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The Best Response Algorithm

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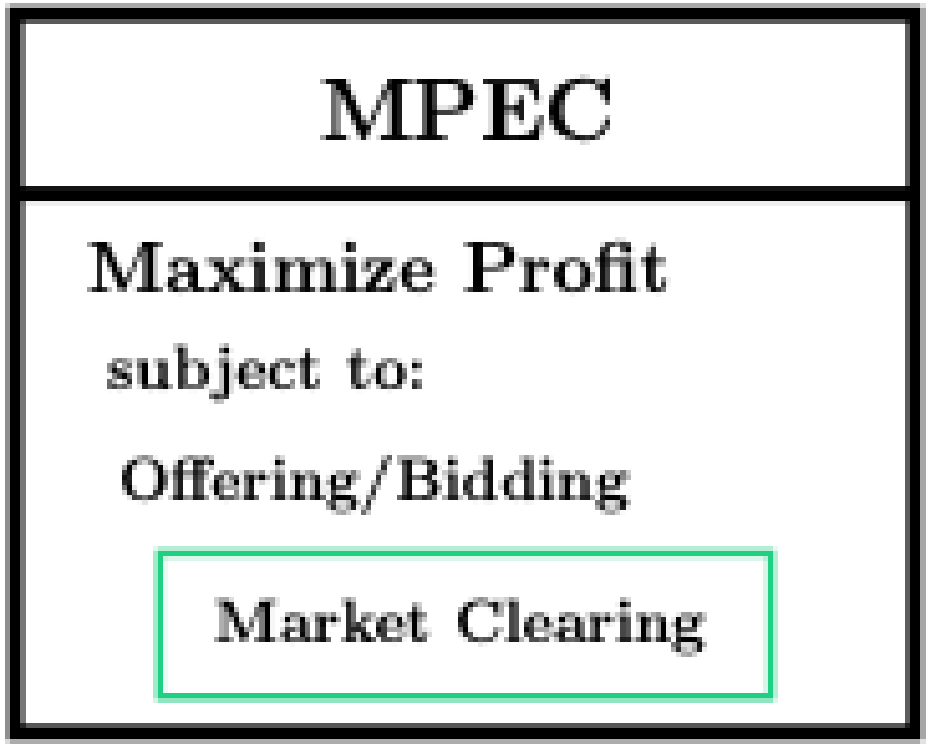
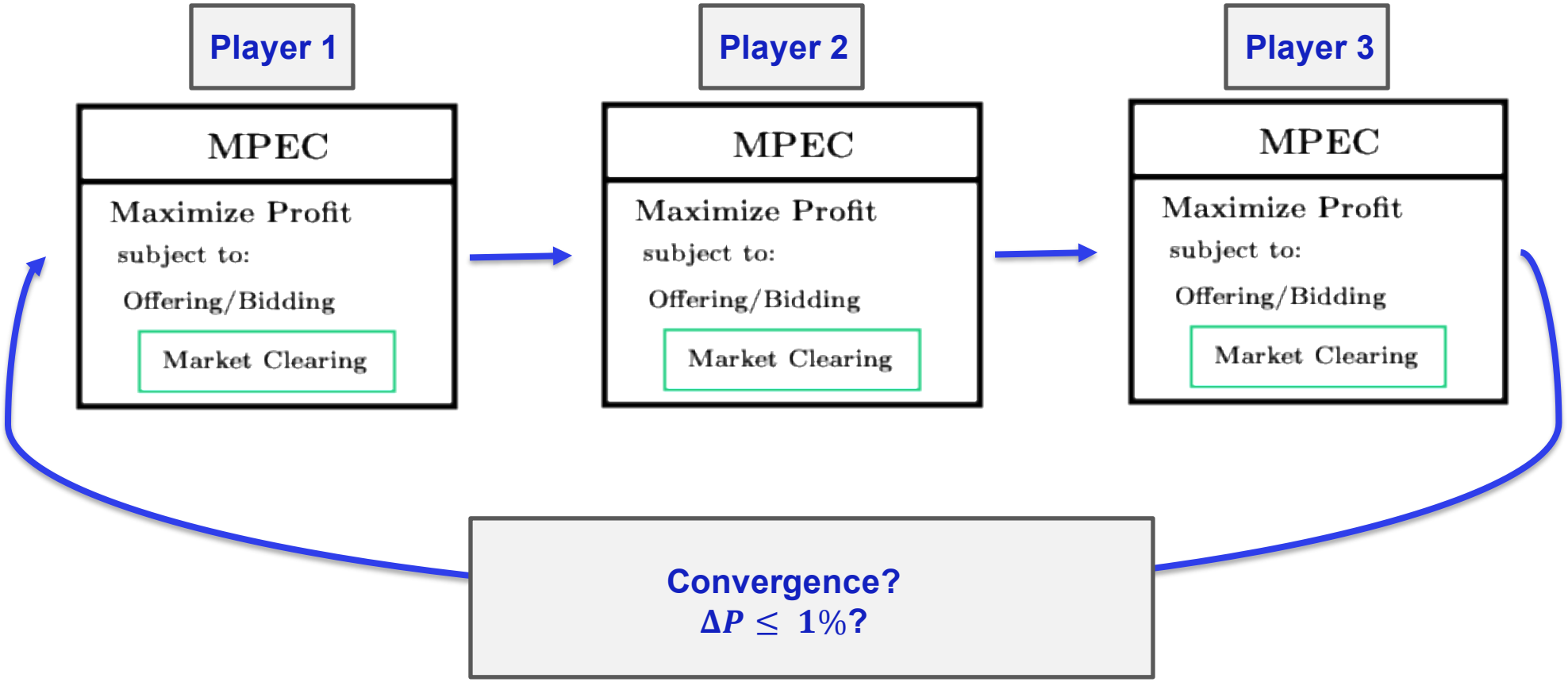
The MPEC

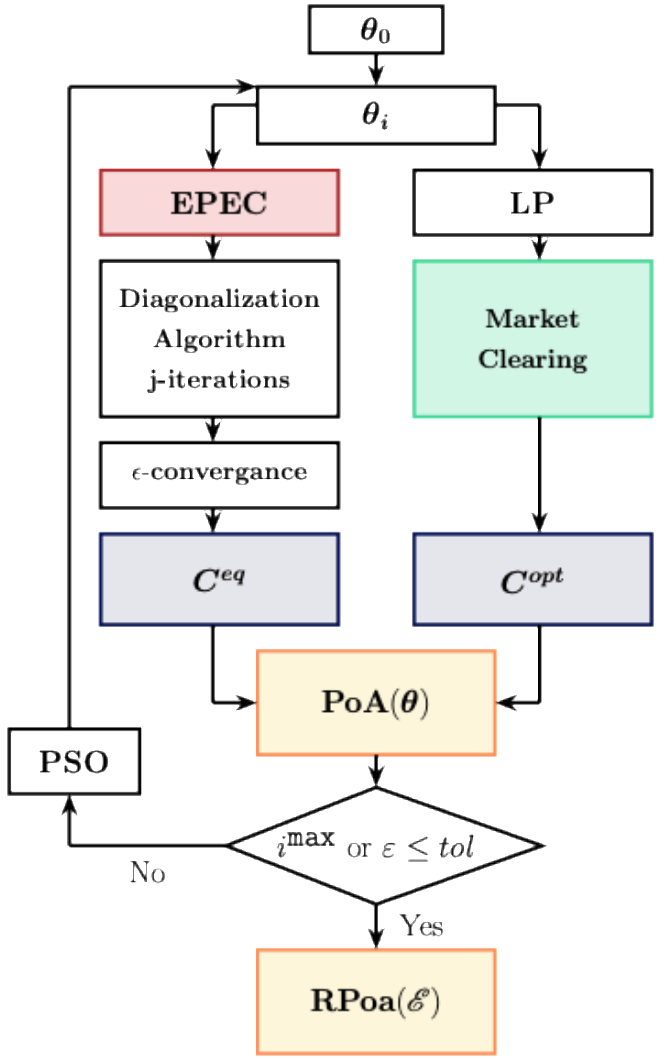


https://corporatefinanceinstitute.com/resources/economics/prisoners-dilemma/

The Best Response Algorithm



RPoA over the discretized search space



Diagonalization Algorithm == Best Response

Exercise

- Consider 3 players, with 1 generator each.
- Consider a range of possible cost range(minFuelCost, maxFuelCost) for each player.
- Discretize each range in S segments. Keep it to 2 segments so the search space is not to large.
- For every combination SxSxS run the BR algorithm. Use convergence based on profit or a number of max iterations.
- For every combination clear the market at true costs.
- Calculate the PoA of the SxSxS space.
- Generalize the previous in a python function where you can pass the number of players, the range of fuel cost of each player, and the number of segments for discretatization.
- What do you see when you increase the number of players?
- What about when the discretization is finer?
- Can you even compute all the combinations?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