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## **Rational Choice Theory and Voter Turnout: Models and Problems of a D Term**

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### **Abstract**

Turnout studies tackle the question, “Why do some people vote while others do not?” Anthony Downs’ *An Economic Theory of Democracy* was the first systematic attempt coping with turnout puzzles by exploiting rational choice theory (RCT). A D term or a civic duty, an important concept used by Downs, explains that people vote only if they care about democracy. There are two important questions regarding voter turnout: (1) Does RCT explain voter turnout successfully? (2) Does adding a D term mean that we no longer have a rational choice model? This paper aims to deal with the latter question only, and my main argument is that a D term makes RCT impossible because while RCT is the conception of investment, the D term is the conception of consumption. I am interested in question (2) only, therefore, even though my answer is that a D term makes RCT impossible, this does not mean that I see that RCT is successful in explaining voter turnout; in contrast, I think it is not. Apart from the discussion of a D term, I also review some RCT models which try to avoid the difficulties raised by a D term. In terms of application, I suggest that different political systems, cultures, history, and so on need different characteristics of RCT, so researchers should be aware of the limits of RCT.

### **Keywords**

Anthony Downs, D term, Political behavior, Rational choice theory, Turnout



## Introduction

Turnout is one of the most important forms of political participation in a democratic society. Anthony Downs' *An Economic Theory of Democracy* (1957a) was the first book dealing with this question by employing Rational Choice Theory (RCT). After his book was released, many academics have launched both supporting and opposing views to the application of RCT with turnout (Wandling, 2011). This paper will explore how RCT has been applied to solve this problem. It should be noted that as most of them have been discussing turnout in American politics which is a winner-takes-all system, readers should be aware of its limitation.

I have selected 7 models: the basic model, the calculus of voting model, the minimax regret model, the strategic politician model, the asymmetric information model, the group-based voting model of mobilization, and the altruism of voting model. I will also contribute my thinking to Downs (1957a; 1957b) by discussing whether the application of a D term in RCT is appropriate or not. After I introduce some RCT models, I will discuss the challenges of the application of RCT to real politics. I will also use a case study from Argentine politics (Stokes, 2005) to show how RCT can be applied. Finally, I will propose my way of thinking about RCT and problems of a D term. It should be noted that even though not every model introduced in this paper aims to discuss problems of a D term directly and explicitly, they are responses to the problem in one way or another. In other words, since they see that a D term fails to solve the turnout problems, they propose their own ways of thinking about it.

I hope that this paper will urge scholars to study voters' behavior through rational choice theory, which may also be applied to other actors such as governments, firms, bureaucrats, trade unions, protesters, and so forth (Olson, 1965; Moe, 1980).

## Questions

1. How do RCT models explain voter turnout?
2. What are the challenges of the application of RCT?
3. Does adding a D term make a rational choice theory impossible?

## Literature Review: Models

### (1) The Basic Model<sup>1</sup>

Even though this model excludes many realistic assumptions out of the model, it is a good starting point as it gives a general outline of RCT models.

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<sup>1</sup> This section is rearranged from Aldrich (1993, pp. 247-251)

Assumptions:

1. There are 3 choices: vote for their preferred candidate (A), vote for their opponent (B), and abstention.
2. Agents want to maximize their own utilities which depend on the outcomes of the election.
3. There are 5 states of the world: their preferred candidate wins by more than one vote, by exactly one vote, or their preferred candidate loses by more than one vote, by exactly one vote, and tie.
4. Information is imperfect: agents do not know the states of the world before deciding their choices.
5. Decision theory: one's decision does not depend on what other people do.
6. Costs of voting: if agents vote, they have to pay costs, otherwise they do not.

In this model, an agent votes only if their utility is greater than their costs of voting.

$$R = B - C \tag{1}$$

where R – rewards

B – benefits or the difference in utility for A instead of B winning (B = 1)

C – costs of voting  $0 < C \leq 0.5$

**Table 1** Decision Table (Basic Model)

		(1)	(2)	(3)	(4)	(5)
		Winning by More than One Vote	Winning by Exactly One Vote	Tied	Losing by Exactly One Vote	Losing by More than One Vote
(1)	<b>Vote for A</b>	1 - C	1 - C	1 - C	0.5 - C	0 - C
(2)	<b>Vote for B</b>	1 - C	0.5 - C	0 - C	0 - C	0 - C
(3)	<b>Abstention</b>	1	1	0.5	0	0

Table 1: We can see that the states of the world of 'Vote for B' is strongly dominated by 'Abstention' and weakly by that of 'Vote for A,' so we can eliminate all states of the world of 'Vote for B.' This means that although agents have 3 choices, that is, vote for A, vote for B, and abstention, they never vote for B. Agents will have to choose between vote (for A) or abstention. Columns (1) and (5) are out of our attention because voters cannot affect the

outcomes, so whatever choices they decide produce the same outcome, except row (3) which has no costs of voting. Therefore, our focus will be on columns (2), (3), (4), and rows (1) and (3).

If we vote for A, and A wins by exactly one vote, we will get  $(1 - C)$ . We get 1 because our decision is actually pivotal, and we feel that our decision is very important and deserves to be rewarded utterly. If we vote for A but the outcome is tied, we will get  $(1 - C)$ . We get 1 because of the same reason as winning by exactly one vote. We would feel that if we do not vote for A, then candidate A will lose for sure, so our decision is also pivotal. If we vote for A but candidate A loses by exactly one vote, we will get  $(0.5 - C)$ . We get 0.5 because we have done the best we can do. If we do not vote for A, then candidate A will lose by more than one vote. We realize that our decision is quite relevant, but we lose so we can get only 0.5.

If we vote for B but candidate A wins by exactly one vote, we will get  $(0.5 - C)$ . We get 0.5 because we feel that our decision is pivotal. If we vote for A instead, then candidate A will win by more than one vote for sure. This is different from the case that we vote for A and candidate A wins by exactly one vote which results in  $(1 - C)$ . While the former case happens because of our mistaken decision (if we vote for A instead, candidate A will win by more than one vote for sure), the latter case happens because of our pivotal decision and it is the best we can do. If we vote for B and the outcome is tied, we will get  $(0 - C)$ . We get 0 because we feel that if we vote for A instead, then candidate A will win by exactly one vote for sure. This is also different from the case that we vote for A and the outcome is tied which results in  $(1 - C)$  with the same reason as the last case.

What does the figure 1 tell us?

1. If  $C \geq 0.5$ , agents always abstain.
2. If  $C = 0$ , agents always vote for A.
3. If  $0 < C < 0.5$ , agents cannot decide whether to vote or not because column (2), (3), and (4) are inconsistent. For example, if we assume that  $C = 0.4$ , then we get the following result:

Table 2: We can see that in the case that candidate A wins by exactly one vote, we will get 1 if we abstain, but 0.6 if we vote for A. So, it is reasonable to abstain. If we decide to abstain and the outcome is tied or candidate A loses by exactly one vote, then it is unreasonable to abstain any more. In other words, in the case of  $0 < C < 0.5$  we cannot decide whether to vote or not. This is the fundamental problem of the basic model.

**Table 2** Decision Table for the Basic Model ( $0 < C < 0.5$ ); ( $C = 0.4$ )

		(1)	(2)	(3)	(4)	(5)
		Winning by More than One Vote	Winning by Exactly One Vote	Tied	Losing by Exactly One Vote	Losing by More than One Vote
(1)	Vote for A	0.6	0.6	0.6	0.1	- 0.4
(2)	Vote for B	0.6	0.1	- 0.4	- 0.4	- 0.4
(3)	Abstention	1	1	0.5	0	0

## (2) The Calculus of Voting Model<sup>2</sup>

This model aims to solve the above problems (column 2, 3, and 4) and make the basic model more realistic. To do so, we need to change some assumptions of the basic model as follows: (1) agents maximize *expected* utility instead of utility, and (2) agents estimate the probability of states of the world.

$$R = PB - C \tag{2}$$

where P – the probability that the states of the world can happen<sup>3</sup>

We need to add the P term because we are not sure what states of the world will happen in the case of  $0 < C < 0.5$ . If column (2) happens, then we should abstain. If columns (3) and (4) happen, then we should vote instead. So, the probability is very important for the decision making.

Table 3: The B term is silent because its existence entirely depends on the P term. According to the calculus of voting model, the problem of inconsistency is solved as follows:

1. If  $C \geq 0.5$ , agents always abstain regardless of the P term.
2. If  $C = 0$ , agents always vote for A regardless of the P term.

<sup>2</sup> This section is rearranged from Aldrich (1993, pp. 251-258)

<sup>3</sup> It should be noted that the P term is the probability that a single vote can change the outcome, not the probability of having the B term. P is high only if a voter believes that he or she can make the outcome different by their vote. The P term is determined by (1) the size of the electorates, and (2) the expected closeness of the elections.

3. If  $0 < C < 0.5$ , then there are two different cases as follows: If  $P > C$ , then agents cannot decide whether to vote or not. If  $P \leq C$ , then agents always abstain.

**Table 3** Decision Table for the Calculus of Voting Model

		(1)	(2)	(3)	(4)	(5)
		Winning by More than One Vote	Winning by Exactly One Vote	Tied	Losing by Exactly One Vote	Losing by More than One Vote
(1)	<b>Vote for A</b>	$P - C$	$P - C$	$P - C$	$P(0.5) - C$	$0 - C$
(2)	<b>Vote for B</b>	$P - C$	$P(0.5) - C$	$0 - C$	$0 - C$	$0 - C$
(3)	<b>Abstention</b>	$P$	$P$	$P - P(0.5)$	$0$	$0$

The calculus of voting model solves the problem of the basic model by adding the  $P$  term and assuming that  $P \leq C$ . This indicates that people abstain only if they estimate that the costs of voting outweigh the probability that their single vote would change the outcome of the election. But the fact is that we are just a person among millions of people, so some scholars suggest that  $P$  is likely to be zero or very very low in the very large electorates<sup>4</sup>. This implies that we should also abstain in columns (2), (3), and (4). Even though the calculus of voting model can solve the mathematical problem of the basic model as we now can say that a voter should abstain in any case, this generates another serious problem: its conclusion really conflicts with reality as a lot of people go to vote in the very large electorates (Blais, 2009, pp. 626). The new problem from equation (2) can be illustrated as the following equation:

$$R = - C \tag{3}$$

Equation (3) is far from being realistic because it suggests that everyone abstains from the elections all the time. Because of this, rational choice theorists have tried to come up with new solutions. Downs (1957a) proposes a  $D$  term. Now we can have the new equation as follow:

$$R = PB + D - C \tag{4}$$

<sup>4</sup> It should be noted that, under conditions of uncertainty, even if an electorate is expected to be very close, there is no reason to believe that the  $P$  term should be high. It seems to be irrational to believe that a single vote can make the outcome different. This means that the  $P$  term would be very small even in a very small electorate (Aldrich, 1993; Feddersen, 2004).

where  $D$  – the civic duty in a democratic society

What makes equation (4) and (2) different is the 'D' term. Downs (1957a, pp. 261-2) defines the D term as 'the return from voting per se.' He writes that

The advantage of voting per se is that it makes democracy possible. If no one votes, then the system collapses because no government is chosen. We assume that the citizens of a democracy subscribe to its principles and therefore derive benefits from its continuance; hence they do not want it to collapse. For this reason they attach value to the act of voting per se and receive a return from it.

Even if  $PB = 0$  people may vote if  $D > C$ . However, equation (4) has some serious problems. First, since the D term represents a voter's taste, it cannot be explained by RCT which aims to explain only how one acts, given tastes.<sup>5</sup> Second, if the D term is unacceptable, we need to revise equation (2) and the problem still remains.

### **(3) The Minimax Regret Model<sup>6</sup>**

This model was first introduced by Ferejohn and Fiorina (1974), as an effort to replace the calculus of voting model proposed by Downs (1957a); Tullock (1967), and Riker and Ordeshook (1968). They distinguish between decision making under 'risk' and under 'uncertainty.' While the former the P term is knowable, the latter is unknowable. As they propose to use the latter model, they claim that their model is novel because it ignores the P term and the D term altogether as they want to confine their model to the conception of

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<sup>5</sup> This is a very controversial topic. For example, Fowler (2006) argues that RCT just refers to the fact that people have the qualities of 'completeness' and 'transition.' It does not necessarily mean that people must be self-interested and care about themselves only. So, it is possible to accept the conception of 'altruism' in RCT. Downs (1957) argues that people can think of the long-run returns like the stability of democracy rather than the short-run returns, and the long-run returns can outweigh the costs of voting. On the other hand, the 'D' term is viewed incompatible with RCT. They argue that RCT should express the conception of 'investment,' not 'consumption.' (Barry, 1970; Geys, 2006).

<sup>6</sup> This section is rearranged from Ferejohn and Fiorina (1974, pp. 525-536), Aldrich (1993, pp. 253-261), and Geys (2006, pp. 21-2).



investment, not consumption.<sup>7</sup> The idea of 'minimax regret criterion' is described by Ferejohn and Fiorina (1974, pp. 528) as "the difference between what the decision maker could have attained had he known the true state of nature before he chose his action and what he actually gets by choosing an act". Therefore, the question a voter asks would be "if it turns out that a given state of the world is true, would you have any regret that you chose the action (voted or abstained) that you did, and if so, how much regret?" (Aldrich, 1993, p. 253). In order to answer this question we need to form regret tables.<sup>8</sup>

**Figure 4** Decision Table for The Minimax Regret Model (4.A – 4.C)

A Decision Table

	(1)	(2)	(3)	(4)	(5)
	Winning by More than One Vote	Winning by Exactly One Vote	Tied	Losing by Exactly One Vote	Losing by More than One Vote
(1) <b>Vote for A</b>	1 - C	1 - C	1 - C	0.5 - C	0 - C
(2) <b>Vote for B</b>	1 - C	0.5 - C	0 - C	0 - C	0 - C
(3) <b>Abstention</b>	1	1	0.5	0	0
<b>Highest Payoff in Column</b>	1	1	1 - C if C < 0.5 0.5 if C ≥ 0.5	0.5 - C if C < 0.5 0 if C ≥ 0.5	0

B Table of Regrets (C < 0.5)

(1) <b>Vote for A</b>	1 - (1 - C)	1 - (1 - C)	(1 - C) - (1 - C)	(0.5 - C) - (0.5 - C)	0 - (0 - C)
(2) <b>Vote for B</b>	1 - (1 - C)	1 - (0.5 - C)	(1 - C) - (0 - C)	(0.5 - C) - (0 - C)	0 - (0 - C)
(3) <b>Abstention</b>	(1 - 1)	(1 - 1)	(1 - C) - (0.5)	(0.5 - C) - 0	0 - 0

<sup>7</sup> They disagree with Barry (1970) who said that economic models are useless if a consumption idea is included in the model. They argue that it is possible to study it by RCT. But they did not aim to do so in their article (1974).

<sup>8</sup> In fact, Ferejohn and Fiorina (1974) discuss both the case of two-candidate and three-candidate contests. I prefer to talk about the former case only in this article.

C Table of Regrets ( $C < 0.5$ ): Calculation of Maximum Regret for Each Action

						<b>Maximum Regret</b>
(1)	<b>Vote for A</b>	C	C	0	0	C
(2)	<b>Vote for B</b>	C	$0.5 + C$	1	0.5	1
(3)	<b>Abstention</b>	0	0	$0.5 - C$	$0.5 - C$	$0.5 - C$

Table 4 C: Agents never vote for B because the maximum regret for B is 1 which is greater than vote for A and abstention. Agents vote for A rather than abstain if the maximum regret of A is less than that of abstention. This can be explained through the following:

$$C < 0.5 - C$$

$$2C < 0.5$$

$$C < 0.25$$

If  $C < 0.25$ , then agents vote for A. For example,  $C = 0.2$ :

<b>Maximum Regret</b>
0.2
1
0.3

So, agents will vote for A because  $0.2 < 0.3$

If  $C > 0.25$ , then agents abstain. For example,  $C = 0.3$ :

<b>Maximum Regret</b>
0.3
1
0.2

So, agents will abstain because  $0.3 > 0.2$

What does the minimax regret model tell us? It tells us that people vote if  $C < 0.25$  (very low). It can explain turnout even excluding the P term and D term. However, some scholars argue that the minimax regret model has some serious theoretical problems about the P term (Aldrich, 1993; Geys, 2006; Blais et al., 1995)

#### **(4) The Strategic Politicians Model<sup>9</sup>**

Jacobson and Kernell (1983) found that there is conflicting evidence about the relationship between 'economic conditions' and 'turnout': while the aggregate-level data shows that economic conditions are strongly related to turnout, the individual-level data shows otherwise. For the aggregate-level data, voter turnout increases when the national economy turns bad, because voters want to punish the incumbent party. For the individual-level data, voter turnout has nothing to do with personal economy, because voters do not see that their own personal bad economy is due to the bad performance of the incumbent party (Kinder & Kiewiet, 1981).

Jacobson and Kernell (1983) try to explain why when national economy turns bad, voter turnout rises up by using their alternative model: strategic politician hypothesis. The idea is that while the P term may be unimportant for voters, politicians take it seriously, especially for challengers. When economic situations turn bad, the incumbent can be criticized easily and convincingly as they are supposed to be responsible for that. At the same time, challengers see this as their great chance to beat them in the election. This means that P is viewed by challengers to be high enough. Because of this, politicians, interest groups are willing to invest their resources in those electorates, which can be used to launch turn-out-to-vote campaigns. The costs of voting not only are reduced a lot, but the benefits also increase because politicians try to convince voters that they are much better than their opponents. Finally, turnout rate rises. This model implies that turnout rate is high in the close elections and when the economy is bad.

#### **(5) The Asymmetric Information Model<sup>10</sup>**

Feddersen and Pesendorfer (1996) propose an alternative RCT of turnout. They reject the calculus of voting model because, as they explain, it fails to explain the phenomenon of roll-off<sup>11</sup>. They want to explain why some independent voters decide to

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<sup>9</sup> This section is rearranged from Aldrich (1993, pp. 266-9).

<sup>10</sup> This section is rearranged from Feddersen and Pesendorfer (1996) and Feddersen (2004, pp. 103-105).

<sup>11</sup> Roll-off is the situation where there are two separate elections (prestige and lower offices) in the same ballot and we must vote for one of them, instead of both of them. In this sense, cost-benefit models

abstain even if we assume that they can benefit from candidates and voting is costless. Their main proposal is that better-educated voters are more likely to vote while less-educated voters abstain. Surprisingly, their theory fits to Wolfinger and Rosenstone's (1980) empirical evidence that level of education is the best predictor of participation. However, Feddersen and Pesendorfer (1996) employ a lot of mathematical techniques to prove their model which is really difficult for beginners to follow. On the other hand, Feddersen (2004) just employs easier arguments. Therefore in this article I will combine both papers and try to explain their model as easy as possible.

Assumptions:

1. There are 4 agents:  $v_1, v_2, v_a, v_i$ <sup>12</sup>
2.  $v_1, v_2, v_a$  are uninformed agents;  $v_i$  is an informed agent<sup>13</sup>
3.  $v_1$  is a partisan of candidate A;  $v_2, v_a, v_i$  independent voters<sup>14</sup>
4. There are 2 candidates: candidate A (incumbent) and candidate B (challenger)
5. Voting is costless
6. There are 2 states of the world:
  - State 1: all voters prefer that candidate A win the election. In other words, the incumbent can perform better than the challenger in the future.
  - State 2:  $v_1$  prefers that candidate A win the election, but  $v_2, v_a, v_i$  prefer that candidate B win the election<sup>15</sup>. In other words, the challenger can perform better than the incumbent in the future.

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seem unable to explain because if this is the case they should vote for both of them or stay home at all. Therefore, it seems more reasonable to believe that roll-off voters are strategic voters regardless of the costs of voting.

<sup>12</sup>In this model they are supposed to vote individually. But if we assume that they can form a group before voting, then this model needs to be developed quite a lot, which is not the point for us here.

<sup>13</sup>Informed agents are those who know with certainty which states of the world will happen. They know exactly which candidate is better. This denotes better-educated voters who can compare the performances of the incumbent and the challenger in the future. They know that their choice is correct. In contrast, uninformed agents mean those who cannot know which states of the world will happen. This means that while informed voters know the true state of the world 'before' the election, uninformed voters know it 'after' the election. So, uninformed voters are those who vote with uncertainty.

<sup>14</sup>'Independent voters' or 'swing voters' are those who prefer a better candidate always. Namely, if they know that the incumbent will perform better than the challenger, then they would vote for the incumbent, and vice versa. The problem is that only 'informed independent voters' can know exactly which candidate is better. 'Partisan voters' are those who always vote for their preferred candidates regardless of their potential performances in the future.

The idea is that if there are only 'informed independent voters,' then every independent voter, both informed and uninformed, can maximize their own utilities because 'informed independent voters' can know exactly which candidates will perform better in the future. But, in fact, there are both 'informed' and 'uninformed' independent voters, so the latter needs to think about what they should do: vote for the incumbent, the challenger, or abstain.

Now, let's consider how each voter would behave in this model: v1 always votes for candidate A in both states of the world despite of not knowing the true state of the world. This is because v1 is a partisan voter of candidate A. vi votes for candidate A if state 1 has occurred and votes for candidate B otherwise. This is because they know exactly the true state of the world.

Now, we can form a decision table as follows:

**Table 5.1** Decision Table for v1 and vi

State 1 (incumbent is better)		State 2 (challenger is better)	
Incumbent	Challenger	Incumbent	Challenger
v1		v1	
	vi		vi

From table 5.1: v2, an uninformed independent voter, has to think about how they should act. They can know/observe figure 5.1. They know that v1 always votes for the incumbent because v1 is a partisan voter, while vi always votes for the right candidate because vi knows exactly which candidate is the best. Because of this, v2 decides to vote for the challenger in both cases because if state 1 happens, then the incumbent wins the election or at worst it is a tie, and if state 2 happens, then the challenger wins the election. This can be described with the following table:

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<sup>15</sup>The idea of the states of the world is that since 'uninformed independent voters' cannot know exactly which states of the world will happen, they need to think about their dominant strategies for both states of the world. In contrast, since 'informed independent voters' can know exactly which states of the world will happen, they do not need to think about any strategies because they can vote correctly for sure. This also holds for 'partisan voters' because they always vote for their preferred candidates. Therefore, the states of the world are especially important for 'uninformed independent voters' only.

**Table 5.2** Decision Table for v1, vi and v2

State 1 (incumbent is better)		State 2 (challenger is better)	
Incumbent	Challenger	Incumbent	Challenger
v1		v1	
vi			vi
	v2		v2

From table 5.2: if state 1 happens, then the incumbent receives 2 votes from v1 and vi, while the challenger receives 1 vote from v2. In this case, the incumbent, which is preferential, will win only if va votes for the incumbent or abstains. But if va votes for the challenger, then they will be in a tie and the incumbent may lose in a coin flip. Now, va has to think about his choice: vote for the incumbent or abstention. But before we will consider their potential action, let us consider the situation in state 2 first. If state 2 happens, then the incumbent receives 1 vote from v1, while the challenger receives 2 votes from vi and v2. In this case, the challenger, which is preferred by va, will win only if va votes for the challenger or abstains. But if va votes for the incumbent, then they will be in a tie, and the challenger may lose in a coin flip.

Now, let us consider all the choices va has: (1) vote for the incumbent; (2) vote for the challenger; (3) abstention. What should va choose? va votes for the incumbent in both cases: If state 1 happens, then the incumbent wins the election because it receives 3 votes (v1, vi, va) against the challenger that receives only one vote (v2). If state 2 happens, then they are in a tie and the election has to be decided by a coin flip. va votes for the challenger in both cases: if state 1 happens, then they are in a tie and a coin flip has to be used. If state 2 happens, then the challenger wins the election because the incumbent receives only one vote from v1, but the challenger receives 3 votes from vi, v2, and va.

va abstains in both cases: if state 1 happens, then the incumbent wins because it receives 2 votes (v1, vi) against the challenger who receives only one vote (v2). If state 2 happens, then the challenger wins because they receive 2 votes (vi, v2) against the incumbent who receives only one vote (v1). We can see that it is only the case of abstention that va can maximize their utility. And this can be shown on the following table:

**Table 5.3** Decision Table for va

Strategies of va	Outcomes		
	State 1	State 2	
<b>Vote for the incumbent</b>	The incumbent	Tie	va cannot maximize his utility
<b>Vote for the challenger</b>	Tie	The challenger	va cannot maximize his utility
<b>Abstention</b>	The incumbent	The challenger	va can maximize his utility

What do we learn from the asymmetric information model? It tells us that in equilibrium, informed independent voters (better-educated people) are more likely to vote, and uninformed independent voters (less-educated people) are more likely to abstain.

### **(6) The Group-Based Voting Model of Mobilization<sup>16</sup>**

This model tries to explain why a lot of people go to vote in costly and large electorates. Many rational choice theorists who use the calculus of voting model usually end up with the conclusion that in a very large and costly electorate, people are more likely to abstain because the P term is very low and the C term is very high. So, even if there are some benefits from one of the candidates, they prefer to abstain because the costs of voting are greater than its probability and benefits. This problem is called 'the paradox of not voting.'

Assumptions:

1. The unit of analysis is the group, not the individual.
2. There are 3 actors: voters, group leaders, and candidates.
3. Each group is formed by individual voters who share the same preferences.
4. Each group is coordinated by its leaders who can convince their followers to vote.

When each individual forms their group according to their different ideologies and has their own group leaders, the unit of analysis has changed from 'each individual' to 'groups of people.' This means that a number of voters who can affect the outcomes of the elections is reduced significantly. Of course, the number of voters is still the same, but a number that 'can' affect the election decreases. Those who really have the impact on the election are 'group leaders' because these few leaders can influence their followers to vote. Each member of a group decides whether to vote or not according to their leaders who can allocate resources to their followers, and encourage them to vote for one of the candidates they prefer. So, when the P term is higher, turnout is higher. Although the cost of voting

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<sup>16</sup> This section is rearranged from Feddersen (2004, pp. 105-107).

would be high, turnout is still high because each voter does not need to pay it themselves as their leaders would provide it for them. However, Feddersen (2004, p. 106) argues that this model fails to explain “how leaders affect the micro-level decision-making of voters”.

### (7) The Altruism of Voting Model

This model tries to explain why people go to vote in costly and large electorates. According to the calculus of voting model, rational people should abstain because the costs of voting outweigh the benefits of voting as the probability (the P term) that one vote can determine the outcome is very small. This conflicts with the real world. Fowler (2006) argues that the main reason the calculus of voting model fails to explain turnout is because it ignores an important motivation of human behavior: altruism. He argues that humans are not only motivated by 'pure' self-interest, but also by 'altruism' or a concern for the welfare of others. If rational men just refer to people who have preferences that are complete and transitive<sup>17</sup>, then we can have the concept of altruism in the RCT. He also distinguishes between the D term and altruism. While the former is independent of outcomes and people may vote even if the utilities from both candidates are indifferent, the latter allows people to vote only if they think one of alternatives is superior and other people's welfare depends on the outcome. Therefore, 'altruism' is not the conception of consumption like the D term.

$$\begin{aligned} \text{Model:} \quad & R = P(B_s + \alpha NB_o) - C \\ & R = 1/N(B_s + \alpha NB_o) - C \\ & R = 1/N(B_s) + \alpha B_o - C \end{aligned}$$

where  $B_s$ : benefits to oneself  
 $B_o$ : benefits to others  
 $\alpha$ : altruism (how much people care about others)  
 $N$ : a number of voter  
 $P$ : the probability that one vote can determine the outcome ( $P = 1/N$ )

since  $N$  is very very high, so  $1/N$  is supposed to be zero.

$$\text{Thus,} \quad R = \alpha B_o - C \quad (5)$$

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<sup>17</sup>Rationality does not mean that people are intelligent and know everything. Indeed, it just means that people can tell what they prefer (complete) and the correct order of their preferable choices (transitive). For example, someone is rational if he can tell that they prefer A to B, and B to C (complete), and they can also tell that they prefer A to C (transitive). (Hausman & McPherson, 1996).



Equation (5) suggests that people vote if they care about the welfare of others and believe that their preferred candidate can make them better off.

### **The Application: Challenges and A Case Study**

Even though this article intentionally focuses on whether a D term is compatible with RCT or not rather than on how successful RCT models explain voters' behaviors in reality, I see it worthwhile to touch upon to some extent how RCT can be applied to the reality. First of all, it is important to note that all seven models presented in the last section can be applied only to the winner-takes-all system. If our votes are still be counted even if our preferred candidate loses the election, then our voting behavior will change significantly, i.e. we will no longer take a factor like the probability (P term) into account. This makes RCT useless and irrelevant as RCT aims to explain how voters deal with the P term, and, of course, without the P term means without the D term. Therefore this is one of the most significant limitations of the application of RCT in the reality.

The application of RCT to real politics without considering specific circumstances may be ineffective for at least two reasons. First, RCT explains voters' behavior too little: it only explains that people vote because the voting benefits outweigh the voting costs, but explains nothing about the measurement of the costs. Namely, the notion that "people vote if the voting cost is very low" does not take us much far to understand and predict voters' behaviors as they never tell us to what extent the cost can be called "low." This seems to be a subjective rather than objective measurement. Second, RCT explains voters' behavior too much broadly: it simply explains that people always vote rationally and overlooks many factors contributing to voters' behaviors such as cultures, political situations, and other issues (Gandhi, 2005; Petracca, 1991). If we ask why someone crosses the road, RCT would say that by doing so he maximizes utility (Hodgson, 2012, p. 101). This seems to explain nothing at all because it does not make us understand their action in any deep sense.

Since the application of RCT to turnout study is significantly originated by American political economists and designed to deal with American politics, one needs to create a new RCT model to explain voters' behavior in Thailand or other Asian politics as they have different political structures, political situations, and political cultures. Voters in a particular voting system may reason differently from voters in other systems, like a person who changes his behavior according to different circumstances (Burton, 1963). For instance, voters in the party-list system go to vote without taking the size of the electorates (the P term)

into account because they vote for their preferred political parties<sup>18</sup> rather than their preferred candidates, thus we need a new model that can explain their behaviors.

In terms of political culture, RCT cannot be applied to partisan voters who always vote for their preferred candidates, regardless of any other factors like the voting costs and the probability. As voters always vote without taking those factors into account at all, RCT can no longer predict their behaviors by looking at the voting costs. For instance, religious persons may vote by taking religious and moral issues into account rather than the probability that their preferred candidates could win the election (Stegmueller, 2013). It is therefore difficult to apply RCT to different political structures and cultures as they play a significant role in shaping voters' behavior.

According to Nathan (2007, p. 17) who studied political culture in Asia by using dataset in 2000 and 2006, people who held traditional values in Asian countries like China, Korea, the Philippines, Taiwan, Thailand, Indonesia, and Singapore were more likely to lean on their own traditional values rather than democratic values: "they were less demanding of the regime, and more deferential to the authorities". He also found that people who held traditional values in Japan, the Philippines, and Mongolia were more likely to vote because they were easily mobilized, whereas people who held democratic values in Hong Kong and Japan were more likely to vote because they wanted to influence politics (ibid., pp. 14-15). All of this implies that voters' behaviors are influenced by political culture in their countries, and, of course, their behaviors would change according to their changing political cultures.

I would like to show how RCT can be applied to real politics by exploring a case study from Stokes (2005) who studied Argentine voters' behavior. Her aim is to explain how political machine<sup>19</sup> works in the secret ballot. According to RCT, people vote if the benefit outweighs the cost, but in reality voters sometimes vote because of money they receive from politicians. Their voting behaviors are determined by their relationship between them and politicians. The question is how we could explain why, even in the secret ballot system, they still vote for politicians who give them rewards? How could we apply RCT to explain their voting behavior? Stokes (2005) used the case study from Argentina by conducting a survey

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<sup>18</sup> The difference between voting for preferred political party and for preferred candidate is that while, for the former, *rational* voters may vote for their preferred party even if they know that the probability of winning the largest party is small because even though their preferred party is not the largest party in the parliament, they know that their preferred party may still have a seat in the parliament; for the latter, *rational* voters should not vote for their preferred candidate in the large electorate because they are supposed to vote only if the P term is very large, in other words, they do not vote if they know that their preferred candidate may lose.

<sup>19</sup> Political machine is that politicians give some rewards to voters in exchange for their votes (vote-buying).

of 1,920 voters in three Argentine provinces from December 2001 to January 2002, and then she used a regression model to estimate the relationship between dependent variables and independent variables.

The starting point of the problem is that politicians often give machine operatives<sup>20</sup> a small reward which is not enough to distribute among voters, so machine operatives have to decide who, among their neighbors, should and should not receive those rewards. They often classify them into three categories: *loyal* voters – those who always vote for politicians in question; *weakly* opposed voters – those who may swing their votes for politicians who give them better rewards; and *strongly* opposed voters – those who always vote against politicians in question. According to her model, machine operatives should give rewards to weakly opposed voters because they will vote the machine if they are offered rewards, and oppose the machine if they are not offered rewards. In contrast, loyal voters will vote the machine regardless of offered rewards (partisan), so politicians know this and do not waste rewards on them. Likewise, strongly opposed voters will not vote the machine even if they are offered rewards, so politicians do not waste rewards on them either.

Her model also indicates that the target of political machines (vote-buying) is 'poor voters' because according to the theory of diminishing marginal utility of income, poor voters value the rewards relatively high compared to rich voters, so the rewards generate more votes among the poor than the rich, and that people in 'small towns' are more likely to receive, and to be responsive to rewards because they often know each other very well, so it is easier for politicians to monitor them. This means that once a voter receives rewards from politicians, he or she could hardly vote otherwise or not to go vote at all, otherwise they may be punished. Interestingly, the findings confirmed her model. The probability that a wealthy Argentine person would have received a reward and was responsive to it was 0.2%, whereas the probability that a poor Argentine person would have received a reward and was responsive to it was 13%. This confirms that poor persons are more likely to have vote-buying behavior than wealthy people. In this sense people may go to vote not because the voting benefits outweigh the voting costs but because they are monitored by politicians and machine operatives; they may vote because of fears.

Stokes (2005) provides a good example of how RCT may be used to explain and predict voters' behavior in reality. The great challenge is that different political systems, cultures, history, and so on require different characteristics of RCT. In this sense to apply RCT to Thailand and other Asian countries, we need to understand specific characteristics of those countries, but this goes beyond the aim of the paper.

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<sup>20</sup> Machine operatives are people who live in a particular area and operate political machines for politicians. For example, they will get voters to the polls and get them to vote for the party, after that they will get some rewards from politicians and distribute them among their neighbors.

## Rational Choice Theory and Problems of a D term

In this section I aim to discuss the fundamental elements of rational choice theory and address problems of a D term. First of all, I would like to start by insisting that RCT here refers to substantive and objective rationality that have their origins in economics, which is so different from procedural and bounded rationality which have the origins in psychology (Vriend, 1995). Moreover, rationality must be objective, not subjective: while the former means that a decision maker can convince others that she is right in making her decisions, the latter means that others cannot convince a decision maker that she is wrong in making her decisions (Simon, 1985; Gilboa et al., 2010). For example, if one has to choose between \$10 and \$100, objective rationality predicts that every rational agent will choose \$100, but subjective rationality may say that some rational agent may choose \$10 because they may value other things than more money, and so on. I agree with Downs (1957a; 1957b) that the rationality of voter turnout does not mean that we have to take into consideration the whole personality of each individual, and 'homo politicus' just refers to the 'average man' in the electorate. Basically, rational men are those who have preferences that are complete and transitive. It has nothing to do with people's intelligence and knowledge (Fowler, 2006).

RCT is the study of human behavior by assuming that rational actors always choose 'the appropriate means for achieving some given end' (Harsanyi, 1969, p. 515). Most of the time, rational behavior is assumed to be motivated by economic self-interest, and it would be irrational to do anything against their own pleasures. I suggest that RCT should consist of 4 basic elements: (1) explicable, (2) predictable, (3) objective, and (4) self-interested. Now I will explain these 4 elements in details.

### (1) Explicable

Every RCT model should be able to explain what is going on in the real world systematically and directionally. This idea was developed by positivists and empiricists who believe that the truth can be reached through our senses and observations, and that there must be a law determining the motion of humans' behavior. At first glance, everything looks complicated and disturbed, but once a law determining the motion is discovered, everything becomes comprehensible and in order. However, we do not need to explain every action; instead, we should only explain some actions that are related to a certain goal. It is necessary to reduce multiple goals of decision-makers to a single goal, otherwise we cannot find out a certain direction of behavior that rational decision-makers should pursue. For example, we may *assume* that a politician wants to get elected, and to judge whether they are rational is to see if their action leads them to that goal. But if we do not assume a certain

goal or end, then we cannot explain or predict their behavior. Rationality here, therefore, refers to an agent's means, not an agent's ends (Downs 1957a; 1957b).

Indeed, understanding of everything means understanding of nothing; we would use the term 'understanding' only when we need to grasp some mechanisms and laws behind complicated situations, but if we know *everything* very well already, why do we need a theory in the first place? A theory is useful only if we use it as our lens or perspectives towards the disturbed world. Think about the importance of a map. When we want to go to a certain place, we would need a map that tells us the way to go there effectively. That means that a map with too many details is less desirable than a map with some important details. Anyway it does not mean that a map with too many details is untrue, but it is just ineffective to complete our certain missions (Rogers, 2006, p. 276).

In my view, even though the D term can explain the facts about voter turnout, it fails to explain behaviors in terms of economic goals. As Downs (1957s) shows an example of the difference between a political purpose and a nonpolitical purpose: if a man prefers party A for political reasons, but his wife has a tantrum whenever he fails to vote for party B, and if finally he decides to vote for party B in order to please his wife, we can say that he is rational as a husband, but irrational as a political actor. Therefore, if our model aims to explain something under a certain goal, we should not include other different goals because this makes it impossible for RCT to be established.

## (2) Predictable

Another main objective of RCT is to predict behavior, and to do so, we need to find out a law that controls that behavior or something that has a certainty in the world of uncertainty. It is unavoidable to simplify the whole facts in order to predict behaviors (Kellstedt & Whitten, 2013). It would be clearer to explain this notion by means of an example (the price mechanism theory) as follows:

$$\begin{aligned} \text{Quantity of a Commodity} &= f \\ &(\text{Prices, Preferences, Incomes, GDP, Political Situations, etc.}) \end{aligned} \quad (6)$$

According to function (6), there are many factors affecting the changes of the quantity of a commodity, but neoclassical economists hold that every factor except prices are given. We can have a certain law that controls the changes of quantity of a commodity, that is, the levels of prices. If the level of prices increases, consumers will reduce their consumption, whereas producers will boost their production, and vice versa. In contrast, if we take other factors like tastes into account rather than prices, then we are no longer able to predict the quantity as we do not know when and how consumers' tastes as a whole change.

Let's assume that we are a producer, and we have to predict the changes of the quantity, the question is what factor should we primarily take into account? Even though we know that if consumers whose the level of income increases will consume more, we cannot simply predict that the quantity will increase as a market consists of many consumers whom some of them may suffer the decreasing level of income, and some who get the increasing level of income may buy other commodities more. This does not mean that factors other than prices are irrelevant but that to predict something we need to have a certain law beforehand. I do not want to discuss this theory in details here as I rather want to show that if we take into consideration all factors, then we cannot predict behavior and the motion of certain situation.

In this sense adding the D term in the model will make it unable to predict behavior objectively and directionally as the D term is a conception of consumption, not investment. For the conception of investment, we investigate the changes of the prices rather than preferences as we can predict behavior in general without investigating individuals' preferences in particular. For the conception of consumption, we investigate the changes of individual's preferences which are very subjective and we cannot predict behavior in general because each individual has different preferences. In this sense if we add the D term in the model, then we cannot explain and predict voters' behavior in general as their preferences are known only to themselves. But if the model is a investment conception, then we can explain and predict voters' behavior in general as we do not need to look into each individual's subjective preferences but to look into objective facts such as the voting costs, the size of the electorates, and political systems.

### **(3) Objective**

To explain and predict behaviors, it is necessary that behaviors are assessed objectively, and to be objective is to assume that every individual is under the same law. A dependent variable always varies according to independent variables regardless of each individual's desire and will. According to the function (6), the demand law indicates that consumers consume more if the level of price reduces, and vice versa. However, some may argue that some consumers consume more despite the fact that the levels of price are increasing; for example, Veblen goods is a goods that someone is willing to consume more when the price is increasing in order to show off how rich he is (Veblen, 1899). Therefore, for someone, the demand curve is positive, not negative. Even though I totally accept that this can happen in the real world, I see that this fact cannot refuse the assumption of rationality because a number of such kind of people is small compared to most people, and the demand law still works very well in the present time. If we allow Veblen goods to dominate the demand rule, then we no longer could explain and predict the motion of behaviors because we do not have a particular law for average people.

Now the question is how we know if most people are compatible with the demand rule or any other mechanisms? As I mentioned, RCT does not want to say that every individual has to behave in the same way, but that on average<sup>21</sup> people would go to the same direction. We do not need to make a survey to ask people's opinions because behaviors may be unrelated to opinions/attitudes (Wilson & Nisbett, 1978; Wilson et al., 1984). Even if someone says that "the more expensive, the better," they may do the opposite when they go to the market. Behavior is the latter, not the former. To cite Friedman (1953, pp. 14-5), whether a theory is valid or not does not depend on 'realistic assumptions,' but on 'accurate predictions.' If a theory can make a correct prediction, then the theory has discovered a law determining society's behaviors. In this sense the negative demand curve still works very well. In one word, the demand rule is objective and predictable, Veblen goods is subjective and unpredictable.

When it comes to voter turnout, RCT works only if all factors determining our behaviors are objective. The D term is problematic because we cannot predict people's preferences due to their subjectivity. Someone may have higher D than that of others, and we cannot know why. This is different from the B term, the P term, and the C term in which they all can be objectively assessed.

#### **(4) Self-interested motivation**

This assumption is crucial to make RCT different from other theories. In my view, self-interest is an initial assumption of RCT without the need to prove if this assumption is true for everybody. We should assume that everyone is selfish, otherwise we could not explain and predict behaviors objectively and generally. For example, when we know that self-interested consumers consume more when prices decrease, and if we (e.g. governments) want to change people's smoking behavior, we can improve the situation by increasing the prices of cigarettes via increasing taxes. Of course, this policy may not make every individual change their behavior, but it can change 'average' people.

Importantly, we need to think about how to cope with the worst case that could happen. Let's think about the necessity of laws. Laws are created with the negative assumption that everyone is likely to harm each other (Hobbes, 1651). Again, this norm does not need to be proved in reality because laws are designed to protect against the worst case

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<sup>21</sup> "On average" here refers to two aspects: (1) most people's behaviors, and (2) everyone's behaviors in the long term. Let's take Veblen goods for example, it may be true that someone may want to buy something more when its price is increasing, but the point is that how long they can continue to do that. In other words, they may do it during a short period of time. If he cannot buy Veblen goods for the rest of their life, then Veblen goods is just a variance from the normal demand law.

that could happen. I admit that, in fact, not everyone has the nature of hostility; some are selfless and altruistic. But laws are constructed for every individual in a society, and it is impossible to distinguish between selfish and selfless people, thus it would be more effective to think about the worst case that could happen.

When it comes to economics, we need to assume that everyone is selfish because this is the worst case that could happen in terms of economics. If we hold that everyone is selfless and cooperative, why do we have to study economics in the first place? If everyone was selfless, then they would share what they possess with other people unconditionally, and we would not need to think about how to allocate resources effectively. This is why economists hold the principle of scarcity (Samuelson & Nordhaus, 1948). Of course, this does not mean that we should think that everyone is selfish. In fact, it does not matter whether people are selfish or not because we just want to make sure that we can solve problems if the worst case happens even if there is only selfish people in the world.<sup>22</sup>

However, I accept that RCT can include actions and behaviors motivated by a concern for others (altruism), but they must always be a part of their self-interest: we help other people because we hope to maximize utility from doing so. The D term is problematic because there is no valid explanation why people think that they have to vote to maintain democracy, and it is impossible that nobody votes, so why do they think that if no one votes democracy will collapse? Moreover, voting randomly is unacceptable for RCT as it is an arbitrary and unpredictable action.

When it comes to RCT of political behavior, we should also assume that everybody is selfish and does everything for themselves: a rational man should vote to maximize his utility, and he needs to think about the probability of the election outcomes. Although it is possible for people to think about the welfare of others, it is important that such an altruism must be the conception of investment, not consumption. If to get benefits for others ( $B_0$ ) has nothing to do with the probability, then this makes the model become the conception of consumption instead of investment, and it is an arbitrary action that cannot be assessed objectively; we cannot predict such kind of behavior. The D term may explain voter turnout effectively, but it cannot be added in a rational choice theory as they are based on different conceptions.

To sum up, I suggest that a D term is not added to RCT models because it fails to meet the four criteria: explicable, predictable, objective, and self-interested motivation. In this sense I agree with critics of the D term that the D term would change the nature of RCT from the conception of investment to the conception of consumption which is not the task of RCT at all. RCT is a theory of means to given ends, not a theory of tastes. We do not care

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<sup>22</sup> An example of misunderstanding of this conception, please see Alford & Hibbing (2004).



why and how one has a certain preference, but we care why and how one chooses a certain means to achieve his goals, given his preference.

## Conclusion

I have reviewed how turnout puzzle – why do some people vote while others do not? – is dealt with by seven RCT models. Despite different variables and conclusions, they all assume that each individual is a rational decision-maker who cares about their own economic interests: they vote only if their benefits outweigh their costs, otherwise they abstain. The most important problem of turnout puzzle is that while a lot of people go to vote, RCT predicts that people do not vote because voting costs outweigh voting benefit. In other words, theory fails to explain and predict voters' behaviors in reality. After Downs (1957) proposes a D term (civic duty) to solve this problem: although the voting costs outweigh the voting benefit, people who value democracy will go to vote as they want to sustain democracy, many scholars have attacked a D term as a non-RCT theory and try to provide several RCT models.

I have argued that a D term, despite it being quite reasonable, makes RCT impossible as while RCT is a conception of 'investment,' a D term is a conception of 'consumption.' The great difference between 'investment' and 'consumption' conceptions is that whereas the former holds that individuals can maximize utility only if they receive the expected results, e.g. one can maximize utility only if his preferred candidate wins the elections, the latter holds that individuals can maximize utility even if their expected results are not received, e.g. one can maximize utility by simply voting for his preferred candidate, regardless of the election outcomes. Since individuals can receive a D term simply by voting for someone, regardless of the election outcomes, a D term is the conception of consumption, not investment. The great problem of a D term is that it undermines the explanatory and predictable powers of RCT.

In terms of application, one needs to understand specific circumstances of political systems, cultures, history of countries in question: American politics and Thai politics may require different RCT models. I hope that there will be a development of the application of RCT to real politics in the future, especially to Thai politics.

## References

- Aldrich, J. H. (1993). Rational Choice and Turnout. *American Journal of Political Science*, 37(1), 246-278.
- Alford, J. R. & Hibbing, J. R. (2004). The Origin of Politics: An Evolutionary Theory of Political Behavior. *Perspectives on Politics*, 2(4), 707-723.

- Barry, B. (1970). *Sociologists, Economists and Democracy*. London: Macmillan.
- Blais, A. (2009). Turnout in Elections. In R. J. Dalton & H. D. Klingemann (Eds.), *Oxford Handbook of Political Behavior* (pp. 621-635). Oxford: Oxford University Press.
- Blais, A., Young, R., Fleung, C. & Lapp, M. (1995). Do People Vote on the Basis of Minimax Regret? *Political Research Quarterly*, 48(4), 827-836.
- Burton, R. V. (1963). The Generality of Honesty Reconsidered. *Psychological Review*, 70, 481-499.
- Downs, A. (1957a). *An Economic Theory of Democracy*. New York: Harper & Row.
- Downs, A. (1957b). An Economic Theory of Political Action in a Democracy. *Journal of Political Economy*, 65(2), 135-150.
- Feddersen, T. J. (2004). Rational Choice Theory and the Paradox of not Voting. *Journal of Economic Perspectives*, 18(1), 99-112.
- Feddersen, T. J. & Pesendorfer, W. (1996). The Swing Voter's Curse. *American Economic Review*, 86(3), 408-424.
- Ferejohn, J. A. & Fiorina, M. P. (1974). The Paradox of Not Voting: A Decision Theoretic Analysis. *American Political Science Review*, 68, 525-536.
- Fowler, J. H. (2006). Altruism and Turnout. *Journal of Politics*, 68(3), 674-683.
- Friedman, M. (1953). *Essays in Positive Economics*. Chicago: The University of Chicago Press.
- Gandhi, D. (2005). Rational Choice Theory in Political Science: Mathematically Rigorous but Flawed in Implementation. *Critique: A Worldwide Journal of Politics*, spring, 80-92.
- Geys, B. (2006). 'Rational' Theories of Voter Turnout: A Review. *Political Studies Review*, 4, 16-35.
- Gilboa, I., Maccheroni, F., Marinacci, M., & Schmeidler, D. (2010). Objective and Subjective Rationality in a Multiple Prior Model. *Econometrica*, 78(2), 755-770.
- Harsanyi, J. C. (1969). Rational-Choice Models of Political Behavior vs. Functionalist and Conformist Theories. *World Politics*, 21(4), 513-38.
- Hausman, D. M. & McPherson, M.S. (1996). *Economic Analysis, Moral Philosophy, and Public Policy* (2<sup>nd</sup> ed.). Cambridge: Cambridge University Press.
- Hobbes, T. (1651). *Leviathan*. J. C. A. Gaskin (Ed). Oxford: Oxford University Press, 2008.
- Hodgson, G. M. (2012). On the Limits of Rational Choice Theory. *Economic Thought*, 1, 94-108.
- Jacobson, G. C. and Kernell, S. (1983). *Strategy and Choice in Congressional Elections*. New Haven: Yale University Press.
- Kellstedt, P. M. and Whitten, G. D. (2013). *The Fundamentals of Political Science Research* (2<sup>nd</sup> ed.). Cambridge: Cambridge University Press.

- Kinder, D. R. and Kiewiet, D. R. (1981). Sociotropic Politics: The American Case. *British Journal of Political Science*, 11(2), 129-161.
- Moe, T. M. (1980). A Calculus of Group Membership. *American Journal of Political Science*, 24(4), 593-632.
- Nathan, A. J. (2007). Political Culture and Diffuse Regime Support in Asia. *Globalbarometer*, Working Paper Series, 43.
- Olson, M. (1965). *The Logic of Collective Action: Public Goods and the Theory of Group*. Cambridge, MA: Harvard University Press.
- Petracca, M. P. (1991). The Rational Choice Approach to Politics: A Challenge to Democratic Theory. *The Review of Politics*, 53(2), 289-319.
- Riker, W. H. & Ordeshook, P. C. (1968). A Theory of the Calculus of Voting. *American Political Science Review*, 62(1), 25-42.
- Rogers, J. R. (2006). Appendix: A Primer on Game Theory. In J. R. Rogers, R. B. Flemming & J. R. Bond (Eds. ). *Institutional Games and the U. S. Supreme Court: Constitutionalism and Democracy* (pp. 275-296). London: University of Virginia Press.
- Samuelson, P. A. & Nordhaus, W. D. (1948). *Economics* (19<sup>th</sup> ed.). New York: McGraw-Hill Education, 2009.
- Simon, H. A. (1985). Human Nature in Politics: The Dialogue of Psychology with Political Science. *American Political Science Review*, 79(2), 293-304.
- Stegmueller, D. (2013). Religion and Redistributive Voting in Western Europe. *Journal of Politics*, 75(4), 1064-1076.
- Stokes, S. C. (2005). Perverse Accountability: A Formal Model of Machine Politics with Evidence from Argentina. *American Political Science Review*, 99(3), 315-325.
- Tullock, G. (1967). *Towards a Mathematics of Politics*. Ann Arbor: University of Michigan Press.
- Veblen, T. B. (1899). *The Theory of the Leisure Class: An Economic Study of Institutions*. London: Macmillan Publishers.
- Vriend, N. J. (1995). Rational Behavior and Economic Theory. *Journal of Economic Behavior and Organization*, 29, 263-285.
- Wandling, R. A. (2011). Rationality and Rational Choice. In J. T. Ishiyama & M. B. Breawing (Eds.). *21st Century Political Science: A Reference Handbook* (pp. 3-42). London: SAGE Publications.
- Wilson, T. D. & Nisbett, R.E. (1978). The Accuracy of Verbal Reports about the Effects of Stimuli on Evaluations and Behavior. *Social Psychology*, 41(2), 118-131.

Wilson, T. D., Dunn, D.S., Bybee, J.A., Hyman, D.B. & Rotondo, J.A. (1984). Effects of Analyzing Reasons on Attitude-Behavior Consistency. *Journal of Personality and Social Psychology*, 47(1), 5-16.

Wolfinger, R. E. & Rosenstone, S. J. (1980). *Who Votes?* New Haven: Yale University Press.