

Review

Review of microeconomics

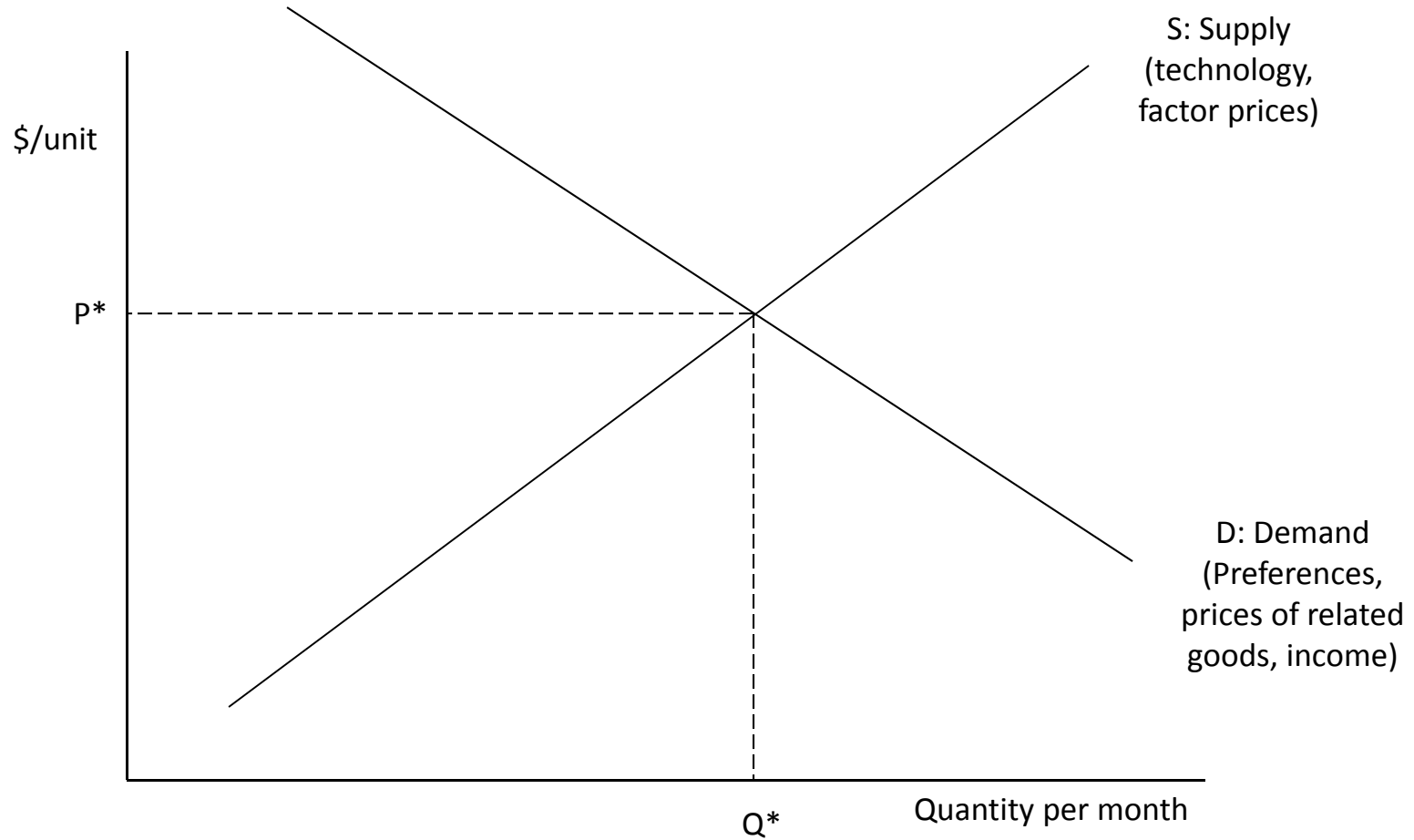
- Supply/demand analysis
- Efficiency of competitive equilibrium
- Applications

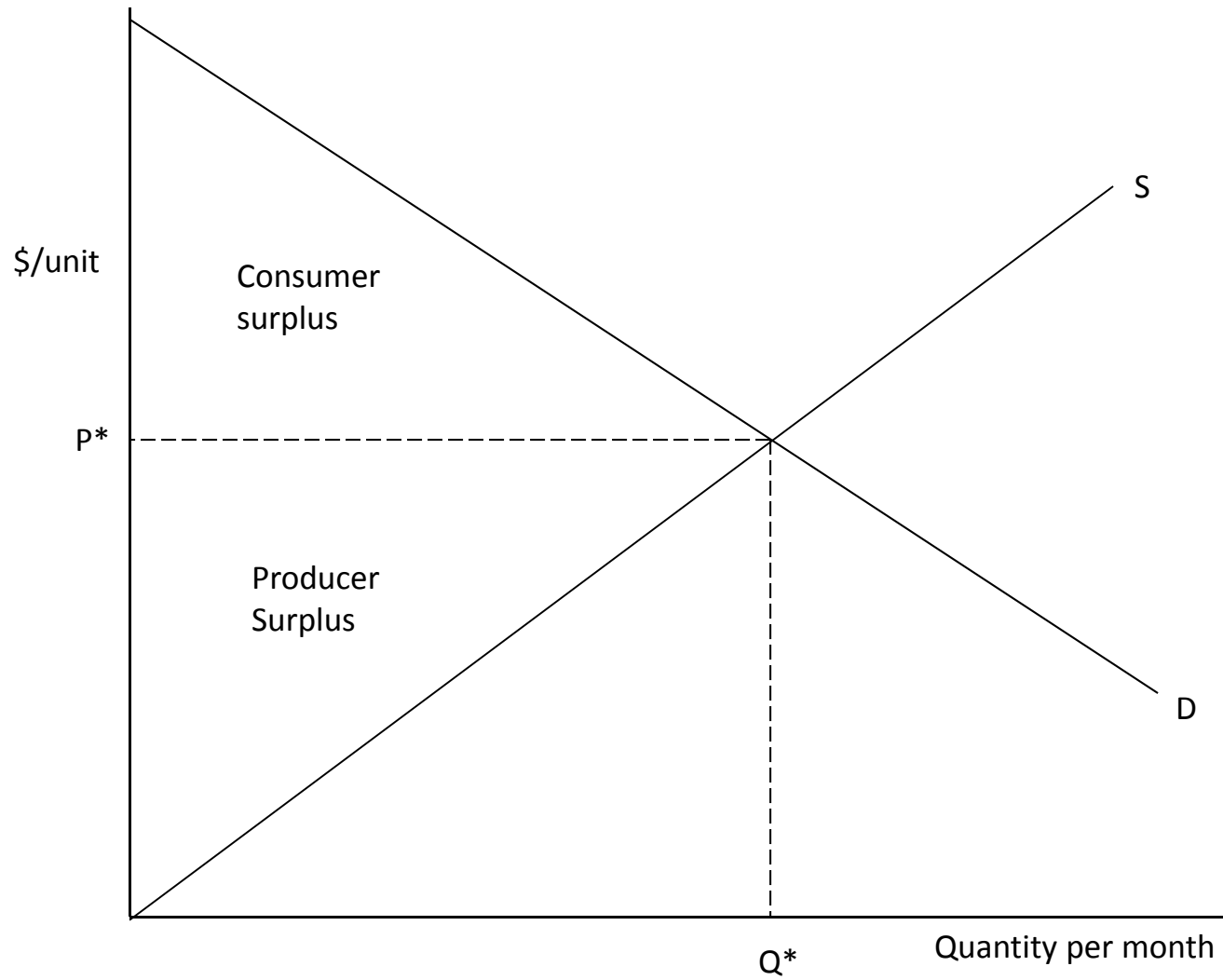
Economic efficiency and policy analysis

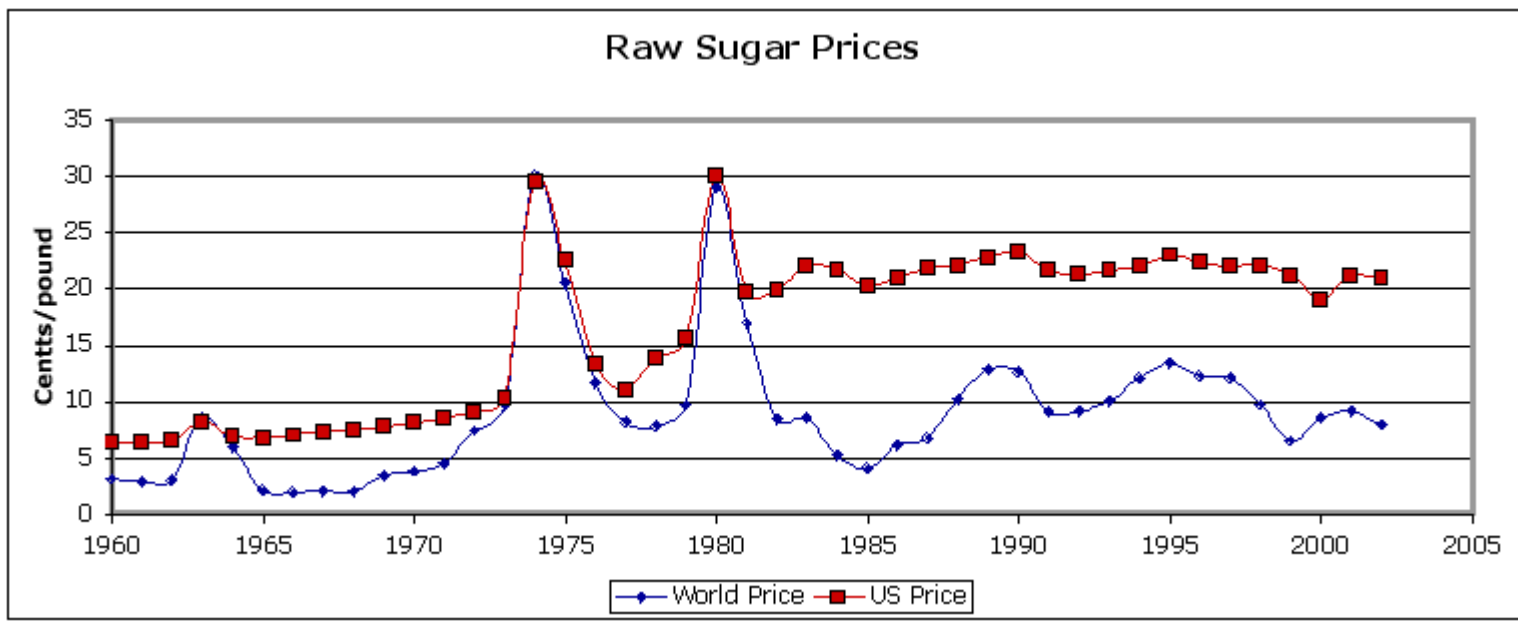
- Pareto Optimality
- Missing markets, externalities and corrective policy
- Property rights

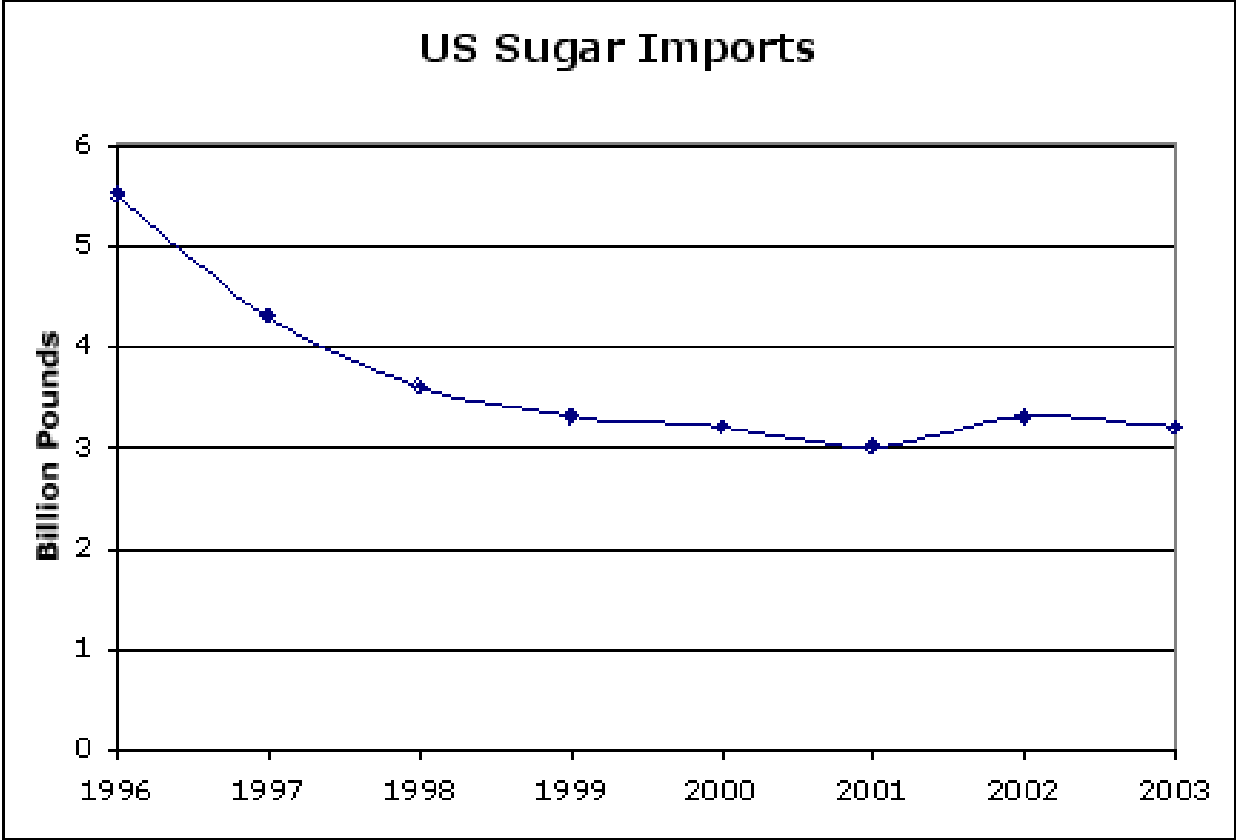
Intertemporal Choice

- Present value calculations
- Asset market equilibrium

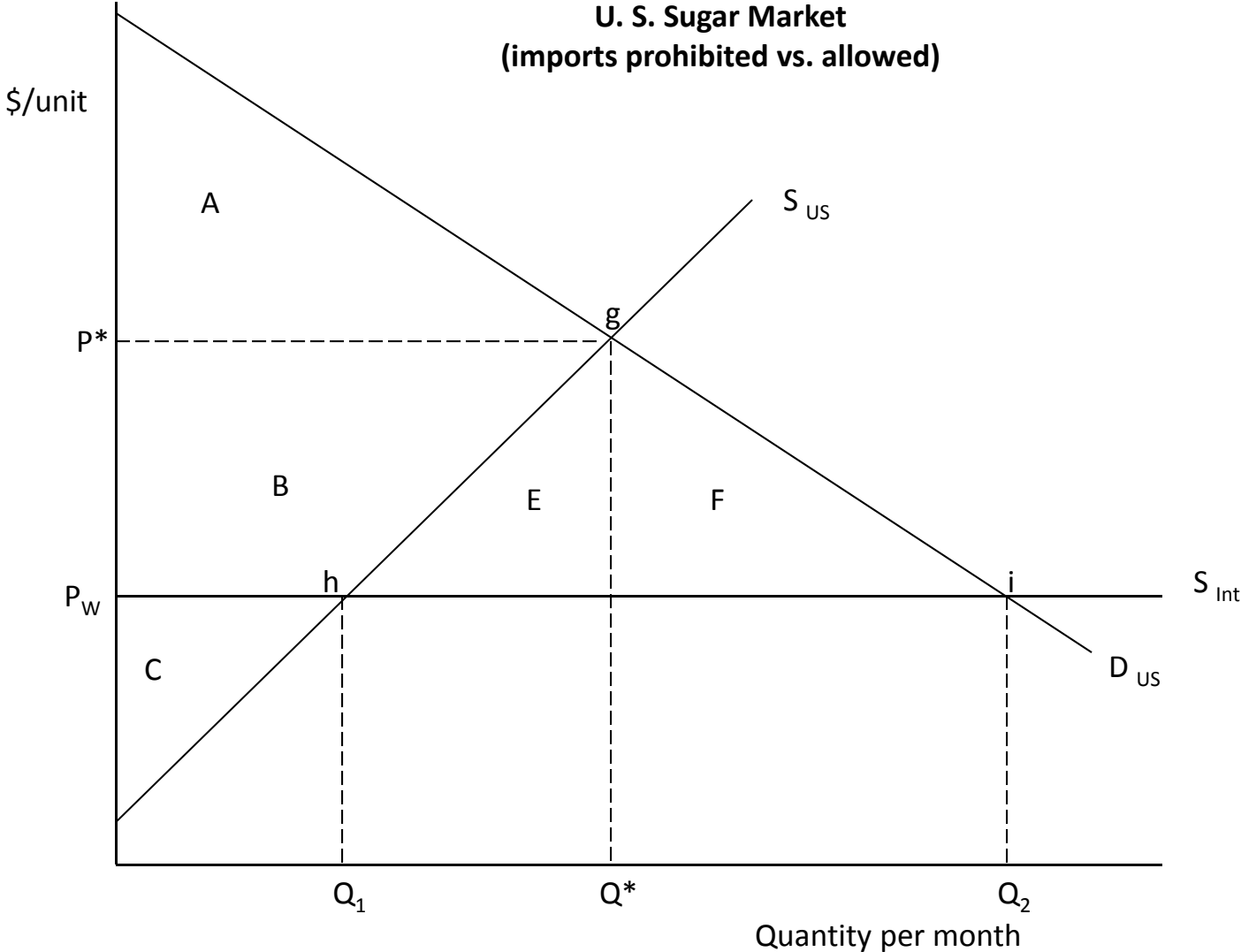


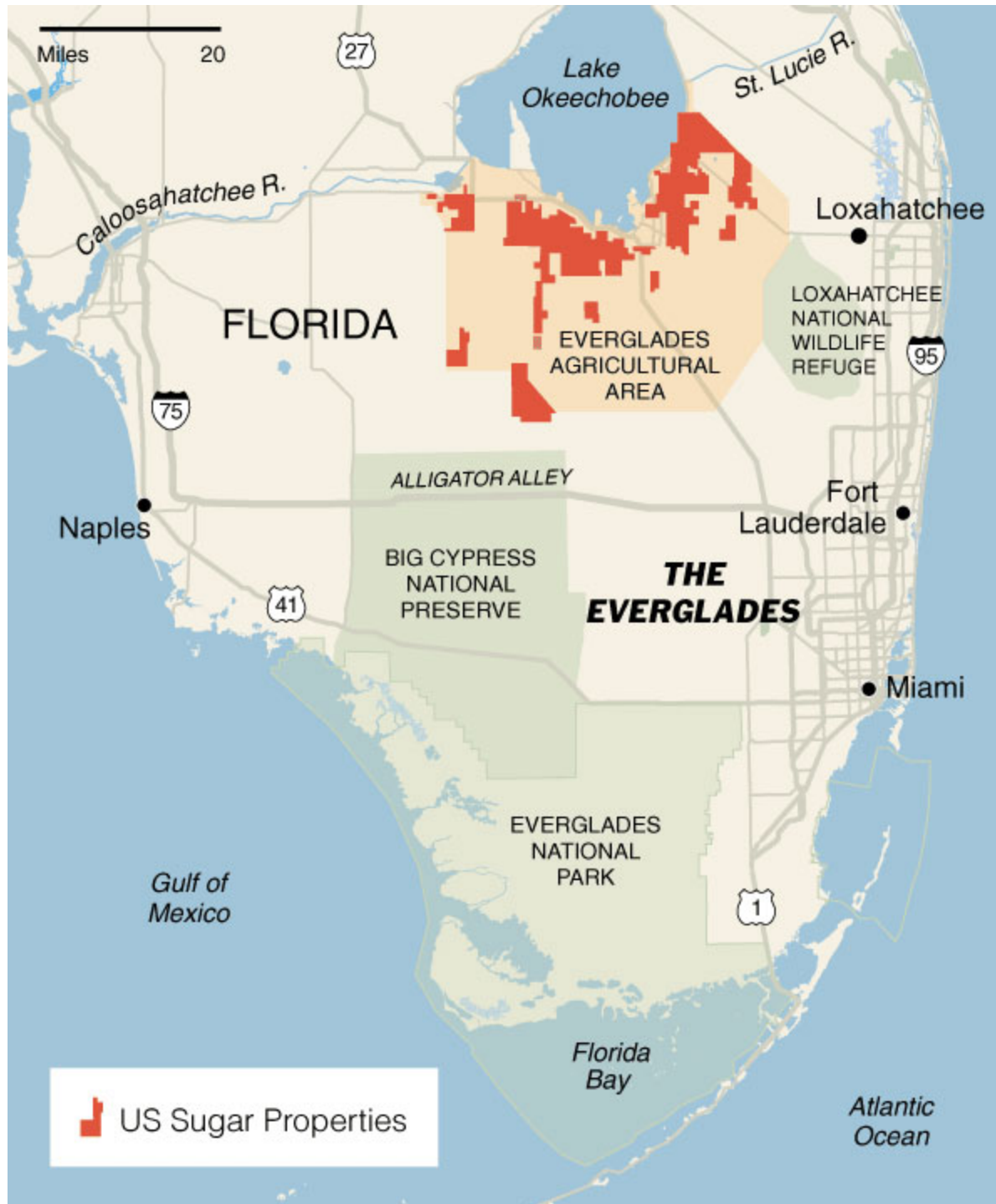






**U. S. Sugar Market
(imports prohibited vs. allowed)**





3/28/2012

 US Sugar Properties

Pareto Optimal Allocation: An allocation of resources is Pareto Optimal if any reallocation that improves one person's utility necessarily makes someone else worse off.

Pareto Optimality and Competitive Markets

Theorem: If competitive markets exist to allocate all inputs and outputs that affect individual utilities or profits, then the competitive equilibrium, with supply = demand in each market, is Pareto optimal.

Missing Markets, Externalities, and Corrective Policy

Potato chip example:

Requires labor, L , at cost w

w = value of the output labor could produce in another industry

Other input, river for irrigating potatoes

Opportunity cost = value of foregone recreational use, p_R^*

No market for water, price is effectively zero.

Water cost is external to the firm, not included in supply function

Chip market.

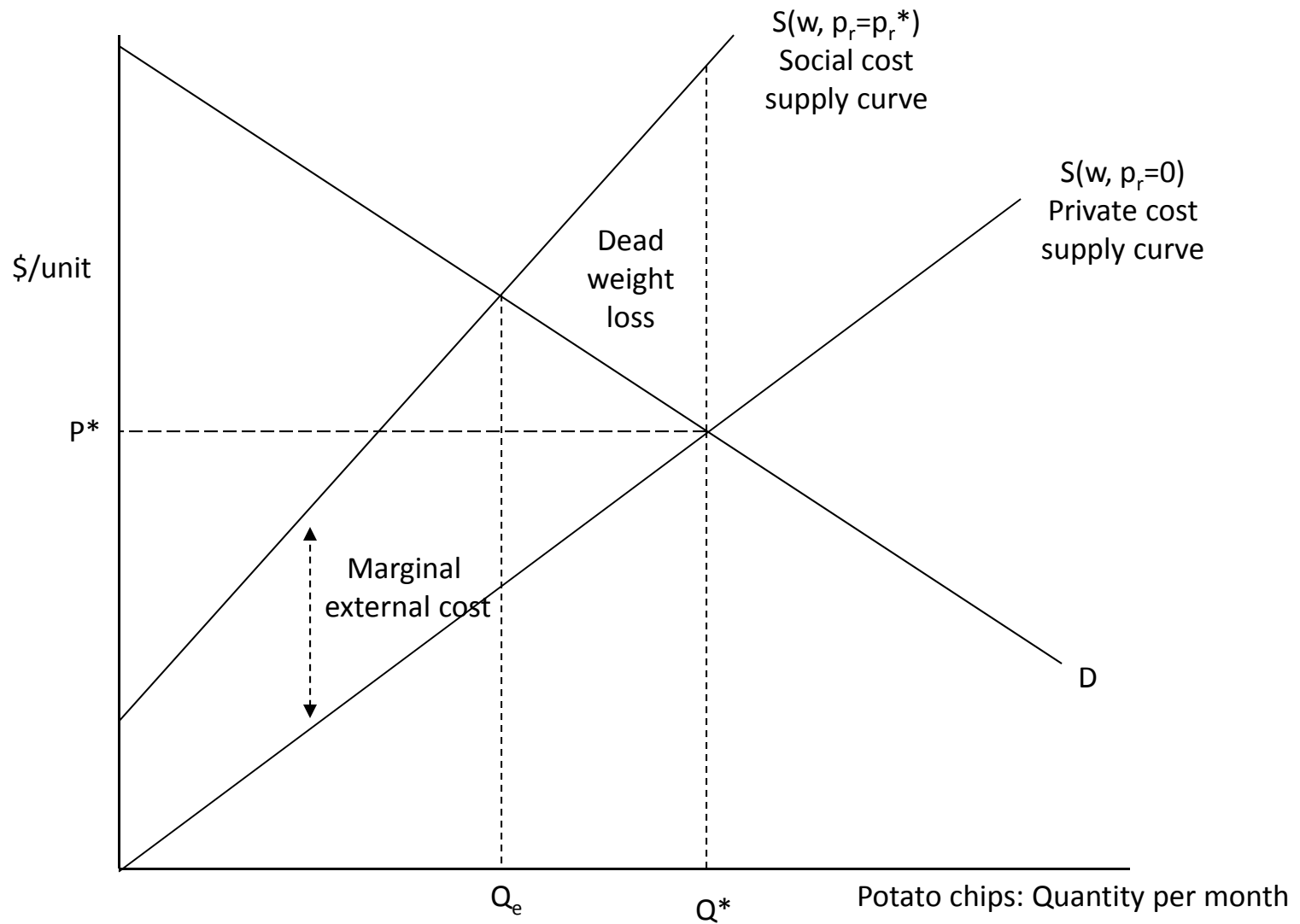
Market cost is 'too low', because river is un-priced

Inefficiency (DWL): too many chips, too little recreation

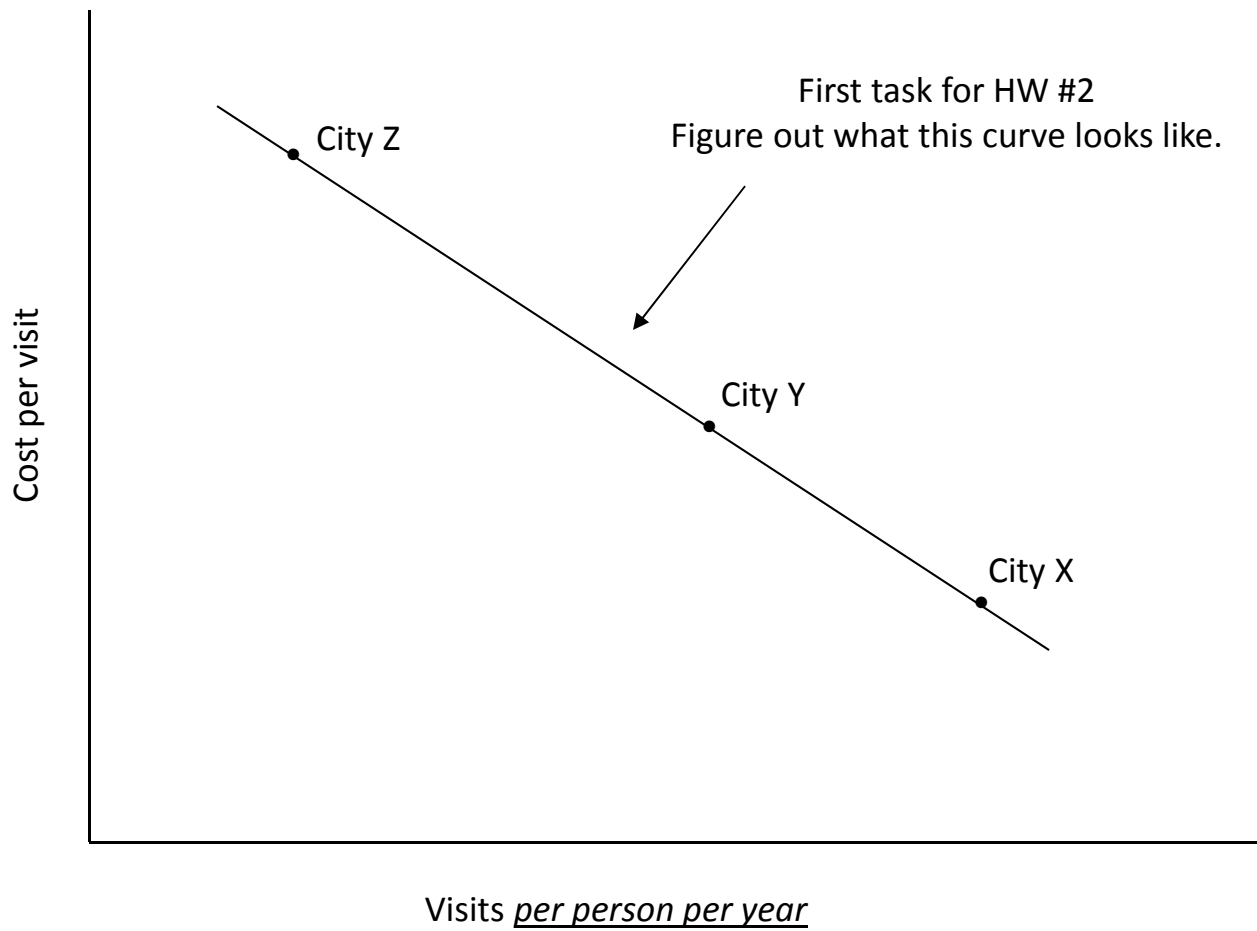
Corrective policy:

Charge a price for water, p_R^* .

Mimics what market for river would do, if one existed



Private cost supply curve lies below social cost supply curve because it excludes the opportunity cost of irrigation water from the river (p_r^*).



Markets incomplete (and externalities occur) when property rights not well defined

Property rights specify:

- Who may use an asset
- Who can be excluded
- How asset may be used
- Whether it may be transferred

Difficult to establish when:

- Monitoring and enforcing ownership are difficult (e.g., sedentary lobsters vs. migrating tuna)
- Government is ineffective or corrupt in enforcing (e.g., Switzerland vs. Nigeria).

Present Value and Utility Maximization

Rule: If markets for borrowing and lending exist, then utility maximization requires that investment decisions be made to *maximize the present value of net payoffs*.

Present Value Formulas

1: PV of A received in period t, when the interest rate is r% per year:
= $A/(1+r)^t$ with compounding once per year;
= Ae^{-rt} , where $e=2.71$, with 'continuous compounding'.

2. PV of A received each year forever, starting next year:
$$PV = A/(1+r) + A/(1+r)^2 + A/(1+r)^3 + A/(1+r)^4 + \dots$$
$$= A/r$$

3: PV of A is received each year from year 1 (next year) through year T:
$$PV = (A/r)\{1 - 1/(1+r)^T\}$$

4: PV of A is received at intervals of T years, forever:
$$PV = A/\{1 - 1/(1+r)^T\}$$

Asset Market Equilibrium Rule

Def. of Asset: Object that can yield consumption in more than one period.

Examples: house, bond, oil reserve, forest.

One period decision: Should the owner hold asset i for an additional year, or sell it and invest the proceeds in an alternative asset?

P_i = price of asset i ;

Possible payoffs to holding asset i for one year:

(1) Consumption flow, C_i

Examples, bond interest, housing service, utility from art, apples from tree.

(2) Expected capital gain/loss, dP_i

Examples: oil reserves, works of art, apartments may rise or fall.

(3) Physical growth/depreciation: g_i in physical terms, $g_i P_i$ in value

Examples: forest growth ($g_i > 0$), apartment house depreciates ($g_i < 0$).

Asset Market Equilibrium Rule (cont.)

Total Return from holding asset i: $C_i + dP_i + g_i P_i$.

Rate of return from holding asset i: $= \{C_i + dP_i + g_i P_i\} / P_i = C_i / P_i + dP_i / P_i + g_i$

Rate of return on alternative asset in the economy: r

Investor's decision:

Hold (sell) asset i if its rate of return is greater (less) than r ;

Investor is indifferent between holding and selling asset i if

$$C_i / P_i + dP_i / P_i + g_i = r.$$

Asset market equilibrium condition: $C_i / P_i + dP_i / P_i + g_i = r$

Examples

Oil reserve:

$c_i = 0$ (no consumption flow while held),

$g_i = 0$ (no depreciation or growth)

$dp_i > 0$ (possible capital gain)

Result: $dp_i/p_i = r$; therefore $dp_i/p_i = r$.

Work of art:

$c_i > 0$ (utility flow from enjoyment),

$g_i = 0$ (no depreciation or growth)

$dp_i > 0$ (possible capital gain)

Result: $c_i/p_i + dp_i/p_i = r$; therefore $dp_i/p_i < r$.