Macro II/Aussenwirtschaft
Lecture Slides No 7

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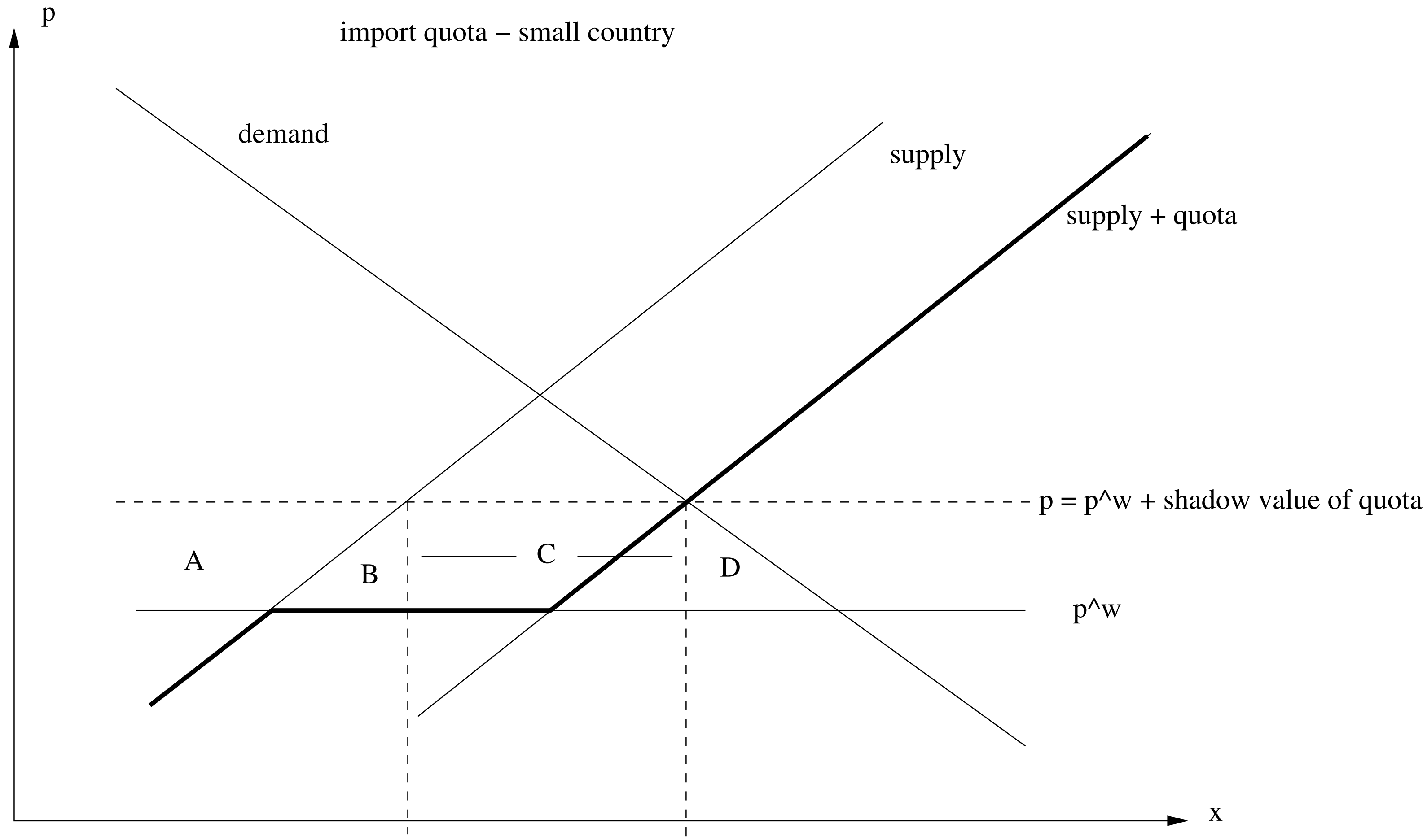
Other instruments

- many forms, eg quantity restrictions, product standards
- let's look at a quantity restrictions, called a quota
- quantity needs to be lower than free trade import
- then one can only import a maximum of the quota
- important question: how/to whom the quota is allocated
- auctioned of, first come first served, handed out to foreigners


p
import quota – small country
demand
supply
supply + quota
p = p^w + shadow value of quota
A
B
C
D
p^w
x

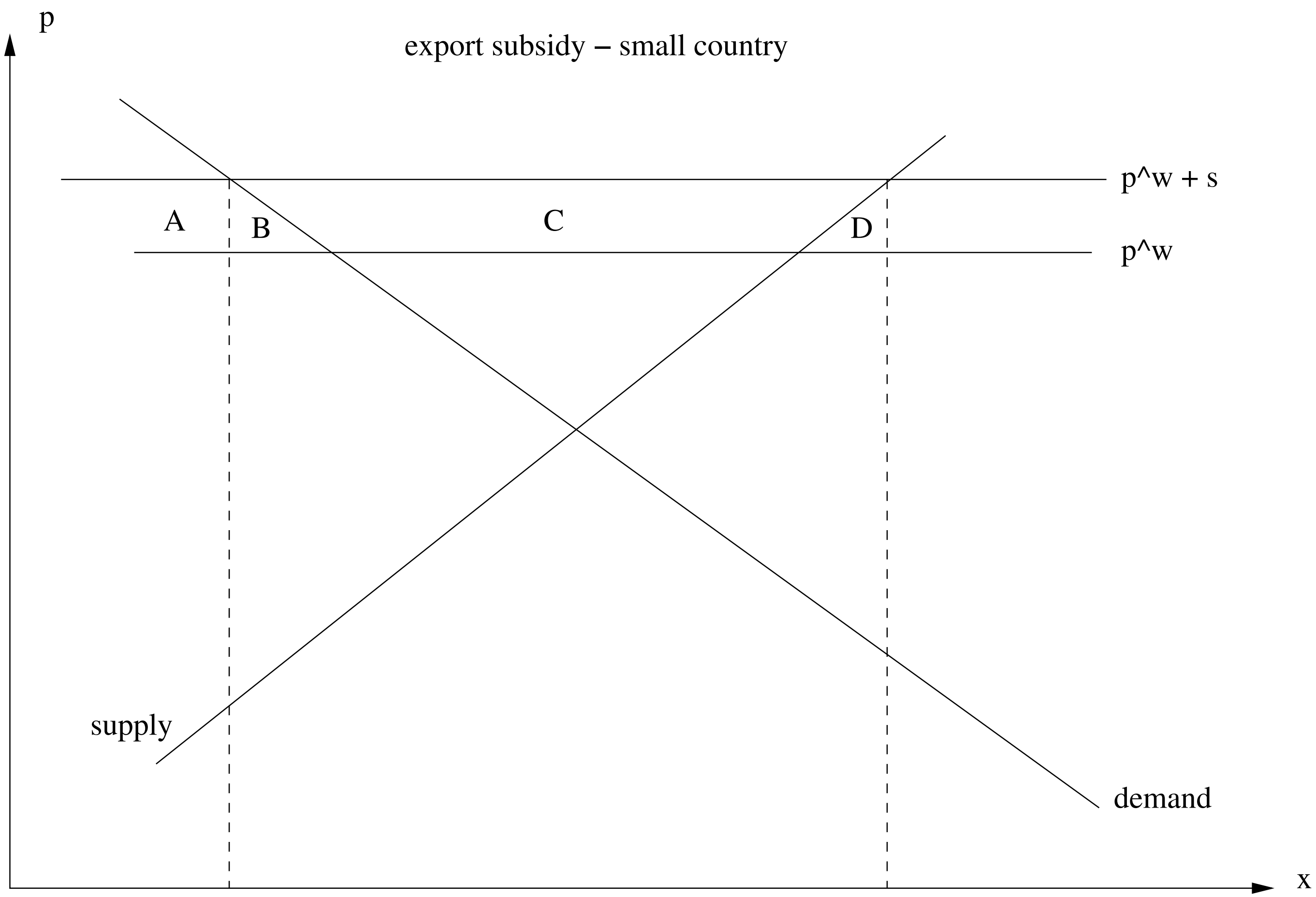
Welfare calculation

consumers	-A	- B	- C	-D
producers	+A			
gov't (if)			+ C	
		- B		- D

- negative effect like tariff
- same as tariff iff rent stays domestic
- else loss will be greater
- for instance for voluntary export restraints

Policy on export side

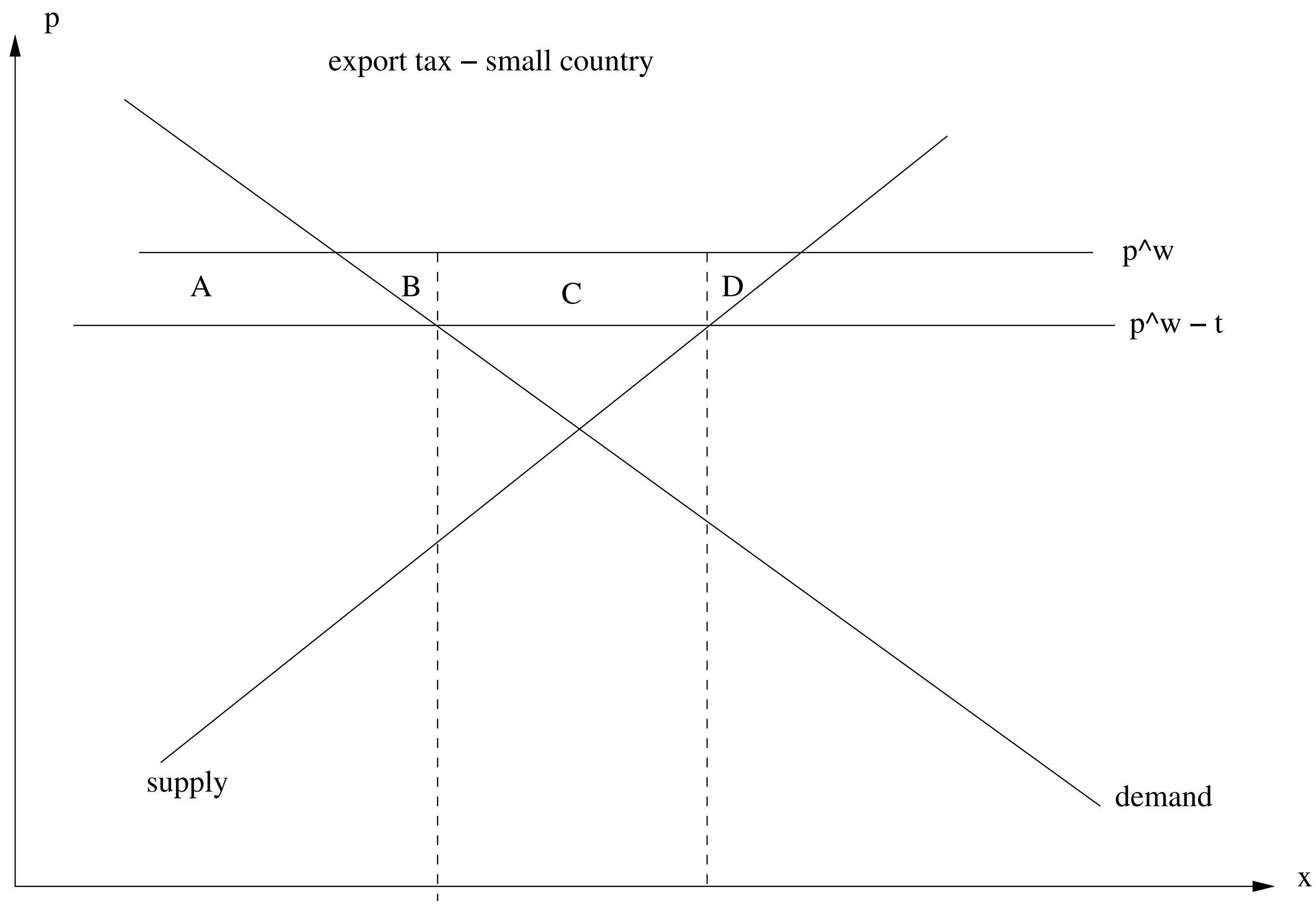
- consider both export subsidy and tax
- for small and large country
- we see that only one makes (some) sense
- only for the large country
- compare to import tariff


p
export subsidy – small country
p^w + s
A
B
C
D
p^w
supply
demand
x

Welfare calculation

consumers	-A	- B		
producers	+A	+ B	+ C	
gov't		- B	- C	- D
		- B		- D

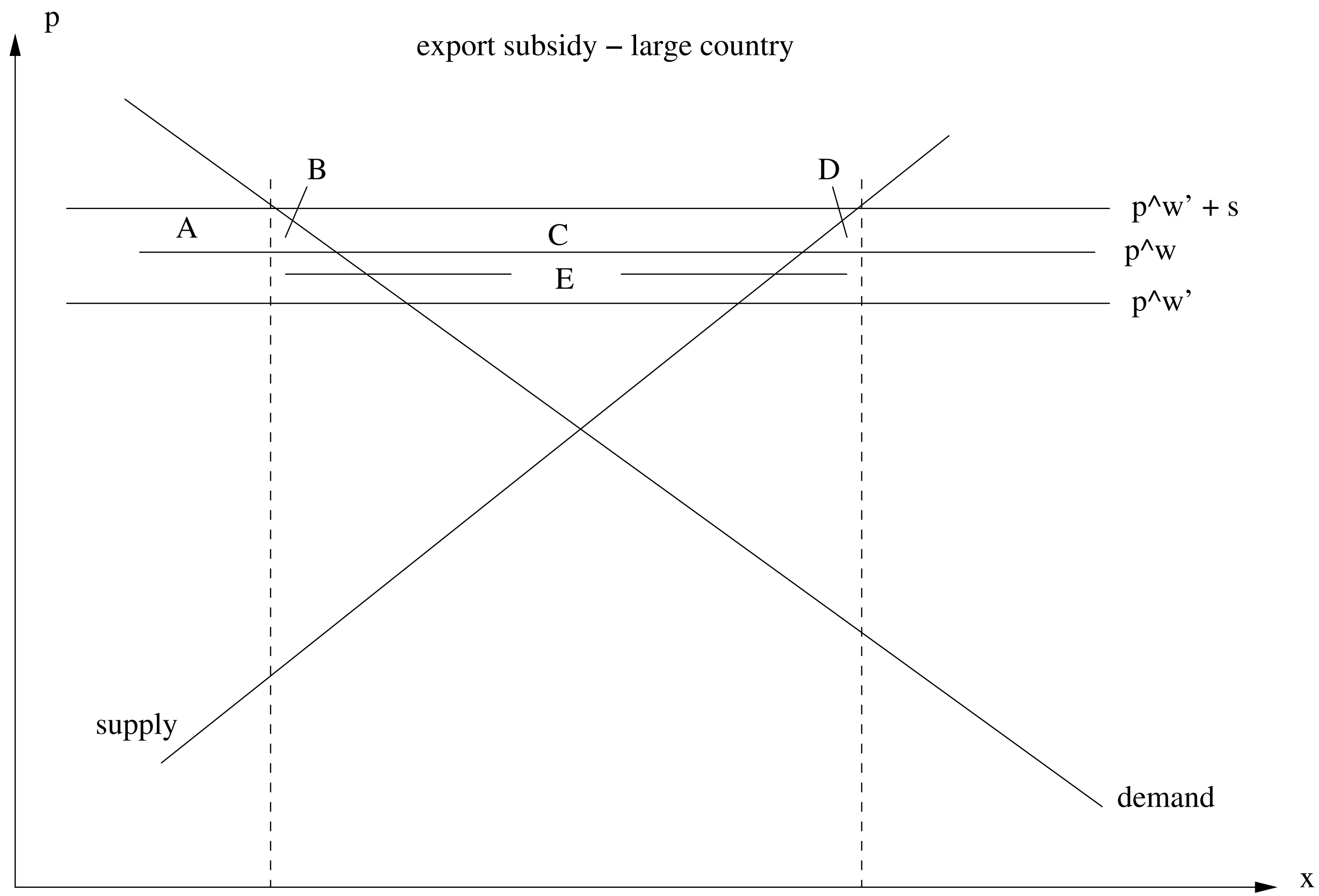
- subsidy increases domestic price
- negative welfare effect overall
- subsidy is transfer from taxpayers to producers
- distorting the price implies efficiency loss


p
export tax – small country
p^w
A
B
C
D
p^w – t
supply
demand
x

Welfare calculation

consumers	+ A			
producers	- A	- B	- C	- D
gov't			+ C	
		- B		- D

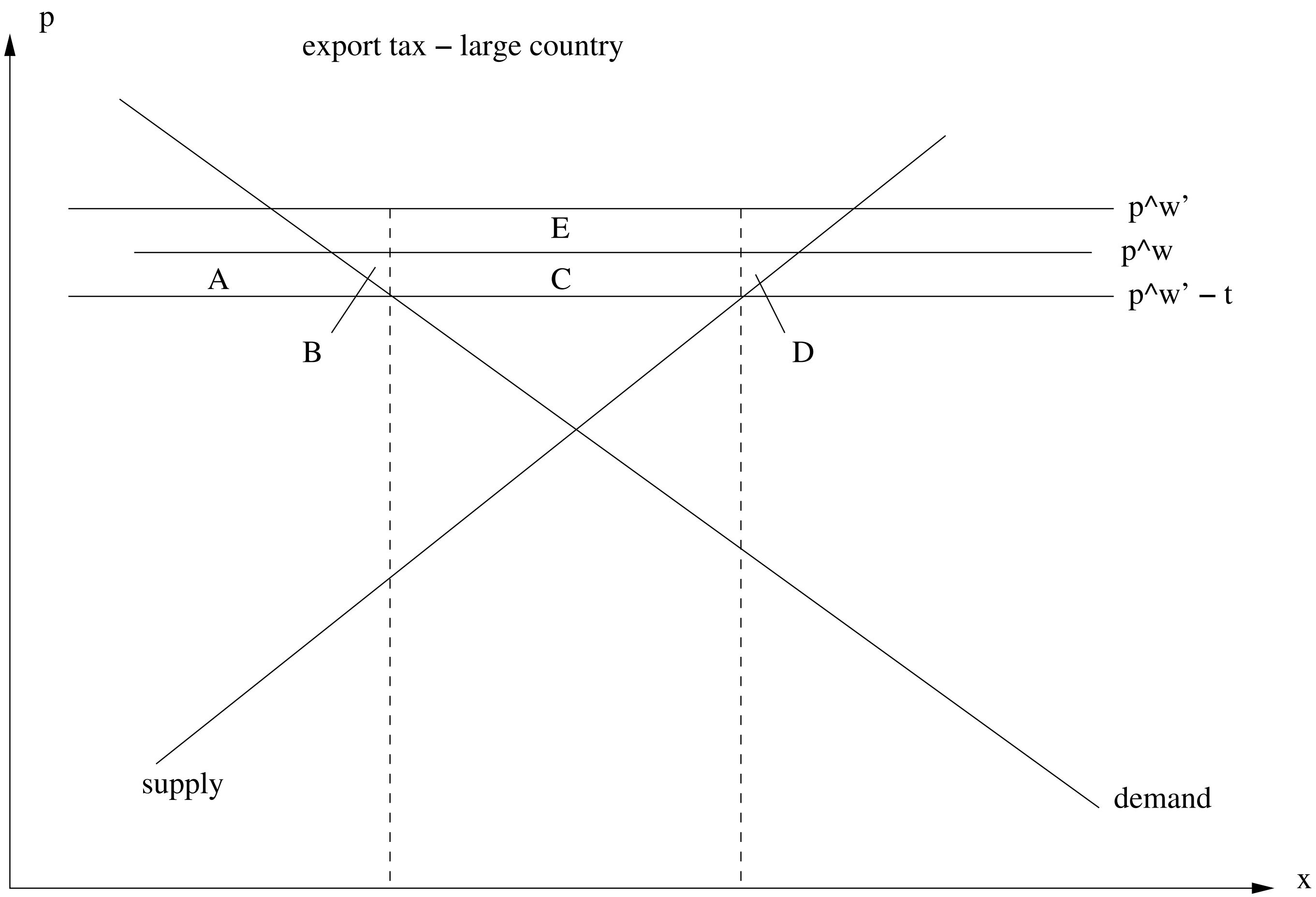
- again negative effect
- tax lowers domestic price
- price distortion leads to efficiency loss
- but opposite distributional impact


p
export subsidy – large country
B
D
p^w' + s
A
C
p^w
E
p^w'
supply
demand
x

Welfare calculation

consumers	-A	- B			
producers	+A	+ B	+ C		
gov't		- B	- C	- D	- E
		- B		- D	- E

- subsidy lowers world market price
- worsens terms of trade, extra negative effect
- welfare loss beyond the distortion
- policy doesn't seem to make sense (well, see below)


p
export tax – large country
p^w'
E
p^w
A
C
p^w' – t
B
D
supply
demand
x

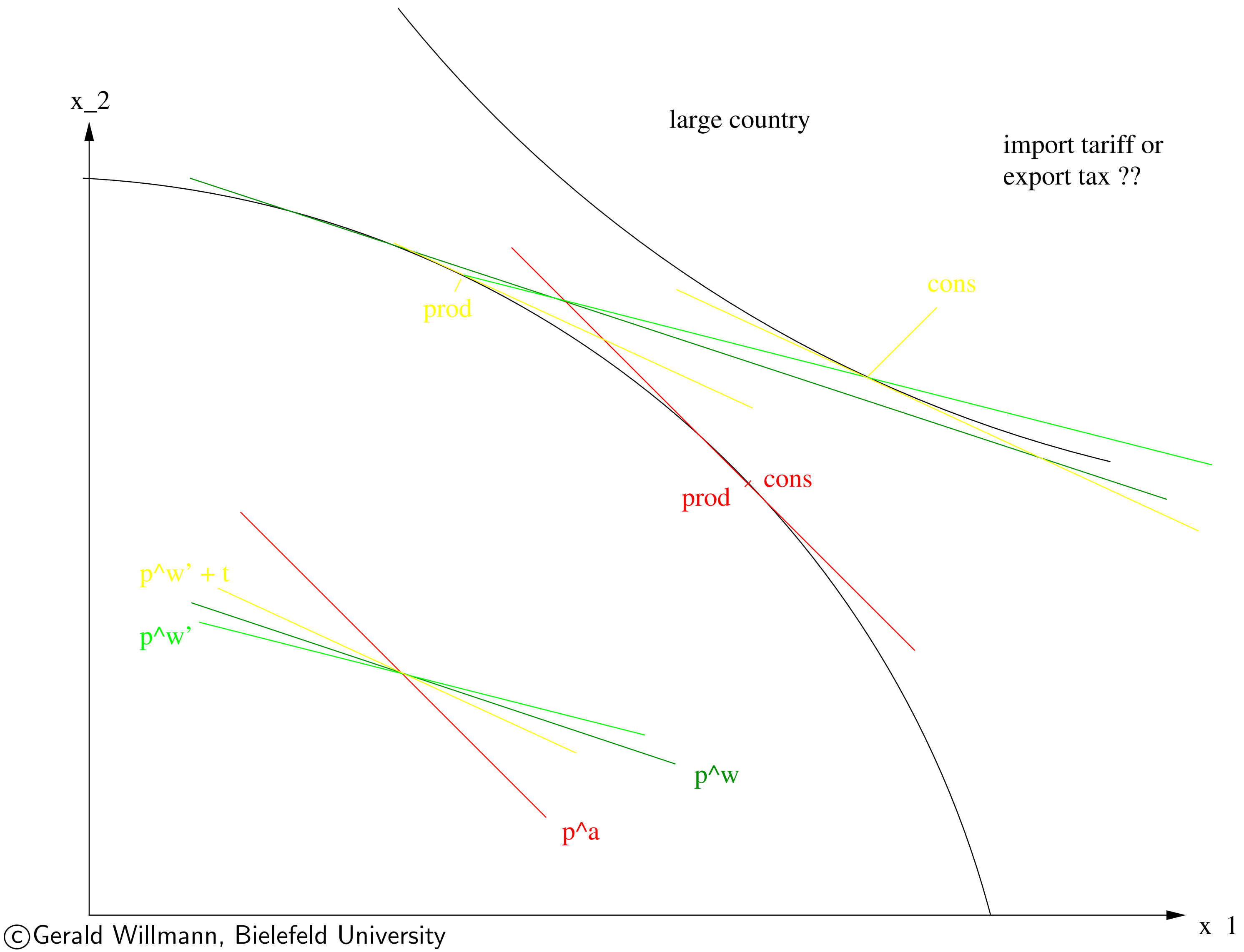
Welfare calculation

consumers	+ A				
producers	- A	- B	- C	- D	
gov't			+ C		+ E
		- B		- D	+ E

- negative price distortion
- improved terms of trade
- we sell at higher price
- similar to import tariff for large country

Import tariff vs export tax

- compare import tariff and export tax for large country
- need to do this in general equilibrium
- implicit assumption is balanced trade
- import tariff restricts our import demand
- lowering p_1/p_2 in the world market
- export tax restricts our export supply
- increasing p_2/p_1 in the world market



x_2
large country
import tariff or
export tax ??
cons
prod
cons
prod
p^w' + t
p^w'
p^w
p^a
x 1

Market power

Cournot duopoly: 1 foreign firm, 1 domestic

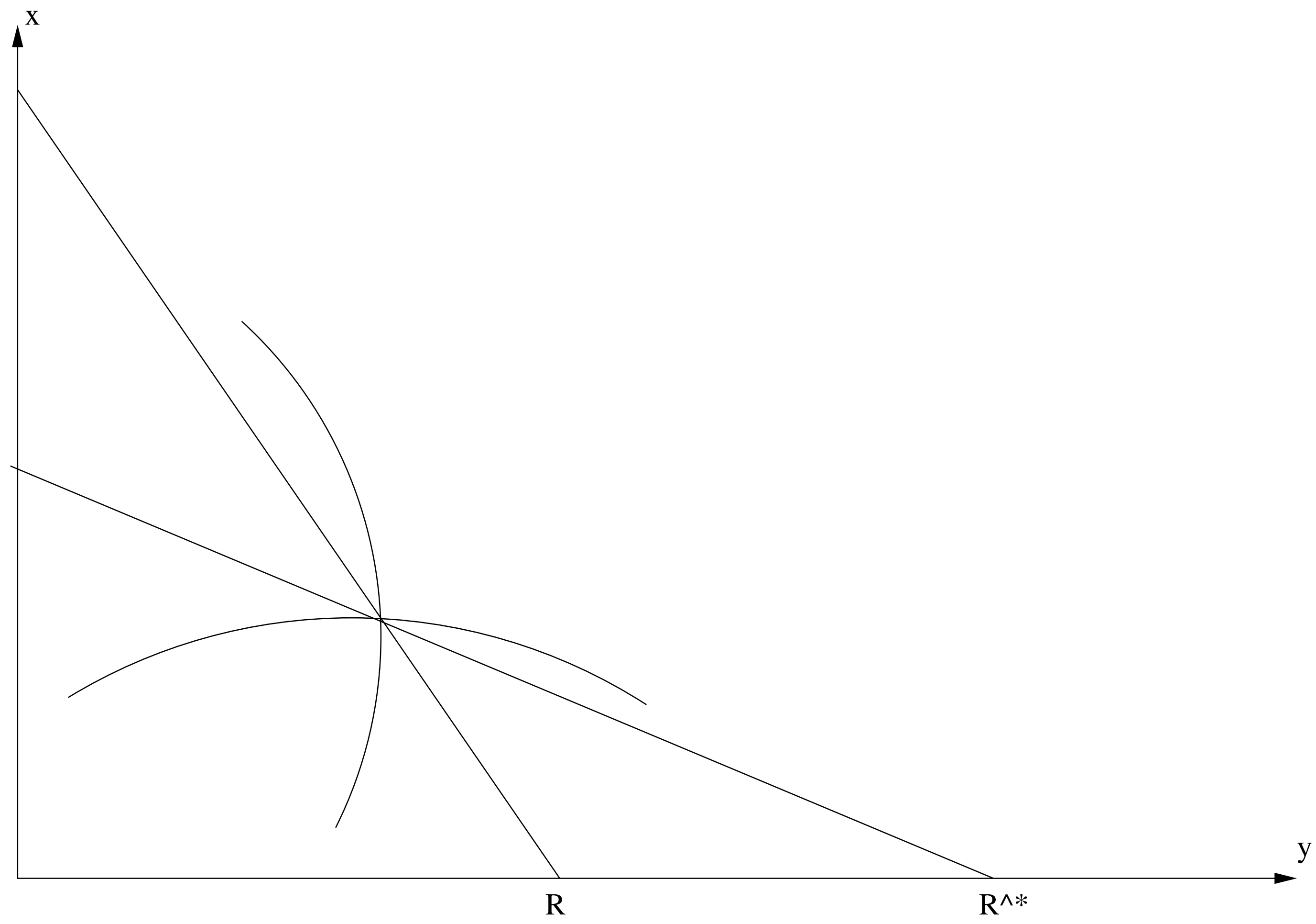
$$\begin{aligned} \pi^* &= x(p(z) - t) - c^*(x) \\ \pi &= yp(z) - c(y) \quad \text{with } z = x + y \end{aligned}$$

FOC:

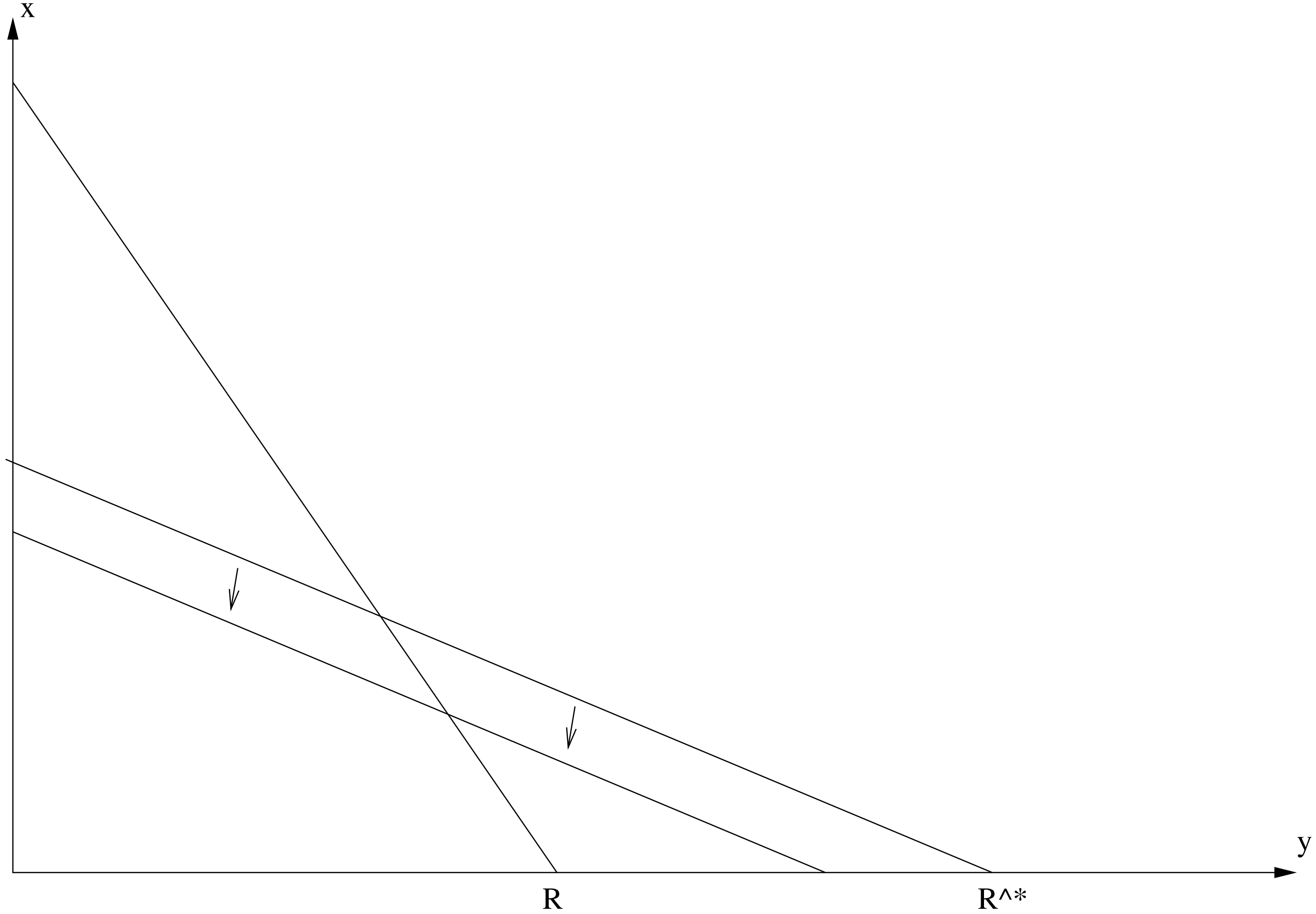
$$\begin{aligned} \pi^*_x &= p(z) + xp'(z) - (c^{*\prime}(x) + t) = 0 \\ \pi_y &= p(z) + yp'(z) - c'(y) = 0 \end{aligned}$$

one can solve for reaction curves/fcts:

$$x = r^*(y, t) \quad \text{and} \quad y = r(x)$$


x
y
R
R^*

- what happens if we introduce tariff?
- from 1st FOC: $dx/dt = 1/\pi^*_{xx} < 0$
- foreign reaction curve shifts down
- $\frac{dW}{dt} = t\frac{dx}{dt} - x\frac{dp*}{dt} + (p - c'(y))\frac{dy}{dt}$
- 1st term zero for $t = 0$, 2nd and 3rd positive
- optimal tariff positive to shift rents


x
y
R
R^*

Pareto gains from trade

- Pareto criterion is strong and incomplete
- favors the status-quo ...
- trade has distributional implications
- can we have Pareto gains from trade
- when country moves from autarky to free trade
- and winners compensate the losers

Lump sum compensation

consumers: $\max u^h(c^{ha}, v^{ha})$ subject to $p^{a\prime}c^{ha} \leq w^{a\prime}v^{ha}$

producers: $p^{a\prime}y^a - w^{a\prime}v^a = 0$ (zero profit)

proposed transfer scheme: $R^h = (p - p^a)'c^{ha} - (w - w^a)'v^{ha}$

this gives them option to what they had under autarky:

$$
\begin{aligned}
p'c^h &\leq w'v^h + R^h \\
p'c^{ha} &\leq w'v^{ha} + (p - p^a)'c^{ha} - (w - w^a)'v^{ha} \\
p'c^{ha} &\leq w^{a\prime}v^{ha}
\end{aligned}
$$

check that this transfer scheme is feasible:

$$\begin{aligned}
-\sum_h R^h &= (p^a - p)' \sum c^{ha} - (w^a - w)' \sum v^{ha} \\
&= (p^a - p)' y^a - (w^a - w)' v^a \\
&= (p^{a\prime} y^a - w^{a\prime} v^a) - (p' y^a - w' v^a) \\
&= -(p' y^a - w' v^a) \\
&\geq -(p' y - w' v) = 0
\end{aligned}$$

Q.E.D.

- compensation potentially possible
- indication that reform desirable
- strong informational requirements
- alternative Dixit/Norman taxation
- 2nd best comparison not clear (for partial reform)
- important example: preferential liberalization