Part 3: The exchange

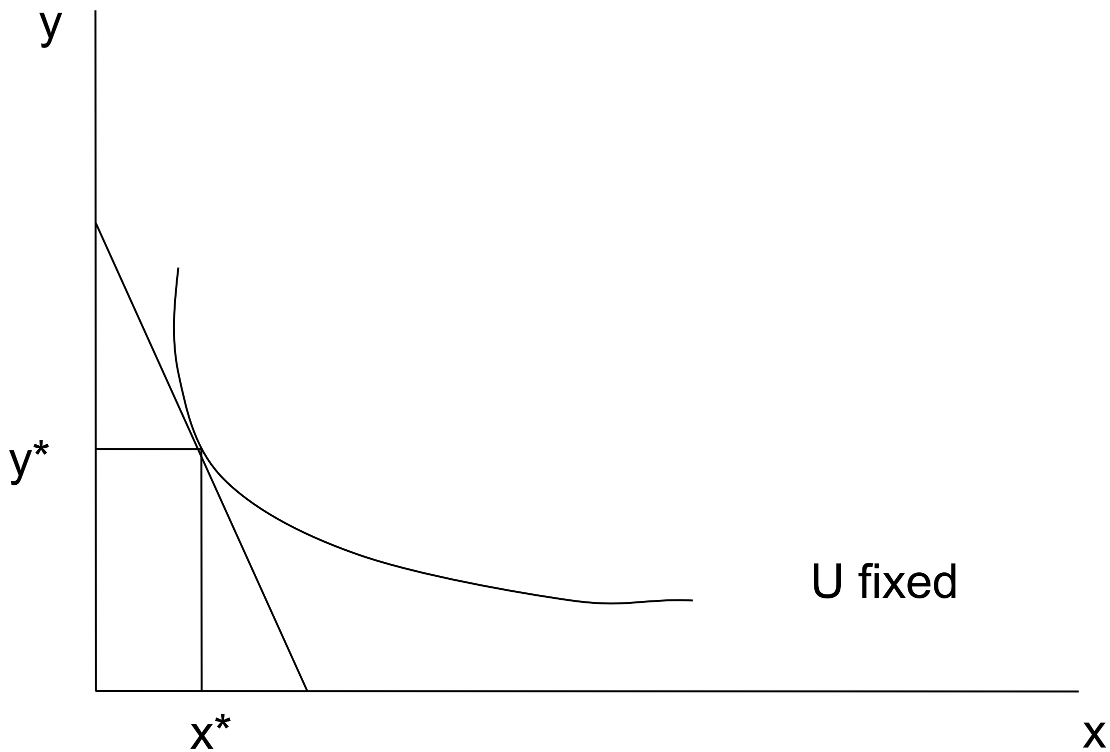
Markets

- Meeting point of demand and supply
- Consumers demand
- Producers supply
- Demand falls in price of good
- Supply increases in price of good

- Institutional context (assumed): enforcable contracts (rule of law), social trust

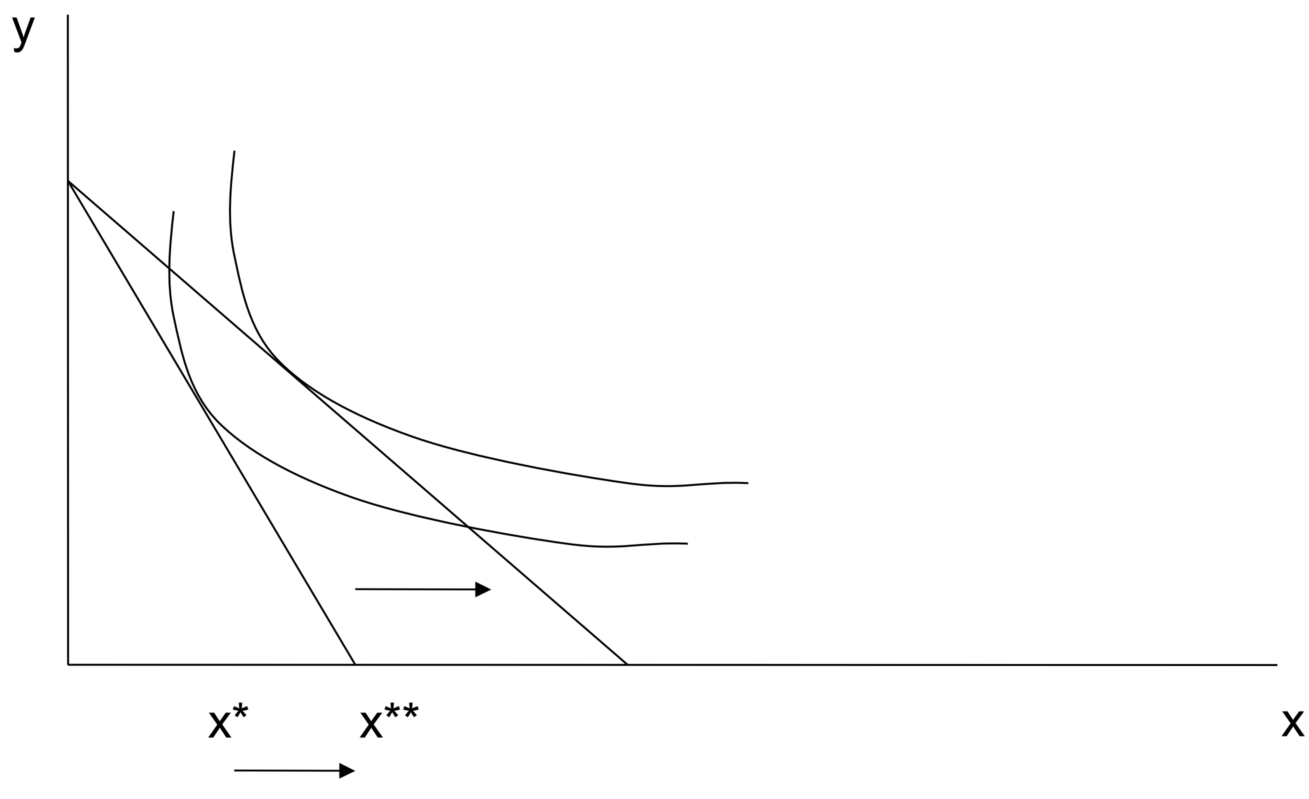
Consumer‘s demand I

$\max U(x,y)$ s.t. $I = p_x x + p_y y$

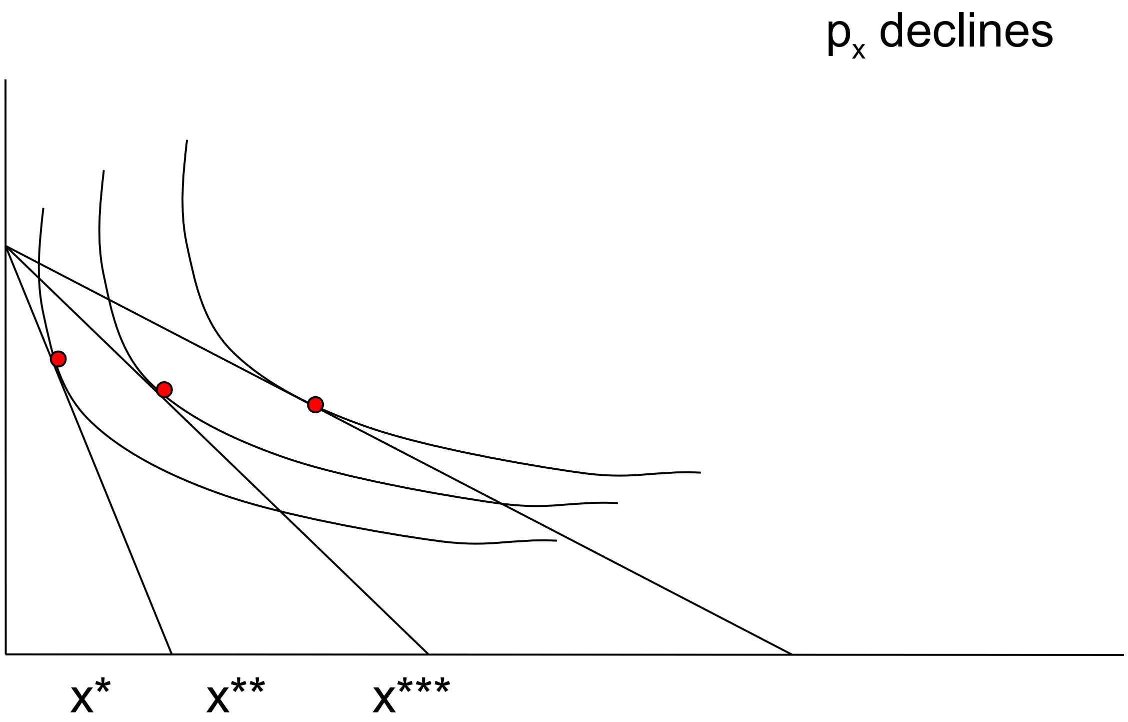


Consumer‘s demand II

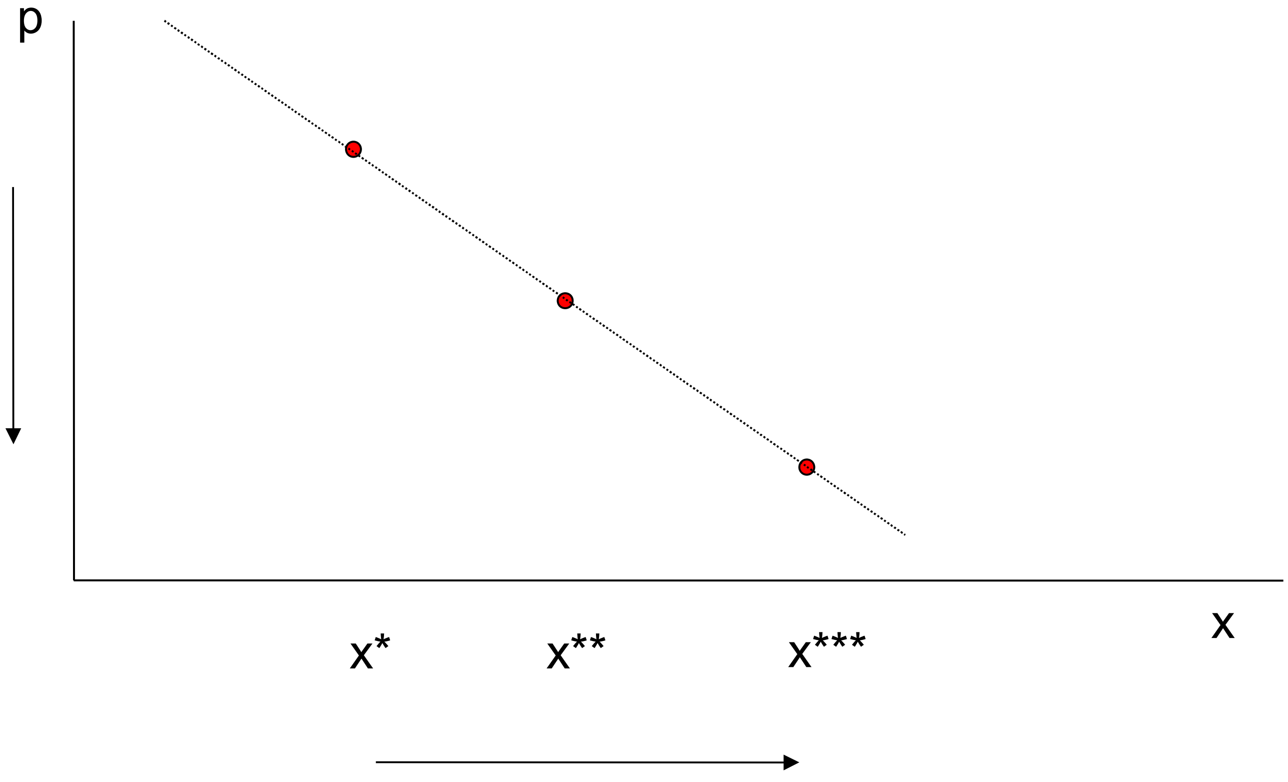
Effect of price decrease of x



Consumer's demand III

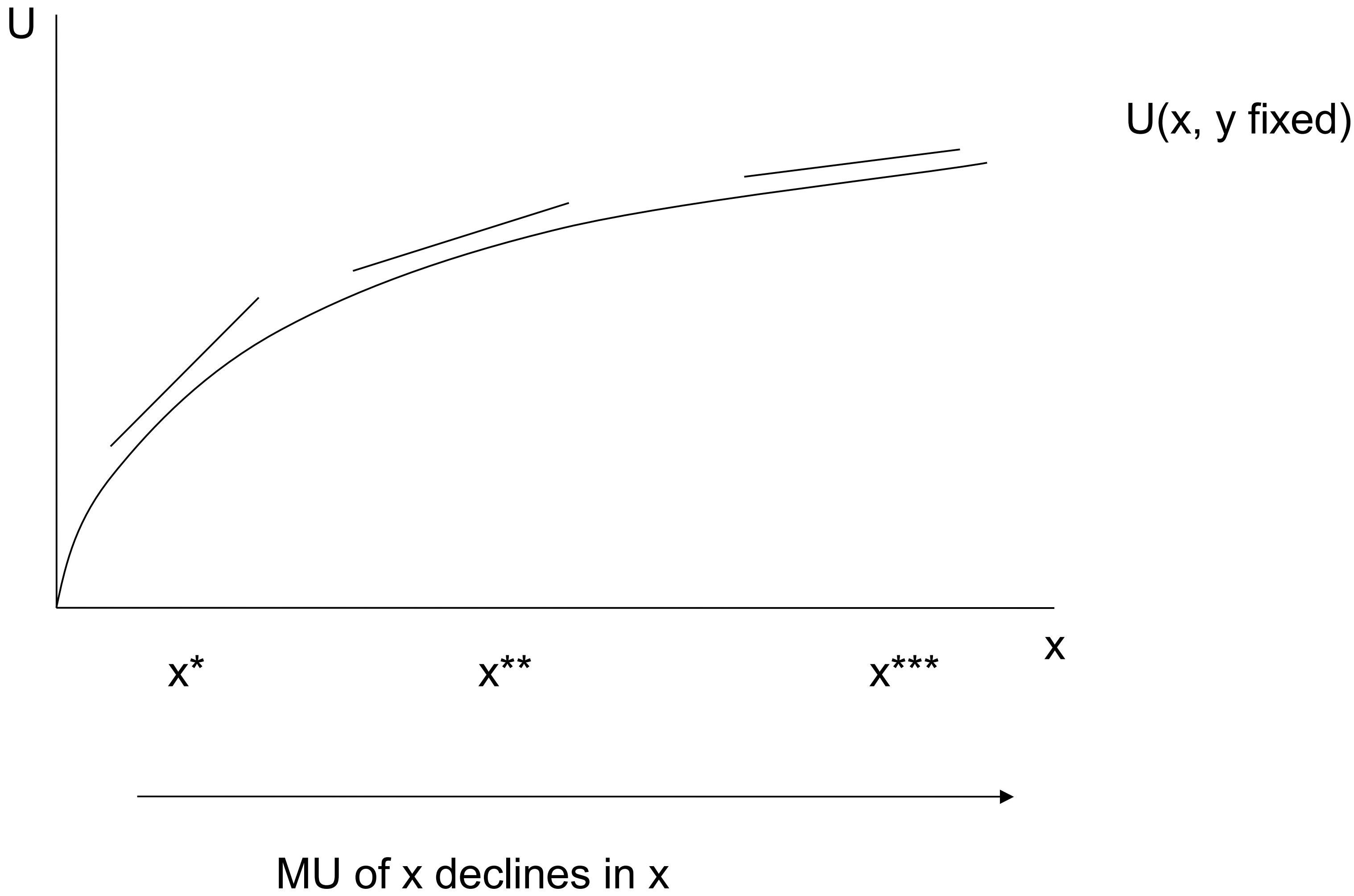


Consumer‘s demand IV

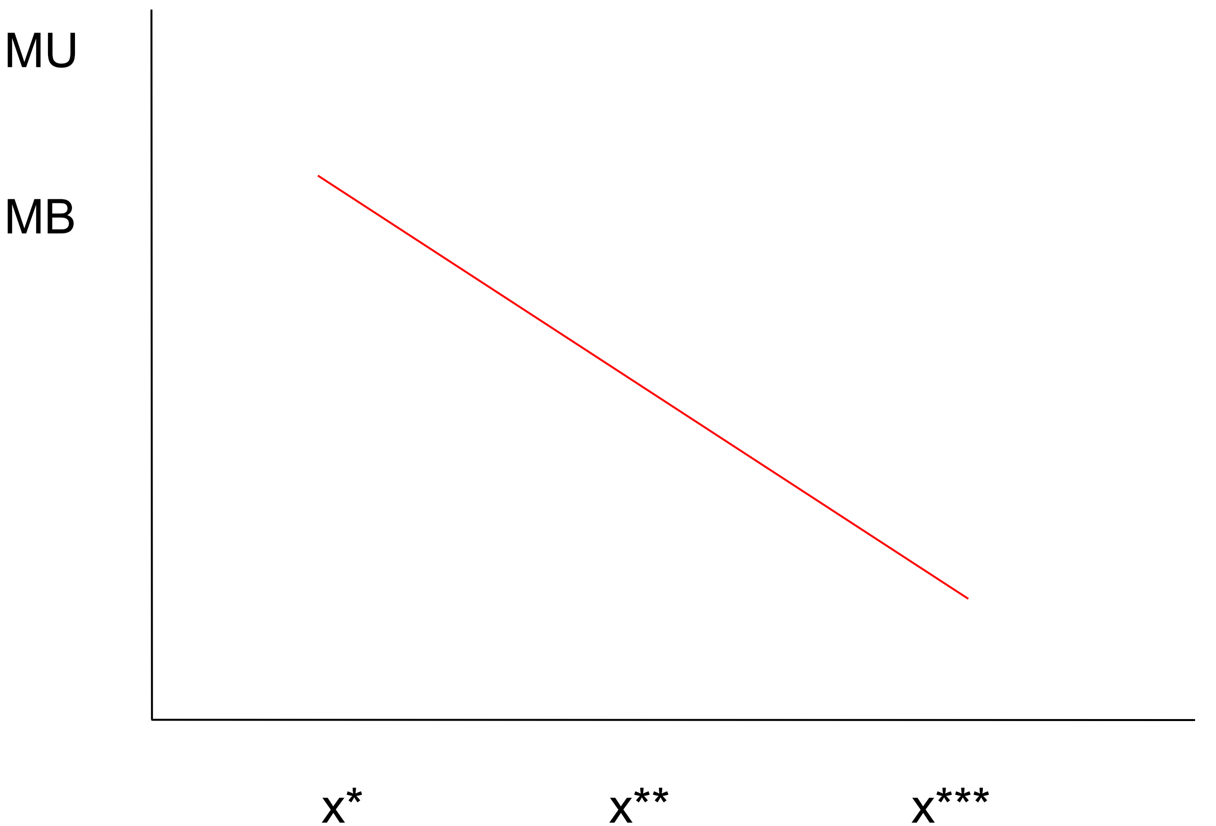


Consumer‘s demand V

Alternative view



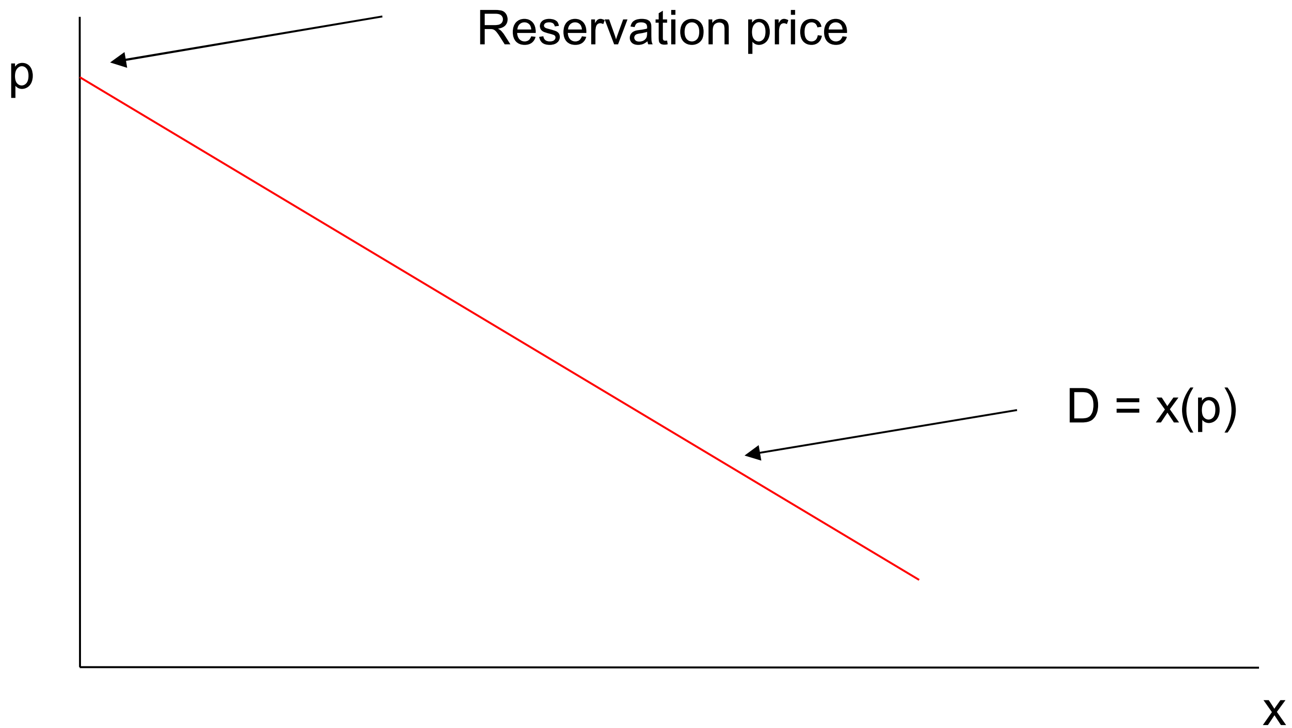
Consumer‘s demand VI



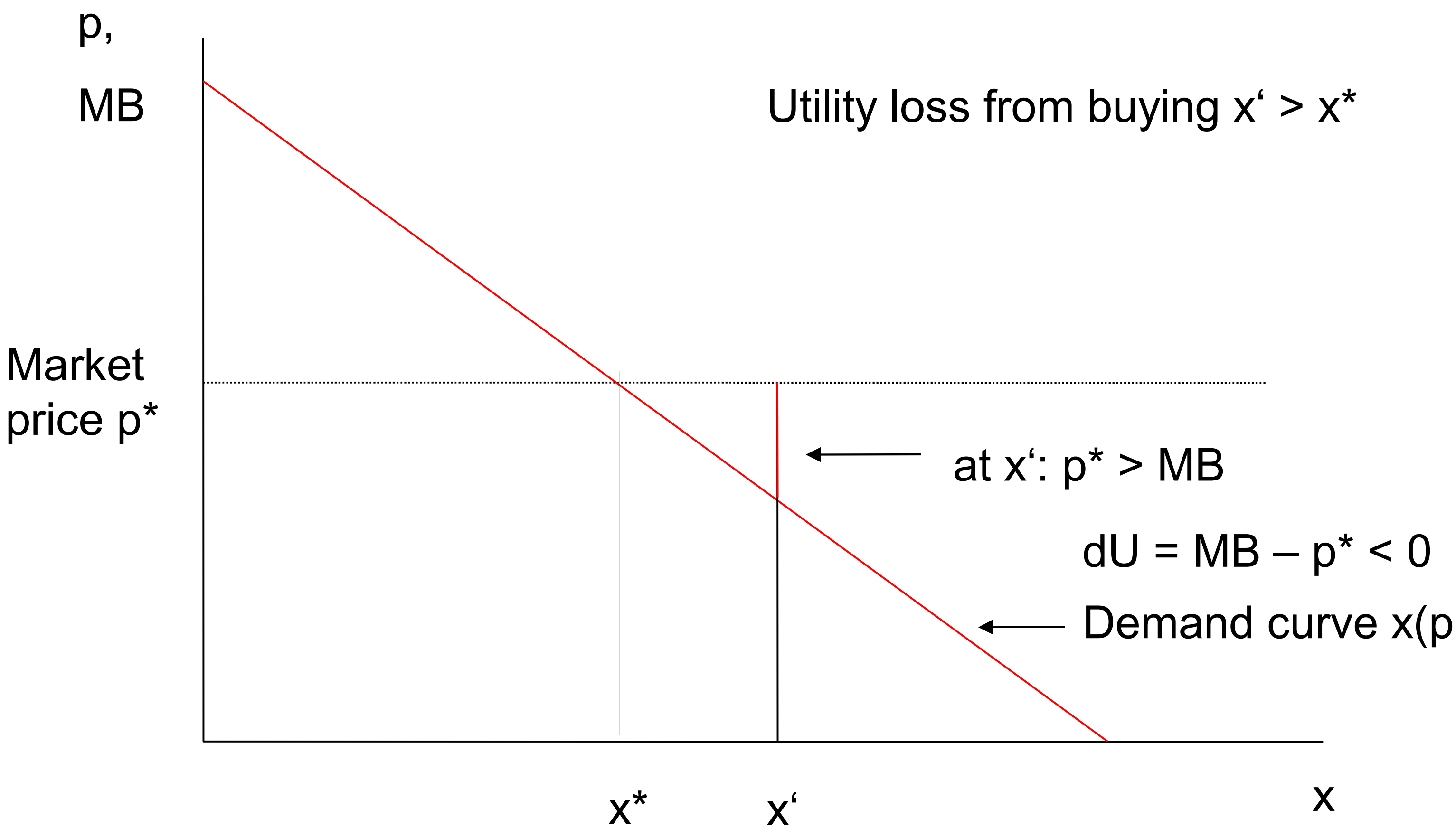
as x increases, MU of additional x declines

MU valued at 'prices'l = MB, marginal benefit

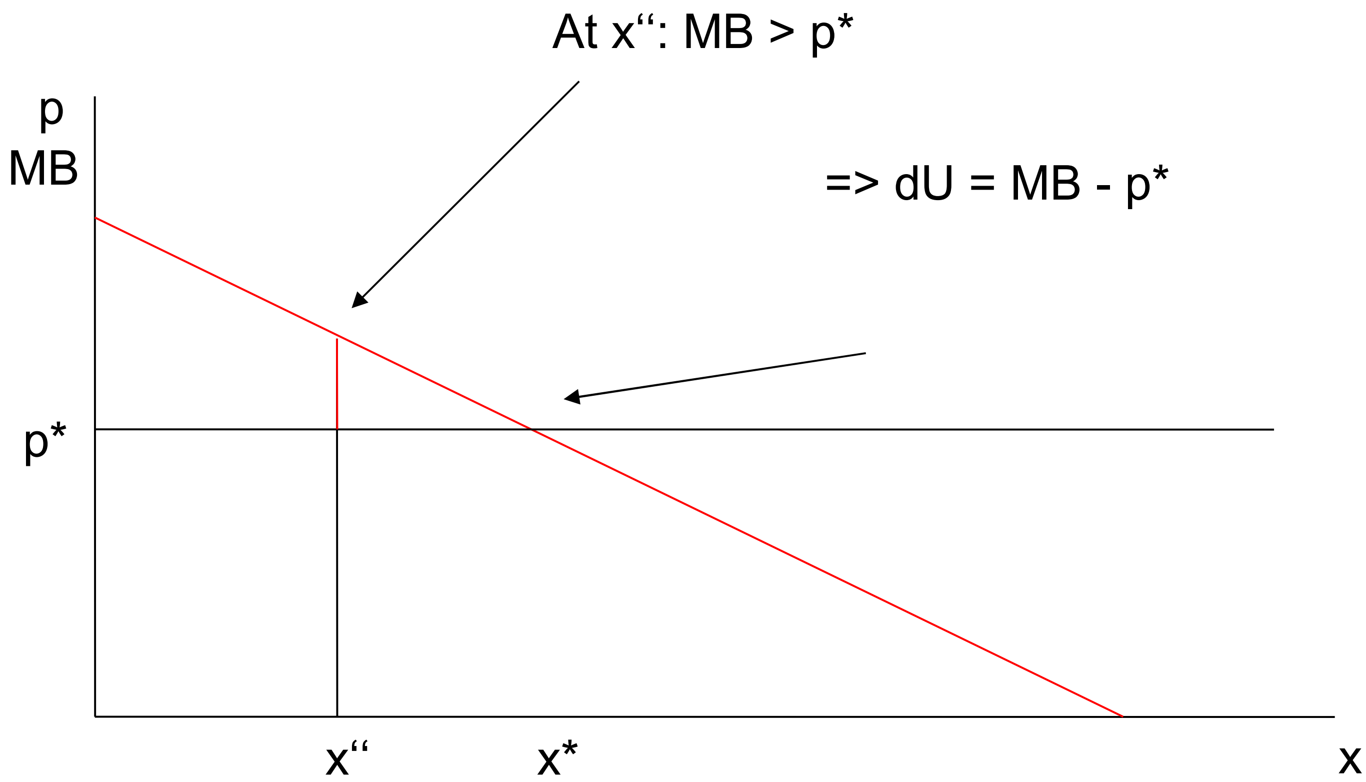
The demand curve



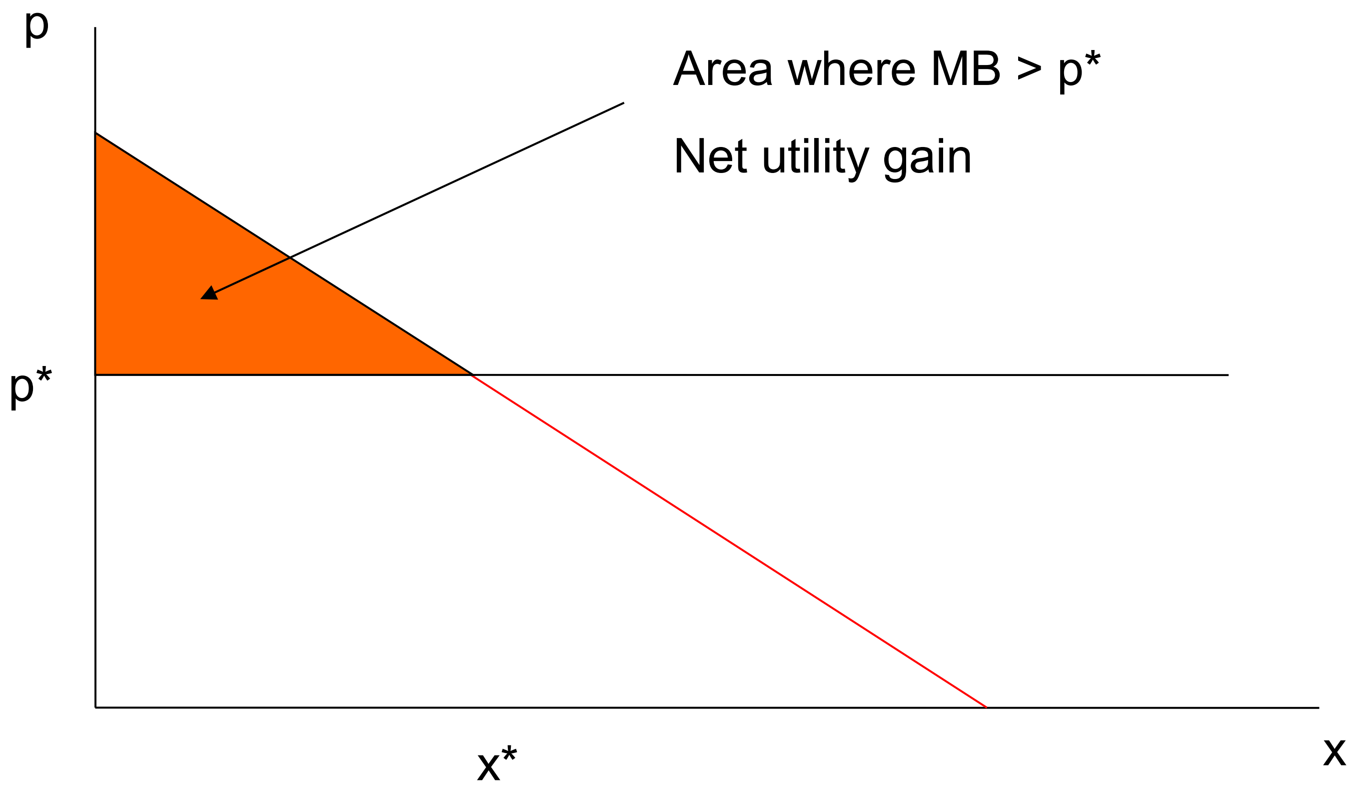
Consumer welfare I



Consumer welfare II

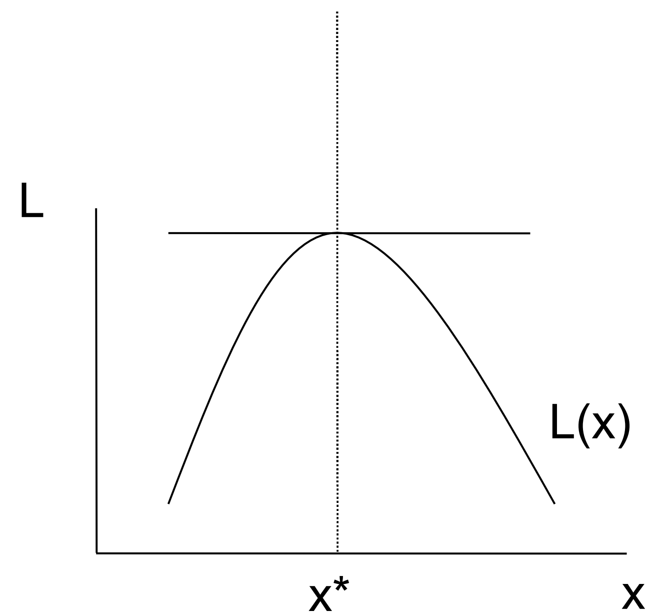


Consumer welfare III



Mathematical approach I

- Max $U(x, y)$ s.t. $I = xp_x^* + yp_y^*$
- $L = U(x, y) + \lambda(xp_x^* + yp_y^* - I)$
- $\partial L/\partial x = 0$
- (first order condition at $x = x^*$)



- $\partial U/\partial x + \lambda p_x^* = 0$

$\Rightarrow -1/\lambda\ MU_x = p_x^*$

- => marginal benefit of x equals market price p*

Mathematical approach II

$\partial L/\partial x = 0 \Rightarrow -1/\lambda\ MU_x = p_x^*$

$\partial L/\partial y = 0 \Rightarrow -1/\lambda\ MU_y = p_y^*$

$I = xp_x^* + yp_y^*$

$\Rightarrow$ demand function x(p):

$\Rightarrow x^* (p^*, y^*(p^*))$

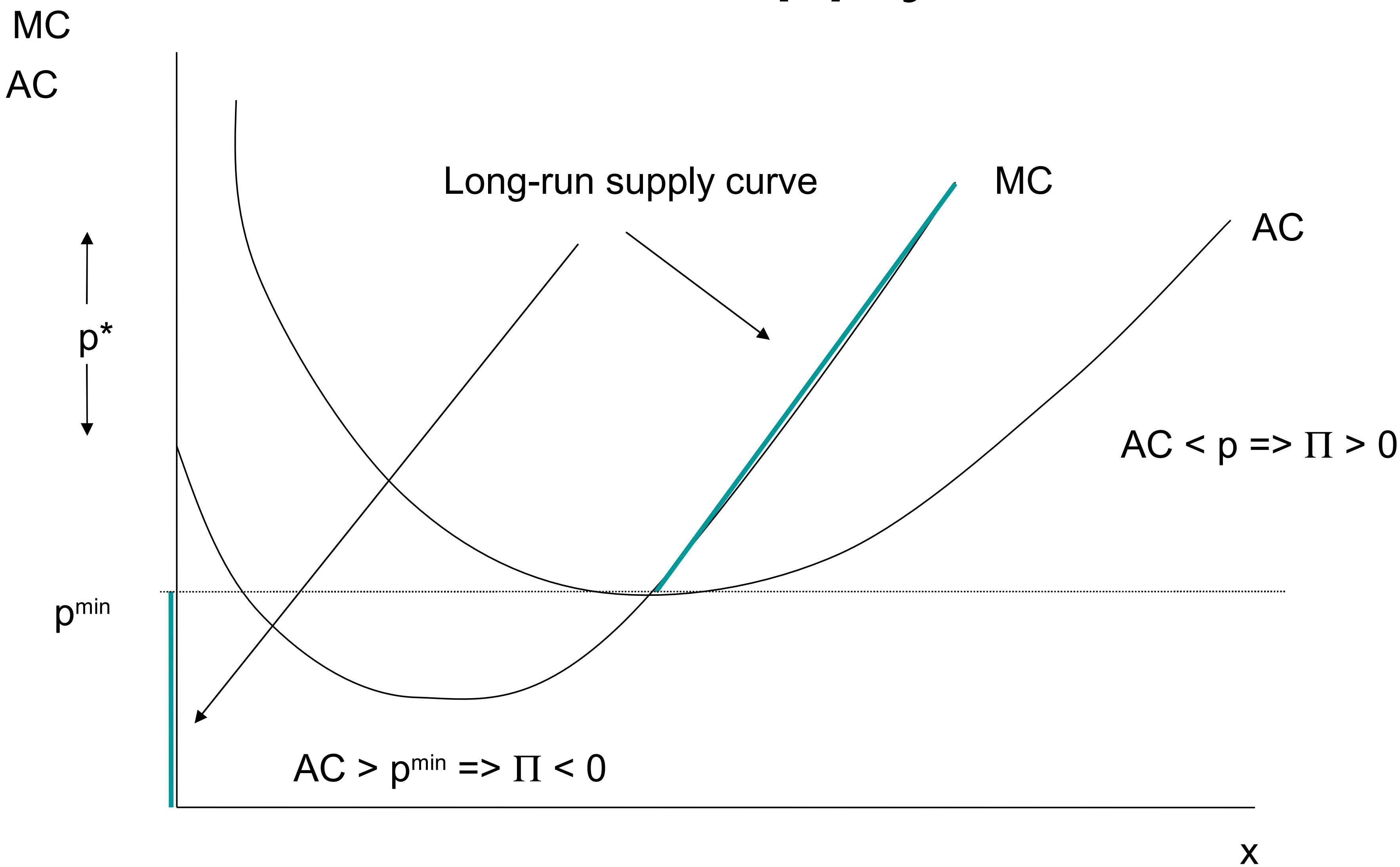
$\Rightarrow x^*(p^*, I)$ (Marshallian demand)

(p price vector $p = (p_x, p_y)$) (analogously: $y^* (p^*, I)$)

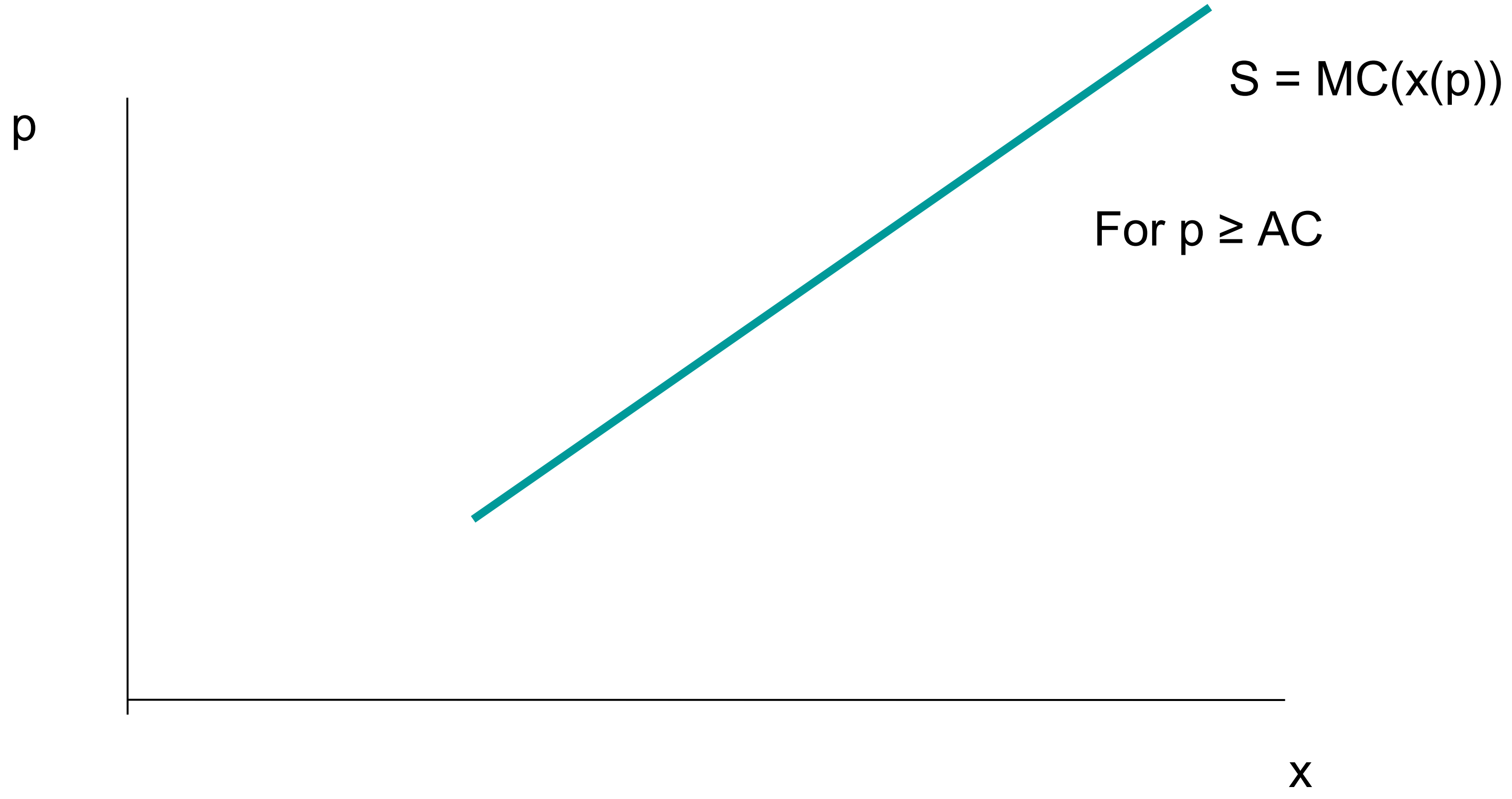
Firm‘s supply I

- The cost function C(x)
- Fixed costs, variable costs
- Fixed costs: land, building
- Most variable: labor
- Time horizon: short-term, long-term
- Lecture 1: constant marginal costs
- Reality: marginal costs vary in x

Firm‘s supply II



Supply in Market



Mathematical derivation I

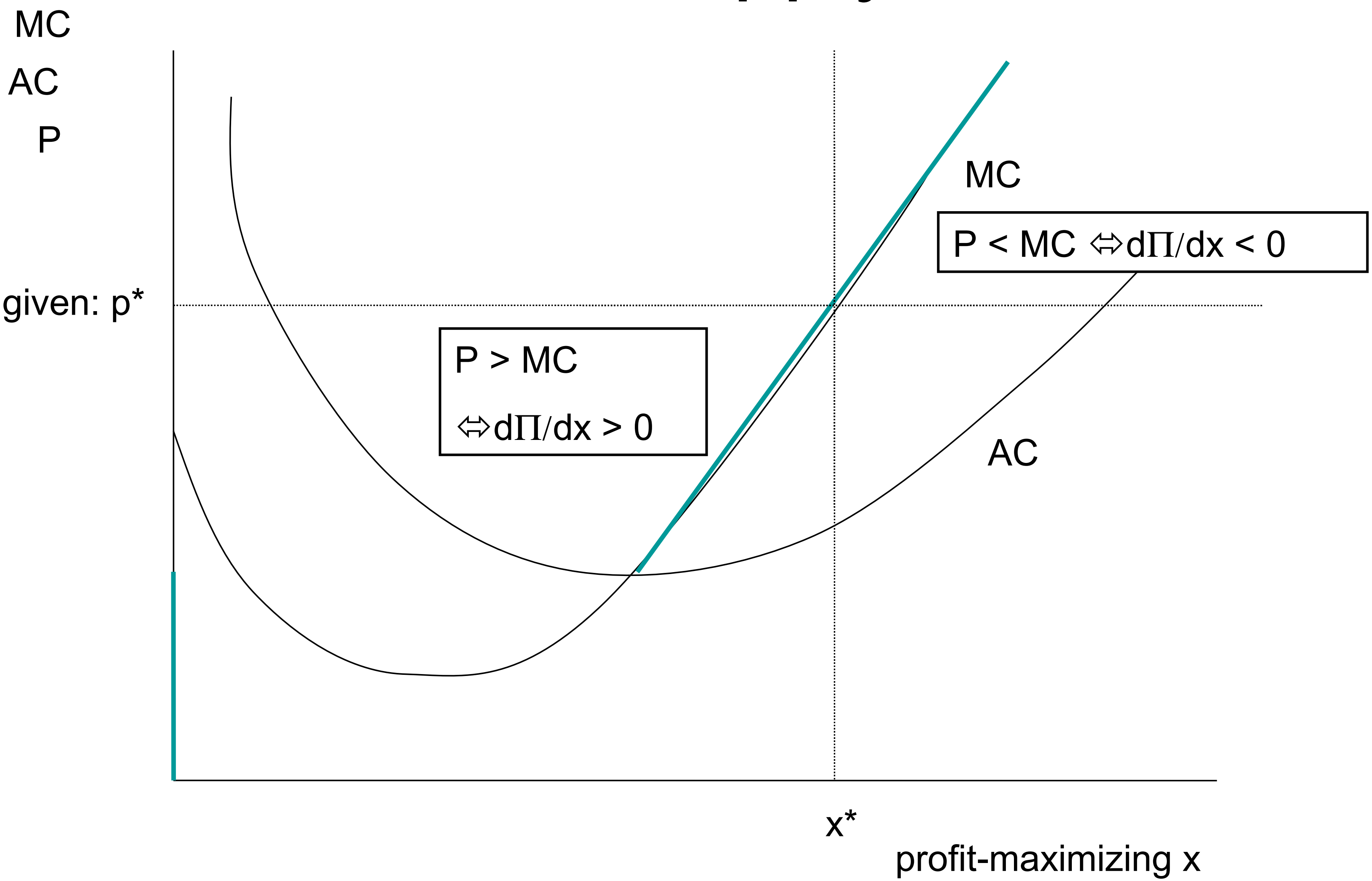
- Profit: $\Pi(x) = px - C(x) = px - F - c(x)$
- Max $\Pi(x)$
- First order condition: $d\Pi/dx$ (at $x = x^*$) = 0
- $p = dc(x)/dx \Leftrightarrow p(x^*) = MC(x^*)$
- (inverse supply function)
- What is the optimal price so that $p(x^*) = MC(x^*)$?

Mathematical derivation II

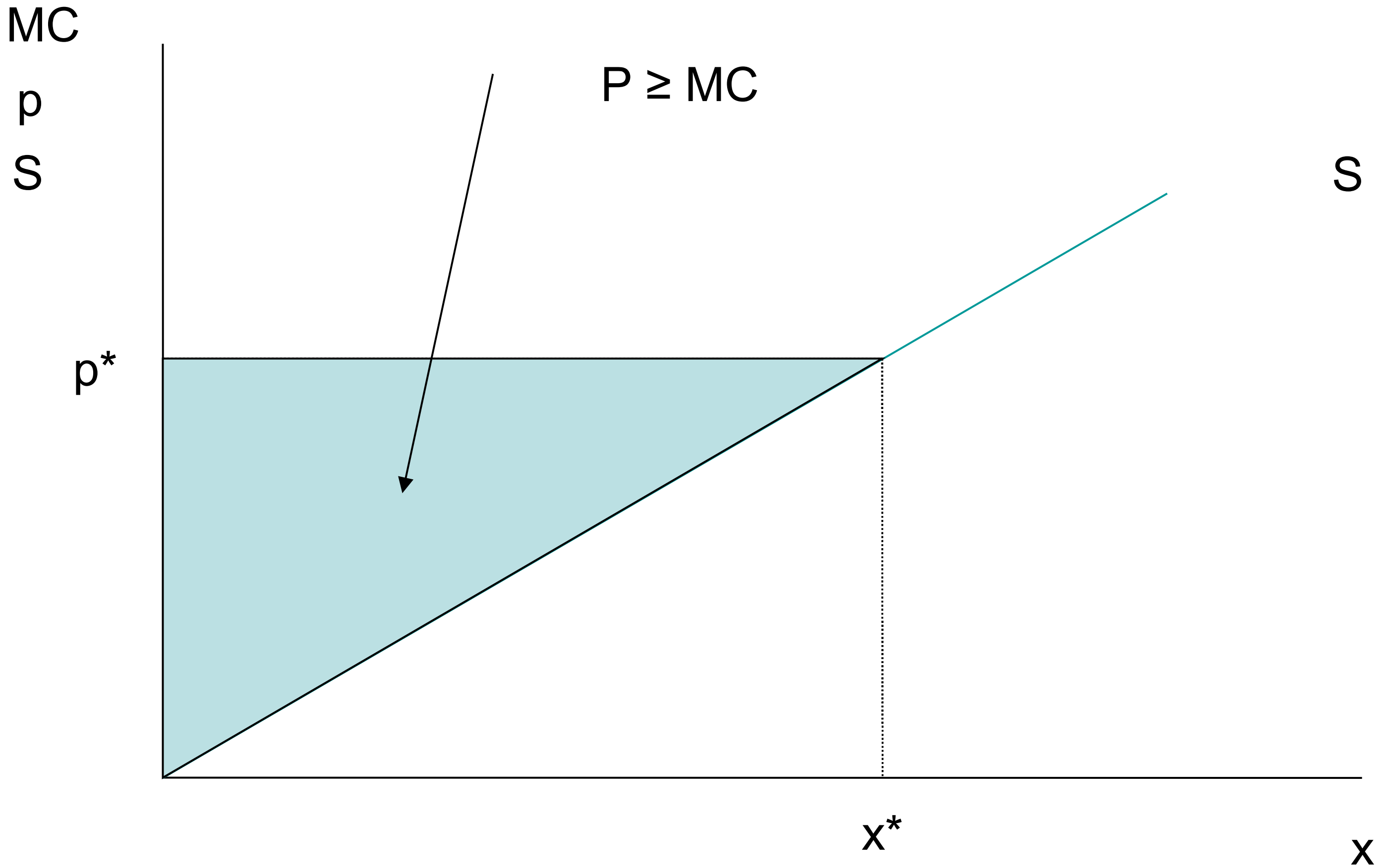
- $p(x) = MC(x)$
- (inverse supply function)
- => Supply function $x(p^*)$?
- $p = MC(x(p^*)) \Rightarrow x(p^*)$

- Profit-maximizing x^* depends on market price p^*

Firm‘s supply III

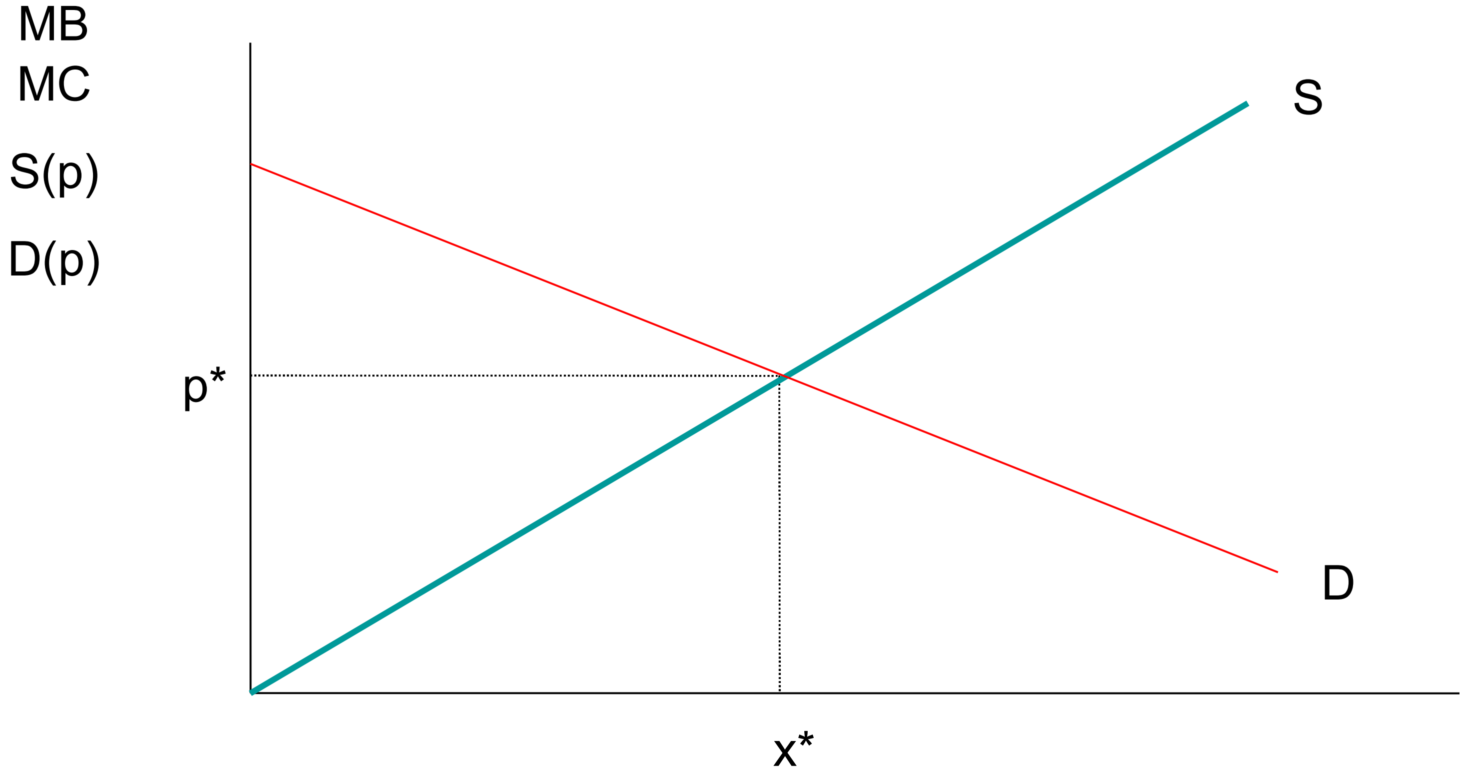


Producer surplus



Market

Coordination device: price mechanism



The invisible hand

...every individual necessarily labours to render the annual revenue of the society as great as he can. He generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting it. By preferring the support of domestic to that of foreign industry, he intends only his own security; and by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand *to promote an end which was no part of his intention. Nor is it always the worse for the society that it was no part of it. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it. I have never known much good done by those who affected to trade for the public good.*

Welfare gains from exchange