Financing for infrastructure By Insurance companies

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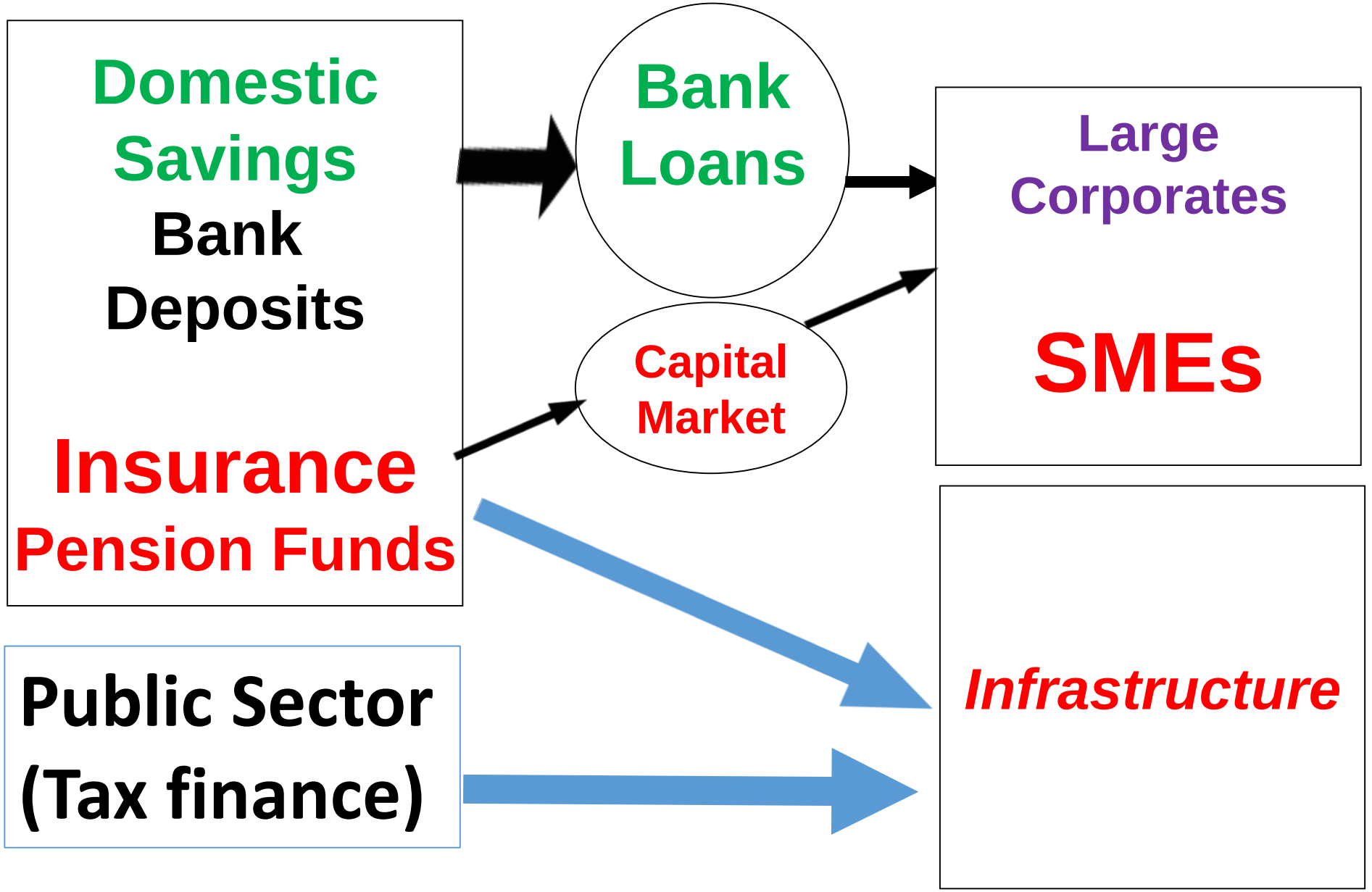
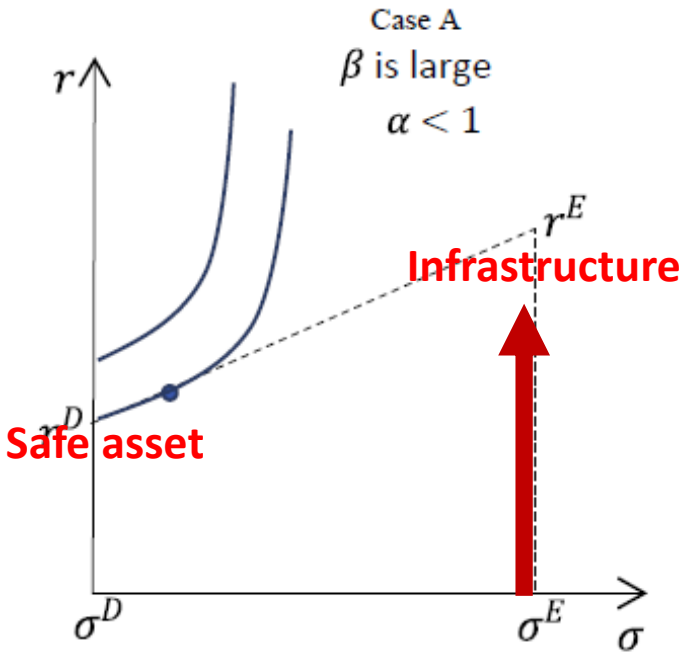
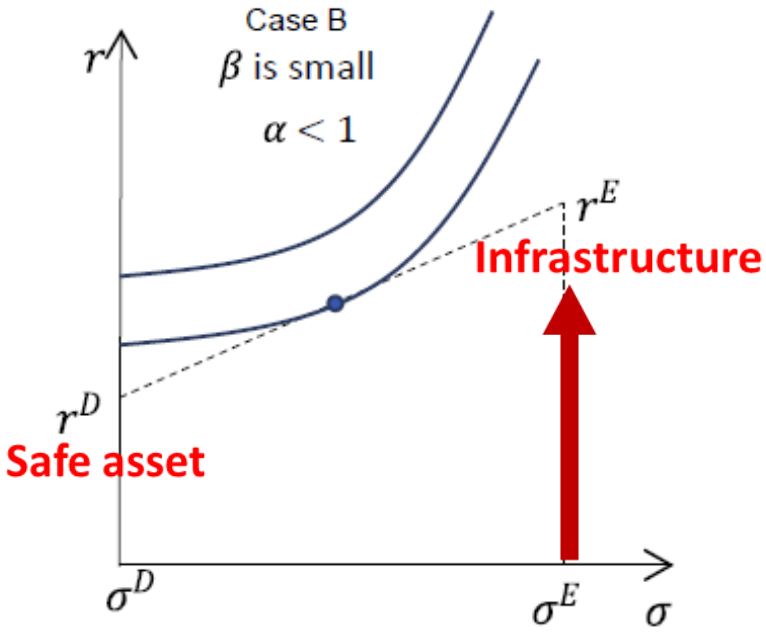
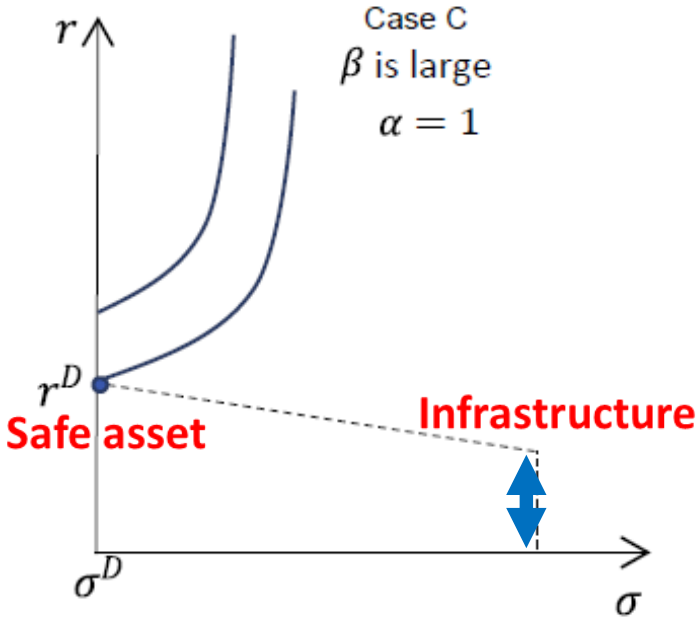
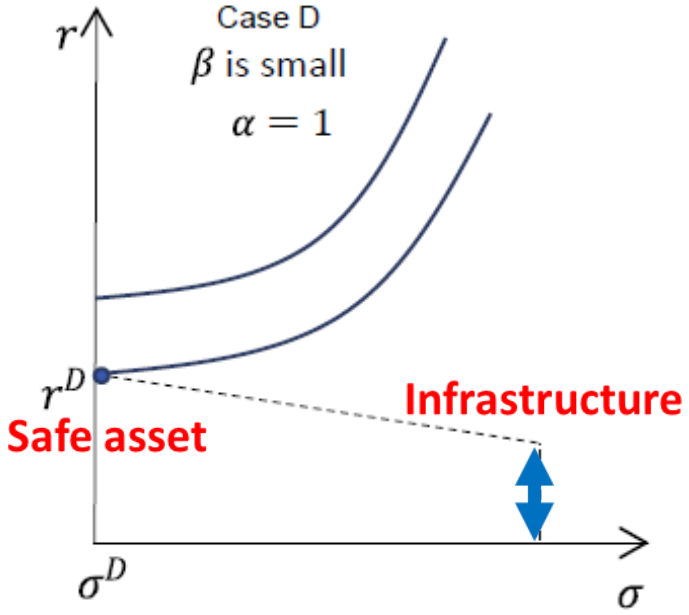
Circulation of Savings into Domestic Investment

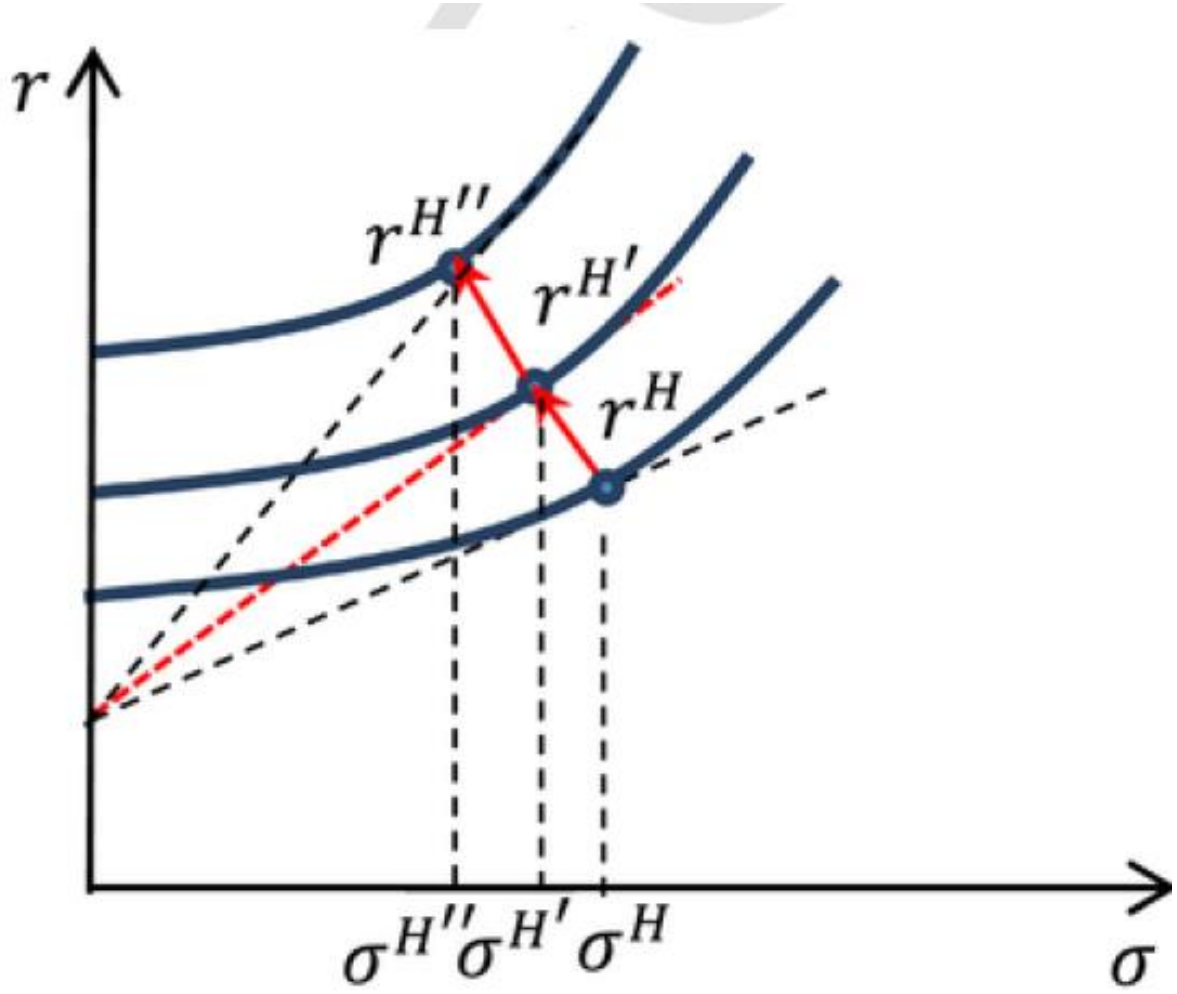



Case A
β is large
$\alpha < 1$
r
r^E
r^D
Infrastructure
Safe asset
σ^D
σ^E
σ


Case B
β is small
$\alpha < 1$
r
r^E
r^D
Infrastructure
Safe asset
σ^D
σ^E
σ

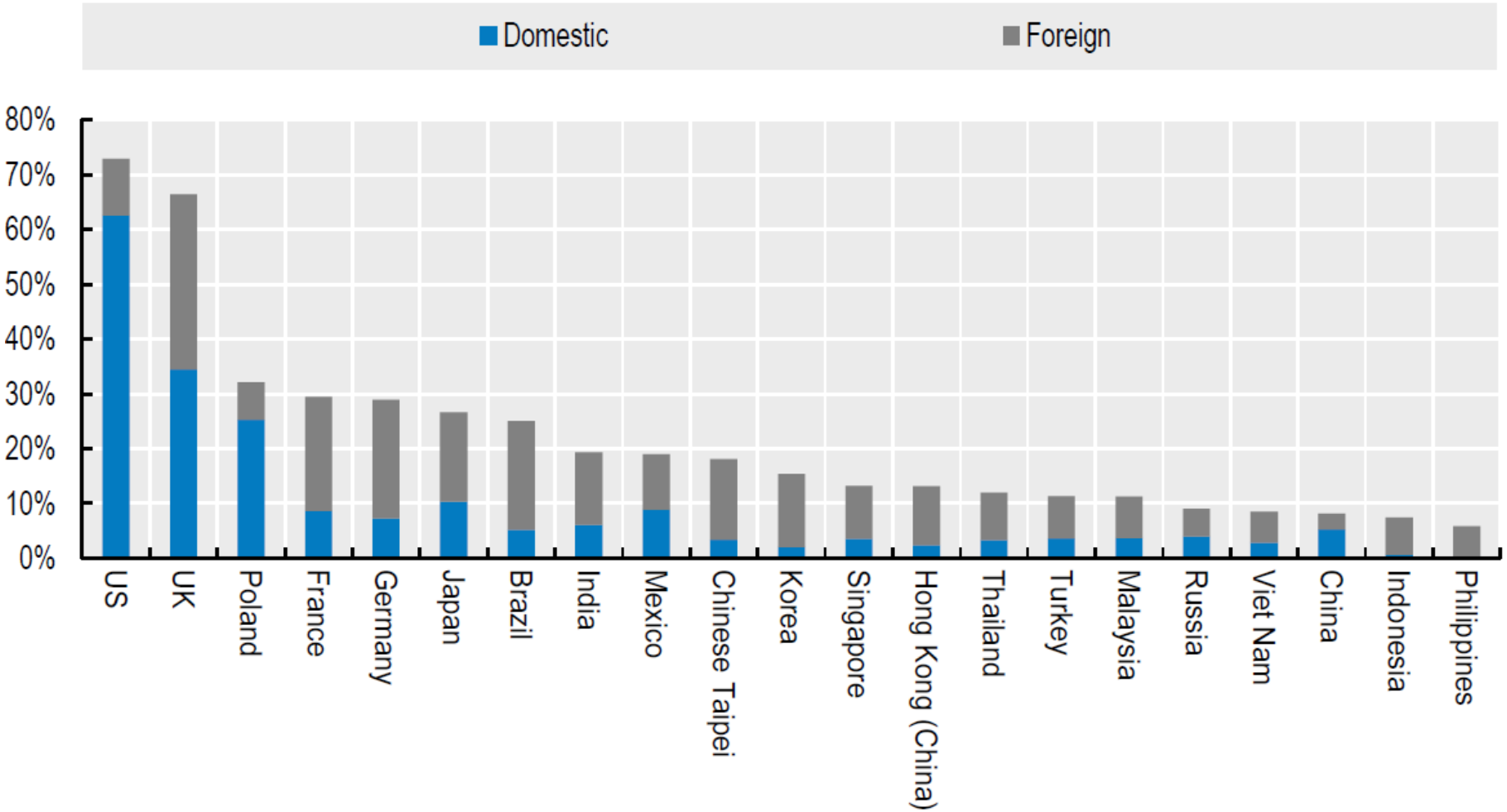

Case C
β is large
$\alpha = 1$
r
r^D
Infrastructure
Safe asset
σ^D
σ


Case D
β is small
$\alpha = 1$
r
r^D
Infrastructure
Safe asset
σ^D
σ



. Increase in rate of return and reduce of risk by introducing DLT-based green funds S

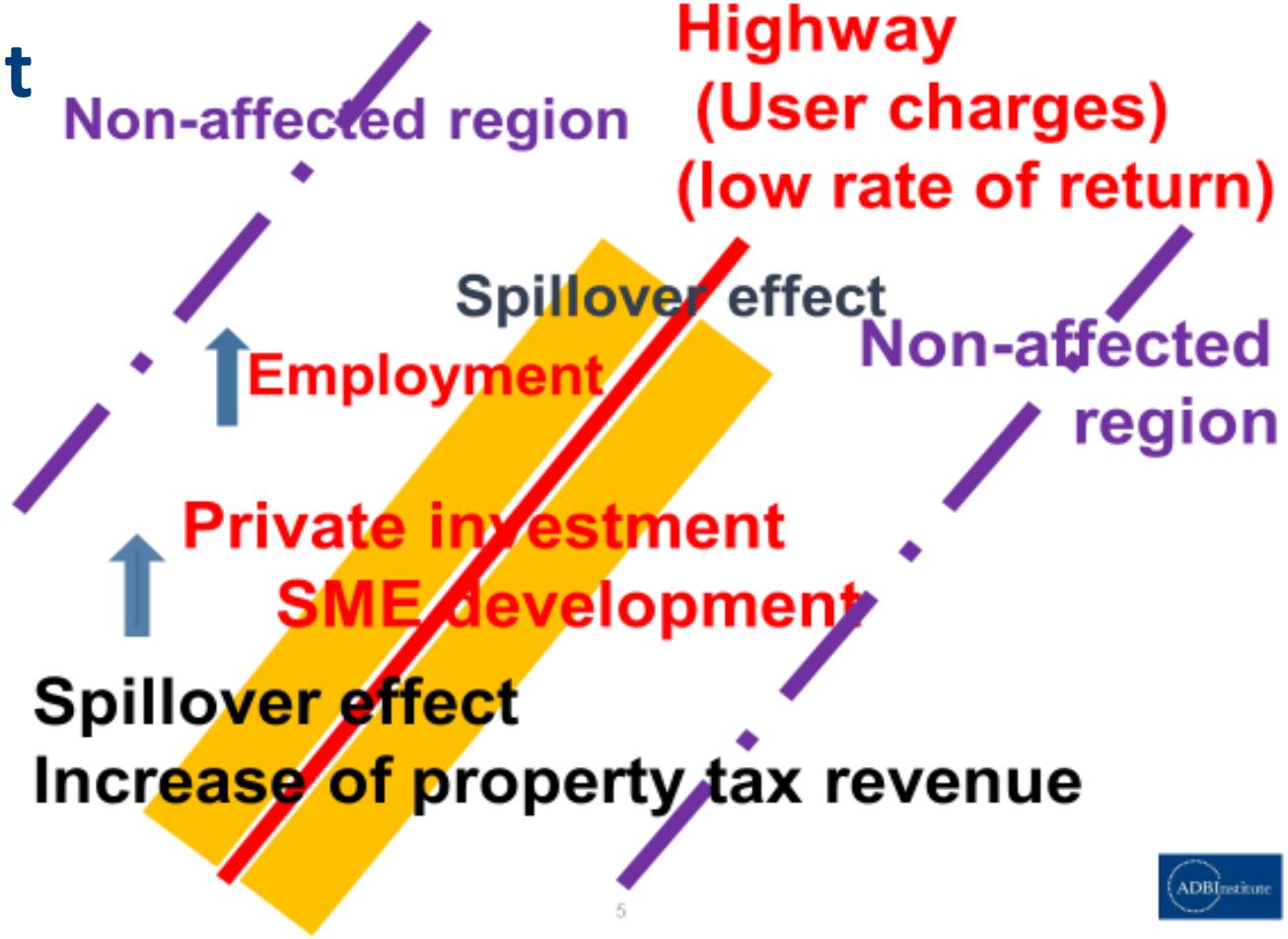
Figure 20. Institutional investors, domestic versus foreign, as of end 2016



urce: FactSet, OECD calculations. See methodology for details.

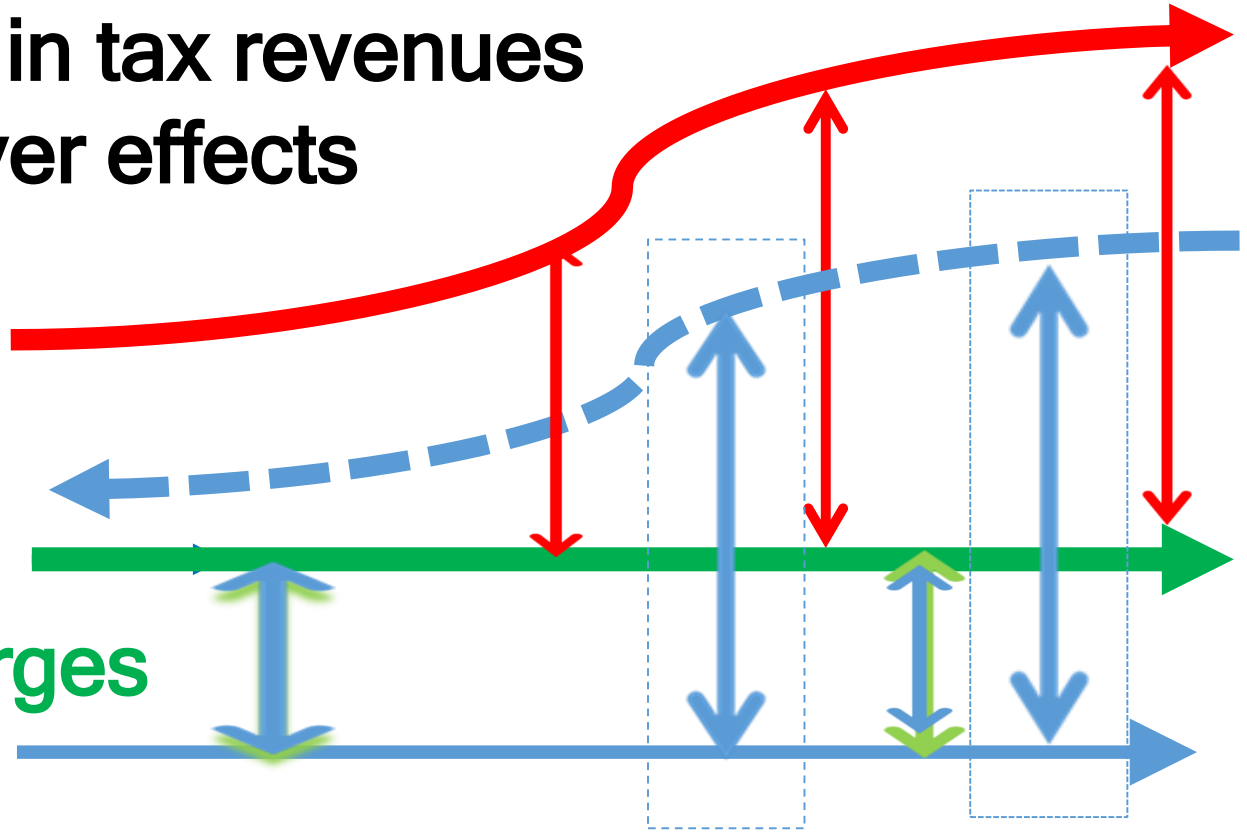
Spillover Effects of Infrastructure Investment

Railways
Electricity



User Charges are not enough

Increase in tax revenues
by spillover effects



user charges

The Southern Tagalog Arterial Road (STAR Highway), Philippines, Manila

Tax Revenues in three cities

Yoshino and Pontines (2015)

ADBI Discussion paper 549

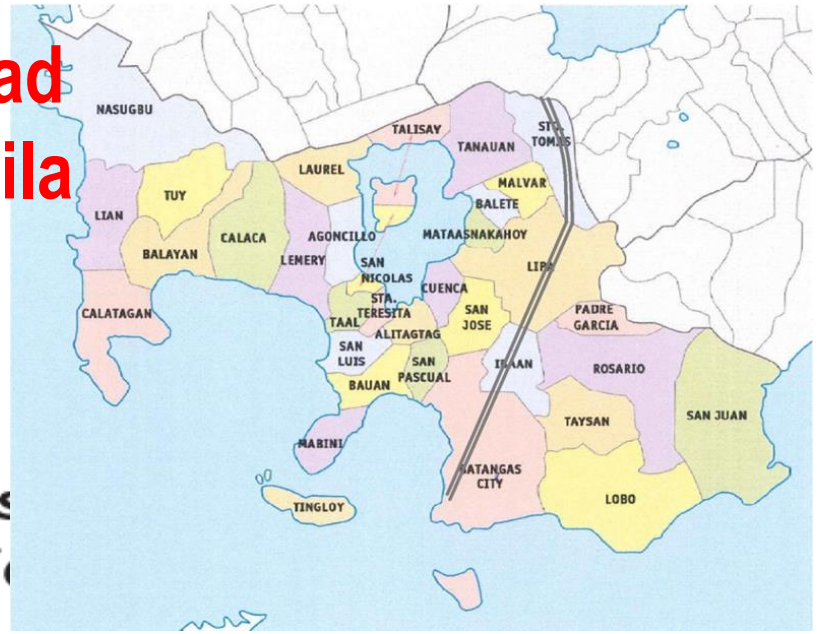


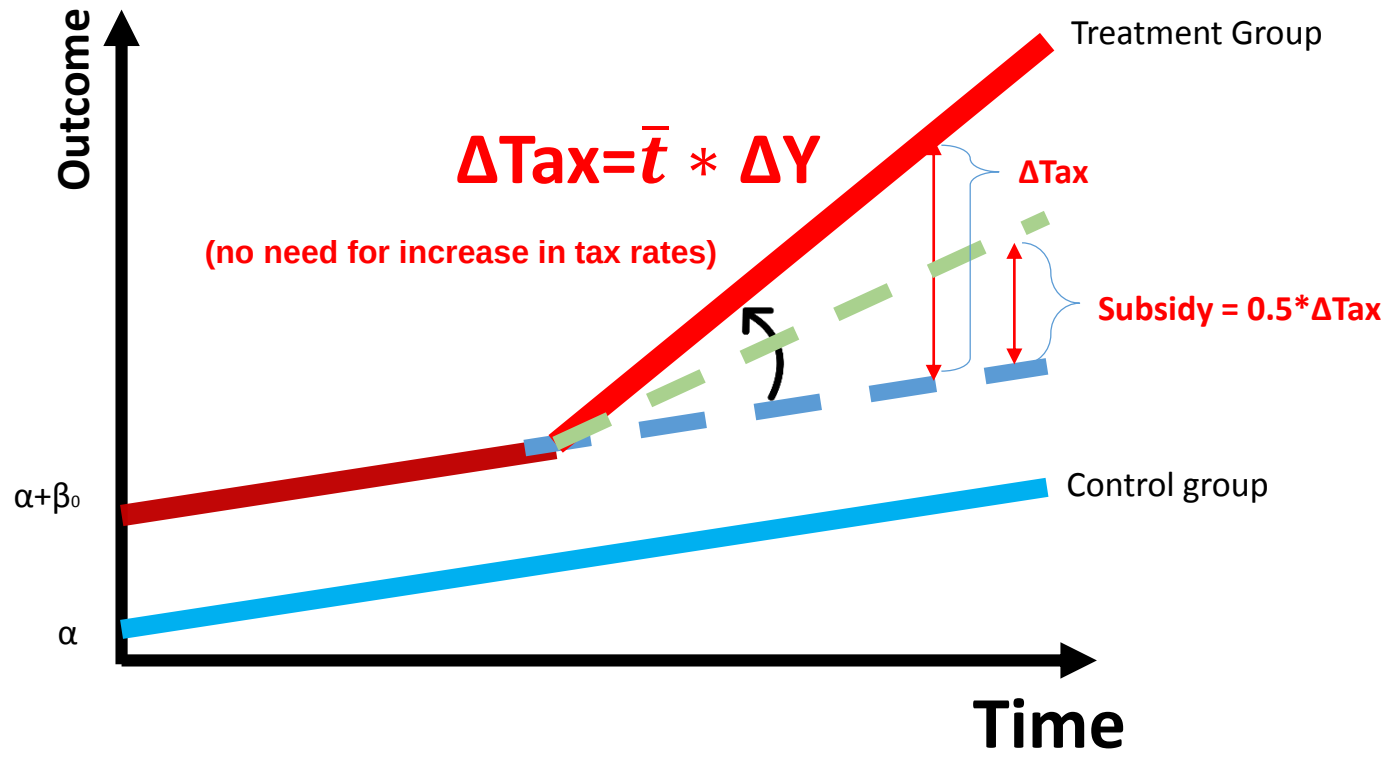
Table 3.3 Calculated Increase in Busines
Beneficiary Group Relative to Nonbenefi

	t-2	t-1	t	t+1	t+2	t+3	t+4
Lipa City	134.36	173.50	249.70	184.47	191.81	257.35	371.93
Ibaan	5.84	7.04	7.97	6.80	5.46	10.05	12.94
Batangas City	490.90	622.65	652.83	637.89	599.49	742.28	1,208.61

Construction

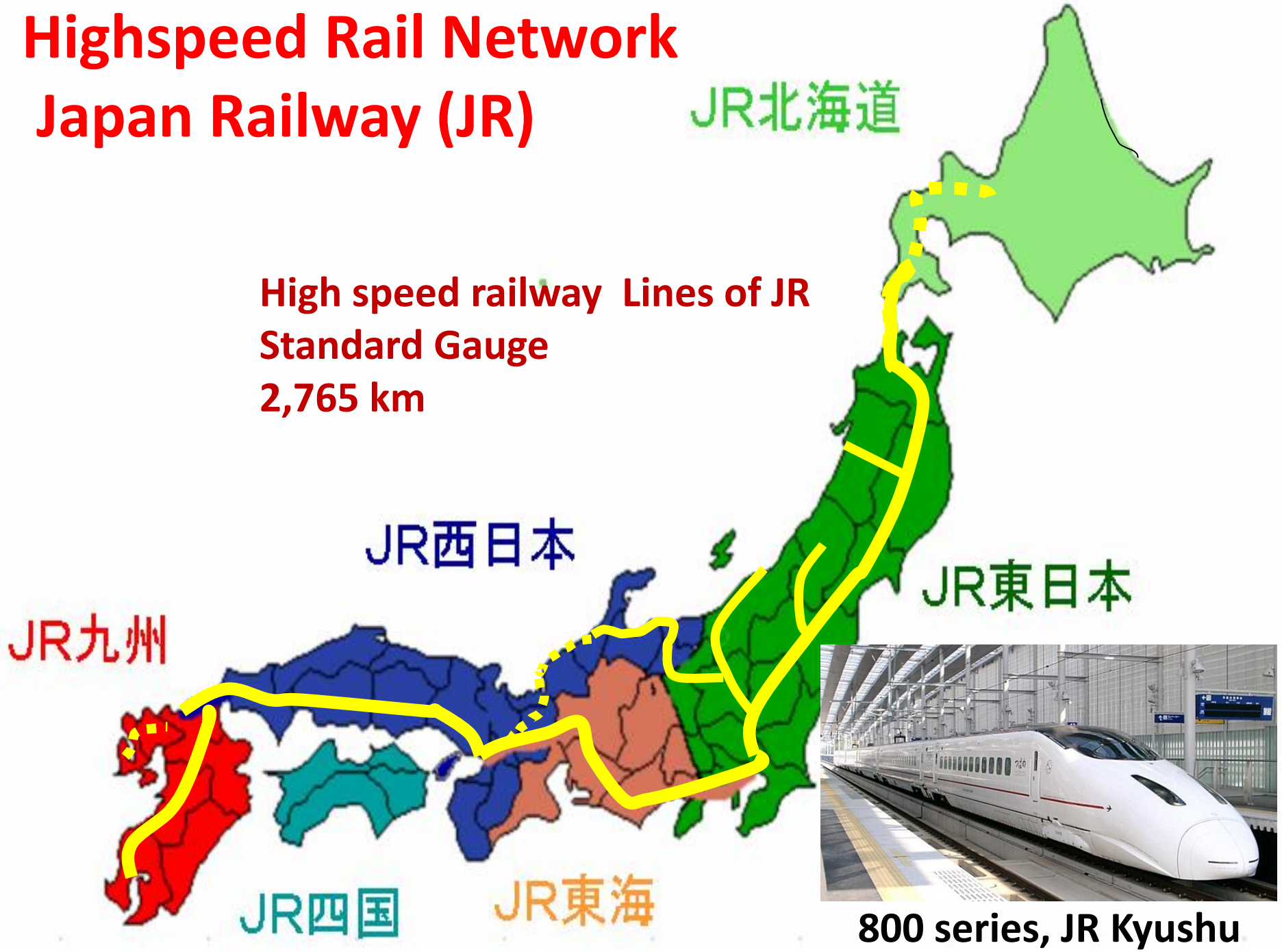
Operation period

Concept of subsidy based on additional flow of tax revenue due to infrastructure



$$Outcome = \alpha + \beta_0 D_i + \sum_{t=1}^{N} \beta_0 * D_i * T_t + \varepsilon_{i,t}$$

Highspeed Rail Network
Japan Railway (JR)

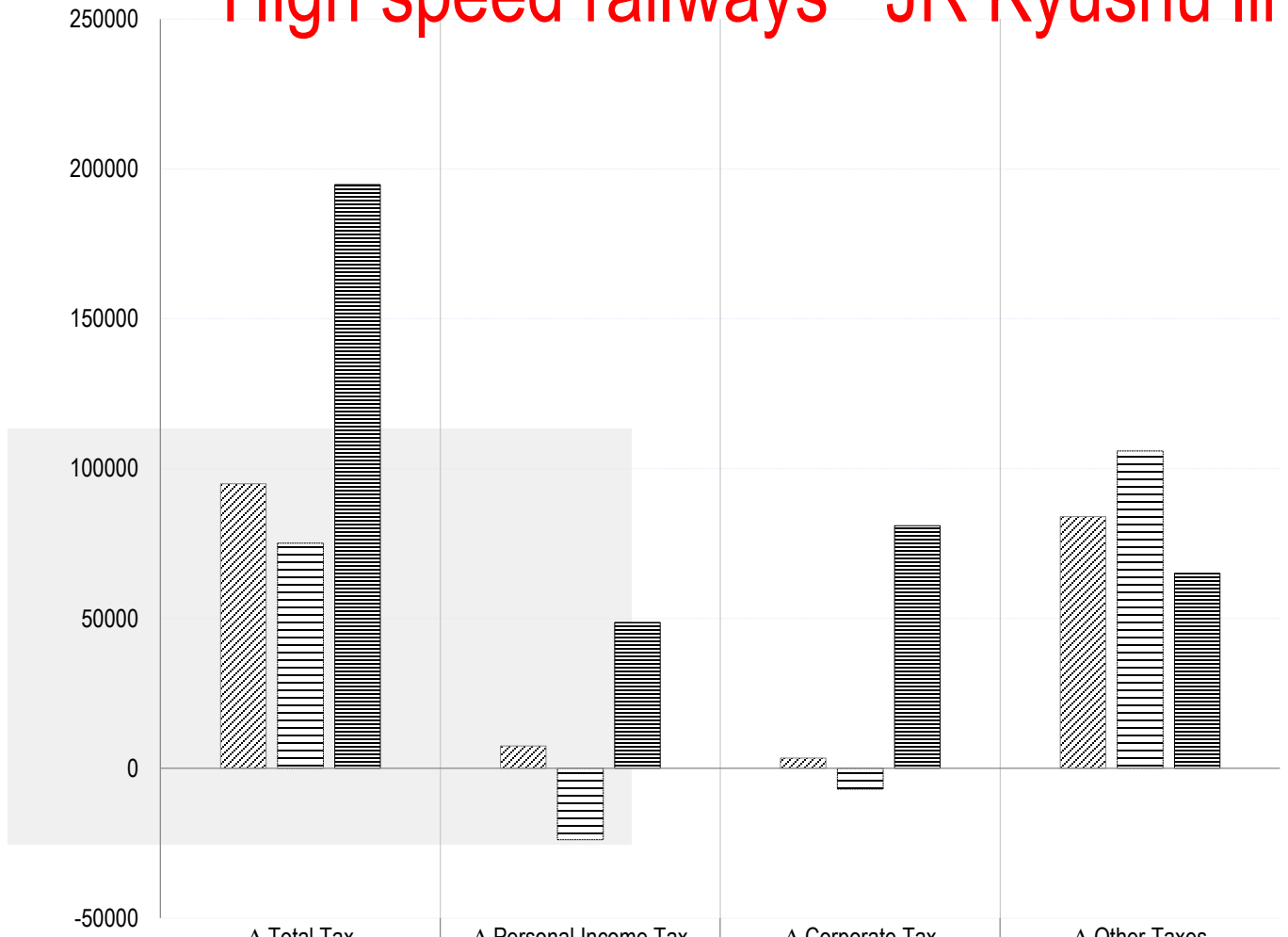


High speed railway Lines of JR
Standard Gauge
2,765 km

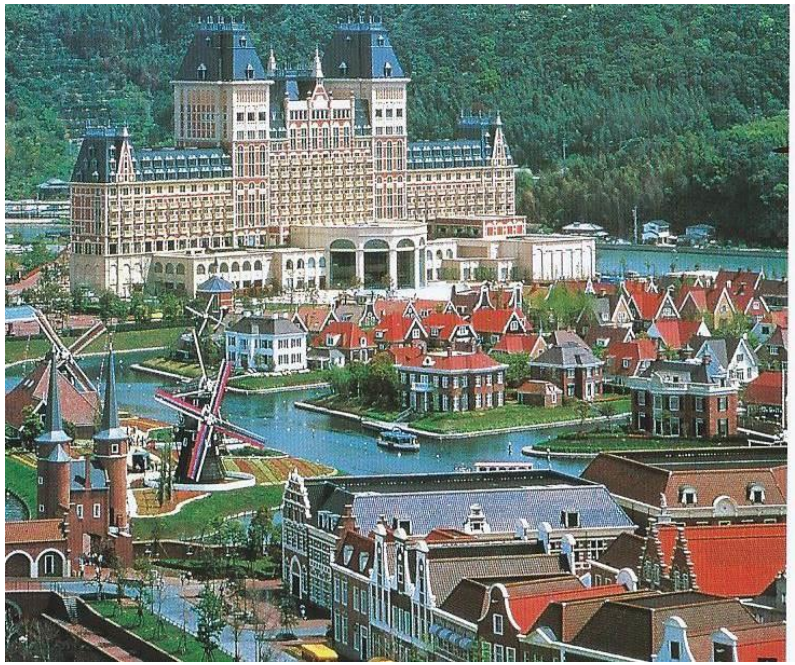
800 series, JR Kyushu

Estimation results of Increased tax revenues

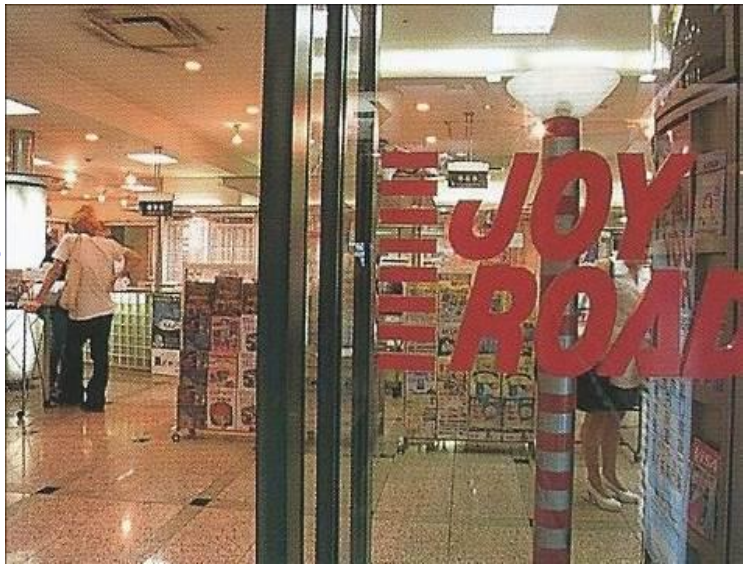
High speed railways JR Kyushu line



		Δ Total Tax	Δ Personal Income Tax	Δ Corporate Tax	Δ Other Taxes
Construction	[1991-2003]	94895	7447	3435	84012
Operation 1	[2004-2010]	75131	-23843	-6883	105858
Operation 2	[2011-2013]	194790	48690	80998	65102

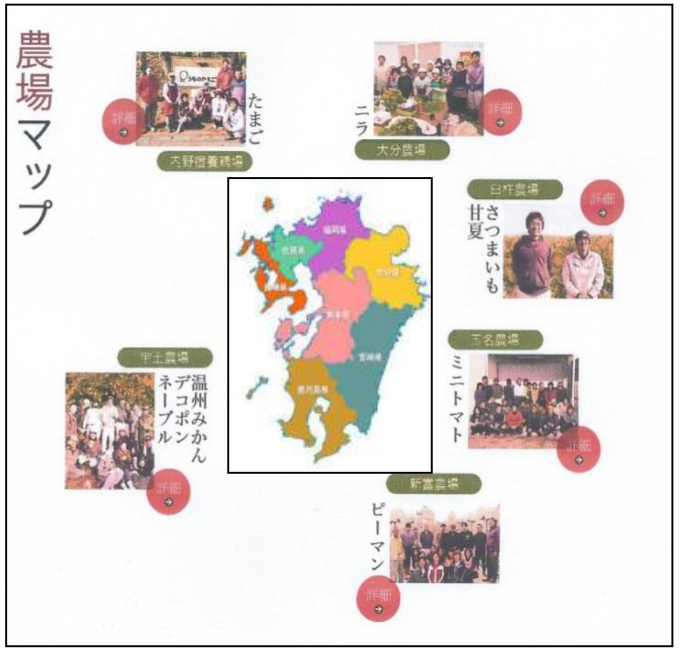


Hotel Business



Promote Tourism

Restaurants at Various Stations

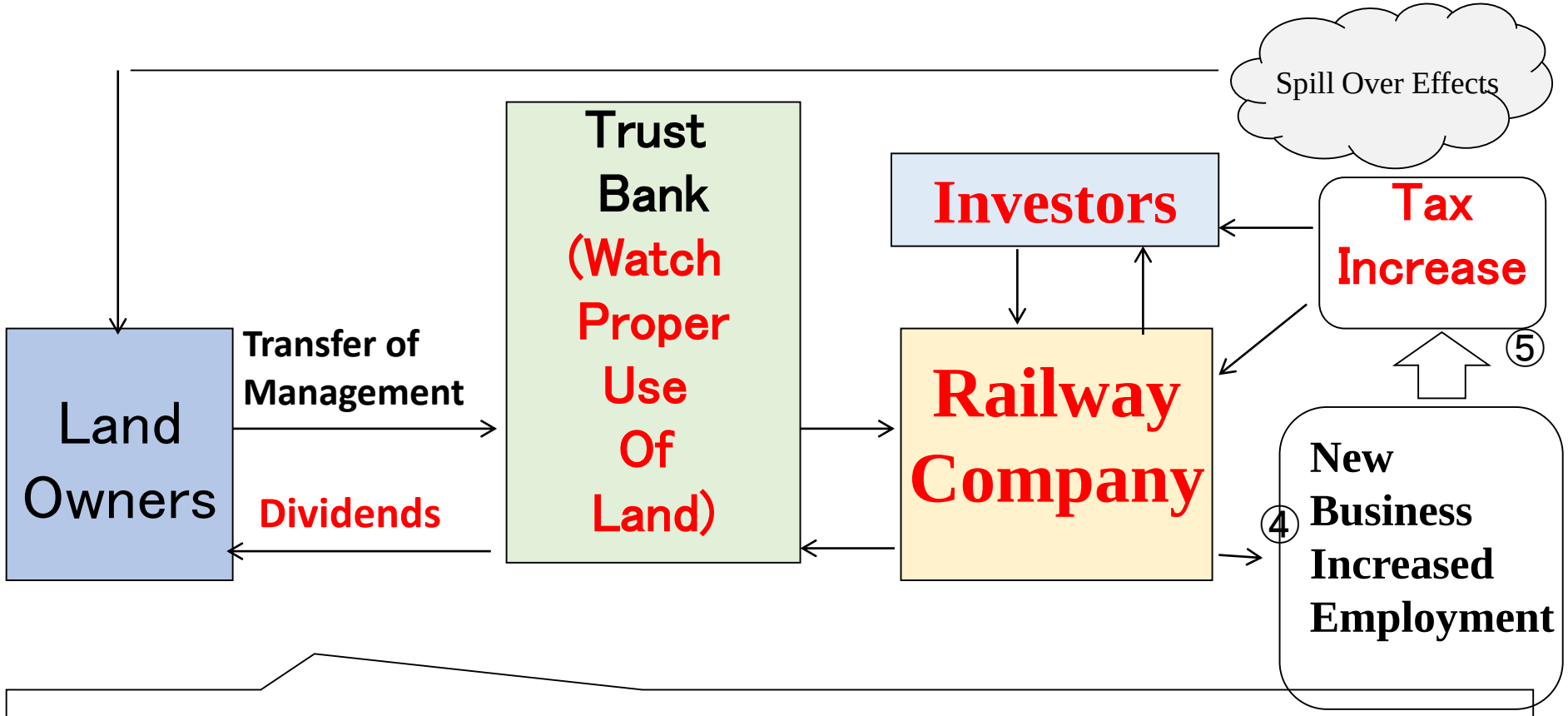


JR Farm

Macroeconomic Effect of Infrastructure Investment

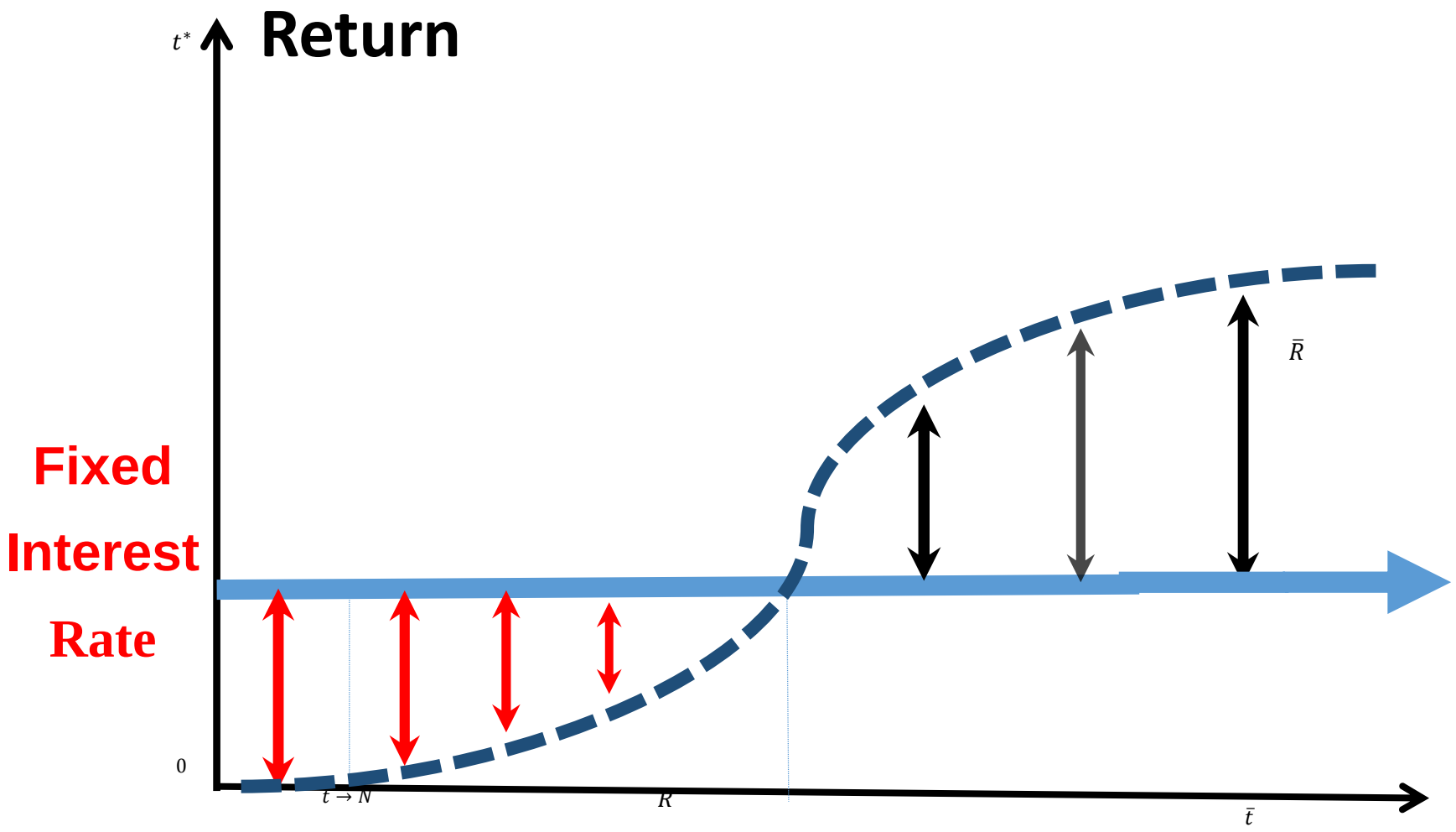
Spillover Effects Estimated from a Macroeconomic Translog Production Function				
	1956-60	1961-65	2001-05	2006-10
Direct effect	0.696	0.737	0.114	0.108
Indirect effect (K_p)	0.452	0.557	0.091	0.085
Indirect effect (L)	1.071	0.973	0.132	0.125
20% returned	0.305	0.306	0.045	0.042
Increment	**43.8%**	**41.5%**	**39.0%**	**39.1%**

Land Trust for Infrastructure Investment

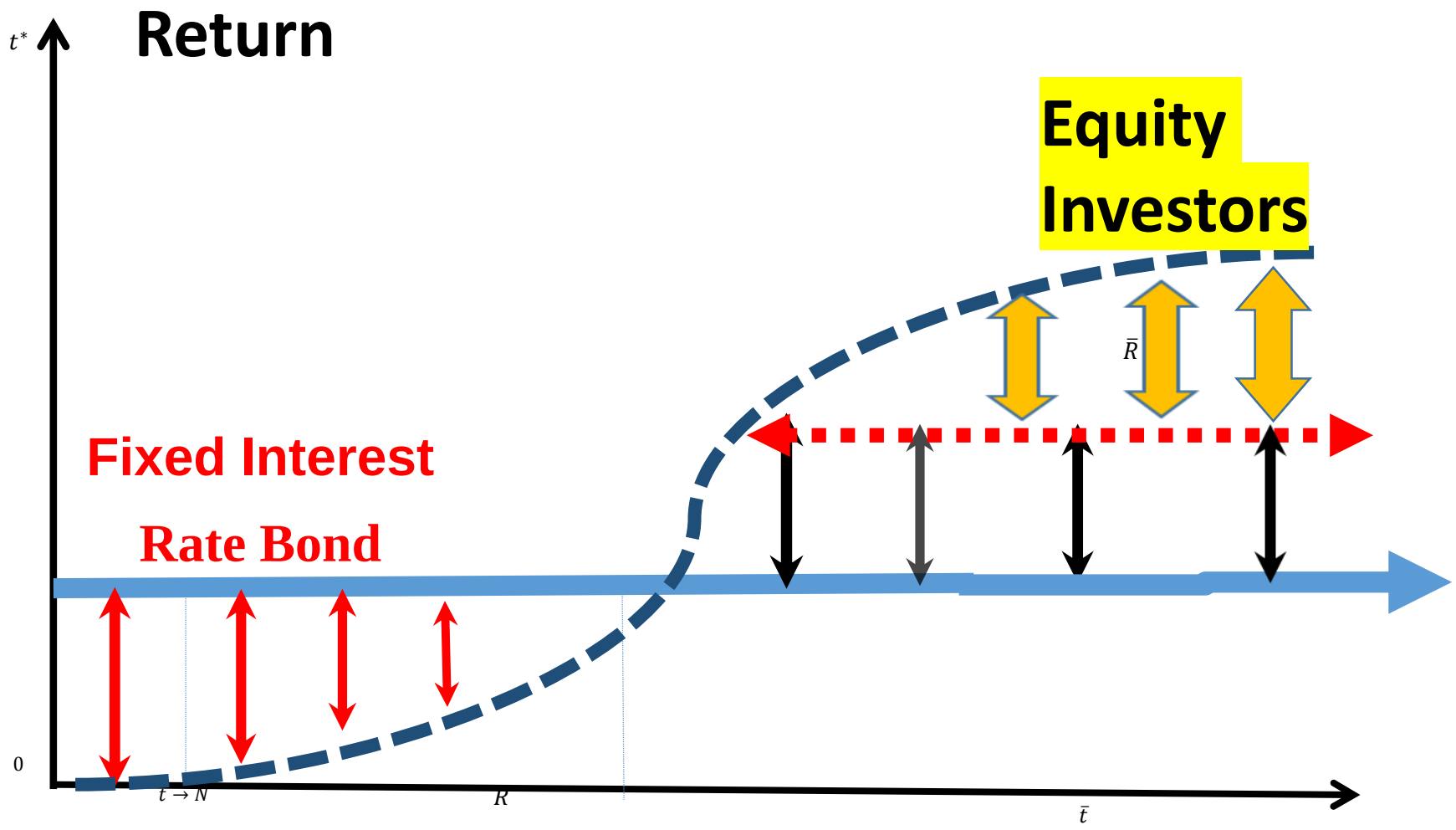


1, Reduction of Costs of Land Purchase
2, Leasing contract
3, future tax revenues can be used for repayment
4, Land owners keep their ownership

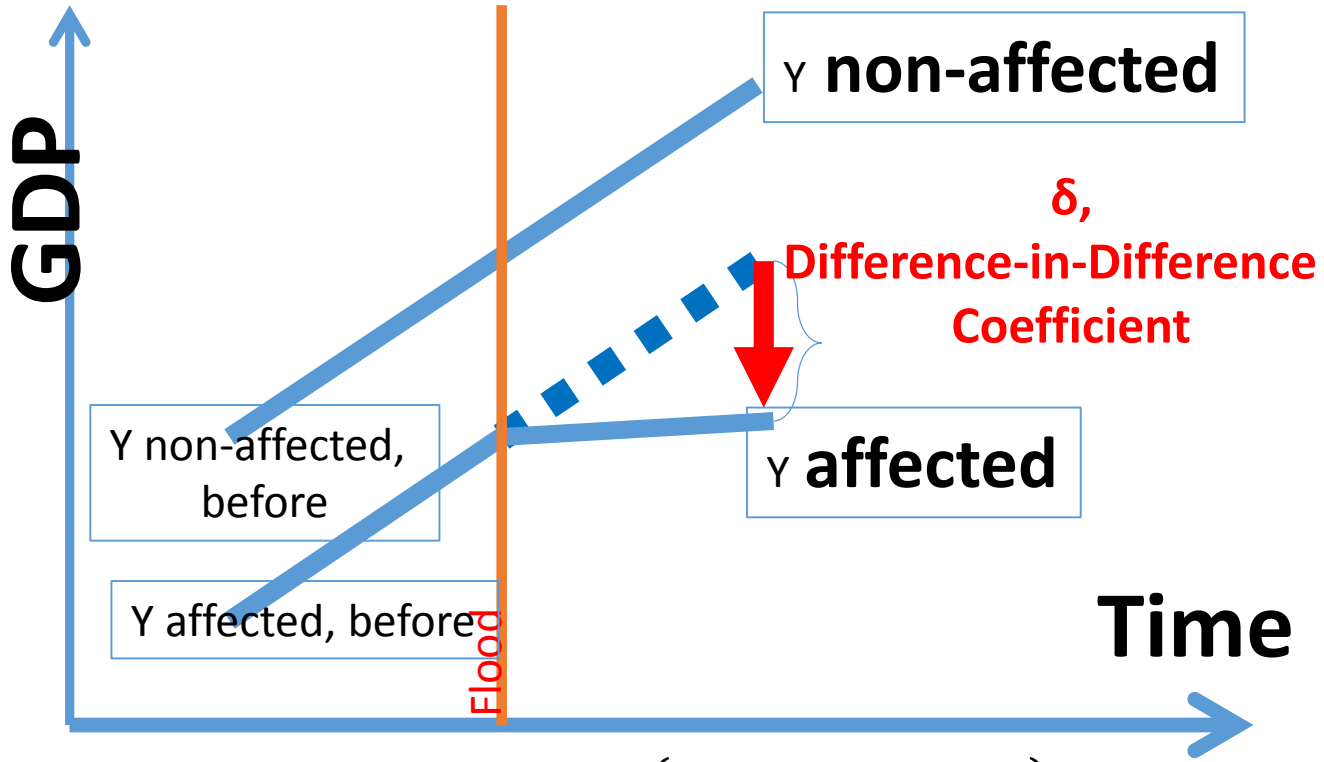
Long term infrastructure bond



Infrastructure bond and Equity Investment



Graphical explanation of Disaster Risk



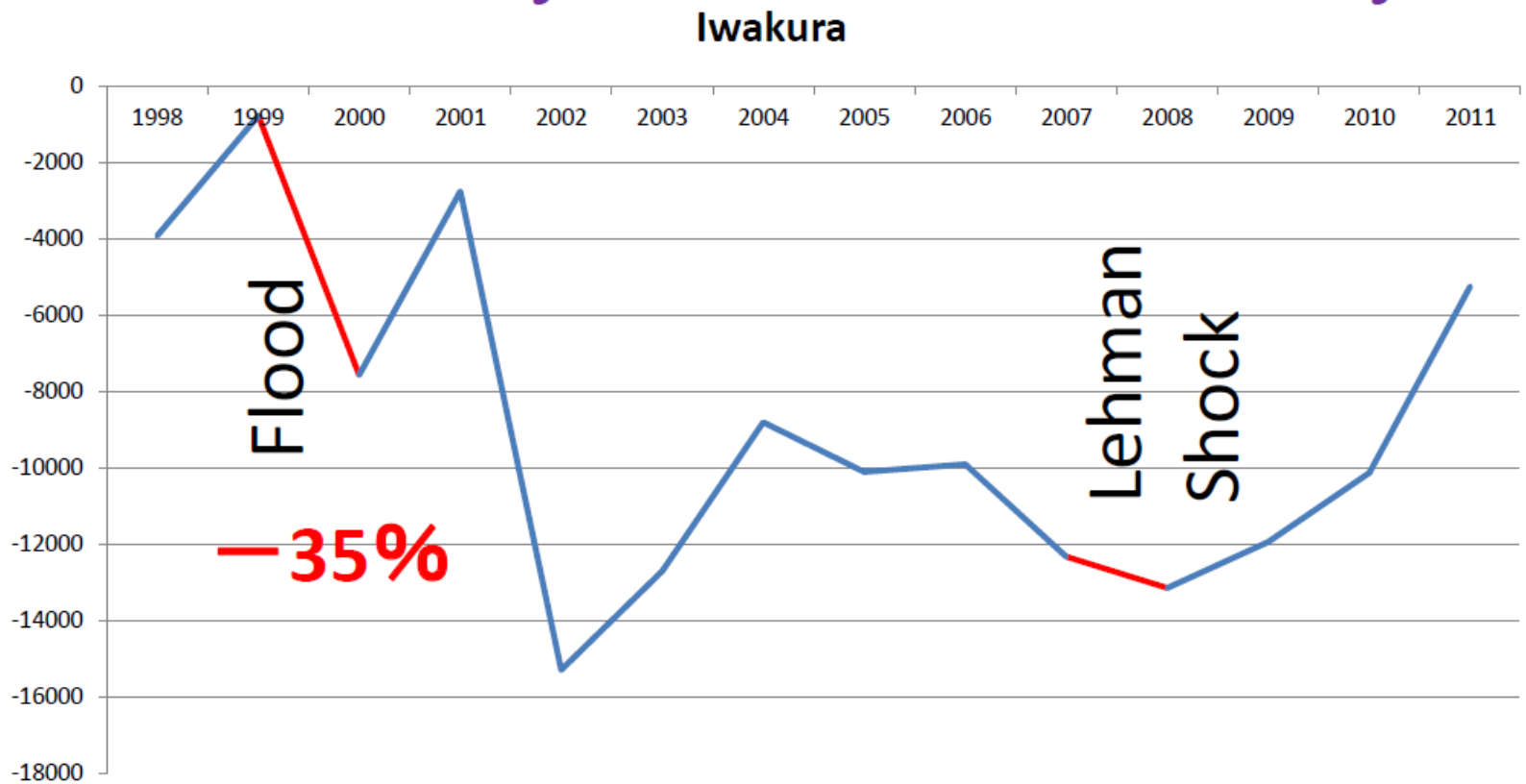
$$\Delta Y_{it} = \alpha_i + \varphi_t + \delta\left(D_{flood} \times D_{after}\right)_{it} + \epsilon_{it}$$

ΔY_{it} - GDP growth rate; α_i - sum of autonomous and region specific rate of growth; φ_t- year specific growth effect; $\left(D_{flood} \times D_{after}\right)_{it}$- dummy variable indicating that observation belong to affected group after flood period; δ- difference in difference coefficient; ϵ_{it}- error term.

Difference in difference estimation coefficients, million. JPY

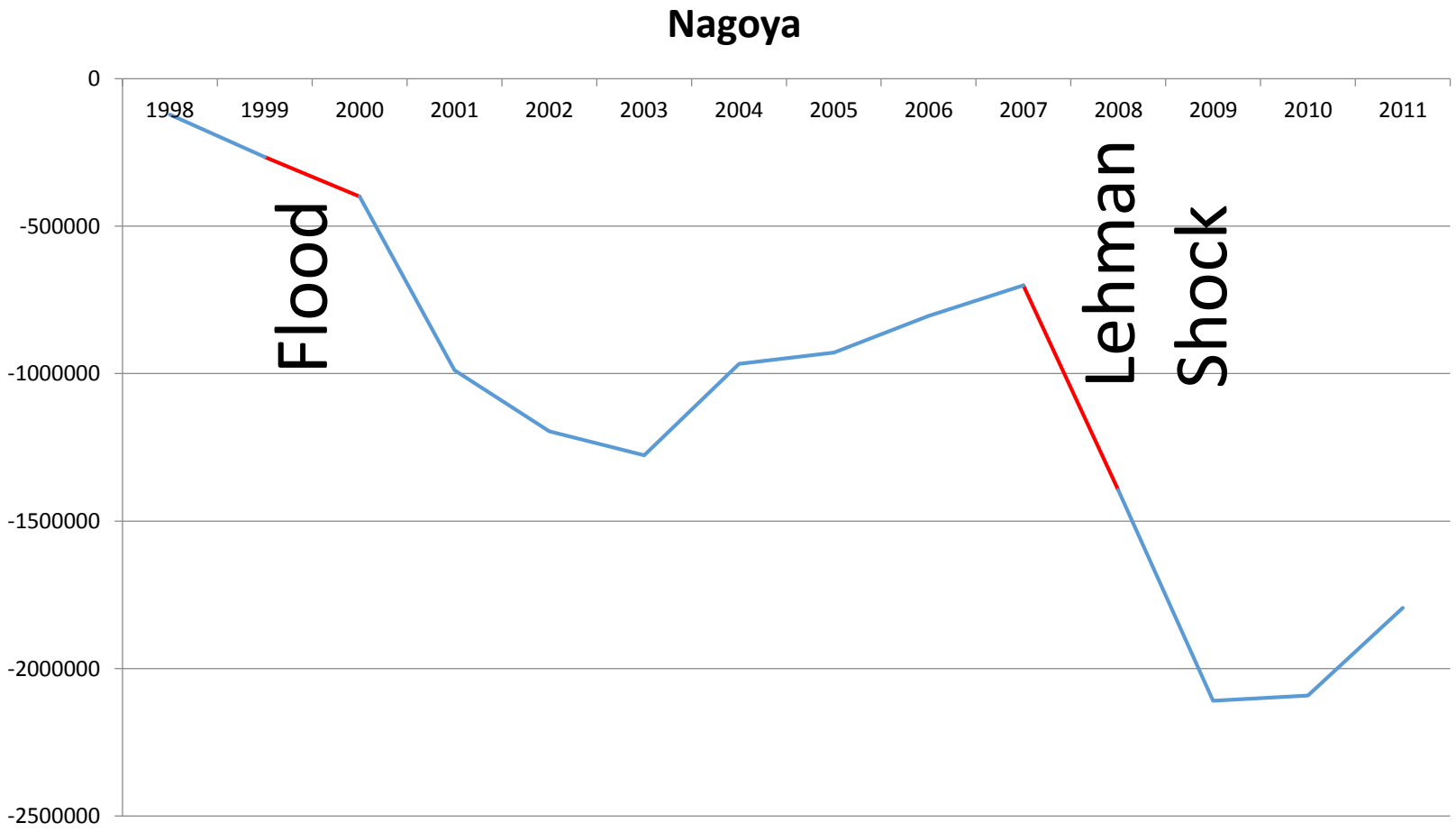
Agricultural Region: Big Drop

It took 3 years for the recovery



Difference in difference estimation coefficients, million. JPY

Services sector : 4 years decline



Give incentives to operating companies

SOE Reform → Increase efficiency and rate of return

Incentive Mechanism

In order to enhance efficiency and increase the rate of return on infrastructure development, it is necessary to vary the dividend payment for private investors based on the project's revenues, including both user fees and spillover tax revenues. It is also necessary for infrastructure operating entities to exert efforts to increase income. Table 5 shows the payoff matrix, depending on the presence or absence of effort by investors and the infrastructure-operating entity.

Payoff table for infrastructure operating entity and investors

Normal Case	Effort Case
(50 , r) perating Investors Entity	(50 , αr) Operating Investors Entity
(100 , r) perating Investors Entity	(100 , αr) Operating Investors Entity

Infrastructure & Education

Yoshino and Umid Abidhadjaev (2016)

Education

In a study of 44 companies, Professor Yoshino found that education played a significant role in impacting the quantum of the spillover effect. Secondary schools provided basic skills for blue collar workers. Universities provided education for highly skilled workers. Workers' education level impacted businesses' productivity.

Dependent variable: log difference GDP per capita in 1991-2010			
Regression number	REG.1	REG.2	REG.3
Variables	Coef.	Coef.	Coef.
lnY_1991	-0.06	-0.14	-0.14
	(-0.54)	(-1.35)	(-1.38)
ln(n+g+d)	-3.09	-5.75	-4.36
	(-0.59)	(-1.23)	(-0.77)
ln(Kg)	0.23	0.31	0.53
	(1.17)	(2.00)	(3.30)
ln(Sec)			0.00
			(0.46)
ln(Kg)xln(Sec)	0.20		
	(1.59)		
ln(Uni)			0.21
			(2.07)
ln(Kg)xln(Uni)		0.24	
		(2.76)	
Constant	-0.28	0.56	0.48
	(-0.33)	(0.69)	(0.57)
Number of observations	44.00	44.00	44.00
R-squared	0.21	0.30	0.30
F-statistic	2.62	4.14	3.29

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Thank you for your Attention