Fiscal policies for a low-carbon economy -- A green (and more inclusive) recovery from the COVID-19 crisis

1. Green fiscal policies: the need for Carbon Taxes (CT) and Green bonds (GB)

- One needs a mix of policies: fiscal, monetary, regulation, and regulatory standards.
  
  - **Carbon taxation benefits:**
    - A *Pigouvian tax* that addresses negative externalities: Repricing of goods, services → substitution effects (see Nordhaus, 2008 and Acemoglu et al., 2012)
    - **Co-benefits beyond carbon emissions:** reduce costs of healthcare through less air pollution, fewer respiratory diseases and virus outbreaks
    - **Provides domestic revenues:** use for green innovation and compensations -- best results when used to subsidize low-carbon products (Parry et al., 2014b, Acemoglu et al., 2012 and Kato et al., 2015).
  
  - **Carbon taxation disadvantages:**
    - To be effective alone: $80-$100 per ton (Heal & Schenker, 2018) → may face political constraints (Grubb, 2014)
    - current generation carries the burden (see Orlov et al., 2018)

Source: Author calculations based on IMF (2019) and IEA.
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  **Green Bonds**

  - **Fixed-income securities** (usually certified by a third-party) to leverage financial resources for **green investments** (e.g.: clean energy, low-carbon transport, green building, etc. and bridge finance see EU taxonomy)
  - Unlock substitutions effects/ elasticities
    → **bridge finance**
  - Allow for **intertemporal burden sharing** -- "intergenerational fairness"
    (Sachs, 2014, Flaherty et al, 2016; Orlov et al, 2018)
  - **Green bonds de-risk portfolio holdings of investors**; good hedge against oil price volatility and fossil fuel asset volatility
  - Green bonds depend on the **fiscal space and debt sustainability** should be considered. → case for green Convertible bonds? (Appendix)

Source: Heine et al. (2019)
1. Green fiscal policies: There are benefits in combining CT and GB

- CT lead to structural change but not sufficiently (e.g. political constraints)
  (Lagarde & Gaspar, 2019; Grub, 2014)
- **Unlock carbon pricing elasticities + bridge finance.** Need for large scale investments on renewable energy sources
  (Semmler et al. 2018, Heine et al., 2019).
- Carbon taxation increases green bonds’ relative returns and decreases volatility of returns
  (Flaherty, 2017; Heine et al., 2019)
- Mixing speeds up transition and makes the green debt more sustainable
  (Heine et al., 2019; Orlov et al., 2018; Semmler et al., 2019; Mittnik et al., 2020)
1. Green fiscal policies: Countries worldwide where carbon pricing initiatives* were implemented and/or green bonds were issued.


* In the US carbon pricing initiatives were only implemented in several states, not nationally. In certain countries carbon pricing initiatives were implemented on a national and subnational level (e.g. Canada, China, Mexico).

Source: Bloomberg Terminal data and World Bank Carbon Pricing Dashboard (10/2020)
2. Financial markets: Linkages to climate change

Financial instability

“Stranded assets” (Carney, 2018) → Losses and crashes in stock market and banking system → Green swan events, losses due to climate uncertainties and climate disasters (Bolton et al., 2020)

Financial market as a roadblock
- Investor’s short-termism (Haldane, Davies et al., 2014; Semmler et al., 2020)
- Reducing green investments

Financial market as a bridge
- Green bonds as bridge finance to scale up + increase elasticity
- Improve intertemporal fairness (Orlov et al., 2018; Sachs, 2014)
- Investor portfolio benefits (empirical findings)
3. Our data show that green bonds show on average lower yields, i.e. lower capital costs for bond issuers.

Primary market yields (yield at issue)  Secondary market yields (yield to maturity)

Source: Author calculations based on fixed income securities from Bloomberg terminal (10/2020)
4. EU Taxonomy for sustainable activities

- It creates a EU standard to classify assets and investment according with their climate benefits, following new technological trends and indicator (Technical Expert Group on Sustainable Finance).
- Organized by sector and technology, it provide references to classify climate change mitigation and climate change adaptation activities, including criteria for do no significant harm to other environmental objectives.
- It adds up to EU Green Bond Standard → enable green finance activities.

Source: EU Technical Expert Group (2020)
The eligible green expenditures of €12.3 billion are split among five sectors and mapped to the six European environmental objectives set out in the EU Sustainable Finance Taxonomy:

- Mitigation (60.6%)
- Adaptation (16.2%)
- Biodiversity (12.5%)
- Water (1.6%)
- Pollution control (7.9%)
- Circular economy (1.3%)

Figure 1: Breakdown by sector

Figure 2: Breakdown by EU environmental objective

Source: DE Federal Ministry of Finance (2021)
6. Green convertible bonds?

- The convertible bond market index (ICE BofA US Convertible Index – VXA0) outperformed other market indices such as
  - the S&P 500 Bond Index (SP500BDT)
  - and the S&P 500 (SP500).
- In 2020 the VXA0 Yield-to-date returns (YTD) was 20.9% while the
  - SP500BDT was 7.85%
  - and the SP500 2.97%