Session 1.2
Upstream versus Downstream Rivalry

This session gives another example of the strategic form and how to find a pure strategy Nash equilibrium, or NE for short. To some extent firms don't just compete *horizontally*, but also *vertically*. This example is a simple illustration of the strategic issues that can arise.

Competition through integration

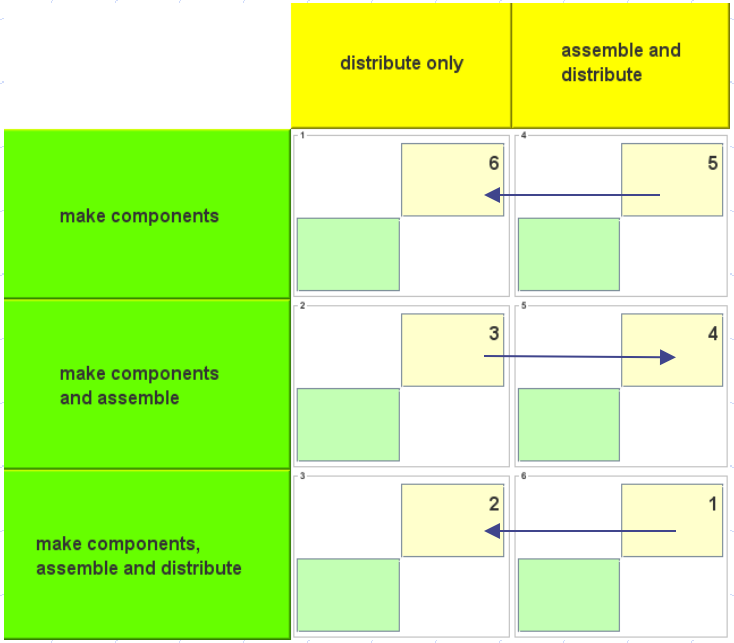
- In this game, a specialized supplier of components for a durable good has the option of integrating downstream.
- For example the supplier could start its own dealerships.
- A retailer who markets the good could integrate upstream and produce its own store brand.

- The supplier's profits are higher if the retailer only distributes.
- The more integrated the supplier, the lower the retailer's profits.

Best replies of the retailer

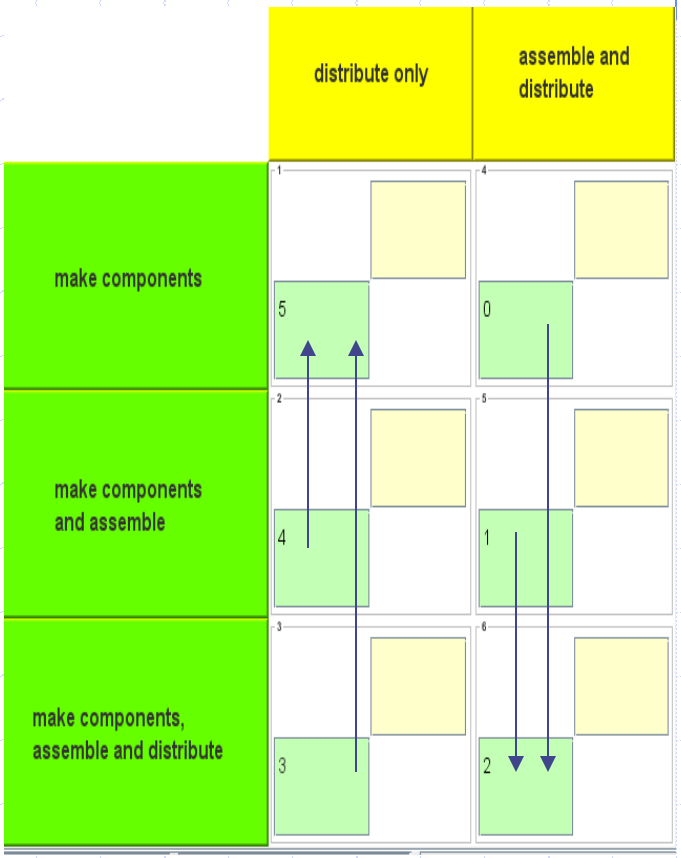
- If the supplier assembles but does not distribute, then the retailer should also integrate upstream, and assemble too.
- Otherwise the most profitable course of action of the retailer is to focus on distribution.

- The arrows indicate the best replies of the retailer.
- Notice the retailer's best reply depends on the supplier's strategy.



Best replies of the supplier

- If the retailer integrates upstream, the supplier makes higher profits by undertaking more downstream integration, to avoid being squeezed.
- If the retailer confines itself to distribution, then the best reply of the supplier is to focus on its core competency, and only produce component parts.
- The arrows show the supplier's best replies.
- Even though the middle strategy is never a best reply it is never the worst strategy either.

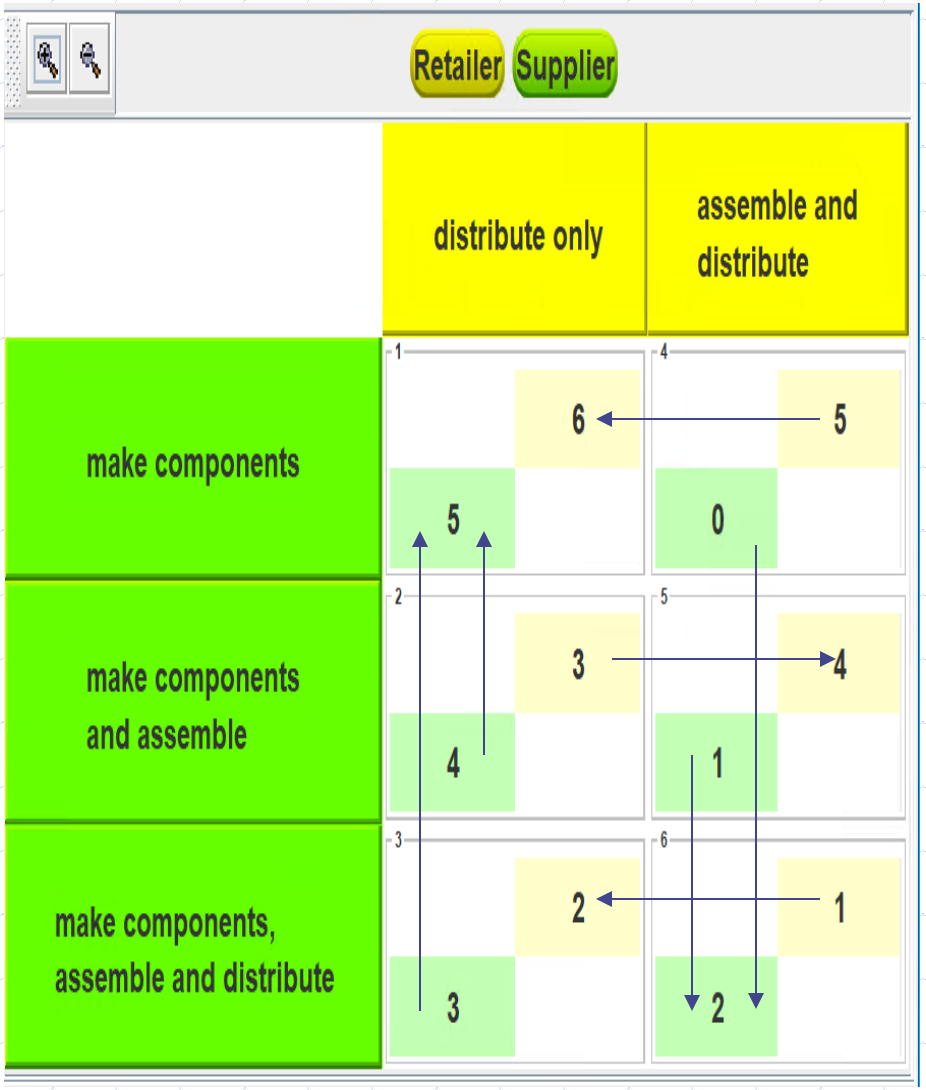


NE for integration game

- The NE is (make components, distribute only), with payoffs is (5,6).
- To verify this claim, note that if the retailer chooses to distribute only by moving Left, the best reply of the supplier is to only make components, by moving Up.
- Similarly if the supplier moves to Up, then the best reply of the retailer is to move Left.
- By inspecting the other cells one can check there is no other NE in this game.
- In this game the NE is unique.

NE illustrated

- Only at the NE are there no arrows leading out of the box.
- This is a defining characteristic of NE, and provides a quick way of locating them all in a matrix form game.



A chain of conjectures

The NE is supported by a chain of conjectures each player might hold about the other. Suppose:

S, the Supplier, thinks that R, the Retailer, plays Left

=> S plays Up;

R thinks that "S thinks that R plays Left"

=> R thinks that "S plays Up"

=> R plays Left;

S thinks that "R thinks that S thinks that R plays Left"

=> S thinks that "R plays Left"

=> S plays Up;

and so on.