

Infrastructure Finance: Enhancing Returns to Attract Private Sector Investors

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Background

Background

Increasing demand

- Asia needs to invest \$22.6 trillion from 2016 to 2030, \$1.5 trillion per year for infrastructure financing.
- The costs of climate change increase investment needs up to \$26 trillion.

Lack of public resource

- The public sector finances around 92% of infrastructure investment in Asia (ADB 2017).
- The potential for additional public-sector financing for infrastructure is limited.

Declining Bank Loan

- Commercial banks provided an estimated 90% of all private debt for infrastructure financing from 1999 to 2009 (WEF, 2014).
- Bank loans have fallen because of stringent capital requirement under Basel III.

Widening Funding Gap

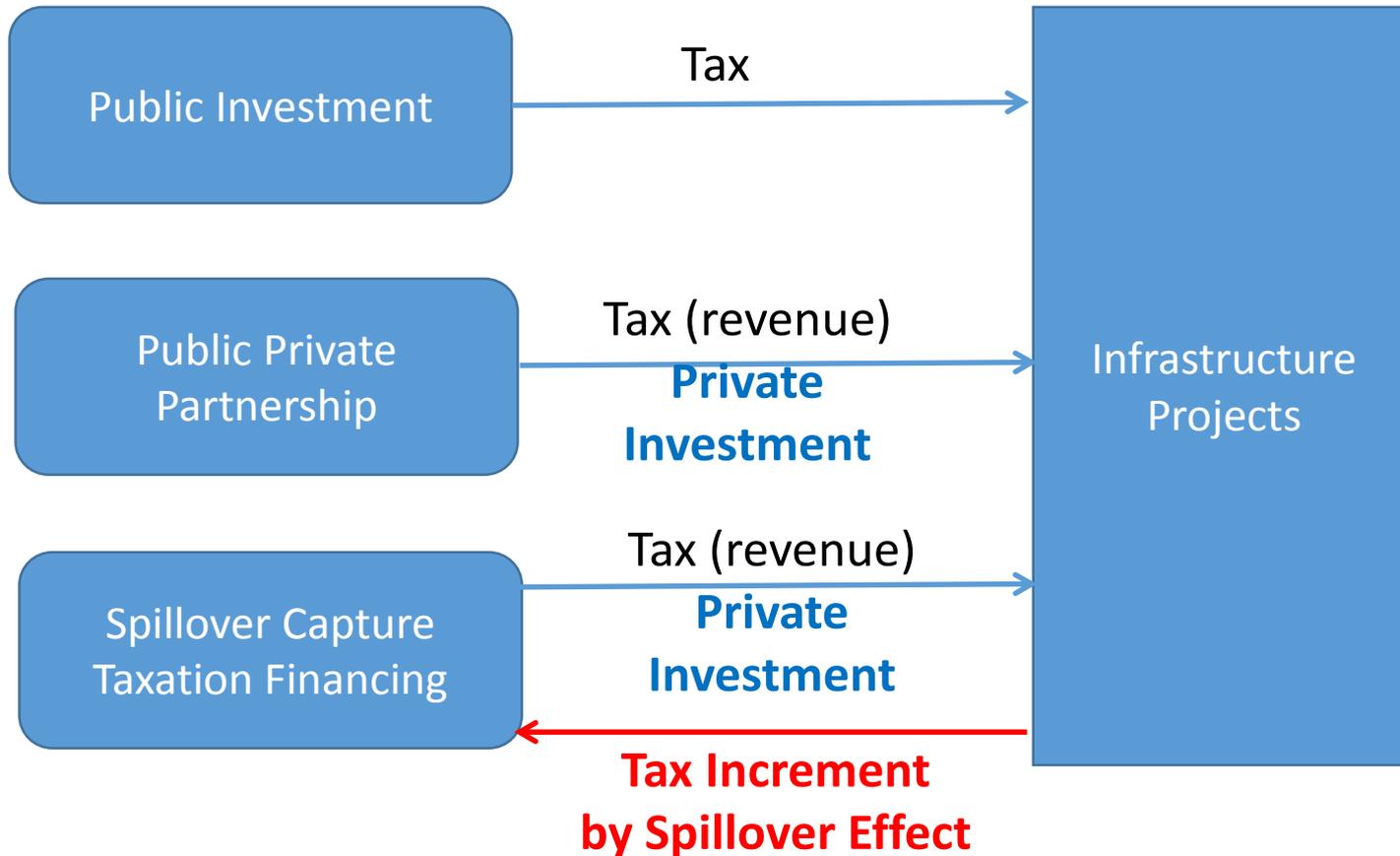
- Huge infrastructure financing gap threatens sustainable economic growth.
- Therefore private investment can plug the huge funding gap.

Background

- Against these backdrops, it has become increasingly critical to design creative and innovative solutions to infrastructure funding problems and thus to secure the greater involvement of private sector in financing infrastructure projects.
- Given the risks inherent in infrastructure projects which requires large capital and long gestation period, it is necessary to provide risk mitigation or a carrot to private investors.
- However, government explicit support and minimum revenue guarantee may cause moral hazard and thus decrease the efficiency. Therefore appropriate risk-return sharing mechanism facilitates private investment to achieve public goals of both infrastructure development and economic development.
- It is expected that Dean Yoshino's idea, so-called "spillover capture taxation bond" and self-financing mechanism to utilize the tax increment occurred from the project can solve funding problems without additional fiscal burden.

Spillover Capture Taxation Financing

- More efficient use of public resources
- Self-selection of the projects with good externalities



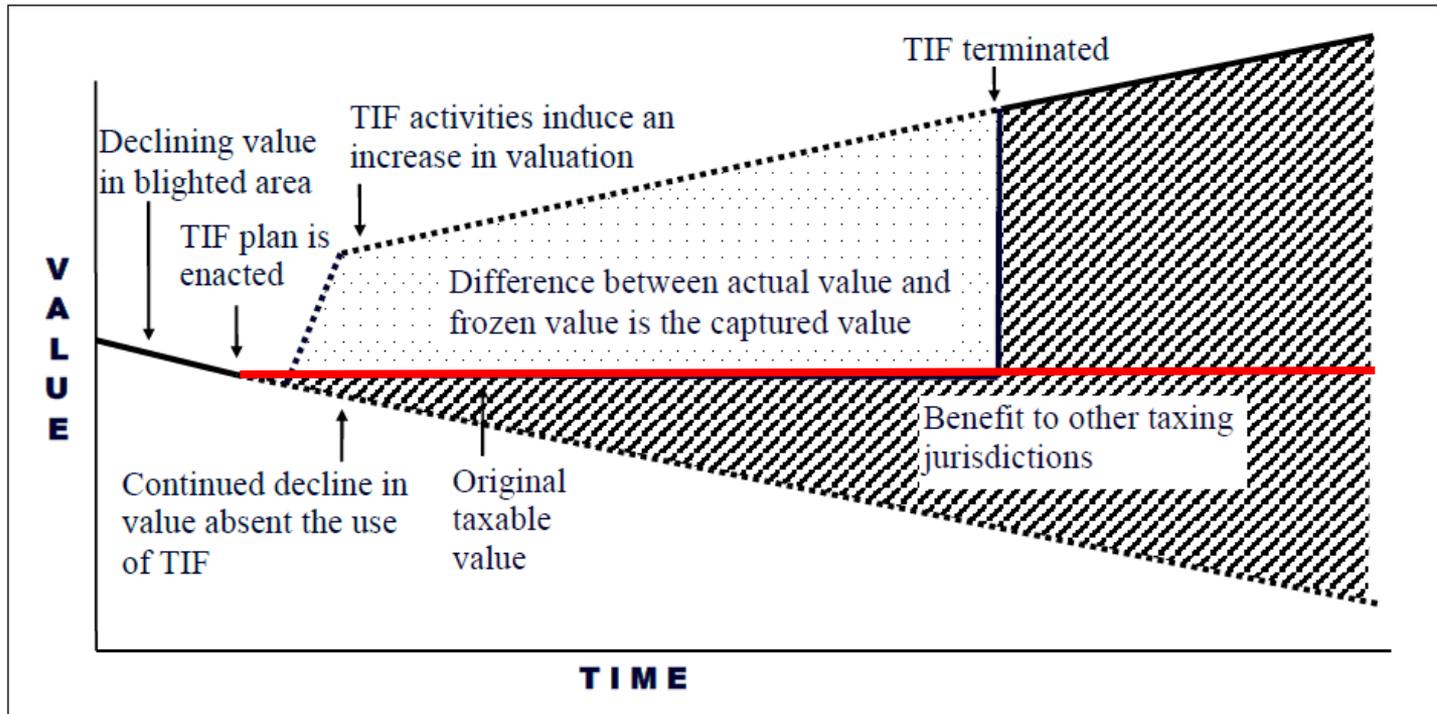
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Attempts to Enhance Returns For Private Investors

- 1) Tax Increment Financing**
- 2) GDP-linked Bond**
- 3) Stapled Securities**

Tax Increment Financing (TIF)

- Tax Increment Financing (TIF) is an upfront financing method for the development and infrastructure of an area of concern (TIF district) by using the difference between actual value and frozen (base) value as source of repayment.



Source: Minnesota Department of Revenue (2017), [Guide to 2017 Auditor/Treasurer Manual](#)

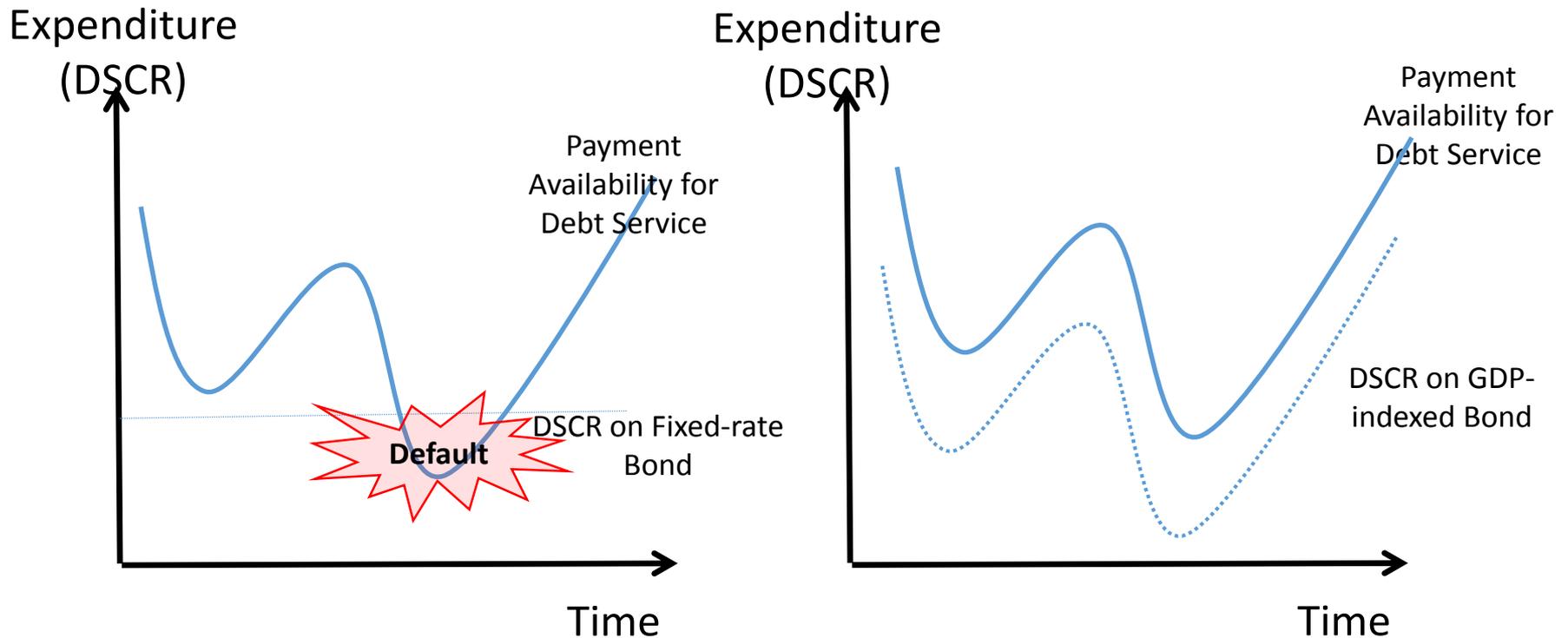
Tax Increment Financing (TIF)

- TIF provides localities with an off-balance sheet financing mechanism and gives a certain amount of flexibility and autonomy for local government decision making (Weber & Goddeeris, 2007).
- TIF differs from tax abatement, tax credits, other tax incentives, and direct subsidy program in terms of self-financing. TIF began first in California in 1952 and it began to grow on a large scale in the late 1970s and 1980s. Currently it has been popular and 49 states in the US have allowed some variants of this financing scheme. (Chapman, 2017).
- The full cost of development project may or may not be covered by the tax increment alone, so the government may combine both TIF (bond) and general-purpose government bond or revenue bond.
- TIF bonds are secured by the future tax increment and thus it can reduce the upfront cost for infrastructure projects which is a major impediment to undertaking the project.

GDP-linked Bonds

- GDP-linked repayment scheme lets the issuing government to pay smaller debt service when economic growth is slower than expected while it enforces the issuing government to pay higher interest rates when its economy is doing better than expected.
- In the language of Kopf (2017), GDP-linked securities is to fix interest payment to GDP growth. Since payment ability and debt servicing costs are taken into account simultaneously, default can be avoided.
- This scheme helps to prevent the issuing country from driving itself towards the excessive expansionary fiscal policy when the economy is running hot and thus offering partial protection to investors against inflation risks; when the economy is experiencing a slowdown, it can ease the government's debt burden enough to reduce the likelihood of default.

Reducing the Likelihood of Default



Source: Christian Kopf(2017), The case for GDP-linked securities

GDP-linked Bonds: *Argentine Case*

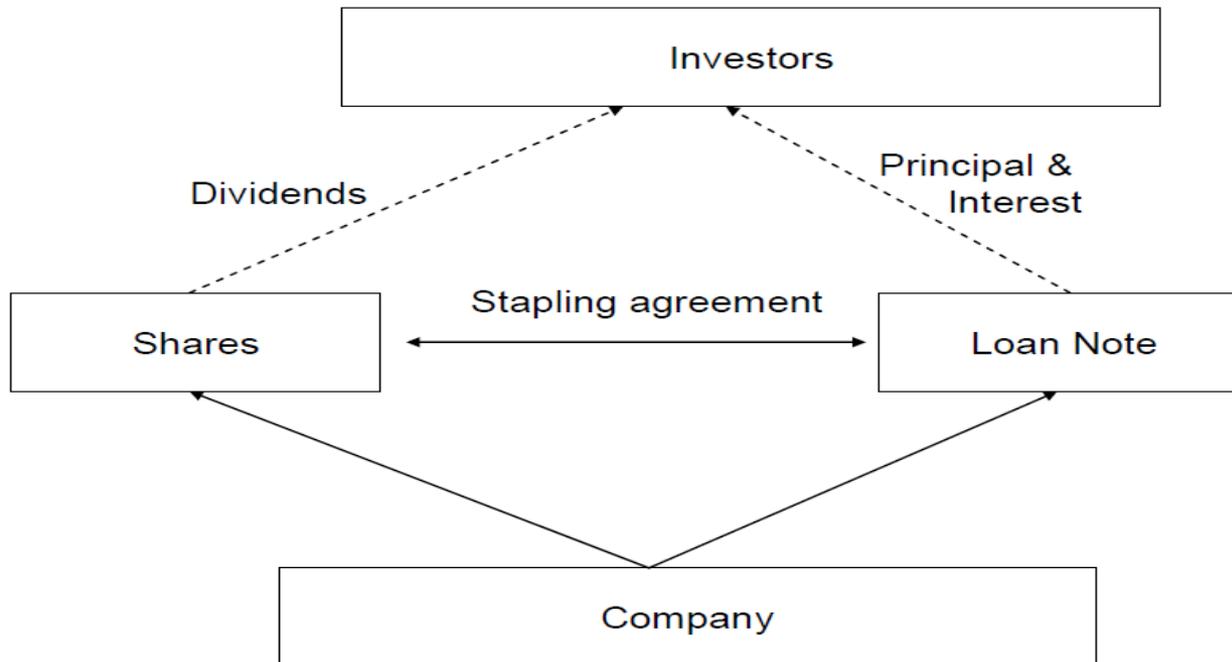
- One of the most representative use of GDP-linked securities is that used by Argentina. In 2005, Argentina engaged in debt restructuring package worth of USD 62 billion.
- The interest payment on Argentina's GDP-linked securities is made under the three conditions: (i) real GDP is greater than base-case GDP; (ii) real annual GDP growth is greater than base-case GDP growth with threshold set at 4.26% in 2005 and slowly being lowered to reach 3% by 2015; (iii) total payments on the warrants do not go over the payment cap set at 0.48 per unit of currency of the warrants.

$$\delta_t^{GDP} = \begin{cases} \bar{\delta} + \gamma q_t (Y_t - Y_0 e^{\bar{g}t}) & \text{for } Y_t > Y_0 e^{\bar{g}t}, Y_t > Y_{t-1} e^{g^*} \\ \bar{\delta} & \text{otherwise.} \end{cases}$$

- *Payment = ((0.05 * excess GDP) * unit of currency coefficient* notional value of GDP-linked securities)*

Stapled Securities

- Stapled securities are created when two or more securities by the same or different entities are contractually bound together so that they cannot be bought or sold separately.



Source: Kevin Davis (2012), *Stapled Securities: Antipodean Anomaly or Adaptable Innovation?*

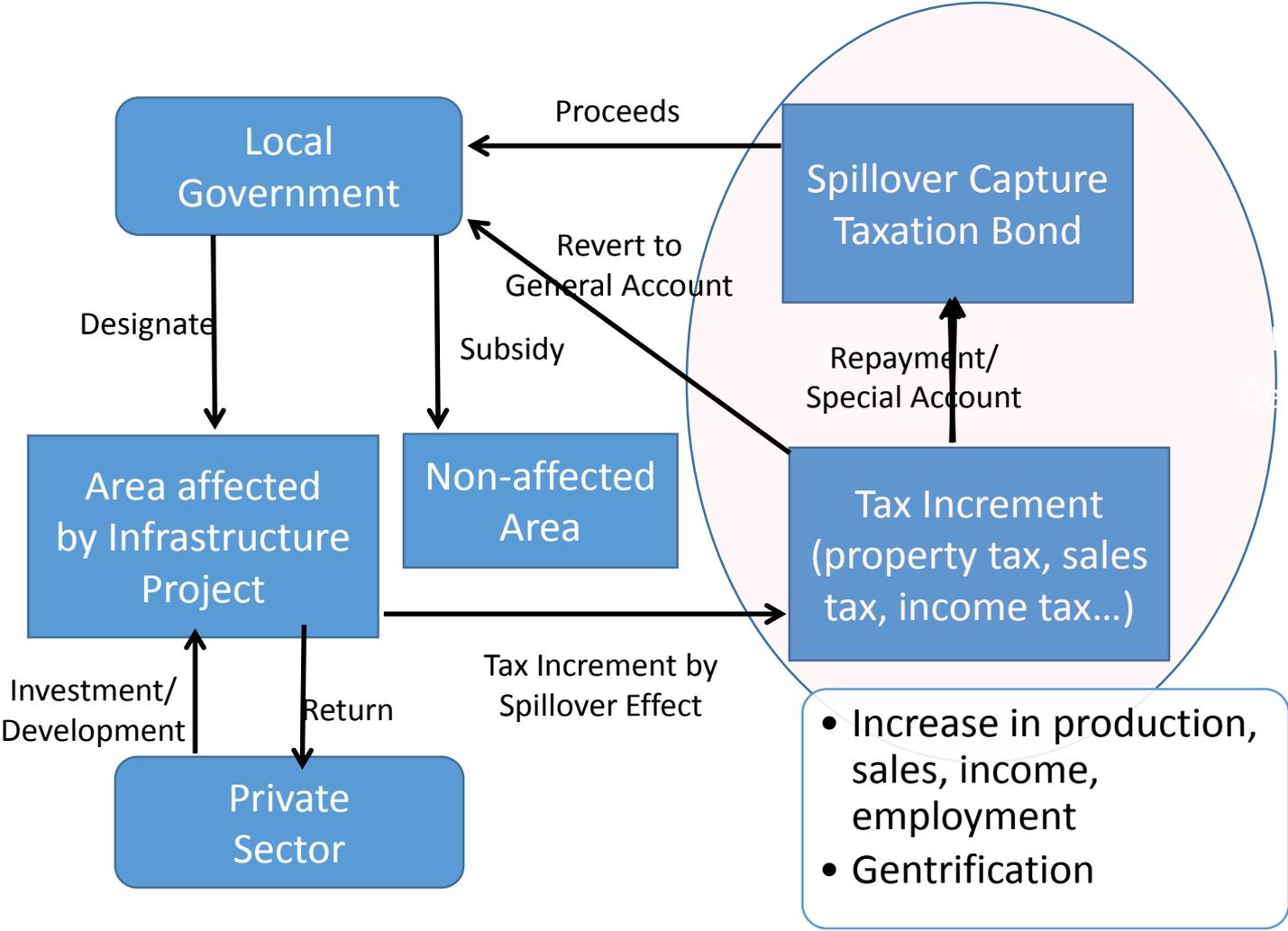
Stapled Securities

- This method has been frequently used in Australia by a large range of issuers such as Australian Real Estate Investment Trusts, infrastructure funds and major banks.
- Stapling different securities might create value and expand the investor opportunity set (Davis, 2012)
- The most obvious rationale for stapling is tax arbitrage by stapling of securities issued by different entities subject to differential taxation arrangement.
- Investors receive an income stream comprising dividends, interest and a return of principal – each component of which (under the Australian tax system) involves different tax treatment. If stapling reduces the total tax bill paid on income generated by a particular business activity, stakeholders benefit.

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Feasibility and Implications

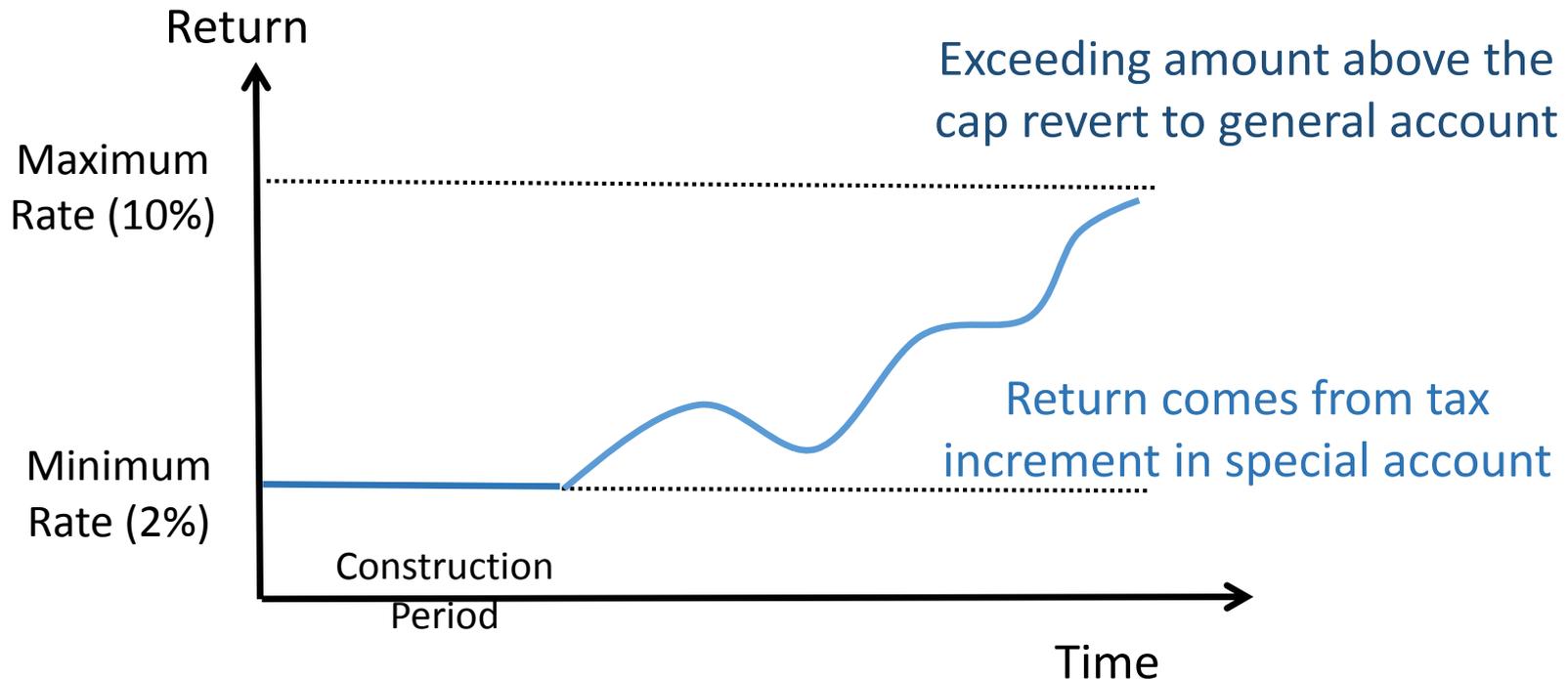
Feasible Financing Scheme: Example



Spillover Capture Taxation Bond: Example

- The bondholder is given a minimum coupon of 2%, with potential for greater coupon payments if spillover captured tax growth exceeds 4%. However, the maximum coupon paid out is capped at 10% in order to avoid high debt service.

$$\text{Coupon}_t = \min \{ \max [2\%, g_t^{\text{tax}} - 2\%], 10\% \}$$



Carrot to induce private investment

- Spillover capture taxation bond can be used as a carrot to induce private investment for infrastructure development that would not otherwise occur.
- Investors have incentives to closely monitor the project performance that determines the level of interest earnings for the investors.
- The mechanism of tax growth indexed bond can reduce the likelihood of default over the long life span of the project based on the payment availability.
- Stapled securities offset the prolonged repayment available in infrastructure projects because Infrastructure projects require huge investment in early stages of construction and return long-term repayments upon the completion of construction.
- This imbalance between investment and payment can be overcome through stapling securities that provide dividends, interest payment and return of a invested capital.

Remaining Issues for Implementation

- To designate (define) affected/non-affected area by the project
 - There might be unobserved factors that could cause affected areas (TIF areas) to grow faster or slower than other non-affected areas.
- To determine a set of variables (metrics) to measure spillover effects
- To test but-for condition (the necessity of the project)
- To strengthen a central-local government partnership

Appendix

Climate Awareness Bond (World Bank)

Summary of Terms and Conditions

Issuer	European Investment Bank
Issuer Rating	Aaa/AAA/AAA
Minimum Issue Size	€600,000,000
Denomination	€100
Subscription Period	From 29 May up to and including 22 June 2007 (closing at 17.00 GMT)
Issue Price	100%
Coupon	None
Maturity Date	28 June 2012 (5 years)
Payment Date	28 June 2007
Redemption Amount	100% at Maturity (principal protected)
Index	The FTSE4Good Environmental Leaders Europe 40 Index
Index Participation	75.00 to 85.00%, to be determined on 25 June 2007
Additional Amount at Maturity	

$$100 * \max \left[5\%, \text{Participation} * \left(\frac{\text{TheIndex}_{\text{average}}}{\text{TheIndex}_{\text{initial}}} - 1 \right) \right]$$

TheIndex_{average} = Arithmetic Average of the monthly closing levels over the final 7 months (7 observations)

TheIndex_{initial} = official closing level of the Index on 25 June 2007 (the Issue Date) = initial level

Listing Luxembourg, Euronext Amsterdam, Milan

Source: EIB(2007), EPOS II: The Climate Awareness Bond

Wage-indexed Bonds

- Uruguay Government intends to issue local-currency Treasury Notes linked to nominal wage index after approval of new Pension Unit.
- On April 13th, Uruguay's Congress passed a bill that creates a new daily accounting unit called as Unidad Previsional (Pension Unit) that will track changes to the nominal wage index. The Pension Unit will take the initial value of one peso (\$U 1.00) on the 04/30/2018.
- During the second semester, the government plans to auction in the domestic market treasury notes linked to wages. The supply of this new tradable asset class aims to give insurance companies in the retirement annuity business a means to hedge their currency and maturity risks in their balance sheets.



Thank You!