Climate and Debt

Ugo Panizza

Debt and innovative finance in developing countries

UNU Wider-BOFIT
Helsinki, October 27, 2022
A perfect storm?
Outline

1. Climate perspectives
2. Debt and fiscal space
3. Financing
   1. Debt for climate: Green bonds
   2. Credit for climate: Carbon credit market
   3. Debt relief for climate
4. Policies
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1. Climate perspectives
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I. Climate

1. Planetary view
   • Net zero – where the emissions are - mitigation

2. Local perspective
   • Vulnerability and adaptation

3. Conservation
   • Remaining carbon sinks
   • Hotspots and biodiversity

4. Distributional perspective
   • Climate equity
The planetary view: A global common:

<table>
<thead>
<tr>
<th>Approximate global warming relative to 1850–1900 until temperature limit (°C)* (1)</th>
<th>Additional global warming relative to 2010–2019 until temperature limit (°C)</th>
<th>Estimated remaining carbon budgets from the beginning of 2020 (GtCO₂)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5</td>
<td>0.43</td>
<td>900 650 500 400 300</td>
</tr>
<tr>
<td>1.7</td>
<td>0.63</td>
<td>1450 1050 850 700 550</td>
</tr>
<tr>
<td>2.0</td>
<td>0.93</td>
<td>2300 1700 1350 1150 900</td>
</tr>
</tbody>
</table>

Likelihood of limiting global warming to temperature limit* (2)

17% 33% 50% 67% 83%

IPPC 2021, Tabelle SPM.2
The planetary view: A global common:

**How much is 300/40?**
The planetary view:

The planet does not care who is emitting
The planetary view: Growing like China is not an option

Source: Global Carbon Project
I. Climate

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   • Climate equity
Who is vulnerable to climate change?
INFORM risk index
Who is vulnerable to climate change?
INFORM risk index
Who is vulnerable to climate change?

Percentage of population exposed to rising sea levels

The local view:

Source: own compilation-based on IPCC WGII 2022, Figure 15.3,
I. Climate

1. Local perspective
   - Even at 1.5 degrees the frequency and severity of natural disasters will increase
   - The most exposed regions tend to be LICs, and islands
   - They need adaption investment
     - Financing?
3. Conservation: Biodiversity as global common
At risk from warming
I. Climate

1. Conservation perspective
   • There are unexploited carbon sinks
     • In low emitting parts of the world
     • How to conserve them?
       • Strand the assets
       • Compensate
I. Climate – thought experiment

1. Assignment: design a global carbon credit market

   • There are 300 Gt left – allocate these emission rights and then trade
     • Paris: to the current emitters
     • Alternatives:
       • Equal distribution per capita
       • Take into account past emissions
       • Take into account ease of avoidance
       • Take into account relative vulnerability
       • Other biodiversity services
I. Climate equity: Who did it?

**Figure 1.2: Cumulated Carbon Emissions**

<table>
<thead>
<tr>
<th>Year</th>
<th>1995</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Russia</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other EMDE</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>China</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other AE</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>EU (with UK)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>United States</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Rich emit more than poor, growth is mostly brown

Based on a regression capita carbon emissions (in logs) over the log of GDP per capita (real PPP at 2017 prices).
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II. Debt – Fiscal constraints in EMDEs

1. Estimates of fiscal need for adaptation

   Aligishiev et al., 2022: $500 billion per year, or about 0.4% of AE GDP

2. Debt distress is already high
II. Debt – Fiscal constraints in LICs

Figure 3.4: Debt Sustainability Over Time

Note: This figure plots the evolution of the share of PRGT-eligible countries (72 countries in total) classified as being at low, moderate, and high risk of debt distress on the basis of the External debt World Bank/IMF Debt Sustainability Framework.
FIGURE 3.3 EMERGING AND DEVELOPING ECONOMIES WITH NO MARKET ACCESS

Note: This figure plots the evolution of the share (black line) of emerging and developing economies with no market access (lack of market access is defined as having a spread above 750 basis points)
II. Debt – Fiscal constraints in EMDEs

3. Climate change adds negative shocks
   Fiscal deficits deteriorate significantly more in EMDEs than in AEs after a climate shock (with cost of 1% of GDP)

4. Spreads in EMDEs are highly susceptible to external shocks
   About 6 times stronger spread reaction to a global shock than in AEs

5. EMDE spreads are increasingly sensitive to climate risk
   Markets are increasingly pricing future climate risk (coefficient on spreads increases over time and is higher for predicted risks)

6. Pushing up borrowing costs

Many EMDEs will not be able to finance the need adaptation investments
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III. Debt financing the green bond market

Puzzles of the sovereign green bonds

1. Additional green spending? *Not really*

2. A commitment to do something specific?  
   *Not really*

3. A way to signal to investors your intentions?  
   Sovereigns should have more direct means
Growth of green sovereign bonds:
Mostly in Europe
In euro

SB (sovereign backed)
LG (Local gov)
III. Looking for the greenium

1. Greenium – definition
   
   Issuer point of view: positive greenium
   = lower financing = difference brown - green bond

2. Is it positive?
   
   Our finding: negative Greenium (5 bp) in AEs, not significant in EMDEs

3. But it varies with climate risk
III. But it is higher in countries with higher risk: Markets “reward” green finance

**FIGURE 4.3 PARTIAL CORRELATION BETWEEN THE GREENIUM AND CLIMATE RISK**

Note: This figure plots the partial correlation between greenium and climate risk based on the results of columns 2 or Table 4.3.
III. Looking for the commitment – ask the lawyers

The Hungarian Green bond 2021

While it is the intention of the Issuer to apply the proceeds from the placement to finance or refinance Eligible Green Expenditures, it is under no legal obligation to do so. There is also no legal obligation to ensure that such Eligible Green Expenditures will be available or capable of being implemented as anticipated and, accordingly, that the Issuer will be able to use the proceeds for such Eligible Green Expenditures as intended. In addition, there is no legal obligation to ensure that Eligible Green Expenditures will achieve the originally intended impacts (environmental, social or otherwise) or outcomes in the manner expected.\textsuperscript{34}
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III. Credit for Climate Finance: The Economic Case For Carbon Credits

**Point 1.** some crucial economic activities, will not be replaced with renewable energy. Need for offset by carbon removal from the atmosphere

**Point 2 Compulsory** Net Zero targets give emitters the choice to comply directly or indirectly by purchasing carbon credits - and the possibility to offset will mean less opposition to carbon emission reduction regulations.

**Point 3** In an efficient carbon credit market, any source of carbon emission reduction should count as a carbon offset

**Point 4.** Incentivize carbon emission reductions, carbon emission avoidance, and carbon removal & sequestration worldwide

- Set up an important source of income for developing countries=> Not a donation, but an asset with market value
III. Credit for Climate Finance: The Economic Case For Carbon Credits

Carbon Credits come in many shapes and sizes

III. Credit for Climate Finance: The Economic Case For Carbon Credits

Panel B. Offset Prices by Verification Standard, 2020


Carbon Credits: Market Fragmentation and Quality Issues
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III. Debt restructuring and climate

Tinbergen (goals and instrument)

1. Debt for Climate Swaps – rarely optimal
   
   *if goal is to provide room for climate finance - grants*
   
   *if goal is to reduce debt - restructuring*

2. But climate conditionality in debt restructuring

   *Debt exchange of conventional bonds for sustainability linked,*
   
   *Climate risk and financing need in DSA,*
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Policies

1. Create an institutional framework for a carbon credit market based on mandatory direct and indirect carbon emission reduction requirements for all large emitters.

2. Climate-conditionality in comprehensive debt restructurings and deeper haircuts with DSA that keeps into account climate risk: Exchange of conventional bonds for Sustainability Linked (market creation)

3. Set up a climate information and monitoring system to support the development of sustainability-linked sovereign bonds

4. Commit to an annual target for fiscal support for adaptation, mitigation and transition expenditures in developing and emerging market countries

5. Develop a clear legal framework and verification mechanisms that will enhance the credibility of green sovereign bonds.

6. Improve the design of debt-for-nature swaps.
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