Efficiency and Equity

October 26

Reading: Chapter 13

In this topic we examine: (1) notion of efficiency and equity; (2) how and why the perfectly competitive economy can achieve efficiency; (3) why, however, it may not; (4) notion of equity and how it is different from efficiency.

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Efficiency and Equity

a. Supply, demand and efficiency
b. General equilibrium and efficiency
c. Inefficiency in the economy
d. Efficiency and equity
e. Equity and fairness

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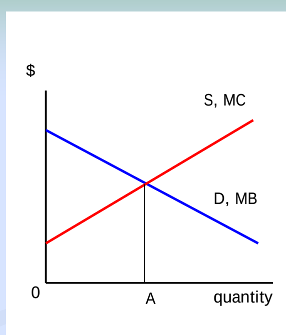
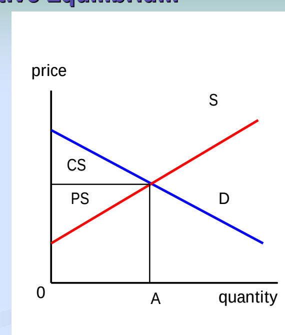
Supply, Demand and Efficiency
Efficiency in a market

- In partial equilibrium model of a single market, efficiency can be measured by the total surplus.
- Supply curve shows marginal cost – maximum amount at which suppliers will supply additional output. Area under supply curve measures total cost
- Demand curve shows marginal benefit – maximum that buyer will pay for additional output. Area under demand curve measures total benefit
- At quantity A, MB=MC and total net benefit is maximized. Efficiency is achieved – net benefit maximized. Area between the two curves measures total net benefit or surplus.
- What happens at other levels of output? Net benefit or surplus is lower.
- Note: Not discussing actually what happens – no prices, no buyers and sellers making decisions.



Supply, Demand and Efficiency
Efficiency of Competitive Equilibrium

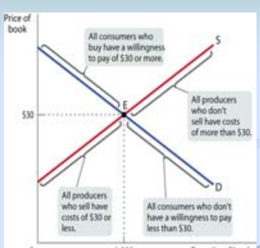
- Perfectly competitive equilibrium implies efficiency.
- Consumer surplus + producer surplus = total surplus is maximized.



Demand, Supply and Efficiency
Efficiency of competitive equilibrium, cont.

Can we improve on this equilibrium? Explain with each buyer and seller buying and selling one unit (for simplicity).

1. By **reallocating consumption**? No. Every consumer who gets it has a higher willingness to pay. Every one who doesn't has a lower willingness to pay.
2. By **reallocating production** across sellers? No. Every seller who sells has a lower cost than those who don't sell.
3. By **changing production level**? No. Willingness to pay of last buyer equals cost of last seller.



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Demand, Supply and Efficiency
Why the market is efficient and caveats

- What makes the market efficient?
  - Property rights:
    - resources and goods have owners who can sell them when they want
  - Price mechanism:
    - Signal: Provides buyers and sellers with information which helps them to make decisions. Allows decentralized decision-making.
    - Rationing device: Price changes clear the market to decide who will buy and who will sell.
- Market failure
  - Market power: parties have market power and prevent mutually beneficial trades from occurring
  - Externalities: side effects which work outside markets
  - Nature of goods: some goods are not suited for efficient management through markets. Example: national defense
- Equity and fairness
  - People who get to buy goods get it because they are willing to pay more. Maybe others not willing to pay more cannot afford it, not because they don't "need" it. So maximizing surplus does not imply fairness

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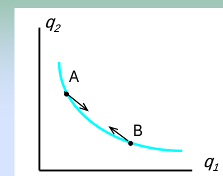
General Equilibrium and Efficiency
Efficiency in the economy as a whole

- So far looked at one market. But we are interested in efficiency in the **economy as a whole**. Many markets, many goods.
- General notion of **efficiency**: a situation in which **no one can be made better off without making someone else worse off**. (Is this an appropriate definition? Alternative: total utility of all individuals maximized. Interpersonal comparisons of utility.)
- To achieve efficiency, economy has to meet three criteria:
  1. **Efficiency in consumption**: no way to distribute goods among consumers which will make some better off without making someone else worse off.
  2. **Efficiency in production**: no way to produce more of some good, given technology and resources, without reducing production of some other goods.
  3. **Efficiency in output levels**: the economy producing the right mix of goods so that it is not possible to change the mix to make someone better off without making others worse off.

General Equilibrium and Efficiency
Efficiency in consumption

When do we get **efficiency in consumption**? If we cannot make someone better off by reallocating consumption without hurting someone else.
If A and B have same preferences and they are at points A and B, we can make both better off by moving them as shown by arrows without changing totals of goods.

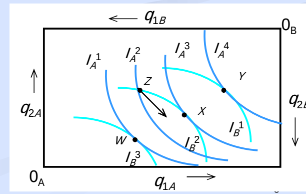


Shown by box diagram with two people – **Edgeworth box**.

At Z, both can be made better off

At W, X, Y, this is not possible: only way to make somebody better off is by making someone else worse off.

For efficient consumption, **MRS for all people between two goods must be equal**.

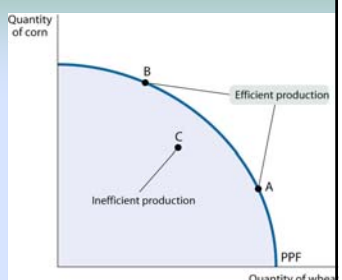


General Equilibrium and Efficiency
Efficiency in Production

Efficiency in production requires that the economy is on the production possibilities frontier.

All resources are fully utilized.

Factors are used in sectors in which they are most productive.

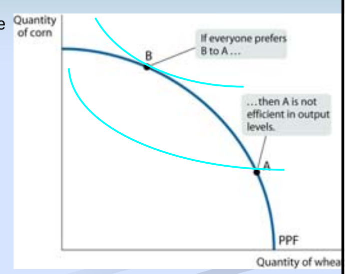


General Equilibrium and Efficiency
Efficiency in Output Levels

Economy produces a mix of goods at which it is not possible to make someone better off without making others worse off.

We can use community indifference curves to show this. B is preferred to A by consumers who have the same preferences.

A is efficient in production, but not in output levels.



General Equilibrium and Efficiency
Perfectly competitive economy and efficiency

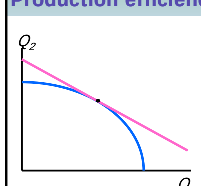
When prices perform properly as economic signals, a *competitive market economy* in *general equilibrium* is efficient.

- **efficiency in consumption**
- **efficiency in production**
- **efficiency in output levels**

Efficiency in consumption

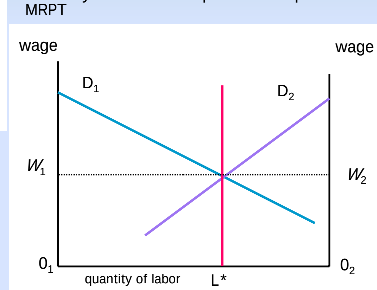
- In competitive equilibrium, each consumer maximizes utility so that for each consumer, price ratio is equal to MRS for each consumer.
- Each consumer faces the same price ratio.
- So MRS of each consumer is equal, implies efficiency in consumption.

General Equilibrium and Efficiency
Perfectly competitive economy and efficiency, cont.
Production efficiency



Perfectly competitive equilibrium implies that the economy is on PPF with price ratio equal to MRPT

How does this happen? Wage flexibility ensures full employment of factors. Resources move between sectors to maximize value of production.



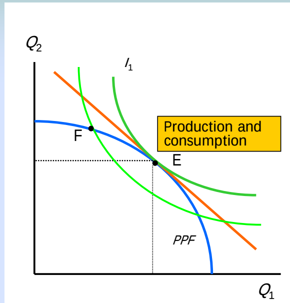
General Equilibrium and Efficiency

Perfectly competitive economy and efficiency, cont.

Efficiency in output levels

Perfectly competition takes the economy to E in equilibrium. If we are producing at B, producers are not maximizing profits or consumers not maximizing utility, or supply is not equal to demand – or all three.

E is efficient and also the competitive equilibrium.

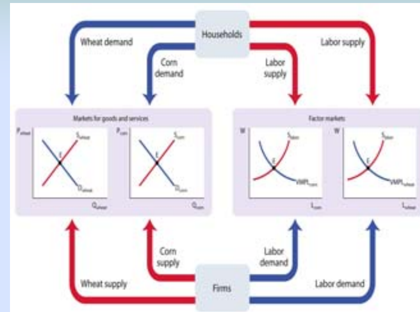


General Equilibrium and Efficiency

Perfectly competitive economy and efficiency, cont.

Efficiency in output levels

Can also be shown by circular flow diagram, showing equilibrium in different goods and factor markets. In general equilibrium, all markets will be in equilibrium, so none of the supply and demand curves will shift, and the total surplus in all markets together will be at the maximum.



Inefficiency in the Economy

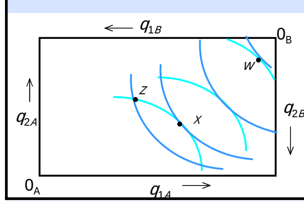
- **Market power**. If some markets have a few (or even one) sellers or buyers, the markets will not be perfectly competitive. These agents may use their market power to prevent prices provide proper economic signals. Example, monopolies can keep prices high, reducing quantity produced.
- **Externalities**. Activities of agents can have direct effects on others rather than effects through markets. Example pollution by a firm hurting consumers. There is normally no market for pollution. So firms pollute without taking costs imposed on consumers into account.
- **Public goods and common resources**. Some goods or services are not suited for efficient management by markets. Defense. Information. Fishing.

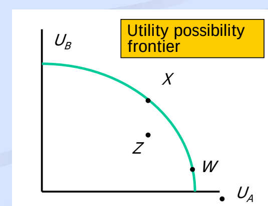
Efficiency and Equity

An efficient outcome for society does not necessarily mean that the outcome is desirable. It may not be desirable, for instance, if one person in the economy gets all the goods and services produced and therefore has a very high level of utility, while others get next to nothing. May not be **equitable**.

Shown by point *W* on the **Edgeworth box** with fixed quantities of two goods, 1 and 2. *X* may be considered more equitable – also efficient. *Z* may be more desirable for society than *W*, although *Z* is inefficient.

Also shown with an **utility possibility frontier** which shows maximum utility for one person (say, B), given utility levels of all others (say, A). Points on the frontier are efficient. Why? Must be downward sloping. Why? They need not hold output of goods to be constant, but production must be on production possibilities frontier. Why?





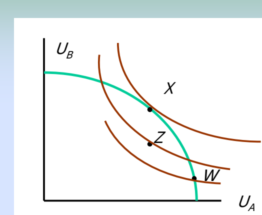
Equity and Fairness

- Economists and philosophers have proposed **many notions** of equity, fairness and justice.
- Some focus on fair **processes**, some on fair **outcomes**.
- **Fair processes** look at the 'rules of the game' – the economy can be like a lottery – if everyone has an equal chance of winning, fair. Outcomes need not be equitable. How does one ensure an even playing field? But what is the gap in rewards between winner and loser? Some stress that the rules of the game should also involve respect for individual rights – for instance, the right to private property and free choice, even if the outcome is not equitable.
- If one wants to focus on **fair outcomes**, there are two questions:
  - With **what metric** to see how well people are doing? Real income, utility, ability to achieve some desirable goals – like being educated, healthy? Or in terms of some 'primary' goods – food, clothing, etc. But which ones?
  - How to tell whether an outcome in terms of this is just or not? That is, how to **aggregate** over individual outcomes? Two well-known examples. Utilitarians add up utility of all and try to maximize it. But can one compare different people's utilities? John Rawls argues outcomes are more desirable if the worst-off individuals are doing better – veil of ignorance idea: any one of us could be the worst-off individual. More generally, can have a social welfare function – society's welfare depends on how individuals do.

Equity and Fairness

Social welfare function and efficiency

- Assume society has social welfare function (SWF): social welfare depends on the utility of each person. (Metric of utility. Aggregation with some value judgment about relative importance society attaches to the individuals.)
- Two-person example. Social welfare can be shown with curves showing a given level of welfare. Downward-sloping. Social welfare higher as we move northeast.



- According to the SWF, *Z* is preferable to *W* even though *W* is efficient and *Z* is not.
- Socially most desirable point is *X*.