP

China: cost of pollution >5% of GDP

Social
- Technology readiness
- Labor productivity
- Competitiveness of workforce
- Access to basic services
- Inequality - social upheaval
- Youth unemployment
- Ease of doing business & Infra
- Labor freedom and workers’ rights

South African strikes cost ~$400 million in 2012, growing in 2013

Governance
- Trade vulnerability
- Fiscal transparency and governance in resource sector
- Sustainable fiscal and external debt positions
- Costs of corruption
- Accountability of government
- Violence, political uncertainty

World Bank estimates cost of corruption at 2-4% of GDP, equivalent to 20% tax on foreign investment

Sources: MSCI ESG Research; 1 Philippines Climate Change Commissioner, 2 World Bank Environment – Asia-Pacific, 3 South African government estimates, 4 World Bank Governance Institute of Global Governance
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