Final Project

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Background

- Green, Social, and Sustainability Bonds Financial securities issued by organizations to raise funding for a portfolio of projects that are expected to generate "green" or "social" (or both!) benefits.
- Environmental Performance Index (EPI) Index provided by Yale and Columbia, ranking 180 countries on climate change performance, environmental health, and ecosystem vitality

Research question

- What is the relationship between the amount of debt funding raised through Green and Sustainability (GS) bonds and a country's EPI score?

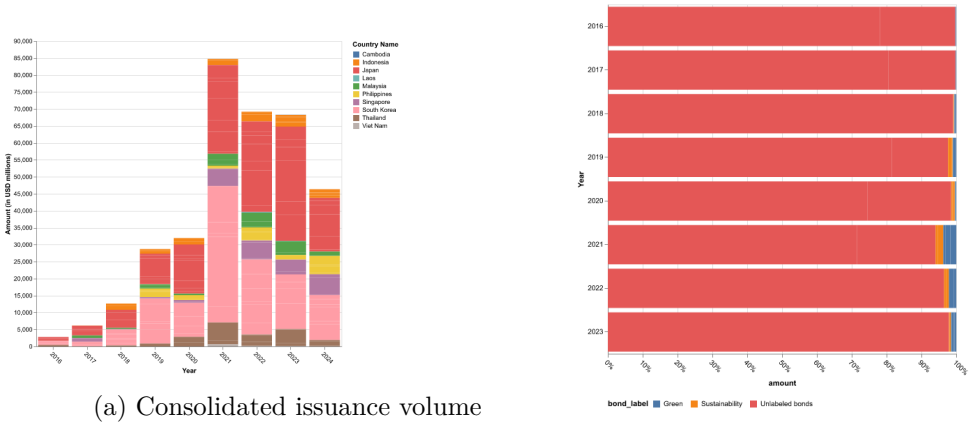
Approach

- Dataset 1: GS Bond issuances (taken from ADB AsianBondsOnline portal)
  - Contains GS bond and total local currency bond issuance volumes (USD millions)
  - Limited to ASEAN+3 economies (dropped China as outlier)
- Dataset 2: EPI (taken from Yale EPI website)
  - Contains aggregated EPI score (two-year time horizon)

Findings

1. Nominal borrowing amounts for GS bonds follow an upward trend. Dashboard shows that this trend is common to all countries within the region. While JP, SK contributes to forming the trend with large and increasing volume, other countries such as SG, ID, PH and KH generally increases the issuance based on their own size of volume. But as the borrowing mix shows, notably the rate of these GS bonds are quite small as a percentage of overall borrowing volume.

    - Possible reasons: 1)To fund projects that will help countries meet their nationally determined contributions under the Paris Agreement. 2)To explore alternative indigenous energy sources in response to a looming energy crisis exacerbated by geopolitical conflicts. 3)To take advantage of the growth of capital markets dedicated to Environment, Social, and Governance (ESG). 4)More generally, to meet higher deficit requirements initially caused by the COVID-19 pandemic.



(a) Consolidated issuance volume

(b) Share of GS bonds in total bonds

Figure 1: Bonds issuance volume and share, 2016-2024YTD

2. There is a regional (and global) drop in EPI scores, followed by a slight recovery in 2024. Even in the relative performance of each countries to a global benchmark using EPI gap from world average (dashboard), the scores of ASEAN+3 countries other than JP, SK and SG are lower than the average, and the whole ASEAN+3 trend is still on downtrend.

    - Possible reasons: 1)Shift in scoring criteria that require higher standards for performance. 2)More developments focused on economic growth rather than environmental targets.

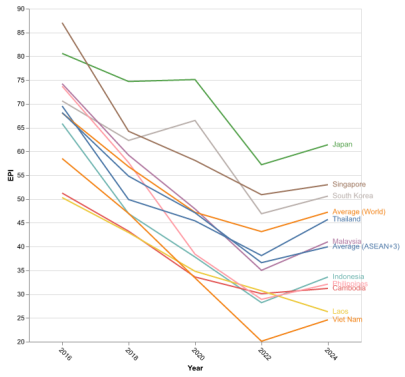


Figure 2: EPI scores, 2016-2024

3. In the South Korea example, we can see that EPI scores remain stagnant despite a rise in GS bond issuance volume (we can select each country and make the trend comparison on dashboard). We tried linear regression on time series data to draw trend lines, with normalizing data for more meaningful comparison (Bonds are expressed in USD millions, EPI scores are 0 to 100).

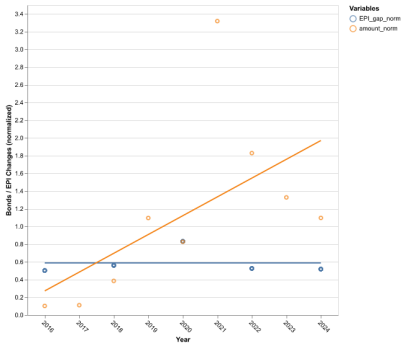


Figure 3: Linear Regression on time series data - South Korea (Consolidated issuance volume, EPI score, 2016-2024)

Summary and areas for further research

- Summary: Lower scores are observed despite higher GS issuance volumes.It is possible that EPI scores would have decreased even more if not for these investments. This could be a signal of "greenwashing" which refers to bond issuers using the GS label to oversell their environmental commitments to raise funding.
- Areas for further research: 1)Use of project-level data or more specific categorization of use of proceeds to derive a more accurate relationship between funds raised and specific projects funded. 2)Explore other potential determinants of EPI scores (e.g. GDP, specific investments into renewable energy, etc.) to help explain observed EPI trends. 3)Make relevant peer comparisons between economies based on other factors aside from region (e.g. emerging economies).