

# **Impact Evaluation of Infrastructure: Case Studies of Japan and the Philippines**

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# Outline

- 1, Micro data-based Evaluation of the effect of Infrastructure – Philippine case**
- 2, Tax revenues and Non-tax Revenues**
- 3, Business Tax, Property Tax**
- 4, Affected region vs non-affected region**
- 5, Macroeconomic effect of infrastructure**
- 6, Community based infrastructure**  
**Hometown Investment Trust Funds**

# Micro Case Study - **Philippine micro data**

## Objectives:

- 1, Evaluation of **the 'highway effect' on tax and non-tax revenues** using as case study the Southern Tagalog Arterial Road (STAR) in Batangas Province, Philippines
- 2, Evaluation is carried out using a quasi-experimental approach via **a difference-in-difference (DiD) analysis**

# Affected or treatment group (D = 1)

**Affected group:**

Lipa City,  
Ibaan and  
Batangas City





# Unaffected or Control groups (D = 0)

## Control group (1):

San Jose  
San Pascual  
Padre Garcia  
Rosario  
Taysan



## Control group (2):

Cuenca  
Alitagtag  
Bauan  
Lobo  
San Juan



## Control group (3):

Agoncillo  
Lemery  
San Nicolas  
Taal  
San Luis  
Mabini



## Control group (4):

Nasugbu  
Lian  
Tuy  
Balayan  
Calaca  
Calatagan

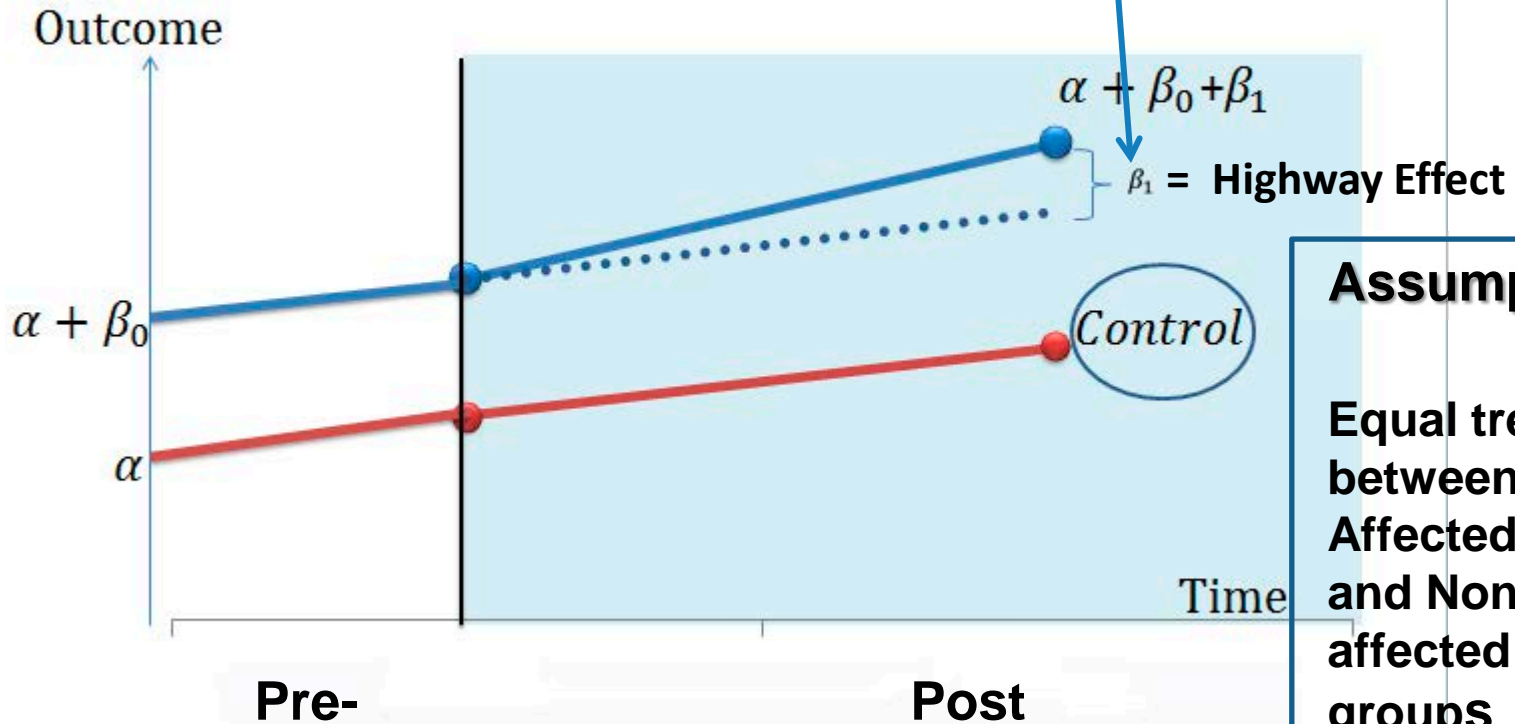


# Method: Difference-in-Difference (DiD) Analysis

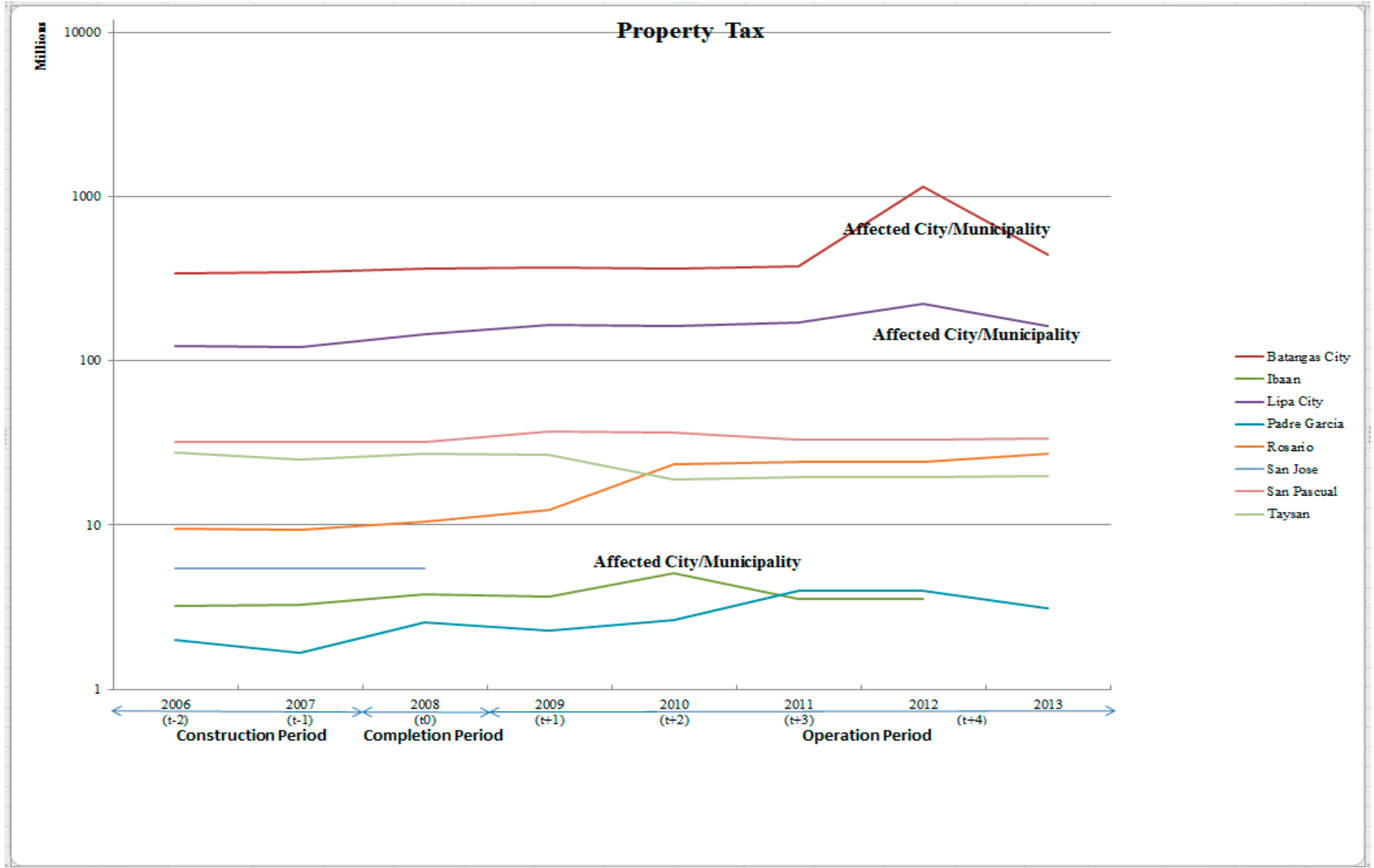
$$\text{Outcome} = \alpha + \beta_0 D + \sum_{t+4}^{t-2} \beta_1 D \times T + \varepsilon$$

where:  $D = 1$  (Affected or treatment group)  
 $D = 0$  (Unaffected or control group)

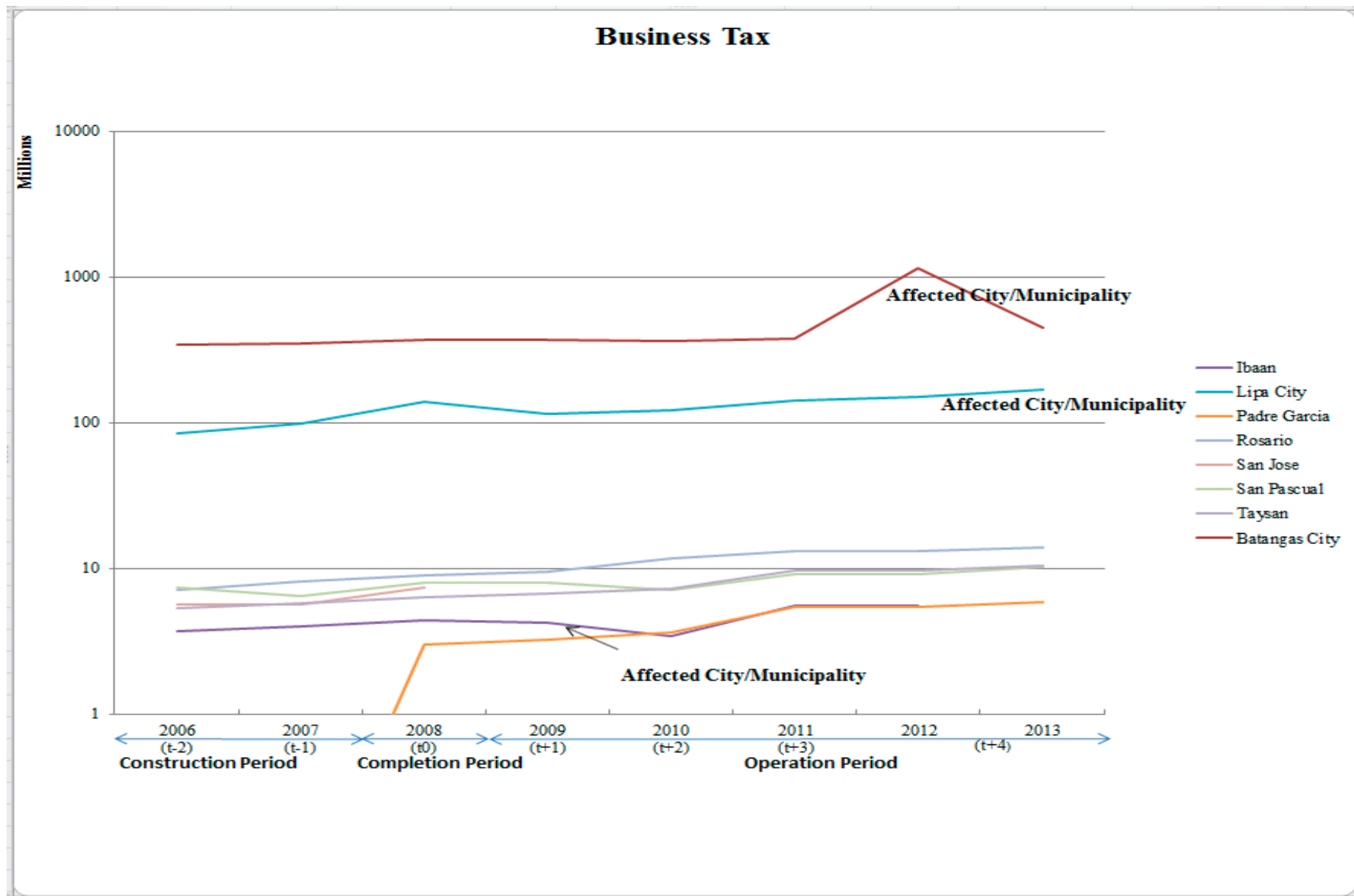
$T =$  Affected period



# Property tax data



# Business tax data





# Tax variables and Non-tax variables

- We employ data on **property tax revenues, business tax revenues, regulatory fees and user charges** of the cities and municipalities comprising Batangas Province, Philippines.
- The tax and non-tax revenues data were obtained from the Philippine Bureau of Local Government Finance (BLGF)

### Difference-in-Difference Regression: Control Group 1

	(1) Property tax	(2) Property tax	(3) Business tax	(4) Business tax	(5) Regulatory fees	(6) Regulatory fees	(7) User charge	(8) User charge
Impact D	1.370 (1.473)	1.466 (1.478)	0.819 (0.869)	0.776 (0.885)	0.932 (0.763)	0.929 (0.779)	0.513 (1.012)	0.612 (1.125)
Impact D × Period <sub>t-2</sub>	0.210** (0.099)	0.095 (0.100)	1.570*** (0.502)	1.616** (0.626)	0.186 (0.121)	0.162 (0.118)	0.651*** (0.132)	0.453*** (0.105)
Impact D × Period <sub>t-1</sub>	0.210** (0.096)	0.254** (0.104)	1.689*** (0.517)	1.978*** (0.585)	0.507** (0.225)	0.610*** (0.191)	0.502*** (0.151)	0.330 (0.277)
Impact D × Period <sub>t0</sub>	0.342*** (0.125)	0.293** (0.126)	1.849*** (0.519)	1.995*** (0.616)	0.609** (0.292)	0.637** (0.253)	0.740*** (0.175)	0.553 (0.292)
Impact D × Period <sub>t+1</sub>	0.373*** (0.128)	0.060 (0.161)	1.799*** (0.536)	1.541** (0.803)	0.774* (0.475)	0.591 (0.458)	0.836*** (0.289)	0.604 (0.470)
Impact D × Period <sub>t+2</sub>	0.471** (0.203)	0.183 (0.210)	1.739*** (0.589)	1.520* (0.831)	0.949** (0.430)	0.786* (0.412)	0.803*** (0.267)	0.576 (0.442)
Impact D × Period <sub>t+3</sub>	0.376*** (0.123)	0.136 (0.144)	1.968*** (0.479)	1.821** (0.692)	1.162*** (0.290)	1.037*** (0.282)	1.023*** (0.275)	0.804* (0.424)
Impact D × Period <sub>t+4</sub> , forward	1.247*** (0.344)	0.939*** (0.348)	2.610*** (0.280)	2.360*** (0.556)	1.548*** (0.231)	1.369*** (0.272)	1.321*** (0.456)	1.090* (0.603)
Construction		0.709** (0.278)		1.085 (0.920)		0.567 (0.399)		0.118 (0.580)
Constant	16.18*** (0.504)	10.34*** (2.45)	15.25*** (0.516)	6.290 (8.038)	14.84*** (0.272)	10.19*** (3.13)	14.26*** (0.265)	13.39*** (4.85)
<i>N</i>	98	90	98	90	98	90	97	90
<i>R</i> <sup>2</sup>	0.24	0.25	0.36	0.37	0.42	0.42	0.20	0.21

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

### Difference-in-Difference Regression: Control Group 2

	(1) Property tax	(2) Property tax	(3) Business tax	(4) Business tax	(5) Regulatory fees	(6) Regulatory fees	(7) User charge	(8) User charge
Impact D	2.283 (1.479)	2.383 (1.486)	1.221 (0.947)	1.078 (0.889)	1.414 (0.843)	1.508* (0.863)	0.775 (1.207)	1.084 (1.30)
Impact D × Period <sub>t-2</sub>	0.210** (0.099)	0.109 (0.095)	1.570*** (0.501)	1.686*** (0.614)	0.186 (0.121)	0.101 (0.111)	0.651*** (0.132)	0.319*** (0.076)
Impact D × Period <sub>t-1</sub>	0.210** (0.095)	0.248** (0.102)	1.689*** (0.516)	1.930*** (0.580)	0.507** (0.225)	0.652*** (0.188)	0.502*** (0.151)	0.422 (0.272)
Impact D × Period <sub>t0</sub>	0.342*** (0.125)	0.297** (0.126)	1.849*** (0.518)	2.017*** (0.614)	0.609** (0.292)	0.619** (0.252)	0.740*** (0.175)	0.513 (0.291)
Impact D × Period <sub>t+1</sub>	0.373*** (0.128)	0.101 (0.129)	1.799*** (0.535)	1.760** (0.722)	0.774* (0.475)	0.404 (0.440)	0.836*** (0.289)	0.191 (0.411)
Impact D × Period <sub>t+2</sub>	0.471** (0.203)	0.221 (0.191)	1.739*** (0.589)	1.720** (0.766)	0.949** (0.430)	0.615 (0.396)	0.803*** (0.267)	0.199 (0.390)
Impact D × Period <sub>t+3</sub>	0.376*** (0.123)	0.168 (0.125)	1.968*** (0.478)	1.986*** (0.638)	1.162*** (0.289)	0.896*** (0.266)	1.023*** (0.274)	0.493 (0.388)
Impact D × Period <sub>t+4</sub>	1.247*** (0.343)	0.980*** (0.334)	2.610*** (0.279)	2.575*** (0.445)	1.548*** (0.230)	1.185*** (0.246)	1.321*** (0.455)	0.683 (0.572)
forward								
Construction		0.608** (0.145)		0.554 (0.409)		1.021*** (0.258)		1.120*** (0.192)
Constant	15.27*** (0.529)	10.25*** (1.380)	14.85*** (0.640)	10.30*** (3.596)	14.36*** (0.450)	5.92*** (1.952)	14.00*** (0.712)	4.78** (1.89)
<i>N</i>	102	94	102	94	100	94	100	94
<i>R</i> <sup>2</sup>	0.41	0.42	0.44	0.45	0.46	0.47	0.18	0.21

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

### Difference-in-Difference Regression: Control Group 3

	(1) Property tax	(2) Property tax	(3) Business tax	(4) Business tax	(5) Regulatory fees	(6) Regulatory fees	(7) User charge	(8) User charge
Impact D	2.883** (1.424)	2.941** (1.425)	1.608* (0.850)	1.528* (0.787)	1.824** (0.765)	1.947** (0.805)	1.517 (1.025)	1.879* (1.148)
Impact D × Period <sub>t-2</sub>	0.210** (0.097)	0.118 (0.095)	1.570*** (0.489)	1.634*** (0.591)	0.186 (0.118)	0.058 (0.117)	0.651*** (0.130)	0.290*** (0.082)
Impact D × Period <sub>t-1</sub>	0.210** (0.093)	0.238** (0.098)	1.689*** (0.504)	1.966*** (0.571)	0.507** (0.219)	0.681*** (0.185)	0.502*** (0.148)	0.442* (0.266)
Impact D × Period <sub>t0</sub>	0.342*** (0.122)	0.30** (0.123)	1.849*** (0.507)	2.0*** (0.596)	0.609** (0.285)	0.606** (0.246)	0.740*** (0.171)	0.504* (0.283)
Impact D × Period <sub>t+1</sub>	0.373*** (0.125)	0.131 (0.135)	1.799*** (0.523)	1.597** (0.684)	0.774* (0.463)	0.271 (0.449)	0.836*** (0.282)	0.099 (0.409)
Impact D × Period <sub>t+2</sub>	0.471** (0.198)	0.248 (0.195)	1.739*** (0.575)	1.571** (0.728)	0.949** (0.419)	0.495 (0.404)	0.803*** (0.260)	0.115 (0.387)
Impact D × Period <sub>t+3</sub>	0.376*** (0.120)	0.190 (0.128)	1.968*** (0.468)	1.864*** (0.607)	1.162*** (0.283)	0.797*** (0.280)	1.023*** (0.268)	0.424 (0.385)
Impact D × Period <sub>t+4</sub> , forward	1.247*** (0.336)	1.009*** (0.331)	2.610*** (0.273)	2.415*** (0.412)	1.548*** (0.225)	1.055*** (0.277)	1.321*** (0.445)	0.593 (0.569)
Construction		0.537** (0.167)		0.949** (0.387)		1.342*** (0.388)		1.342*** (0.260)
Constant	14.67*** (0.451)	10.27*** (1.359)	14.46*** (0.505)	6.64** (3.378)	13.95*** (0.317)	2.88 (3.416)	13.26*** (0.376)	2.18 (2.30)
<i>N</i>	128	118	128	118	128	118	125	118
<i>R</i> <sup>2</sup>	0.50	0.50	0.47	0.48	0.54	0.57	0.39	0.42

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

### Difference-in-Difference Regression: Control Group 4

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Property tax	Property tax	Business tax	Business tax	Regulatory fees	Regulatory fees	User charge	User charge
Impact D	1.252 (1.434)	1.491 (1.326)	0.889 (0.865)	0.896 (0.765)	1.326* (0.727)	1.353** (0.692)	1.351 (0.985)	1.789* (0.992)
Impact D × Period <sub>t-2</sub>	0.210** (0.098)	0.061 (0.092)	1.570*** (0.495)	1.593** (0.625)	0.186 (0.120)	0.210 (0.137)	0.651*** (0.130)	0.397*** (0.144)
Impact D × Period <sub>t-1</sub>	0.210** (0.094)	0.201*** (0.069)	1.689*** (0.509)	1.775*** (0.607)	0.507** (0.222)	0.610*** (0.191)	0.502*** (0.149)	0.474** (0.194)
Impact D × Period <sub>t0</sub>	0.342*** (0.124)	0.052** (0.155)	1.849*** (0.512)	1.808*** (0.651)	0.609** (0.288)	0.554** (0.223)	0.740*** (0.172)	0.260 (0.233)
Impact D × Period <sub>t+1</sub>	0.373*** (0.126)	-0.230 (0.203)	1.799*** (0.528)	1.617** (0.777)	0.774* (0.468)	0.543 (0.481)	0.836*** (0.285)	-0.150 (0.401)
Impact D × Period <sub>t+2</sub>	0.471** (0.200)	-0.071 (0.171)	1.739*** (0.581)	1.584** (0.807)	0.949** (0.424)	0.752* (0.447)	0.803*** (0.263)	-0.084 (0.383)
Impact D × Period <sub>t+3</sub>	0.376*** (0.121)	-0.129 (0.164)	1.968*** (0.472)	1.829*** (0.688)	1.162*** (0.286)	0.985*** (0.240)	1.023*** (0.271)	0.193 (0.343)
Impact D × Period <sub>t+4, forward</sub>	1.247*** (0.339)	0.595 (0.386)	2.610*** (0.276)	2.354*** (0.776)	1.548*** (0.227)	1.258*** (0.107)	1.321*** (0.449)	0.266 (0.425)
Construction		1.327** (0.497)		0.60 (0.619)		0.745*** (0.270)		2.137*** (0.641)
Constant	16.30*** (0.440)	5.359 (3.959)	15.18*** (0.521)	10.24** (4.911)	14.45*** (0.184)	8.308*** (2.239)	13.43*** (0.206)	-4.235 (5.14)
N	114	104	114	104	114	104	111	103
R <sup>2</sup>	0.21	0.23	0.37	0.36	0.56	0.55	0.36	0.44

Clustered standard errors, corrected for small number of clusters; \* Significant at 10%. \*\* Significant at 5%. \*\*\* Significant at 1%. 13



# Affected and Unaffected group - Spillover effect (outside of the province)

## AFFECTED group:

Lipa City,  
Ibaan and  
Batangas City

**Unaffected:**  
*(municipalities  
belonging to  
neighboring  
Quezon  
province)*

Candelaria  
Dolores  
San Antonio  
Tiaong



## Difference-in-Difference Regression: Spillover

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Property tax	Property tax	Business tax	Business tax	Regulatory fees	Regulatory fees	User charge	User charge
Impact D	1.5535 (1.263)	0.736 (0.874)	1.067 (1.316)	0.438 (1.407)	1.372 (1.123)	0.924 (1.046)	0.990 (1.095)	0.364 (1.028)
Impact D × Period <sub>t-2</sub>	0.421** (0.150)	-0.083 (0.301)	1.189*** (0.391)	0.991** (0.450)	0.248*** (0.084)	-0.019 (0.248)	0.408*** (0.132)	-0.010 (0.250)
Impact D × Period <sub>t-1</sub>	0.447** (0.160)	0.574*** (0.118)	1.264*** (0.415)	1.502*** (0.542)	0.449** (0.142)	0.515*** (0.169)	0.317** (0.164)	0.434** (0.167)
Impact D × Period <sub>t0</sub>	0.497*** (0.128)	0.570** (0.223)	1.440*** (0.417)	1.641*** (0.482)	0.604** (0.183)	0.642*** (0.181)	0.350 (0.271)	0.422 (0.158)
Impact D × Period <sub>t+1</sub>	1.294** (0.674)	0.387 (0.728)	2.256** (0.957)	1.779** (0.470)	1.318** (0.649)	0.838* (0.448)	0.959 (0.714)	0.197 (0.560)
Impact D × Period <sub>t+2</sub>	1.163* (0.645)	0.336 (0.594)	2.226** (0.971)	1.804** (0.531)	1.482** (0.634)	1.044** (0.413)	0.941 (0.704)	0.247 (0.531)
Impact D × Period <sub>t+3</sub>	1.702* (0.980)	0.450 (0.578)	2.785** (1.081)	2.070*** (0.544)	1.901*** (0.630)	1.238*** (0.369)	1.732*** (0.598)	0.676 (0.515)
Impact D × Period <sub>t+4, forward</sub>	2.573*** (0.900)	1.100 (0.758)	3.428*** (0.928)	2.560*** (0.350)	2.288*** (0.563)	1.509*** (0.452)	2.030*** (0.607)	0.787 (0.745)
Construction		2.283** (1.172)		1.577 (1.196)		1.207 (0.855)		1.942* (1.028)
Constant	14.69*** (0.408)	-2.499 (8.839)	14.18*** (0.991)	2.230 (9.094)	13.66*** (0.879)	4.597 (6.566)	13.08*** (0.649)	-1.612 (7.84)
<i>N</i>	80	73	79	73	80	73	77	73
<i>R</i> <sup>2</sup>	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%.

# Alternative Difference-in-Difference – Distance of municipality from STAR Tollway

- The adjacency of a municipality to the municipality/city in which the STAR Tollway directly pass through was used as the criterion for a municipality to be included in the control group
- We take a different strategy this time by using the estimated distance of a municipality/city from the STAR Tollway
- The difference-in-difference regression is now expressed as:

$$\text{Outcome} = \alpha + \beta_0 \text{Distance} + \sum_{t+4}^{t-2} \beta_1 \text{Distance} \times \text{Treatment Period} + \varepsilon$$

□ Inclusion of leads and lags as before

## Difference-in-Difference Regression: Distance from the STAR Tollway

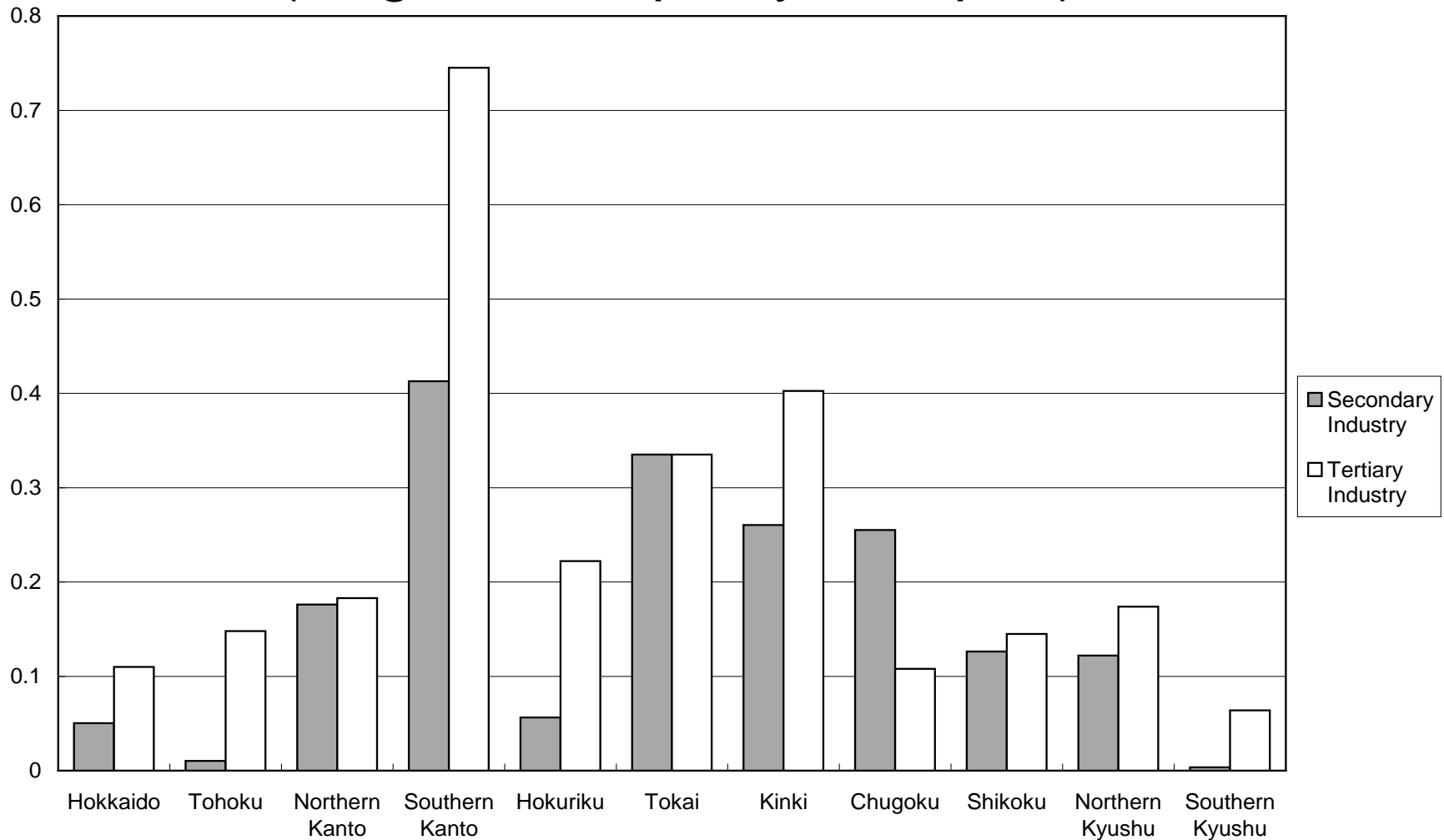
	(1) Property tax	(2) Property tax	(3) Business tax	(4) Business tax	(5) Regulatory fees	(6) Regulatory fees	(7) User charge	(8) User charge
Distance	-0.691*** (0.227)	-0.683*** (0.224)	-0.753*** (0.156)	-0.718*** (0.159)	-0.708*** (0.097)	-0.752*** (0.101)	-0.583*** (0.120)	-0.546*** (0.124)
Distance × Period <sub>t-2</sub>	0.073*** (0.010)	0.064*** (0.009)	0.166*** (0.010)	0.117*** (0.011)	0.034* (0.018)	0.047** (0.019)	0.107*** (0.016)	0.033** (0.016)
Distance × Period <sub>t-1</sub>	0.056*** (0.019)	0.049*** (0.018)	0.205*** (0.013)	0.213*** (0.014)	0.155*** (0.015)	0.173*** (0.013)	0.036 (0.024)	-0.007 (0.025)
Distance × Period <sub>t0</sub>	0.103*** (0.011)	0.095*** (0.011)	0.247*** (0.012)	0.222*** (0.012)	0.196*** (0.018)	0.211*** (0.019)	0.120*** (0.029)	0.059** (0.028)
Distance × Period <sub>t+1</sub>	0.100*** (0.023)	0.088*** (0.024)	0.230*** (0.015)	0.111*** (0.014)	0.234*** (0.027)	0.241*** (0.025)	0.131*** (0.024)	0.018 (0.027)
Distance × Period <sub>t+2</sub>	0.140*** (0.012)	0.130*** (0.015)	0.238*** (0.014)	0.128*** (0.018)	0.292*** (0.022)	0.300*** (0.023)	0.149*** (0.030)	0.042 (0.031)
Distance × Period <sub>t+3</sub>	0.111*** (0.020)	0.101*** (0.018)	2.261*** (0.019)	0.168*** (0.023)	0.285*** (0.025)	0.294*** (0.024)	0.181*** (0.023)	0.083*** (0.026)
Distance × Period <sub>t+4</sub>	0.232*** (0.020)	0.220*** (0.023)	0.322*** (0.021)	0.202*** (0.025)	0.370*** (0.016)	0.377*** (0.016)	0.197*** (0.021)	0.084*** (0.027)
forward								
Construction		0.030 (0.101)		0.902*** (0.059)		0.077 (0.075)		0.496*** (0.135)
Constant	19.98*** (0.768)	19.74*** (1.108)	19.66*** (0.532)	12.262*** (0.736)	17.946*** (0.334)	17.427*** (0.752)	16.90*** (0.429)	12.930*** (1.255)
N	960	886	960	886	960	886	960	886
R <sup>2</sup>	0.03	0.03	0.07	0.07	0.12	0.13	0.05	0.04

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

\*\*\* Significant at 1%.

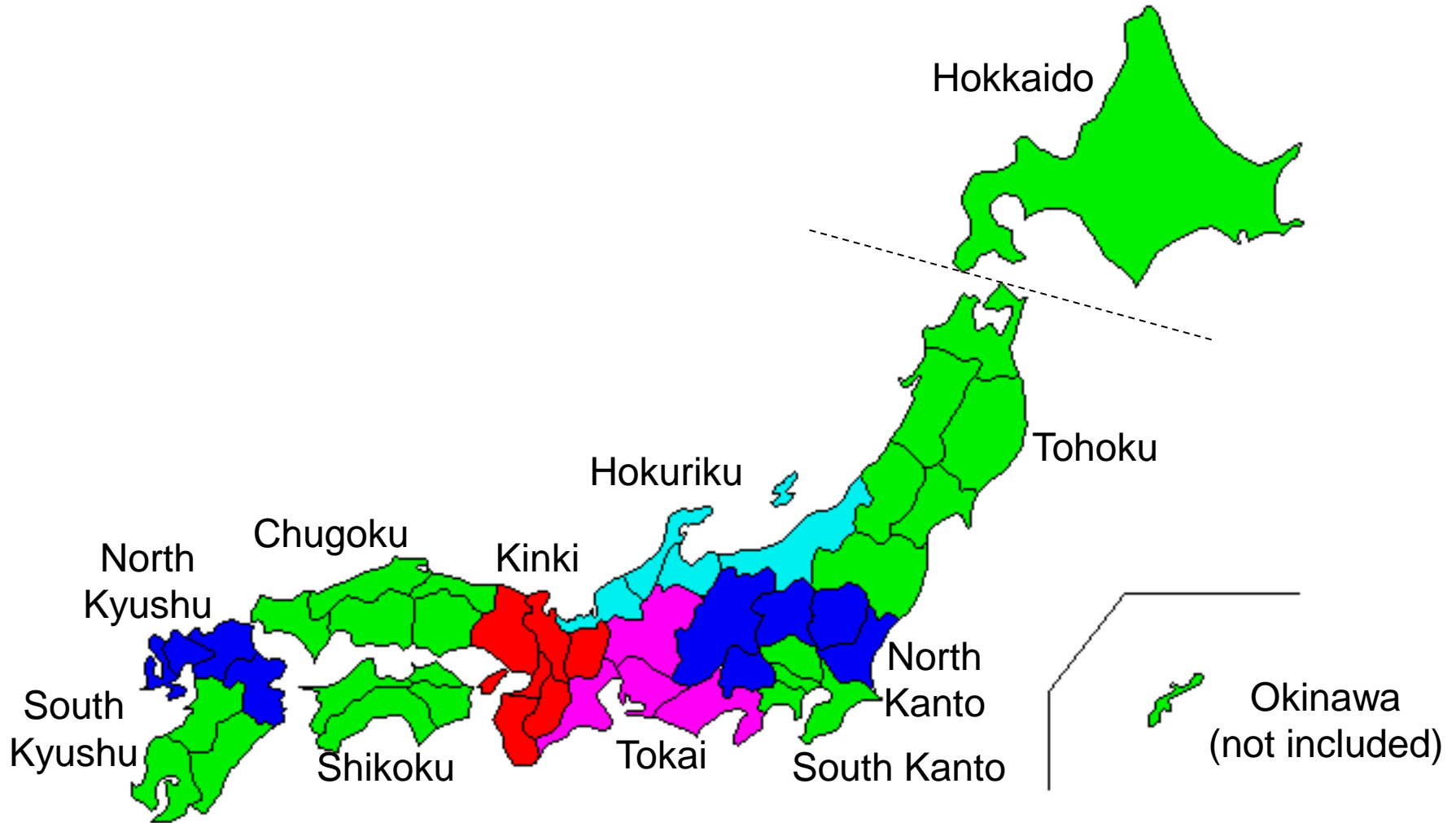
# Marginal Productivity of Public Capital

## (Regional Disparity in Japan)





# Map of Japan from the North to the South



# Macroeconomic Effect of Public Capital

$$Y_t = f(Kp_t, L_t, Kg_t)$$

Simultaneous regression of

Translog Production Function and Labor Share Function

$$\ln Y = \alpha_0 + \alpha_1 \ln Kp + (1 - \alpha_1) \ln E + \alpha_3 \ln Kg$$

$$+ \ln Kp \left( -\frac{1}{2} \beta_2 \ln Kp + \beta_2 \ln E + \beta_3 \ln Kg \right)$$

$$+ \ln E \left( -\frac{1}{2} \beta_2 \ln E - \beta_3 \ln Kg \right) + \frac{1}{2} \beta_6 - (\ln Kg)^2$$

$$S_E = \frac{wE}{pY} = \frac{\partial \ln Y}{\partial \ln E} = (1 - \alpha_1) + \beta_2 \ln Kp - \beta_2 \ln E - \beta_3 \ln Kg$$

# Marginal Productivity of Public Capital

## Macroeconomic Effects (in Japan)

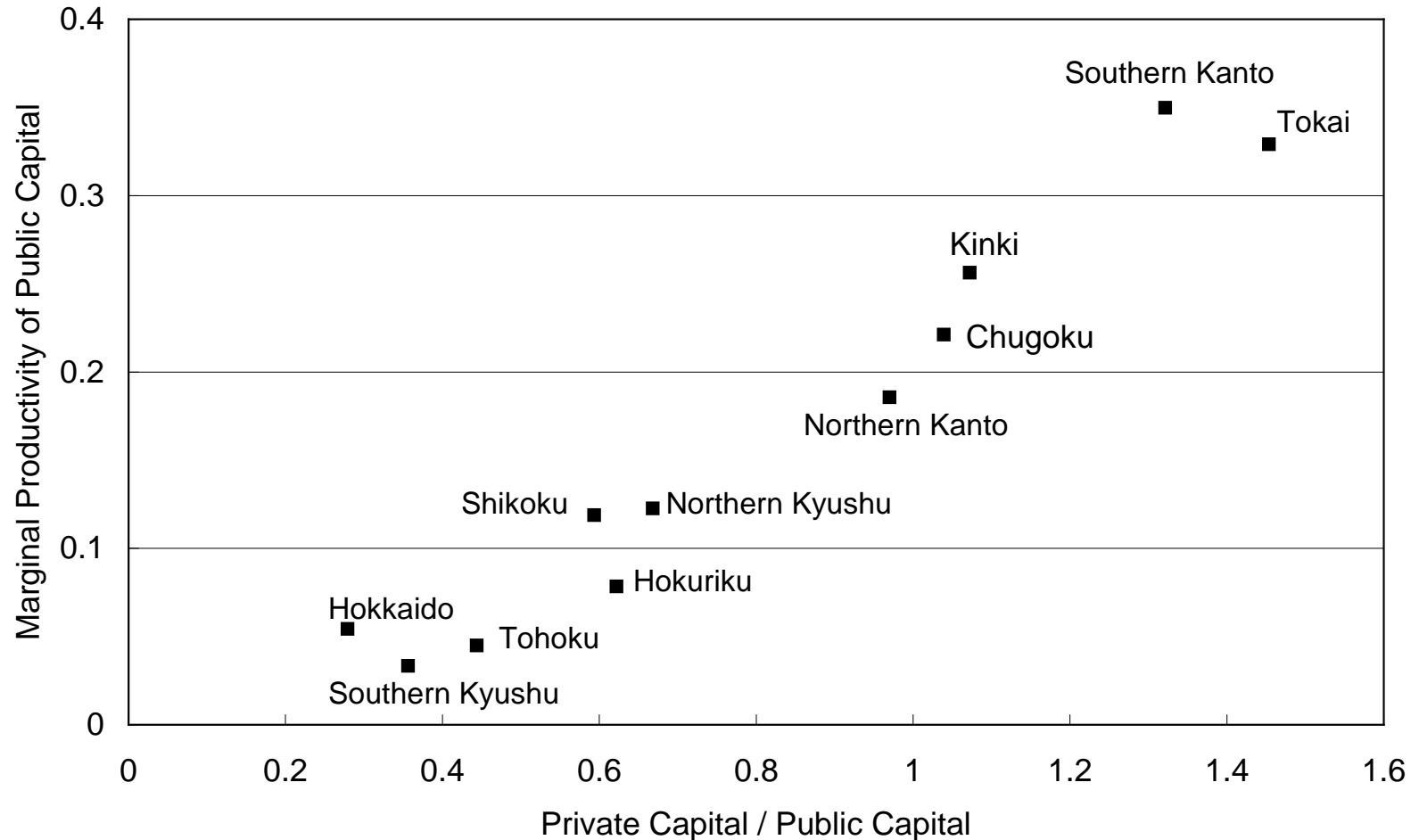
Period(FY)	1956–60	1961–65	1966–70	1971–75	1976–80	1981–85
Direct Effect	0.696	0.737	0.638	0.508	0.359	0.275
Indirect Effect(Private Capital)	0.453	0.553	0.488	0.418	0.304	0.226
Indirect Effect(Labor Input)	1.071	0.907	0.740	0.580	0.407	0.317
Private Capital	0.444	0.485	0.452	0.363	0.294	0.262

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

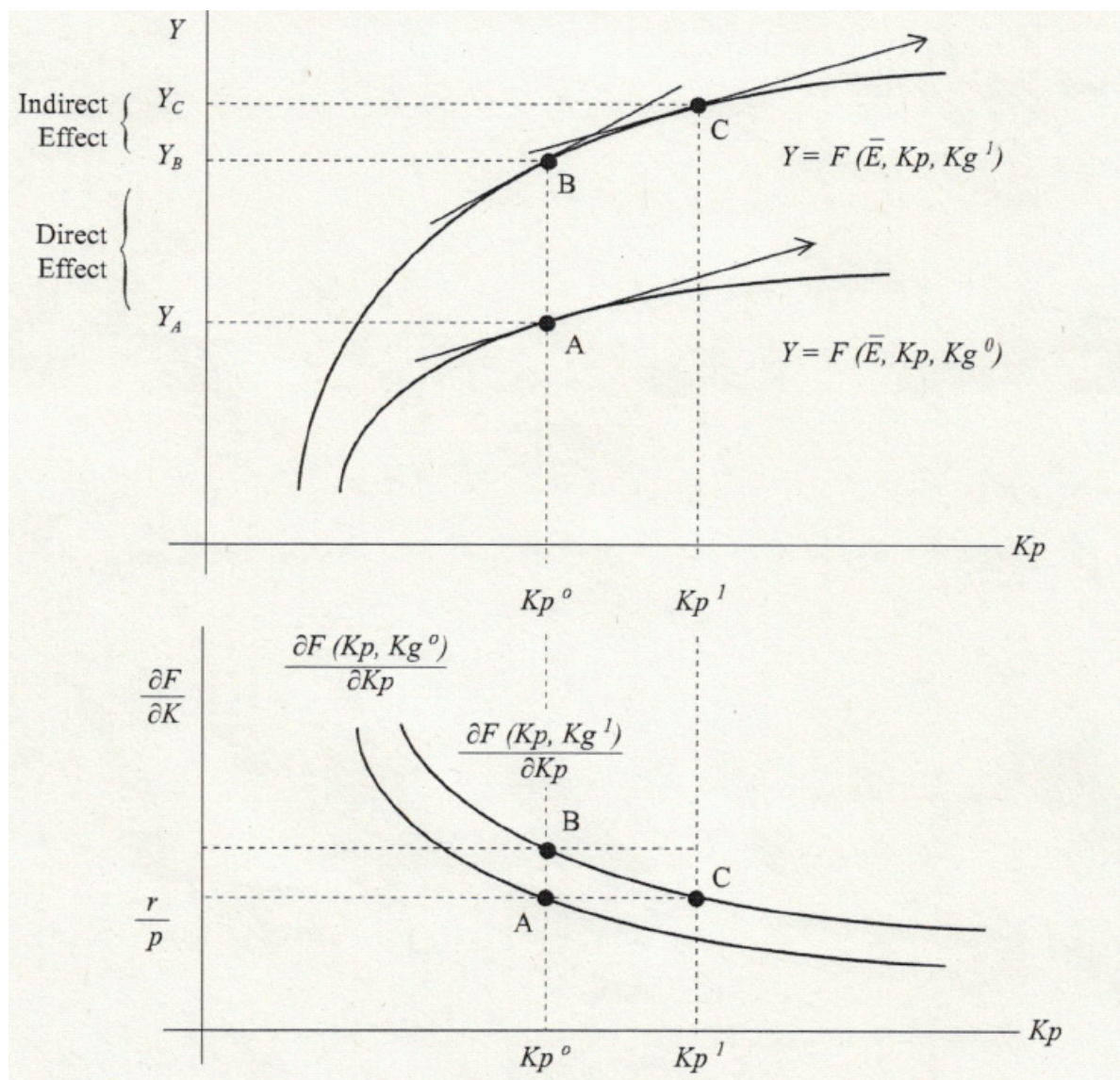
# Effectiveness of Public Capital Stock

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

## Secondary Industry (Industrial Sector)



# Explanation of Direct and Indirect Effects





# Determinants of Regional Allocation of Public Investment in Japan (Political Power plays a role)

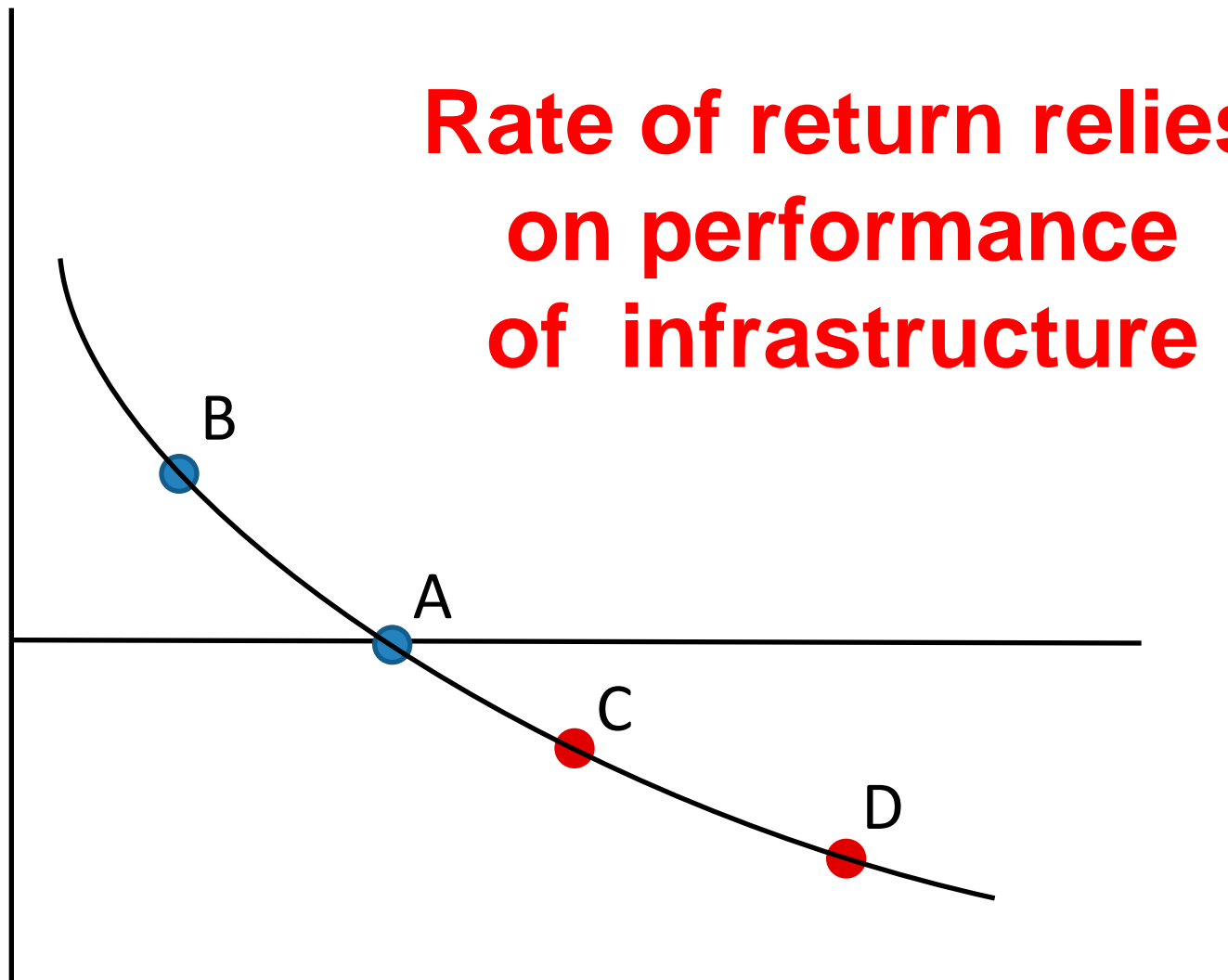
Allocation of Public Infrastructure in Japan: (Pooled data, 47 prefecture)

Coefficient	Explanatory Variables	Agriculture	Land Conservation	Industrial Infrastructure	Improvement of living standards
$\alpha_0$	Constant	-35.44 (-10.46**)	-34.26 (-11.32**)	-61.58 (-11.84**)	52.32 (8.00**)
$\alpha_1$	Yp (Income)	0.01 (7.21**)	0.01 (13.18**)	0.02 (17.99**)	0.036 (25.86**)
$\alpha_2$	Sp(AreaSize)	4970 (28.47**)	2090 (13.40**)	3855 (14.39**)	2730 (8.10**)
$\alpha_3$	Rp(Political Power)	8280 (16.88**)	7274 (16.60**)	10956 (14.55**)	-7434 (-7.85**)
$\alpha_4$	Dummy1	-23.21 (-6.69**)	-34.27 (-11.06**)	-59.81 (-11.23**)	-36.85 (-5.50**)
$\alpha_5$	Dummy2	27.43 (9.26**)	-1.65 (-0.62)	65.87 (14.48**)	66.89 (11.70**)
Adj. $R^2$		0.675	0.486	0.458	0.527

(1) ( ) denotes t-value

(2) \*\* is significant with 99.0% level,

# Rate of Return and the Revenue Bond



# *To Create Incentive Mechanism*

## To Avoid Moral Hazard Problem

	<b>Normal Case</b>	<b>Revenue Bond</b>
<b>Normal Case</b>	<b>(50A, r)</b> Management Investors company	<b>(50A, 100B)</b>
<b>Revenue Bond</b>	<b>(100A, r)</b>	<b>(100A, 100B)</b> Management Investors Company

# Public Private Partnership (PPP)

- (1) **Risk sharing** between private and public sector
- (2) Incentive to cut costs and to increase revenue
  - Avoid political intervention (transparency)
  - **Bonus payment for employees who run infrastructure (incentive mechanism)**
- (3) Many projects could be started by PPP
  - **Utilize domestic savings**
  - Life insurance and Pension funds (**long term**)
- (4) **Indirect Effects are important (tourism, manufacturing, agriculture, services)**

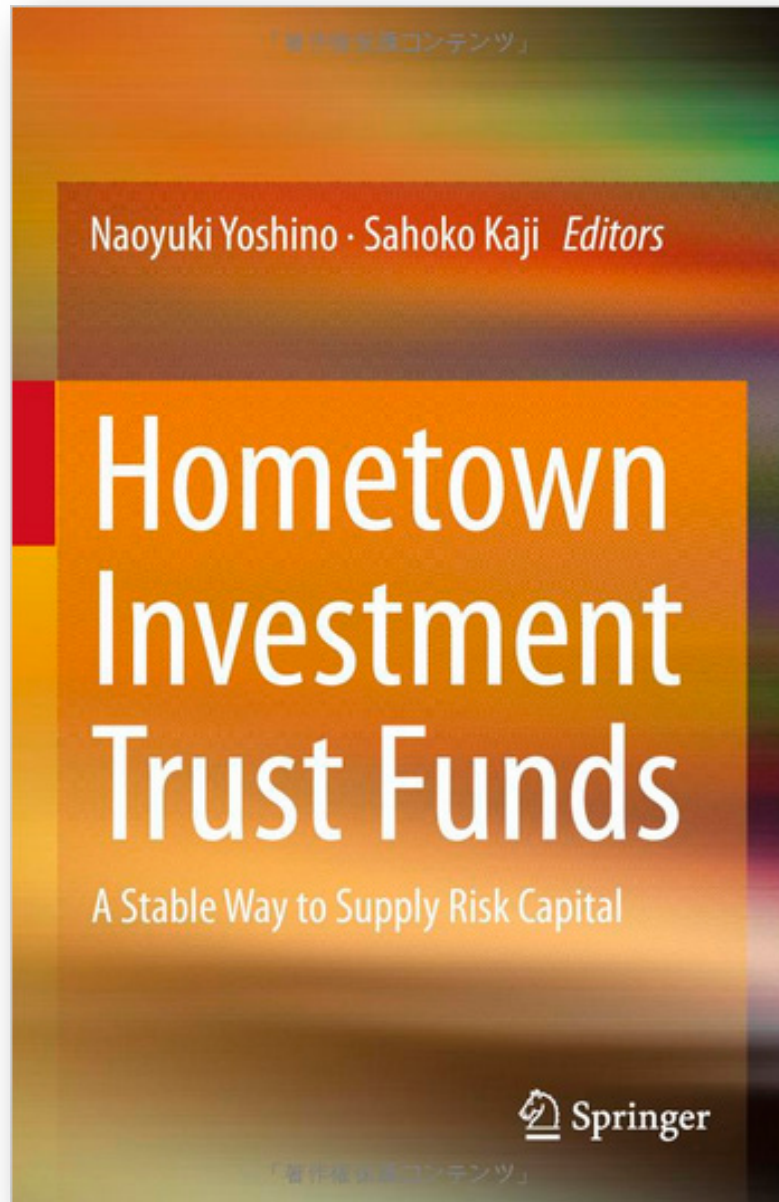
# Community Infrastructure

- Wind power Generator Funds
- Agricultural Farmer's Trust Fund
- **SME Hometown Trust Fund**
- Local Airport

## Large Projects

Pension Funds, Insurance Funds

Infrastructure Bond



***Hometown  
Investment Trust  
Funds***  
***A Stable Way to  
Supply Risk Capital  
(i.e. knowledge  
base companies)***

***Naoyuki YOSHINO  
Sahoko KAJI (ed.)***





# ***Savings/GDP and Investment/GDP in Asia***

<b>Economy</b>	<b>Savings/GDP Ratio (%)</b>			<b>Investment/GDP ratio (%)</b>		
	2007	2010	2011	2007	2010	2011
PRC Mainland	51.9	53.4	53.8	41.7	48.2	48.7
Hong Kong, China	33.3	29.9	29.2	20.9	23.7	23.8
Indonesia	27.3	33.3	31.1	24.9	32.5	32.9
Japan	28.5	23.8	23.9	23.7	20.2	21.4
Republic of Korea	31.5	31.9	29.6	29.4	29.2	28.2
Malaysia	37.5	32.9	33.1	21.6	21.4	21.8
Philippines	22.1	24.8	22.3	16.9	20.5	20.5
Singapore	48.4	46.0	45.8	21.1	23.8	26.0
Thailand	32.8	30.6	30.4	26.4	25.9	25.6

*Note:* Savings rate = gross national saving/GDP; Investment rate = gross capital formation/GDP.

*Source:* IMF, *World Economic Outlook Database*.

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