Economics 220, January 2022 **Your Name:** Dhyey Dharmendrakumar Mavani
Homework 13

In order to encourage firms to invest in adopting new low-emissions technologies, a government offers subsidies to firms that adopt these methods. However, the firms' willingness to adopt the new technologies is dependent on the subsidies continuing over a period of time. The government may not be able to constrain future governments to continue the subsidy program after the necessary investments have been made.

If the government and firms were to make their decisions simultaneously, the payoffs would be as follows:

		Government: Continue subsidy	Government: Discontinue subsidy
Firms	Invest	70, 50	40, 70
	Don't invest	50, 30	50, 35

dominant strategy

best response

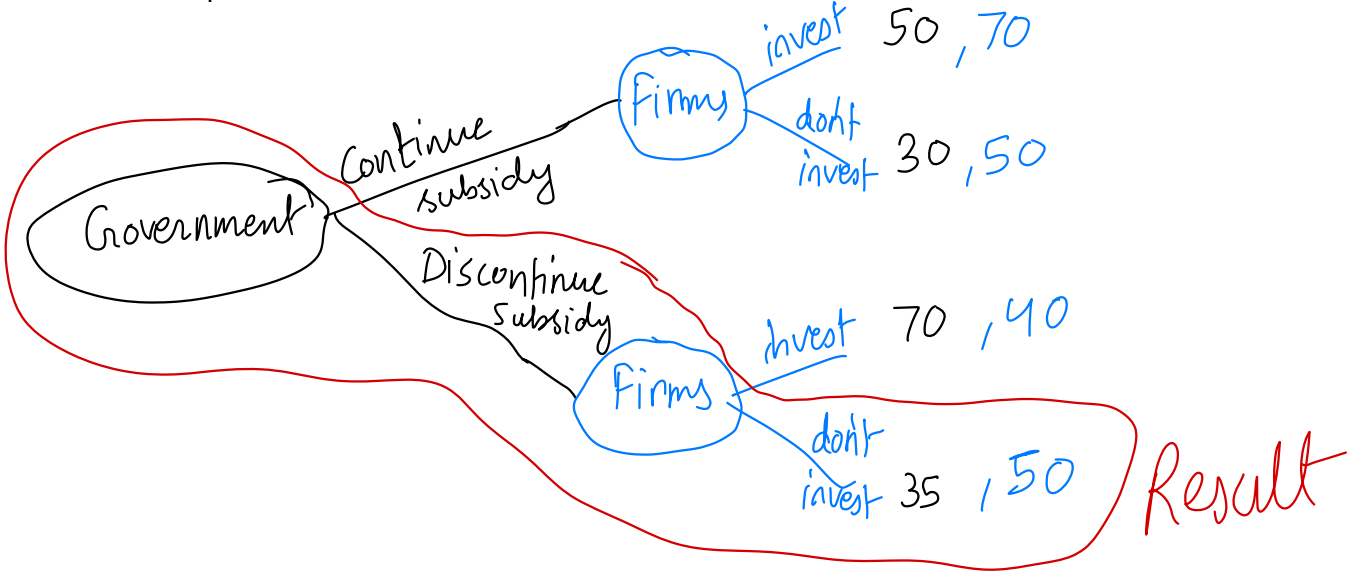
only nash equilibrium

(payoffs: Firms, Government)

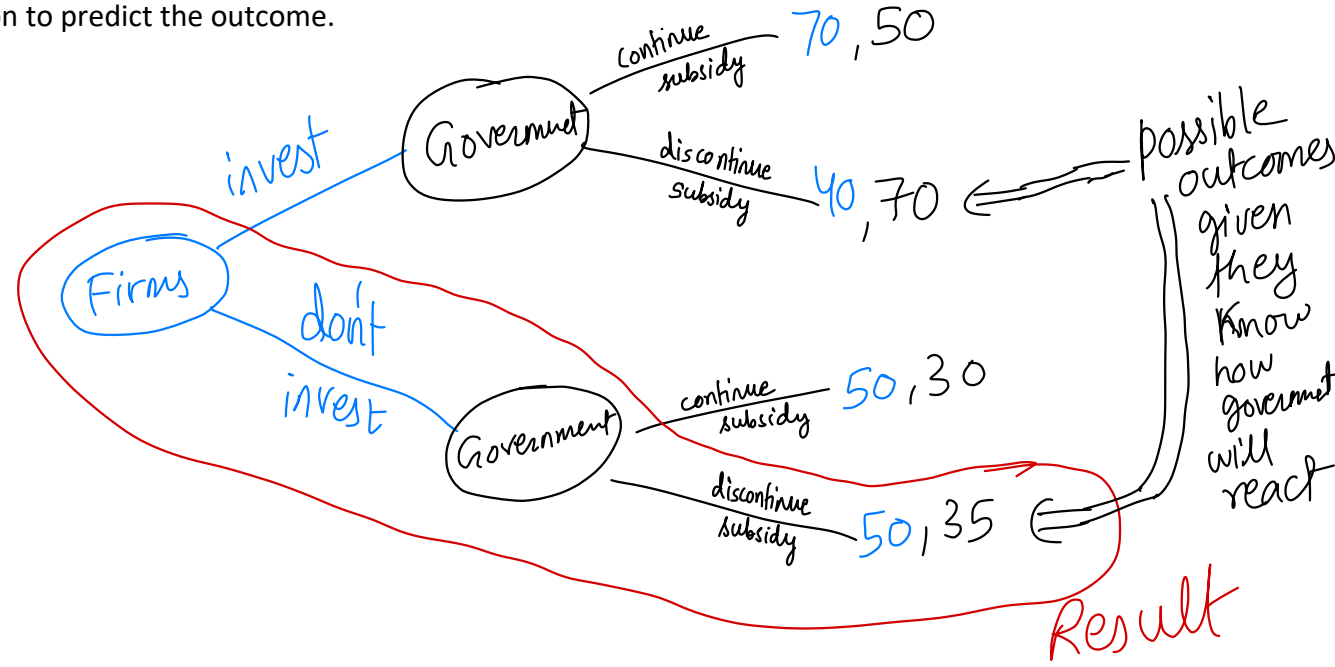
What is/are the Nash equilibria of this game assuming both players move simultaneously?

If both move simultaneously, the Government's dominant strategy is to Discontinue subsidy and Firm's best response is Don't invest. So, nash eqm is (50,35) ≡ [Firm's don't invest, government discontinue subsidy]

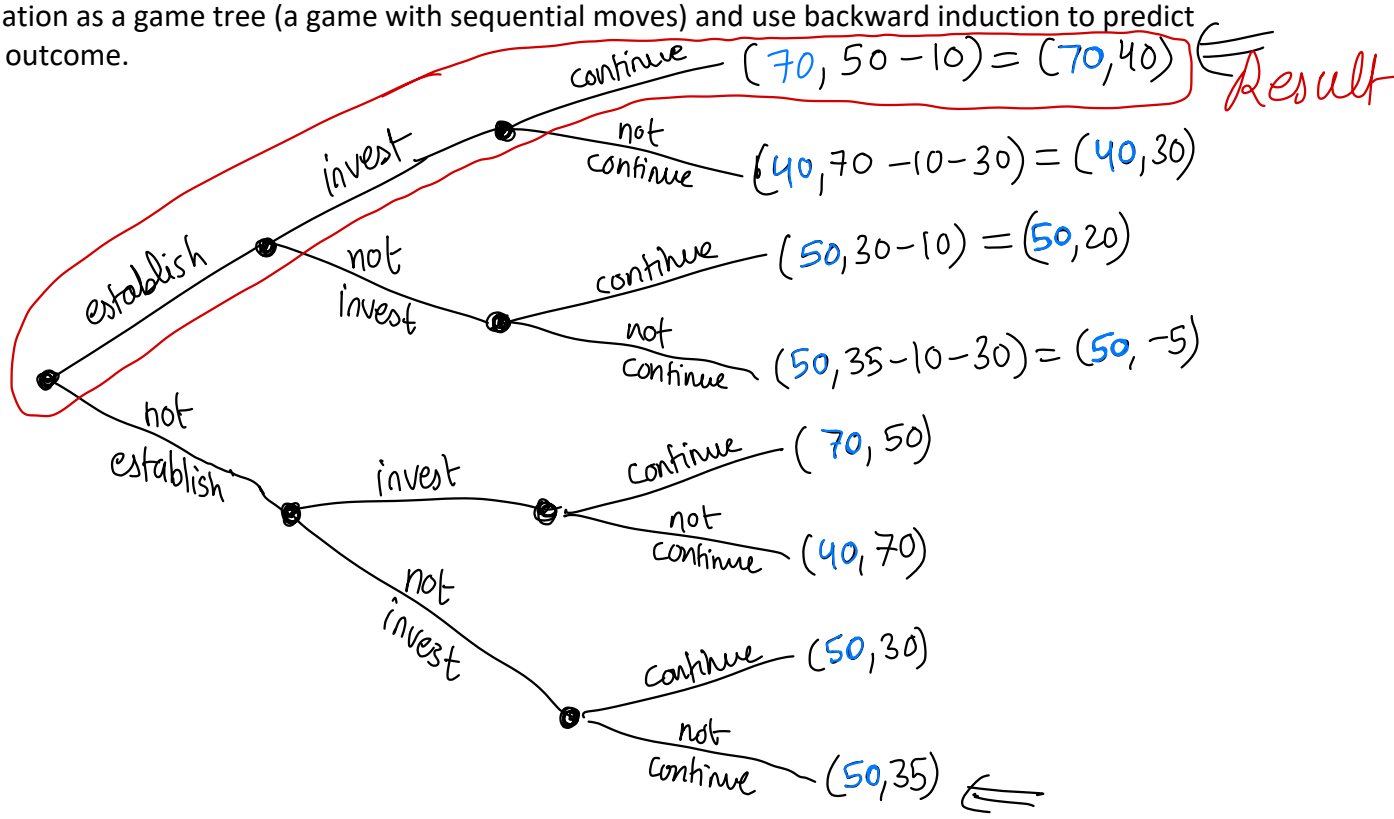
Suppose the government moves first – in other words, the government can credibly commit. Represent this situation as a game tree (a game with sequential moves) and use backward induction to predict the outcome.



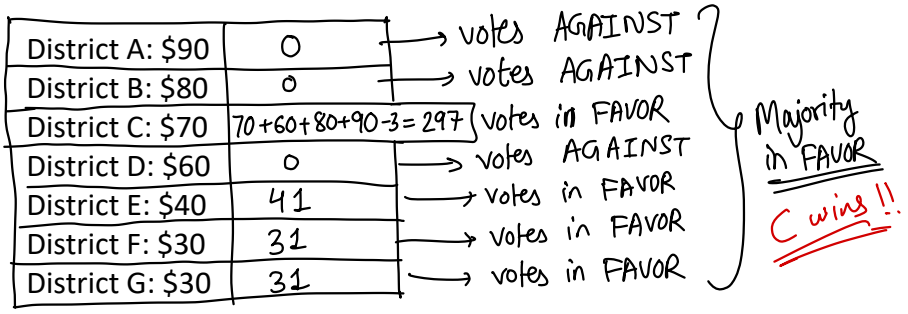
Suppose the government cannot credibly commit. In other words, Industry must first choose whether to invest, and then the government will choose whether to continue the subsidy. Represent this situation as a game tree (a game with sequential moves) and use backward induction to predict the outcome.



Suppose the government cannot credibly commit. In other words, Industry must first choose whether to invest, and then the government will choose whether to continue the subsidy. However, suppose that before industry moves, at a cost of 10, the government can create a permanent government agency to disburse subsidies. Once established, abolishing the agency would be politically costly; it would lower the government's payoff by 30. Formulate this situation as a game tree (a game with sequential moves) and use backward induction to predict the outcome.



A legislature has seven legislators, representing districts A, B, C, D, E, F and G. A spending bill is under consideration that would allocate a total of $400 spending to each district, as follows:



Legislator C has the opportunity to propose an amendment to the spending bill that would reallocate the $400 differently among the seven districts. To pass, the amendment must obtain the support of a majority (at least four votes). Assume that spending allocations must be in whole dollar amounts, and that legislators will vote against the amendment unless they strictly prefer it to the status quo. What proposal will C make in order to maximize the benefits for her own district?

C would first find the Districts which gets the least amount of money initially because it would be easier and more cost efficient to convince them to favor C's amendment.

So, C would distribute the money as mentioned in the above table by thus maximizing the benefits for her own district.