Revisiting the Theory of the Calculus of Voting

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Outline

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- The EITM Framework

- Hypotheses

- Data and Measurement

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- Conclusions

Research Question

- The calculus of voting (Downs 1957; Riker and Ordeshook (1968):

- $R = PB - C + D$

1) **R**: the reward gained by the voter from voting in a given election.

2) **P**: the probability that her marginal contribution to the election is decisive.

3) **B**: the individual's benefits if her preferred candidate actually wins.

4) **C**: the cost of voting (informational, physical, opportunity, etc.).

5) **D**: the sense of citizen duty, goodwill feeling, psychological and civic benefit of voting.

- The voter turns out to vote if $R > 0$ and abstains if $R \leq 0$.

Research Question

- Fiorina (1976): expressive components (*D*)

1) *Civic duty*.

2) *Psychological support*.

- This study attempts to employ an empirical implication of theoretical models (EITM) framework to reexamine the calculus of voting and expect to provide more insight into the *D* term in the model developed by Downs (1957) and Riker and Ordeshook (1968).

The EITM Framework

- **Three-Step EITM Framework (Granato et al. 2010):**

Step 1: Identify a theoretical concept of human behavior of interest and relate it to a statistical concept.

Step 2: Develop behavioral (formal) and statistical analogues.

Step 3: Unite the theoretical and statistical analogues in testable theory.

Step 1: Identify a theoretical concept of human behavior of interest and relate it to a statistical concept

- The baseline model: $R = PB - C + D$ (1)

1) $\underline{D}$: civic duty (i.e., O) and affinity for candidate (i.e., A).

2) $\underline{C}$: small and constant (Niemi 1976; Aldrich 1993; Tullock 2000; Riker and Ordeshook 1968)

- $U(V) = PB + O + A$ (2)

- where **$U(V)$** is the utility of voting; **PB** is the benefit of voting; **O** is civic duty; **A** is the voter's affinity for candidate.

1) If $U(V) > 0$, then an individual will choose to vote.

2) If $U(V) \leq 0$, then an individual will abstain from voting.

Step 1: Identify a theoretical concept of human behavior of interest and relate it to a statistical concept

- The EITM relation:

1) **Theoretical concept**: decision making ($U(V) = PB + O + A$).

2) **Applied statistical concept**: discrete choice (turnout - a dichotomous action).

Step 2: Develop behavioral (formal) and statistical analogues

- $U(V) = PB + O + A$ (2)

1) **<u>PB</u>**: party differential (i.e., **Pd**) (Downs 1957).

2) **<u>A</u>**: the difference in affinity for competing candidates (i.e., **Ad**).

- $U(V) = Pd + O + Ad$ (3)

Step 2: Develop behavioral (formal) and statistical analogues

- An individual i will vote if at least one of the three components is greater than zero:

1) $Pd_i > 0$, $O_i > 0$, and $Ad_i > 0$.

2) $Pd_i > 0$, $O_i = 0$, and $Ad_i = 0$.

3) $Pd_i = 0$, $O_i > 0$, and $Ad_i = 0$.

4) $Pd_i = 0$, $O_i = 0$, and $Ad_i > 0$.

5) $Pd_i > 0$, $O_i > 0$, and $Ad_i = 0$.

6) $Pd_i = 0$, $O_i > 0$, and $Ad_i > 0$.

7) $Pd_i > 0$, $O_i = 0$, and $Ad_i > 0$.

- An individual i will abstain from voting if $Pd_i = 0$, $O_i = 0$, and $Ad_i = 0$.

Step 2: Develop behavioral (formal) and statistical analogues

- Assume that the true values of an individual's party differential, civic duty and affinity for candidate are conditioned on her observed values, $\widehat{Pd_i}$, $\widehat{O_i}$ and $\widehat{Ad_i}$.

- The probability that an individual vote is:

$$\Pr(y_i = 1 \mid \widehat{Pd_i}, \widehat{O_i}, \widehat{Ad_i}) = 1 - \Pr(Pd_i = 0 \mid \widehat{Pd_i}) \Pr(O_i = 0 \mid \widehat{O_i}) \Pr(Ad_i = 0 \mid \widehat{Ad_i}) \tag{4}$$

1) $\Pr(Pd) = \Phi(\alpha_{Pd} + \beta_{Pd} \widehat{Pd})$,

2) $\Pr(O) = \Phi(\alpha_O + \beta_O \hat{O})$

3) $\Pr(Ad) = \Phi(\alpha_{Ad} + \beta_{Ad} \widehat{Ad})$.

- The familiar property of the standard normal cumulative distribution function: $1 - \Phi(z) = \Phi(-z)$.

Step 2: Develop behavioral (formal) and statistical analogues

$\Pr(y_i=1|\ \widehat{Pd}_\iota,\ \hat{O}_\iota,\ \widehat{Ad}_\iota)$

$= 1 - [1 - \Phi(\alpha_{Pd} + \beta_{Pd}\widehat{Pd})][1 - \Phi(\alpha_O + \beta_O\hat{O})][1 - \Phi(\alpha_{Ad} + \beta_{Ad}\widehat{Ad})]$

$= 1 - \Phi(-\alpha_{Pd} - \beta_{Pd}\widehat{Pd})\ \Phi(-\alpha_O - \beta_O\hat{O})\ \Phi(-\alpha_{Ad} - \beta_{Ad}\widehat{Ad})$

$= 1 - \Phi[(-\alpha_{Pd}\alpha_O\alpha_{Ad}) - (\alpha_O\alpha_{Ad}\beta_{Pd})\widehat{Pd} - (\alpha_{Pd}\alpha_{Ad}\beta_O)\hat{O} - (\alpha_{Pd}\alpha_O\beta_{Ad})\widehat{Ad} -$

$(\alpha_{Ad}\beta_{Pd}\beta_O)\widehat{Pd}\hat{O} - (\alpha_O\beta_{Pd}\beta_{Ad})\widehat{Pd}\widehat{Ad} - (\alpha_{Pd}\beta_O\beta_{Ad})\hat{O}\widehat{Ad} - (\beta_{Pd}\beta_O\beta_{Ad})\widehat{Pd}\hat{O}\widehat{Ad}]$

$= \Phi[(\alpha_{Pd}\alpha_O\alpha_{Ad}) + (\alpha_O\alpha_{Ad}\beta_{Pd})\widehat{Pd} + (\alpha_{Pd}\alpha_{Ad}\beta_O)\hat{O} + (\alpha_{Pd}\alpha_O\beta_{Ad})\widehat{Ad} + (\alpha_{Ad}\beta_{Pd}\beta_O)\widehat{Pd}\hat{O}$

$+ (\alpha_O\beta_{Pd}\beta_{Ad})\widehat{Pd}\widehat{Ad} + (\alpha_{Pd}\beta_O\beta_{Ad})\hat{O}\widehat{Ad} + (\beta_{Pd}\beta_O\beta_{Ad})\widehat{Pd}\hat{O}\widehat{Ad}]$

$$= \Phi[\gamma_0 + \gamma_1\widehat{Pd} + \gamma_2\hat{O} + \gamma_3\widehat{Ad} + \gamma_4(\widehat{Pd}\hat{O}) + \gamma_5(\widehat{Pd}\widehat{Ad}) + \gamma_6(\hat{O}\widehat{Ad}) + \gamma_7(\widehat{Pd}\hat{O}\widehat{Ad})] \quad (5)$$

Equation (5) is simply a conventional probit regression setup with several interaction terms.

Step 3: Unite the theoretical and statistical analogues in testable theory

- *Probit(Turnout) = δ_0 + δ_1(Party differential) + δ_2(Civic duty) + δ_3(Affinity for candidate) + δ_4(Party differential × Civic duty) + δ_5(Party differential × Affinity for candidate) + δ_6(Civic duty × Affinity for candidate) + δ_7(Party differential × Civic duty × Affinity for candidate)* (6)

- It is expected to find that δ_1, δ_2, and δ_3 are positive.

- But how are δ_4, δ_5, δ_6 and δ_7 ?

Step 3: Unite the theoretical and statistical analogues in testable theory

- From equation (5) (i.e., $\Pr(y_i=1 \mid \widehat{Pd_i}, \widehat{O_i}, \widehat{Ad_i}) = 1 - \Phi(-\alpha_{Pd} - \beta_{Pd}\widehat{Pd})\,\Phi(-\alpha_O - \beta_O\widehat{O})\,\Phi(-\alpha_{Ad} - \beta_{Ad}\widehat{Ad})$), it is known that as an individual's civic duty rises, $\Phi(-\alpha_O - \beta_O\widehat{O}) \to \Phi(-\infty) = 0$.

- Then she will approach 100 percent probability of turnout and the effects of party differential and affinity for candidate will be negligible.

- By contrast, if an individual has low level of civic duty (i.e., $\Phi(-\alpha_O - \beta_O\widehat{O}) \to 1$), then equation (5) will reduce to:
$$\Pr(y_i=1 \mid \widehat{Pd_i}, \widehat{Ad_i}) = 1 - \Phi(-\alpha_{Pd} - \beta_{Pd}\widehat{Pd})\,\Phi(-\alpha_{Ad} - \beta_{Ad}\widehat{Ad}) \tag{7}$$

Step 3: Unite the theoretical and statistical analogues in testable theory

- Equation (7) reflects that when an individual does not regard voting as her civic responsibility, her turnout decision is mainly driven by her party differential and affinity for candidate.

- With the increase of civic duty, the effects of party differential and affinity for candidate on turnout will be diminishing.

- By contrast, lack of civic duty will strengthen the impacts of party differential and affinity for candidate on turnout.

Step 3: Unite the theoretical and statistical analogues in testable theory

- The same logic can also be applied to the situations for party differential and affinity for candidate.

- Our theoretical model suggests that party differential, civic duty and affinity for candidate have their own individual effects on turnout, and more importantly they also interact to affect turnout.

- The interactions are the key to showing the relationship that the effect of one variable on voter participation weakens as another variable becomes important in affecting turnout decisions.

- The four interaction terms in equation (6) (i.e., δ_4, δ_5, δ_6 and δ_7) should display *negative* signs.

Hypotheses

- H_1: Party differential is positively associated with voter turnout (i.e., $\delta_1 > 0$).

- H_2: Civic duty is positively associated with voter turnout (i.e., $\delta_2 > 0$).

- H_3: Affinity for candidate is positively associated with voter turnout (i.e., $\delta_3 > 0$).

Hypotheses

- H_4: The interaction between party differential and civic duty is negatively associated with voter turnout (i.e., $\delta_4 < 0$).

- H_5: The interaction between party differential and affinity for candidate is negatively associated with voter turnout (i.e., $\delta_5 < 0$).

- H_6: The interaction between civic duty and affinity for candidate is negatively associated with voter turnout (i.e., $\delta_6 < 0$).

- H_7: The interaction among party differential, civic duty and affinity for candidate is negatively associated with voter turnout (i.e., $\delta_7 < 0$).

Data and Measurement

- **Data**: *The ANES 2010-2012 Evaluations of Government and Society Study (EGSS1)*.

- **Dependent variable**: *Voter Turnout in the Congressional elections*

  What is the percent chance that you will vote in the Congressional elections this November? The percent chance can be thought of as the number of chances out of 100. You can use any number between 0 and 100. For example, numbers like 2 and 5 percent may be "almost no chance," 20 percent or so may mean "not much chance," a 45- or 55-percent chance may be a "pretty even chance," 80 percent or so may mean a "very good chance," and a 95- or 98-percent chance may be "almost certain."

- Responses are rescaled to 1 and 0: 1 = 100 percent and 0 otherwise.
- 41 percent of respondents are coded to vote and this number is close to the average turnout rate in midterm elections (39.8 percent over the past 50 years).

Data and Measurement

- **Key independent variables:**

- _**Party differential**_ $= \left|\ |I_i - I_R|\ -\ |I_i - I_D|\ \right|$

- where I_i is voter i's ideological position, I_R is voter i's perception about the ideological position of Republican Party, and I_D is voter i's perception about the ideological position of Democratic Party.

- _**Party differential**_ ≥ 0.

Data and Measurement

- *<u>Civic duty</u>*

1) *Different people feel differently about voting. For some, voting is a duty – they feel they should vote in every election no matter how they feel about the candidates and parties. For others voting is a choice – they feel free to vote or not to vote, depending on how they feel about the candidates and parties.*

2) *How strongly do you feel that voting is a (choice/duty)?*

- Civic duty is coded to range from 0 to 6: 0 = very strongly mainly a choice; 3 = neither a choice nor a duty; 6 = very strongly mainly a duty.

Data and Measurement

- ***<u>Affinity for candidate</u>*** $= \left| \left| A_{HRi} - A_{HDi} \right| + \left| A_{SRi} - A_{SDi} \right| \right|$

- where A_{HRi} is voter i's affinity for the House Republican candidate; A_{HDi} is voter i's affinity for the House Democratic candidate; A_{SRi} is voter i's affinity for the Senate Republican candidate; A_{SDi} is voter i's affinity for the Senate Democratic candidate.

- ***Affinity for candidate*** ≥ 0.

Data and Measurement

Table 1. Correlations between Key Independent Variables

	Party differential	Civic duty	Affinity for candidate
Party differential	1.00		
Civic duty	0.15***	1.00	
Affinity for candidate	0.32***	0.21***	1.00
N		996	

Note: *** is significant at $p < 0.01$.

Data and Measurement

- ***Control variables***:

1) Political efficacy.

2) Political interest.

3) Strength of party ID.

4) Demographic variables (ex., income, education, race, gender and age).

Table 2. Descriptive Statistics of All Variables

Variable	Mean	S.D.	Min.	Max.
Turnout	0.41	0.49	0	1
Party differential	2.25	1.82	0	6
Civic duty	3.11	2.36	0	6
Affinity for candidate	2.76	2.94	0	12
Political efficacy	1.57	1.12	0	4
Political interest	2.17	1.18	0	4
Strength of party ID	1.79	1.05	0	3
Income	9.99	4.52	0	18
College and above degree	0.32	0.47	0	1
Black	0.11	0.32	0	1
Hispanic	0.10	0.30	0	1
Others (Asian and other)	0.05	0.22	0	1
Female	0.50	0.50	0	1
Age	46.64	17.19	18	100
N	996			

Table 3. Binary Probit Analysis of Voter Turnout

	Model 1		Model 2	
	Coef. (S.D.)		Coef. (S.D.)	
Party differential (δ_1)	0.134	***	0.259	***
	(0.025)		(0.059)	
Civic duty (δ_2)	0.157	***	0.272	***
	(0.019)		(0.050)	
Affinity for candidate (δ_3)	0.126	***	0.201	***
	(0.016)		(0.050)	
Party differential × Civic duty (δ_4)			-0.027	*
			(0.016)	
Party differential × Affinity for candidate (δ_5)			-0.010	
			(0.014)	
Civic duty × Affinity for candidate (δ_6)			-0.010	
			(0.013)	
Party differential × Civic duty × Affinity for candidate (δ_7)			-0.001	
			(0.003)	
Constant	-1.422	***	-1.881	***
	(0.097)		(0.182)	
N	996		996	
Likelihood ratio test	237.15	***	257.92	***
Pseudo R^2	0.18		0.19	
AIC	1113.23		1100.45	
BIC	1132.84		1139.67	
-2*Log likelihood	1105.23		1084.45	

Note: *** is significant at $p < 0.01$; ** is significant at $p < 0.05$; * is significant at $p < 0.10$.

High correlations between interaction terms

Table 4. Correlations between Interaction Terms

	Party differential × Civic duty	Party differential × Affinity for candidate	Civic duty × Affinity for candidate	Party differential × Civic duty × Affinity for candidate
Party differential × Civic duty	1.00			
Party differential × Affinity for candidate	0.48***	1.00		
Civic duty × Affinity for candidate	0.59***	0.63***	1.00	
Party differential × Civic duty × Affinity for candidate	0.73***	0.78***	0.87***	1.00
N			996	

Note: *** is significant at $p < 0.01$.

Table 3. Binary Probit Analysis of Voter Turnout

	Model 1 Coef. (S.D.)		Model 2 Coef. (S.D.)		Model 3 Coef. (S.D.)		Model 4 Coef. (S.D.)	
Party differential (δ_1)	0.134	***	0.259	***	0.272	***	0.159	***
	(0.025)		(0.059)		(0.048)		(0.054)	
Civic duty (δ_2)	0.157	***	0.272	***	0.284	***	0.220	***
	(0.019)		(0.050)		(0.038)		(0.040)	
Affinity for candidate (δ_3)	0.126	***	0.201	***	0.215	***	0.124	***
	(0.016)		(0.050)		(0.037)		(0.040)	
Party differential × Civic duty (δ_4)			-0.027	*	-0.032	***	-0.027	**
			(0.016)		(0.011)		(0.012)	
Party differential × Affinity for candidate (δ_5)			-0.010		-0.014	*	-0.006	
			(0.014)		(0.008)		(0.009)	
Civic duty × Affinity for candidate (δ_6)			-0.010		-0.014	**	-0.014	**
			(0.013)		(0.006)		(0.007)	
Party differential × Civic duty × Affinity for candidate (δ_7)			-0.001					
			(0.003)					
Political efficacy							0.111	**
							(0.048)	
Political interest							0.357	***
							(0.055)	
Strength of party ID							0.059	
							(0.051)	
Income							0.037	***
							(0.012)	
College and above degree							-0.026	
							(0.111)	
Black							-0.271	
							(0.166)	
Hispanic							-0.050	
							(0.170)	
Others (Asian and other)							-0.044	
							(0.223)	
Female							-0.047	
							(0.097)	
Age							0.017	***
							(0.003)	
Constant	-1.422	***	-1.881	***	-1.918	***	-3.516	***
	(0.097)		(0.182)		(0.154)		(0.272)	
N	996		996		996		996	
Likelihood ratio test	237.15	***	257.92	***	257.77	***	402.72	***
Pseudo R^2	0.18		0.19		0.19		0.30	
AIC	1113.23		1100.45		1098.60		973.65	
BIC	1132.84		1139.67		1132.91		1056.98	
-2*Log likelihood	1105.23		1084.45		1087.619		939.65	

Note: *** is significant at $p < 0.01$; ** is significant at $p < 0.05$; * is significant at $p < 0.10$.

Table 5. Marginal Effects of Explanatory Variables on Voter Turnout

	Model 1	Model 2	Model 3	Model 4
Party differential	0.051	0.098	0.103	0.059
Civic duty	0.060	0.103	0.108	0.082
Affinity for candidate	0.048	0.076	0.081	0.046
Party differential × Civic duty		-0.010	-0.012	-0.010
Party differential × Affinity for candidate		-0.004	-0.005	-0.002
Civic duty × Affinity for candidate		-0.004	-0.005	-0.005
Party differential × Civic duty × Affinity for candidate		-0.001		
Political efficacy				0.041
Political interest				0.133
Strength of party ID				0.022
Income				0.014
College and above degree				-0.010
Black				-0.096
Hispanic				-0.019
Others (Asian and other)				-0.016
Female				-0.018
Age				0.006
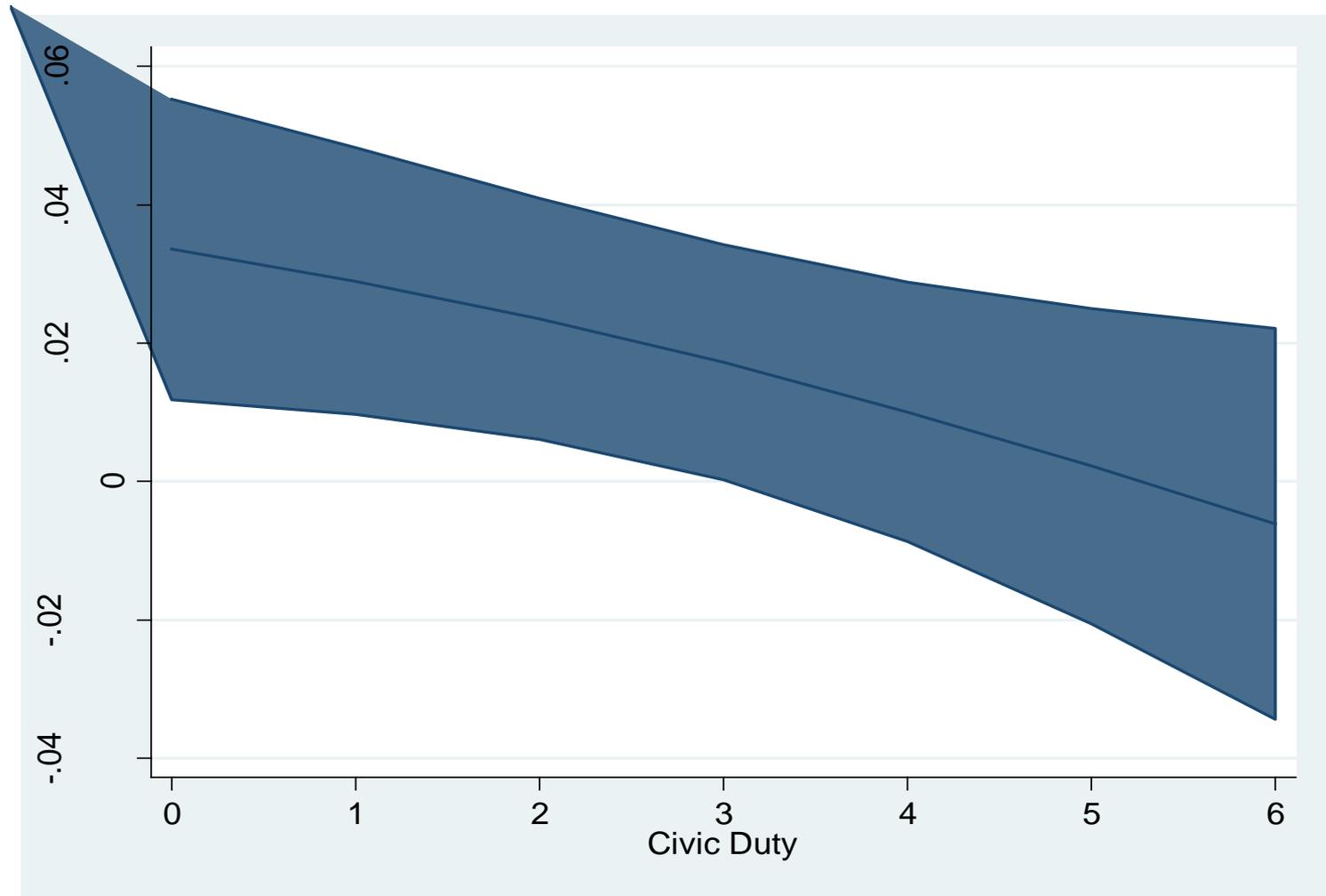
Figure 1. Average Marginal Effects of Party Differential on Voter Turnout with 95 % Confidence Intervals
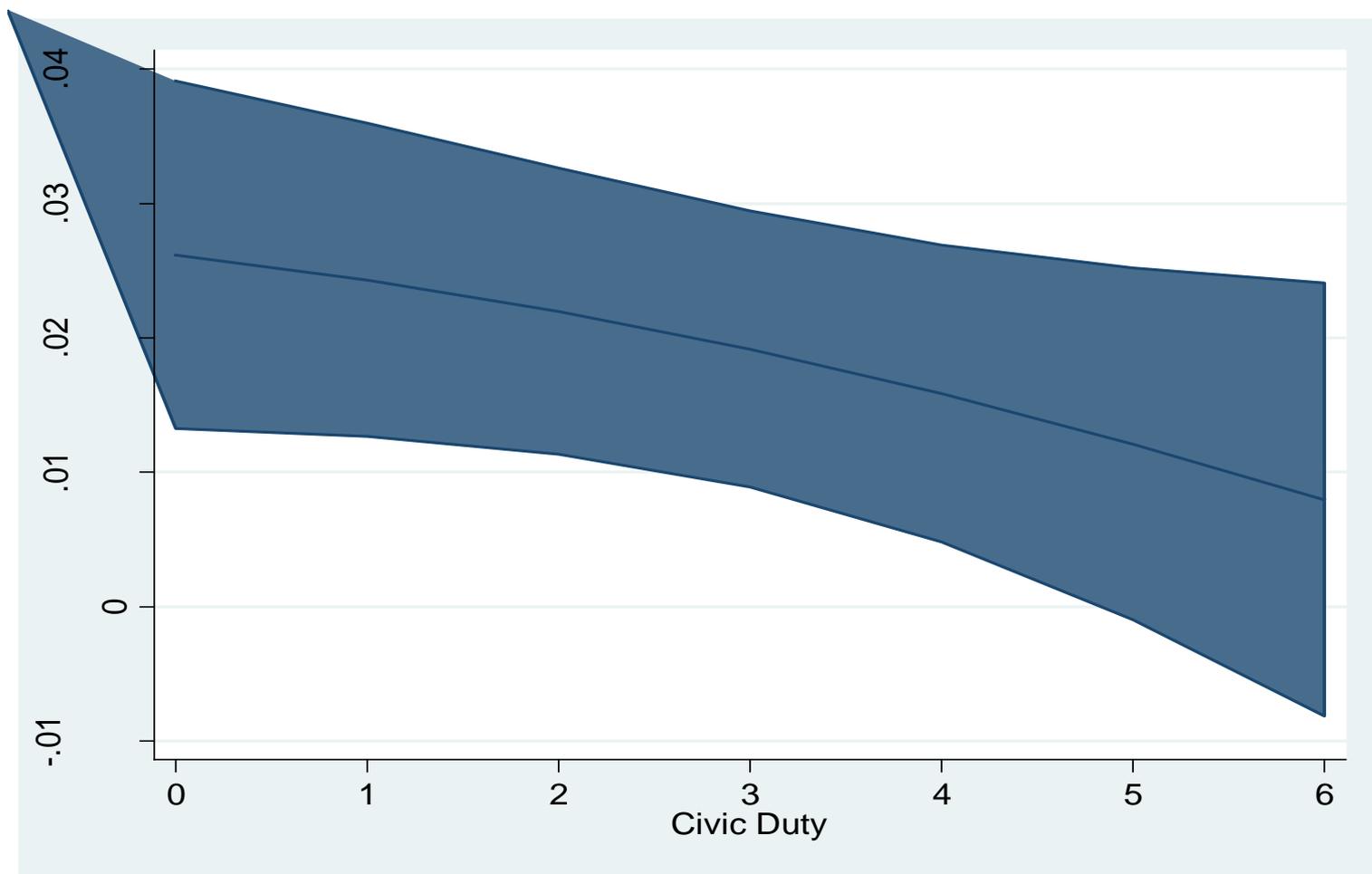
Figure 2. Average Marginal Effects of Affinity for Candidate on Voter Turnout with 95 % Confidence Intervals

Table 6. OLS Regression Analysis of Voter Turnout

	Model 1 Coef. (S.D.)		Model 2 Coef. (S.D.)	
Party differential (δ_1)	7.225	***	2.618	**
	(1.083)		(1.018)	
Civic duty (δ_2)	8.068	***	5.544	***
	(0.865)		(0.769)	
Affinity for candidate (δ_3)	7.473	***	4.348	***
	(0.862)		(0.778)	
Party differential × Civic duty (δ_4)	-0.608	**	-0.450	*
	(0.264)		(0.231)	
Party differential × Affinity for candidate (δ_5)	-0.484	**	-0.189	
	(0.202)		(0.181)	
Civic duty × Affinity for candidate (δ_6)	-0.580	***	-0.583	***
	(0.156)		(0.136)	
Political efficacy			5.062	***
			(0.983)	
Political interest			9.937	***
			(1.061)	
Strength of party ID			3.015	***
			(0.999)	
Income			1.070	***
			(0.240)	
College and above degree			4.637	**
			(2.278)	
Black			-0.026	
			(3.142)	
Hispanic			1.338	
			(3.258)	
Others (Asian and other)			-2.112	
			(4.309)	
Female			-0.081	
			(1.926)	
Age			0.383	***
			(0.060)	
Constant	20.427	***	-21.185	***
	(3.004)		(4.560)	
N	996		996	
F statistic	74.13	***	56.62	***
Adjusted R^2	0.31		0.47	
Mean VIF	4.65		2.62	

Note: *** is significant at $p < 0.01$; ** is significant at $p < 0.05$; * is significant at $p < 0.10$.

Another Empirical Test

- **Data**: *Taiwan's Election and Democratization Study: The Survey of the Presidential and Legislative Elections (TEDS2012)*

- **Dependent variable**: *Turnout in the 2012 presidential election*.

- **Key independent variables**: *party differential*, *civic duty*, and *affinity for candidate*.

- **Control variables**: political efficacy, political interest, electoral concern, strength of party ID, and demographics (i.e., income, education, gender and age).

Table 7. Descriptive Statistics of Variables in TEDS0212

Variable	Mean	S.D.	Min.	Max.
Turnout	0.88	0.33	0	1
Party differential	4.69	3.06	0	10
Civil duty	1.74	1.17	0	3
Affinity for candidate	3.52	2.85	0	10
Political efficacy	1.45	0.49	0	3
Political interest	1.22	0.86	0	3
Electoral concern	1.97	0.74	0	3
Strength of party ID	1.67	1.04	0	3
Income	5.29	3.04	1	10
College and above degree	0.45	0.50	0	1
Female	0.48	0.50	0	1
Age	2.75	1.29	1	5
N		1153		

Table 8. Binary Probit Analysis of Voter Turnout in Taiwan

	Coef.		(S.E.)	M.F.
Party differential (δ_1)	-0.061	**	(0.031)	-0.008
Civil duty (δ_2)	0.380	***	(0.100)	0.048
Affinity for candidate (δ_3)	0.160	***	(0.053)	0.020
Party differential × Civil duty (δ_4)	0.037	**	(0.017)	0.005
Party differential × Affinity for candidate (δ_5)	-0.008		(0.007)	-0.001
Civil duty × Affinity for candidate (δ_6)	-0.047	**	(0.019)	-0.006
Political efficacy	-0.107		(0.126)	-0.014
Political interest	-0.028		(0.074)	-0.004
Electoral concern	0.279	***	(0.085)	0.035
Strength of party ID	0.123	**	(0.051)	0.016
Income	0.000		(0.020)	0.000
College and above degree	0.096		(0.134)	0.012
Female	0.190	*	(0.114)	0.024
Age	0.241	***	(0.055)	0.031
Constant	-0.616	**	(0.298)	
N	1153			
Likelihood ratio test	233.16	***		
Pseudo R^2	0.27			
-2×Log likelihood	632.99			

Note: 1. *** is significant at $p < 0.01$; ** is significant at $p < 0.05$; * is significant at $p < 0.10$.

2. M.F. denotes marginal effects.
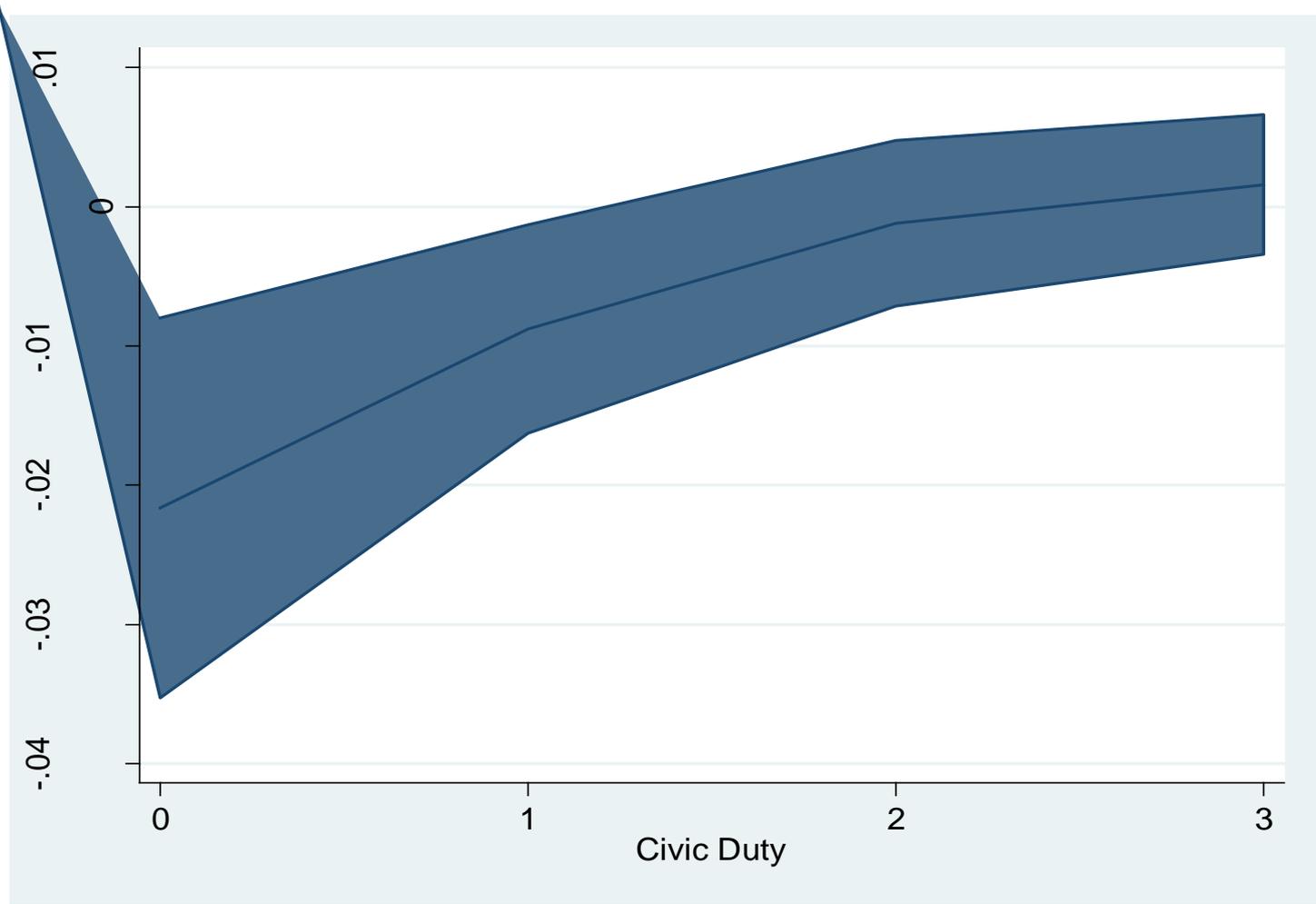
**Figure 3. Average Marginal Effects of Party Differential on Voter Turnout with 95 % Confidence Intervals in Taiwan**
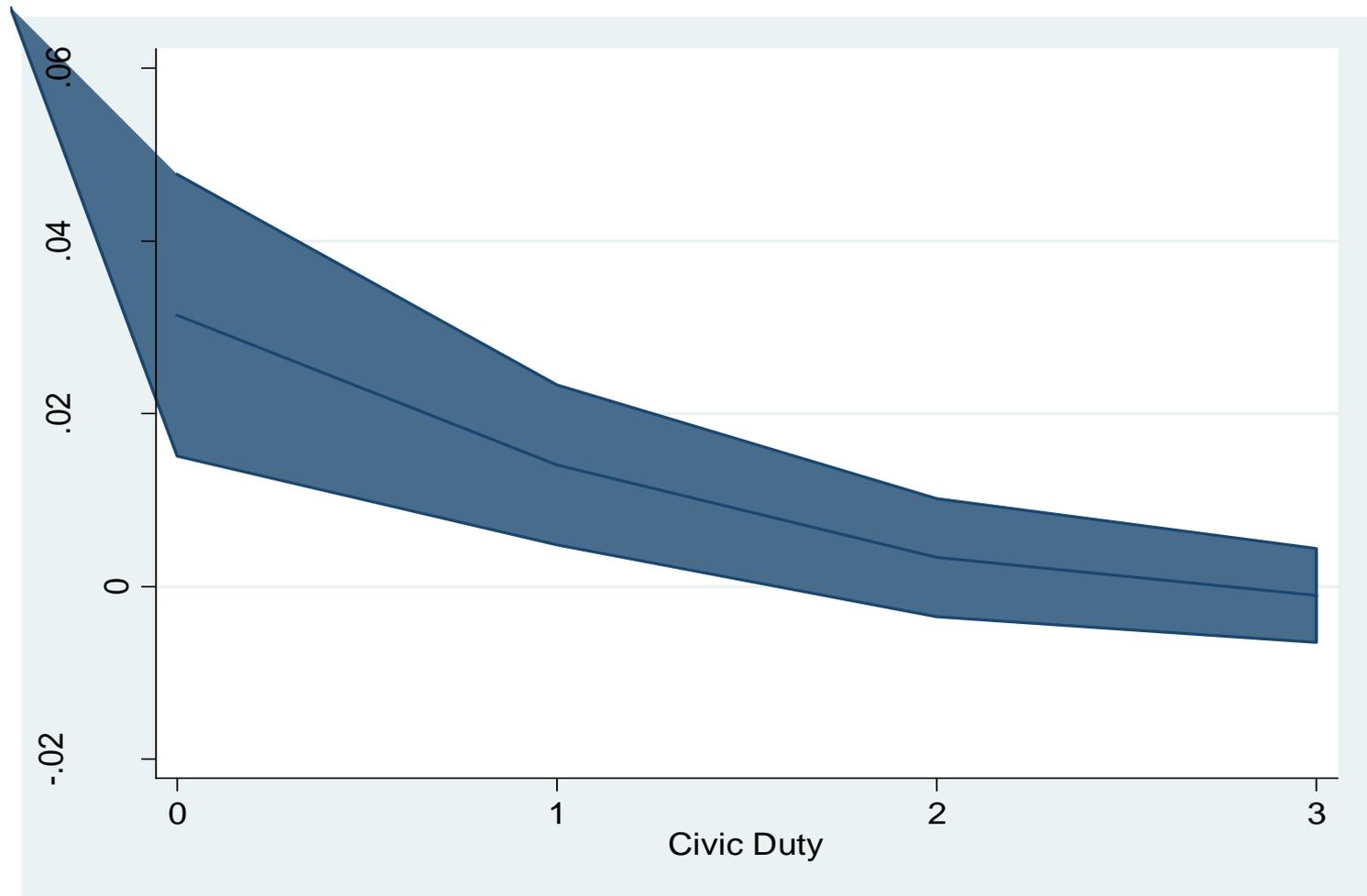
Figure 4. Average Marginal Effects of Affinity for Candidate on Voter Turnout with 95 % Confidence Intervals in Taiwan

Conclusions

- Party differential, civic duty and affinity for candidate are positively associated with voter turnout.

- The interaction terms between party differential and civic duty and between civic duty and affinity for candidate are negatively related to turnout.

- *Implication*: Citizens with a strong sense of civic duty turn out to vote mainly because they want to fulfill their civil obligation and thus hardly take into consideration parties and candidates.

- *Suggestion*: Analysts should include choice preference, civic duty and their interaction terms in the statistical model of turnout and it is required to take the D term seriously.

Thanks for your listening.

Any comments are welcome!

Supplement 1 – U.S.A

- ***Party differential***:

    When it comes to politics, how would you describe each person or group – as (liberal, conservative, or neither liberal nor conservative / conservative, liberal, or neither conservative nor liberal)?

1) Yourself?

2) Democrats?

3) Republicans?

- 7-point scale: from "Very liberal" to "Very conservative."

Supplement 2 – U.S.A

- *Affinity for candidate*:

  How much do you like or dislike each person?

  1) House Republican Candidate?

  2) House Democratic Candidate?

  3) Senate Republican Candidate?

  4) Senate Democratic Candidate?

- 7-point scale: from "Like a great deal" to "dislike a great deal."

Supplement 3 - Taiwan

- ***Party differential***:

    Sometimes people will talk about the question of Taiwan independence or the unification with China. Some people say that Taiwan should declare independence immediately. Others say that Taiwan and China should unify immediately. Still others have opinions between these two positions. This card lists eleven positions from independence (0) to unification (10).

1) What position do you think KMT occupies?
2) What position do you think DPP occupies?

Supplement 4 - Taiwan

- ***Affinity for candidate***:

  We'd like to get your feeling toward presidential candidates. I'll read the name of a candidate and I'd like you to rate that candidate using a 0 to 10 scale, while rating 0 means that you dislike him or her very much and rating 10 means that you like him very much.

  1) How would you rate TSAI Ing-wen using 0 to 10 scale?
  2) How would you rate MA Ying-jeou?

Supplement 5 - Taiwan

- ***Civic duty***:

1) Different people have different opinions about voting. Some people think that voting is a responsibility, and you should vote even if you don't like any of the candidates or parties. Other people think that it is all right to vote or not to vote, and the decision depends on how you feel about the candidates or parties. Do you think that voting is a responsibility, or do you think that it is all right either to vote or not to vote?

2) Do you believe very strongly, somewhat strongly, or only a little that voting is a responsibility?