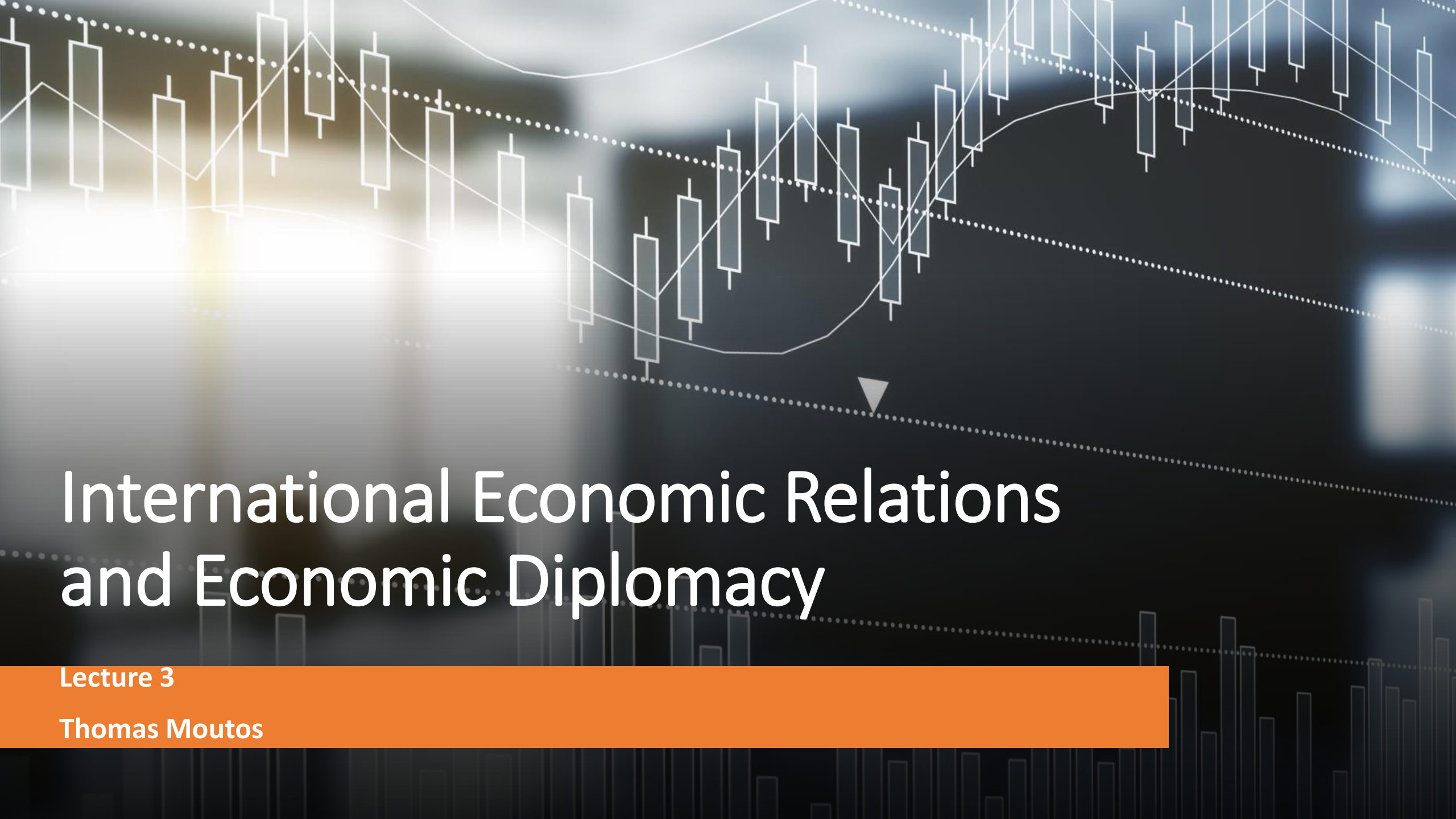
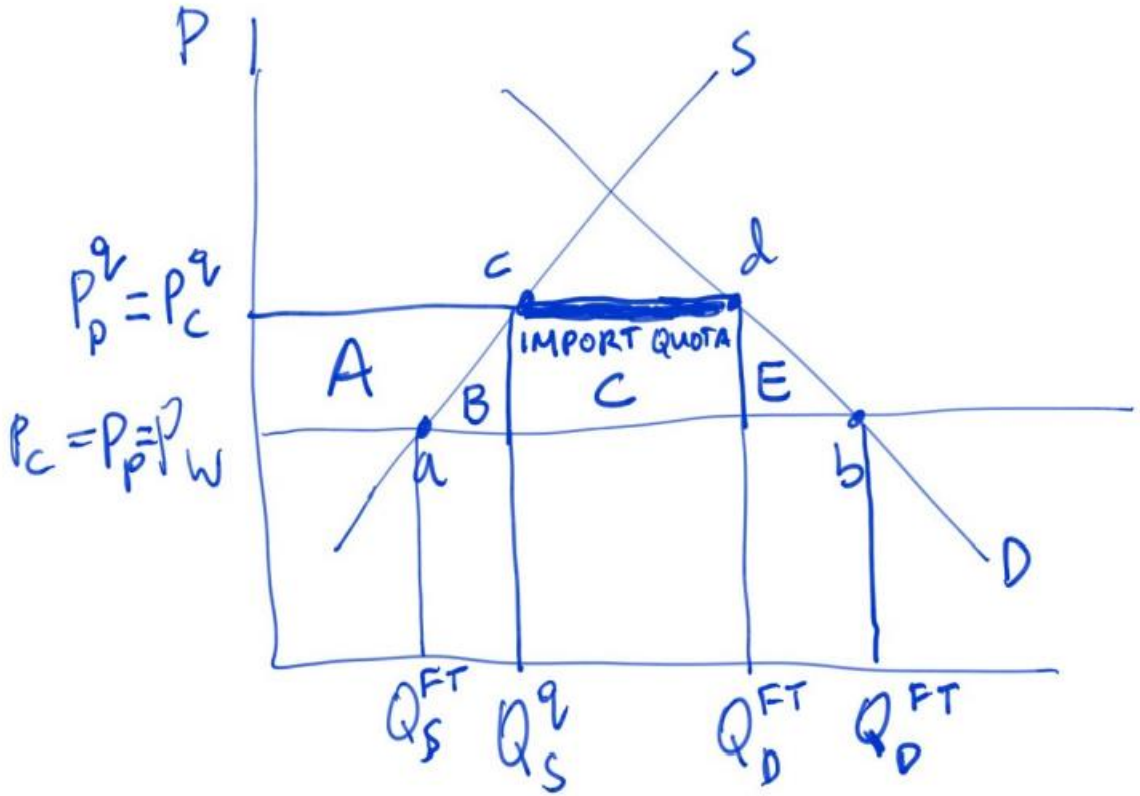


International Economic Relations and Economic Diplomacy

Lecture 3

Thomas Moutos

Quantitative Restrictions (Quotas)



Under FT the country imports ab. Then the government imposes a quota on imports of cd. This implies that the price to domestic consumers and producers rises to P_c^q. CS drops by A+B+C+E. PS rises by A. But who gets the license to import the cd units ($\bar{q} = cd$)?

How the quotas are allocated is important for Social Welfare

(a) Domestic firms get the license. Then they import at P_W and sell at P_C^q, thus receiving rents equal to area C.

$\Delta(SW) = \Delta(CS) + \Delta(PS) = -(A+B+C+E) + (A+C) = -(B+E)$.

Thus, in this case the loss in SW is the same as in the case of an equivalent tariff ($t = P_C^q - P_W$).

(b) Auctioning the licenses. In this case the govn't can receive area C as revenue from the auctions and

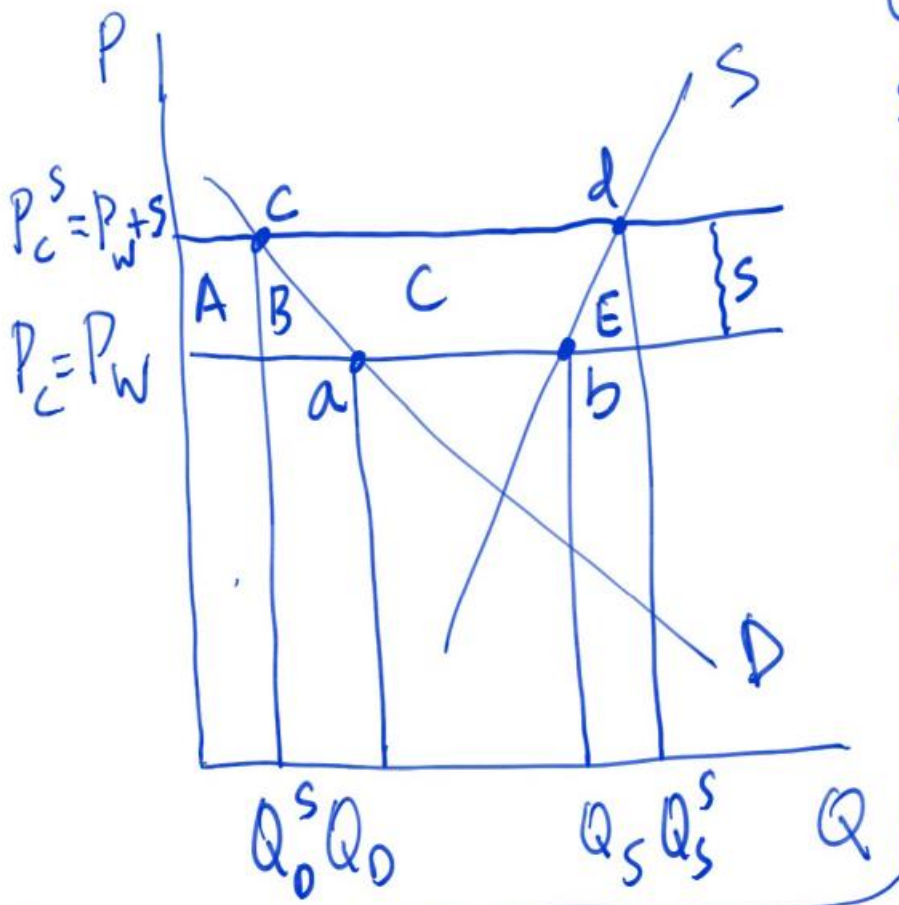
$\Delta(SW) = \Delta(CS) + \Delta(PS) + \Delta(TR) = -(A+B+C+E) + A + C = -(B+E)$

(c) Voluntary Export Restraints (VERs).

VERs (continued). In this case foreign exporters (e.g. Japanese auto producers exporting to the US) "voluntarily" agree to restrict their exports to quantity cd. Then, knowing that they can increase the price of their exports to P_C^q and still sell no less than the quota, they did so, receiving area C.

$\Delta(SW) = -(A+B+C+E) + A = -(B+C+E)$, i.e. the largest loss in SW.

Export Subsidies: Perfect Competition, Small Country



Granting an export subsidy of S per unit, implies that domestic prices will rise to $P_C^S = P_W + S$, domestic demand will fall and domestic supply will expand. Exports will increase from ab to cd. As a result, $\Delta(CS) = -(A+B)$, $\Delta(PS) = A+B+C$, $\Delta(TR) = -(B+C+E)$, $\Delta(SW) = -(B+E)$.

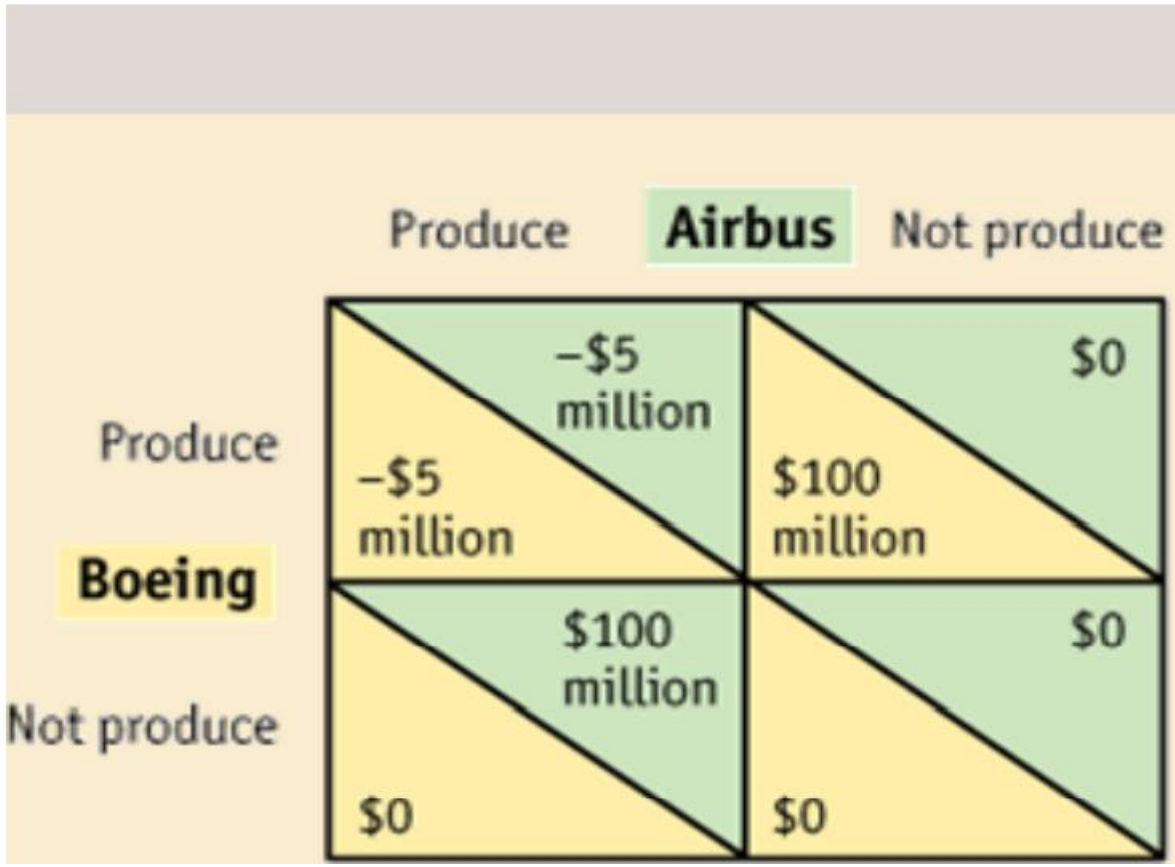
We thus conclude that export subsidies by a small country benefit domestic producers, but hurt domestic consumers, and – since they also generate an expense for the government – reduce SW.

The same is true if a large country gives export subsidies. The loss in SW will be even bigger in this case since it will result in a drop in the world price, thus having the domestic country inadvertently subsidizing foreign consumers (i.e. we pay taxes in order to subsidize foreign consumers).

These results may not hold in the case of imperfect competition.

Strategic Export Subsidies

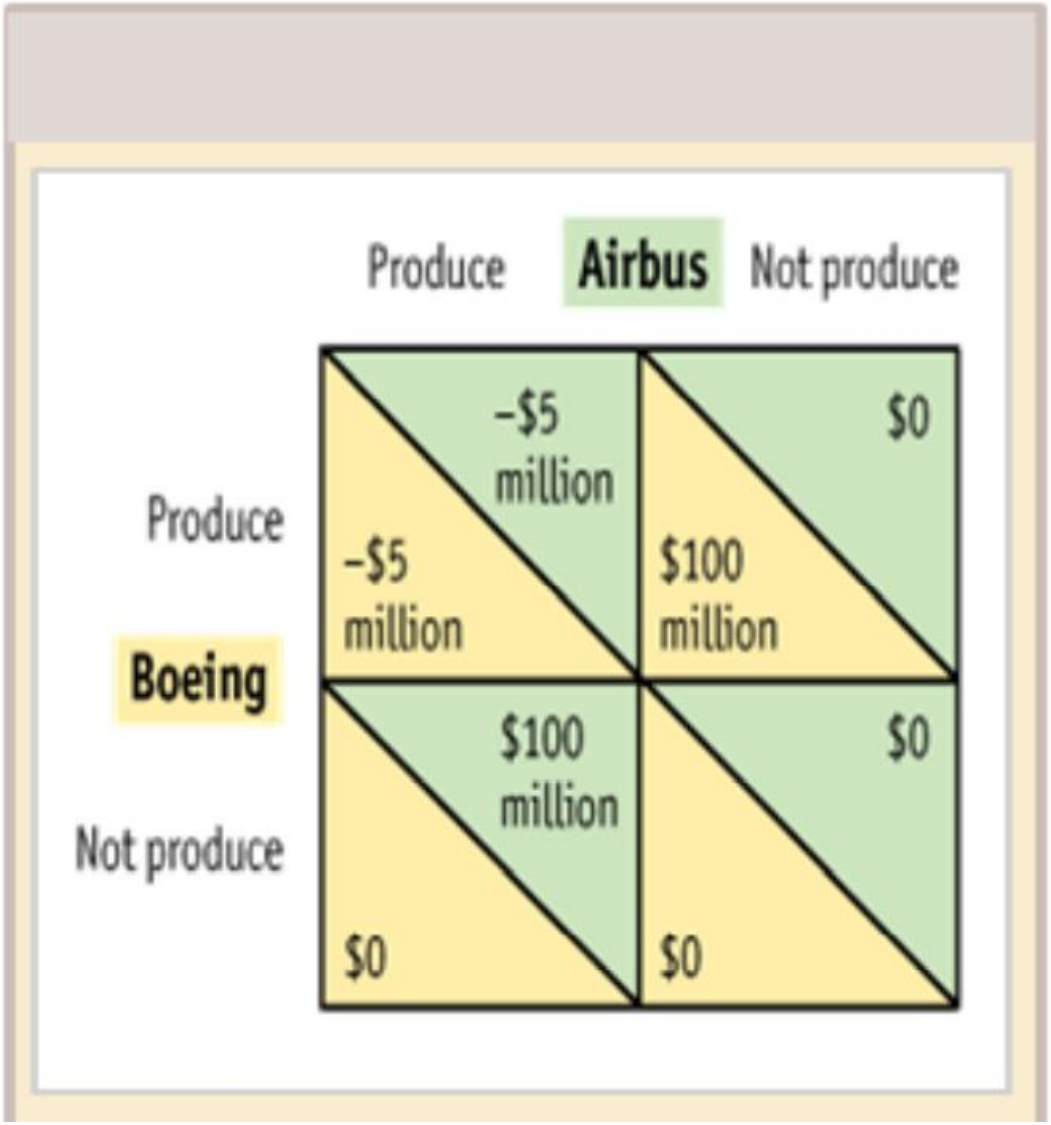
Consider two firms (Airbus and Boeing) considering whether they wish to spend a lot of money and effort to develop and eventually produce a new aircraft. For simplicity we assume that the aircraft will only be exported (so no CS considerations are taken into account). If they both produce the new aircraft, they will have to share the market, and they will be not be able to cover the very large costs of developing the aircraft, thus both incurring losses. But, if only one of them produces, there will be considerable profits. We assume a symmetric situation (i.e. both make losses if they both produce). The relevant payoffs are shown below.



Payoff Matrix between Two Firms

The lower-left number in each quadrant shows the profits of Boeing, and the upper-right number shows the profits of Airbus. Each firm must decide whether to produce a new type of aircraft. Each firm is making its best decision, given the action of the other.

"Strategic" Use of High-Tech Export Subsidies



Strategy for Boeing:

If Airbus produces, then Boeing is better off *not producing*.

If Airbus does not produce, then Boeing is better off by producing.

Thus, there is no *dominant* strategy (i.e. to do one thing irrespective of what the other firm is doing) for Boeing.

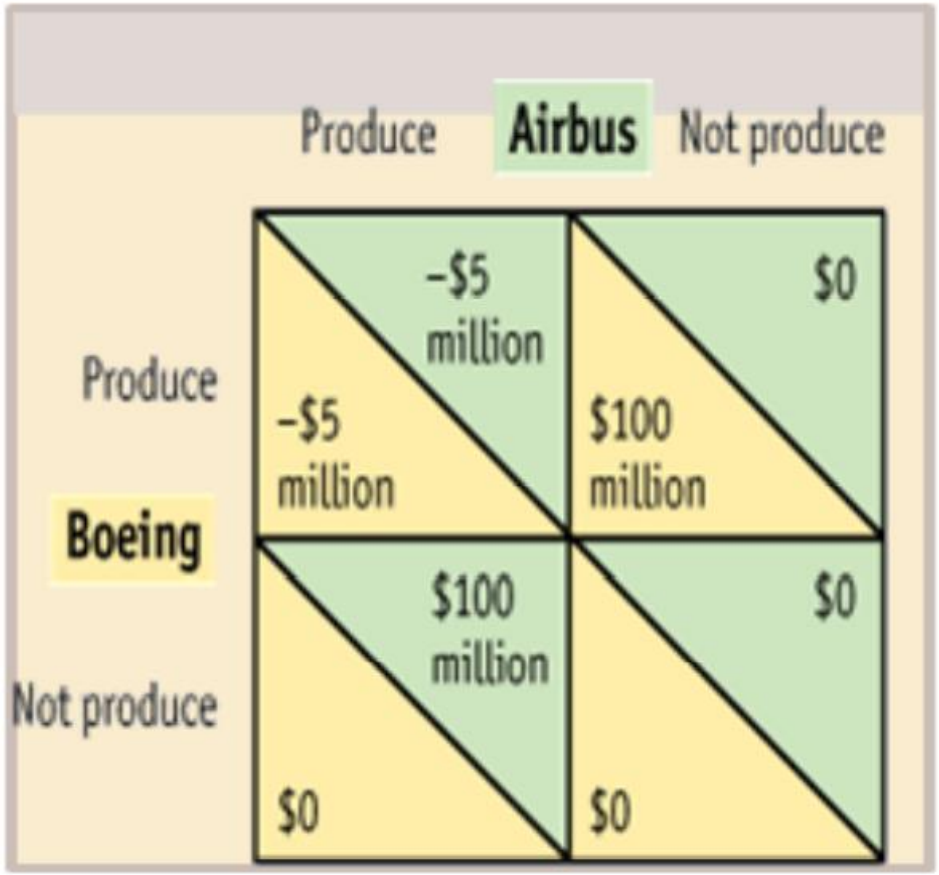
Strategy for Airbus:

If Boeing produces, then Airbus is better off *not producing*.

If Boeing does not produce, then Airbus is better off by producing.

Thus, there is no *dominant* strategy (i.e. to do one thing irrespective of what the other firm is doing) for Airbus.

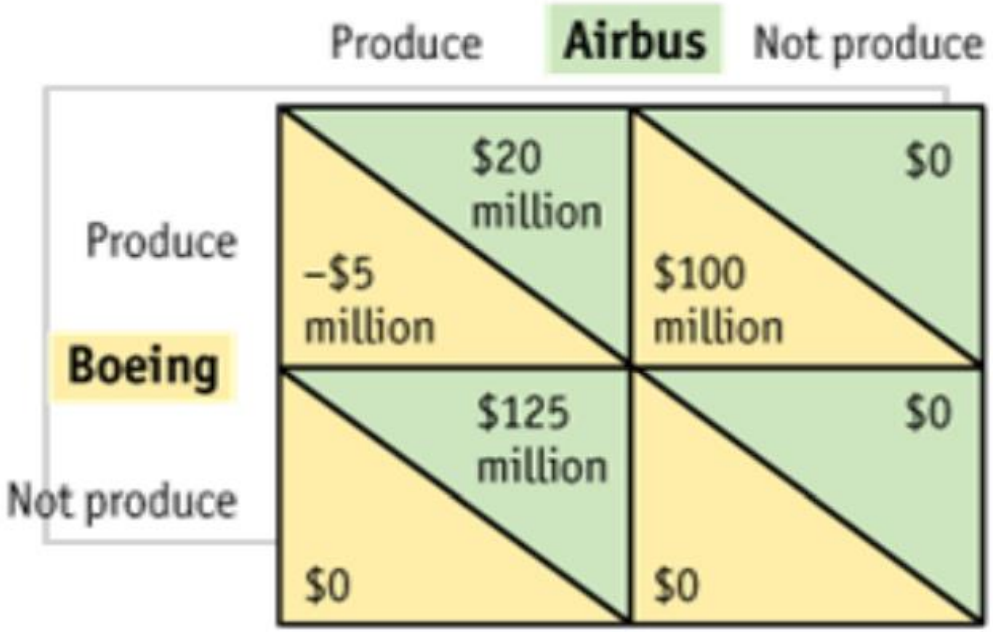
In this Setup there is No Dominant Strategy



The fact that each of the two firms would prefer to do a different thing depending on what the other firm does implies that there is no way on the basis of this model to determine what will happen.

Can, e.g. the EU governments intervene to change the game in such a way that the dominant strategy for Airbus is to produce (i.e. independently of what Boeing is going to do)?.

Effect of a Subsidy to Airbus



Rise in producer profits: + 125

Fall in government revenue: – 25

Net effect on European welfare: + 100

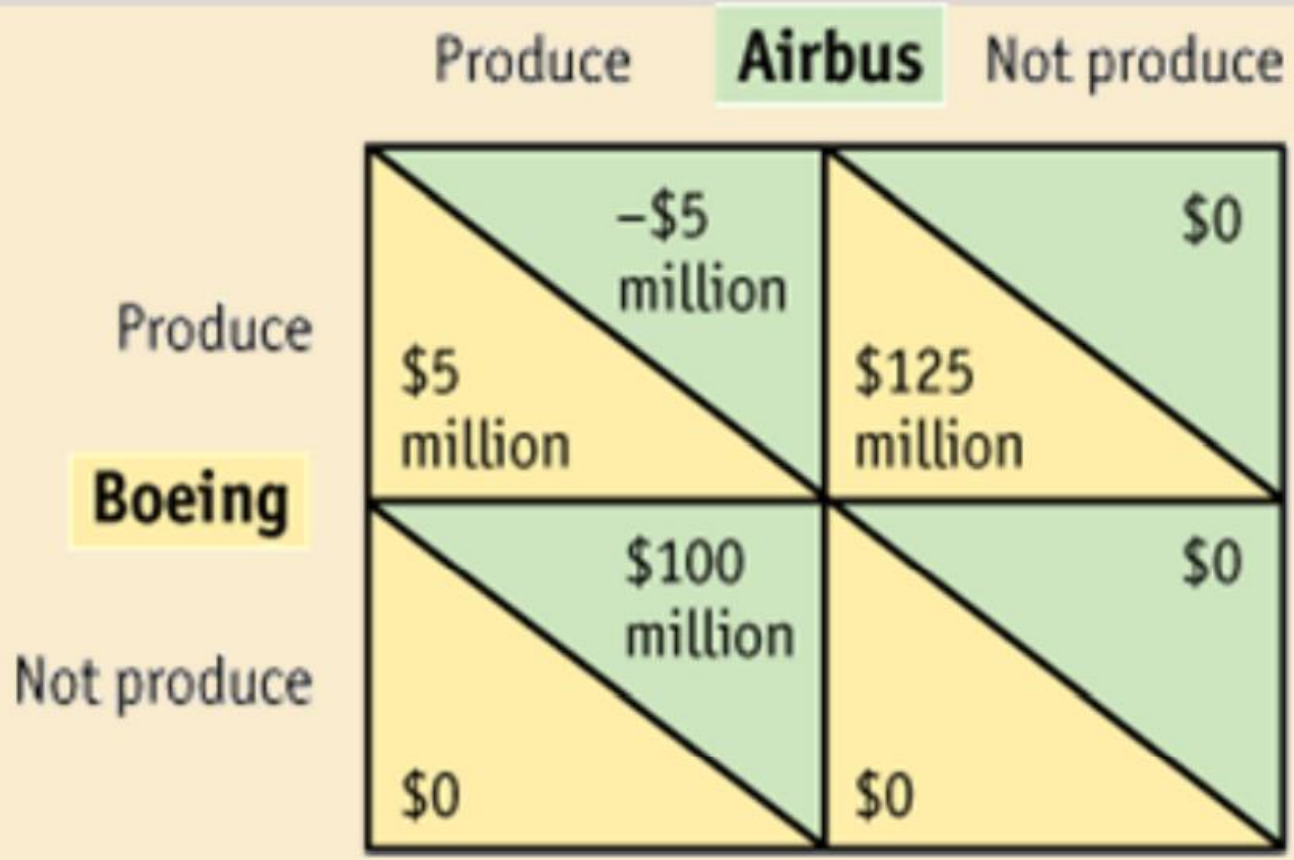
Payoff Matrix with Subsidy

When the EU governments provide a subsidy of $25 million to Airbus, its profits increase by that much when it produces a new aircraft. Now, no matter what Boeing does, the best action for Airbus is to produce. As a result, Boeing will not produce.

The profits for Airbus will now be $125 million, while the subsidy cost only $25 million, so there can be a net gain of $100 million in European welfare.

Subsidy with Cost Advantage for Boeing

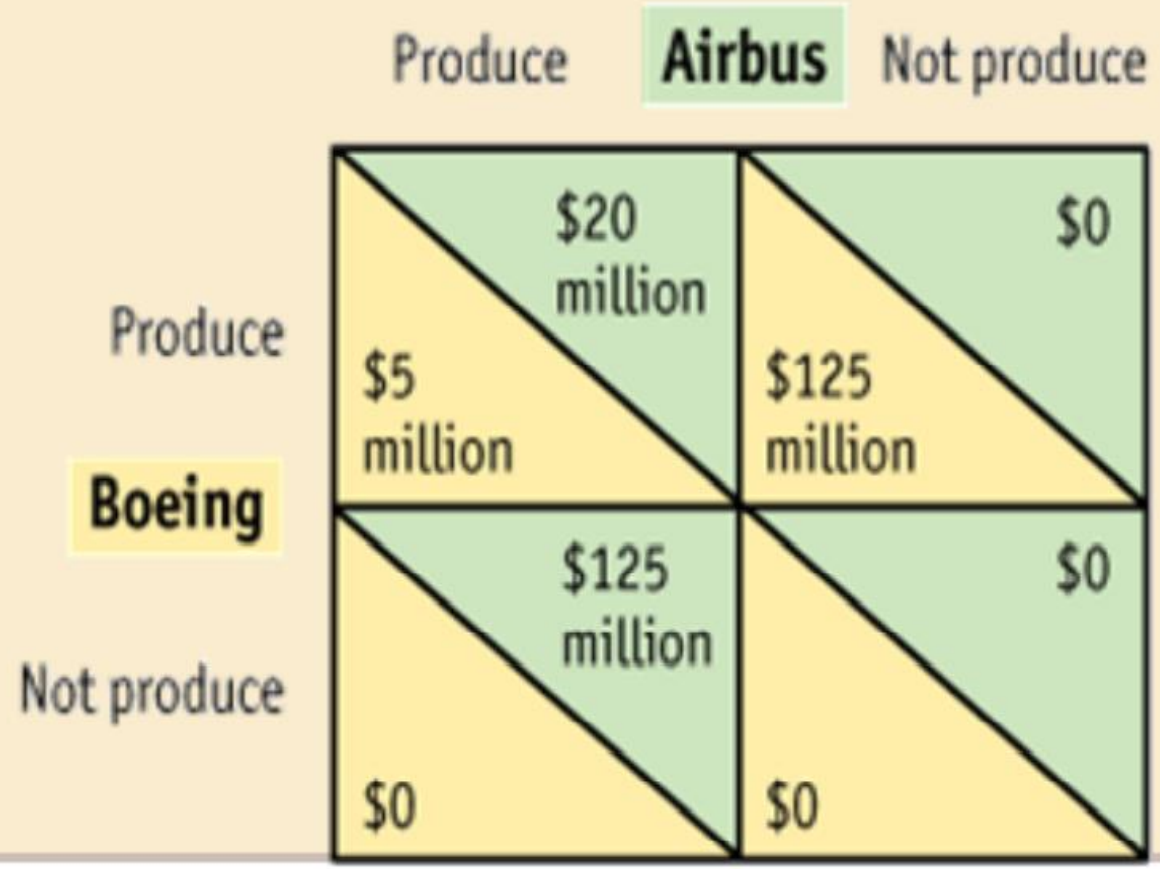
Another Payoff Matrix, with Boeing Cost Advantage



If Boeing has a cost advantage in the production of aircraft, the payoffs are as shown here. Boeing earns profits of $5 million when both firms are producing and profits of $125 million when Airbus does not produce. Now the equilibrium, is in the upper-right quadrant, where Boeing produces and Airbus does not.

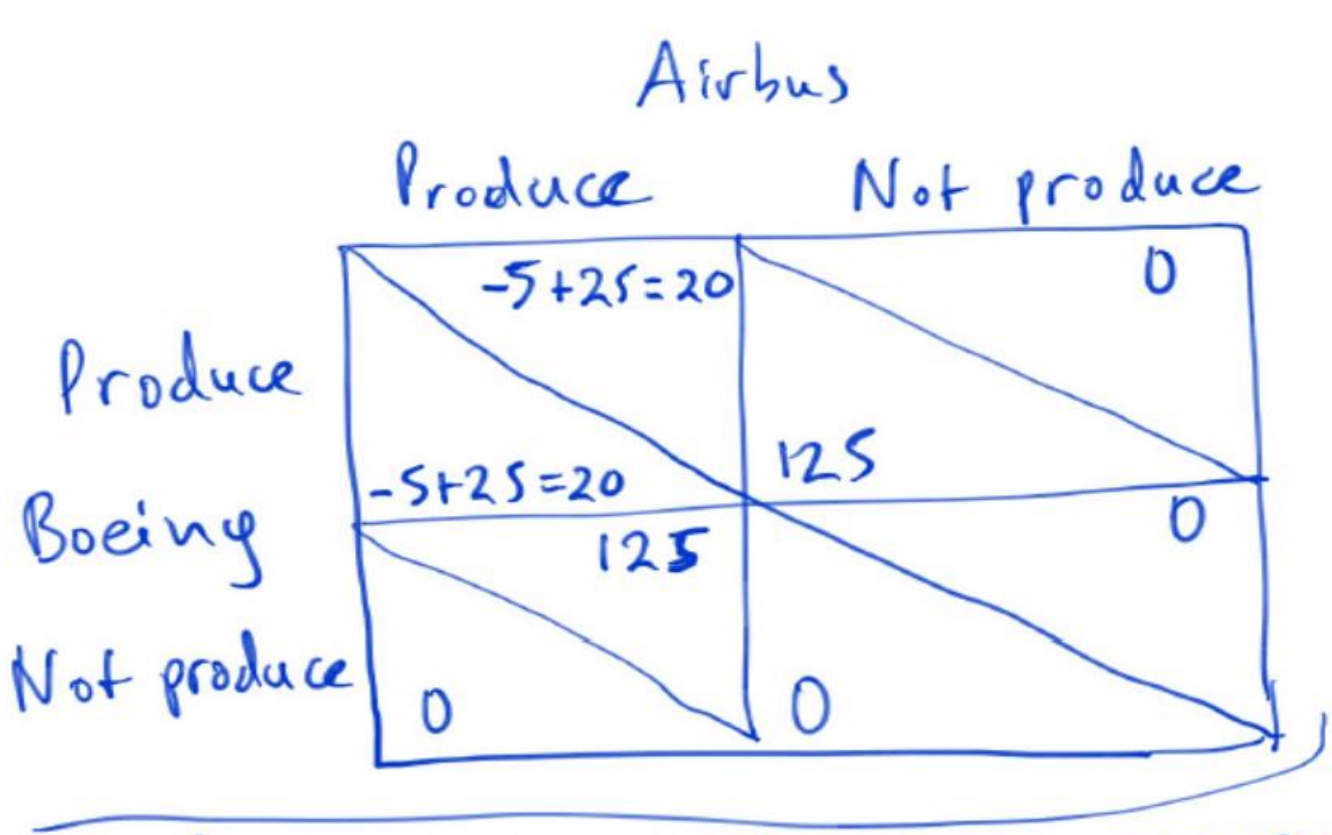
Subsidy with Cost Advantage for Boeing

Another Payoff Matrix with Foreign Subsidy



When the European governments provide a subsidy of $25 million to Airbus, its profits increase by that much when it produces. Now the equilibrium is in the upper-left quadrant, where both firms produce. The profits for Airbus have increased from 0 to $20 million, but the subsidy costs $25 million, so there is a net loss of $5 million in European welfare.

What if both governments subsidized (symmetric case) ?



Now both firms have a dominant strategy no matter what the other firm does, i.e. both decide to produce. As a result profits (PS) for both firms is 20, but both governments spend 25 (each), so there is a net loss of SW equal to 5 for both countries.