Activity: Voter Participation
Econ 305

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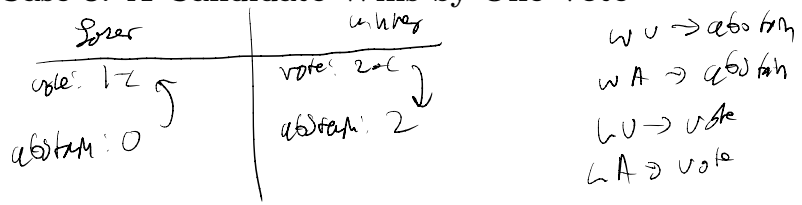
Two candidates, Joe and Donald, compete in a national Presidential election. Of the 200 million registered voters in the U.S., 100 million support Joe and 100 million support Donald. Each citizen decides whether to vote, at a cost, for the candidate she supports, or to abstain. A citizen who abstains receives a payoff of 2 if the candidate she supports wins, 1 if this candidate ties, and 0 if this candidate loses. A citizen who votes receives the payoffs $2-c$, $1-c$, and $-c$ in these three cases, where $0 < c < 1$. Find the (pure strategy) Nash equilibria.

We can do this by considering different types of strategy profiles. For each case, we need to check whether or not any single citizen has an incentive to deviate to another strategy, given the strategies of all other citizens. If not, we have a Nash equilibrium.

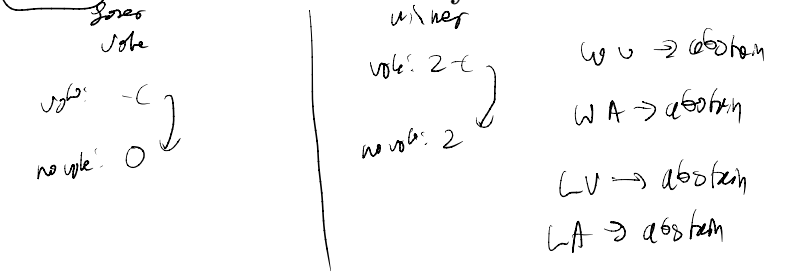
Case 1: All Citizens Vote

Case 2: Not All Citizens Vote; the Candidates Tie

Case 3: A Candidate Wins by One Vote



Case 4: A Candidate Wins by at Least Two Votes ← stable solution



Bonus: Suppose that Joe has more supporters than Donald. What are the (pure strategy) Nash equilibria of this game?

Hint: Let n_J be the number of people who vote for Joe and n_D be the number of people who vote for Donald. Also, denote the number of Donald's supporters by $k < 100$ million. Proceed in cases as before.

There is no pure strategy nash equilibrium