FIGURE 2: EXTERNAL COST AND INDIVIDUAL MARGINAL PROFIT FUNCTIONS.

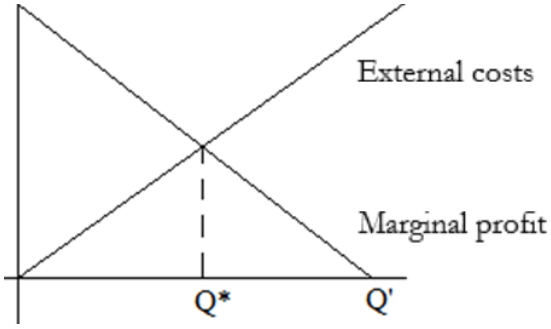
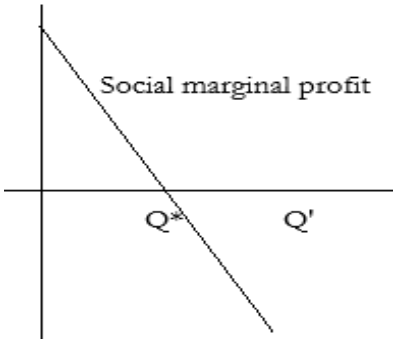


FIGURE 3: SOCIAL MARGINAL PROFIT FUNCTION



According to the ***Coase Theorem*** i*f the government makes the rights clear, the profit- and utility seeking behaviour of market participants lead to Pareto-efficient resource allocation.* From the aspect of efficiency the owner of the right does not matter. However from the aspect of equity the two cases are not identical since the owner of the right will get compensation. In this case the market solves the problem after the state has declared the rights. But usually there are a lot of victims of an externality far in time and in space. It is hard to define the compensation. In these cases the government uses *taxes for collecting the external costs from the causers*. Pigou suggested that the amount of tax should be equal to the amount of external costs. These taxes are called ***Pigouvian-taxes***.

The government can decide if the company has the right to pollute or the beach has the right for clear water. In the first case the company gets compensation from the beach for decreasing the production from Q'. While in the second case the beach gets compensation from the factory for increasing production from zero quantity. In both cases the equilibrium is at Q*.

The First Welfare Theorem is true in the case of perfect competition. According to conditions of perfect competition the ***information*** is symmetric however, it is usually ***asymmetric***. It can cause two types of problems: moral hazard and adverse selection. The Pareto-optimal resource allocation is not ensured automatically. The market can solve these problems (by using signals, filters or incentive mechanisms) in many times but not in every case.

Without governmental intervention none of the banks would supply students loan anywhere in the world. The governmental intervention has several modes, for example the warranty.

In the case of ordinary monopolist the pricing mechanism causes deadweight losses so the output is not Pareto-optimal. (In the case of price discriminating monopoly there is no deadweight loss but the problem of distributive justice is present - see the following chapter.) Usually the government prohibits the present of ***monopoly*** but in several cases it is impossible. When the average profit is increasing with the production (economies of scale) the present of monopoly is natural. It is usual if the costs of entry are high while the running expenses are much less relative to it. Consider for example drainage. The investment cost is high while the cost of the joining of an additional consumer is close to zero. Instead of prohibiting these natural monopolies the government controls them.

Redistribution of income

Redistribution of incomes is the second economic function of the state. At Figure 1 point "C" was not efficient and point "D" was unavailable. What about point "A" and "B"? Both of them are efficient but are they the same from other aspects? Point "A" signs a less symmetric distribution than point "B". What if the society prefers "B" to "A" because the first one is a more fair situation? According to the ***Second Fundamental Theorem of Welfare Economics*** *any of the Pareto-efficient resource allocations can be achieved by perfect competition in case of the adequate initial redistribution of resources*. It means that the government only has to intervene at the beginning of the process and thereafter it leaves the economic actors to decide alone. In this case the result will be Pareto-efficient and fair as well. This is the base of the ***mixed economy***: *the market and the government work together side by side*.

The main governmental instruments of the distribution function are (progressive) personal income taxation, social transfers and obligatory social security (health care and pension funds).

Macroeconomic stabilization

Finally, the third economic function is stabilisation. Besides efficiency and fairness there are four other important aspects which cannot be ignored by governments. The fiscal policy has to pay attention to the following four elements: price stability, employment, external balance and economic growth.

8.2 Revenues of the Government

The main instruments of the government to achieve its goals are taxation, transfers and expenditures. This chapter deals with the revenues.

Classes of taxes

The receipts of the government have 3 main forms: taxes, charges and borrowing. In the case of borrowing the government has to repay it and to pay some interest as well. Before examining the tax categories it is useful to determine the basic definitions of taxation.

Tax is a *statutory monetary payment liability imposed unilaterally by the state without any reward.* Statutory: determined in a law. Monetary payment: presently fulfillable only by money but in the past by product or services were usual. Unilaterally: the government decides without asking the citizens. Without any reward: the tax payer cannot claim anything against it.

Tax payer is a (legal or natural) person *who is imposed by the tax law*.

Tax base is *the quantity which is imposed by tax law*. It can be a nominal value or a natural measure of the taxable subject. The former is typical in the case of income tax while the latter occurs in the case of property taxes (for example a flat's area in square metres or the engine capacity of a car).

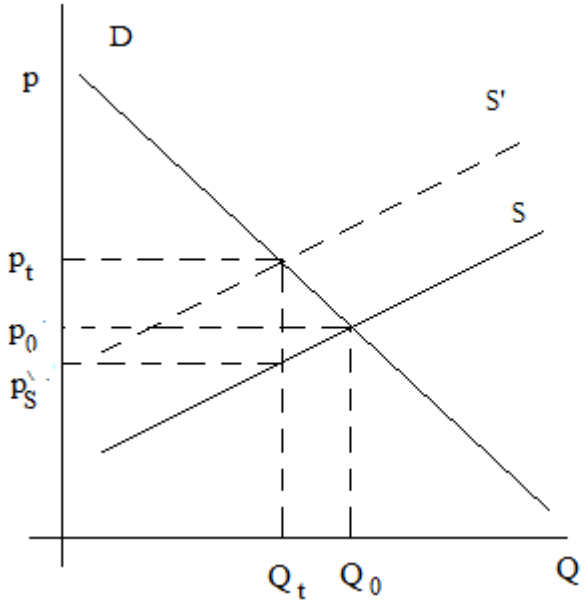
The design of ***personal taxes*** can r*eflect the economic characteristics* (mainly the ability to pay) o*f the tax payer*. The so-called ***In rem taxes*** *depend on the transaction or object which they are imposed on*, independent of the tax payer's circumstances. They can be called ***direct*** and ***indirect taxes***. These expressions are used to be approached from another aspect. In case of direct taxes the tax payer bears the burden of the tax while in the case of indirect taxes the tax payer can shift it. To make it clear the process of tax incidence has to be considered.

Figure 4 shows the market of a good. The supply is signed by *S* before levying any tax. Let's assume that the government decides to tax the selling of the good by an amount of *t*. After this decision the curve of supply will move forward by *t S',* parallel with the original. The original market price (p_0) increases, the new price is p_t. After the seller gets this amount he has to pay the tax (*t*) and keeps the difference (p_S) between the market price and the tax paid.

$$p_S = p_t - t \tag{1}$$

The burden of the tax borne by the buyer is: $p_t - p_0$ and by the seller is: $p_0 - p_S$. They shared the burden between themselves.

FIGURE 4: TAX INCIDENCE



Tax rate can be expressed as a *function which shows the amount of the tax payment at a given level of the tax base*.

$$T = t(Y) \tag{2}$$

Average tax rate function shows *the ratio of the tax payment to the tax base*. It is called effective tax rate as well.

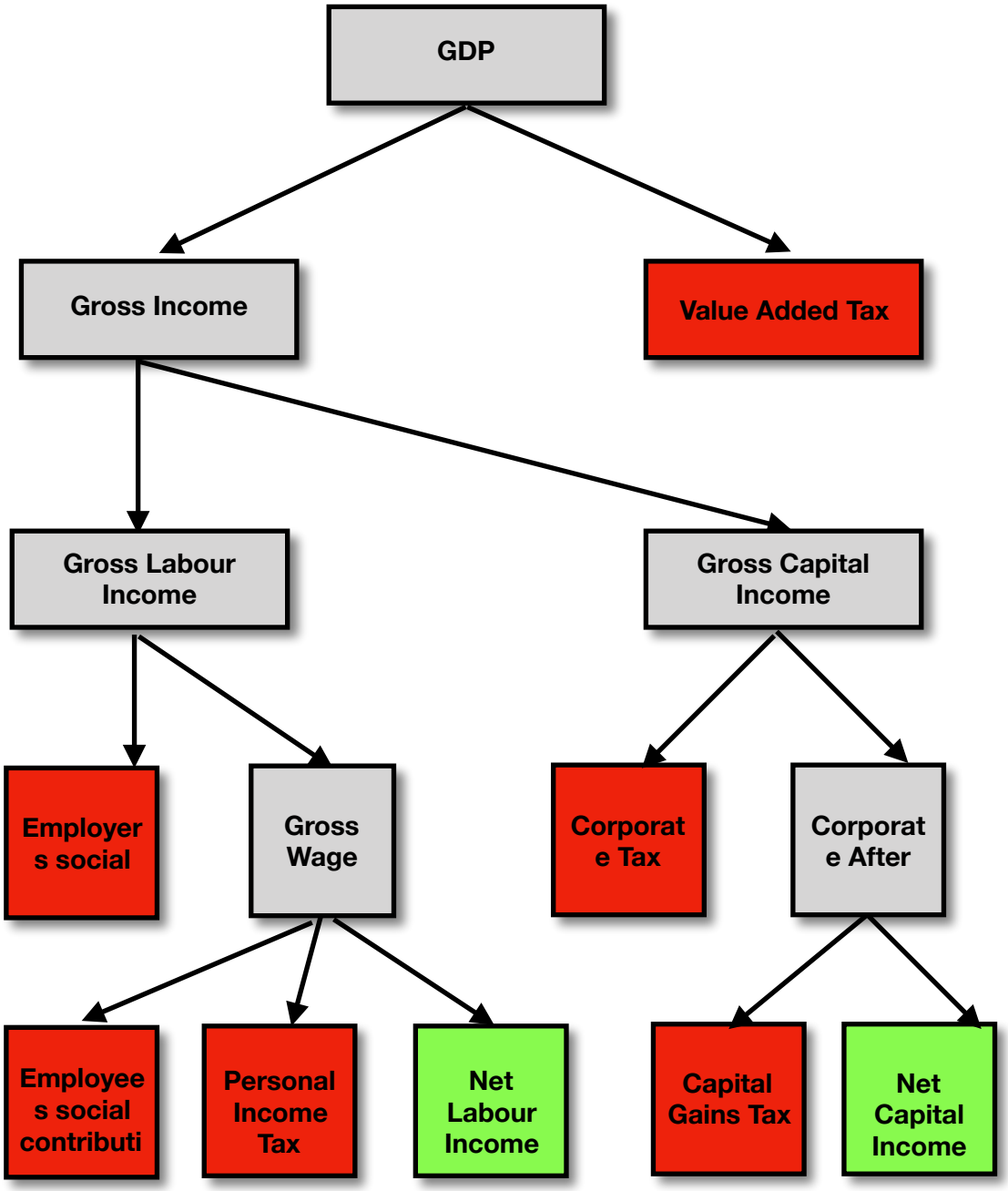
$$a(Y) = \frac{T}{Y} = \frac{t(Y)}{Y}. \tag{3}$$

Marginal tax rate function calculates *the tax burden of an additional unit of tax base*.

$$m(Y) = \frac{\delta t(Y)}{\delta Y}. \tag{4}$$

The tax rate is called ***progressive, proportional (flat rate) or regressive*** if its *average tax rate function is increasing, constant or decreasing in order*.

FIGURE 5: THE TAXTREE.



Value Added Tax (VAT) is an indirect tax on transactions. Theoretically the tax base is the value added of the product or service between phases of production. In practice the

taxpayer has to pay the rate of VAT based on the whole value but the previously paid VAT for the purchased products and services is deductible. The GDP (Gross Domestic Product) contains the VAT. If the rate of VAT is 20 %, the amount of it will be the 16.67 % of the GDP as the following equations give us. Equation (5) shows the decomposition of GDP.

GDP = VAT + taxbase of VAT = 0,2x taxbase of VAT + taxbase of VAT = 1,2 x taxbase of VAT (5)

From (5) the VAT in the function of GDP if the VAT rate is 20%.

$$VAT = 0.2 * \frac{GDP}{1,2} = 0.1667 * GDP$$

GDP can be divided according to the contribution of production factors, i.e. capital and labor. The gross labour income consists of the *employer's social contribution* and of the gross wage of the employees. The former can be calculated similar to VAT. If the rate of social security contribution of the employer is 20%, the contribution will be 16.67% of the gross income from labour. The employee's net wage is derived from the gross wage after deducting the *personal income tax* and the *employee's social contribution*. The gross wage is the tax base of both.

The gross income from capital is the companies' taxable profit charged by the ***corporate tax***. After paying the tax the company can reinvest and/or pay some dividend for the owners. They get the net capital income after deducting the ***capital gains tax***.

Besides the taxes on the taxtree there are several other types of taxes in the world. Duties, excise taxes on tobacco, alcohol and fuel, property or wealth taxes, ecotaxes or green taxes etc. The most important revenue is realised from the excise tax on tobacco, alcohol and fuel because the demand of these products is reasonably inelastic. The economic weight of property or wealth taxes are varying in the world between 0 to 10 %.

Principles of taxation

Many economists and social philosophers dealt with the requirements of a good tax structure. (They agree in many aspects but there are some differences obviously.) The most important principles are the following.

➡ *First of all the revenues have to cover the government's expenditures.*

The tax system has to take into consideration equity, that is taxes should be fair. Two principles deal with this topic.

➡ The ***benefit principle*** suggests that *everyone should pay contribution proportional to the rate as (s)he enjoys public services*. This concept does not calculate with the redistributional objectives. Usually those people require most public services (health care or education) who could not achieve private services.

➡ The ***principle of ability-to-pay*** deals with this question fundamentally. It says that *everyone should be charged according to their capacity to pay taxes*. Horizontal equity prevails if those with the same capacity are treated equally, whereas vertical equity claims that those with higher capacity must pay higher taxes. The so-called equal sacrifice principles give 3 different solutions for the tax determination problem.

The ***Principle of equal absolute sacrifice*** requires that *the absolute change in the utility has to be the same amount for every person* in the society, that is

$$U(Y_i) - U(Y_i - T_i) = \text{constan for every i} \quad (7)$$

The ***Principle of equal proportional sacrifice*** requires that *the percentage change in the utility has to be the same ratio for every person* in the society, that is

$$\frac{U(Y_i) - U(Y_i - T_i)}{U(Y_i)} = \text{constant for every i for every i} \quad (8)$$

The ***Principle of equal marginal sacrifice*** requires that *the marginal utility of the last tax unit has to be the same for every person* in the society, that is

$$\frac{dU(Y_i - T_i)}{d(Y_i - T_i)} = \text{constant for every i for every i} \quad (9)$$

➡ *The requirement of **efficiency** claims minimal deadweight loss should be caused by the taxation.*

In Figure 4 the so-called Harberger-triangle shows the amount of it. Only some part of the decrease in consumer's and producer's surpluses was realised by the state as taxes. The remaining part is lost for the society, this is the excess burden of the taxation. The less is the price elasticity the less is the deadweight loss. From the aspect of efficiency any good with inelastic demand is an adequate tax base. However these goods have usually low income elasticity as well, thus taxing them charges mainly the poor. As there is a trade-off between efficiency and equity it is hard to decide between them.

➡ *The tax system is **neutral** if it does not disturb the ranking of the tax payers or the economic projects.*

If person *X* has higher gross income or wealth than person Y, then their positions should not change with taxation. Similarly if the net present value of project *A* is higher than of project *B* their relation should not vary with taxation.

➡ *The costs of administration should be as low as possible.* These costs appear at the tax authority and at the taxpayers as well.

➡ ***Elasticity** of a tax system shows its ability to adapt to the varying circumstances.*

➡ *Other features of the good tax system are simplicity, transparency, and stability.*