

Game theory and its application on vote trading in the United States of America

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Abstract

Objective: To showcase that vote trading for both dominant party voters such as the republicans and individual candidate voters is a tool that can alter the outcomes of the presidential elections in the USA.

Methods: The concept of game theory has been implemented to show voter behaviour between dominant party voters and individual candidate voters. Game theory in this case outlines the various combinations of actions and outcomes that will take place on election day between these two sets of voters and eliminates the unfavourable combinations and brings out the most viable and lucrative option for both groups of voters.

Findings: This paper successfully concludes that vote trading is an essential tool and process that will aid in the winning of Presidential elections for the dominant political parties such as the republicans or the democrats. More exclusively, the paper finds that vote trading is also one of the finer methods for political parties to capture swing states on Election Day, allowing them a better chance - according to statistical analysis of US presidential election winners - to win the entirety of the election. The conclusiveness of this finding via elimination of alternative actions further strengthens the need to bring vote trading as a practice behind which strong legislation should be put forth to facilitate the flowing of votes in the interests of supply and demand.

Applications: The findings of this paper can be applied in furthering the need of making vote trading a legally recognized political process.

Keywords: Game theory; presidential election; vote trading.

1. Introduction

At the outset, one must first understand the very concepts that go behind the election process of the United States as well as the nature of the system at large. In the United States, states are divided into three types every four years as a new presidential election is about to begin. The first of the three are regular states (RS), the second are swing states (SS), and the third are dominant states (DS). To simplify the understanding of the three types we can say:

1. **Regular states (RS):** These are states where no party or candidate that is running in the presidential election has a clear majority of votes in the said state.
2. **Swing states (SS):** These are states where the entirety of the state is divided between two majority parties (for example: the Republicans and the Democrats) and the state's voters could 'Swing' between voting for either party. Swing states are considered prime in winning the elections and statistical trends over the years have shown that parties and candidates that win swing states are more likely to win the entire election.
3. **Dominant states (DS):** These are states where one party has a clear majority and is bound to win the state's votes irrespective of any change in the political climate. Either the Democrats or the Republicans are expected to win the state in terms of votes - even if they had their hands 'Tied behind their backs' so to speak.
4. **Individual candidate (IC).** This candidate runs for the elections alongside the two dominant parties - the Republicans and Democrats and contests in the Electoral College the same way the other candidates do. For the purpose of this paper, I will be excluding the participation of voters in regular states and will be solely looking at how voters of dominant parties in dominant states and voters of individual candidates in swing states behave with each other when the time of voting arises. Moreover, this paper will be looking in to how the tool of vote trading can prove to be essential for any dominant state party to win the entirety of the election via the concept of game theory.

2. Nature and process

To begin, two variables need to be considered - i. A voter of an individual candidate who is residing in a swing state and, ii. A voter of a dominant state party such as the Republicans or the Democrats residing in the dominant state. These two variables are taken into consideration as this paper involves the interaction between these two voters and how and why 'Vote trading' or the exchanging of one vote for the other is essential to create a win-win [1] situation for both voters.

As the broad components of the election have been covered, one must now look at the very nature or rules and regulations of the election process in the United States of America:

The election process of the USA is based on the Electoral College [2] - a system which was first introduced in 1787. The Electoral College allows for the process of voting for 'Electors' via a two part process:

1. Political parties such as the Republicans and the Democrats will select a slate of electors at gatherings and meetings prior to Election Day. These people are primarily those that have a particular affiliation to either the party as a whole or to the presidential candidate.
2. Election Day citizens vote for their electors via casting a ballot for the presidential candidate of their choice. Upon casting a vote for the presidential candidate of their choice, they are indirectly choosing their state's electors if the candidate of their choice wins.

Once the process of choosing electors [3] has been completed, on Election Day electors are to vote for the presidential candidate of their state's choice and cast ballots for a presidential and vice presidential candidate - the two candidates come as a pair for example - Donald J. Trump and Mike Pence. The pair of candidates that gains the maximum number of votes in each state is elected as the President and Vice President of the United States of America, respectively.

3. Vote trading and game theory application

Now that the process of elections in the United States has been broadly outlined, one can now focus on what this paper hopes to bring out, that is, why a voter of a dominant party (*based in a DS that his/her party dominates*) should trade votes with a voter of an individual candidate (*based in a SS*) to successfully win the election. A question here may arise as to how this benefits the voter of the IC as well as the voter of the dominant Party. To answer this, it is the policy in the united states constitution that allows an IC access to federal funding [4] for the next term of elections if the IC manages to garner 5 per cent of the popular vote and as stated before, if swing states are won by the dominant party, the party has a greater chance of winning the entirety of the election. Therefore, this incentivises the voter of the IC to trade votes with the voter of the dominant party and vice-versa.

The phenomenon of trading votes is very simple - one voter votes for the party or candidate of another voter and the other voter votes for the party or candidate of the first voter. The concept of game theory can be applied to this and in specific to the thesis of this paper. In many aspects, game theory is "The study of human conflict and cooperation within a competitive situation" [5]. This essentially means that in such a tight and competitive situation such as the Election Day, game theory can show why the 'Best possible outcome can be brought about with the best combination of actions' - the best combination of actions being the trading of votes between the aforementioned voters. This can be further elaborated via a 3x3 matrix that provides the various 'Combination of actions' and their outcomes which prove why trading of votes is the best action to be taken if the dominant party hopes to win the election.

A - Voter of the dominant party (based in the dominant state)

B - Voter of the individual candidate (based in the swing state)

As seen in Table 1, the other six combinations of actions that could possibly take place, do not create an environment where both voters are benefiting (*It is assumed that no one combination of IC and dominant party voters will abstain from voting at the same time. Only one voter may abstain between the two. If both voters were to abstain from voting then the entire election process becomes non-existent*).

Table 1. Combinations of unfavourable actions and outcomes

A votes for his party in the SS - no future Presidential campaign, no winning of the SS	B votes for his candidate in the DS - no funded Presidential campaign, no winning of the SS	A votes for the IC and B votes for the IC - funded Presidential campaign, no winning of the SS
A votes for the Regular State Party, B votes for the Dominant State Party - no funded Presidential campaign, winning of the SS by Dominant State Party	A votes for B 's candidate, but B abstains from voting - Dominant State Party has lesser chance of winning SS, funded Presidential campaign	B votes for A 's party, but A abstains from voting - Dominant State Party has better chance of winning SS, no funded Presidential campaign

In this way, vote trading is the best option and allows for both parties to succeed in furthering each of their candidates' political careers. Game theory outlines how without vote trading, the voters would not benefit and would create either a win-lose lose-win or lose-lose situation. As neither of the aforementioned models is preferred, a win-win situation is inevitable, and vote trading is the key factor to achieving that outcome.

Since more and more votes are traded in this fashion, two prominent results come to the forefront:

1. The dominant party in the DS has a better chance of contesting the SS and can possibly win it.
2. The losing IC in the SS has a better chance of winning 5 per cent of the popular vote and therefore has access to a federally funded campaign next term.

4. Conclusion

This occurrence of vote trading has been one that originated first in the compromise of 1970 and has picked up popularity in the succeeding presidential elections as recent as the November 2016 presidential elections between Donald J. Trump and Hilary Clinton. Although vote trading has gained a certain amount of vogue, ethical considerations have always been in question. Primarily, specialists of ethical study have stated that "Vote trading is often considered immoral, since votes should be determined on the basis of the merits in question". However, many consider vote trading to be morally correct and a process of overthrowing the 'Tyranny of the majority' as it allows for minorities to bring into play a certain level of influence over the electoral process. Moreover, there have been ideas brought forth to allow for a legalized system - a market of sorts wherein votes could be exchanged based on need and availability.

5. References

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The Publication fee is defrayed by Indian Society for Education and Environment (www.iseeadyar.org)

Cite this article as:

Mihir Parekh. Game theory and its application on vote trading in the United States of America. *Indian Journal of Economics and Development*. Vol 5 (11), November 2017.