Meeting the Climate Challenge: Using Public Funds to Leverage Private Investment in Developing Countries

Section 3 – Raising finance

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Raising finance to address the climate challenge will require public intervention. Anthropogenic greenhouse gas (**GHG**) emissions have the potential to cause damages through climate change, hence creating a market failure that calls for Government action. Putting a price on GHG emissions through the creation of carbon markets is a way to address this market failure and is meant to play a central role in leveraging private finance. However, **the regulatory framework necessary to build carbon markets will take time to develop and establish credibility**, and carbon markets need to expand in order to meet the scale of climate finance required. As a result, **while strengthening carbon markets' regulatory frameworks, Governments also need to reinforce the wider climate change policy framework, and find ways to leverage private finance in the short-term**. In this respect, the immediate challenge for Governments is to raise private finance at a sufficient scale, using public funds as efficiently as possible.

There are two main possible options to raise finance in order to fund public interventions in climate change (whether or not such interventions are meant to leverage private finance). The first one is through various forms of taxation and the second is through debt. This section will focus on the latter, and more specifically on the use of traditional capital markets instruments such as bonds.

This section will first provide a brief overview of bonds as a capital raising instrument, and then propose specific instruments deemed most capable of raising financing for climate change, providing an analysis on how each perform against a set of predetermined criteria. Finally, it will provide practical examples of how such instruments may work in two sectors of climate mitigation - namely, energy efficiency and forestry.

3.1 Key issues behind debt issuance and bonds

The reason why debt issuance is of particular interest is that government bonds can be designed to play additional roles besides raising finance. They can increase government commitment to policy change by creating financial incentives for governments to deliver the regulatory framework; and, if designed appropriately, they can provide for a hedging instrument for investors against the risk of delivery of policy change.

In order to allow government bonds to play their role efficiently, there are three main elements that need to be taken into consideration:

1. **Characteristics of the debt issuer:** the level at which government bonds are issued, i.e. international, federal, national or subnational level, will play an important role especially in terms of the solidity of the guarantee and associated risk.

2. **Potential bonds subscribers:** the profile of individuals and entities likely to form the demand for bonds is important as it will drive the type of bonds issued. This implies that a variety of bonds might be required to meet the potential demand.

3. **Design of the bond:** the two first elements will therefore impact the design of the bond, which mainly consists in setting the maturity (i.e. duration) of the product as well as the interest rate. The design needs to fit the types of investments Governments want to engage in as well as the scale of the market.

3.2 Proposals on raising finance from the capital markets

The reason why bonds are of particular interest is because they can be designed to play additional roles besides raising finance. They can increase government commitment to policy change by creating financial incentives for governments to deliver the regulatory framework; and, if designed appropriately, they can provide for a hedging instrument for investors against the risk of delivery of policy change.

As mentioned earlier, traditional forms of bond finance can be combined with more innovative instruments or features. We considered the following options for raising finance upfront:

- **Traditional government bonds**: Money is raised through general borrowing from Governments. Bonds would have sovereign guarantee and therefore very high rating. They would have standard characteristics (duration, coupons, etc) to appeal to institutional investors. Money raised would be treated as normal government borrowing. Governments would then use budget directly to support developing countries' projects.

- **Bonds linked to specific investments:** 'Green bonds' would be issued by a government owned bank/institution. Money raised would be used specifically for co-investing with the private sector in emission reduction projects in the developing world. Returns from investment (both carbon market related and additional revenue streams) would pay for bonds' coupons and interest. Bonds would have sovereign guarantee. This type of

instrument would be similar to the World Bank issue of green bonds, but with a stronger emphasis on the link between the bonds and the specific investment activity carried out through the government owned bank/institution.

- **Indexed bonds:** This mechanism could be combined with traditional bonds or green bonds. Payments of coupons/interest on bonds would be indexed to carbon prices or national emission reductions to provide an incentive for Governments to deliver an effective regulatory framework to reduce emissions: if carbon prices are too low or emission reduction targets are not met, the bonds would pay higher interest. Bonds could therefore serve as a hedging instrument for companies investing in renewable energy or emission reduction projects. Bonds would have sovereign guarantee.

- **Long-term option contracts for carbon emissions:** A put option would provide the holder with the right to sell a carbon emission permit at a specified price and specified date. The seller of the option assumes the obligation to purchase the asset if the option is exercised. If the Government was the issuer of the options, it could collect upfront funds by selling them. In that case, the buyer of such options would be businesses interested in hedging the risk of investment returns linked to the price of carbon.

- **Higher proportion of offsets in early stages:** Governments would ask regulated entities to cover their emission liabilities through a high amount of offsets from developing countries early on, to generate higher early financial flows to developing countries. This money could then be used to finance and support (including monitoring, reporting and verification) emission reduction projects in developing countries.

Many of these capital raising instruments could be equally applied in developed or developing countries. More specifically, **instruments that link bonds to direct investments in emission reduction projects may be particularly suitable to developing countries, as they would allow Governments to take a direct stake in project finance.** For instance, Governments could decide to issue bonds on the capital markets directly related to specific technologies, projects or types of investments (such as forestry, as discussed below), guaranteeing the bond returns, but also ensuring that the money collected is invested in a particular set of projects (similarly to the green bonds proposal described above). This would be valuable, as the direct involvement of Governments in projects would give them an incentive to ensure the regulatory framework necessary for the project to produce financial returns are delivered timely (e.g. by linking it into global carbon markets).

A further important observation is that the **additional roles that bonds can play besides raising finance** (such as increasing policy credibility and providing for a hedging instrument) could be even more powerful if their issuance is coordinated among key countries. Individual countries have, in fact, only limited power in terms of delivering a regulatory framework that is comprehensive enough to guarantee returns to private investments: GHG emissions are a global externality and require a globally coordinated solution. Coordinating bond issuance across key

countries would hence form a very powerful signal on the global commitment to policy change and would, ensure bonds play a significant role setting out the right incentives for the private sector to invest.

Finally, the economic context is also likely to influence the political acceptability of different types of bond and will hence influence Governments' choices. For example, in the current economic context, the issuance of traditional government bonds might be unsustainable both economically and politically. A more feasible solution might therefore be to link bonds with specific investments, clarifying the ways and means the Government will use to generate future revenues, which would then be used to pay the bonds' coupons (as opposed to using the budget).

In order to provide a more detailed analysis of the instruments described above (see table below), a set of four criteria has been defined to assess each instrument. The four criteria include:

1. **Appropriate risk allocation** between the public and the private sector: this criteria test the ability of the instrument to provide the private sector with investment opportunities with competitive risk-adjusted returns.

2. **Alignment of incentives** between the public and the private sector: the public and the private sectors must face similar incentives in order to create a virtuous investment cycle.

3. **Scale, scope and usability:** instruments must allow large scale investments and be practically feasible.

4. **Political acceptability:** selection of instruments needs to factor in the political context.

	Criteria			
Instruments	**Appropriate risk allocation**	**Alignment of incentives**	**Scale, scope and usability**	**Political acceptability**
Traditional government bonds	•Government bears risks related to projects financed by the bonds. •No formal link between risk and specific management of the regulatory framework on emissions.	•No additional incentive for Governments to deliver on the regulatory framework (e.g. incentive to create a carbon market)	•Ideal for raising large investments through institutional investors. However, limited by current concerns about borrowing. •No effect in terms of pushing large policy changes. •Administrative simplicity	•As hard as any government debt issuing at this stage.
Bonds linked to specific investments (green bonds)	•Risk remains with Government. •Returns from projects that Governments invest in are dependent not only on the ability of Governments to implement regulatory framework but also on other factors (e.g. evolution of global carbon markets).	•Both public and private sectors have similar incentives to ensure maximum returns from the projects. •As a result, greater incentive for Governments to implement an efficient regulatory framework.	•Potential for large investments from institutional investors if bonds have sovereign guarantee and standard characteristics. •Bonds could be administratively easily to develop, but institutional set-up could be complex.	•Impact on budget similar to traditional bonds (perhaps slightly different depending on the nature of the assets financed with the revenues). Bonds could be marketed successfully around specific 'green instruments', hence increasing their political acceptability.
Indexed bonds	•Government has only indirect control over risks associated with returns (e.g. risk around the regulatory framework) •Bond buyers would face the risk of lower returns if the	•Aligned incentives between financiers in emission reduction projects and the Government, as both would want higher carbon prices or emission targets to be met	•Niche product, because only attractive as a hedging instrument. •Indexed bonds set the right policy incentives, but not as powerful as other instruments	•Potentially hard in current context because of burden it creates on public budgets. •Risk would need to be limited by putting a ceiling on

	Criteria			
Instruments	**Appropriate risk allocation**	**Alignment of incentives**	**Scale, scope and usability**	**Political acceptability**
	Government achieves its objectives fully: hence it should be treated as a good hedging instrument only.	(depending on indexing). •Bond buyers would have opposite incentives. However, because it is a hedging instrument, bond buyers are likely to be the same agents as financiers in emission reduction projects.	in creating radical policy change.	returns. •Treating this as a niche product could make it more acceptable.
Long-term option contracts for carbon emissions	•Governments issuing put options would face the risk of carbon prices lower than the option's exercise price. •Appropriate alignment of risks, as with indexed bonds.	•Sale of put options by Governments would be a credible commitment to a carbon price floor and would provide upfront finance. •Governments could differentiate price of put options according to the investors (e.g. charging a lower price to CCS investors). •Safe hedging instrument for companies investing in emissions reductions, while increasing Government's incentive to minimise policy and regulatory risks.	•Mostly hedging instruments, as indexed bonds. •Provides an instrument to limit the carbon price risk and reach substantial scale. •Characteristics of options could be determined according to Governments' policy priorities in terms of technologies. •Does not require a fully functioning option market to price the option contracts.	•If issued at scale, the burden on the public purse could be substantial.

	Criteria			
Instruments	**Appropriate risk allocation**	**Alignment of incentives**	**Scale, scope and usability**	**Political acceptability**
Higher upfront proportion of offsets in early stages	• Although no financial risk to Governments, there is a strong environmental effectiveness risk, as effectiveness of early emission reductions investments in developing countries may be questionable. • Potential to access larger amounts of cheap abatement opportunities early on.	• Governments would have to take on the responsibility of ensuring that emissions reductions paid for upfront by regulated entities are actually achieved.	• Potential scale of offsets purchased by regulated entities is substantial (especially in Europe and even more so in the US), hence creating a large pot of money available for investments in developing countries in the short-term. • Administratively simple, but potential negative effect on domestic investments to reduce emissions.	• No additional financial liability for Governments. • Could be very difficult for Governments to guarantee the environmental effectiveness of the measure, hence creating potential political liability.

3.3 Raising finance in specific sectors

Concrete ideas and proposals are beginning to emerge concerning ways in which financing can be raised for climate mitigation through the capital markets. We list two emerging examples below: one in energy efficiency in the building sector, and the other in forestry.

3.3.1 Energy efficiency in buildings

There are **several theoretically possible ways of raising finance in the capital markets for energy efficiency, based on providing finance secured against future cost savings**. Currently, however, the potential for making this model work appears to be low, due to a lack of experience and the complexity of modelling this kind of cash-flow enhancements in banking credit departments, and the high level of risk relating to (i) the real economy that comes from securing credit against future savings, since these are a function of production volume, and therefore sales, and (ii) the development of the energy markets under considerable uncertainty about future regulatory frameworks.

Despite these obstacles, in the Unites States there have been a number of recent efforts in to develop raising instruments in the context of increasing energy efficiency in buildings (the PACE programme, Property Assessed Clean Energy). The key idea was to combine PACE finance with Federal Bond Guarantees to innovative funding to accelerate the energy retrofitting of residential and commercial buildings. This scheme uses as a catalyst a stronger Federal guarantee, as opposed to the municipal guaranties of Munis (municipal bonds), together with a highly secure stream of revenue from the investment, both at residential and commercial level, as returns are collected as a tax surcharge to the household or the commercial occupier of the building (and hence with the highest level of debt seniority – a property tax lien). While still a proposal, the bonds would be able to access the large Federal bonds market, currently valued at $500bn.

For such a capital raising instrument to work, the right regulatory frameworks would need to be put in place, including the right property ownership and tax structures. However, this provides one promising avenue that may be explored by some countries.

3.3.2 Forest bonds

Reduced emissions from deforestation and forest degradation (REDD+) has the potential to deliver long-term revenue streams. However, in order to unlock such investment potential, up-front investment is required. **There is proven demand for AAA-rated 'green bonds' earmarked for investment in environmental projects, and forest bonds may, therefore, represent one sub-type of the green bond instrument.** The World Bank has already issued two green bonds denominated in US dollars and Swedish Kroner. A special 'green account' was used for proceeds from green bonds. At the end of every quarter, funds are deducted from this account and added to the World Bank's lending pool for 'green' disbursements to

support eligible projects. It would be possible to issue a 'forest bond' with a long tenor (10 years or more) and in substantial size (up to $5bni) where proceeds are committed to REDD+. Such a mechanism would bridge the gap between broad institutional investor demand for high quality 'vanilla' bonds, and the need for finance for REDD+ projects. The risks in providing REDD+ finance would be borne by the development bank. Bond investors would earn a market rate of interest, in line with other AAA-rated bonds. The bank would expect to make a higher return on its REDD+ portfolio than it pays in interest.

3.4 Recommendations

It is necessary to increase our understanding of instruments to raise finance for climate change. Identifying the most efficient instruments will require increase dialogue and concerted efforts between the public and private sectors.

In addition, the urgency of the climate challenge calls for the implementation of the most appropriate instruments without delay and in a coordinated manner to ensure the availability of finance in strategic sectors and at the scale required.