8. Oligopoly

ECON1101 • KC Notes

8.0 Oligopolies

- **Oligopoly** features a small number of firms with **strategic interactions between them**
    - Economists use game theory
    - **Simultaneous Game**: players move simultaneously and are unaware of other's actions

8.1 Entry Game

- Construct a **table of payoffs**. If they exit/don't enter, they will get 0 profit.

	Entry	**No Entry**
Stay	8, **-2**	10, **0**
Exit	0, **10**	0, **0**

- **Dominant Strategy**: a strategy preferred by a player irrespective of the other's choice
    - Black's dominant strategy is to **stay** – they will get $8 or $10 billion if they stay, and 0 if they exit.
    - Blue does not have a dominant strategy – it could get -2 or 10 when entering. However, we can **anticipate Black to stay** – so we don't enter the market
    - **Iterated elimination of dominated strategies**: removing strategies that are not dominant (in this case, all strategies involving Black exiting)
- **Strategy Profile**: a set of strategies, e.g. (Entry, Stay), (Entry, Exit), (No Entry, Stay), (No Entry, Exit)

8.2 Prisoner's Dilemma Game

- **Prisoner's Dilemma**: firms decide to not cooperate, even though doing so will be beneficial to both
- Construct a **table of payoffs**.

	Advertising	**No advertising**
Advertising	80, **80**	120, **50**
No advertising	50, **120**	100, **100**

- Black's dominant strategy is to **advertise** – regardless of whether blue advertises or not they will get more profit
- Blue's dominant strategy similarly is to **advertise**
- This is not Pareto optimal and Invisible Hand Principle fails – both would be better off without advertising (if they collaborated)

8.3 Cartel Game

- **Cartel**: private agreements aimed at increasing profit by reducing competition
- Often prohibited under competition law to ensure consumers are charged lowest prices
- Like 8.2, both will cut prices as that is their dominant strategy

	Price cut	**No price cut**
Price cut	150, **150**	300, **100**
No price cut	100, **300**	200, **200**

8.4 Coordination Game

- **Coordination Game**: situations where players benefit from coordinating their decisions
- Here, payoffs are measured in utils.
- Note that there is **no dominant strategies** – Blue would not go to the theatre unless Black also does.

	Theatre	**Stadium**
Theatre	20, **10**	0, **0**
Stadium	0, **0**	2, **15**

- **Nash Equilibrium**: strategy profile where **no player can benefit from unilaterally changing their strategy**
    - (Theatre, Theatre) and (Stadium, Stadium) are the two Nash equilibria – if Black or Blue changes decisions the will experience 0 utils.