Infrastructure Finance and Economic Effect of Infrastructure

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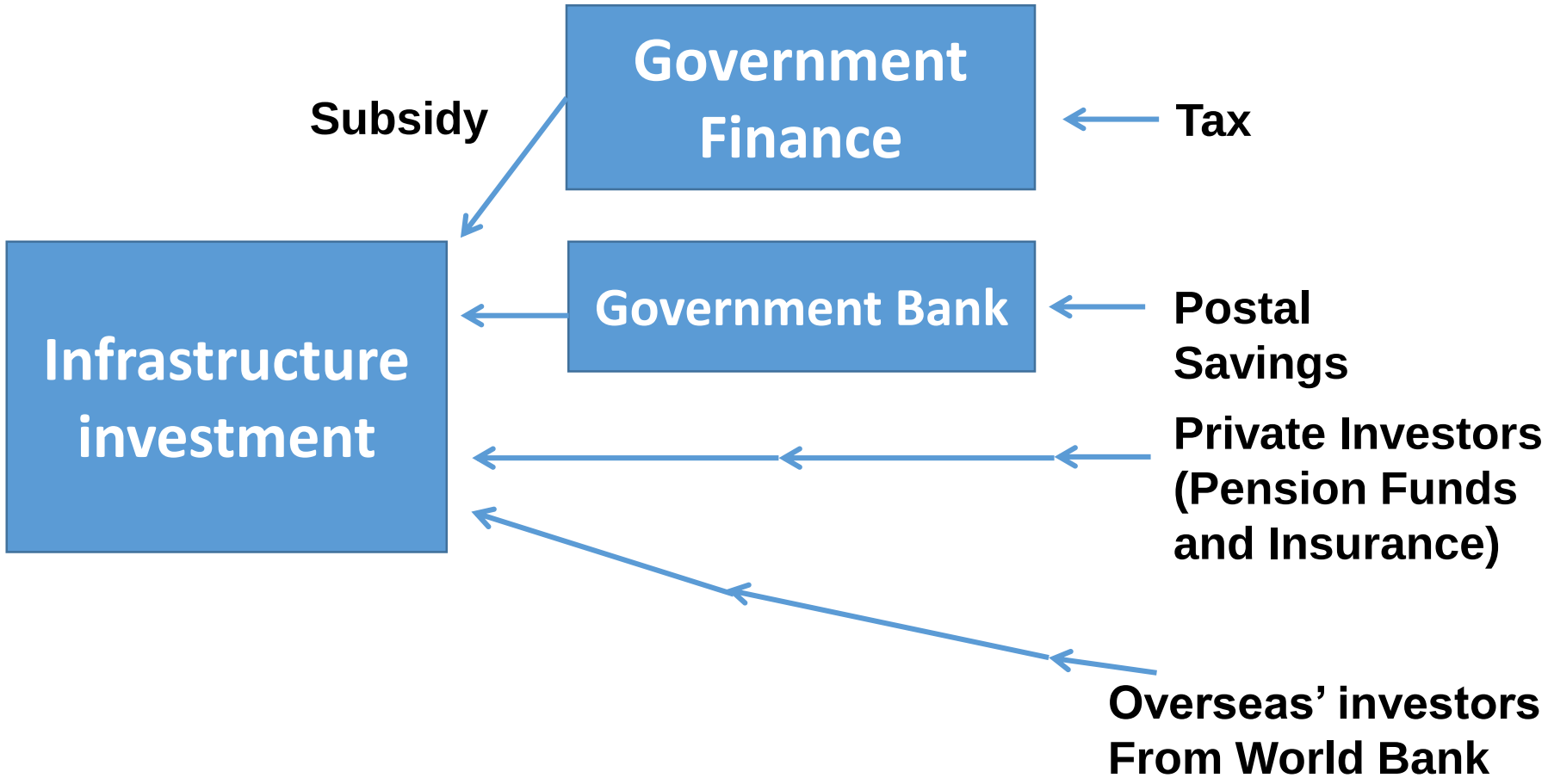
Various Ways to Finance Infrastructure



Subsidies from the Government: Agriculture

Industrial Policy of Japan (Academic Press, 1984), Chapter 4, YOSHINO

TABLE I

Sectoral Disbursement of Subsidies (billion yen, % of total in parentheses)[a]

Year	Sea Transport	Coal Mining	Small Business Textiles, etc.[b]	High Technology[c]	Agriculture, Forestry, and Fisheries	Total Subsidies
1955	3.5(5.0)	0 (0)	0.5 (0.6)	0.5(0.7)	65.7(93.4)	70.3
1956	3.2(4.9)	0 (0)	0.7 (1.1)	0.5(0.7)	59.4(93.0)	63.8
1957	0.05(0)	0 (0)	1.9 (2.8)	0.4(0.6)	64.2(96.3)	66.7
1958	0.04(0)	0 (0)	3.1 (4.2)	0.6(0.7)	70.3(94.8)	74.1
1959	0.5(0.6)	0 (0)	2.2 (2.6)	0.5(0.6)	81.9(96.0)	85.3
1960	1.7(1.7)	5.8 (6.0)	2.6 (2.6)	0.5(0.5)	86.1(89.0)	96.7
1961	1.5(1.3)	5.8 (5.3)	4.6 (4.2)	0.6(0.5)	95.2(88.2)	107.9
1962	1.6(1.0)	10.8 (7.2)	9.1 (6.1)	0.7(0.4)	126.2(84.8)	148.8
1963	2.1(1.1)	18.0(10.0)	11.8 (6.6)	0.8(0.4)	146.0(81.5)	179.0
1964	10.1(4.7)	18.3 (8.5)	16.6 (7.7)	0.9(0.4)	167.5(78.3)	713.8
1965	13.6(5.5)	20.1 (8.1)	21.8 (8.8)	0.8(0.3)	190.1(76.9)	246.9
1966	14.5(4.5)	24.0 (7.5)	29.8 (9.4)	1.9(0.5)	246.0(77.6)	316.7
1967	15.4(4.1)	37.7(10.1)	36.2 (9.7)	4.2(1.1)	277.0(74.5)	371.6
1968	15.7(3.7)	42.3(10.0)	39.3 (9.3)	5.5(1.3)	318.6(75.3)	422.6
1969	15.2(3.1)	69.9(14.3)	43.6 (8.9)	6.4(1.3)	351.4(72.0)	487.8
1970	15.4(2.3)	78.8(11.8)	51.6 (7.7)	7.7(1.1)	510.7(76.7)	665.2
1971	15.6(1.9)	68.0 (8.3)	59.2 (7.2)	8.2(1.0)	664.5(81.3)	816.6
1972	16.1(1.6)	58.7 (5.9)	90.8 (9.1)	20.0(2.0)	806.0(81.2)	992.1
1973	16.1(1.4)	63.9 (5.5)	85.4 (7.4)	31.9(2.7)	952.5(82.7)	1,151.0
1974	15.6(1.2)	55.2 (4.5)	103.7 (8.5)	44.5(3.6)	996.6(81.9)	1,216.8
1975	15.0(1.1)	61.1 (4.5)	129.4 (9.5)	43.3(3.2)	1,102.3(81.5)	1,352.2
1976	13.6(0.8)	58.7 (3.7)	166.4(10.7)	36.3(2.3)	1,268.8(82.1)	1,545.0
1977	11.5(0.6)	57.6 (3.2)	173.6 (9.7)	31.3(1.7)	1,514.6(84.6)	1,789.7
1978	9.5(0.4)	59.5 (2.5)	206.8 (8.9)	31.4(1.3)	1,992.3(86.5)	2,300.7
1979	5.5(0.2)	52.2 (1.9)	232.6 (8.7)	34.1(1.2)	2,345.6(87.8)	2,671.4
1980	9.5(0.3)	48.8 (1.7)	243.7 (8.6)	34.6(1.2)	2,473.8(87.9)	2,811.8
1981	10.5(0.3)	44.4 (1.5)	249.9 (8.6)	36.3(1.2)	2,552.7(88.1)	2,895.1
1982	11.0(0.3)	48.1 (1.5)	251.0 (8.2)	37.2(1.2)	2,695.1(88.5)	3,043.7

Infrastructure for Manufacturing Industry

TABLE II
Investments in Social Overheads and Industrial Infrastructure (billion yen)

Year	Gross Investment in Social Overheads	Share of Industrial Infrastructure	of Which				
			Roads*	Ports	Waste Treatment Facilities	Water for Industrial Use	Railway
1955	148.7	79.9	23.0	4.4	0	0	52.5
1956	158.1	89.8	26.4	4.4	0	0.2	58.7
1957	230.6	151.2	45.9	6.8	0.3	0.3	98.7
1958	292.3	229.3	133.6	8.2	0.3	0.5	87.3
1959	398.6	293.7	164.0	20.8	0.4	0.9	107.6
1960	501.0	339.3	197.6	23.5	0.6	1.3	116.4
1961	741.3	554.0	311.8	46.5	0.7	2.5	192.5
1962	850.9	686.4	420.6	57.4	1.1	3.8	203.5
1963	1122.8	856.7	488.0	69.7	2.2	5.4	291.4
1964	1248.4	931.3	580.3	80.4	4.3	7.0	259.3
1965	1457.6	1136.0	704.7	87.2	4.6	8.3	331.2
1966	1645.0	1348.5	876.2	111.0	3.2	8.2	350.0
1967	1858.6	1512.1	1001.1	124.0	2.7	6.2	378.0
1968	1965.5	1608.5	1081.0	121.6	3.0	6.6	396.3
1969	2217.4	1278.8	1254.1	154.2	3.3	7.4	399.8
1970	2565.1	1875.5	1275.3	185.1	3.6	10.1	401.5
1971	3010.4	2354.7	1688.1	220.0	4.4	13.4	428.8
1972	3714.7	2908.9	2055.1	267.3	8.4	18.8	559.3
1973	4747.5	3593.7	2439.5	326.8	16.3	23.3	787.8
1974	4831.3	3624.5	2464.6	328.0	18.6	23.1	790.1
1975	4758.7	3627.6	2507.6	316.2	23.3	21.4	759.0
1976	5522.9	3980.7	2730.2	361.2	28.0	24.3	837.1
1977	6572.3	4904.7	3399.7	412.8	34.6	26.3	1031.2
1978	8320.0	5730.0	4048.7	487.5	48.3	25.0	1120.4
1979	9967.0	6370.7	4386.8	583.4	63.5	23.9	1313.1
1980	9896.1	6683.8	4756.2	579.9	66.2	22.6	1258.9
1981	9850.5	6600.8	4789.4	585.9	67.1	21.0	1137.5
1982	9883.2	6770.4	4982.5	591.1	66.5	19.6	1110.7

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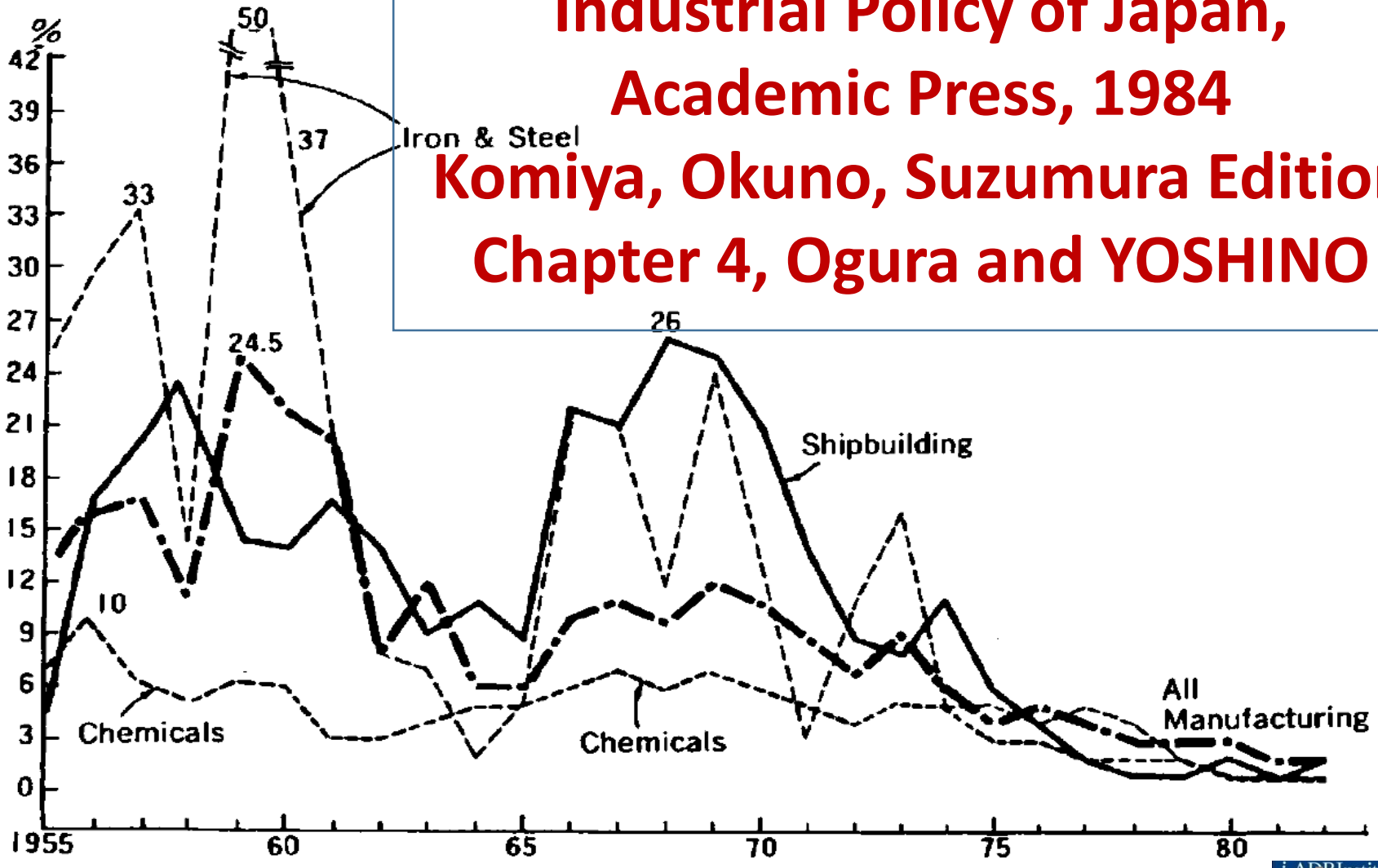
Government Policy: Special Tax Depreciation

Industrial Policy of Japan, Academic Press, 1984
Komiya, Okuno, Suzumura Edition
Chapter 4, Ogura and YOSHINO



Low Interest Loans by Government Banks

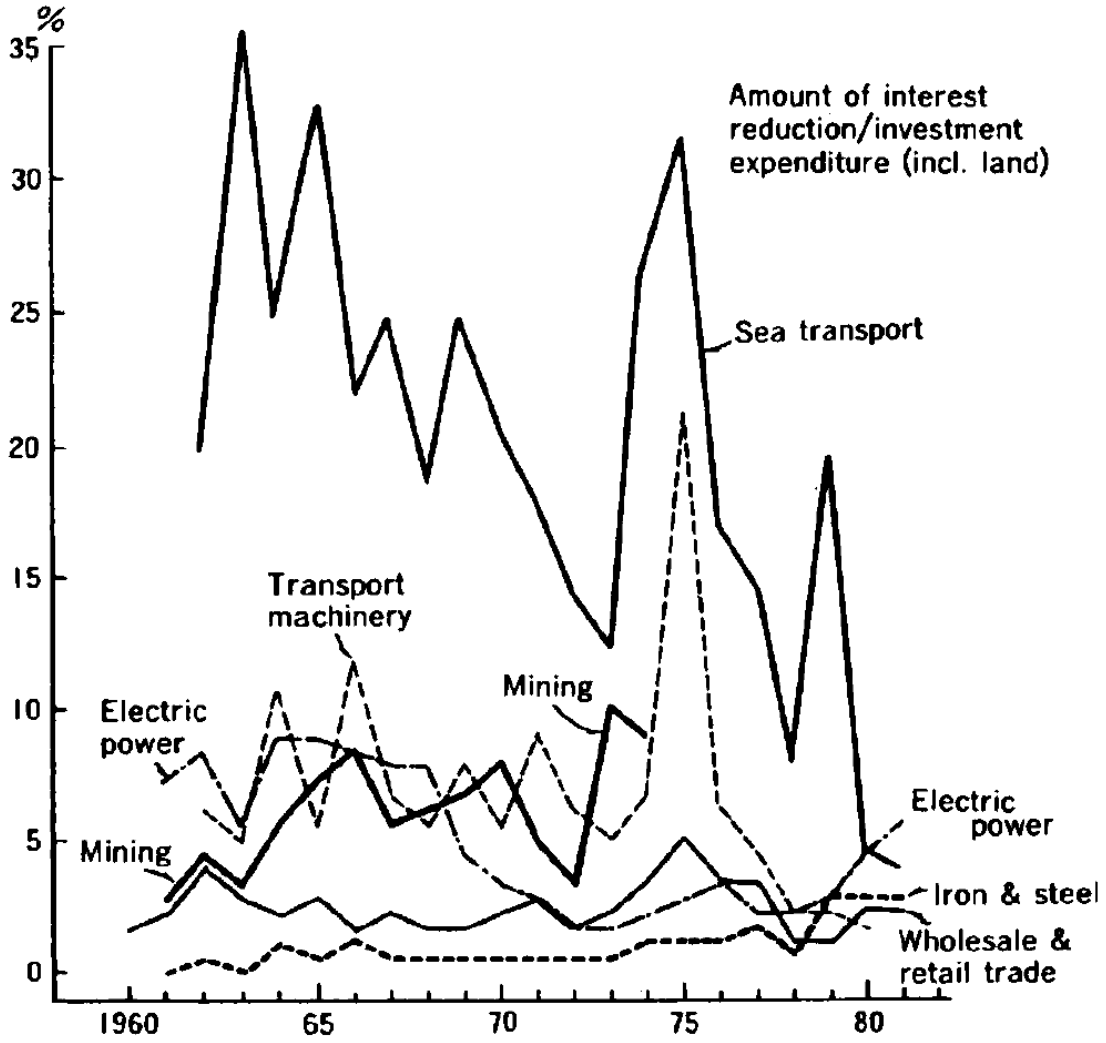


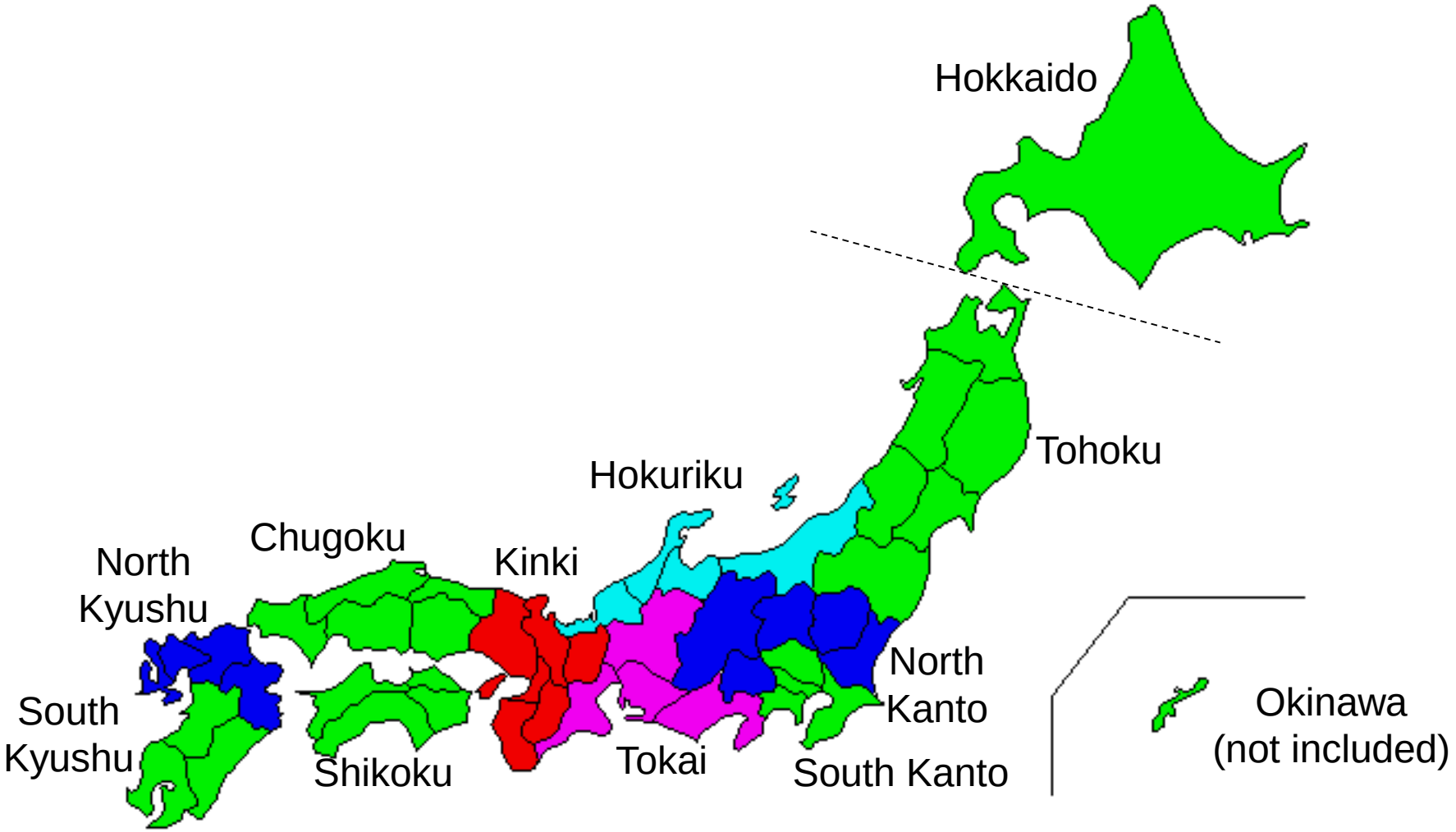
Fig. 5.5 Ratio of estimated reduction in interest burden to investment expenditure.

Government Support: Sea Transport and Shipbuilding

A Comparison of Benefits Arising out of Reduction in Interest Burden and Special Depreciation Schemes (%)

	Manufacturing					
	Total	Transport Machinery	Iron and Steel	Machinery	Sea Transport	Electric Power
			1961–1973			
1. *Reduction in interest burden (est.)* Investment expenditure (incl. land)	1.0 (52)	6.9(85)	0.5(27)	3.6(72)	22.3(76)	5.9(94)
2. *Benefits from spl. dep. schemes* Investment expenditure (incl. land)	0.95(48)	1.3(15)	1.4(73)	1.4(28)	7.2(24)	0.36(6)
Total	1.95	8.2	1.9	4.9	29.5	6.26
			1974–1980			
1. *Reduction in interest burden (est.)* Investment expenditure (incl. land)	1.6 (73)	6.4(94)	1.6(70)	2.6(84)	17.0(81)	2.8(77)
2. *Benefits from spl. dep. schemes* Investment expenditure (incl. land)	0.57(27)	0.4 (6)	0.7(30)	0.5(16)	4.1(19)	0.9(24)
Total	2.1	6.8	2.3	3.1	21.1	3.7

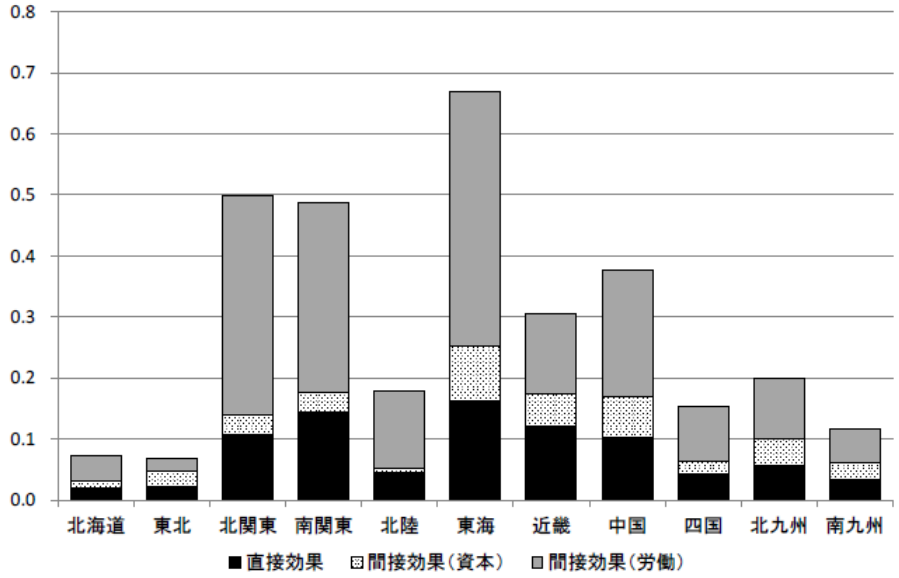
Map of Japan from the North to the South



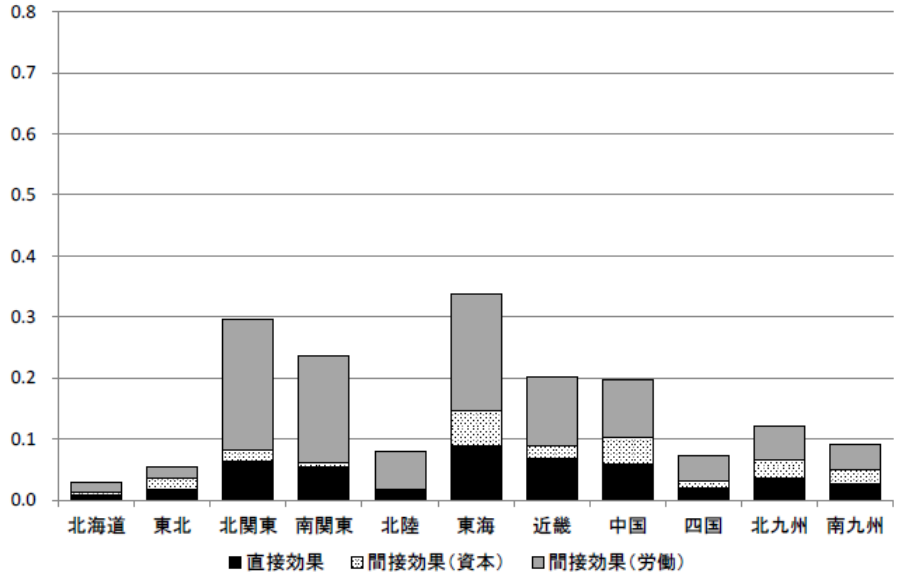
Economic Effect of Infrastructure Investment Regional Disparities (Manufacturing Industry)

図 1　第 2 次産業における社会資本の生産力効果の変化

(1) 1990 年度



(2) 2010 年度

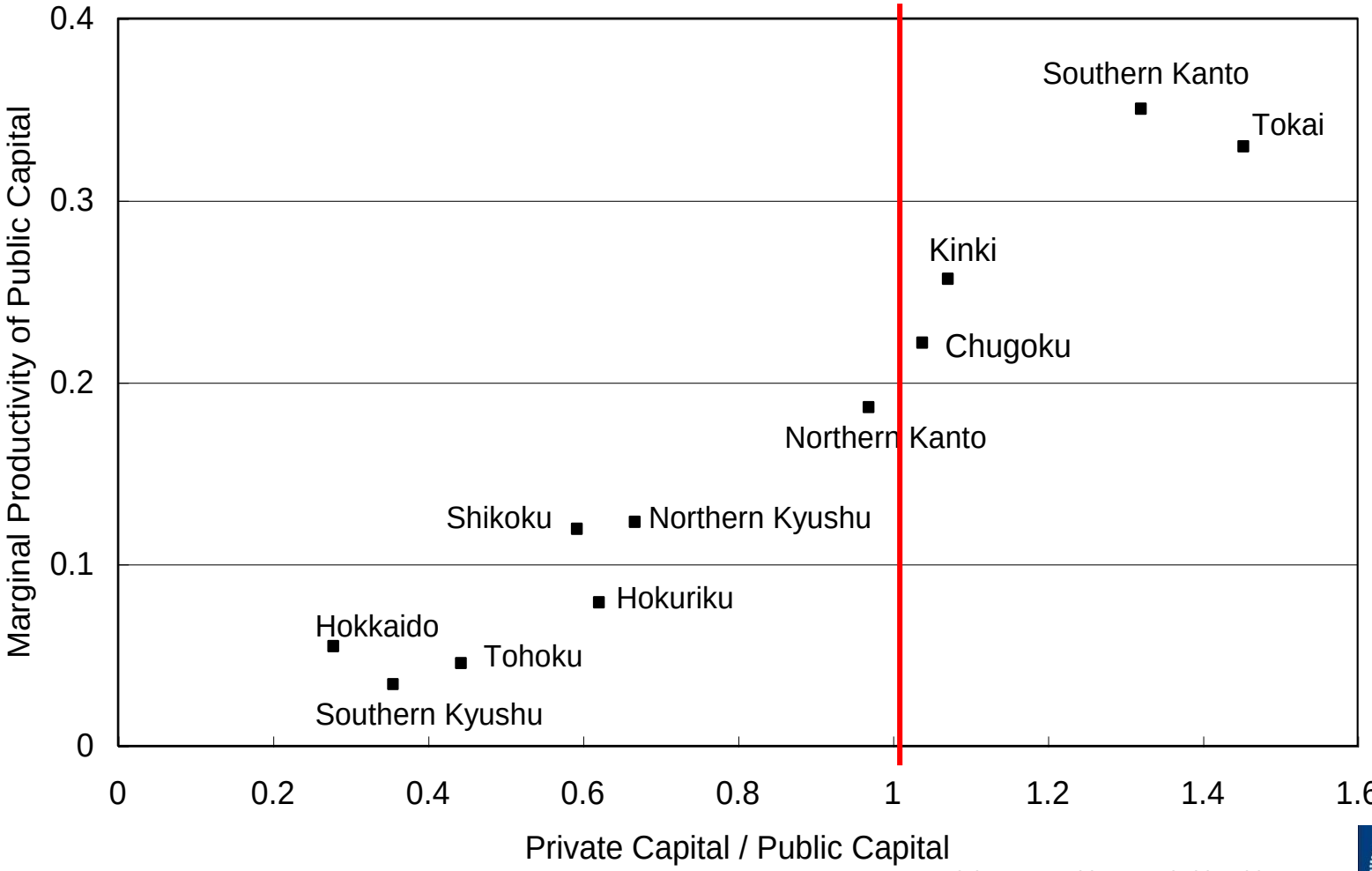


（出所） Nakahigashi-Yoshino (2015)

Effectiveness of Public Investment

- “Private capital/Public capital ratio” to “Marginal productivity of Public capital” -

Secondary Industry (Industrial Sector)



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The production technology of the private sector is represented by the following production function.

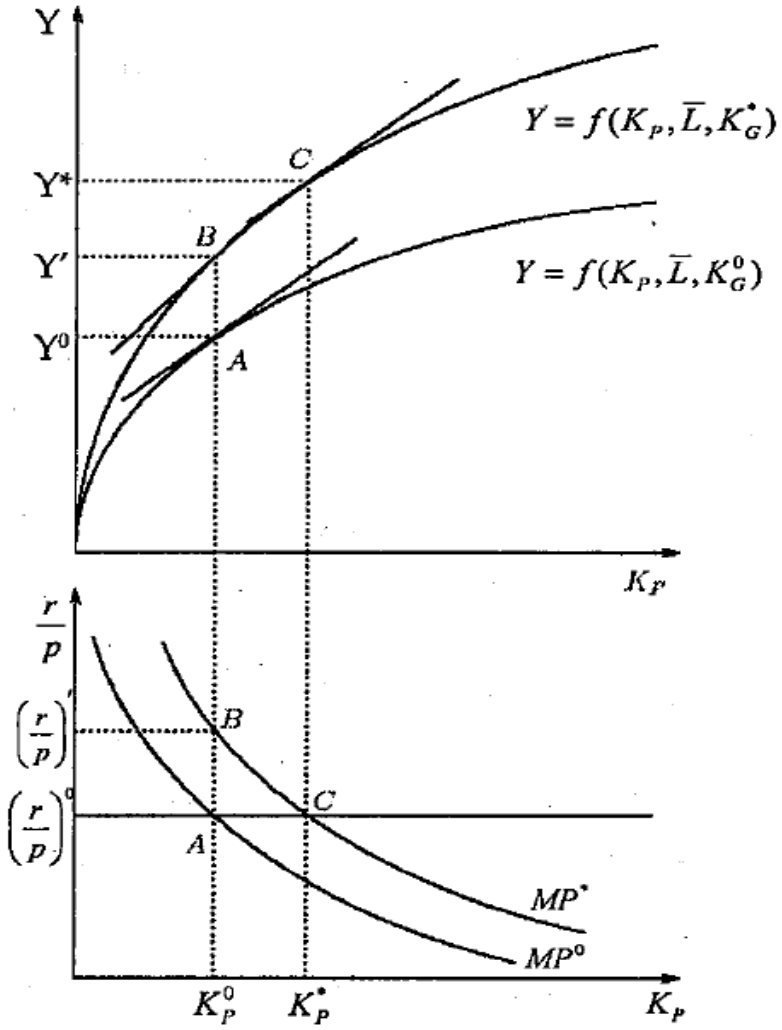
$$Y = f(K_P, L, K_G) \tag{1}$$

where Y denotes output (in value added) in the private sector. The output is produced by combining private capital stock, Kp, labor input, L, and infrastructure stock, K_G.

In this paper, we assume the translog production function.

$$\begin{aligned} \ln Y = {} & \alpha_0 + \alpha_K \ln K_P + \alpha_L \ln L + \alpha_G \ln K_G \\ & + \beta_{KK}(1/2)(\ln K_P)^2 + \beta_{KL} \ln K_P \ln L + \beta_{KG} \ln K_P \ln K_G \\ & + \beta_{LL}(1/2)(\ln L)^2 + \beta_{LG} \ln L \ln K_G + \beta_{GG}(1/2)(\ln K_G)^2 \end{aligned} \tag{2}$$

Figure 3: Direct Effect and Indirect Effect



Source: Yoshino and Nakajima(ed.)(1999) Figure 3-3

$$\frac{\partial Y}{\partial K_P} = \frac{r}{p}, \frac{\partial Y}{\partial L} = \frac{w}{p} \tag{3}$$

where r denotes the cost of capital, w the wage, and p the price of product. Multiplying each equation by Kp/Y and L/Y respectively,

$$\frac{\partial Y}{\partial K_P}\frac{K_P}{Y} = \frac{\partial \ln Y}{\partial \ln K_P} = \frac{rK_P}{pY}, \frac{\partial Y}{\partial L}\frac{L}{Y} = \frac{\partial \ln Y}{\partial \ln L} = \frac{wL}{pY} \tag{4}$$

If we assume the translog production function for equation (2), the left hand side of each equation above is obtained by taking partial derivative of equation (2) with respect to ln Kp and ln L respectively.

$$s_K = \alpha_K + \beta_{KK} \ln K_P + \beta_{KL} \ln L + \beta_{KG} \ln K_G \tag{5}$$

$$s_L = \alpha_L + \beta_{KL} \ln K_P + \beta_{LL} \ln L + \beta_{LG} \ln K_G \tag{6}$$

Marginal Productivity of Public Capital
(in Japan)

Period(FY)	1956–60	1961–65	1966–70	1971–75	1976–80	1981–85
Direct Effect	0.696	0.737	0.638	0.508	0.359	0.275
Indirect Effect(Private Capital)	0.453	0.553	0.488	0.418	0.304	0.226
Indirect Effect(Labor Input)	1.071	0.907	0.740	0.580	0.407	0.317
Private Capital	0.444	0.485	0.452	0.363	0.294	0.262

Period(FY)	1986–90	1991–95	1996–00	2001–05	2006–10
Direct Effect	0.215	0.181	0.135	0.114	0.108
Indirect Effect(Private Capital)	0.195	0.162	0.122	0.100	0.100
Indirect Effect(Labor Input)	0.192	0.155	0.105	0.090	0.085
Private Capital	0.272	0.242	0.219	0.202	0.194

Thailand (Effectiveness of Infrastructure Investment)

		Private capital	Public capital	Direct effect	Indirect effect	
					Capital	Labor
Agriculture, forest, hunting and fishing						
	1971-1980	0.971	0.778	0.086	0.618	0.074
	1981-1990	0.912	0.516	0.107	0.323	0.087
	1991-2000	0.859	0.101	0.068	-0.059	0.092
	2001-2012	0.814	-0.185	0.018	-0.293	0.090
Manufacturing						
	1971-1980	0.710	0.526	0.191	0.111	0.224
	1981-1990	0.623	0.426	0.163	-0.004	0.266
	1991-2000	0.554	0.409	0.135	0.190	0.083
	2001-2012	0.631	0.902	0.173	1.081	-0.351

Cost-Benefits Analysis

1, Present Discount Value of Costs

$$TC = C/(1+r) + C/(1+r)^2 + C/(1+r)^3 + C/(1+r)^4$$

2, Present Value of Return

$$TR = R/(1+r) + R/(1+r)^2 + R/(1+r)^3 + R/(1+r)^4$$

3, Comparison between Costs and Benefits

TR (total revenue) > TC (total costs)

4, If TR<TC → increase revenue

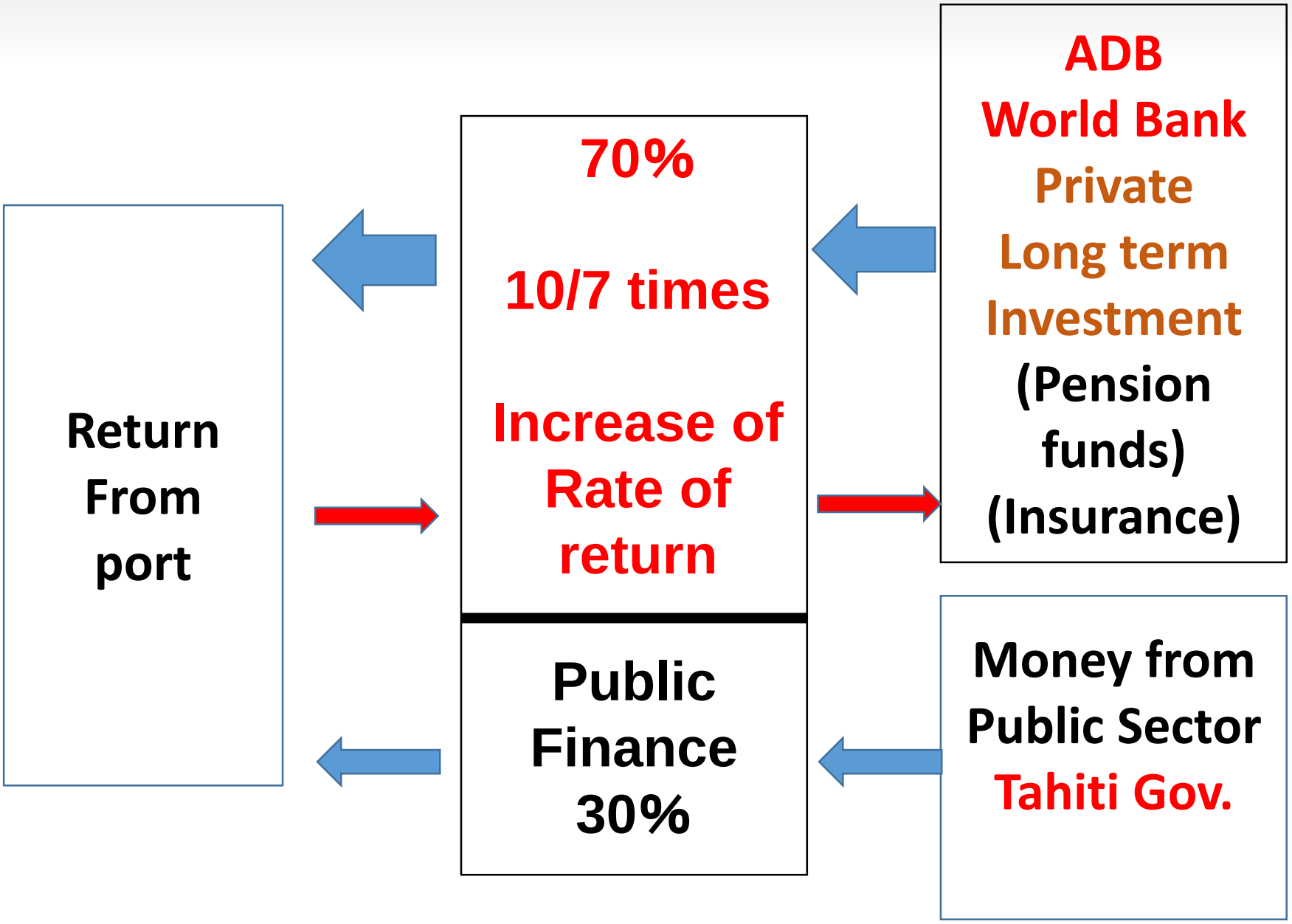
→ capital injection

5, Viable projects (TR>TC) in the long run

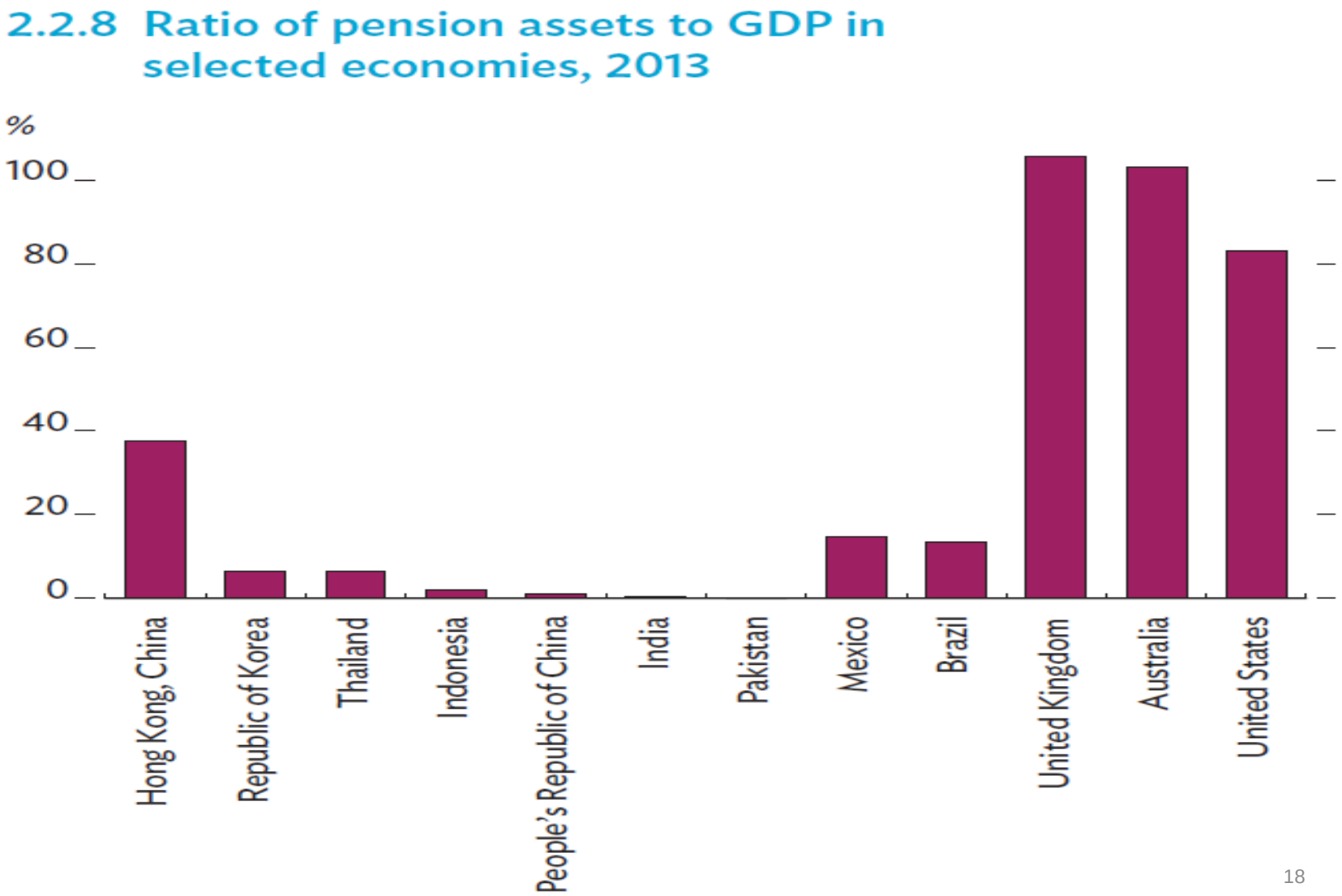
→ Increase rate of return by increasing revenues

→ Reduction of costs

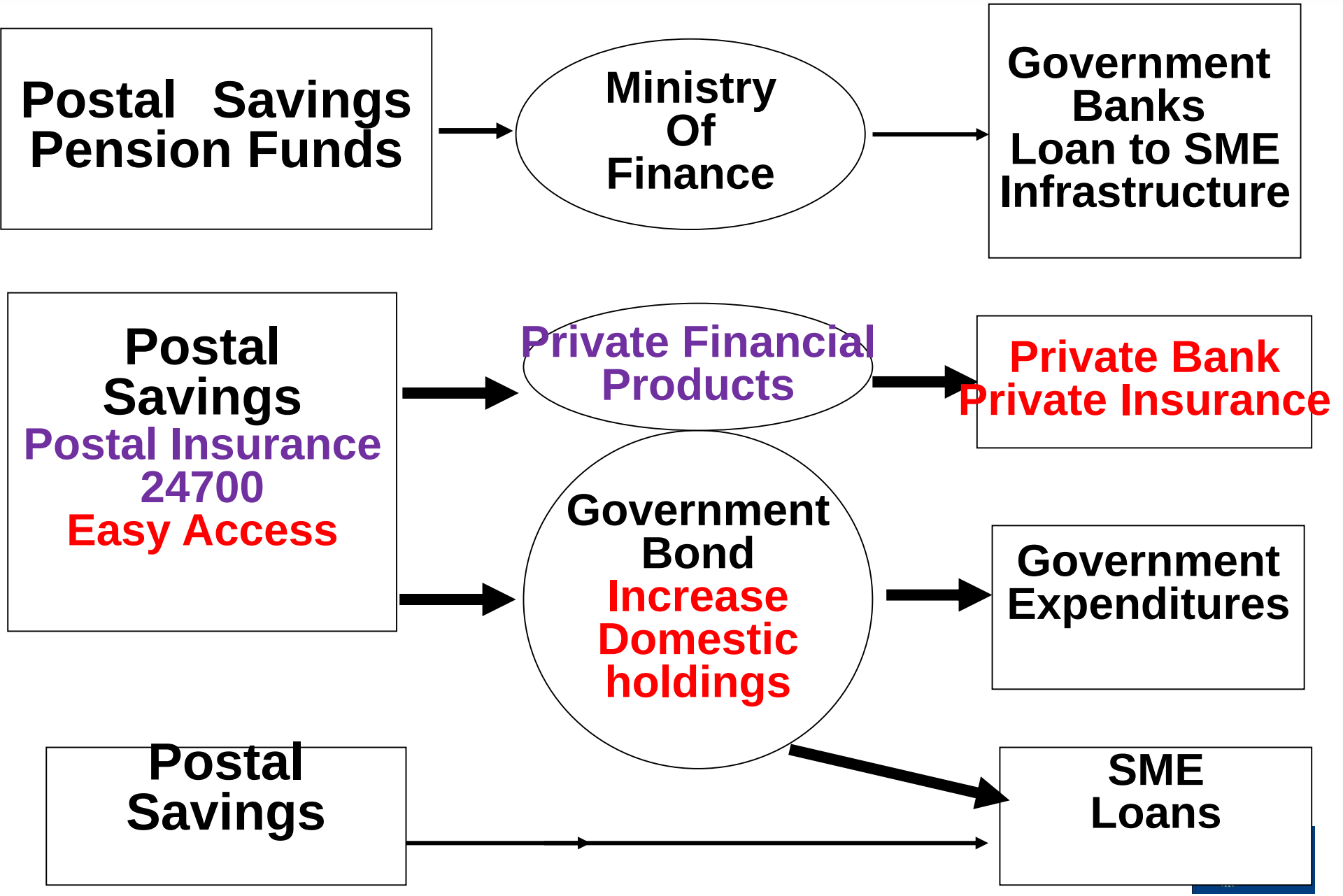
→ Capital injection by government


ADB
World Bank
Private
Long term
Investment
(Pension
funds)
(Insurance)
70%
10/7 times
Increase of
Rate of
return
Return
From
port
Public
Finance
30%
Money from
Public Sector
Tahiti Gov.

Ratios of Pension Assets, Asian Development Outlook 2015



Use of Postal Savings



Community Infrastructure

Wind power Generator Funds

Agricultural Farmer's Trust Fund

Start-up business finance

Local airport

SME Hometown Investment Trust Fund

Large Projects (highways, ports)

Pension Funds,

Insurance Funds

Infrastructure Bond

Infrastructure investment for tourism

1, New business for tourism, fishery industries and cruise industries

SMEs and Startup businesses

Engine of growth ----- SMEs

2, Education for students

Various languages

Services Sector

Maritime Sector

3, Shipping Industry, Repair technology

Population Ageing of Asia

POPULATION AGING IN ASIA

About
17%
of Asian population over 60 by 2030

Asian population over 60: To increase by about
400
million

PACIFIC AS A POTENTIAL RETIREMENT DESTINATION AND SUPPLIER OF SKILLED AGED CARE LABOR

Favorable climate, pristine environments, hospitable people

PRIORITY ACTIONS ▶▶▶ Investments in public services—particularly health care systems and human resource development



http://www.adb.org/publications/pacific-opportunities-leveraging-asias-growth

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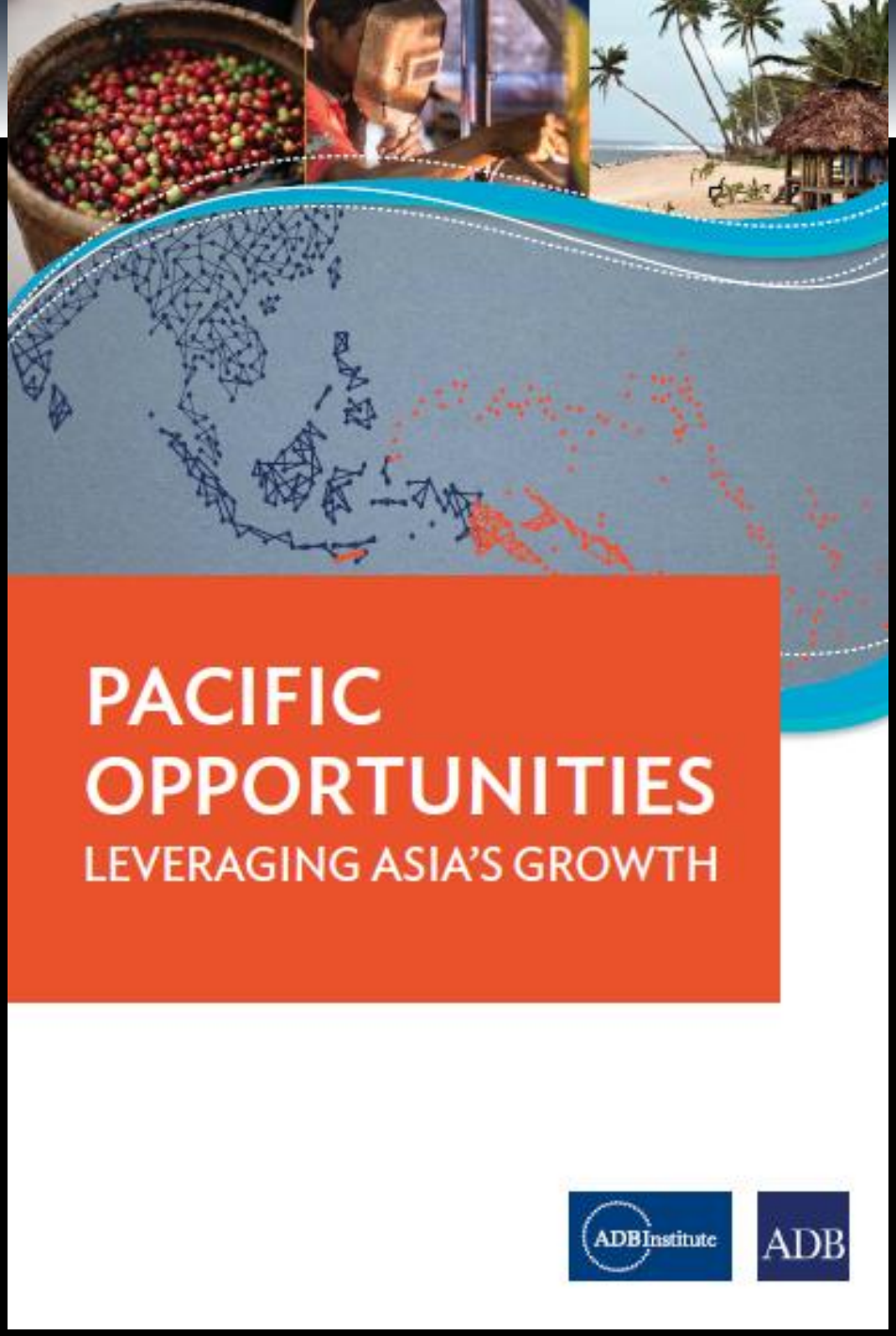
Internal Launch of the ADB-ADBI Publication

LRC 3, 9 September 2015



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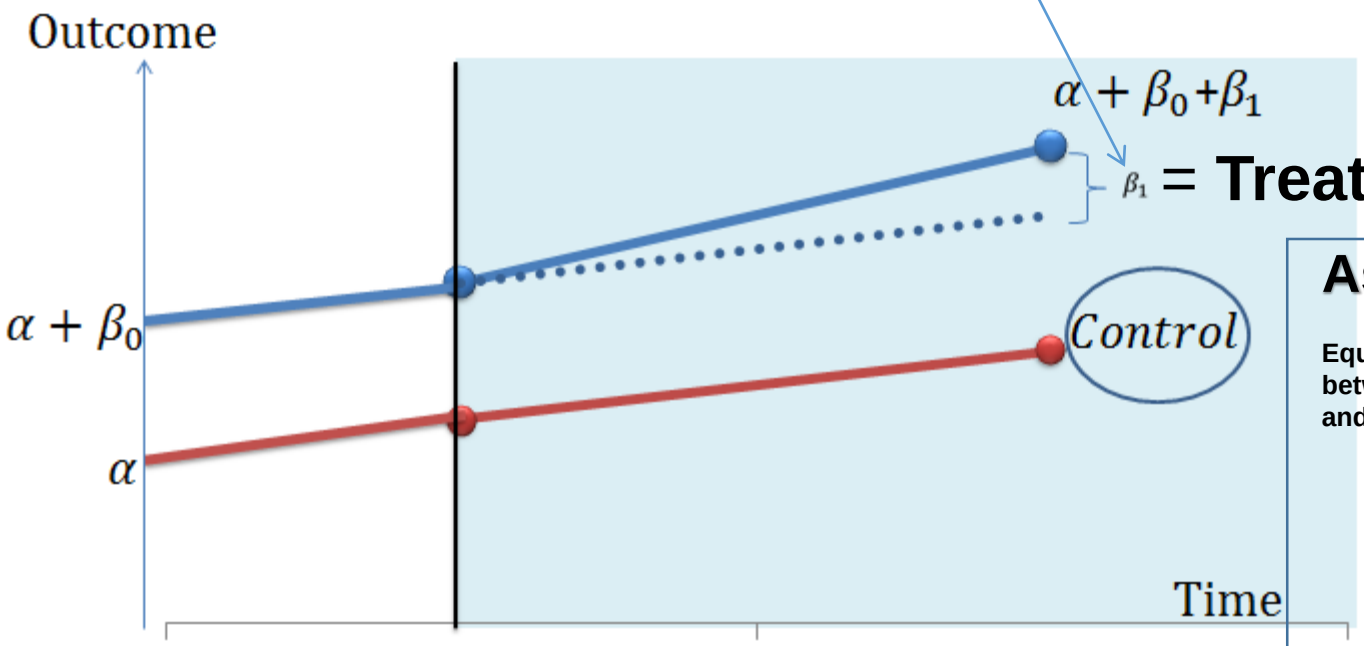
Case Study: Southern Tagalog Arterial Road (STAR) , Philippineses

- The Southern Tagalog Arterial Road (STAR) project in Batangas province, Philippines (south of Metro Manila) is a modified Built-Operate-Transfer (BOT) project.
- The 41.9 km STAR tollway was built to improve road linkage between Metro Manila and Batangas City, provide easy access to the Batangas International Port, and thereby accelerate industrial development in Batangas and nearby provinces.

Method: Difference-in-Difference (DiD) Analysis

$$\text{Outcome} = \alpha + \beta_0 D + \sum_{t+2}^{t-4} \beta_1 D \times T + \varepsilon$$

where: D = 1 (Treatment group) T = Treatment period
D = 0 (Control group)



Assumption:

Equal trends between Treatment and Control groups

Difference-in-Difference Regression: Spillover

	(1) Property tax	(2) Property tax	(3) Business tax	(4) Business tax	(5) Regulatory fees	(6) Regulatory fees	(7) User charge	(8) User charge
Treatment D	1.55535	0.736	1.067	0.438	1.372	0.924	0.990	0.364
	(1.263)	(0.874)	(1.316)	(1.407)	(1.123)	(1.046)	(1.095)	(1.028)
Treatment D × $Period_{t+2}$	0.421**	-0.083	1.189***	0.991**	0.248***	-0.019	0.408***	-0.010
	(0.150)	(0.301)	(0.391)	(0.450)	(0.084)	(0.248)	(0.132)	(0.250)
Treatment D × $Period_{t+1}$	0.447**	0.574***	1.264***	1.502***	0.449**	0.515***	0.317**	0.434**
	(0.160)	(0.118)	(0.415)	(0.542)	(0.142)	(0.169)	(0.164)	(0.167)
Treatment D × $Period_{t0}$	0.497***	0.570**	1.440***	1.641***	0.604**	0.642***	0.350	0.422
	(0.128)	(0.223)	(0.417)	(0.482)	(0.183)	(0.181)	(0.271)	(0.158)
Treatment D × $Period_{t-1}$	1.294**	0.387	2.256**	1.779**	1.318**	0.838*	0.959	0.197
	(0.674)	(0.728)	(0.957)	(0.470)	(0.649)	(0.448)	(0.714)	(0.560)
Treatment D × $Period_{t-2}$	1.163*	0.336	2.226**	1.804**	1.482**	1.044**	0.941	0.247
	(0.645)	(0.594)	(0.971)	(0.531)	(0.634)	(0.413)	(0.704)	(0.531)
Treatment D × $Period_{t-3}$	1.702*	0.450	2.785**	2.070***	1.901***	1.238***	1.732***	0.676
	(0.980)	(0.578)	(1.081)	(0.544)	(0.630)	(0.369)	(0.598)	(0.515)
Treatment D × $Period_{t-4,}$ forward	2.573***	1.100	3.428***	2.560***	2.288***	1.509***	2.030***	0.787
	(0.900)	(0.758)	(0.928)	(0.350)	(0.563)	(0.452)	(0.607)	(0.745)
Construction		2.283**		1.577		1.207		1.942*
		(1.172)		(1.196)		(0.855)		(1.028)
Constant	14.69***	-2.499	14.18***	2.230	13.66***	4.597	13.08***	-1.612
	(0.408)	(8.839)	(0.991)	(9.094)	(0.879)	(6.566)	(0.649)	(7.84)
N	80	73	79	73	80	73	77	73
R^2	0.29	0.41	0.37	0.44	0.43	0.50	0.26	0.39

Clustered standard errors, corrected for small number of clusters; * Significant at 10%. ** Significant at 5%. *** Significant at 1%.

The Southern Tagalog Arterial Road (STAR) Philippines, Manila

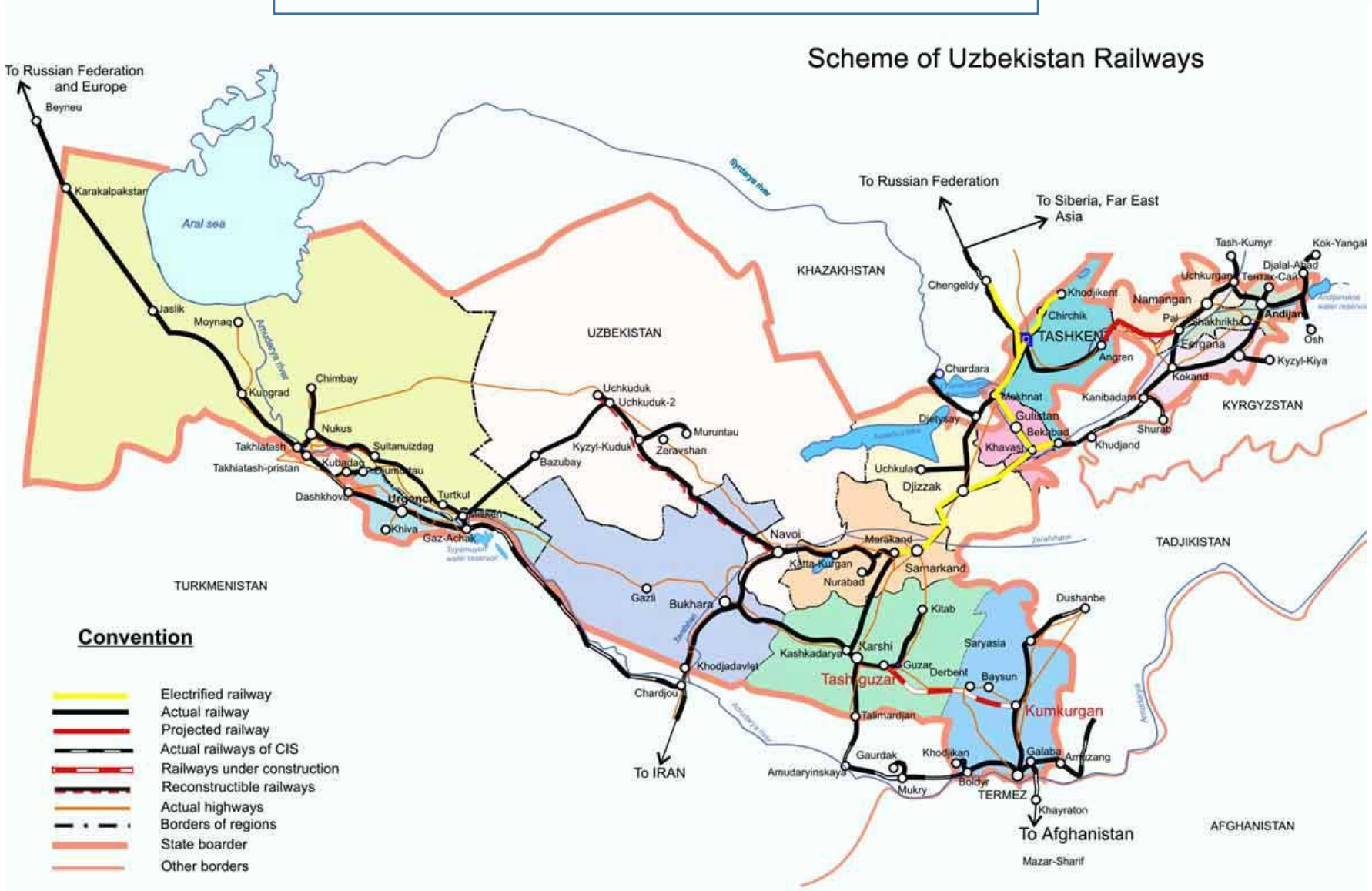
表 8　フィリピンの STAR 高速道路の影響のない地域と比較した事業税の増加額

（単位：100 万ペソ）

	t_{-2}	t_{-1}	t_0	t_{+1}	t_{+2}	t_{+3}	t_{+4}以降
Lipa 市	134.36	173.50	249.70	184.47	191.81	257.35	371.93
Ibaan 市	5.84	7.04	7.97	6.80	5.46	10.05	12.94
Batangas 市	490.90	622.65	652.83	637.89	599.49	742.28	1208.61

（出所）Yoshino and Pontines (2015)より筆者作成

Uzbekistan: Railway



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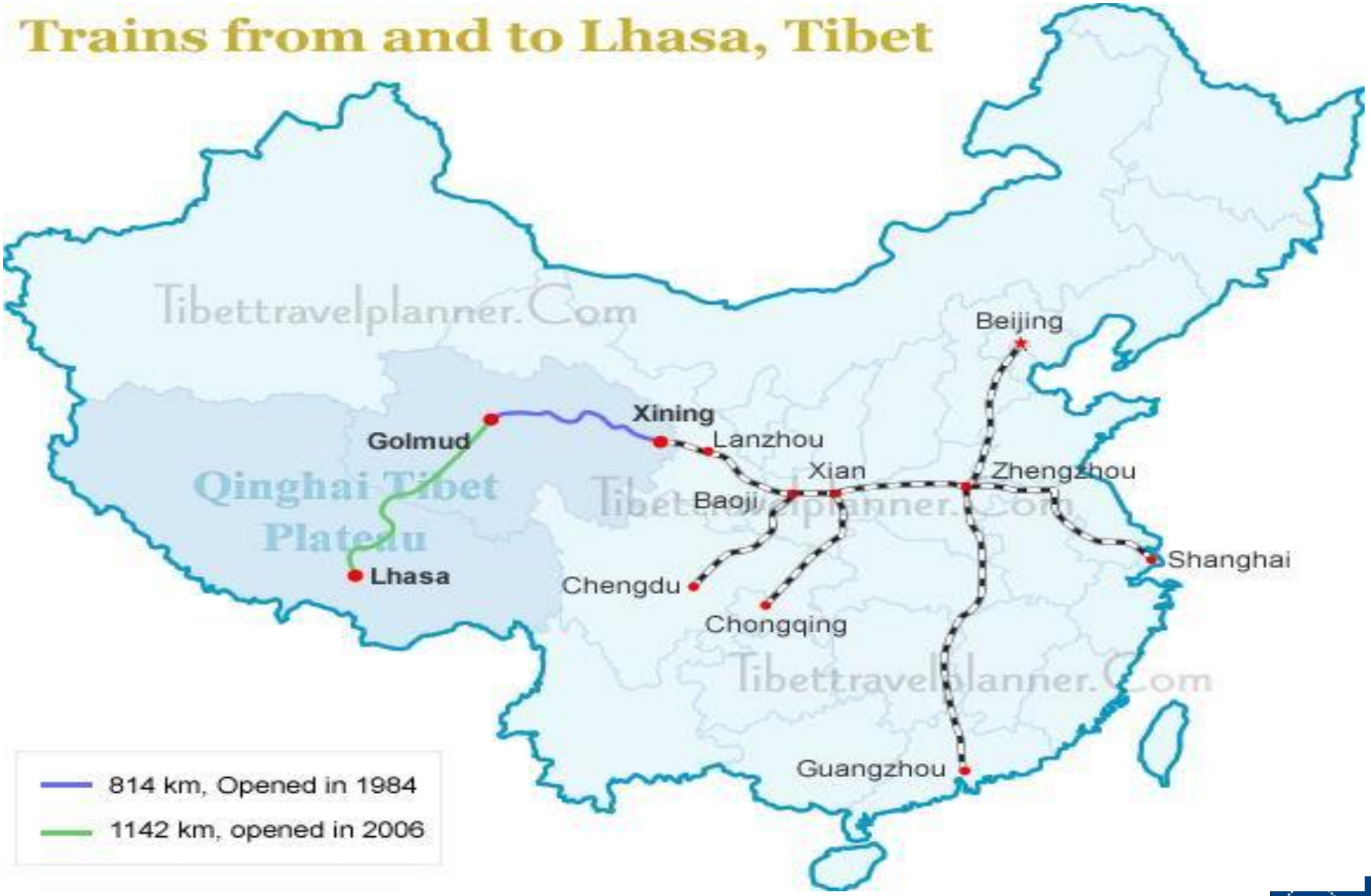
Regions	Out come	Pre-railway period	Post-railway period	Diffe rence
Non-affected group	GDP growth rate	8.3	8.5	0.2
Affected Group	GDP growth rate	7.2	9.4	2.2

Qinghai-Tibet Railway Map



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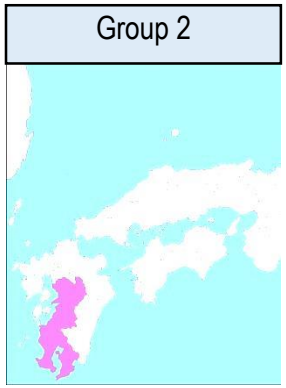
Tibet Railway

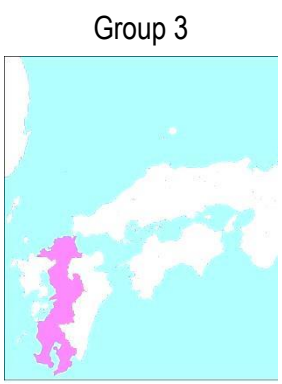
Source	SS	df	MS		
Model	8.28173613	6	1.38028935	Number of obs =	72
Residual	11.6075298	65	.178577382	F(6, 65) =	7.73
				Prob > F =	0.0000
				R-squared =	0.4164
				Adj R-squared =	0.3625
Total	19.8892659	71	.280130506	Root MSE =	.42258

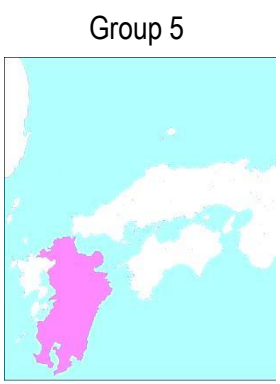
difference1	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
govspending1	.0118414	.0028554	4.15	0.000	.0061389	.017544
population1	.0034233	.0013616	2.51	0.014	.000704	.0061426
population0	-.0102002	.0037957	-2.69	0.009	-.0177808	-.0026196
govspending0	-.0206841	.0055783	-3.71	0.000	-.0318248	-.0095435
Dummy	.0924005	.2097625	0.44	0.661	-.3265242	.5113252
Dummy2	.061252	.1937049	0.32	0.753	-.3256034	.4481074
_cons	.4984291	.2045091	2.44	0.018	.0899961	.906862

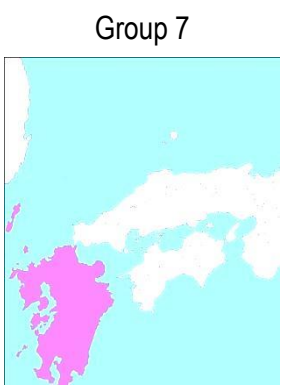
Japanese Bullet Train

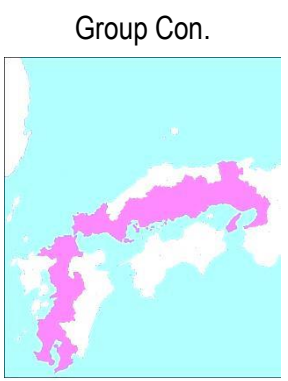
Japanese Bullet Train
Estimation results by group of prefectures

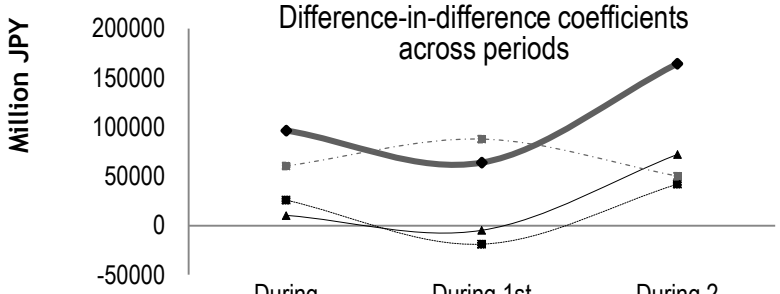




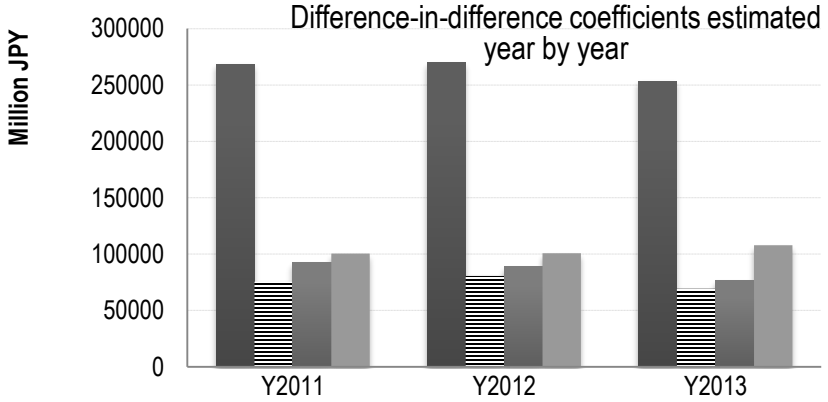








	During Construction Period [1991-2003]	During 1st Phase of Operation [2004-2010]	During 2 Phase of Operation [2011-2013]
Total Tax	96603	64067	164541
Personal Income Tax	25723	-19033	42035
Corporate Tax	10350	-4772	72330
Other Taxes	60529	87872	50176

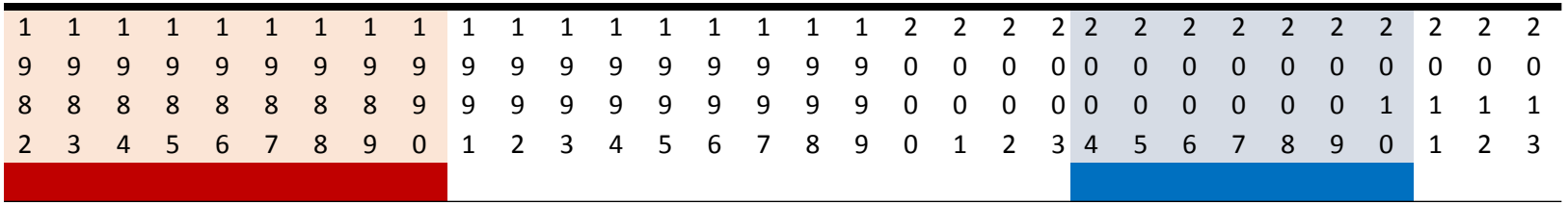


	Y2011	Y2012	Y2013
Total Tax	268644	270262	253343
Personal Income Tax	75582	80472	69234
Corporate Tax	92720	89082	76302
Other Taxes	100341	100707	107805

Note: Numbers for tax revenue amount adjusted for CPI with base year 1982. Pre-shinkansen construction period covers years from 1982 to 1990. Non-affected groups include rest of the prefectures
Treated groups: Group 2: Kagoshima, Kumamoto
Group 3: Kagoshima, Kumamoto, Fukuoka
Group 5: Kagoshima, Kumamoto, Fukuoka, Oita, Miyazaki
Group 7: Kagoshima, Kumamoto, Fukuoka, Oita, Miyazaki, Saga, Nagasaki
Group Con.: Kagoshima, Kumamoto, Fukuoka, Yamaguchi, Hiroshima, Okayama, Hyogo, Osaka

Impact of Kyushu Shinkansen Rail on CORPORATE TAX revenue during 1st PHASE OF OPERATION period

{2004-2010} , mln. JPY (adjusted for CPI, base 1982)



Variable	Regression 1	Regression 2	Regression 3	Regression 4	Regression 5
Treatment2	-4772.54				
	[-0.2]				
Number of tax payers	5.8952514*	5.8957045*	5.896112*	5.8953585*	5.8629645*
	[1.95]	[1.95]	[1.95]	[1.95]	[1.91]
Treatment3		-15947.8			
		[-0.87]			
Treatment5			-13250.4		
			[-1.06]		
Treatment7				-6883.09	
				[-0.7]	
TreatmentCon					-28030.8
					[-0.65]
Constant	-665679	-665418	-665323	-665358	-658553
	[-1.35]	[-1.35]	[-1.35]	[-1.35]	[-1.32]
N	799	799	799	799	799
R2	0.269215	0.269281	0.269291	0.269241	0.269779
F	1.934589	2.106448	2.074548	2.100607	8.497174

COMPOSITION OF GROUPS

Group2	Group5
Kagoshima	Kagoshima
Kumamoto	Kumamoto
	Fukuoka
Group3	Oita
Kagoshima	Miyazaki
Kumamoto	
Fukuoka	
	GroupCon
Group7	Kagoshima
Kagoshima	Kumamoto
Kumamoto	Fukuoka
Fukuoka	Osaka
Oita	Hyogo
Miyazaki	Okayama
Saga	Hiroshima
Nagasaki	Yamaguchi

Note: Treatment2 = Time Dummy {1991-2003} x Group2. etc. t-values are in parenthesis. Legend: * p<.1; ** p<.05; *** p<.01. Clustering standard errors are used, allowing for heteroscedasticity and arbitrary autocorrelation within a prefecture, but treating the errors as uncorrelated across prefectures

Impact of Kyushu Shinkansen Rail on CORPORATE TAX revenue during 2nd PHASE OF OPERATION period

{2011-2013} , mln. JPY (adjusted for CPI, base 1982)

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013

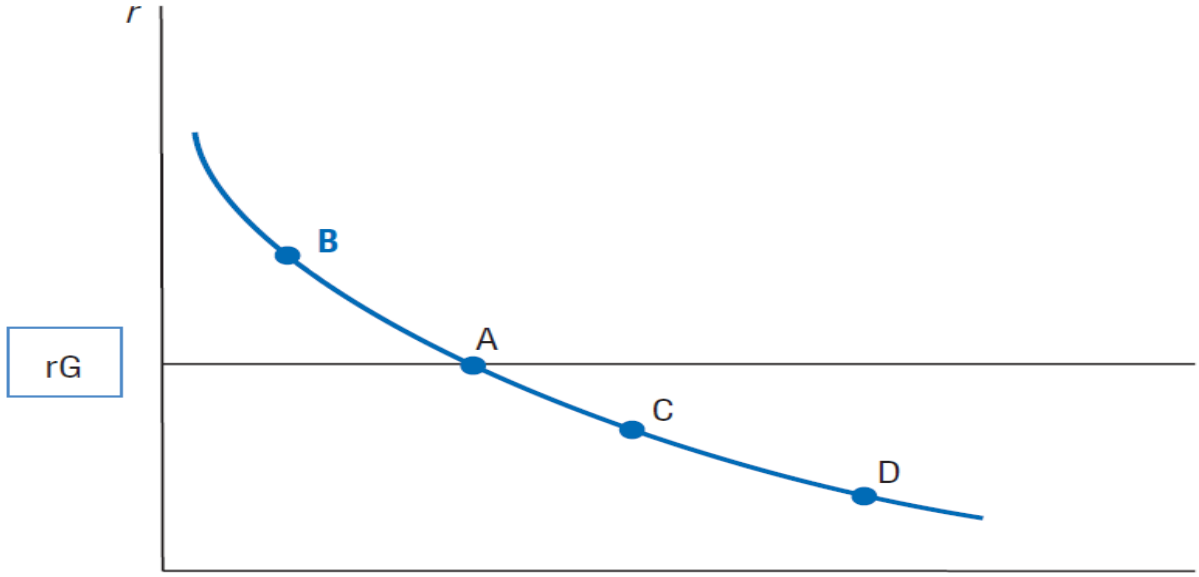
Variable	Regression 1	Regression 2	Regression 3	Regression 4	Regression 5
Treatment2	72330.012**				
	[2.2]				
Number of tax payers	5.5277056***	5.5585431***	5.558603***	5.5706545***	5.9640287***
	[3.13]	[3.14]	[3.14]	[3.14]	[3.07]
Treatment3		104664.34*			
		[2]			
Treatment5			82729.673**		
			[2.1]		
Treatment7				80998.365**	
				[2.34]	
TreatmentCon					179632
					[1.58]
Constant	-568133.98**	-573747.28**	-574245.87**	-576867.56**	-642138.87**
	[-2.07]	[-2.08]	[-2.08]	[-2.09]	[-2.1]
N	611	611	611	611	611
R2	0.350653	0.352058	0.352144	0.352874	0.364088
F	5.062509	5.486197	5.351791	5.431088	16.55518

COMPOSITION OF GROUPS

Group2	Group5
Kagoshima	Kagoshima
Kumamoto	Kumamoto
	Fukuoka
Group3	Oita
Kagoshima	Miyazaki
Kumamoto	
Fukuoka	
	GroupCon
Group7	Kagoshima
Kagoshima	Kumamoto
Kumamoto	Fukuoka
Fukuoka	Osaka
Oita	Hyogo
Miyazaki	Okayama
Saga	Hiroshima
Nagasaki	Yamaguchi

Note: Treatment2 = Time Dummy {1991-2003} x Group2. etc. t-values are in parenthesis. Legend: * p<.1; ** p<.05; *** p<.01. Clustering standard errors are used, allowing for heteroscedasticity and arbitrary autocorrelation within a prefecture, but treating the errors as uncorrelated across prefectures

Expected rates of return on project bonds vs. benchmark yield



	No Efforts	Efforts to improve
No Efforts	(50, *r*) Operating Company Investors	(50, *αr*) Operating Company Investors
Efforts to improve	(100, *r*) Operating Company Investors	(100, αr) Operating Company Investors

Public Private Partnership (PPP)

(1) Risk sharing between private and public sector

→ Collect Domestic Savings

→ long term savings (insurance, pension funds)

(2) Incentive to cut costs and to increase revenue

→ Avoid political intervention

→ Bonus payment for employees who run infrastructure

(3) Indirect Effects are important (tourism, manufacturing, fishing, services)

What is the purpose of infrastructure ?

Risks Associated with Infrastructure

1、Risk sharing between private and public

2、too much reliance on overseas' money

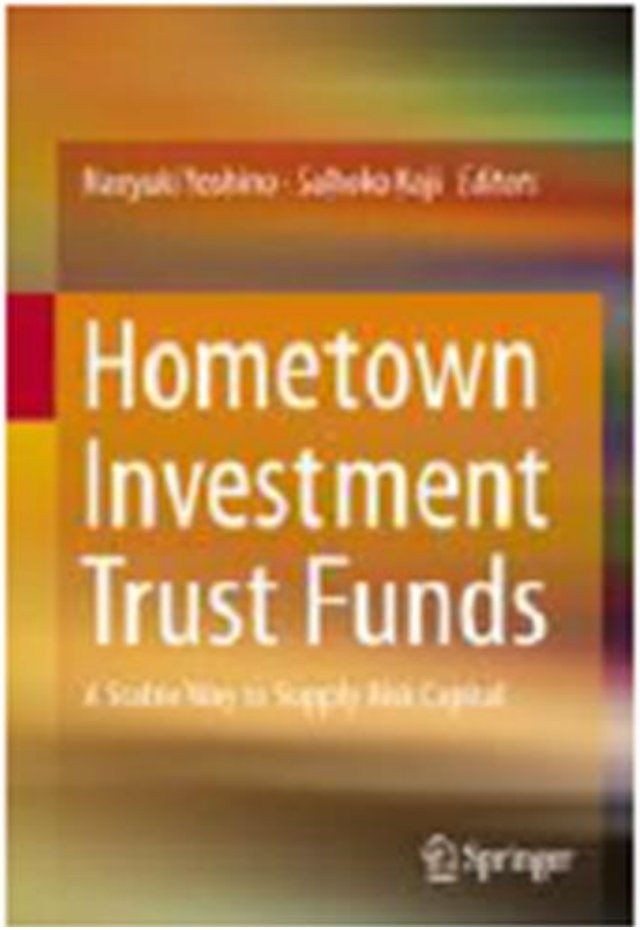
→ future burden for the country

3、Loans vs Investment

4、bankable projects or not ?

5、Various Risks (political risk, operational risk, demand risk, ex-post risk, maintenance risk, earthquakes, natural disaster risk)

Possible Solutions
Start up businesses, fisheries



Hometown Investment Trust Funds

A Stable Way to Supply Risk Capital

Yoshino, Naoyuki; Kaji Sahoko (Eds.)
2013, IX, 98 p. 41 illus.,20 illus. in color

Available Formats:

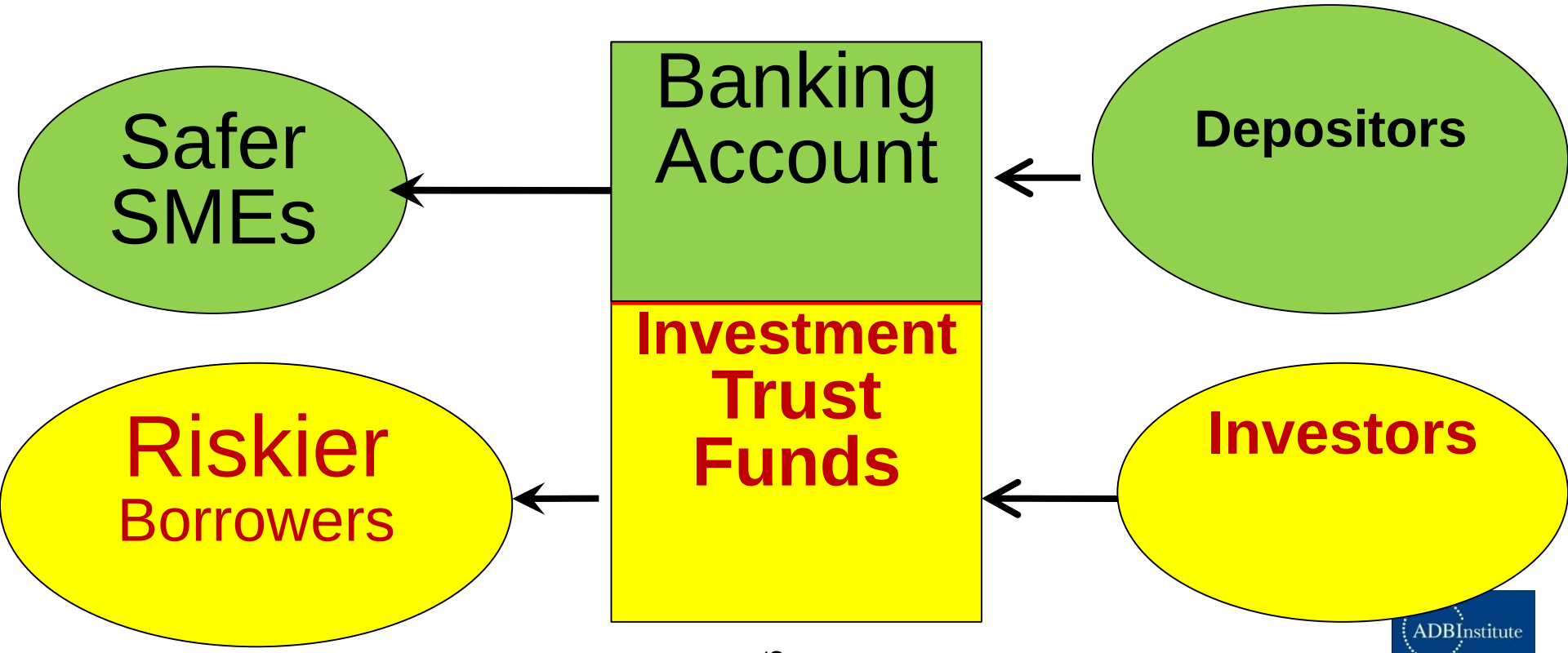
ebook
Hardcover
Springer

Japan, Cambodia Vietnam, Peru

Bank-based SME financing and regional financing to riskier borrowers

1. Bank Loans to relatively safer borrower
2. Hometown Investment Trust Funds/

E-Finance, Internet financing




新発田 Shinpaiku

Investment in SMEs and start up businesses

すべてを失い再起を断念しそうになった時。

Agricultural Funds

Beans and Wine

ADBInstitute

Challenges

Y=AF(N, Kp, Kg)

Enhancing Infrastructure Investment and Financial Stability

Maintain macroeconomic and financial stability
Create an exchange rate mechanism
Recycle savings into Investments
Maintain fiscal soundness
Avoid future crises and contagion

Supporting Equitable Growth

Improve income equality (Education, Tax System, Equal Opportunity)

Promoting Competitiveness and Innovation

Strengthen competitiveness of the agricultural sector, manufacturing and services sectors, SMEs and large firms

Protecting the Environment

Reduce CO^2 emissions, Coal, Technology, Water supply, Sanitation

Enabling Factors

Developing Infrastructure Finance

Y=AF(N, Kp, Kg)

Develop efficient markets in support of infrastructure and the real sector

Increase effectiveness of financial intermediation

Improve recycling of regional savings into regional infrastructure investment

Harnessing Human Capital

Education and Training

Building Seamless Connectivity

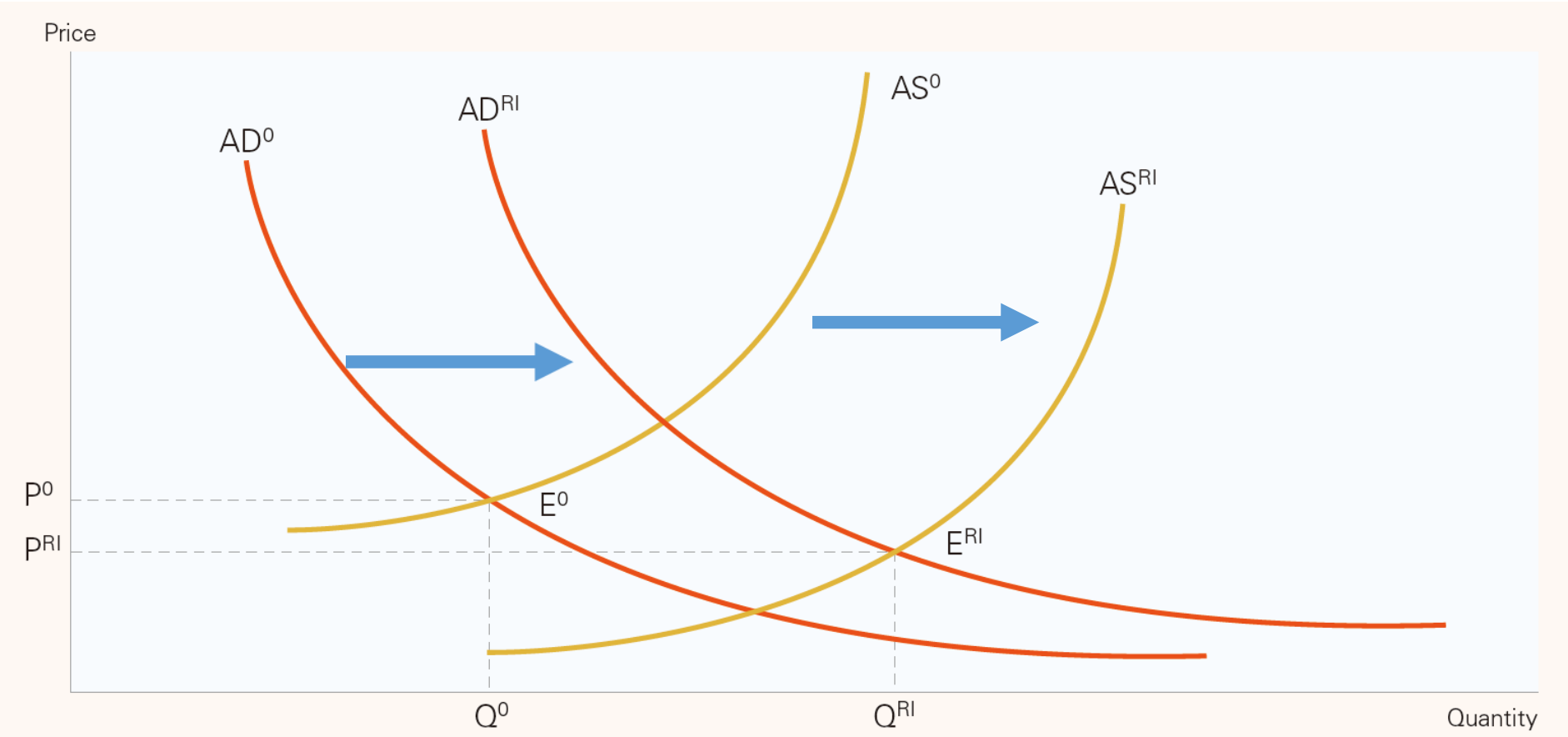
Y=C+I+G+EXP-IMP ←Investment, Exports and Imports

Infrastructure Investment and AS Y=AF(N, Kp, Kg)

Strengthening Governance

Institutional Architecture

Effect of Infrastructure investment on Aggregate Demand and Aggregate Supply



AD = aggregate demand; AS = aggregate supply; E = equilibrium point; P = price; Q = quantity; RI = regional integration.

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