

1. Rothschild's fortune) Before the battle of Waterloo, Nathan Rothschild sent messengers with pigeons to Belgium. Thanks to them, he was the first man in London to know the outcome of the battle with Napoleon. Armed with his information, he could decide whether to buy or to sell British war consoles (government bonds). The rest of the Market knew about his private information. They also could observe his decision and react accordingly. The actions of Mr. Rothschild (who moves first) are in the rows, the actions of the rest of the Market are in the columns

Wellington wins	Buy _M	Sell _M	Napoleon wins	Buy _M	Sell _M
Buy _R	1,1	3,-3	Buy _R	-1,-1	-3,3
Sell _R	-3,3	-1,-1	Sell _R	3,-3	1,1

- (a) Is there an equilibrium in which Mr. Rothschild follows his knowledge (i.e., buy British consoles in case of victory and sells them if Wellington loses?)

Solutions: Rothschild following his knowledge is strictly dominant strategy for him. As a best response, the Market will do the same as Rothschild.

- (b) Is there an equilibrium, where Mr. Rothschild always buys? Be careful about the off-path beliefs.

Solutions: No. Following knowledge is strictly dominant.

2. (Entry) Consider the entry game from the class, but with $\frac{1}{9}(a-c)^2 < f_l < \frac{1}{4}(a-c)^2 < f_h$ and such that $Ef < \frac{1}{4}(a-c)^2$.

- (a) Can the Incumbent's strategy "Always Enter_I" be ever played in equilibrium?

Solutions: No because Out is strictly dominant for the high cost Incumbent.

- (b) Check whether "Always Out_I" and "Always Enter_C" is a (wpBE) equilibrium. Carefully explain the off-path beliefs.

Solutions: If the Challenger Always Enters, then Always Out is a best response for each type of the Incumbent (even the low fixed cost is higher than the Cournot profits). Because $Ef < \frac{1}{4}(a-c)^2$, the Challenger who did not learn anything will enter if she is alone. However, because even the lowest costs are higher than the Cournot payoffs, the Challenger will not enter if the Incumbent enters. Hence, Always Enter is not a best response after the (off-path) history in which the Incumbent entered.

- (c) Is there a separating equilibrium in this game?

Solutions: The incumbent plays Enter when low cost and the Challenger plays Always Out.