Distance is the Soul of Beauty: How Nevermets Change Your Votes?

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Overview

What did I do? (1/2)

1. Questions to Ask:
    a. (Core) Does never-met visitors change political identification across municipalities?

    b. (Extensive) Does economic integration reduce the political tension?

2. What I have tested?
    a. OLS tests the basic correlations of votes and visitor exposure.

    b. DID tests the magnitude of the shock.

    c. RDD tests the discretion around the cutoff of visitor accessibility.

What did I do? (2/2)

3. Preview of Results:
    a. OLS mostly agree with that the higher degree of visitor exposure brings in more switches of party recognition.
    b. DID results confirmed the existence of the ECFA shock.
    c. RDD results show that the boundaries between high and low visitor-exposed regions become more significant.

Contributions

- To the best of my knowledge, this is the first paper...
  a. To combine the multiple datasets published by Taiwanese government. (AVRSET, CEC, DSBGA, Income Tax, Education, NLSC (Taiwan GIS))
  b. To identify the shock of ECFA.(PTA between China and Taiwan)
  c. To apply RDD to set up a threshold of visitor exposure.
  d. To identify a counter example of integration theory.
  e. To show that bilateralism need not reduce the nationism.

Outline

Overview

Conceptual Background

Institutional Background

Data

Identification

Results

Conclusion

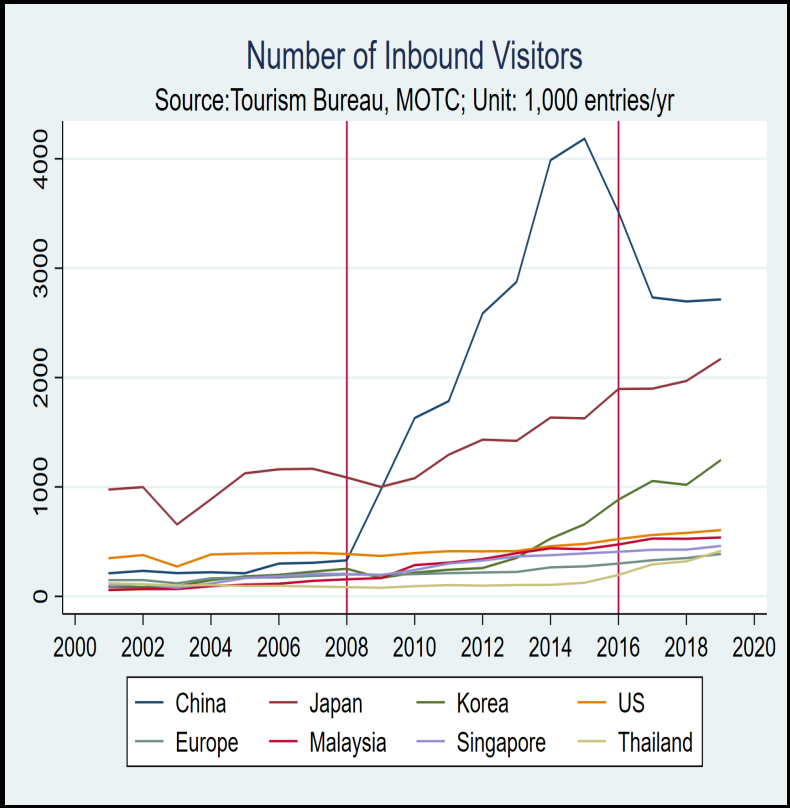
Conceptual Background

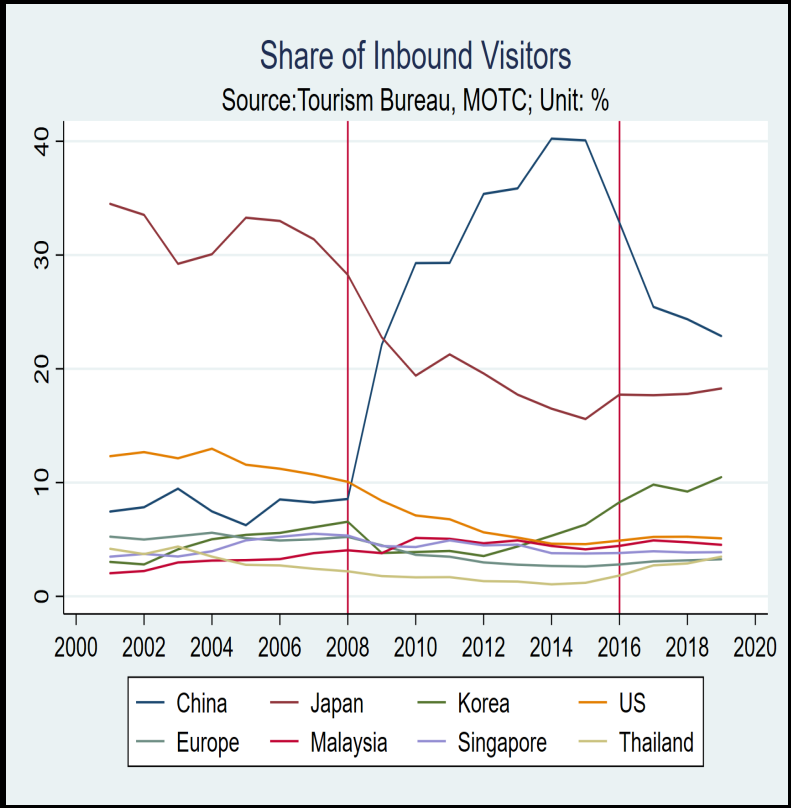
Background (1/4) : Stylized Facts

1. Facts Observed:
   a. From 2008, a sudden lift of long-time travel ban of Chinese tourists to Taiwan provided a natural policy experiment.
   b. From 2008, the mainstream Taiwanese public opinion changed from pro-China to self-determine.
2. Directed Acyclic Graph:

$$\boxed{\text{a}} \rightarrow \boxed{\text{b}} \quad ?$$

Background (2/4): Visualization of Visitors





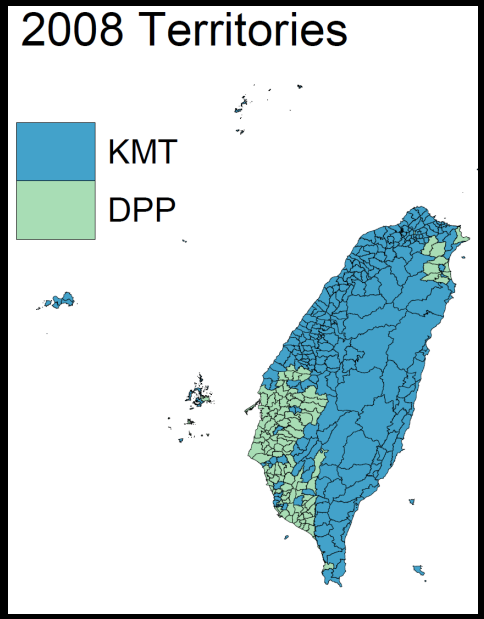
Background (3/4): Timetable of Travel Policies

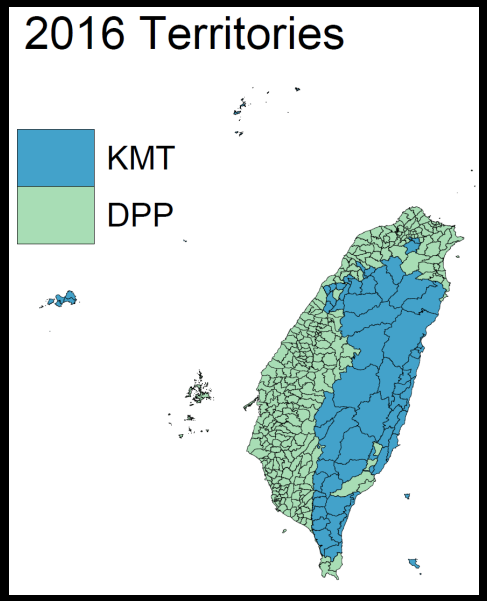
Date	Phase	Cities Residents Allowed Travel to Taiwan	Count	Total
2011 / 6 / 28	Phase 1	Beijing, Shanghai, Xiamen	3	3
2011 / 7 / 29	Mini-Three Links[1]	Xiamen, Fuzhou (Fujian), Putian, Quanzhou, Zhangzhou, Longyan, Sanming, Nanping, Ninde	(9)	(9)
2012 / 4 / 28	Phase 2 - Stage 1	Tianjin, Chongqing, Nanjing, Hangzhou, Guangzhou, Chengdu	6	9
2012 / 8 / 28	Phase 2 - Stage 2	Jinan, Xian, Fuzhou (Jiangxi), Shenzhen	4	13
2012 / 8 / 28	Mini-Three Links[1]	Wenzhou, Quzhou, Lishui, Ganzhou, Fuzhou, Shangrao, Yingtan, Meizhou, Chaozhou, Shantou, Jieyang	(11)	(20)
2013 / 6 / 28	Phase 3 - Stage 1	Shenyang, Zhengzhou, Wuhan, Suzhou, Ningbo, Qingdao	6	19
2013 / 6 / 28	Phase 3 - Stage 2	Shijiazhuang, Changchun, Hefei, Changsha, Nanning, Kunming, Quanzhou	7	26
2014 / 7 / 18	Phase 4	Harbin, Taiyuan, Nanchang, Guiyang, Dalian, Wuxi, Wenzhou, Zhongshan, Yantai, Zhangzhou	10	36
2015 / 3 / 18	Phase 5	Haikou, Hohhot, Lanzhou, Yinchuan, Changzhou, Zhoushan, Huizhou, Weihai, Longyan, Guilin, Xuzhou	11	47
2019 / 7 / 31	The Tourism to Taiwan Policy Suspended		-	0
2019 / 9 / 20	Resume the policy of “Mini-Three Links” to citizens resides in 20 cities.		(20)	(20)

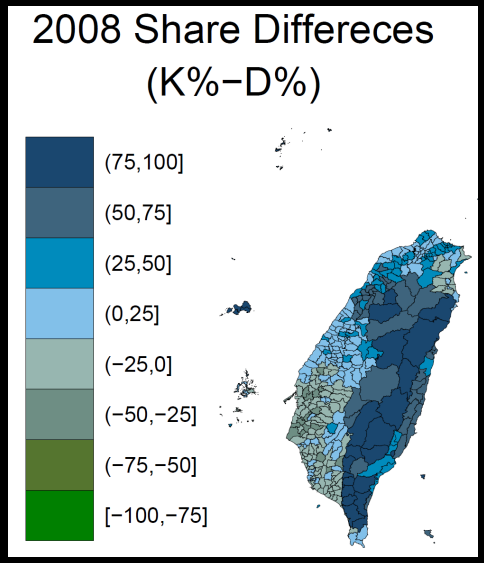
Timetable of Open Up Tourism to Taiwan for the Residences in Mainland Cities

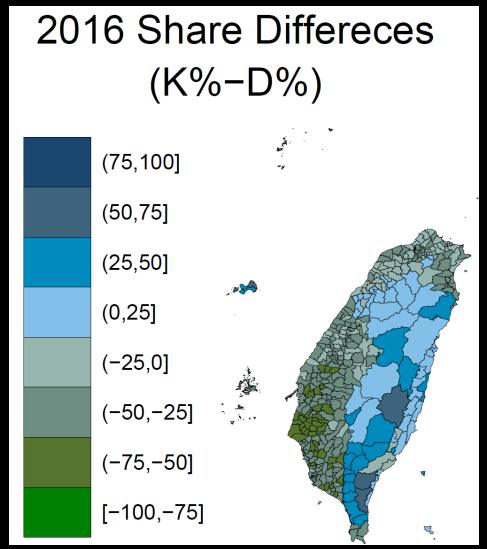
Source: Mainland Affairs Council, R.O.C. Table is organized by this research.

Background (4/4): Visualization of Vote Change









Institutional Background

Politics

1. Bipartisanship. (anti-China v.s. pro-China)
2. Both nominated presidential candidates since 1996.
3. Single Vote, Simple Majority, Presidential System
4. Electoral Cycle = 4 years.

Name	Democratic Progressive Party (DPP)	Kuomingtang (Nationalist Party) (KMT)
Est. Yr	1986	1919
Incumbency	2000-2008; 2016-2024	1996-2000; 2008-2016
Ideology	Left; Liberal	Right; Conservative
Cross-strait	Taiwanese Self-determination	Chinese Legacy
Foreign Policy	anti-China	pro-China

Data

Electoral Data

- Data Source: Central Election Commission (CEC)
  - The Central Election Commission is the permanent independent agency responsible for managing local and national elections.
- District-level data includes: 22 municipalities, 368 districts across Taiwan. (3 remote islands were temporarily excluded)
- Timing of Elections includes: 2004, 2008 (pre-shock); 2012, 2016 (post-shock) [expandable]
- Outcome Variables: Winning Margin (kdmargin), Voting Share Margin (kdsharemargin).

Data of Visitors (1/5)

- Definition of Tourist Dispersion
  - Becken, Wilson, Forer and Simmons (2008)
  - Cooper (1981)
- Purpose of Tourist Dispersion
  - MacLellan and Burnside (2003)
- Advantage of the Tourist Dispersion
  - Jackson and Murphy (2006)
  - Weaver (1995)
- Measurement of the Tourist Dispersion
  - Becken et al. (2008)
  - Collins (2006)
  - Tideswell and Fualkner (1999)
  - Allcock (1996)
  - Pearce and Elliot (1983)

Data on Visitors: Chinese Tourists Exposure (CTE_{it}^{k}) (2/5)

- Borrow from the tourism economic literature. Dispersion of the tourist matter!
- CTE_{it}^{k} is the new running variable that we are going to use.
- Combine with ARSVET data.

$$CTE_{it}^{k} = \Sigma_{j=1}^{k} \frac{\text{Chinese Tourists}_{t-1} * \text{Relative Visit}_{j,t-1}}{\text{Distance}_{ij}}$$

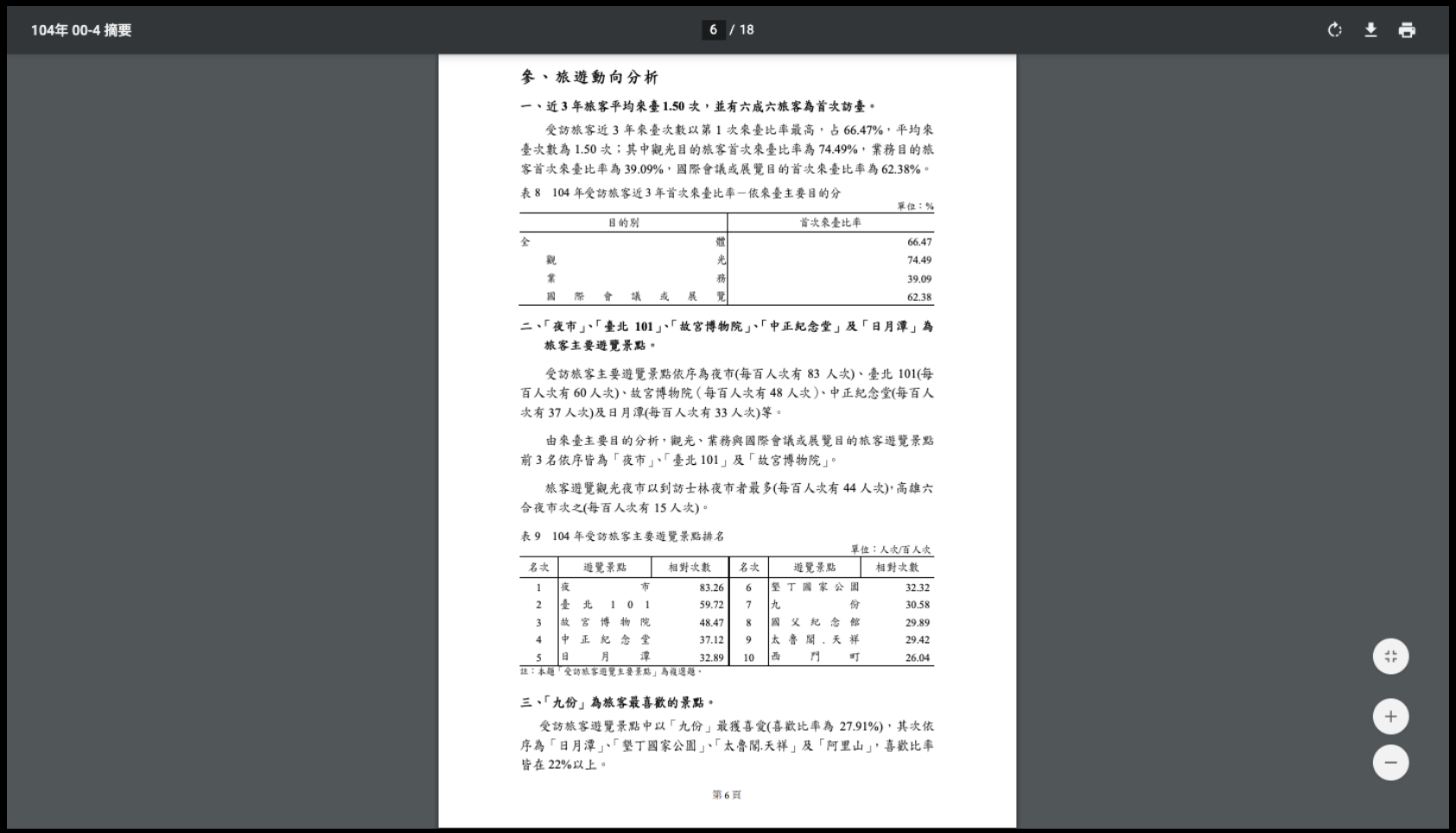
- Top - k Tourist Attractions (k = 1, 3, 5)
- Chinese Tourist_t is the Total Chinese Tourists in Year t-1
- Relative Visits_j is the Visit Counts for per 100 people at attraction j
- Distance_{ij} is the driving time between dist i to attraction j

Data on Visitors: Example (3/5)

How to Calculate $CTE^3_{i,2016}$

- $CTE^3_{i,2016}$; One-year period Chinese Visitors Exposure Index in 2016.
- In 2015, there were 4.18 million visits of Chinese Tourists.
- Chinese $\text{Tourist}_{2015} = 4.18$
- Top - 3 tourist attractions in 2015 are
  1. Taipei 101 (59.72/100)
  2. National Palace Museum (48.47/100)
  3. CKS Memorial (37.12 / 100)
- Calculate the traveling time from dist i to those 3 attractions,
- Follow the formula so that we could have the number.

Data on Visitors: Raw Data Source (4/5)



參、旅遊動向分析

一、近 3 年旅客平均來臺 1.50 次，並有六成六旅客為首次訪臺。

受訪旅客近 3 年來臺次數以第 1 次來臺比率最高，占 66.47%，平均來臺次數為 1.50 次；其中觀光目的旅客首次來臺比率為 74.49%，業務目的旅客首次來臺比率為 39.09%，國際會議或展覽目的首次來臺比率為 62.38%。

表 8　104 年受訪旅客近 3 年首次來臺比率－依來臺主要目的分

單位：%

目的別	首次來臺比率
全體	66.47
觀光	74.49
業務	39.09
國際會議或展覽	62.38

二、「夜市」、「臺北 101」、「故宮博物院」、「中正紀念堂」及「日月潭」為旅客主要遊覽景點。

受訪旅客主要遊覽景點依序為夜市(每百人次有 83 人次)、臺北 101(每百人次有 60 人次)、故宮博物院(每百人次有 48 人次)、中正紀念堂(每百人次有 37 人次)及日月潭(每百人次有 33 人次)等。

由來臺主要目的分析，觀光、業務與國際會議或展覽目的旅客遊覽景點前 3 名依序皆為「夜市」、「臺北 101」及「故宮博物院」。

旅客遊覽觀光夜市以到訪士林夜市者最多(每百人次有 44 人次)，高雄六合夜市次之(每百人次有 15 人次)。

表 9　104 年受訪旅客主要遊覽景點排名

單位：人次/百人次

名次	遊覽景點	相對次數	名次	遊覽景點	相對次數
1	夜市	83.26	6	墾丁國家公園	32.32
2	臺北 101	59.72	7	九份	30.58
3	故宮博物院	48.47	8	國父紀念館	29.89
4	中正紀念堂	37.12	9	太魯閣.天祥	29.42
5	日月潭	32.89	10	西門町	26.04

註：本題「受訪旅客遊覽主要景點」為複選題。

三、「九份」為旅客最喜歡的景點。

受訪旅客遊覽景點中以「九份」最獲喜愛(喜歡比率為 27.91%)，其次依序為「日月潭」、「墾丁國家公園」、「太魯閣.天祥」及「阿里山」，喜歡比率皆在 22%以上。

第 6 頁

Figure (3)　pp. 6, 2015 ASRVET

Visitor Data: Visualization (5/5)

- Relative Numbers Statistics on Table 9.

表 9　104 年受訪旅客主要遊覽景點排名

單位：人次/百人次

名次	遊覽景點	相對次數	名次	遊覽景點	相對次數
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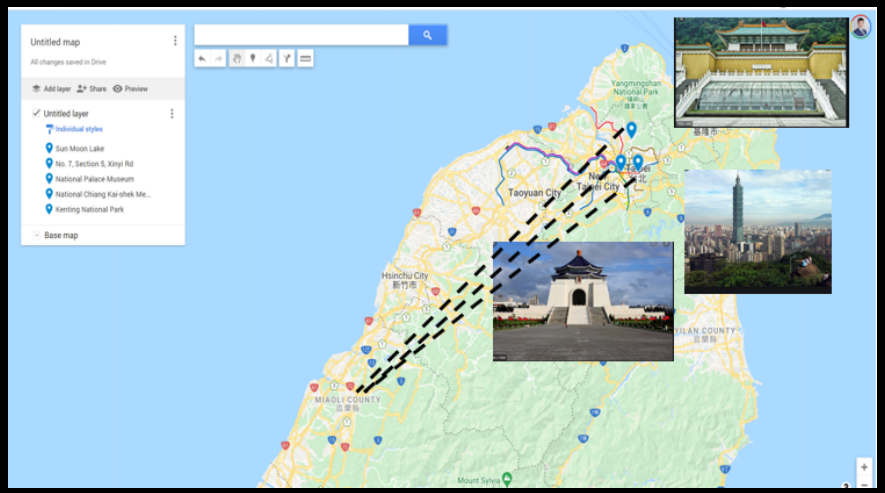
註：本題「受訪旅客遊覽主要景點」為複選題。

Table 9 in ASRVET

- Using Miaoli City as district i to calculate the $CTE^{3}_{miaoli,2016}$

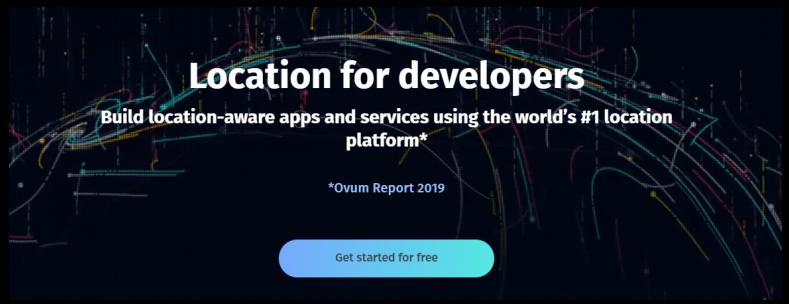


Google Map Visualization

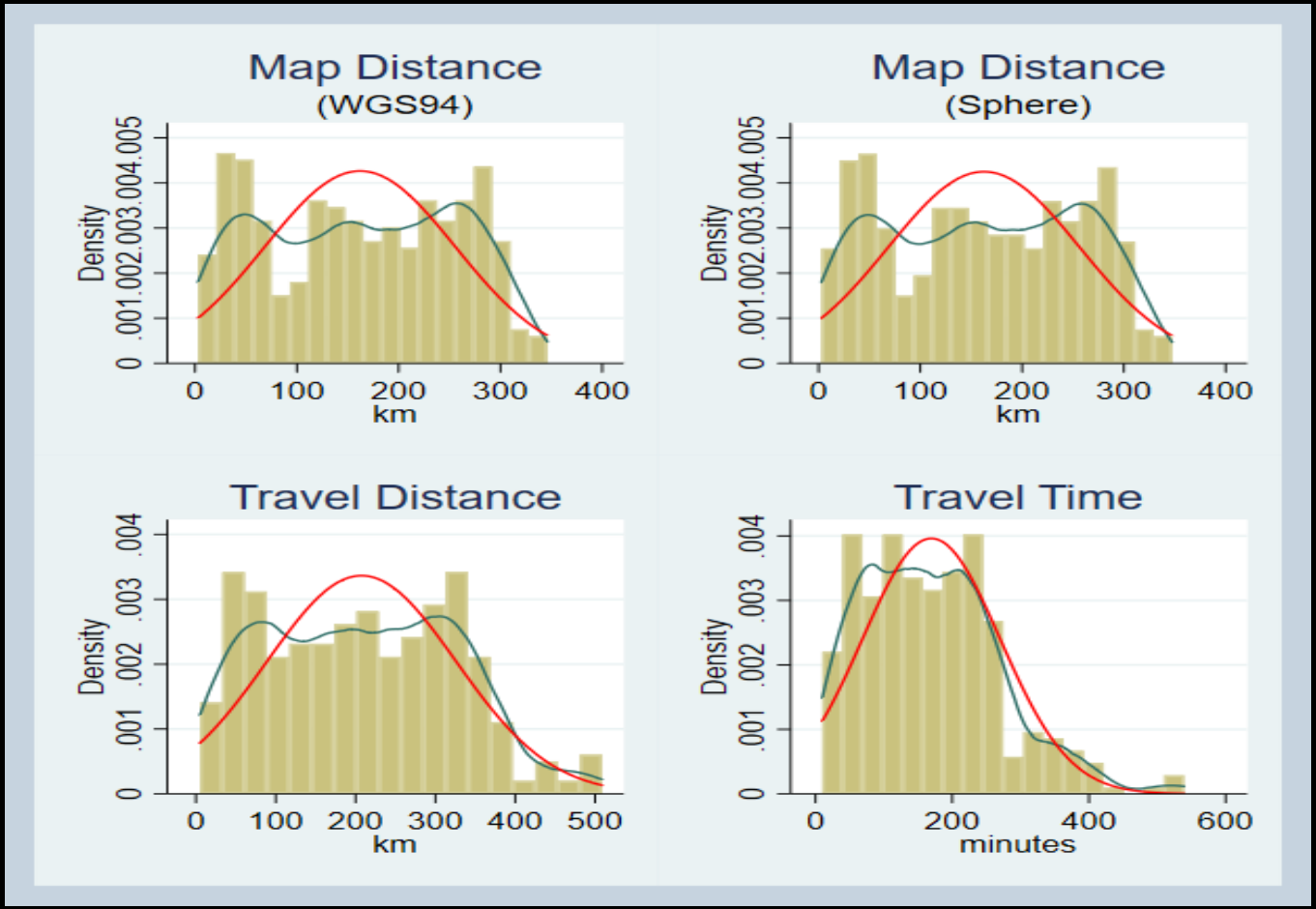
Geographical Data: Sources (1/2)

	Data	Source
1	Coordinates of Districts	Ministry of Interior, Taiwan
2	Shape, Boundaries, and GIS files	Nat'l Land Surveying and Mapping Center
3	Map Distance	Stata (Picard, 2010)
4	Travel Distance and Time	Stata, HERE Technologies Inc. API

- Map Source: HERE Technologies. https://here.com/
- Coordinate + HERE.com API service + Stata
  $\rightarrow$Travel time between 358 districts and Taoyuan International Airport (TPE).



Geographical Data: Selection of Distance (2/2)



- Are geographical distances good proxies for tourist exposure?
- distance = Driving time to the municipalities. Map
- We exclude the island and the districts are not located in Taiwan.

Identification

Benchmark: Panel OLS

$$VoteMargin_{it} = \beta_0 + \beta_1 CTE_{it} + \beta_2 D_{it} + \beta_3 I_{it} + \beta_4 College_{it} + \eta_i + u_{it} \quad (1)$$

$$ShareMargin_{it} = \beta_0 + \beta_1 CTE_{it} + \beta_2 D_{it} + \beta_3 I_{it} + \beta_4 College_{it} + \eta_i + u_{it} \quad (2)$$

$i =$ municipalities

$t =$ election year

$D_{it} =$ population density

$I_{it} =$ average income

$College_{it} =$ share of population with college degree

$\eta_i =$ fix effect of the municipalities

Shock Estimation: DID

$$VoteMargin_{it} = \beta_0 + \beta_1 CTE_{it} + \beta_2 D_{it} + \beta_3 I_{it} + \beta_4 College_{it} +$$
$$\gamma_1 Post_t + \gamma_2 CTE_{it} * Post_t + \gamma_2 D_{it} * Post_t + \gamma_3 I_{it} * Post_t + \eta_i + u_{it}$$

$$ShareMargin_{it} = \beta_0 + \beta_1 CTE_{it} + \beta_2 D_{it} + \beta_3 I_{it} + \beta_4 College_{it} +$$
$$\gamma_1 Post_t + \gamma_2 CTE_{it} * Post_t + \gamma_2 D_{it} * Post_t + \gamma_3 I_{it} * Post_t + \eta_i + u_{it}$$

$i =$ municipalities

$t =$ election year

$D_{it} =$ population density

$I_{it} =$ average income

$College_{it} =$ share of population with college degree

$\eta_i =$ fix effect of the municipalities

$Post_t =$ indicator function if t $\geq$ 2010

Boundary Test: RDD (1/2)

Sharp RD Design (Lee(2008), Lee and Lemieux (2010))

$$Y_i = D_i\tau + W_i\delta_1 + U_i \tag{1}$$

$$D_i = 1[X_i \geq c] \tag{2}$$

$$X_i = W_i\delta_2 + V_i \tag{3}$$

Y_i : Outcome variables. K-D Margin, K%-D%

D_i : Treatment. The district is exposed to tourists or not.

X_i : Assigning variable. The travel time to TPE airport and CTE.

W_i : Unobserved endogenous variable. The real tourist numbers; which is assumed to have the effect on the result of election Y_i.

c : The arbitrary cutoff of travel time and CTE.

Note: (3) comes from the old tourist literature that distance negatively correlates with the number of tourists, so that $\delta_2 \neq 0$.

Boundary Test: RDD (2/2)

- Since districts can not precisely control W_i via X_i.
  - It is not always the case that the longer travel time from the airport brings fewer tourists. The districts have"no full control" to be tourism hot spots or not. (RD seems valid!)
- Then, the question becomes the problem of model selection.
- Should we run the linear polynomial? Quadratic?

$$Y_i = \tau 1[X_i > c] + \delta_1(X_i - c) + U_i$$
$$Y_i = \tau 1[X_i > c] + \delta_1(X_i - c) + \delta_2(X_i - c)^2 + U_i$$

...or higher degree local polynomial?

- We pin c = 290 minutes. Conventionally, Taiwanese thinks that the maximum one-day trip is around 5-hours (4 hours and 50 minutes) from Taipei to Kaohsiung.

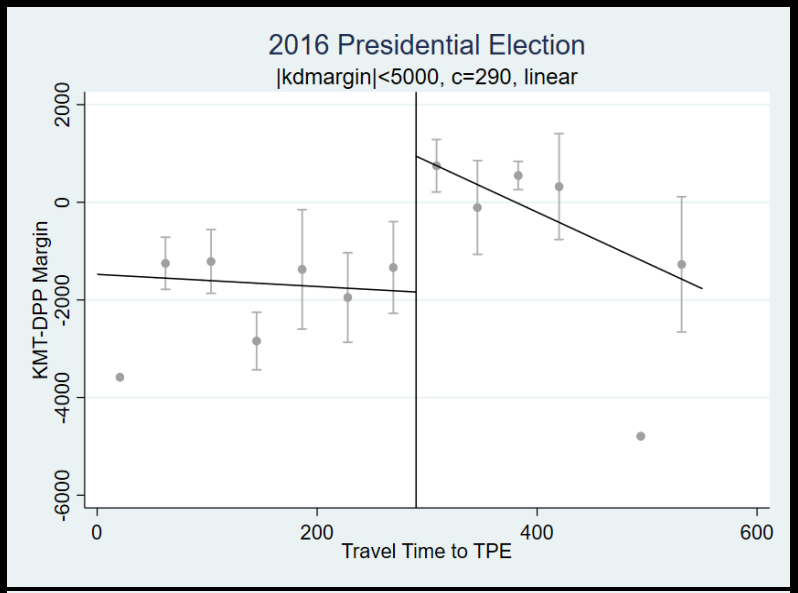
External Validity: RDD

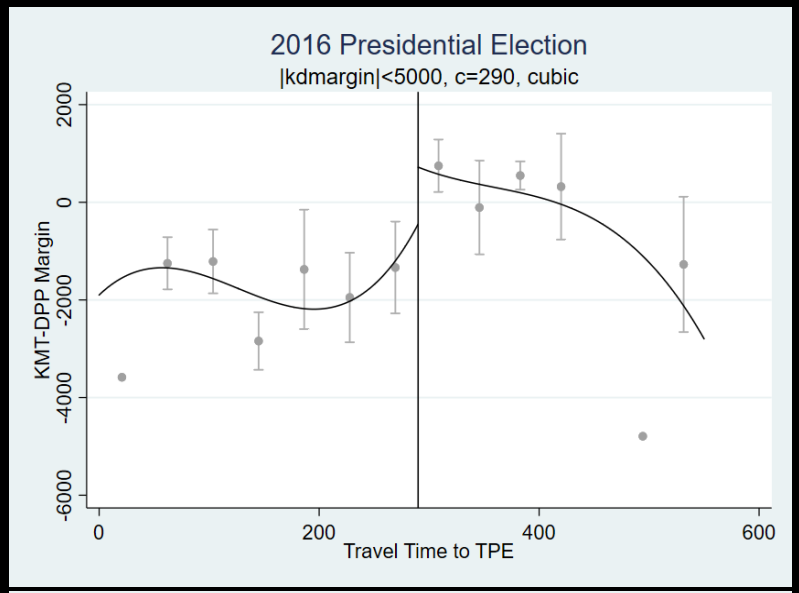
Why RD?

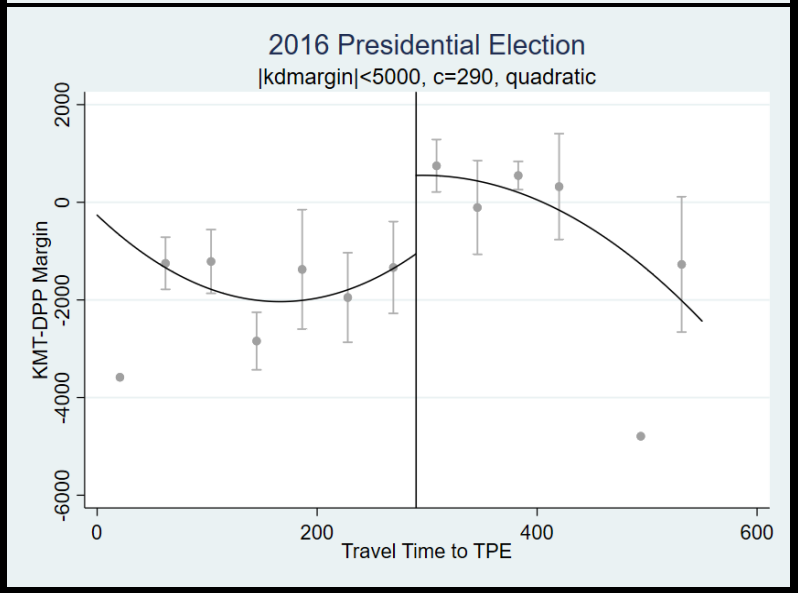
- Many "unobserved" things contribute to the result of election.
  - OLS, GLS, GMM (possibly) render the omitted variables bias.
  - OLS results could only show the correlation.
- There exists a cutoff to categorize the two kinds of districts.
  - Short travel time v.s. long travel time.
  - High exposure to visitors v.s. low exposure to visitors.
- Other reasons, Lee and Lemieux (2010)
  - The "unobserved" factors tend to be continuous.
  - The district i can not directly manipulate its treatment, whether getting exposure from tourists or not.
  - We need not additionally assume the distributions of the unknown factors.

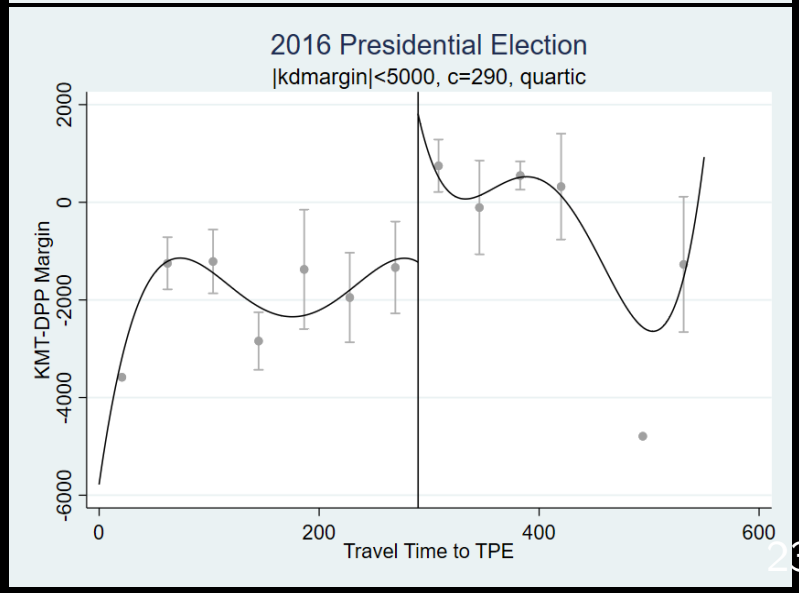
RD Graph(s) for Model Selection

Use '16 electoral result as an example:









Results

OLS Result

	Vote Margin				Share Margin			
CTE	-193.77*	-263.51*	-310.42*	-303.43	-7.12*	-5.31	2.11	3.11*
	(54.32)	(33.22)	(21.3)	(210.3)	(1.92)	(4.15)	(5.31)	(1.72)
Density		93.24	43.58	77.61		4.31*	4.81*	4.59
		(9.31)	(10.08)	(7.31)		(1.54)	(2.31)	(3.41)
Income			99.51	33.78			0.94	0.32
			(49.51)	(17.61)			(4.31)	(2.16)
College				-38.52				4.57
				(100.71)				(20.21)
FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.217	0.251	0.283	0. 289	0.351	0.367	0.348	0.481
N	1420	1420	1420	1420	1420	1420	1420	1420

Table (1) OLS Results

DID Result

	Vote Margin				Share Margin			
Post	-333.12*	-400.23*	-312.34*	- 99.71*	-5.21*	-3.31	-4.41*	-1.56
					(1.44)	(3.21)	(2.12)	(1.34)
CTE* Post	-1333.77*	-2613.51*	-3103.42*	-3031.33	-6.32*	-5.37	3.81	1.33
	(44.23)	(31.21)	(12.3)	(104.5)	(1.92)	(4.15)	(5.31)	(1.72)
Density *Post		3.81	4.38	7.65		5.31	2.12	14.9
		(10.31)	(12.08)	(17.13)		(11.43)	(12.21)	(13.41)
Income*Post			92.55*	31.67*			0.41	0.38
			(61.72)	(18.29)			(3.34)	(1.13)
College*Post				-58.44				3.12
				(101.63)				(12.29)
...	...	...	...	...	...	...	...	...
FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.151	0.312	0.335	0. 341	0.151	0.134	0.148	0.181
N	1420	1420	1420	1420	1420	1420	1420	1420

Table (2) DID Results

RDD Results: Vote Margin (K-D; time; '08 v.s. '16)

Table (3) 2008 KMT-DPP Vote Margin

Polynomial	linear	quadratic	cubic	quartic
Outcome Var.	kdmargin	kdmargin	kdmargin	kdmargin
RD_Estimate	1745.3	2194.3	1449.4	4657.2
	(0.119)	(0.083)	(0.294)	(0.125)
N	355	355	355	355
c	290	290	290	290

p-values in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table (4) 2016 KMT-DPP Vote Margin

Polynomial	linear	quadratic	cubic	quartic
Outcome Var.	kdmargin	kdmargin	kdmargin	kdmargin
RD_Estimate	621.4	1262.3	5071.3*	8002.5*
	(0.577)	(0.400)	(0.046)	(0.015)
N	355	355	355	355
c	290	290	290	290

p-values in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

RDD Results: Share Margin (K%-D%; time; '08 v.s.'16)

Table (5) 2008 KMT-DPP Share Margin

Polynomial	linear	quadratic	cubic	quartic
Outcome Var.	kdsharediff	kdsharediff	kdsharediff	kdsharediff
RD_Estimate	51.50**	37.98	31.24	35.86
	(0.002)	(0.170)	(0.337)	(0.351)
N	355	355	355	355
c	290	290	290	290

p-values in parentheses $^{*}\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$

Table (6) 2016 KMT-DPP Share Margin

Polynomial	linear	quadratic	cubic	quartic
Outcome Var.	kdsharediff	kdsharediff	kdsharediff	kdsharediff
RD_Estimate	53.39***	43.77*	37.69	42.05
	(0.000)	(0.105)	(0.242)	(0.276)
N	355	355	355	355
c	290	290	290	290

p-values in parentheses; $^{*}\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$

Robustness Check in "c" (p-value)

- Full gradient table will be listed in the paper.
- When c deviates from 300, the conclusion of comparison between the two years becomes not so clear.
- Higher degree of the local polynomials fit better in the model of vote margin.
- Lower degree of the local polynomials fit better in the shared difference.

RD Results using CTE^3_{it} (c =200)

Table (7) 2008 KMT-DPP Vote Margin (using CTE^3)

Polynomial Outcome Var.	linear kdmargin	quadratic kdmargin	cubic kdmargin	quartic kdmargin
RD_Estimate	545.3 (0.213)	2094.3 (0.183)	2249.4 (0.394)	3657.2 (0.224)
N	355	355	355	355

p-values in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table (8) 2016 KMT-DPP Vote Margin (Using CTE^3)

Polynomial Outcome Var.	linear kdmargin	quadratic kdmargin	cubic kdmargin	quartic kdmargin
RD_Estimate	731.4 (0.158)	2362.3* (0.094)	5471.3* (0.044)	8002.5* (0.013)
N	355	355	355	355

p-values in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Conclusion

Conclusions

Distance is the soul of beauty. >>>

Acquaintance is the passport to the fortune.

- From what we have seen in the data and analysis, the open boarder policy actually made vote from pro-China to anti-China.
- However, we did not answer why.
  - A potential explanation could be the selection of tourists.
  - Theoretical Model is still under constructure.
- Future Work
  - Add additional time points and more elections into analysis.
  - Use the local election as a control group, to see if the clarification of the boundary shows up in the local elections.
  - Service in trade could be explained by the "psychological" distance just as the Gravity Model in Modern Trade Theory?

Q&A

- **Thank you for the attendance, sincerely.**
- This is a preliminary draft, any feedback will be appreciated.
- The video of the presentation will be soon posted on my page.
- Link: http://jeffjkuo.github.io
- email: jeffkuo@gwu.edu

Geographical Map of Taiwan

Back to Territories GIS | Back to Vote Share Margin GIS | Back to Distance Comparison