



University of  
Zurich<sup>UZH</sup>

# Leseaufträge «Mikroökonomik I»

## Modul 1: Einführung

### Unit 4:

- Pareto Verbesserung und Pareto Effizienz

### Quellen:

- **Chapter 2 – Supply and Demand**  
Frank, Robert H, & Cartwright, Edward. (2016). Microeconomics and Behaviour (2nd European ed.). London: McGraw-Hill Education.

**EXERCISE 2.1** At a price of 4 cents in this hypothetical tulip market, how much excess demand for tulips will there be? How much excess supply will there be at a price of 20 cents?

## ADJUSTMENT TO EQUILIBRIUM

When price differs from the equilibrium price, trading in the marketplace will be constrained—by the behaviour of buyers if the price lies above equilibrium, by the behaviour of sellers if below. At any price other than the equilibrium price, one side or the other of the market is dissatisfied. This will put pressure on prices to move towards the equilibrium.

At prices above equilibrium, for example, sellers are not selling as much as they want to. The impulse of a dissatisfied seller is to reduce the price. In the tulip business, after all, stock not sold today can be worthless tomorrow. At a price of 16 cents each, 2,000 tulips are being sold, but another 2,000 go unclaimed. Each seller reasons, correctly, that if the price of his tulips were reduced to 15 cents, while others remained at 16 cents, he could move all his unsold tulips. Buyers can also reason that they are paying too high a price. Buyers will abandon sellers where the price is 16 cents in favour of those where it is only 15 cents. Downward pressure on price will persist as long as there remain any dissatisfied sellers—that is, until price falls to its equilibrium value.

When price is below 12 cents, buyers are dissatisfied. At a price of 8 cents each, 2,000 tulips are being sold, but buyers are willing to buy another 2,000. Buyers will start bidding against each other, increasing the price they are willing to pay, in the hope of seeing their demands satisfied. This upward pressure on price will persist until price reaches its equilibrium value.

An extraordinary feature of this equilibrating process is that no one consciously plans or directs it. The actual steps that consumers and producers must take to move toward equilibrium are often indescribably complex. Suppliers looking to expand their operations, for example, must choose from a bewilderingly large menu of equipment options. Buyers, for their part, face literally millions of choices about how to spend their money. And yet the adjustment toward equilibrium results more or less automatically from the natural reactions of self-interested individuals facing either surpluses or shortages.

### Why do people not haggle in supermarkets?

All marketplaces are different. In fact, there is a dazzling array of different ways that buyers and sellers have found to meet, trade and agree a price. To give just a few examples: prices at the Aalsmeer Flower Auction are determined by a, so-called, Dutch or clock auction; the price ticks down until a buyer indicates his willingness to buy. Traders on the Paris Bourse input bids and asks to a computer system. Buyers at the Grand Bazaar in Istanbul haggle face-to-face with market traders. And customers of a superstore are offered take it or leave it prices.

Despite the huge array of different ways to trade, the basic pressure on prices to move toward equilibrium always remains the same. Sometimes it might seem as though the price is being determined only by buyers, such as at the Flower Auction, or by the seller, such as in a superstore. But this is an illusion. If flower growers don't bring their flowers to auction, or customers don't go to the superstore, the price will change.

So, why do we see such different ways to trade? Clearly, history and tradition play their part. The inevitable logic of cost-benefit calculation is also at work, however. The Aalsmeer Flower Auction is an efficient way to sell a huge amount of flowers very quickly. The Grand Bazaar is a great way to bring together a large number of buyers and sellers. And a superstore offers time-pressed customers a convenient way to do the weekly shop in less than an hour. ■

## SOME WELFARE PROPERTIES OF EQUILIBRIUM

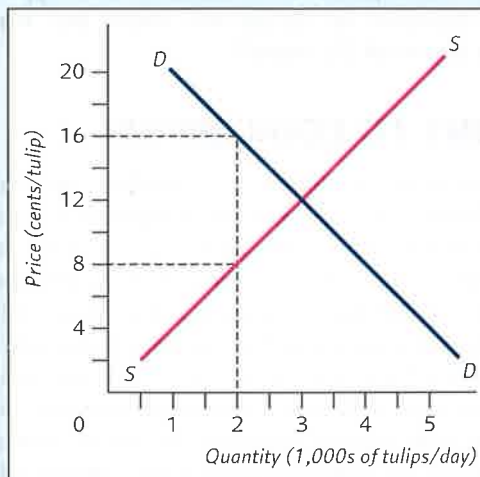
Given the attributes—tastes, abilities, knowledge, incomes, and so on—of buyers and sellers, the equilibrium outcome has some attractive properties. Specifically, we can say that the outcome is **Pareto efficient** in the sense that no reallocation

*Pareto efficient* an outcome where it is not possible to make some person better off without harming another person.

## ECONOMIC NATURALIST 2.2

**FIGURE 2.6****An Opportunity for Improvement in the Tulip Market**

When the quantity traded in the market is below (or above) the equilibrium quantity, it is always possible to reallocate resources in such a way that some people are made better off without harming others. Here, a dissatisfied buyer can pay a seller 10 cents for an additional tulip, thus making both parties better off.



can improve some people's position without harming the position of at least some others. *If price and quantity take anything other than their equilibrium values, however, it will always be possible to reallocate so as to make at least some people better off without harming others.*

Sticking with the tulip example, suppose the price is 8 cents, with suppliers therefore offering only 2,000 tulips. As indicated in Figure 2.6, the vertical interpretation of the demand curve tells us that when only 2,000 tulips are available, buyers are willing to pay 16 cents. Similarly, the vertical interpretation of the supply curve tells us that when 2,000 tulips a day are supplied, the marginal cost of delivering another tulip is only 8 cents. When the value to the buyer of the last tulip grown (16 cents) is higher than the cost of supplying it (8 cents), there is room to cut a deal.

Suppose, for example, a dissatisfied buyer were to offer a supplier 10 cents for a tulip. The supplier would gladly sell an additional tulip at this price (since, at 2,000 tulips, an additional tulip costs only 8 cents to harvest). This transaction would improve the buyer's position by 6 cents (the difference between the 16 cents value he attaches to the tulip and the 10 cents he paid for it). It would also improve the seller's position by 2 cents (the difference between the 10 cents she got and the 8 cents cost of supplying the extra tulip). No one suffers any harm from this transaction, and the participants reap 8 cents of additional benefit from it (6 cents for the buyer, 2 cents for the seller). A similar argument can be made concerning any price below the equilibrium value. For any such price, it is always possible to make some people better off without hurting others. The outcome would not be Pareto efficient.

What if the price had been higher than the equilibrium price to begin with? Suppose the price is 16 cents with trading therefore limited by buyers' demands for 2,000 tulips. (Again, see Figure 2.6.) Now a dissatisfied seller can propose a transaction that will make both the seller and some buyers better off. Suppose, for example, a seller offers an additional tulip for sale for 14 cents. Since buyers value additional tulips at 16 cents, whoever buys it will be better off by 2 cents. And since tulips cost only 8 cents to supply, the seller will be better off by 6 cents. Again, no one is injured by this transaction, and again the two parties gain a total of 8 cents.

Thus, no matter whether price starts out above or below its equilibrium value, a mutually beneficial transaction will always be possible. We will examine the welfare properties of the market system in much greater detail in later chapters (see in particular Chapter 17). But for now, suffice it to say that the equilibrium price and quantity constitute the best outcome attainable, given the initial attributes and endowments of buyers and sellers.

## FREE MARKETS AND FAIRNESS

The fact that market equilibrium is efficient in the sense just described does not mean that it is necessarily desirable in any absolute sense. All markets may be in perfect equilibrium, for example, and yet many people may lack sufficient incomes to purchase even the bare necessities of

life. Saying market equilibrium is Pareto efficient does not challenge the notion that being poor is difficult, often even painful. Efficiency says merely that, *given the low incomes of the poor*, free exchange enables them to do the best they can. One can hold this view and still believe it desirable to redistribute wealth within society.

Many critics of the market system complain that it is unfair to ration goods and services based on how much people are willing to pay for them. This criterion, they point out, gives short shrift to the interests of the poor. But as Economic Naturalist 2.3 illustrates, serious contradictions plague alternative schemes of allocation.

### Why is denied boarding compensation fair?

Commercial airlines routinely issue more reservations than there are seats on a flight. Because many reservation holders fail to show up for their flights, this practice seldom causes difficulty. Occasionally, however, 160 passengers will show up for a flight on which there are only, say, 150 seats. How to decide which passengers get on the flight?

Before the late 1970s, airlines dealt with overbooked flights by boarding passengers on a first-come, first-served basis. The problem with this solution is that it gives insufficient weight to the interests of passengers with pressing needs who desperately want to get on the flight.

With this problem clearly in mind, an alternative solution emerged. When too many people show up for a flight, the airline can call for volunteers to abandon their seats in return for either a cash payment or an in-kind payment, such as a free air ticket. The airline would be required to keep increasing its offer until it got enough volunteers.

The advantage of this solution is that it allows passengers to decide for themselves how pressing their schedules are. People with important meetings could simply refuse to volunteer. Others could agree to wait a few hours, often in return for several hundred euros or a free trip to Dubai. By comparison with the first-come, first-served solution, this is a better outcome for all passengers.

A common criticism, however, of asking for volunteers is that it seems unfair to low-income passengers. The reasoning goes that the auction method of soliciting volunteers almost always results in the poorest ticket holders being the ones to wait for the next flight.

Now, a poor person will surely be more likely to find a cash payment a compelling reason to volunteer. But by volunteering, a person says that the cash payment is *worth* the wait. The world would indeed be a better place if poor people had higher incomes and were not tempted by their poverty to give up their seats on aeroplanes. But it is hard to see how poor people's interests would be served by preventing them from earning extra cash by volunteering to wait for the next flight. ■



Elenathewise

To further illustrate the difficulties of rationing goods by something other than willingness to pay, consider again our hypothetical tulip market. Suppose we are concerned that the equilibrium price of 12 cents will exclude many deserving poor persons from experiencing the pleasure of receiving flowers from a loved one. And suppose that, with this in mind, we adopt a system that periodically gives free tulips to the poor. Wouldn't such a system represent a clear improvement in the eyes of any person who feels compassion for the poor?

The answer is that for the same cost we can do even better. When a poor person, or indeed even a rich person, does not buy tulips because the price is too high, she is saying, in effect, that she would prefer to spend her money on other things. If we gave her a bunch of 10 tulips, what would she want to do with it? In an ideal world, she would immediately sell it to someone willing to pay the €1.20 equilibrium price. We know there will be such persons because some of the tulips that would have been bought for 12 cents were instead given to the poor. The poor person's sale of the tulips to one of these people will bring about a clear improvement for both parties—for the buyer, or else he would not have bought it, and for the seller because the tulips are worth less than €1.20 to her.

## ECONOMIC NATURALIST 2.3

The practical difficulty, as we will see in detail in later chapters, is that it would take time and effort for our hypothetical poor person to find a buyer for the tulips. In the end, she would probably find a vase for them. True enough, she might enjoy looking at them. But by her own reckoning, she would have enjoyed the €1.20 even more.

The problem is the same when a government attempts to fix a price below its equilibrium level. Such policies may well be implemented with the sincere belief they are needed to protect the poor from sharply higher prices. Their effect, however, is typically to induce a host of behaviours that help neither rich nor poor.

The fuel subsidy in Nigeria, with which we began this chapter, is a good example. The subsidy leads to wasteful use of petrol and excess demand. It also provides a fertile environment for corruption. Rent control provides another example of the problems associated with trying to fix price below the equilibrium level.

## Rent Controls

Rent control is used in one form or another in most European countries to protect households from unaffordable rent hikes. Such laws, like so many others, are motivated by an honest concern for the well-being of low-income citizens. But their economic consequences are no less damaging for being unintended. Indeed, it has been said that the surest way to destroy a city, short of dropping a nuclear bomb on it, is to pass a rent control law.

Basic supply and demand analysis is again all we need to see clearly the nature of the difficulties. Figure 2.7 depicts the supply and demand schedules for a hypothetical urban apartment market. The equilibrium rent in this market would be €600/month, and at this level there would be 60,000 apartments rented. The government, however, has passed a law that holds rents at  $R_c = €400$ /month, or €200 below the market-clearing value.  $R_c$  in this example constitutes a **price ceiling** for rents, a level beyond which rents are not permitted to rise. At €400/month, buyers would like to rent 80,000 apartments, but suppliers are willing to offer only 40,000. There is an excess demand of 40,000 apartments. And if the rent control level remains fixed at

**price ceiling** level above which the price of a good is not permitted by law to rise.

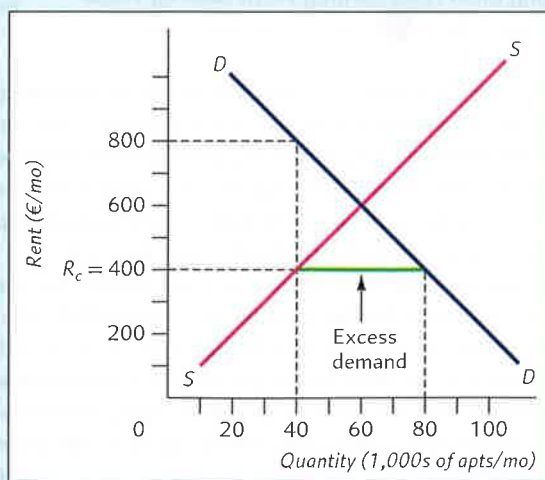
€400/month, excess demand will grow over time as the population grows and inflation reduces the value of money.

In an unregulated market, the immediate response would be for rents to rise sharply. But here the law prevents them from rising above  $R_c$ . Yet there are other ways the pressures of excess demand can make themselves felt. One is for owners to spend less on maintaining their rental units. If there are two renters knocking at the door of each vacant apartment, clogged drains, peeling paint, broken thermostats and the like are not apt to receive prompt attention.

**FIGURE 2.7**

### Rent Controls

With the rent control level set at €400 a month, there is an excess demand of 40,000 apartments a month.





Nor are these the most serious difficulties. With an offering of only 40,000 apartments per month, we see in Figure 2.7 that renters would be willing to pay as much as €800/month for an apartment (again, the vertical interpretation of the demand curve). This pressure almost always finds ways, legal or illegal, of expressing itself. In Stockholm, for example, it is not unheard of to see 'finder's fees' or 'key deposits' as high as €1,000.

Even when rent-controlled apartment owners do not hike their prices in these various ways, serious misallocations result. A widow steadfastly remains in her seven-room apartment even after her children have left home because it is cheaper than alternative dwellings not covered by rent control. It would be better for all concerned if she relinquished that space to a larger family. But under rent controls, she has no economic incentive to do so.



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Why are rent-controlled apartments less well maintained than unregulated units?

**EXAMPLE 2.1** Suppose the rent control is lowered (strengthened) to €200/month. What is the excess demand, and how does it compare with the excess demand when rents were limited (more loosely) to €400/month?

At €200/month, buyers would like to rent 100,000 apartments, but suppliers are willing to offer only 20,000. Thus there is an excess demand of 80,000 units. The excess demand is greater than the excess demand of 40,000 units at the €400/month rent control. ◆

**EXERCISE 2.2** In the market for apartments described in Figure 2.7, what would happen if the rent control level were set at €625/mo?

In response to the kinds of problems described above, some rent-control programmes have been modified to allow landlords to raise rents when a tenant moves out of an apartment. Such changes reduce, but do not eliminate, misallocations. And they may even create new problems. For example, a landlord who knows that a tenant's departure would permit a rent increase may take any available lawful steps to make the tenant's life unpleasant if he remains.

There are much more effective ways to help poor people than to give them cheap petrol, rent-controlled apartments or free tulips. One would be to give them additional income and let them decide for themselves how to spend it. Chapter 19 examines some of the practical difficulties involved in transferring additional purchasing power into the hands of the poor. In brief, the most pressing problem is that it is hard to target cash to the genuinely needy without attracting others who could fend for themselves. But as we will see, economic reasoning also suggests practical ways to overcome this difficulty. There are no simple or easy solutions. But given the enormous losses caused by policies that keep prices below their equilibrium levels, these issues deserve our most serious attention.

## PRICE SUPPORTS

Rent controls are an example of a price ceiling that prevents the price from rising to its equilibrium level. For the converse we can look at the EU's Common Agricultural Policy which imposes *price supports*, or **price floors**, which keep agricultural prices above their equilibrium levels. While price ceilings merely require the announcement of a level beyond which prices cannot rise, price supports require the government to become an active buyer in the market.

Figure 2.8, for example, depicts a price support level of  $P_s$  in the market for wheat. Because  $P_s$  is above the equilibrium price, there is an excess supply of 200,000 tonnes/yr. To maintain the price at  $P_s = €100/\text{tonne}$ , the EU must purchase 200,000 tonnes/yr of wheat. Otherwise farmers would face powerful incentives to cut their prices.

**price floor** a minimum price for a good, established by law, and supported by government's offer to buy the good at that price.