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Module 2 (Theory)

Socrates Comenius 2.1

**Module
Enterprises and production**

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Structure:

- 1. Enterprises and production, an overview**
- 2. Why there are enterprises**
- 3. The structure of enterprises in Europe**
- 4. The year-end financial statement of an enterprise**
 - 4.1 The profit and loss account
 - 4.2 The balance sheet
- 5. The responsibilities of the enterprise**
 - 5.1 Characteristics and kinds of production functions
 - 5.2 Production function in the law of diminishing returns
 - 5.3 Production costs
- 6. The production functions**
 - 6.1 Characteristics and kinds of production functions
 - 6.2 The law of diminishing returns as production function
 - 6.3 The costs of production
- 7. The three sector model and the change in goods production**
- 8. Social aspects in the enterprise**
- 9. Environmental aspects in the enterprise**
- 10. The change in enterprises and production**
 - 10.1 General development tendencies
 - 10.2 The transformation process in eastern Europe

1. Enterprises and production, an overview

Before we can get on the bus to school or work, it must have been developed, produced and sold by somebody somewhere. In exactly the same way, the possibilities of a country to bake bread, construct television sets, produce DVDs, implement fairs or transport procedures depend on the productive capacity of an economy, which ultimately constitutes the national product. The production of goods and services occurs primarily in enterprises which help

- to organise the necessary activities (management) and
- to gear the production to the needs of the customers (marketing).

The production possibilities are determined by

- the size and quality of the workforce (size of the male and female economically active population; provision of human capital),
- the degree of organisation of the workforce (e.g. existence of unions),
- the quantity and quality of machines and equipment (stock of capital),
- technical development (technology),
- the kind of top management (leadership) and
- the character of the public (e.g. authorising agencies) and private (e.g. ownership structure of the enterprises) institutions.

The enterprises' possibilities to produce are often very different from country to country and region to region. Top management decides on the basis of profit maximisation on the

- scope of production (quantity of production) and
- the type of goods (kind of goods)

which they are able to produce (wares) or produce (services). In the process, while taking the availability of production factors (work, land, capital) into consideration, the enterprises make decisions at their chosen location predominantly according to the following aspects:

- costs and productivity of the individual production factors,
- marketing opportunities at home and abroad.

The development of new information and communication technologies (ICT) raises the question of the future of enterprises. Particularly in industry, digital technology and satellite-directed logistics today allow the enterprises to be able to concentrate on their strengths in a progressively easier way and be able to buy in materials and services from other enterprises and countries which on their part have specific advantages in the manufacture of other products.

In the context of deregulation of national markets and the cutback of trade barriers, ICT has benefited the development of certain enterprises. They are the so-called enterprises of the New Economy. Here this is a matter of networked enterprises on the one hand which develop common markets with complementary products. An example of this is the telecommunication market with different enterprises which specialise on partial performance over the whole

value added chain¹. As so-called network industries, the enterprises of the *New Economy* are those which with their products first create the prerequisite for networking so that more enterprises or customers than to date can enter into business connections, either at a lower price or with better performance. These include for example not only multinational software enterprises but also innovative language schools which facilitate the learning of the universal language of English in such a way that that international communication of enterprises is enabled or facilitated across the continents.

2. Why there are enterprises

In the stricter sense, an enterprise is an organisational unit, independent of its legal form, which practises

- an economic activity or
- a non profit-making activity.

The term primarily describes an activity and at first does not presuppose a principal office in the sense of it being a fixed object. De facto, however, for real and virtual enterprises there is a principal office tied to a certain place related to a country or a region, for legal reasons.

Economics	Work			Land	Capital	
Business economics	Anticipated work (Management and business leadership activity) Organisation planning monitoring/leadership			Object-related work (work on the product)	Resources Factory premises, means of production, e.g. machine plant, tools, measuring and testing equipment, transport and storage, fuels such as oil to make production possible at all	Materials (Raw materials, semi-finished and finished products which go as initial products into the final products)

Table 1: Economics and business economics production factors

All the activities in which work is done

- as a craftsman
- freelance or
- relating to commercial law

count as being enterprises.

This can occur in the form of

- one person or family enterprises or
- partnerships and corporations

which regularly pursue an economic activity.

Economically seen, enterprises are the places of production of goods and services. Here the

¹ The value of a product comprises not only the actual final product (e.g. telephoning with a mobile phone) but very many different components made up in the so-called value added stages of a value added chain (e.g. telephone set manufacture, the setting up and maintaining of electrical cables, marketing and service).

transformation of so-called input and output components takes place, i.e. the process of change from production factors into marketable and socially desired final products. Here, attention must be paid to the economic aspects which are understood as production factors in the enterprises being more closely specified.

Input	Production process in the enterprise	Output
Production factors	Combination of the production factors	<ul style="list-style-type: none"> ▪ Agricultural goods ▪ Industrial goods ▪ Trade, home work and publishing house goods ▪ Services (including virtual goods)

Table 2: Production process in the enterprise

However, the question is raised as to why individuals or lobbies in an enterprise join up as an organisational unit and in so doing, bind production factors exclusively to themselves. Basically it would be possible for the markets and the price system to directly supply the enterprises with goods and services. For example, with the help of a contract, a secretary could always offer her services to an enterprise related to a project, i.e. only when needed. Why is an expensive factory or office building constructed to have employees work there at certain times? Could not, as a matter of principle, investments in new machines be made on credit through banks (foreign capital) instead of at least partially raising one's own capital resources?

The Nobel prize winner RONALD COASE queried in the thirties of the 20th century the necessity for the existence of enterprises. The background of his considerations was that using the market and the price system already costs money. If, for example, you want to build and sell cars information must be collated in advance and contracts negotiated. Before beginning with production, prototypes must be developed; finally, preliminary products must be bought or production buildings constructed. In addition, quality controls and sophisticated logistics are required for delivery and distribution. Thus, multitudes of economic activities are needed just for a start to enable manufacture, sales and service. They generate special costs, so-called transaction costs. COASE proved that these transaction costs are generally higher if the individual production activities are de-centralised and not subject to any overall organisation. An enterprise as an independent economic unit fulfils these functions and enables the transaction costs to be kept low.

At the same time it is thus clear that the size, form and organisation of enterprises will be subject to constant change, since the products, the technological possibilities and the mobility of the production factors can change.

This approach of COASE's was also able to explain why an enterprise cannot expand indefinitely and why its size must be variable. If enterprises do become bigger, the people in charge must process more and more information, make decisions and monitor staff. The hierarchy swells and the organisational costs increase. The ideal size of the enterprise is exceeded if the increase in costs (marginal costs) for in-company bureaucracy is higher than the transaction costs which would occur if one were to attend to the markets directly. If anything, modern means of communication and management methods in industrial countries today lead to individual branches of an enterprise tending to be somewhat smaller than in the past.

With the help of the transaction cost approach, the emergence of individual branches is also explained. For instance, the origin of the modern banking system can be accounted for in this way: the banks enable producers to process credits and payment transactions more simply and cheaply than if everyone were to found their own bank.

3. The structure of enterprises in Europe

For economic purposes an enterprise represents both a legally defined (synonym: company) and a technically determined form of organisation. An enterprise can comprise different companies at home and abroad which either

- produce (agriculture, mining, industry) or
- provide services for private households, enterprises or the state (e.g. trade, research and development, logistics, consulting).

From an economic point of view, enterprises are organisation forms which, with the help of production factors, also including management, implement the production process from the point of view of efficiency or profit maximisation. In the process, specific advantages arise for society. These include e.g.

- employing workers and
- levying taxes and duties.

In the European economies there is a multitude of organisation forms which are not always comparable between the countries. In the following, reference will only be made to private and public enterprises which pursue a so-called profit target, which represents the counterpart of the utility maximisation target of private households.

An initial differentiation possibility is the size. In the European Union (EU) the so-called small and medium-sized enterprises (SME) make up some 99% of all the enterprises. This is based on the following classification:

Type of enterprise according to size	Employees		Turnover (millions of €)		Balance sheet total (millions of €)
Smallest enterprises	≤ 10	and	≤ 2	or	≤ 2
Small enterprises	≤ 50	and	≤ 10	or	≤ 10
Medium-sized enterprises	≤ 250	and	≤ 50	or	≤ 431
Large enterprises	> 250	and	> 50	or	> 43

The balance sheet total is the sum which ensues when either all the assets (resources and rights) or all the liabilities (debts and equity capital) are added. On the basis of the balance sheet total alone an enterprise can be assigned to a variable, but it does not say reveal any more about the enterprise (e.g. as regards assets, earning capacity, financial structure).

Table 3: Structuring of enterprises according to size range

Request to the colleagues to provide figures!

Table 4: Structuring of enterprises according to size range for selected countries (proportion of types of enterprises according to employees, turnover figures or balance sheet total)

At the same time, the size of the enterprise must not mislead about its significance. In fact, some of the SMEs are highly specialised despite their lack of size and can by all means be geared to the international scene (*hidden champions*). Nonetheless, locally orientated tradespeople, merchants and to some extent the professions (e.g. doctors) are to be found behind this term. Many of the SMEs suffer from only getting bank credits with difficulty or not being able to attract large quantities of money from investors. In some EU countries there are special promotion programmes which attempt to facilitate the procurement of capital for this kind of enterprise. All together, these enterprises make up the broad foundation of a pyramid, the top of which is formed by a relatively small group of large enterprises. The latter comprise in number less than 1 percent of all the enterprises in Europe, although their share of the market is almost 60 percent.

In particular, the group of the medium-sized enterprises is of great significance for most economies, since in this process of structural change to more directive activities in the enterprises they are considered to be especially flexible and adaptable as far as their market orientation and innovation capability in products and processes are concerned. Mostly, in phases of the re-structuring of enterprises they are hit less hard by cutbacks in employment than the large enterprises.

Another form of differentiation in enterprises is their legal form. The legal form defines the basic conditions of an enterprise. They are laid down in the so-called articles of partnership of the enterprise.

Among other things, the legal form affects the question of the liability of the partners (co-owners and co-partners) and their right of management. In this connection, for example, differences in liability are of significance:

- partnerships: in this legal form at least one partner also has to be responsible with his private assets for the debts of the enterprise (“unlimited liability”)
- corporations: in this legal form liability is as a rule restricted in range (“limited liability”).

This explains why partnerships are mostly relatively small and more likely to be found in agriculture, retail trade and in the professions than in industry, wholesale trade or finance and insurance services. For most other fields of business partnerships are simply too risky for the entrepreneur(s).

The basis for the economic activity of the corporations is the so-called capital stock of the company which is brought into the business when it is founded and can also later be changed. The owners or partners involved are not liable with their private assets for the success of the company but with the capital brought in. If this is used up, the company expires (insolvency). Corporations, however, also have a disadvantage, at least in some EU-countries. Their profits are taxed in addition (corporation income tax). In partnerships, on the other hand, all the income after deduction of expenditure counts as personal income, which is then taxed (income tax). In corporations the state demands its share of the enterprise profits and subsequently of the stockholders’ dividend income. From this, different location conditions of corporations result depending on the particular taxation practice.

Within the framework of European integration since 2005 a new form of corporation has arisen, the European Company (*Societas Europaea* – SE). This enables the founding of enterprises in the EU, to a large extent according to standardised legal principles.

		Euro (€)
Earnings		500 000
less expenditure for production factors which are deployed in the production process (company expenses)		
	Material	100 000
	Wages	180 000
	Electricity, water, gas etc. (other company expenses)	20 000
	Sales and administration costs	30 000
	Rent or leasehold	10 000
	Amortisation	<u>30 000</u>
	Sum of all costs	<u>370 000</u>
Revenue less company expenses		130 000
less other expenses		
	Interest for loans	12 000
	Special levy e.g. for the community (independent of earnings)	<u>8 000</u>
Earnings before tax		110 000
less tax from income and earnings		<u>36 000</u>
Earnings after tax		74 000
less payment of dividends for shareholders		<u>30 000</u>
Retained earnings in the enterprise		44 000

Table 4: Example of a profit and loss account for a corporation (Super Tyres plc”)

The first three expense categories correspond approximately to the variable costs of the enterprise. “Sales and administration costs”, “rent or leasehold”, e.g. for the production hall, as also the “amortisation” are unchangeable in the short term and therefore count as fixed costs. Amortisation designates the operational depreciation of the capital invested in the enterprise. This takes place on the one hand in order to always be able to see the current value of the operating capital from the accounting, and on the other hand to be able to incorporate the operational deficiency of the capital used in the enterprise (e.g. machinery, lorries, computers etc.) as a result of ageing or wear and tear as costs in the price calculation. In the outcome, the amortisation as company expenditure decreases the earnings to be taxed. The position of interest paid (here “Interest for loans”) comprises the costs for raising outside capital to finance the enterprise, e.g. to modernise the enterprise or develop new products. In some countries the enterprises now have to pay special taxes which, however, are independent of the earnings, the so-called taxes on non-income values (e.g. net worth tax or real property tax). Subsequently the taxes dependent on the overall company result are levied on the so-called “earnings before taxes”, as a rule income tax and corporation income tax. Now the

actual net earnings can be seen. Only in corporations which pay dividends on their shares to the co-owners do the earnings decrease again.

4.2 The balance sheet

The so-called balance sheet is also part of an enterprise's annual statement of account. Together with the profit and loss account it describes the economic success or failure of an enterprise. A balance sheet is always drawn up at a certain point in time (balance sheet date), while the profit and loss account is drawn up for a defined period of time. The profit and loss account therefore measures the payments into and out of the enterprise, while the balance sheet records the so-called stock variables.

The balance sheet is a list of the origin and utilisation of an enterprise's capital. To this end three variables are decided on in the enterprise:

- assets: on the one side of a balance sheet the resources and requirements of the enterprise are declared. There is a description of how the enterprise has utilised the money made available to it, e.g. the money that flows into the enterprise through the sale of shares, the reserves and credits. It would also be apparent if the enterprise had too much stock or if unpaid bills of final customers had not been settled.

Total resources (assets) = debts + total equity (liabilities)

- liabilities: on the other side of the balance sheet there are two positions, namely on the one hand
 - the debts: here the debts and commitments, as for example unpaid bills from suppliers (debts) or outside capital made available to the enterprise from banks or other investors are declared. On the other hand the liabilities include
 - equity capital: it comprises the funds over which the enterprise can dispose without any limitations. In the language of accountants, this concerns the net value of an enterprise which corresponds to the total assets minus all the debts. In public limited companies this includes the subscribed capital (equity capital) of the shareholders, who for this, if the earnings are adequate, receive a dividend and the so-called reserves. The latter are surpluses which are reserved e.g. for future investments.

Total equity = assets – debts

If the enterprise represented in table 4 (Super Tyres plc) mistakenly manufactures defective tyres for a few days to the value of 80 000€ which therefore cannot be sold, it is not only the stock of resources which changes. The accounting department then notes that the assets have decreased by this 80 000€ but that the debts have remained the same. In order not to commit balance sheet fraud, the enterprise must now make up the loss with its own equity capital; this then decreases in the example in the table to 320 000€ Imagine what would happen to an enterprise if the equity capital is used up and there is no more outside capital to be had from banks and other financiers. In addition it is clear from this example that the year-end financial statement of an enterprise needs monitoring itself.

The balance sheet is mainly meant to fulfil three functions:

- documentation function: this gives information about the existing assets of the enterprise.
- determination of income function: another function of the balance sheet is to determine the earnings in relation to the so-called equity capital of the enterprise.
- profit calculation function: another function of the balance sheet lies in the calculation of the earnings in relation to the so-called equity capital of the enterprise.

- information function: with this, important information is to be given to the management via the balance sheet for the future management or market direction of the enterprise. For creditors, business partners, employees and the State, the balance sheet is an important decision-making aid with reference to future trust in the management and the intensity of own business activity with the enterprise.

5. The responsibilities of the enterprise

The founder of classical economics, ADAM SMITH (1723 - 1790) already distinguished between three forms of income which must be earned in an enterprise. They are:

- proprietor's income, which is the remuneration for the leadership of an enterprise (e.g. today management wages),
- interest earned on own or outside capital which works in the enterprise,
- enterprise profit as remuneration for the entrepreneur's endeavours and risks.

The entrepreneur also receives the latter for making decisions on adjustments in competition and the expansion of new technologies. SMITH saw the entrepreneur's work level-headedly when he maintained that the entrepreneur, regardless of his egoistic motives, is led by the invisible hand of the market and so contributes – without necessarily wanting to – to prosperity, e.g. through his demand for humane work and the income effects resulting from it.

The economist JOSEF SCHUMPETER (1883 – 1950) later in the course of time attributes a more significant role to the entrepreneur in the industrialised market economy and speaks of the pioneering entrepreneur, whom he describes as a “creative destroyer”. In this spirit, the entrepreneur is an innovator who is less an inventor or founding entrepreneur but rather the one who introduces new production methods (production processes), determines quality standards or reorganises the enterprise in order to make it more efficient.

SCHUMPETER'S entrepreneur is no longer as with ADAM SMITH an instrument of the market; in fact he moves markets and effectuates profound changes in whole branches and ultimately in the economy as a whole. The changes here are:

- the (radical) abandonment of previous enterprise structures and ageing products and
- the simultaneous implementation of technological or organisational innovations in the form of new products (goods, services) or manufacturing procedures.

However, both these do not promise long-term high profits for the individual enterprise, since other enterprises follow as imitators. SCHUMPETER'S concept of the rise and fall of enterprises is based on the “theory of long waves”, as it was formulated by NIKOLAI KONDRATJEW (1892 – 1938). Individual technologies and inventions move an economy into a wave of growth, borne by pioneering enterprises and entrepreneurs. Initially, more and more enterprises profit from this technology, also the supply industry and the service branches built on it. However, as technologies age, they are replaced after a certain time by others. Those enterprises which at an early date put the innovations into practice in products and manufacturing procedures can often make the highest pioneer profits (cf. the enterprise history of Microsoft Inc. or Apple Inc.). New enterprises then arise with the new technologies, whereas in practice it often appears to be difficult for the hitherto existing enterprises to operate successfully in these areas.

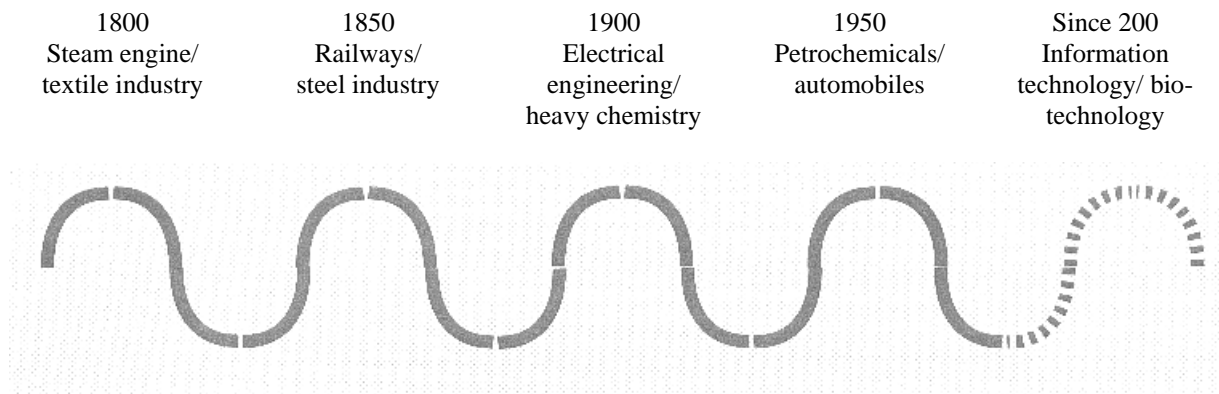


Diagram 1: the long waves of economic growth as a result of entrepreneurial activity (theory of long waves).

One can hardly forecast which technologies will form the next wave. This is the outcome of the sum of all market decisions made by the private households and the investors. All attempts to activate technologies with state support (so-called strategic industrial policy) have failed to date or at least have not been lasting.

Possible technologies for the next long wave are

- nanotechnology
- astrotechnology
- solar technology

As a common entrepreneurial concept, which takes up the ideas of SMITH and SCHUMPETER, the following spectrum of tasks has proved to be characteristic. According to it, the entrepreneur has the following tasks and functions:

- creation and implementation of new products or new qualities of products;
- introduction of new production methods;
- establishment of new organisation structures
- opening up of new outlet areas and sources of supply
- risk carrier and person responsible.

This entrepreneurial performance varies in dependency on the legal form chosen and the organisation of the enterprise. For example today - as opposed to the beginnings of industrialisation – the function of the entrepreneur is only rarely united in one person. At present,

- a manager or
- a team of managers

mostly has power of control over an enterprise, even if only for a certain period. Managers do control an enterprise, but other than the entrepreneur in the sense of a sole owner, no longer bear all the financial consequences for their decisions, and that is why they face a different risk. The manager does also act in an entrepreneurial manner if, for example, he pushes through certain (innovative) factor combinations in the production through; ultimately, though, he is only acting on behalf of others (e.g. the shareholders). His motivation for decision-making is based on his payment as an employee in the enterprise. In manager-

controlled enterprises the content of the profit maximisation principle is normally defined in a different way than if the owner still has power of control in the enterprise himself.

6. The production functions

6.1 Characteristics and kinds of production functions

A central task of the enterprise lies in the combination of production factors in the manufacturing of an agricultural or industrial commodity or the creation of a service. In this context the enterprises act as demanders of the production factors.

Seen socially, the prerequisite for prosperity arises through this:

- The demand for work leads to employment and thus to saved and earned income and creates opportunities for the population through this consumption.
- The demand for capital leads to more turnover in the building economy, in the purchased materials and services industry and in the capital goods market industry.
- The demand for land leads to an increase in value in building land and raw materials. Previously, extensively utilised land (e.g. in agriculture) is now used more productively through more intensive usage (e.g. the building of a factory). Raw materials rise in price and must therefore be won more efficiently and thus conserving resources more.

The operational possibilities under which production can be carried out find expression in a so-called production function. This describes the context between

- different production factors (*input*) and
- the final products (*output*).

The quantity and quality of the goods to be produced thereby depend on

- the equipment of the enterprises with fixed production factors, as for example office buildings, production halls or machine capacity; they are mostly unchangeable for the enterprise for a longer period of time and
- the possibility to deploy production factors variably, as for example personnel, raw materials, and purchased materials and services from other enterprises; they are at least changeable in the medium term, partially in the short term, too.

Production functions are ultimately the expression of technological, commercial and organisational possibilities in a certain location within a country. The production factors needed can show quite different characteristics as regards their temporal obligation.

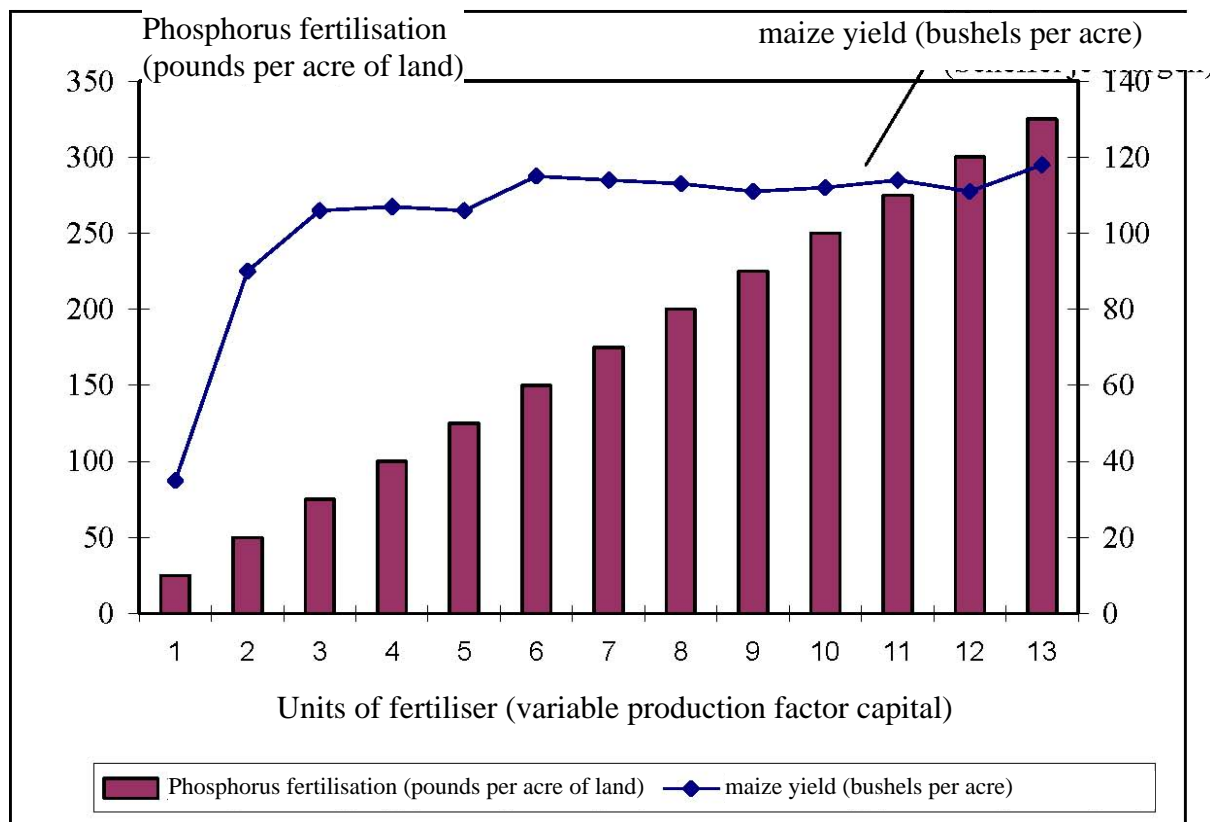
- Unchangeable production functions: this means that the production factors are in an unchangeable deployment ratio with one another (limitational production functions).
- Changeable production functions: these obtain when a certain quantity of a production factor can be substituted by a certain quantity of another production factor without the quantity of production being changed (substitutional production functions).

In the short term almost all production functions are limitational to each other, but some however are enduring. To operate an express train (= production factor capital) a railway company needs terrain for the railway track (land), and a certain minimum number of staff,

such as train drivers and guards (= work). The enterprise can indeed adjust temporally to a certain extent (e.g. staff overtime); a large increase in provision however is only possible if the railway company engages an additional crew or even runs an additional train.

The substitutional production functions can be given for example in a building company. Technically and organisationally, and both with the deployment of capital (cement mixers, bulldozers) and the deployment of workers, this can change relatively quickly in order to carry out a building project. In this case the entrepreneur is not tied to a fixed deployment ratio. He can change the deployment of a production factor continually without having to vary the other factors.

6.2 The law of diminishing returns as production function



Bushel = measure of capacity, approx. 50 litres. Acre: approx. 4000m²

Table 2: Diminishing yields in maize production

After an enterprise has developed a marketable product, further central decisions must be made. Firstly it is a matter of the quantity of goods to be manufactured and secondly of the costs which arise for it. For this, economic experiments which were carried out in the fifties of the 20th century on agricultural surfaces in the US state Iowa provide important insights. There the use of phosphorus fertiliser was observed on various field surfaces in its yield-increasing effect in maize growing. So Table 2 shows that the production factor capital, i.e. the increased use of fertilisers, is no longer productive after a certain quantity used. Nonetheless, it creates costs to an increasing extent.

These results correspond to the so-called Yield Law, as it was formulated by ANNE ROBERT JACQUES TOURGOT (1727 – 1781). The yield or quantity of harvest from a field does not

change proportionally through the increased use of a production factor when all other conditions are constant. At the same time the field itself is the unchangeable (fixed) production factor; deployment of workers, fertiliser, weed killer, irrigation plants, greenhouses or scarecrows are examples of changeable (variable) production factors.

So, for example, in TOURGOT's original Yield Law the harvest on a field initially grows in relation to the variable production factor work disproportionately high, (phase ^I), disproportionately low (phases ^{II} and ^{III}). In the last phase (^{IV}), the yield decreases absolutely, although more and more workers are deployed for the cultivation:

- In phase ^I, the unchangeable factor field surface is used relatively wastefully in relation to the production factor work, as too few workers are employed.
- In phase ^{II}, production is also not ideal, as the harvest, divided by the number of the workers deployed (= average yield) is still smaller than the yield increase (= marginal gain). Positive marginal gains show namely that the production result still grows disproportionately high to the deployment of new workers.
- In the transition from phase ^{II} to phase ^{III} a state is then reached which is termed as the so-called optimum scale of operations. Here the average yield and the marginal gain assume the same value.

² The research work was carried out by Earl O. Herdy, John T. Pesket and William C. Brown: Crop Response Surfaces and Economic Optima in Fertilizer Use (Agricultural Experiment Station, Iowa State College, Ames, Iowa 1955, Table A-15. In Paul Samuelson, William Nordhaus: Economics, New York 2005

- However, the production would be kept up within the whole of phase ^{III}. Until the transition to phase ^{IV}, the total yield can still be increased through the augmented deployment of personnel, even if only for the "price" that an additionally employed worker can contribute less to the improvement of the harvest than his already employed colleagues (decreasing marginal and average yields).
- In phase ^{IV}, the deployment ratio of field surface to workers is then so unfavourable that a greater deployment even leads to absolute losses of harvest. Figuratively one can picture this that when so many workers are deployed on the field they at some point mutually hinder each other in their work and trample down the harvest.

These rather abstract sounding statements on the Yield Law, however, are of great significance in the everyday life of the economy and society. That is why teachers in the "enterprise school" often have the problem that the pupils' attention already begins to flag in the late morning. Many teachers have the feeling that nothing more will go into the pupils' heads. The reason for this is that the ability to take in and concentrate are subject to the law of diminishing returns. So in the first two lessons the pupils have learned a lot, gained insights and informed themselves on contexts. In the third lesson they still have sufficient attention to follow the lessons to a certain extent. But in the fourth and at latest in the fifth lesson the Yield Law collapses completely. So already the day after many pupils are hardly able to remember what they learned in the last lessons from the previous day. By analogy to this, a business enterprise must also consider exactly when it makes the staff do what work. It should therefore try only to define a realistic work target and allow everyone – as far as the normal course of operations in the company permit it – to organise his sequence of operations himself.

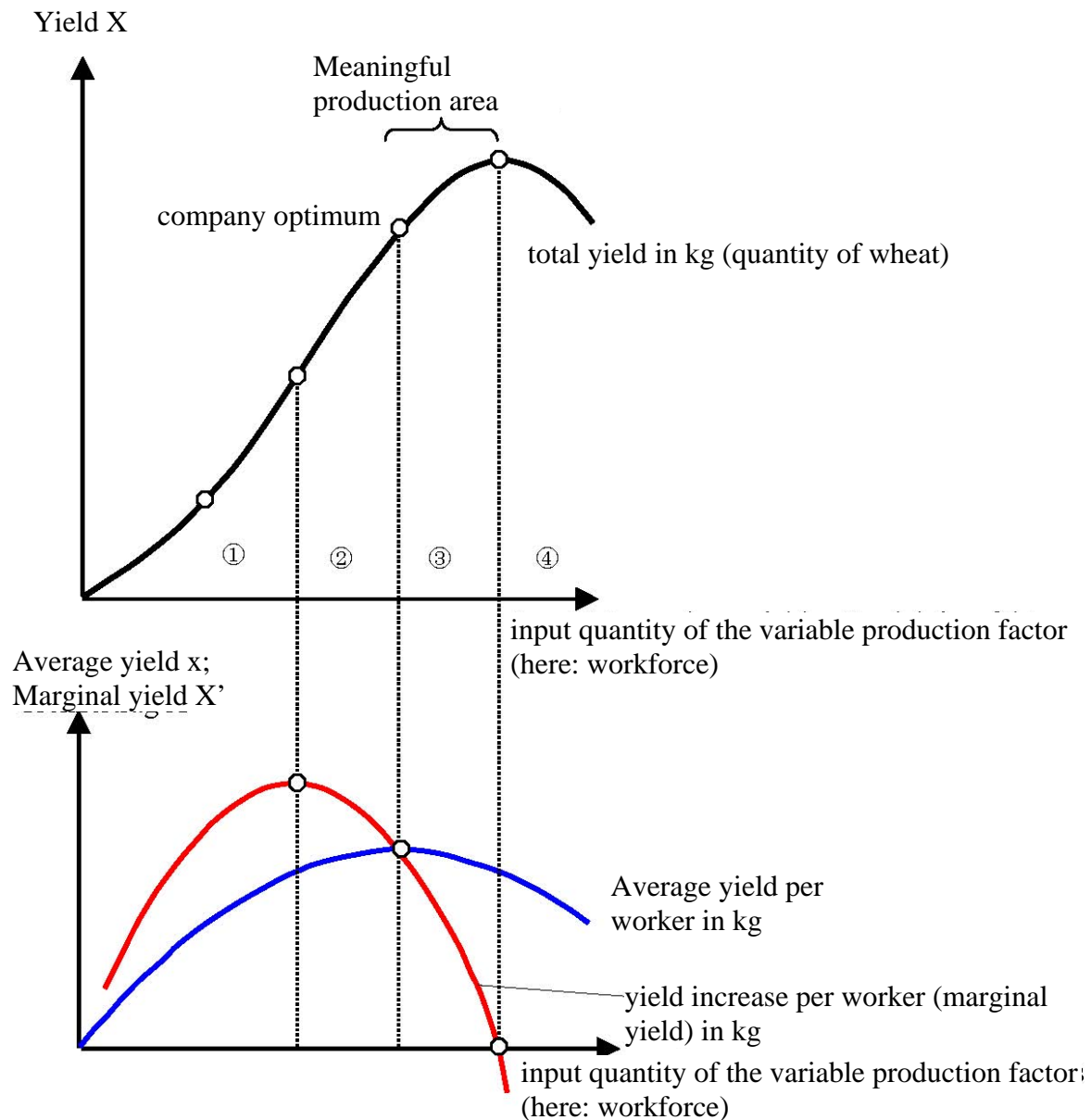


Diagram 3: Yield Law (yield sizes)

6.3 The costs of production

The decisions as to which production factors you have your enterprise make and in what quantities you deploys them, also depends besides

- the technological restrictions and
- the availability (e.g. of raw material)

on

- the costs.

Up to a certain point, many production functions do show that serial production or mass production as a matter of principle serve to reduce costs (*economies of scale*) However, these

production limits occur in dependency on enterprise to enterprise and from product to product very differently. In particular, the entrepreneur must always keep an eye on cost increases (marginal costs) for they ultimately determine the production quantity which they can offer on the market. So it stands out that some software producers who offer so-called Internet *browsers* like to give them away or provide a download free of charge, instead of selling them. Here one must bear in mind that the development costs for Internet *browsers* are really quite high. However, the marketing costs of an additional browser, thanks to Internet marketing, or because the software is already installed on the operating systems of computers on sale, are negligible. Ultimately, the enterprise earns its money with the concomitant *online*-services to which the browser primarily leads the users. In other cases, the marginal costs for an additional production unit are very high. A railway company operating normally can deploy its newest and most economical trains. If, however, demand in the holiday season momentarily increases, the enterprise must also provide older trains which have considerably higher running and maintenance costs. Altogether they then cause very high marginal costs for the product "Travel by Rail".

The Yield Law also shows here the main coherences between the production quantity and costs of an enterprise. The cost function can be directly deduced from the production function: initially in the process, various kinds of costs which are important for production are differentiated. The enterprise must pay a price for the deployment of the production factors work, land, and capital. It is this:

- Wages and salaries (or the concomitant costs, e.g. non-wage labour costs),
- Rent charge for the use of plant areas (e.g. rent, leasehold),
- Interest for the provision of outside capital, de facto also of equity capital.
- Accounts for manufacturing resources and materials (e.g. oil or vendor parts).

The overall costs (C) comprise

- variable costs (C^v): they depend on the quantity produced in an enterprise, i.e. they vary according to the pieces or services produced, such as costs for raw materials, wages for temporary employment contracts, turnover commissions.
- fixed costs (C^{fix}): they are independent of the quantity produced, such as the rent for a workshop, a greenhouse, an office building or keeping a harvester ready for use.

In addition, in analogy to the yield sizes there are derived cost variables:

- the average costs (c) are the relation of the total costs to the quantity produced (costs per piece).
- the marginal costs (C') are defined as the change of the total costs which arise in the production of a further product. Since the fixed costs exist independently of the products, the marginal costs indicate the change of the variable costs. The marginal costs of the fixed total costs are zero.

The following diagram 4 again implies that only the workforce varies, i.e. the production factor work.

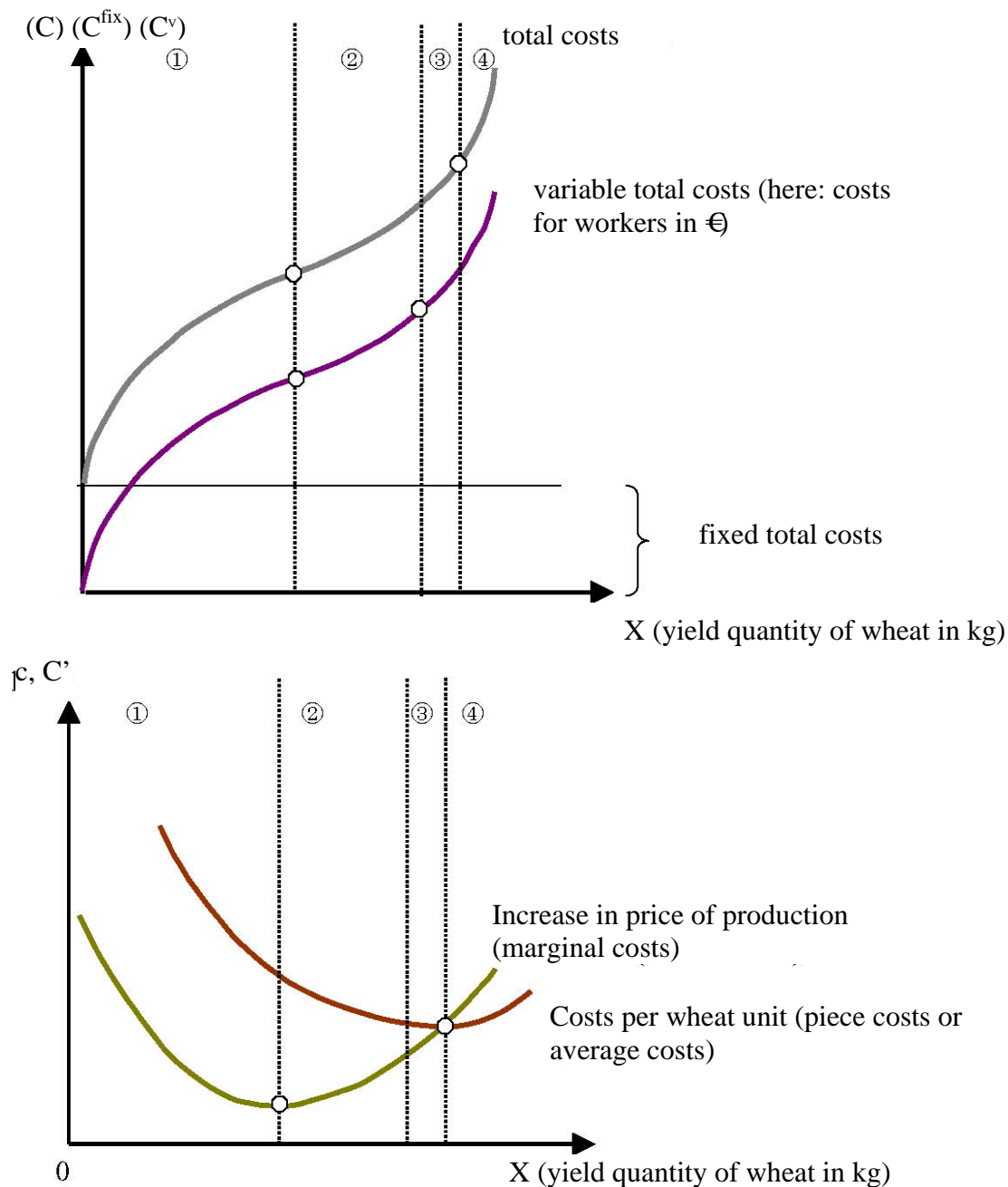


Diagram 4: Yield Law (cost variables)

In the first phase the rise in total costs is only disproportionately low with the production quantity. In the subsequent phases, on the other hand, the rise of these costs is disproportionately high. Not until the end of the second phase does the production begin to become interesting to the enterprise for cost reasons. This point is termed

- production threshold or company minimum.

About up to here an enterprise could still cope with losses, as here at least the fixed costs are covered by the earnings. In the transition from the third to the fourth phase, the piece costs reach their lowest value. Here the marginal and piece costs quasi correspond. This signals to the enterprise that its

- profit threshold

has been reached. No more losses occur, as the variable and fixed costs are covered; but the enterprise is still not making a profit.

Paradoxically, from a long-term point of view the enterprises do not make a profit, i.e. they produce on the profit threshold. It is the so-called static function of competition which forces a continuous competition of costs on the enterprises. Now only a few options for action remain for the enterprises:

They must hope that the market price, which as long as they do not have a monopoly they cannot influence, rises, for example, because the demand on the world market increases. They must be innovative with regard to new production processes, with the aim of saving money. That is, they then produce on the basis of

- technological innovations or
- organisational changes.

with a new production function which already reaches the profit threshold with a lower market price. They must be innovative with regard to the development of new products which is why they give up the hitherto existing products.

In particular, the last-mentioned aspect corresponds to the thoughts of JOSEF SCHUMPETER elaborated on above with regard to the permanent innovation capacity of an enterprise. Otherwise the enterprise will be forced from the market. This is also called the dynamic function of competition.

7. The three sector model and the change in goods production

In the course of the economic development of a country, production priorities change. Abstractly, this can be illustrated by means of the so-called three sector model. If one regards the economies over a longer period of time, it is shown that initially the secondary sector with supra-regionally geared industry and the more regionally geared trades pushes back pro rata agriculture, fishery and forestry, i.e. the primary sector. Finally, the service sector (= tertiary sector) shows the greatest dynamics and in percentages the highest contribution to the creation of the national product.

The reason for this is the increases in productivity which can be achieved in agriculture relatively cost-effectively, e.g. through deploying agricultural machinery and artificial fertilisers. For this in industry, greater efforts must be made. Acquisition costs for manufacturing plant, machines, robots or test apparatus exceed capital goods in agriculture many times. In addition, mostly long-term expensive research work is the prerequisite for it. The development of the modern service sector postulates above all the forming of human capital. With this, on the one hand a higher and thus more expensive need for qualifying the workforce is meant, on the other hand above all the directing activities demand a high degree of re-structuring of organisation and management principles within the enterprise. But also the so-called simpler services, for which comparatively little human capital is needed (e.g. cleaning services) are taken into consideration in the tertiary sector.

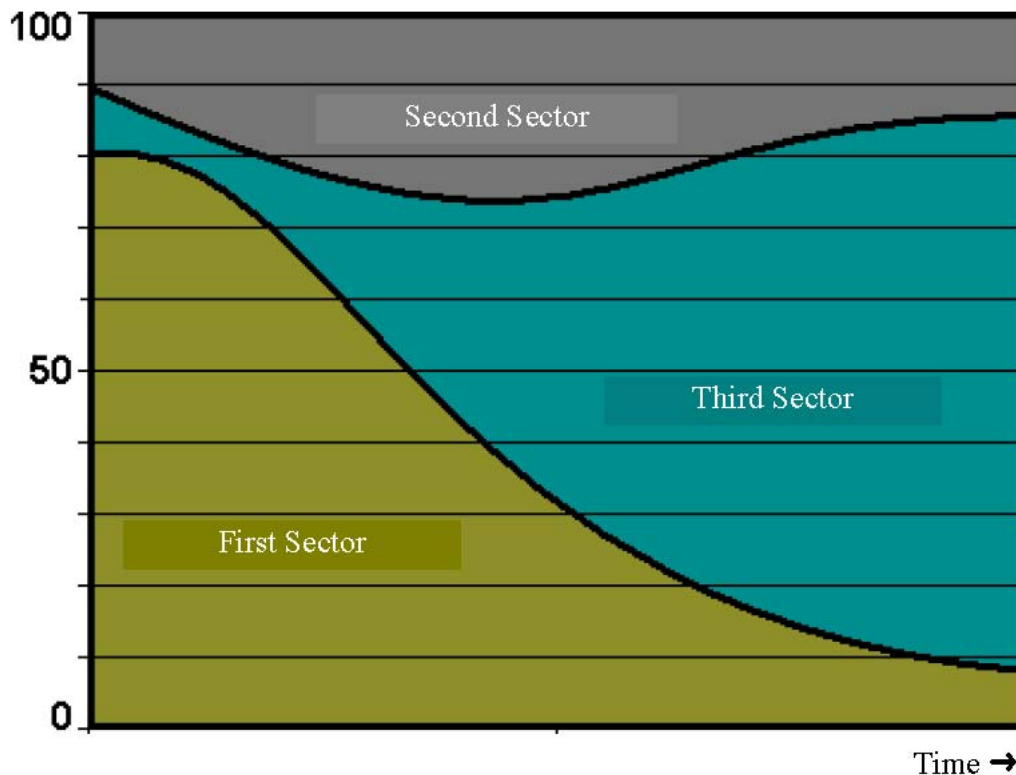


Diagram 5: the three sector model.

	First Sector		Second Sector		Third Sector	
	1985	2003	1985	2003	1985	2003
Germany	1	1	35	31	64	68
Turkey	17	14	36	26	47	61
Lithuania	9	7	39	35	52	58
Czech Republic	8	4	49	41	43	55
EU (12, 15)	3	2	36	33	61	65
USA	3	2	32	25	65	73

(Table 5)

Details related to local information ; details for Lithuania estimated.

Source: OECD in figures, Fischer Weltalmanach, Statistisches Jahrbuch der Bundesrepublik Deutschland für das Ausland. (Statistical Yearbook of the Federal Republic of Germany for Abroad).

Table 5: Share of the gross national product (GNP) according to economic sectors.

It must be taken into consideration that one cannot interpret from the three sector model whether economies are developing to so-called service societies, as the model only illustrates relative dimensions. Seen absolutely, the individual sectors can definitely show considerable fluctuations, something which depends on the economic policy of a country. Similarly it is known today that an increase in high-value services always brings about a certain share of additional, more simple services.

Especially some old industrial states in the EU such as France, Italy and Germany are suffering at the beginning of the 21st century that in many cases their industrial basis has disappeared. Many research studies prove that the existence of competitive industry is the central prerequisite for service enterprises being able to develop adequately. Some 50-60 percent of the services in the so-called old industrial countries of western northern Europe can be directly associated with the secondary sector; in the countries of southern Europe which were not industrialised until the middle of the 20th century it is only about 30-40%. This includes

- logistics
- e-business activities
- research and development
- marketing and advertising
- finance services
- environmental technology and waste disposal or
- auditing and consulting,

to name just a few branches.

If one looks into the future this could mean in an extreme case that in some enterprises that virtually deserted workshops could be seen, which, however, already produce a large share of the company added value. The majority of the workforce would then be busy with directing or object-related work. Just imagine how little added value and employment in the service sector would arise if this – even if to a large extent automated production – were not to be found in a location within the country, but abroad.

Apart from the production and enterprise oriented services, the consumption and household oriented services are also dependent on industry to a large extent. So in industry and the branches connected with it income is earned without which retail and repair trades could scarcely develop.

But agriculture too – at least regionally – can also be of enormous significance in industrial states, not only for the local provisioning of the population but also for the export earnings of a country. Impressive examples of this are to be found in the greenhouse cultures of the Netherlands and Iceland, in the irrigation farming in Spain (e.g. Huerta in Valencia), in some wine growing areas in Europe (e.g. the Rhine valley, Gascogne) or outside Europe above all in Californian valleys in the USA. Of course, industrial production methods which first made it possible to manufacture exportable products have also made their way here.

The outcome of this observation is that industry is still the most important basis for the economic development of a country, independent of its direct contribution to the national product or employment.

However, in the course of time the production spectrum of a country relocates, whereupon the durable and nondurable consumer goods industry (e.g. the clothing industry, the food industry) shows rather smaller rates of increase, to some extent even declining tendencies and the more capital intensive investment goods (e.g. machine manufacturing) and advance delivery goods industry (e.g. the iron and steel industry, raw materials processing) tend to increase more strongly. In service, growth potential is shown both for the more human capital

intensive branches (e.g. research and development) and the work intensive branches (e.g. nursing service provision). Agriculture in Europe, due to the extremely high subsidy figures for this sector, can hardly be registered on the market.

8. Social aspects in the enterprise

In an enterprise, human work power is drawn on independently of costs, qualification and availability. If one considers the history of enterprises in Europe in the last 2000 years, considerable social deficiencies often appear, which in many states outside the European Union still exist. Examples for this are child labour in south and south-east Asia or the extremely poor working conditions for women in the clothing industry in Africa, Asia and Latin America. In general, the social problems which can be associated with production mainly concern industry. However, they are also to be met in agriculture and the service area.

Since the middle of the 20th century, the most extreme forms of human exploitation in enterprises has been overcome. But even today there are social iniquities in the enterprises which the states attempt to counteract in different ways, namely with

- laws for the social protection of the employees and with
- Institutions such as trade unions and other representatives of employees' interests.

The EU recently passed a framework directive and several individual guidelines on the protection of employees. These guidelines define minimum standards. With them, among other things, cost competition among the member states about low social standards is to be avoided. Most of the countries in the EU already have worker protection rights which greatly transcend this minimum, irrespective of the framework directive

Nonetheless, in individual cases workers' protection in the enterprises is safeguarded in quite different ways. Mostly they refer to

- accident prevention in the enterprise,
- the payment of fair wages or salaries,
- working hour regulations, also for night and weekend work and to
- protection against dismissal.

In particular, as an institutional incorporation, different forms of worker participation have asserted themselves in decision-making in enterprises, at least for the possibilities of influencing the production conditions. In its most distinctive form, this takes place within the framework of so-called co-determination in Germany. Unions in other countries consider this to be exemplary. Co-determination is meant to enable workers to influence entrepreneurial decisions. It serves in general as a controlling body and provides concrete additional information about the enterprise. In addition, it represents the role of the employees as important so-called *stakeholders* in the enterprise. For example, the employees are involved in the determining of the work conditions and the interaction of the management with technologies staff and economic decisions on the development and future of the enterprise and the workplaces. In democratic election procedures the employees choose their representatives who realise the representation of interests vis-à-vis the management.

9. Environmental aspects in the enterprise

In the enterprise production, costs arise in many cases for the utilisation or consumption of environmental goods. Especially industrial manufacturing tends in its consumption of resources to contaminate the environment. Sooner or later this involves high consequential costs for the enterprise or the economy.

For several years in most of the states in Europe taxes or levy systems have been used which are based on the ideas of the British economist ARTHUR CECIL PIGOU³ which are called eco-taxes. Through them, an “optimal measure of environmental pollution” is to be attained. The taxation serves to eliminate the difference between the costs an enterprise would virtually have to raise and those which through the production functions the enterprise actually do arise for society. PIGOU envisaged that these eco-taxes should be returned directly to the sector from which each environmental damaging originates, in order so to develop more environmentally friendly manufacturing procedures or to support research for it. In practice, however, the money is often diverted from its intended use by the governments of the states and thus often misses its target.

A further problem with eco-taxes is in the form of the switch effect. If one taxes CO₂ emission, i.e. all fossil energy sources, the enterprises switch to nuclear energy, the use of which sooner or later similarly raises a claim on the environment.

In Europe and most of the other industrial countries, specific environmental instruments are deployed to regulate environmental consumption by the enterprises. The most important are:

³ A. C. PIGOU: The economics of Welfare, Cambridge 1920

- pollution controls: in the form of highest or marginal values (air purification) as well as product norms (mandatory catalytic converter) in goods;
- production process controls: in the form of regulations for the deployment of certain raw and operating supplies (e.g. the banning of asbestos) in the production process.

While both the above-mentioned instruments mainly concern industry, trade and energy production enterprises, the following can be utilised in all sectors and branches:

- trade restrictions: inland trade bans, import/export bans or restrictions for environmentally sensitive goods (e.g. trade with tropical timber) ;
- company environmental management systems: promotion of a dynamic improvement process in the context of sustainable enterprise development.

Since 1993 enterprises in Europe can take part in the so-called EU Eco-Audit, a certification system for company environment management and an environmental audit. The aim is, through comprehensive environmental controlling, to attain a continuous improvement of company environmental protection and to intensify the information of the public and the authorities on the environmental protection standards of the companies. As a voluntary institution it can complement or replace official monitoring.

The enterprise pledges itself initially to a concrete company environmental policy. This is the written declaration to adhere to environmental regulations and furthermore press ahead with a continual improvement of company environmental protection. In a second step, and environmental audit of the company must be carried out which comprises stocktaking in various environmentally relevant segments of company work (e.g. energy and water consumption, quantity of waste and effluents). On this basis a company specific environmental programme is developed.

The environmental programme must contain aims, time guidelines and measures which in any case have to be realised. A subsequent environmental company audit by an inspection authority (certification) takes place in analogy to the environmental audit, but taking into consideration all the newly created inner-company measures in the environmental area and the environmental programme.

For a successfully certified enterprise ensue besides the

- image effect

a number of further advantages, as for example

- improvement of the inner-company controlling.

Through this, the information basis on processes and structures in the enterprise increases considerably. In addition there arises a series of cost reducing potentials, perhaps through

- avoiding waste
- utilising residual material or
- saving energy.

Besides, adequate environmental management can have a cost-reducing impact on

- insurance premiums.

In many cases, enterprises report that from environmental management there are also positive effects on

- quality management

as some of the tests of quality management and environmental management systems are identical or substitutable.

10. The change in enterprises and production

10.1 General development tendencies

If one looks at the development of the last 100 years, various influencing factors appear relevant for the change in size and kind of enterprises. Apart from the above-mentioned cost-specific, technological, organisational and legal parameters, in individual cases specific ones, i.e. affecting only the individual enterprise, but also aspects of economic structural change accrue, and do so with a different emphasis.

In general one can observe that with the begin of the industrialisation process the substitution of the production factor work by the factor capital has intensified. Put differently, machines replace people more and more at least as regards manual work. Besides technological reasons, above all a disproportionally high rise in the cost of the production factor in relation to

productivity is responsible. This development arises sooner or later in and beyond all the sectors and branches and seems at the same time to be an important prerequisite for the growth in productivity in enterprises. Thus also, the demand for capital gradually increases for the enterprises, e.g. for research costs, machine plant and even in IT-supported customer service. Here two general development tendencies can be observed which broadly are to be seen in the context of the internationalisation of enterprise activities (globalisation):

- an increasing degree of specialisation in SMEs; particularly by the so-called *hidden champions*
- the spread of mass production in large enterprises in order to achieve *economies of scale*.

With the early and adequate specialisation of products (e.g. “niche products”) or processes (e.g. “precision work”), even smaller enterprises can work internationally in an economically very successful way. Examples for this are parts of the Swiss watch industry in the top price area, the cutting goods industry in West Germany because of the existence of specific human capital or the services of architects to construct special buildings.

As regards the large enterprises which ensure their earnings from mass production, dangers are appearing in the meantime which could be caused through the size of the enterprise. It is true that in many – marginally specialised – enterprises the potential for increasing economies of scale is great, nonetheless these kinds of earnings can again develop regressively, similarly to the way the yield law clarifies this. If the enterprises always get larger and larger, then at the same time more and more complex tasks in management organisation and controlling occur which in many cases cannot be coped with or which result in extremely high administration costs.

Individual company and production forms have almost disappeared completely in Europe, as for example

- publishing and
- small factories

The basis of publishing was formed by work and produce from farmers and craftsmen and the families who worked with them. As publishers they bought their raw materials themselves on the market, produced the wares themselves at home and then also sold them themselves from home. The publisher, however, is not just a simple tradesman who takes over the sale from the producers, but he completely buys up the wares at prices agreed on before. In order to increase the productivity of his suppliers (farmers, craftsmen and families) he also takes over their delivery with the raw materials and produce from the production.

In the small factories, work division was forced by higher productivity. In doing so, however, the technical basis of the production remained in existence. Seen technologically, it nonetheless came to the development of new and the refining of existing tools and production procedures.

Meanwhile new forms of enterprises have appeared whose future is still unclear today with regard to a sustainability of the structure, as for example

- the enterprises which act in the framework of a network or which themselves run the network for other enterprises (network economy) and

- the multinational enterprise in terms of a global player. What is meant here is large enterprises which besides production plants for wares and services inland extend their activities abroad more and more and to some extent even relocate there.

Network enterprises are mostly those which build on the Internet and information and communication technologies (ICT), (e.g. e-bay). For them and to some extent also for enterprises which are only indirectly involved with the technology, the term *New Economy* has prevailed since the late nineties of the 20th century.

The central characteristic is that within and among countries a form of economic activity hitherto only thought of theoretically is prevailing which above all by means of the networking of extant and new enterprises contributes to an enormous increase in working productivity.

The most important characteristics and development structures are

- ICT as so-called cross-section technology for all branches
- information as an independent product
- the catalysing effect of ICT on increases in productivity in other sectors.

So it comes through the use of ICT to so-called network externalities. They are characterised by the fact that an increasing number of on-line users increases the utility of each of those already networking: one's own broadband Internet connection (very high data rate Digital Subscriber Line, VDSL), e.g. for market research work, is particularly then worth while if many data banks in the medium are connected to each other and their contents can be exchanged. Then an increasing utility (marginal utility) arises in the form that each new user – especially if he puts data into the Net himself – has a greater advantage of the networking than his predecessor, as the latter was only able to access a more limited offer.

Besides the technology to move information, the information itself gains in importance – as a marketable product. Printing, radio, television as well as telephone and fax did in the past considerably improve information processing for the enterprise. What is new in the *New Economy*, however, is the cost aspect. Through ICT there is considerably faster access to information in the form of data packages than before. This, as explained above, substantially lowers the transaction costs for the enterprise and quasi encourages the demand for information .

Besides branches which support their activities directly from the possibilities of productivity growth of ICT or network economy, the thrust of the New Economy is based not only on the demand for the elements of their technology (e.g. semi-conductor industry) but above all it influences other branches in their development (e.g. the travel industry). Also, the transport network and supply network for gas, water and electricity show these characteristics of network economy, so it is to be expected that existing enterprises will also change considerably under their influence. In some European countries it can be observed that technology brought onto the market through the ICT branch has contributed by more than two thirds to an increase of the macroeconomic productivity growth during the last few years.

Name	Turnover in bn US-\$	Earnings in bn US-\$	Stock exchange value in bn US-\$	Branch	Country
Wal-Mart	288	10	212	retail trade	USA
BP	285	15	221	oil	Great Britain

Exxon Mobil	271	25	381	oil	USA
Royal Dutch Shell	267	18	210	oil	Great Britain/ Netherlands
General Motors	194	3	< 70	cars	USA
DaimlerChrysler	177	3	< 70	cars	Germany
Toyota Motor	173	12	134	cars	Japan
Ford Motor	172	3	< 70	cars	USA
General Electric	153	17	382	conglomerate	USA
Total	153	12	148	oil	France

The stock exchange value of a corporation results from the multiplication of the share price of the enterprise and the number of enterprise shares issued. Stock exchange values: as of 31.3.2005 or estimated; Turnover and earning details 21.7.2005

Source: Financial Times Deutschland, CNN Fortune.

Multinational enterprises which today appear on the market as *global players* constitute a special challenge for modern economies. The basic strategic orientation of a *global player* is the utilisation of special advantages on foreign markets, taking regional differences in market needs into consideration. They can be low work costs, market potentials or the avoidance of marketing obstacles on the basis of patronage vis-à-vis foreign import products.

Even if global players have to sustain their position at an international level in competition, at a national level they often succumbed to the market form of an oligopoly or a monopoly, that is they have considerable market power. This must be seen critically on the one hand from competition points of view, as market access of smaller enterprises on the home market is still hardly possible. On the other hand, a large economy also means considerable influence on political decisions. That is why politicians could be inclined to direct their decisions on economic policy towards short-term yield targets of *global players*, even if they could be disadvantageous macroeconomically or in the long term.

10. The change in enterprises and production

The development of enterprises constitutes a historic speciality in the so-called transformation states. They are countries which experience a change from socialistically formed economical systems to market economies. After the collapse of the so-called central administration economies in Eastern Europe, for many states an entrepreneurial new beginning has taken place. The predominant kind of enterprise in these countries until the beginning of the 90s in the 20th century was the nationalised enterprise or publicly owned company. In them there was de facto no entrepreneurial personal responsibility as known from the market economies in Europe. The aim was also not primarily profit maximisation but geared itself directly towards planned performance targets or political aims. Although the majority of companies had to wind down their businesses after the collapse of socialism due to lack of profitability, ecological problems or unsolved ownership questions, some succeeded in continuing with individual parts in private enterprise or setting up again with state support. In doing so, the following problems appeared for the young market economies:

- catching up on certain entrepreneurial experience as regards the development of products and the implementation of processes;
- retraining the workforce with regard to more personal responsibility for own work in the enterprise;

- overcoming the lack of capital to carry out investments and
- using convertible trade currencies.

Here the enormous politically enforced surplus of workers from socialistic times to today led to considerable problems in the work markets of the countries concerned, as the enterprises so far were able to contribute only a little to reducing unemployment.

Today one cannot yet clearly see if the entrepreneurial structures of these young market economies will in the long term equal those in west, north and south European countries, or if modern enterprise development in East Europe will, if anything, have a role model character for the other European economies.