

Economic growth and new economy

Ekonomický růst a nová ekonomika

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Abstract: Technological changes bring about economic growth. We are now at the beginning of the new phase of global economic development called new economy. The bearers of it are especially information technologies, biotechnology, material, energetic and cosmic technologies. There is reflected the influence of important integration factors as new technologies, high competitiveness (which becomes a necessity), new economic culture in the sphere of government, households and business.

Key words: new economy, economic growth, world economy, technologic changes

Abstrakt: Technologické změny přinášejí ekonomický růst. Nyní se nacházíme na počátku nové fáze globálního ekonomického vývoje nazývaného nová ekonomika. Nositeli jsou zvláště informační technologie, biotechnologie, materiálové, energetické a kosmické technologie. Proces se odehrává v podmínkách působení významných integračních činitelů: nové technologie, vysoká konkurenceschopnost (která se stává nezbytností), nová ekonomická kultura ve sféře vlády, domácností i podnikání.

Klíčová slova: nová ekonomika, ekonomický růst, světová ekonomika, technologické změny

THEORETICAL ISSUES

In the literature dealing with the theories of economic development, there exist obvious differences not only among the basically static characteristics but also among the dynamic ones (economic growth, economic development). Many authors formulate them rather widely while calling them in a narrow sense growth or economic growth, others proceed in the opposite way. There also exists a difference among the growth theories regarding developed market economies and the development theories regarding developing economies.

As the most narrow category, there can be regarded *economic growth*. It can be defined as the growth of GDP or any other appropriate aggregate and its components. Thus, the research of economic growth is concentrated on the impact of factors and conditions influencing the growth of GDP and its components. Economic growth is measured mainly by the growth rate of GDP or a similar aggregate as a total.

An important factor influencing economic growth is the *population growth*. The higher the rate of the population growth, the lower is the growth rate of per capita GDP. Among other factors of economic growth, there are counted capital accumulation, technological progress, economic size, level of specialisation and organisation of production, natural resources.

In the above-mentioned narrow sense, economic growth does not include changes in the social-econom-

ic, neither in many technological-economic parameters. However, these parameters are of an extraordinary importance for the development of society and therefore they form a part of the content of a wider category – *economic development*. The simplest definition of economic development is economic growth and structural changes. Under structural changes, there are understood the above mentioned technological-economic and social-economic changes. It regards changes of ownership relationships, distribution, employment, level of living etc. However, it also regards changes of economic policy, many of which are of technological-economic character and influence both development of the production of goods and services and their distribution (for example changes of interest rate, tax rules, devaluation etc.).

Neither does the wider concept of economic development include, compared to the narrow economic growth concept, anything more than the economic sphere. However, the non-economic sphere, including non-economic factors and conditions, influences the development in a considerable way. Therefore, it is necessary to pay a close attention also to the widest one of the dynamic characteristics system that is to *development*. Development in this sense includes economic development and the changes of the non-economic sphere including institutions. Also extraordinary economic factors and conditions are of important economic and social implications.

The non-satisfactory economic growth as well as disappointment over the growth results often call out a re-

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peated interest about the categories of economic growth and economic development and their mutual relationship, which is disputed in the economic theory. Economic growth, the preference of which in the development strategies, economic policy and plans usually does not lead to the desired results, namely in the social-economic sphere, becomes an object of criticism. There even emerge theses, that economic growth did not lead to economic development in such cases, in other words, that there occurred economic growth without economic development. These theses support the idea, according to which economic development is a basically positive phenomenon, while economic growth by itself need not and often does not bring positive results.

The growth concept, expressed in short by the thesis “economic growth solves all” was and of course even now is regarded as a faulty one. However, not to reach one-sided conclusions, it is useful to take a clear viewpoint regarding the problematics of the relationship between economic growth and economic development. As an appropriate viewpoint, there can be regarded the foregoing explanation, stressing the narrow notion of economic growth, wider notion of economic development and the widest notion of development.

To this standpoint, there corresponds also the concept of sustainable development, which puts the utmost stress on environmental factors. Human activities have a negative impact on nature – they destabilise natural environment and endanger future life. If economic development is to be sustained, it is necessary to reach the present progress in several mutually interconnected spheres:

- economic
- human
- environmental and
- technological.

TECHNOLOGICAL CHANGES

Accelerating technological changes are generally regarded as the main cause of economic growth.

According to *Freeman*, technological changes can be divided into four categories. The lowest grade is represented by incremental innovations consisting of progressive modifications of products and processes on a small scale. To a higher level, there correspond radical innovations which already represent a discontinuity which can change the existing products and processes drastically, however, their usually isolated occurrence has not any far-reaching consequences for the economic system. An exception is represented by their clusters leading to the origin of new branches or sectors of industry and services (for example synthetic materials or semi-conductors). A still more important grade is represented by the changes which not only influence many parts of the economy, but at the same time, they are able to generate entirely new sectors. At present, the typical examples of this are typical information technologies, bio-technologies, ma-

terial, energetic and cosmic technologies. The fourth and the highest category, representing really revolutionary changes on a large scale, are the changes in the technological-economic paradigm, the consequence of which is the change in the production scale (the structure of costs and production conditions), distribution and management (organisation) across the whole system. It regards the creative storms of destruction, J.A. Schumpeter's heart of the long waves theory.

However, learning that the global economic development takes place in long waves lasting approximately fifty years is commonly connected with the works of the Russian economist N.D. Kondratiev from the 20ies of the 20. Century, even if the original idea does not come from him. There were identified four finished K-waves. Each of the waves, which can be divided into four phases – prosperity, recession, depression and recovery – uses to be connected with especially important technological changes – the main technological revolutions. In the case of K1, it regarded namely steam power, textile industry (above all that of cotton) and production of iron. In the following K2 wave, railway dominated together with the production of iron and steel. The prosperity of the K3 wave is usually connected with the development of energy production and the quick development of chemical and car industry. The base of the K4 wave should be primarily seen in the field of electronics, synthetic materials and oil-chemistry. Around the especially important technological changes, further innovations are clustering – in production, distribution and organisation – what is finally spread into the whole economy. Such a diffusion of technologies stimulates economic growth and employment. Technologies by themselves do not present a sufficient cause for economic growth; favourable demographic, social, industrial, financial and other conditions are also necessary. Each K-wave has its specific geography. In K1, technological leadership belonged to Great Britain, France and Belgium, to which in K2 Germany and the United States were associated. The latter two countries reached the top of the leading countries in the following K3 wave, which was further represented by the previous leading group of countries and also by Switzerland and the Netherlands. In K4, the leading group comprised of Japan, Sweden and other industrial countries. Today, we are on the threshold of a new phase of the world economy development, on the base of the next, fifth wave of the global economic development, often called *new economy*, which includes namely information technologies, bio-technologies, material, energy and cosmic technologies.

In the historical development, there always prevailed economic growth over decline or stagnation in the world. However, it went on in a very disproportional way regarding both time and territorial allocation. A substantial acceleration and territorial spreading of economic development has occurred namely since the industrial revolution in the last third of 19. century. This *modern economic growth* was distinguished, compared to the past, by a relatively stable increase of the per capita

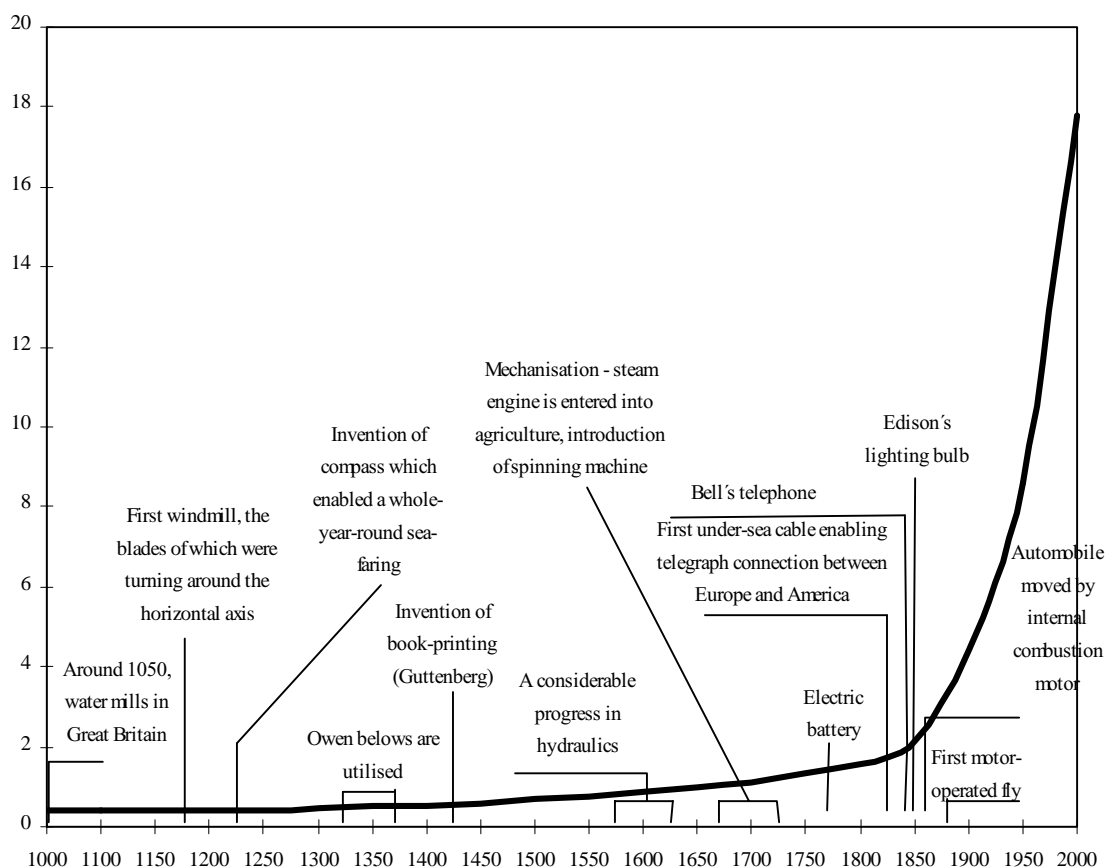


Figure 1. Long-term technological progress and GDP growth (in USD, 1992 prices) (Maddison 2000)

production, accompanied by population growth and usually also by substantial structural changes. Modern economic growth is a long-term process, which does not exclude temporary decreases and therefore a fluctuation, but the overall tendency is clearly that of increase. The rapid population growth connected to this process is, on a certain level, replaced by a slowed down population growth in some of the developed market economies and gradually even by reaching a stationary state. Under the substantial structural changes, there is meant above all the shifting of the core from industry to services and structural changes inside the sector of services. Modern economic growth is conditioned, from the historical viewpoint, by a hitherto not experienced development of sciences and research and their technological application (Figure 1).

WORLD ECONOMY DEVELOPMENT

The characteristics of world economy are connected to the post-war etap of its development. In its frame, the following phases can be distinguished:

- the first phase, following the renovation period (from the end of the war to the break from 40ies to 50ies), when at the same time the centrally planed economies (CPE) were formed and the classical colonialism started to disintegrate, including the 50ies and 60ies. It can be characterised as a period of relative prosperity.

- the second etap includes the critical period of 70ies and 80ies
- the third phase is represented by the 90ies up to the present.

1. phase. In the after-war period, a considerable *acceleration of economic growth* occurred, culminating in the 60ies. High rates of economic growth were typical for all main groups of countries.

The quick economic growth was accompanied by *progressive changes of the sectors structure* in all groups of countries. In the developed market economies (DME), the sector of services gained importance, while in developing countries (DCs) and centrally planned economies (CPEs), it was industry. This development was accompanied, however, by a series of shortcomings including a too high stress put on the heavy industry. Namely among the DCs, there existed considerable differences in the economic growth rate in total, as well as per capita, caused both by the different dynamics of the goods production and services and by the population growth differences.

The economic growth changes in the world as well as in the main groups of countries were influenced during the post-war development by different conditions and factors. In consequence of the CPEs origin and the disintegration of the classical colonialism by the end of 40ies and in the 60ies, three main centres were crystallised (the

USA, the EC, Japan); this phenomenon is usually explained mainly by the fact, that they managed to find and to develop such forms of economic relationships, which enabled a huge scientific-technological development as well as the increase of the level of living in their own countries and a mutually advantageous international economic co-operation. As the main factors of their dynamic economic growth in this period, there can be regarded a proper economic policy, international economic integration including attachment of DCs and the expansion of trans-national corporations.

Relatively favourable conditions for further growth prevailed also in DCs after their liberalisation. An increased economic role of the state, including attempts of the development planning and the growth of the state sector supported the industrialisation efforts which strengthened economic growth and the gradual introduction of the progressive structural changes. The prosperity of the DCs created a growing as a complex, even if fluctuating in time, demand for the traditional as well as modern export from the DCs. Moreover, the DCs started to utilise both direct and indirect advantages issuing from the starting economic co-operation with the DMEs.

Most of the European CPEs had not then yet suffered so much from the limits of the extensive economic growth and the bureaucratic-centralist system of management. Even so, in some of the countries, there merged attempts to correct the existing shortcomings in the form of economic reforms based on the idea of connecting "the plan and the market". However, these attempts were not successful. Their realisation was either politically interrupted, or their fulfilment did not succeed.

2. phase. However, in the 70ies, essential and hitherto unknown disturbances appeared in the world economy. As the most important of them, there can be regarded the so-called *structural crises*: the energetic (namely its decisive part – the oil crisis), the raw-material and the food one. There also emerged new phenomena as the *stagflation* and *slumpflation* (the combinations of stagnation and inflation, resp. of slumping down and inflation), followed by negative consequences both in the DMEs and DCs.

The *food crisis* was called out in 1972 by two main factors: the so-called hundred-years bad harvest, which afflicted namely South and South-East Asia and Sub-Saharan Africa, and the economic-political measures of the leading DMEs (the USA), who limited sowing areas during the period of the world agricultural production decrease. An acute lack of food and an enormous rise of its prices were stopped during two years. However, the food problem of the developing world had not been solved and it merged again at still more dramatic circumstances in the 80ies and 90ies. It will probably pose a serious problem even in the following years.

The *raw-materials crisis* originated at the same time as the food crisis. The temporary shortage and price increase of raw materials was conditioned mainly by the parallel existence of the industrial cycle in the conjunc-

ture phase in three centres of the world market economy (the USA, Western Europe and Japan). The crisis was stopped in 1974, when a drop of the raw materials prices occurred. The forecasts of the time regarding an absolute raw material shortage had proved false. Namely the raw-materials oriented DCs as well as many DMEs, which took part, and still are taking the main part, in the prevailing mining and trade of raw materials, took advantage of the crisis. Other countries, which were mainly importing raw materials, were the losers during the raw material crisis development.

The *oil crisis* originated in 1973. Even if its origin was motivated politically (the fight of the Arab countries against Israel and their using the oil weapon also against its allies), its base was economic: the OPEC countries participated in the major part of oil production and export in the world. By limiting production, they realised their monopoly through increased price, which had risen from 2.6 USD per barrel in 1973 to 11.65 USD in 1974 ("the first oil shock") and even up to 36 USD in the years 1979–81 ("the second oil shock"). During the 80ies, there occurred a gradual price decrease replaced by a fall even down to 14 USD and less in 1986. Since then, the price of oil oscillated between 15–18 USD till 1990, when it temporarily overreached even 40 USD as a consequence of the Iraq crisis. In the 90ies, the oil price dropped shortly under 10 USD, to get again over 30 USD on the break of the century and later on at the level fluctuating around 25 USD.

The OPEC action from 1973 meant the first breaking through the international division of labour on the side of the oil-producing DCs, the incomes of which increased from 100 bln USD in 1974 to 260 bln USD in 1980. The experience of the OPEC countries encouraged other developing countries in their endeavour to introduce the so-called *new international economic order* with the aim to overcome their dependant position with regard to the DMEs.

The oil crisis strengthened inflation and later on lead also to strengthening of the deflation impacts which accelerated the start of the economic crisis. Oil-importing countries, both DCs and DMEs, had to pay an increased price of oil to the OPEC countries and to other oil exporters including USSR. However, the DMEs managed to make profit from the so-called *re-circulation of petrodollars*, which the OPEC countries deposits in the Western banks. Also they managed to adjust flexibly to the changing conditions and applied a series of measures leading to savings in the oil consumption and the growth of its production. Many of the OPEC countries, on the other hand, over-estimated their possibilities and fell into debt, when the incomes from oil exports decreased under 100 bln USD in the mid-80s.

The *structural crisis* and other disturbances influenced the economic growth rate in a more negative way in the DMEs than in the DCs in the 70ies. Besides the oil exporting DCs, only the newly industrialised countries (NIC) registered a growth success, many of them became heavily indebted, however. Most DCs had nevertheless

been afflicted by considerable losses as a consequence of the controversial development of the 70ies, which reflected in the obvious slowing down of the development as a whole. Still more considerable slowing down of the growth and decreasing efficiency were registered by the DMEs.

The period of the 80ies was characterised by a series of unfavourable conditions, which could not but have led to a further prolongation of the decreasing growth trend. The longest and deepest economic crisis since the 30ies originated in the West, but its access was accelerated by the already mentioned “second oil shock”. It hit most of the DMEs and DCs as well as the CPEs. Nevertheless, while the DMEs went out of the crisis relatively soon, owing namely to the quick scientific and technological progress and its still more quick technological application in production, the DCs have only lately showed the ability of a certain acceleration. The main reasons of their long-standing crisis and a not very persuasive enlivening are used to be looked for in the growing international indebtedness, which cuts down their resources for financing economic growth. Another important cause is seen in the unfavourable development of the commodity market including the so-called oil anti-shock from 1986. This development reduced export incomes of a great group of the main oil exporters and pushed them into reducing the development programs. A great part of the DCs was negatively impacted by the combined consequences of both main causes. The CPEs fell into another crisis, of a different character, in the second half of 80ies. This was not a cyclical crisis, but a crisis interconnecting in itself both political and economic aspects. As the main reason of the weakening economic efficiency of the CPEs, preceding the deep crisis, there can be formulated the sharpening contradiction between the necessity of modern production factors development, namely of new technologies and highly qualified labour, which would be able to create and effectively utilise them, on one hand, and the impossibility to reach this goal in the conditions of the hitherto existing economic relationships including the bureaucratic-centralist planning and management answering to the obsolete type of the totalitarian society political structure, on the other hand.

However educating are the conditions and factors taking part in the slowing down economic growth, none the less educating are also the conditions and factors influencing the surprisingly long growth prosperity of the DMEs group (since 1983): technological progress, structural changes, the aggregate demand factors (governmental consumption and private consumption), changes of the international trade and the capital flow in dependence to the main currencies exchange rates, economic-political reforms (“supply side” reforms), capital markets liberalisation, lower inflation rate and other consequences of the monetary policy and price drop of the commodities in the world market (Eurostat 2002).

The mentioned factors and elements were mostly interconnected, but they never acted at the same time. However, weakening of some of them was replaced by

strengthening of the others. For example, in consequence of the changes of the main currencies rates, Japan replaced the USA in the role of the “growth force” based on domestic demand and the abroad investments activity growth in the second half of the 80s.

In the second half of the 80s, there occurred a certain acceleration of economic growth in the world economy. This dynamics was, however, the consequence of the growth results improvement of the DMEs and certain regions of the DCs (Asia); on the other hand, it incorporated the lasting slow-down and fluctuating development rates of the other developing regions (Africa and Latin America), and lastly also the non-precedent absolute drop of the former European CPEs, the present transforming economies, in connection with the political changes of the end of the 80s.

3. phase. However, at the beginning of the 90s, a radical change had started. For the first time in the post-war history, there occurred a *world recession* – in 1991, a lower productions of goods and services was recorded than in 1990. As the main factors of this decline, there are regarded mainly the problems with which the DMEs met (including the impacts of the Persian Gulf crisis) and which caused a considerably slowed down temps in some of these countries, for example Japan, or a direct drop, as in the USA, Canada and the United Kingdom. The further, and immediately unambiguously critical effect was registered regarding the transition of the Central and Eastern European countries from centrally planned to market economies. This transition is in harmony with the prevalent types of economic reforms and is necessarily connected with several years of the production decline.

Even if both DMEs and DCs went through important changes during the 80s, still far more important changes were registered in the development of namely the European CPEs. They did then met with the obstacles, which questioned the core of the ruling social system itself. The issue has been found in a non-precedent *transformation of the Central and Eastern centrally planned economies into market economies*. In the economic field, the transition to market economy won over the alternative of economy oriented at the connecting of plan and market. These changes are not only have a qualitatively differ-

Table 1. Differentiation of the yearly GNP growth per capita

	Numbers of countries according to the yearly per capita GNP growth in the years 1980–2000
Growth rate over 4%	20
Growth rate 3 to 4%	13
Growth rate 0 to 3%	79
Long-term decline	59

Source: World Economic and Social Survey 2001, p. 76

ent type, but also mean the disintegration of socialism on the world scale. Together with this disintegration, there moreover occurs a metamorphosis of the whole post-war system of the world economy: the system based on two different complexes showed a clear trend of the change into the unified system – *world market economy* (Table 1).

NEW ECONOMY

It was in the USA, where the new economy was still more pushing forward in the 90ies. It was expressed by superlatives only till now: no inflation to speak of, a high level of stocks value which was growing by the rate of more than four per cent during the last four years, full employment and budget surpluses.

At present, all is different. Problems have emerged in the commodity as well as in the labour market. Will new

economy survive this crisis? The answer is clear: it will survive and spread all over the world and it shall become an omnipresent phenomenon finally. It will form our economy as well as our lives for decades. New economy disposes of four mutually integrating driving forces: technologies and competitiveness on one hand, and new economic culture in the government sphere, households and business on the other (Figure 2).

Technology is the most conspicuous part of it: the telecommunication revolution is literally all-pervading and spreads much more quickly, than for example telegraph or telephone managed in its time. There exists also another information revolution, which is based on the ability to create software programs restructuring dramatically the primarily given tasks, be it in the sphere of accounting, tickets sale, projects financing, shopping and even entertainment. However, this part of the revolution has not reached its limits yet, we are just at the beginning. The computer capacity explosion will shortly bring about

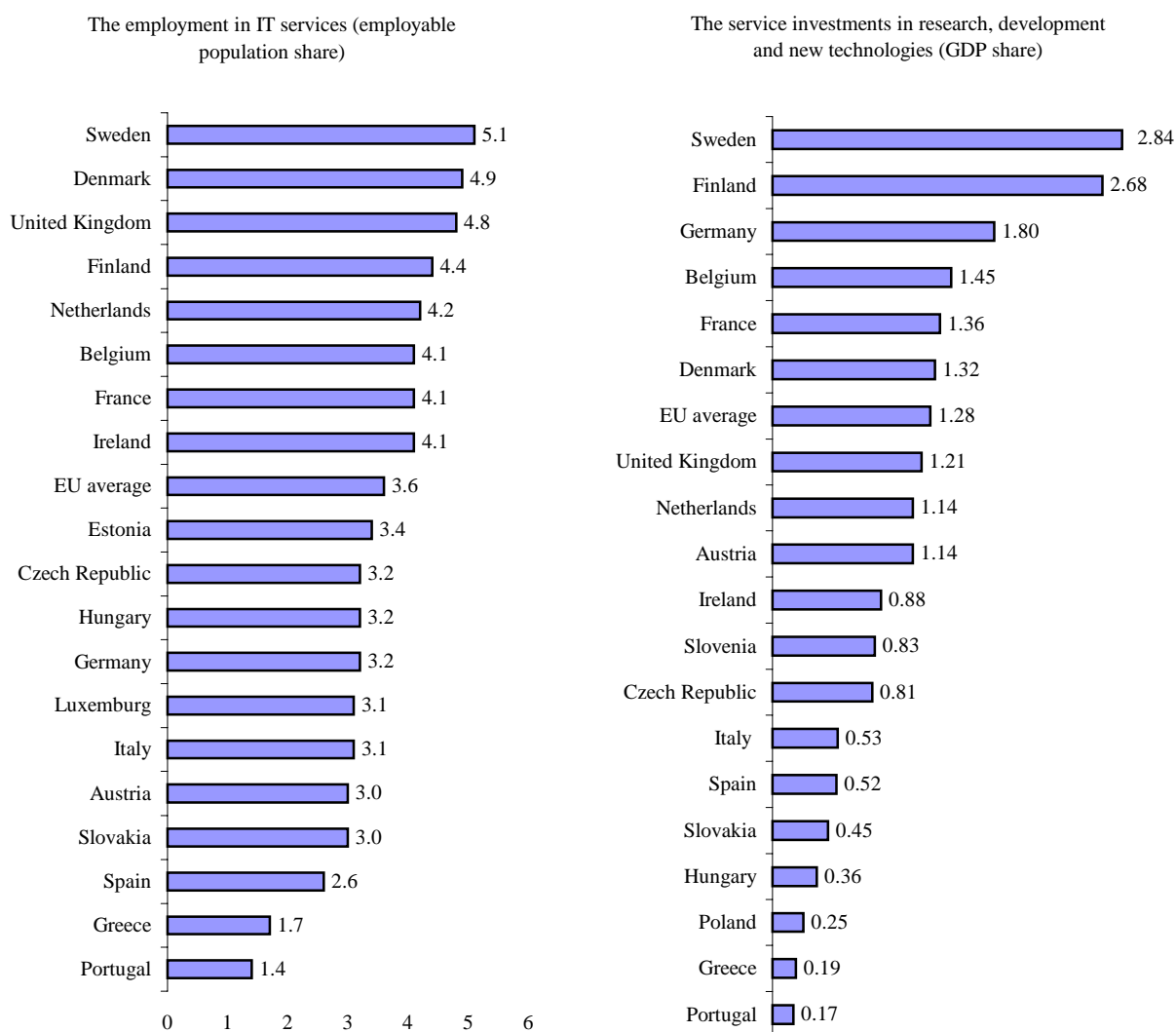


Figure 2. Research, development and new technologies

Source: Eurostat, European Commission – European Innovation Scoreboard 2002, p. 26–30

Table 2. Development and new technology

	Czech Republic	EU average (15)	EU new countr. average (10)	USA
College education (population share)	9.0	21.2	17.5	36.5
Government expenditures for research and development	0.54	0.67	0.41	–
State expenditures for research	0.81	1.36	0.32	2.04
International EPO patents (per 1 million inhabitants)	12.1	152.7	7.1	49.5
Expenditures for IT (GDP share)	9.5	8.0	6.0	–

Source: Eurostat, European Commission – European Innovation Scoreboard 2002, p. 26–30

enormous possibilities, which are now still outside the sphere of our imagination (Table 2).

High competitiveness becomes a law, and that even in the countries where it is shunned (Germany, France, Japan) and elsewhere. The moving forces of competition are of course the rules of the world trade, which becomes more efficient owing to the modern technologies and limiting of the social state. The share holders insist upon getting their own. The speculation capital is at anybody's disposal, and that in an unlimited measure. Therefore, only a small step is still necessary to the abolishment of the protected markets. New economy does mean a move forward without any considerations, but everybody, who is minimally in the position of a buyer, is a king.

The third driving force is the *new economic culture*. Central banks and the Ministries of Finances have already learned, that stable prices and healthy budgets contribute in a quite extraordinary way to the global prosperity. Important also is, that the individual actors as well as the whole enterprises have received the basic message from the world, where everything is possible:

If you have a problem, do not rely on the government, solve it by yourselves!

These approaches have basically changed the mechanism, by which the world was functioning for so long: the middle management, that fort of tradition, was almost liquidated, and, as in every revolution, the status quo protagonists were expelled. Young people want to work in newly developing organisations.

Josef Schumpeter (born in Třešť by Jihlava, an unsuccessful Austrian Minister of Finances from the break of the century – he was then only 21, later a bankrupt banker and finally a great Harvard economist) called this process the “creative destruction”. In his ideas, he counted with trade as the changing rules of the game or important innovations, which would have a shocking influence on the markets, the result of which is, that prices, players as well as the rules of the game are changing in the whole economics. In this process, when the old and tired societies are liquidated, a great regrouping and mixing takes place, which greatly increases productivity.

There exists no better example of *Schumpeter's creative destruction* (Schumpeter 1966) than what happened during the last decade in America. However, this is not any more the story of the USA. At present, creative de-

struction hit almost the whole world. Sceptics still go on arguing, that competitiveness and technologies are causing a havoc and destroying harmony in the society, that they create inequalities and liquidate the middle class. The truth is, that new economy is hard towards those, who live on the costs of the taxpayers and shareholders. But it is also the truth that it offers great chances to energetic people, who were long left outside. An interesting fact is, that in the USA, it meant full employment and improvement of the economic status of the poorest. People often change jobs and have got to learn. But who would like to go back. It is neither the parents, who can see great opportunities in front of their children, neither the children, who have just got enough time to really live their lives. This is also the creative destruction.

CONCLUSION

New economy matures. It does not offer a quick way to wealth, does not multiply the economic growth rates and also it is not applied as easily as that. New economy means a hard labour its miracles are limited, but real. At many places, it has already managed to turn the world upside down: Finland has become a developed technologies centre, Germany is lagging behind a little, since changes are often underestimated in this country, and the Japanese dropping economy was saved only by its great technological potential. Central banks and the Ministries of Finances cannot create the false feelings of prosperity any more.

Globalisation, the accompanying phenomenon of new economy, is a double-blade weapon, however: it is the driving force of economic growth, new technologies development and the growth of the level of living in the countries both rich and poor, but it is also a controversial process which damages national sovereignty, corrodes the local culture and traditions and threatens with the economic and social non-stability. The key question of the 21. century therefore is, whether the states will be able to control this process, or whether they will become its victims.

Economic history is, for a great part, the story of the expanding market: from the farm to town, from the district to the state, from one state to another. In the 20. cen-

tury, the development of markets was slowed down by two world wars and the recession. New technologies and political pressures after the WW2 have accelerated this process. The Cold War from the 40ies to the 80ies then pushed the United States into using trade liberalisation and economic growth as a tool in the fight against communism. The success of the main trade negotiations decreased the average tariffs from 40% in 1946 to 4% in 1995.

After two world wars, Europe perceived the economic unification as a dam against nationalism. The technology has complemented the politics. Even before the origin on Internet, the falling prices of communication and transport – from jet planes to better under-sea cables and satellites – helped the global trade. By the end of the 90ies, the world export (after deducing inflation) was almost ten times higher than forty years earlier.

Globalisation develops this process, but it also leaves it at least in one important aspect. Till the recent past, states were perceived as independent economic units interconnected mainly by trade. However, this is not quite true any more. *Enterprises and financial markets are still more overcoming the national borders in their production, marketing and investment decisions.*

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