Electoral Bias - Legislative Elections

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Outline

- Introduction
- Literature review
- Data
- Method
- Result
- Improvement

Introduction

- Single non-transferable vote (SNTV)
  $\rightarrow$ Single member districts (SMDs) 2008

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- Redistricting

What may happen after redistricting?

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	Votes		
KMT	3000	3000	4000
DPP	8000	1000	1000
Winner	DPP	KMT	KMT

* Total: 20000

Redistricting

	Votes		
KMT	3000	3000	4000
DPP	4000	4000	2000
Winner	DPP	DPP	KMT

* Total: 20000

Seat-Vote rate

	2008		2012	
	KMT	DPP	KMT	DPP
Vote share	54.9%	40.6%	48.7%	45.9%
Seats	53	12	41	26

Literature review

- Electoral Bias and Policy Choice: Theory and Evidence. Timothy Besley and Ian Preston. QJE (2007)

$$\log(\frac{S}{1-S}) = \alpha + \beta \log(\frac{P}{1-P})$$

- Examining Biases in the Single-Member District Tier of Taiwan's Electoral System. Willy Jou. Issue & Studies (2013)

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  - electoral size in districts won
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  - surplus votes per seat won
  - wasted votes per seat lost
  - independent/third party vote in seats won
  - effective vote

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  - effective vote
- Biases may cancel out each other!

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  DPP: $x\%$ votes $\rightarrow$ $y\%$ seats

Table 1
Actual District Results in the 2008 and 2012 Elections - KMT vs. DPP

	2008		*2012*	
	KMT	DPP	KMT	DPP
vote share	54.9%	40.6%	48.7%	45.9%
Seats	53	12	41	26
average electorate size in districts won	233121	244152	249792	248927
average turnout in districts won	58.9%	59.0%	75.0%	74.3%
average surplus votes per seat won	24480	6753	23450	23708
average wasted votes per seat lost	60595	51014	77153	73836
average independent/third party vote in seats won	6005	5543	13168	4603
effective vote	56.9%	21.5%	50.5%	35.5%

Note: Only seats contested by nominees from both major parties are included. One seat was won by an independent candidate in 2008.

Table 2
Simulations for the 2008 Election: KMT vs. DPP

	equal vote share		reverse vote share	
	KMT	DPP	KMT	DPP
vote share	47.7%	47.7%	40.6%	54.9%
Seats	31	33	9	54
average electorate size in districts won	237725	239639	230645	240476
average turnout in districts won	59.1%	58.8%	57.2%	59.2%
average surplus votes per seat won	14425	14637	10902	25458
average wasted votes per seat lost	56190	54910	52501	47095
average independent/third party vote in seats won	6519	5473	3220	5623

Note: One seat each is won by independent and PFP candidates under the equal share scenario; one PFP and two independent seats under the reverse share scenario.

Table 3
Simulations for the 2012 Election: KMT vs. DPP

	equal vote share		reverse vote share	
	KMT	DPP	KMT	DPP
vote share	47.3%	47.3%	45.9%	48.7%
Seats	35	32	30	37
average electorate size in districts won	250781	248007	252446	247032
average turnout in districts won	75.2%	74.3%	75.1%	74.5%
average surplus votes per seat won	21969	24029	19894	25525
average wasted votes per seat lost	75563	75329	74454	76601
average independent/third party vote in seats won	12982	6412	13450	6921

Data

- Central Election Commission
- Taiwan's Election and Democratization Study

Method

Idea:

Districts with more core supporters are easier to win.

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- Number
- Allocation

Distinguish core supporter and swing voter

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- 請問是哪一個政黨?

		是否偏向		
		1	2	
稍微偏向	1	√	√	KMT
		√	√	DPP
	2			KMT
				DPP

A	B	C	D	E	F	G	H
district	region	win	KMTcore	DPPcore	swing	total	note
1	台北市第一選區	1	11	6	13	32	
2	台北市第二選區	1	10	12	9	32	
3	台北市第三選區	1	16	8	7	33	
5	台北市第五選區	1	10	7	15	33	
7	台北市第七選區	1	16	7	9	32	
9	高雄市第一選區	1	9	9	13	33	
10	高雄市第二選區	0	14	12	12	38	
12	高雄市第四選區	1	13	11	7	32	
13	高雄市第五選區	0	7	11	14	32	
15	台北縣第二選區	0	7	16	9	32	
18	台北縣第五選區	1	13	12	9	35	
21	台北縣第八選區	1	12	5	14	33	
22	台北縣第九選區	1	16	6	9	34	無黨第二
24	台北縣第十一選區	1	13	6	16	35	
25	台北縣第十二選區	1	10	4	16	31	
28	桃園縣第二選區	1	11	10	12	34	
29	桃園縣第三選區	1	20	4	5	33	
30	桃園縣第四選區	1	10	7	15	33	
33	新竹縣	1	25	1	7	35	無黨第二
37	台中縣第二選區	0	10	2	19	32	無黨最大

Results

Logistic regression

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-3.7359	1.7611	-2.12	0.0339*
rKMTcore.rate	22.7737	8.7459	2.60	0.0092**

[a] Sample No. 37

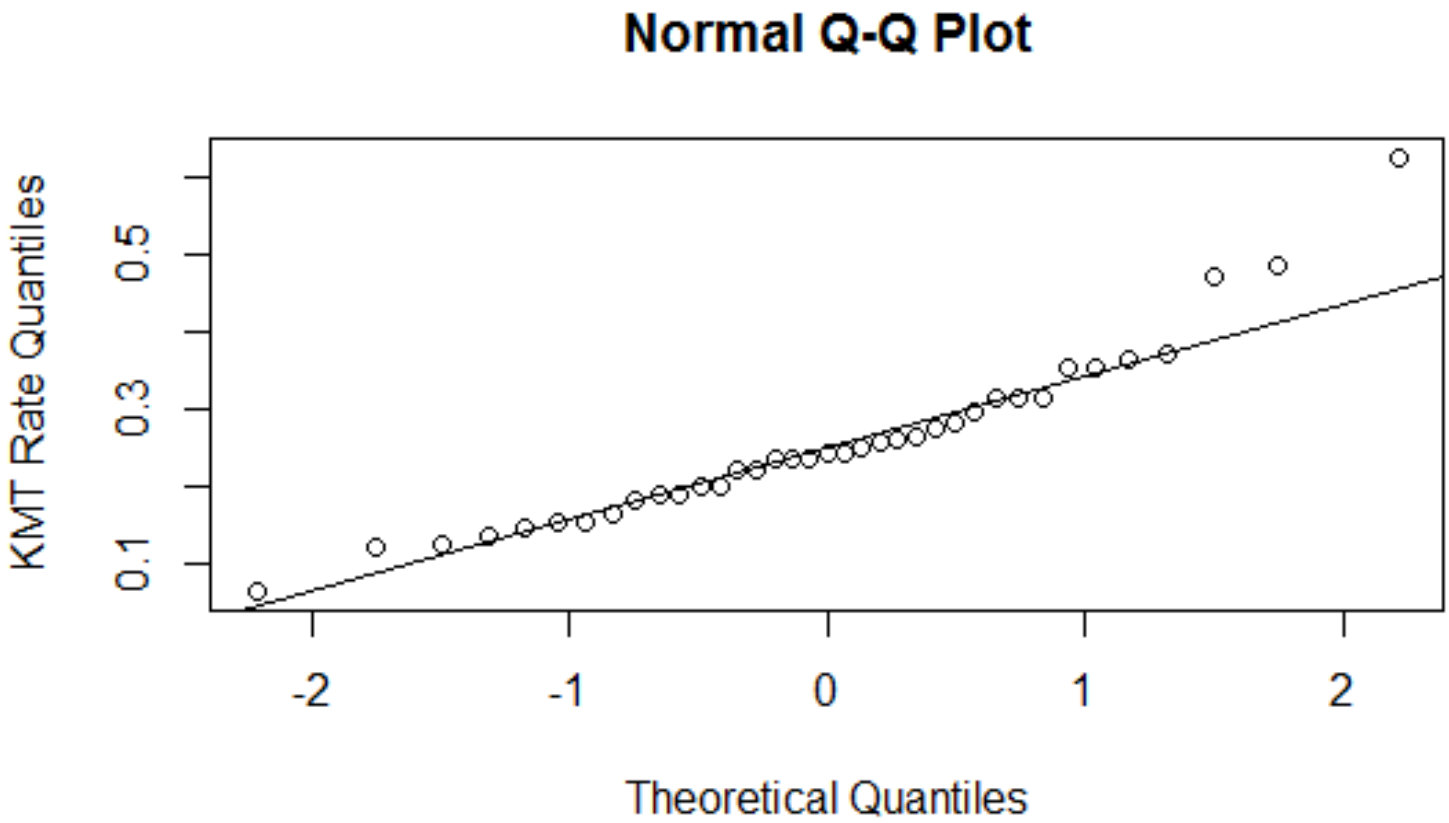
	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	3.1048	1.1139	2.79	0.0053**
rDPPcore.rate	-10.5333	5.2769	-2.00	0.0459*

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	4.9689	2.6104	1.90	0.0570
rswing.rate	-6.8634	4.4735	-1.53	0.1250

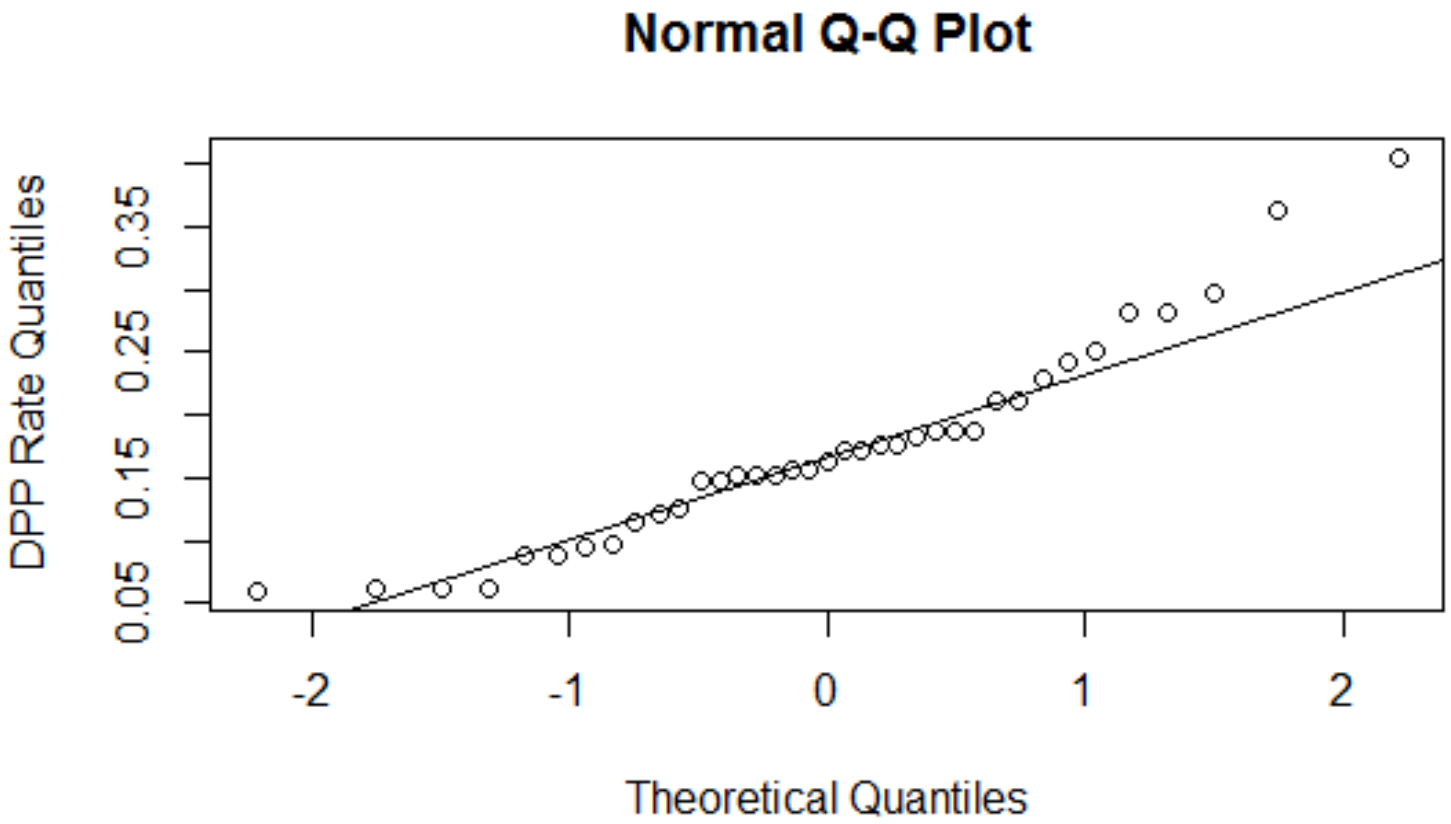
	KMT rate	DPP rate
Mean	0.2561	0.1732
Var	0.0124	0.0065
Max diff	0.4375	0.3438

Normality Test

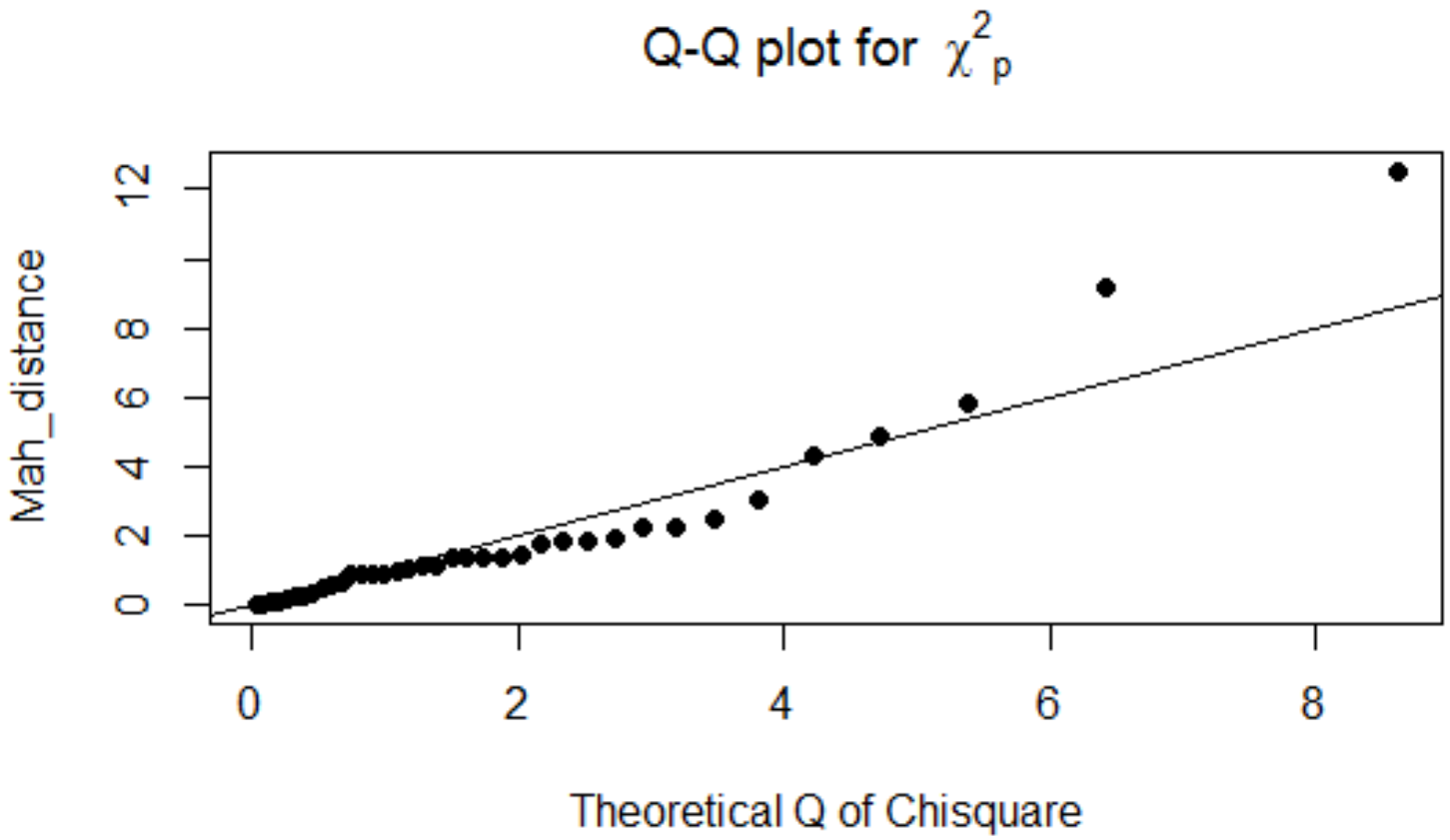
KMT core rate



DPP core rate



Multinormal



Mean Test

$$T^2 = \left[\bar{\boldsymbol{X}}_1 - \bar{\boldsymbol{X}}_2\right]' \left[\left(\frac{1}{n_1} + \frac{1}{n_2}\right) \boldsymbol{S}_p\right]^{-1} \left[\bar{\boldsymbol{X}}_1 - \bar{\boldsymbol{X}}_2\right]$$

$$\sim \frac{n_1 + n_2 - 2}{n_1 + n_2 - p - 1} F_{p, n_1+n_2-p-1}$$

$$P\text{-}value \ll 0$$

Use different definition

		是否偏向		
		1	2	
稍微偏向	1	√	√	KMT
		√	√	DPP
	2			KMT
				DPP

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	-2.4475	1.5590	-1.57	0.1164
KMTcore.rate	11.1231	5.0162	2.22	0.0266*

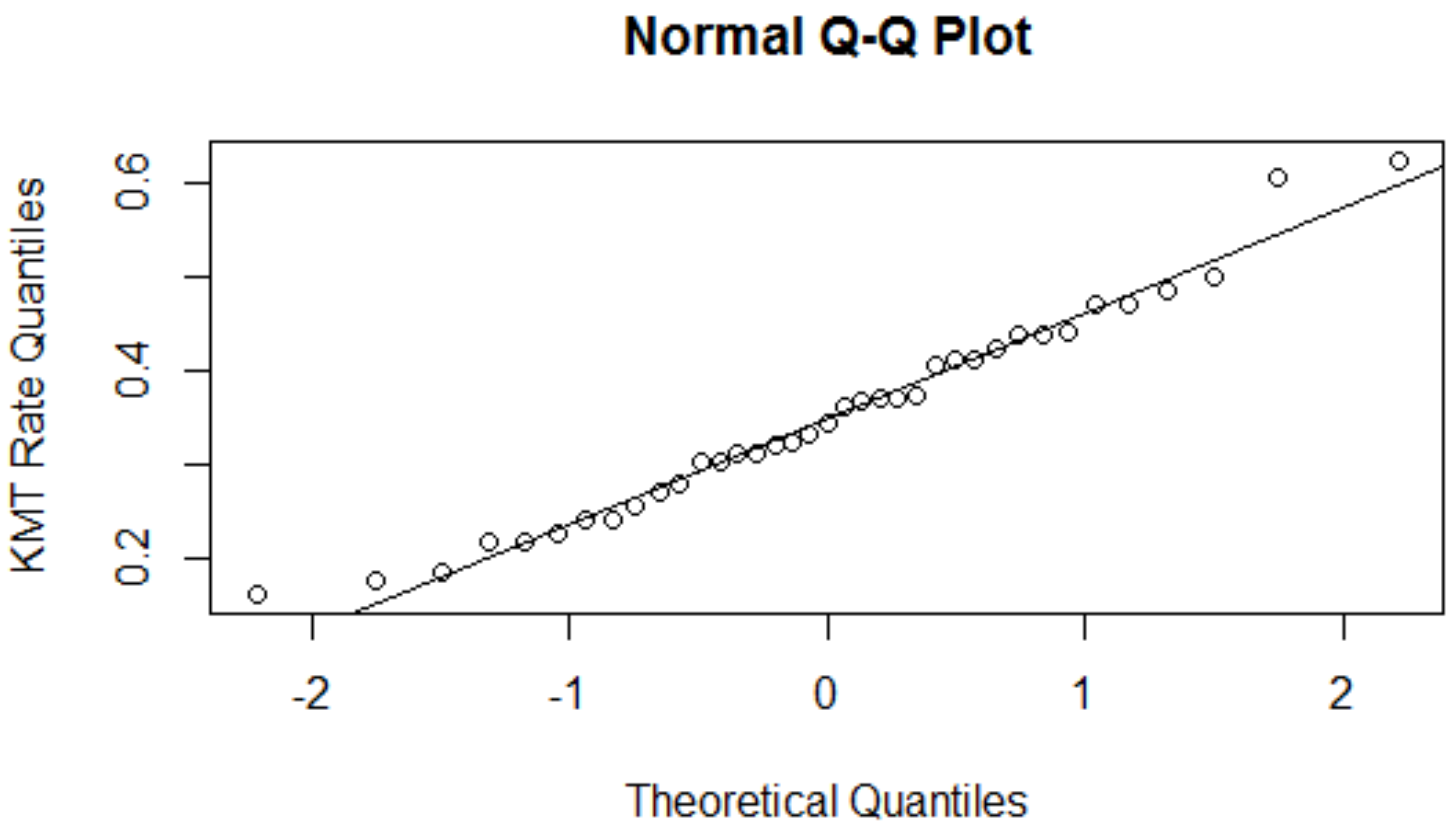
[a] Sample No. 37

	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	3.3266	1.2078	2.75	0.0059**
DPPcore.rate	-8.7022	4.2832	-2.03	0.0422*

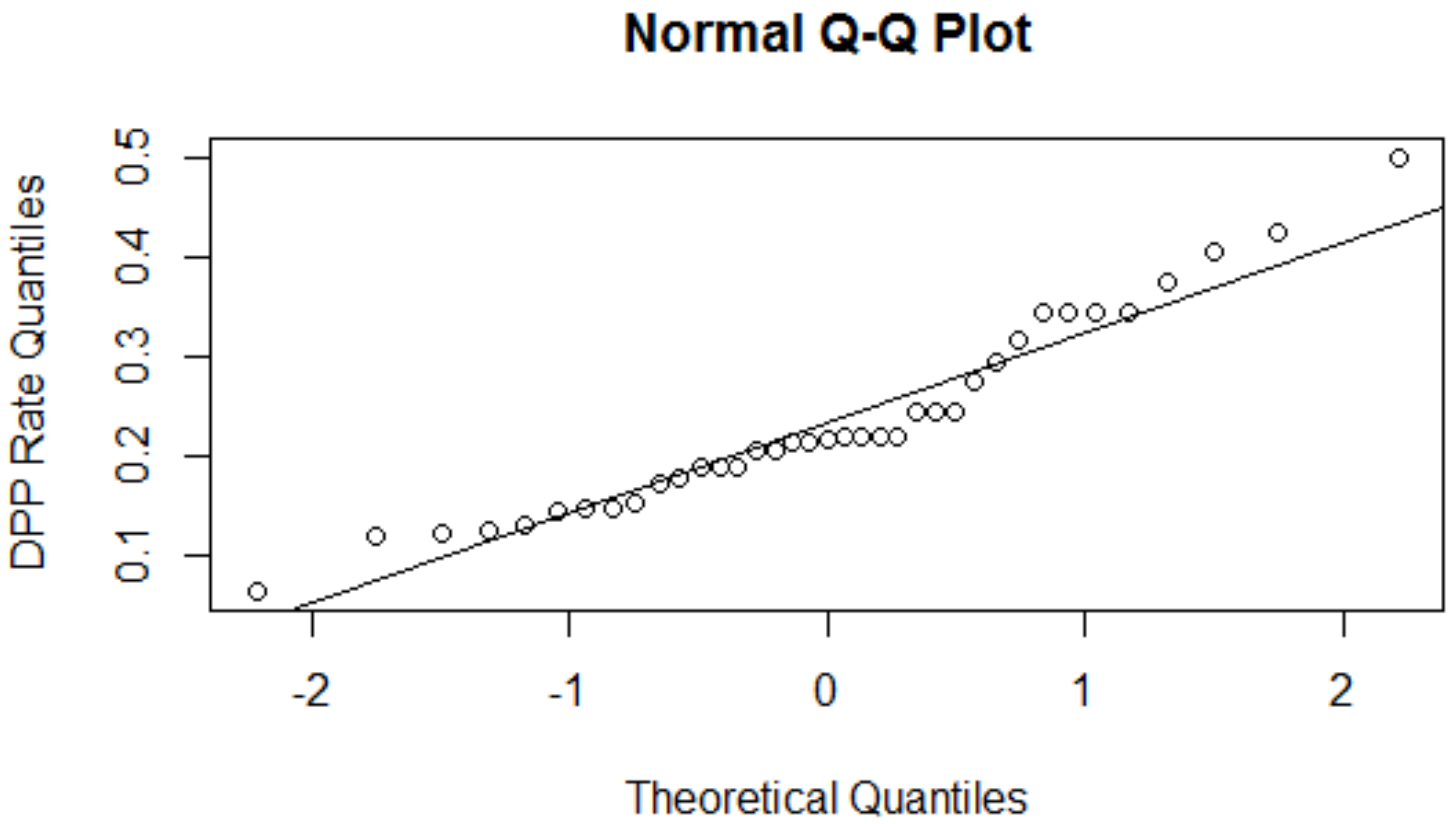
	Estimate	Std. Error	z value	Pr(>|z|)
(Intercept)	2.3935	1.5156	1.58	0.1143
swing.rate	-3.2263	3.6689	-0.88	0.3792

Normality Test

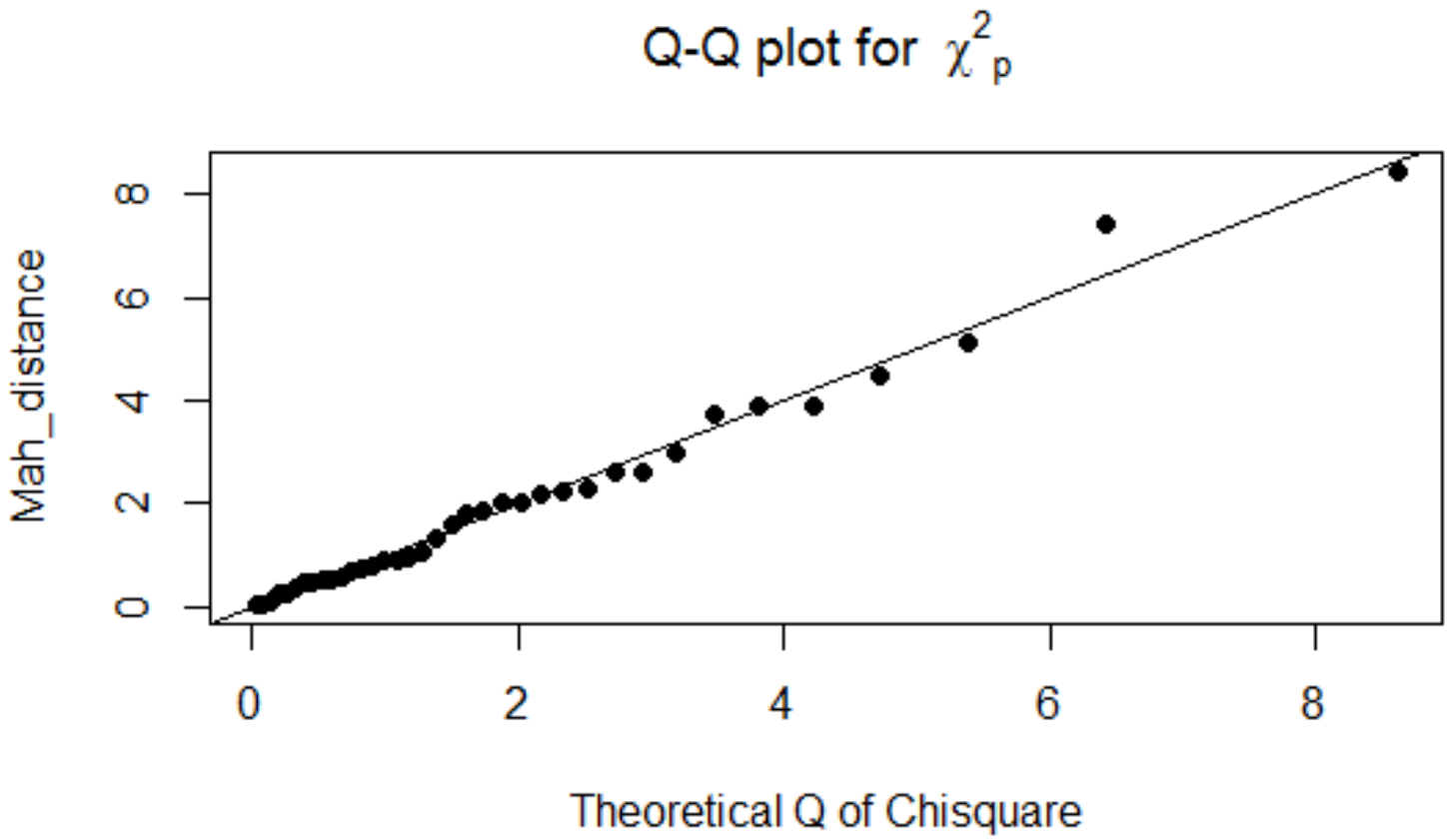
KMT core rate



DPP core rate



Multinormal



Improvement

- 2012
- Definition of core supporters and swing voters
- Explore other eletoral biases
- Merge survey and telephone interview data
- Voters characteristics
- Forecast

Thank you for your attention.