# Normative or Welfare Economics

(H&H Ch. 15, 8.2)

Until today we have been studying *positive* economics (or *descriptive* = what does happen).

*Normative* (or welfare) economics studies what *ought to* happen. (It's *prescriptive.*)

In particular, we examine *allocations*:

i.e. choices of consumption
production
sale of input factors

The basis for comparison of allocations is purely one of *economic efficiency*: not one of *equity* or fairness (or equality of distribution).

We do not attempt to compare (to trade-off) the utility levels of different individuals—welfare economics is mute on comparisons of distribution or comparisons of inter-personal utilities.

**Efficiency, or Pareto Optimality (P.O.):**

A set of allocative choices is said to be P.O. or efficient if there exist no other sets which would make no one worse off while making at least one person better off.

This is a very weak condition: there is *no waste, no slack.* A tug-o'-war is always P.O.: one side can only win at the expense of the other (a zero-sum game).

All points on the Contract Curve are efficient.



**Economic efficiency:**

we say that a set of allocative choices is *economically efficient* if and only if it's Pareto Optimal.

The two are equivalent. (No waste, no slack.)

**Deep Point** (*Theorem of the Invisible Hand*):

Given a number of ideal conditions, optimizing behaviour on the part of individuals and firms under **perfect competition** *leads to an efficient, Pareto Optimal outcome.*

The necessary conditions are:

1. the marginal rate of substitution between any two goods must be the same for any two consumers
$$\frac{P_i}{P_j} = MRS_{ij},$$
2. the marginal rate of technical substitution between any two inputs must be the same for any pair of producers $\frac{w_i}{w_j} = MRTS_{ij}$, and
3. the marginal rate of substitution in consumption between any two goods must be the same as the marginal rate of transformation between these goods for any producer.
$$P = \frac{w_i}{MP_i} = \frac{w_j}{MP_j} = \cdots$$

But, in perfect competition:

1. the marginal rate of substitution in consumption
   = the ratio of prices of the goods,
   $$MRSC_{ij} = P_i/P_j$$

2. the marginal rate of technical substitution
   = the ratio of the prices of every two inputs,
   $$w_i/w_j = MP_i/MP_j$$

3. for each firm, the value of the marginal product of an input
   = the price of the input ($P \times MP_i = w_i$).

Economics provides no way to choose between any two *efficient* (P.O.) allocation choices.

"An allocation can be Pareto Optimal and perfectly ugly."

e.g. the King in the Counting House



**For perfect or pure competition we require:**

- *non-satiation* in consumption
- no *external* benefits

  we require: social benefits = private benefits
- no *external* costs

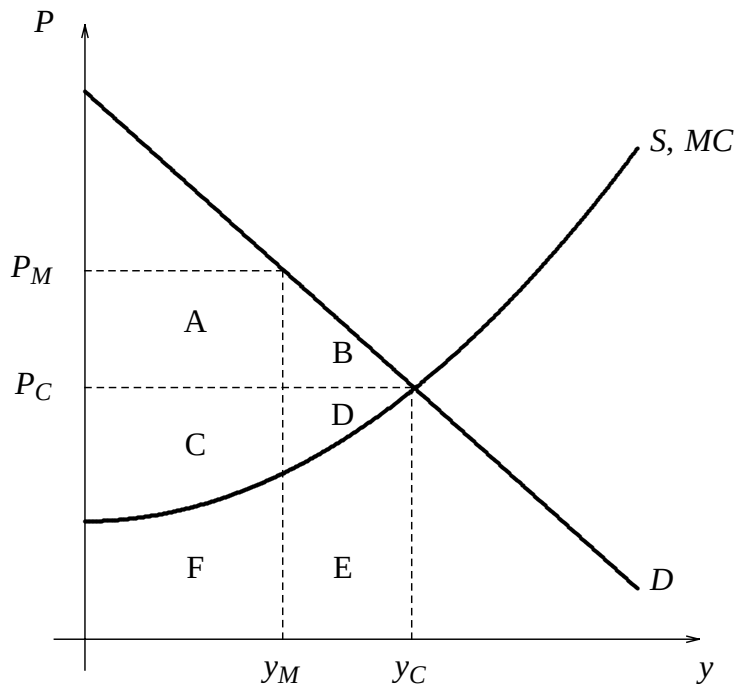
  we require: social costs = private costs
- second-order optimisation conditions satisfied
  (DRTS or *increasing costs*, decreasing marginal utility)
- *price takers* (firms, buyers, sellers)
- *full information* of all offers to buy & sell
- *free entry and exit* i.e. no barriers

Then: allocations from perfect competition are efficient.

**What can go wrong?**

- external benefits (e.g.?)
  ∴ not enough good produced
- external costs — crowding, pollution
  ∴ too much of the "bad" produced
- *public goods* (non-rivals in consumption & excludability)
  e.g. defence, public health
- decreasing costs (*IRTS*)
- market power
- disequilibrium ($2^{nd}$ best)






Areas on this graph correspond to dollar amounts: costs, revenues, profits, losses, and surpluses (net willingnesses to pay or to supply).

**The Efficiency Losses from a Monopoly**:

Consider a shift from monopoly ($y_M$, $P_M$) to competitive ($y_C$, $P_C$):

The Consumer Surplus rises by area $A + B$

Sales Revenue: old = $A + C + F = P_M \times y_M$

new = $C + D + E + F = P_C \times y_C$

$\therefore$ rises by $D + E - A$

but Total Costs rise by area $E$.

Now the change in profits $\Delta\pi = \Delta TR - \Delta TC$.

$\therefore$ Profits fall by $E - (D + E - A) = A - D$

& The gain in C.S. + gain in P.S. = $B + D$.

$\therefore$ Gain in Consumers Surplus – Loss of Profit
= area $B + D$

That is, moving from monopolistic ($y_M$, $P_{M)}$ to competitive ($y_C$, $P_C = MC(y_C)$) leads to a *gain in efficiency*, since at monopolistic output the *Dead-Weight Loss* = area $B + D$.

So: the loser (the monopoly) *could* be compensated by the winners (the consumers) the amount ($A - D$) and then

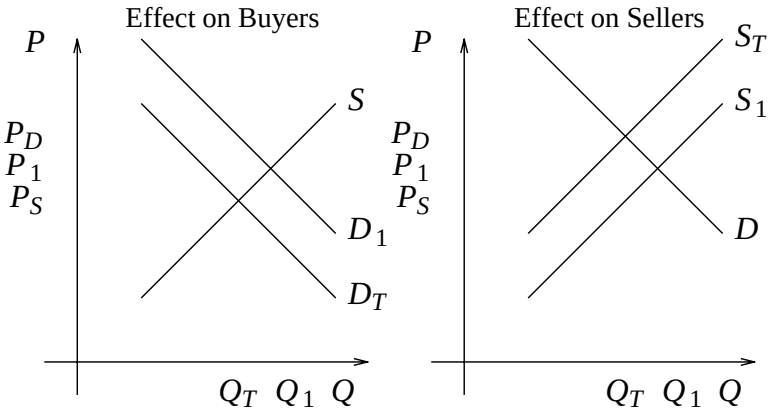
no-one (the monopoly) would be worse off
& someone (the consumers) would be better off.

That is: with the compensation paid, ($y_C$, $P_C$) is *Pareto Superior* to ($y_M$, $P_M$), and is *Potential-Pareto Superior* anyway, whether or not the compensation is paid—by the "winners" (here the consumers) to the "losers" (here the monopolist).



**Taxes and Efficiency** (Revision)

Consider two graphs of what happens when a *unit tax* (of $x$ dollars per unit sold) is imposed on a market:




e.g. a petrol tax of, say, 12¢ per litre.

If the buyer is paying $P_D$ = 70 ¢/litre,
then the seller is getting $P_S$ = 70 – 12¢ = 58 ¢/litre.

In general, if $t$ \$/unit is the tax, then

$$P_D = P_S + t.$$

If the government receives the tax from the supplier, then the quantities sold occur when supply equals demand:

$$D(P_D) = S(P_S) = S(P_D - t)$$

or

$$D(P_S + t) = S(P_S)$$

a *tax wedge* between $P_S$ and $P_D$

Doesn't matter who actually writes the cheque for the government because the tax is passed on to some extent.

*Note:* Another kind of tax is known as *ad valorem* (literally: to the value), usually given as a tax of *x*% of the price (wholesale or retail).

Consider the *efficiency effects of a tax*:

There is a *deadweight loss* (DWL):

| | | |
|---|---|---|
| loss of consumer's surplus *CS* | = | A + B |
| loss of producer's surplus *PS* | = | C + D |
| gain of government revenue | = | (A + C) |
| net loss | = | B + D |

So the triangular area B+D is the deadweight loss, also sometimes known as the *excess burden*.

Why?

Consumers: prepared to pay up to A+B to avoid the tax.

Producers: prepared to pay up to C+D

Together: prepared to pay A+B+C+D to avoid a tax that raises only A+C.

So the excess burden of the tax is B+D,

since the effect of the tax is a reduction in sales:

can't (yet) tax what ain't there.

Note: any distortion or regulation (such as price controls) will in general result in the efficiency, deadweight losses.



**Policy Analysis**

**Pareto Improvement:**

A change is a Pareto Improvement (or Pareto Superior) if it makes no one worse off and at least one person better off.

**Potential Pareto Improvement**: (Kaldor)

A change is an improvement if those who gain *could* reimburse those who lose so that if the transfer of reimbursement took place the change results in no one worse off and at least one person better off. But no actual reimbursement need take place.

The PPI Criterion focuses on *efficiency* not on distribution or fairness:

The reimbursement is a question of distribution, not efficiency. (The government could—by suitable lump-sum taxes—alter the distribution of wealth and/or income in society, without altering the relative prices.) The size of the necessary and potential reimbursement is a question of equity or fairness.

## Summary

In this final section:

we have seen why economists get *very* excited about competitive markets:

- under certain conditions, perfect competition results in an efficient (no waste) allocation of resources (a.k.a. Pareto optimum)
- but we live in a second-best world, in which these conditions are not met.
- how inefficient is a monopoly?
- the efficiency effect of a tax.

For the next installment:

- 202 Economic Investment Appraisal (T3, T6),
- 304 Macroeconomics for Managers (T3, T6)
- 203 Trade and International Business (T3, T6)
- 306 Strategic Game Theory (Summer)
- 201 Industrial Organisation (T4)
- 502 Economics of Organisations & Management (T5)
- 304 Management, Environment, and Resource Markets — “Bob was refreshing and insightful..rekindled a desire to attempt other economic units...Bob loves the subject”.



Proof of Pareto optimality by *reductio ad absurdum*:

At a Walrasian (or market-clearing) equilibrium, consumers maximise given their budget constraints. If a new distribution of goods and services improves the lot of some consumers and harms none, then it necessarily follows that the value of the new total consumption (at Walrasian prices) will exceed the value of the old total consumption. It follows that, since supply must meet demand, the new total production must be valued (at Walrasian prices) above the old total production. But, at a Walrasian equilibrium, producers maximise the value of their production, i.e., their profit. If, however, the value of the new total production is higher, then at least one of the producers must be making a higher profit than before. This is a contradiction.