"Split or Steal" in Golden Balls

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February 20, 2018

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- Golden Ball was a British TV game show during 2007 - 2009. At the last phase of the game - known as "Split or Steal", a procedure to allocate a certain amount of money between the players is used
  - Both players simultaneously choose a ball placed in front of them. Inside, one is printed with "Split" and the other one is printed with "Steal"
  - If both players choose *Split*, they divide the money; if one chooses *Split* while the other chooses *Steal*, the one who chooses *Steal* gets all the money while the other gets nothing; if both choose *Steal*, each one gets nothing
  - An example is illustrated in the following table

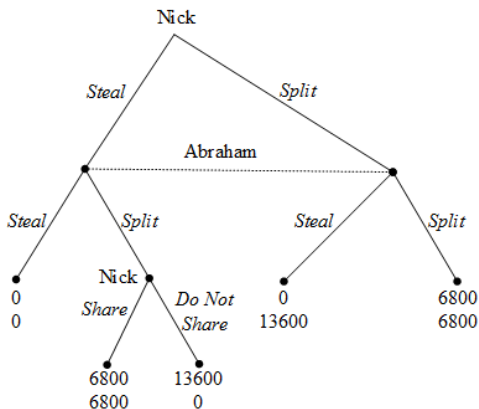|		Nick	
		Split	*Steal*
Abraham	*Split*	6800, 6800	0, 13600
	Steal	13600, 0	0, 0

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- You can verify that *Steal* weakly dominates *Split* for both Abraham and Nick.
- We can also find 3 pure strategy Nash equilibria in this game, namely (*Steal*, *Split*), (*Split*, *Steal*), and (*Steal*, *Steal*).
- The following matrix underlines best response payoffs:

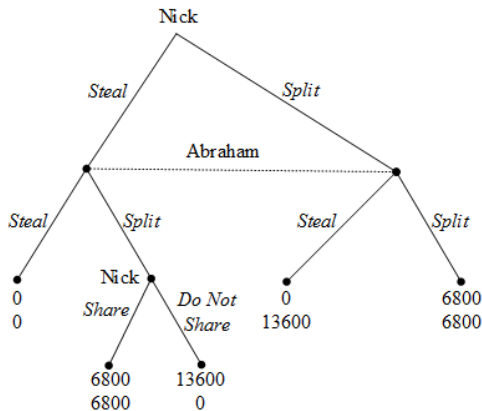|		Nick	
		Split	*Steal*
Abraham	*Split*	6800, 6800	0, <u>13600</u>
	Steal	<u>13600</u>, <u>0</u>	<u>0</u>, <u>0</u>

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- Nick comes up with a surprising proposal:
  - "Abraham, I want you to trust me 100%. I'm going to pick the steal ball. I want you to do split and I promise you that I will split the money with you."

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- Abraham is taken aback and attempts to convince Nick that they should both choose the split ball. After referring to Nick as an idiot whose plan would yield nothing to both of them, Nick finally consents.
- As a result, they both choose *Split* and divide the money.

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- One possible explanation is that Nick was trying to alter the situation in the eyes of Abraham...
  - so that *Steal* no longer weakly dominates *Split*, as illustrated in the following matrix.

		Nick			
		Split/ Share	*Split/ Do not share*	*Steal/ Share*	*Steal/ Do not share*
Abraham	*Split*	6800, 6800	6800, 6800	6800, 6800	0, 13600
	Steal	13600, 0	13600, 0	0, 0	0, 0

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- As you can see from the strategy pairs, *Steal* no longer dominates *Split* for Abraham because:
  - when Nick chooses *Steal/Share*, Abraham is strictly better off when he chooses *Split* than when he chooses *Steal*.
- But this is not a strictly dominating strategy because for Nick as *Steal/Do not share* strictly dominates *Steal/Share*.
- Nick's plan was not to steal and share the proceeds.
  - Instead to give Abraham a reason for choosing *Split*...
  - so that Nick could feel comfortable in choosing *Split*