

Solving India's Renewable Energy Financing Challenge:

Instruments to Provide Low-cost, Long-term Debt



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Key Findings (1/4)

- In our previous work¹, we found that inferior terms of debt – i.e., high cost, short tenor, and variable rate – raises the cost of renewable energy in India by 24-32% compared with similar projects in the US.
- In parallel work², we show that debt-related subsidies are more cost-effective than the existing policy support mechanisms, and can reduce the overall cost of renewable energy subsidies as much as 28-78% compared with existing federal policies.

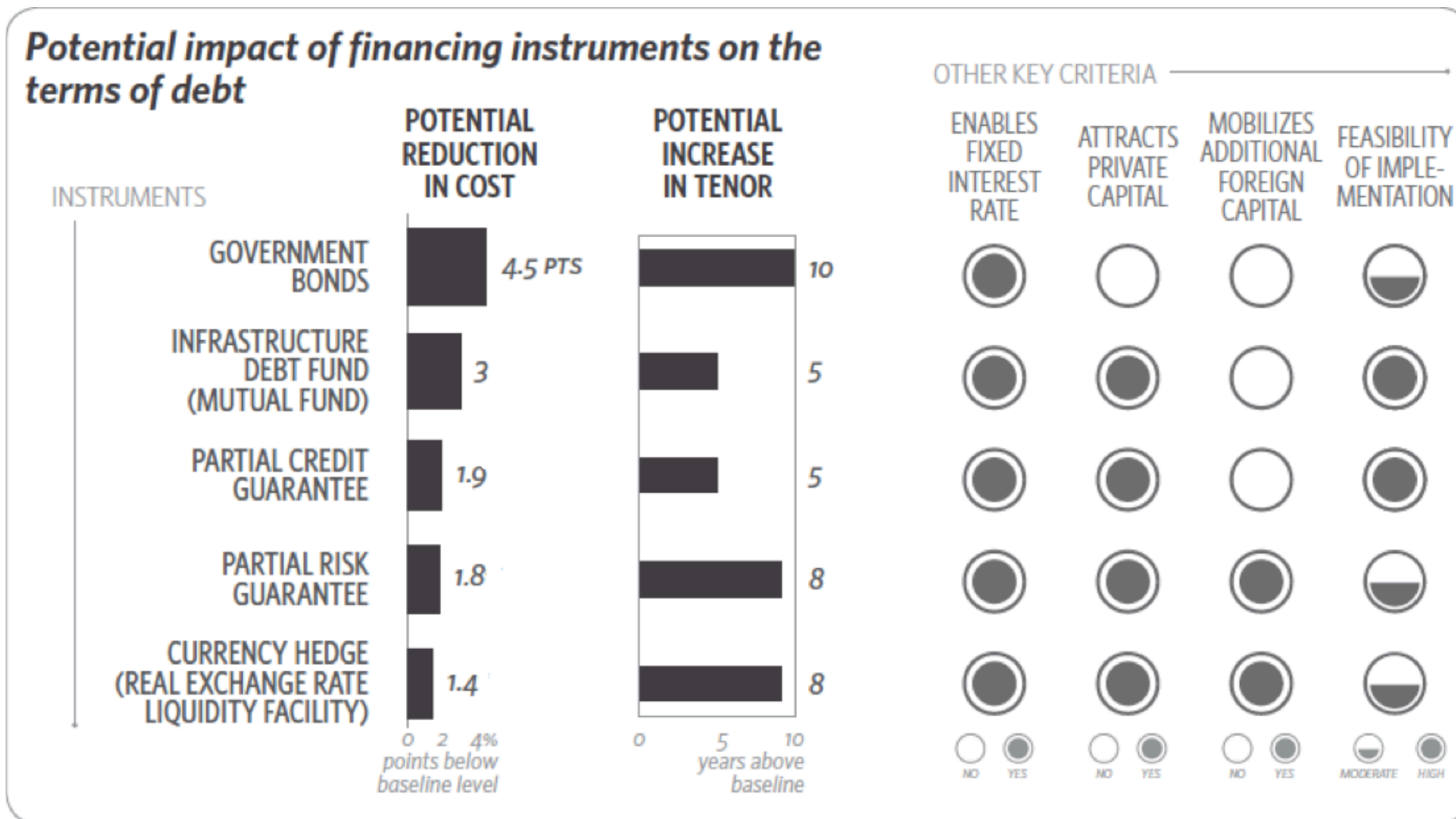
¹Meeting India's Renewable Energy Targets: The Financing Challenge, CPI 2012

²Solving India's Renewable Energy Financing Challenge: Which Federal Policies can be Most Effective?, CPI 2014

Key Findings (2/4)

- In this study, we find that a number of (primarily market-based) financing instruments have the potential to provide and/or facilitate low-cost, long-term debt for renewable energy in India.
- These instruments can reduce the delivered cost of renewable energy by 10-25%, by reducing the cost of debt by up to 1.4-4.5 percentage points and increasing the tenor by up to 5-8 years.
- Additionally, the government can also add an explicit subsidy to further incentivize the borrowers on top of the benefits that these instruments naturally offer.

Key Findings (3/4)



Source: CPI Analysis

The baseline cost for Govt. bonds and IDF (MF) is cost of typical domestic loans (12.3%) and for PRG and Liquidity facility it is cost of typical fixed rate foreign loan (13%).

The baseline cost for PCG is the average annual return of an A rated bond (12.8%).

Key Findings (4/4)

- Each instrument, or set of instruments, has benefits and trade-offs.
- Which set of instruments the Government of India ultimately chooses will depend on the most important priorities.

Methodology

We examined a number of financial instruments that can be used to reduce the cost of debt for renewable power projects. We explored three categories of instruments:

- A. Instruments that provide access to untapped low-cost, long-term funds from domestic capital markets;
- B. Instruments that provide access to foreign debt; and
- C. Guarantee instruments that mitigate the risk associated with projects.

We have selected a few instruments based on:

- 1. Ability to lower the cost and extend the tenor of debt at a fixed interest rate;
- 2. Ability to increase the availability of debt by attracting private and foreign capital;
- 3. Feasibility of implementing the instrument in the Indian context.

Since each of these instruments represents a different kind of debt, we estimated the reduction in cost of debt for each instrument based on the typical baseline cost applicable for that particular instrument.

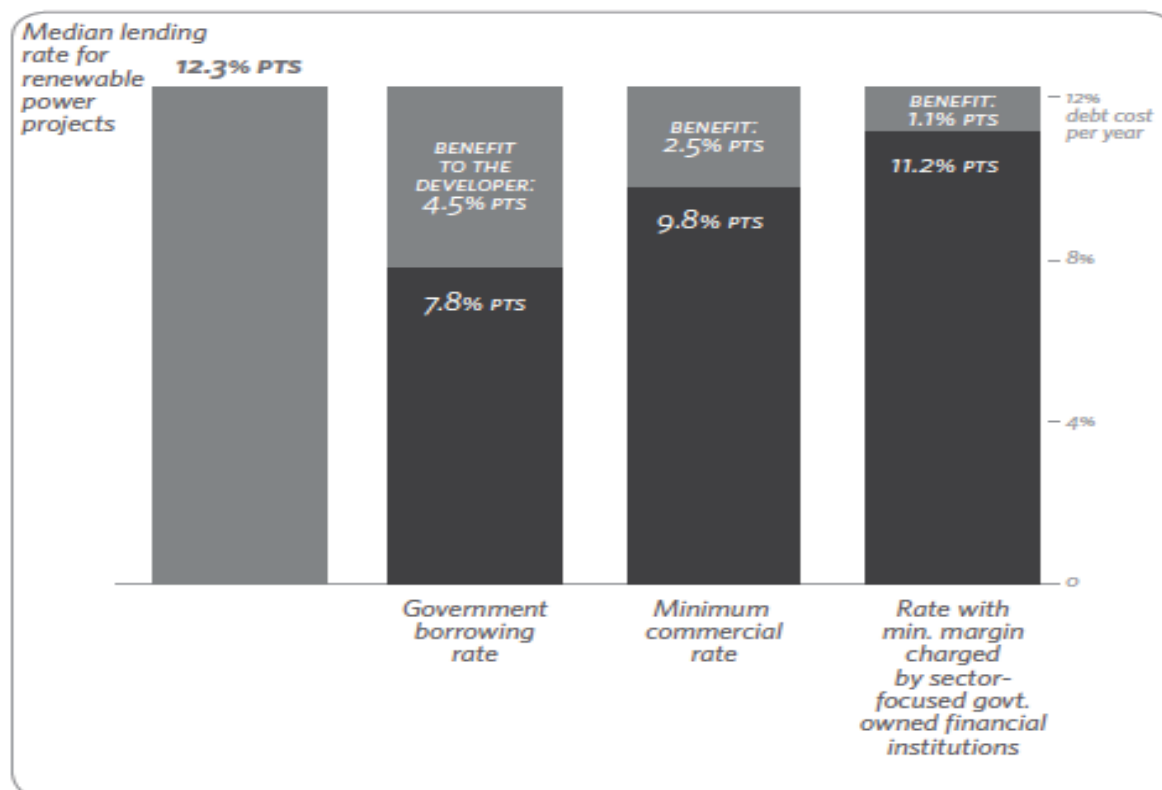
Instruments

Government bonds provide the most benefits, but carry the risk of crowding out private financing (1/2)

A direct government borrowing and lending program could reduce the cost of renewable energy by ~25%, by reducing the cost of debt by up to 4.5 percentage points and increasing tenor by 10 years, compared with domestic commercial loans.

Government of India can provide concessional finance to renewable power projects by raising money through issue of bonds and on-lending the proceeds to project developers.

Potential savings from government borrowing and direct on-lending program



Source: RBI, SBI, CPI Analysis

Government bonds provide the most benefits, but carry the risk of crowding out private financing (2/2)

- The government has three options in lending:
 - Lend at the borrowing rate of 7.8% or lower;
 - Lend at the lowest possible commercial margin (i.e., 2 percentage points);
 - Lend at the lowest possible sector-focused, government-owned financial institution margin (i.e., 3.4 percentage points).
- The implementation feasibility is moderate due to lack of a precedent in India and the risk of crowding out private investment.
 - The government should design such a program with checks and balances.

Infrastructure Debt Fund – Mutual funds would provide the second highest benefit, depending on their success in developing the corporate bond market (1/2)

IDF-MFs would reduce the cost of renewable energy by ~14.5%, by reducing the cost of debt by up to 3 percentage points and increasing the tenor by 5 years, compared with a typical domestic loan.

IDF-MFs may help in easing the financing challenges of renewables by providing liquidity to the bond market and attracting long-term sources of funds.

- IDF-MFs would attract long-term funds if they could manage a high enough rating for their units to enable insurance and pension funds to invest in them.
- A higher rating can be obtained through portfolio diversification, sponsor company strength, and through use of credit enhancement mechanism for the underlying debt securities.

Infrastructure Debt Fund – Mutual funds would provide the second highest benefit, depending on their success in developing the corporate bond market (2/2)

- Renewable project developers would likely raise debt finance directly from the corporate bond market instead of raising loans from a financial intermediary once the liquidity in corporate bond market increases.
 - A developer could possibly issue a bond at a rate between 9.3*-12.3%, with the maximum possible saving of 3 percentage points (=12.3-9.3%).
 - The benefits are largely dependent on IDF-MFs ability to develop the corporate bond market.
 - A developed bond market will also allow project developers to increase their debt tenors to 15 years or more from what is currently available (10 years) from the domestic loan market.
- Implementation feasibility in India is high as the regulatory framework is already in place.

*National Thermal Power Corporation (NTPC) — a largely government-owned enterprise with an AAA rating and therefore, bringing the lowest possible cost of funds —issued a 10-year corporate bond in 2012 with a coupon rate of 9.26% (NSE, 2013)

Partial Credit Guarantees (PCGs) would benefit the borrowers depending on the deal structure and the development of the corporate bond market (1/2)

PCGs would reduce the cost of renewable energy by ~10.5%, by reducing the cost of debt by up to 1.9 percentage points and increasing tenor by 5 years, compared with typical cost of an A rated bond.

- PCGs reduce the cost of debt by enhancing the credit rating of a project.
 - A higher credit rating would help in attracting additional low-cost, long-term funds such as insurance and pension funds.
- We estimate that the net reduction in cost of debt through a PCG would be in the range of 1.4-1.9 percentage points.
 - The cost savings are largely due to reduction in risk for investors due to credit enhancement.

Impact of PCG on Cost of Debt

CREDIT ENHANCEMENT	COST OF FUNDS WITH ORIGINAL RATING* (A)	COST REDUCTION FROM CREDIT ENHANCEMENT (B)	GUARANTEE FEE (C)	COST OF FUNDS WITH PCG (D=A-B+C)	NET COST REDUCTION (A-D)
ADB (A to AA) ^a	12.8%	2.5% pts.	0.60%	10.9%	1.9% pts.
ADB (BBB to AA)	13.8%	3.5% pts.	1.7% ⁺	12.0%	1.8% pts.
IFC (BBB to AA)	13.8%	3.5% pts.	2.1% [#]	12.4%	1.4% pts.
Average	13.4%	3.2% pts.	1.5%	11.8%	1.7% pts.

^aFor a BBB rated bond, ADB's guarantee fee is between 1.3-2.1% of the outstanding bond value. We assumed an average of 1.7%.

[#]For a BBB rated bond, IFC's guarantee fee is estimated in the range of 1.2-3.0% of the outstanding debt. We assumed an average of 2.1%.

Source: ADB, IFC, CPI Analysis

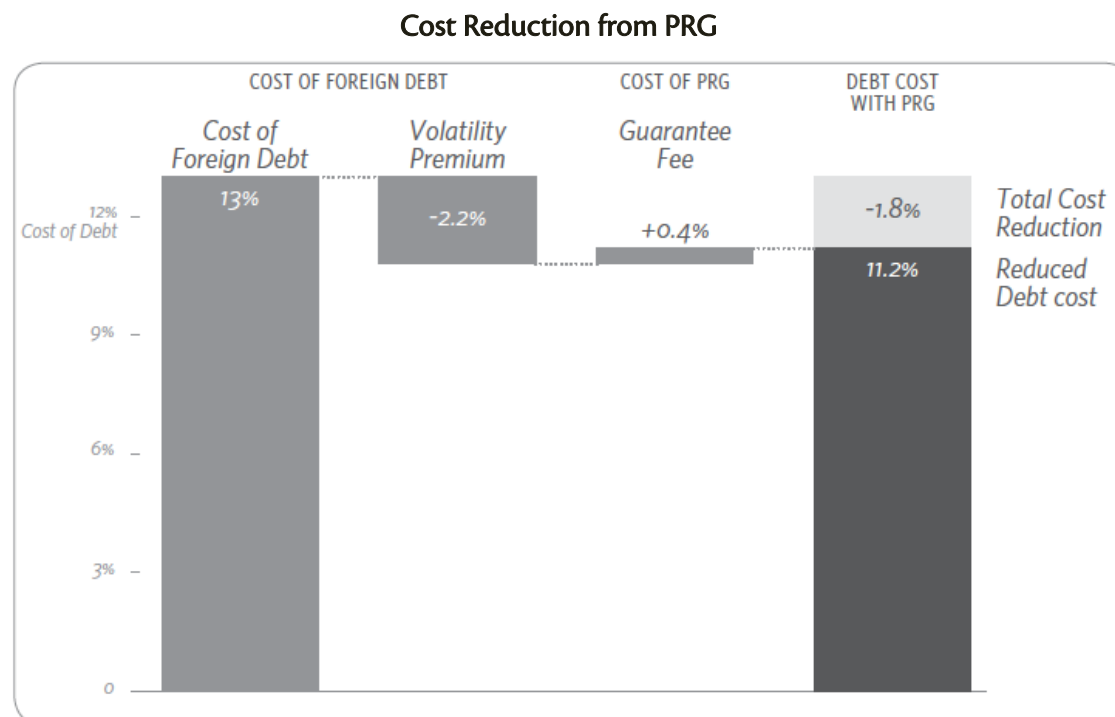
Partial Credit Guarantees (PCGs) would benefit the borrowers depending on the deal structure and the development of the corporate bond market (2/2)

- Raising debt from the corporate bond market allows extending the tenor by 5 years compared with the typical loan tenors available through commercial banks.
- Implementation feasibility in India is high due to existence of a precedent.
 - However, the success of PCGs will depend on (a) the development of corporate bond market and (b) the structure of the transaction.

Partial Risk Guarantees (PRGs) help in tapping foreign funds at lower cost; require simple deal structures to increase their use (1/2)

PRGs would reduce the cost of renewable energy by ~12.7%, by reducing the cost of debt by up to 1.8 percentage points and increasing the tenor by up to 8 years.

- PRGs protect foreign debt investors from political risks such as breach of contract by the state, expropriation, and currency inconvertibility.
 - PRGs would reduce the volatility premium that is included in the cost of foreign loans net of guarantee fee.
 - The net reduction in cost of debt depends on the structure of the guarantee and the extent of risk coverage.



Source: Discussion with banks and project developers, World Bank, and CPI Analysis

Partial Risk Guarantees (PRGs) help in tapping foreign funds at lower cost; require simple deal structures to increase their use (2/2)

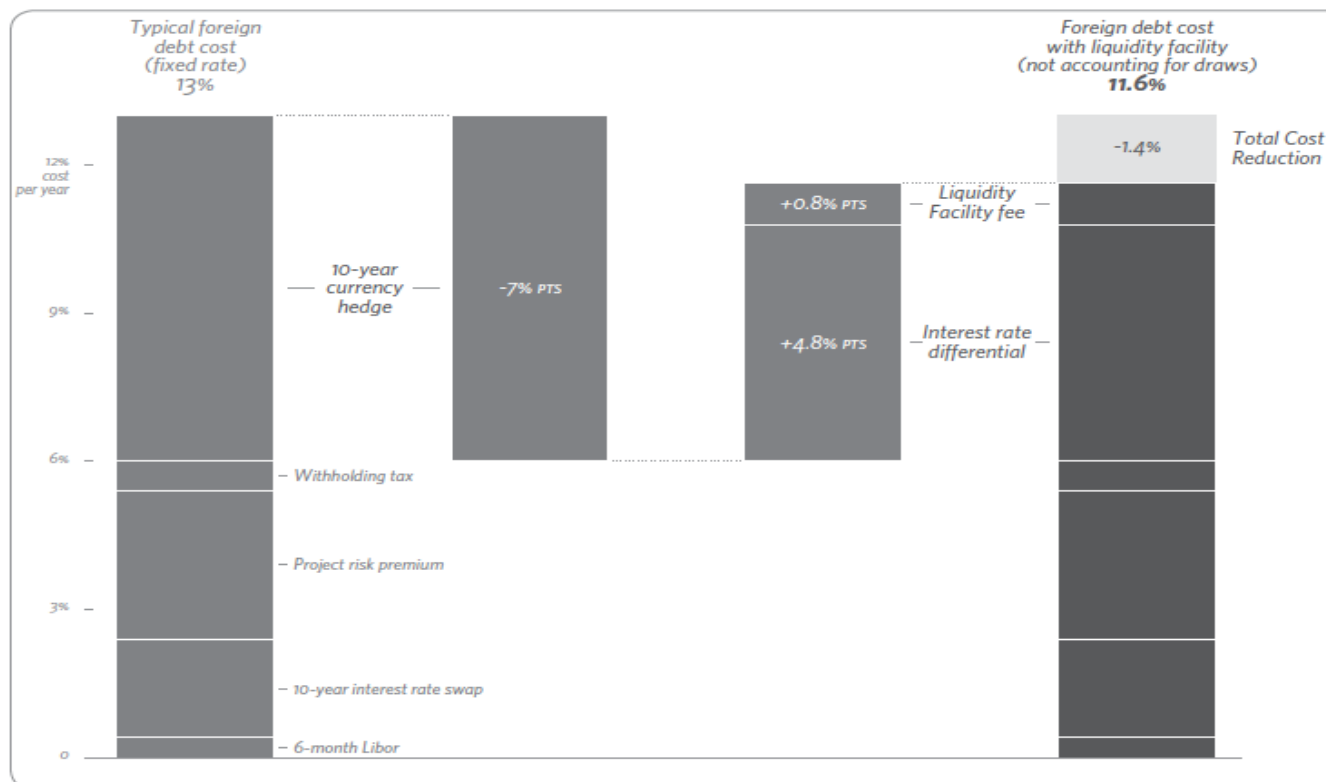
- PRGs would most likely extend the tenor up to 18 years from the usual 10 years as it reduces the risk involved for foreign lenders.
- Implementation feasibility in India is moderate as multilateral agencies usually require a counter-guarantee from national governments.
 - This requirement led to lower than expected up-take of PRGs globally due to complex stakeholder interactions.

Exchange rate liquidity facility would offer a cheaper currency hedging option, but its suitability for Indian conditions needs to be studied further (1/2)

The liquidity facility could lower the cost of renewable energy by ~11.2%, by reducing the cost of debt by up to 1.4 percentage points and extending tenor by up to 8 years, compared with commercial foreign loans.

The liquidity facility could encourage project developers to opt for foreign loans as it provides a cheaper currency hedge option compared with the existing market instruments.

Savings in cost of foreign debt with liquidity facility



Source: Discussions with developers, financial institutions, Bob Sheppard, Co-Chair, Experts Group on Public/Private Risk Sharing, United Nations

Exchange rate liquidity facility would offer a cheaper currency hedging option, but its suitability for Indian conditions needs to be studied further (2/2)

- The cost savings for a project developer = cost of currency hedge – (the cost of liquidity facility + inflation differential).
- The liquidity facility would help to extend the tenor of foreign loans to up to 18 years as it reduces the risk for lenders.
- Implementation feasibility is moderate as the instrument was not widely used so far and lacks a precedent in India.

Conclusions and future work

Conclusions (1/2)

- The government of India would need to take a lead role in introducing financing instruments as private players would find it difficult to introduce new instruments that haven't been used in the country before.
- Government bonds have the highest potential to reduce costs (by up to 4.5 percentage points) and extend tenor by 10 years, but should incorporate proper checks and balances to avoid crowding out private investment.
- Infrastructure Debt Funds - Mutual Funds would reduce the cost of debt by up to 3 percentage points and increase tenor by up to 5 years, but the accrual of these benefits depends on the development of the corporate bond market.
- Partial credit guarantees would reduce the cost of debt by up to 1.9 percentage points and increase tenor by up to 5 years, depending on the development of the corporate bond market and the deal structure.

Conclusions (2/2)

- Partial risk guarantees would attract foreign funds and reduce the cost of debt by up to 1.8 percentage points and increase the tenor by up to 8 years. These guarantees require simple deal structures to be widely adopted.
- Foreign exchange liquidity facility would reduce the cost of debt by up to 1.4 percentage points and extend tenor by up to 8 years, but its suitability for Indian conditions needs to be studied further.
- The government could reduce the cost of debt further by extending an explicit subsidy through these instruments.

Future work

Depending on which instrument mixes seem most relevant to India, we recommend further analysis to examine the instruments in greater detail:

- **For the government bond:** on the duration of a direct government lending program for renewable energy financing to achieve a pre-determined target, such as capacity installation, without crowding out private finance in the long-run.
- **Infrastructure Debt Funds (IDF):** to explore design issues for making IDF-NBFCs suitable for renewable energy financing.
- **Partial credit guarantee:** on the design aspects of partial credit guarantees, such as the nature of coverage and risk sharing among stakeholders. Implementation issues such as project identification and sourcing of funds may also be explored.
- **Partial risk guarantee:** on the design of the instrument as well as the success of existing partial risk guarantee programs and the types of risk that should be covered under such a guarantee.
- **Exchange rate liquidity facility:** to examine the foreign exchange liquidity facility in more detail to identify a design that is suitable for Indian conditions. We also recommend analysis on specific issues such as the size of the liquidity facility and design of tariff.



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