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THE NEW ECONOMY: STATISTICAL MEASUREMENTS

This paper discusses the 'New Economy' in connection with the on-going global debate on its range, content and statistical measurement. It includes all changes and effects in productivity and growth, caused by ideas, information, information and communication technologies and their infrastructure throughout the globalization of markets. Statistical measurements of the New Economy are based on the System of National Accounts, its subjects and interaction. There is an analysis of empirical results on added value, employment and productivity rates in the New Economy of countries from the European Union, the USA and Japan. Some general conclusions are given on the need for further development of the methodology of statistical measurements of that economy.

JEL: F02; C82; O11

The coming into being of the 'New Economy' is a major part of the information society. It is a manifestation of the processes of globalization and economic growth as fundamental characteristics of the world economy. The development of the information revolution gives rise to new economic activities, goods and services and sets new challenges to communication between organizational structures of transnational corporations. Those are related to the transformation of national economies into a unified world economy, within which knowledge, capital, labour, goods and services will be transferred freely.

According to Prof. L. R. Klein, Nobel prize winner in economics, the term 'new economy' is treated differently by economists in developed countries. He believes "the existence of a new economy is rather a matter of evolution in a changed economic environment than...a matter of the existence of various behavioral mechanisms" (Klein, 2000, p. 16). In fact the genesis of the New Economy should be sought in the use of new information and communication technology (ICT) in free trade and the digital and electronic networks, typical products of which are the Internet and on-line commerce. In this respect solid proof can be found in the arguments given in the Economic report of the US President for 2001 on the development of the economy. The Gross Domestic Product as a global statistical indicator of the development of US economy "has grown at an average yearly rate of 4% during the period 1993 - 2000, the number of newly-created jobs has gone up by 22 million, the unemployment rate has gone down to 3.9%, while the hourly labour productivity in the non-agricultural private sector has grown at an average annual rate of 2.3%, as compared to 1.4% during the previous 20 years" (quoted from Leonidov, 2001).

Currently there is a growing number of people supporting the idea that the old categories used to measure the New Economy are not sufficiently adequate. The main issue we need to solve now is: which statistical indicators and approaches are suitable for measuring the New Economy? So it is necessary to identify its range and the most important aspects of statistical measurement in connection with economic growth, employment, efficiency and labour productivity.

Nature and definitions of the "New Economy"

During the last twenty years economists and statisticians discussed and wrote about the information society, which included the New Economy. There has been made a lot of progress in the development of the definitions on the range, classifications and the data collection systems of that economy. There have been developed a number of projects by Eurostat, OECD and the International Association for Official Statistics (IAOS), which in August 2001 held a statistics seminar on the Information society and the New Economy in Tokyo (Japan). In March 2002 in Rome there was held a seminar entitled "The New Economy - Key Measurement Issues". It was organized by the Subcommittee on Economic and Monetary Statistics with the European Committee for Statistical Information in the Economic and Social Sphere (CEIES) together with Italian Statistics (ISTAT). Its main purpose was discussing issues related to the indicators and approaches of statistical measurement in the New Economy.

According to Eva Hagsten from Sweden the term "New Economy" has no single definition. In recent years its contents have been enriched "in view of the fast technological development in the information and telecommunications sector and the resulting more frequent use of technologies and products related to the former (Hagsten, 2002, p. 2). The New Economy is defined very broadly by the Swedish statisticians Jagren and Morel as "the combined effects of a certain number of various changes, which include, among other things, new basic technologies, new unregulated and emerging global markets, which lay greater stress on knowledge and intellectual capital, new organizational structures in companies, new economic policies, low inflation rates as well as new values and relationships (Jagren, Morel, 2001, p. 10). In the discussion the Swedish scientist Magnus Henrekson (Henrekson, 2000, pp. 549-556) characterized the New Economy on the basis of the American researcher Roamers' four factors, namely: 1) rapidly decreasing information management costs; 2) better skills at stabilizing economic policies; 3) broad development of unregulated commodity markets, capital markets and to some degree labour markets, and 4) increased opportunities to use the market pricing mechanism to offset transaction dependence in companies.

Jonung defines the 'New Economy' as an open and globalized world, where ideas and information, as well as capital flows, move freely and rapidly over wide areas. The prerequisites for this economy are capital efficiency and market distribution (Jonung, 2000, pp. 561-566). Viotti and Vredin suggest narrow definitions to describe the New Economy such as structural changes, caused by the revolution in information technology and the greater efficiency of markets (Viotti, Vredin, 2000, pp. 603-608). Eklund and Borg believe it is in a spiral relationship with the risk of production growth (Eklund, Borg, 2000, pp. 529-535). According to the Finnish statistician Juka Jalava "the latest tendencies in the area of information and communication technologies, along with the evolutionary globalization development give rise to a New Economy (Jalava, 2002, p.1). It should be noted that some renowned and recognized analysts and organizations,

The New Economy: Statistical Measurements

such as the OECD, refrain from defining the term "New Economy". For instance, in the OECD report entitled "Is there a New Economy ?" (2000) it is pointed out that researchers associate various meanings with the term. What is common to most of them is the presence of accelerated growth accompanied by lack of inflation and wide use of information and communication technologies.

The above review of the stance of economists and statisticians shows that there is no single definition of the term "New Economy". In recent years it has been used in at least two aspects:

- referring to the changes which have occurred as a result of the fast technical development of the information and telecommunication sector and related technologies and products (goods and services);
- referring to the reformed economic systems in a number of East European countries in the new conditions of transition.

The conclusion is that the idea of a globally accepted definition of the New Economy is still an illusion. There exist broad and narrow definitions of that economy, for instance:

- broad definition - "an open and globalized world, where ideas, information and capital move freely and rapidly";
- narrow definition - "structural change, made by the information and telecommunication revolution and more efficient markets for sustained increase in productivity".

The author believes the term New Economy covers all changes and effects to growth in productivity, caused by ideas, information, information and communication technologies and their infrastructure with the globalization of markets.

In the above definition (which does not claim to be exhaustive or to be the only possible approach to generalization) there can be identified at least three major characteristics of that economy: *firstly*, it has come into being through the use of ideas and information on the growth of productivity; *secondly*, it develops through the application of information and communication technologies with their specific infrastructure; *thirdly*, it manifests itself during globalization of markets and the free movement of capital, goods and services in them.

The study of the New Economy by economists and statisticians is necessary because of two important reasons: *firstly*, identifying the range and content of the new information and communication technologies sector is important due to its complex influence in the information society; *secondly*, statistical indicators on that economy are necessary for a precise analysis of growth and productivity.

There is a discrepancy between demand for generalized data on the New Economy by consumers and accessibility of research done by official government statistical agencies. For instance, the new activities of the information and telecommunication sector are not covered enough by the currently conducted statistical surveys, including those in Bulgaria. There can be found only a few indicators, referring to the hardware section of the information and communication technologies. The rapidly spreading ICT, such as Internet providers and cellphones are usually registered in statistical surveys, although they

are not specified with sufficient precision. At the same time we need statistical information on production, availability, use and impact of information and communication technologies, servicing and digital content. The classifications used are not consistent with the identification of key components of the information and communication technologies with respect to their application in the institutional sectors in households, business (non-financial and financial) enterprises, state administration, non-profit organizations, which serve households in the sector "rest of the world".

Statistical measurements in the New Economy

It is necessary to measure and study the consequences and results of the development of the New Economy at micro-, meso- and macrolevel according to the methodology of the System of National Accounts (rev. 1993). It is based on reporting economic operations and other flows. The subjects of the SNA are those economic units¹, which carry out business operations and take part in them. They are grouped in institutional sectors: households, non-financial and financial enterprises, state administration, non-profit organizations, catering for households and "the rest of the world". Economic units are consumers and producers of goods and services and, being subjects of the markets, they give rise to complex and multifaceted interactions, as a result of which economic operations and other flows (tangible and intangible) are realized. Those operations refer to the visible relations and a certain succession at the realization stage, which refers to the New Economy. At the same time it must be noted that the range of interaction while using information and communication technologies in realized economic operations is much wider and its nature is changed. In market conditions, the choice of institutional units and sectors, regarding the extent to which they will use electronic networks in carrying out their functions, is entirely up to them. The coverage of existing electronic networks depends on the importance they are imparted in the various institutional sectors during the interaction between consumers and producers. The use of networks depends on the kind of economic relations and transactions. Most often those are used with the sale or purchase of a product (good or service), its volume and price being major characteristics of the transaction carried out in the classic case.

In the New Economy a number of activities are carried out through an electronic network, for instance collecting information on the purchase, the purchase itself, the delivery, payment, aftersales, etc. According to Kuipers such transactions "cannot be identified simply as set price deals, nor are they without value and financial liabilities" (Kuipers, 2002, p. 5). The entire process of conducting an activity in the electronic network, in order to carry out an economic operation, is covered by the term "electronic business" (e-business). The main stages are identical for institutional units and sectors, which participate in the demand and supply at the respective markets, in our case a commodity market (see diagram).

¹ Economic units are also called institutional. They are business units, which: 1) own goods or assets and may exchange right of ownership over them; 2) can make economic decisions independently in their business activity and assume the responsibility for them; 3) can incur financial liabilities in their own name and enter into contracts; 4) prepare a full set of accounting reports (author's note).

The New Economy: Statistical Measurements

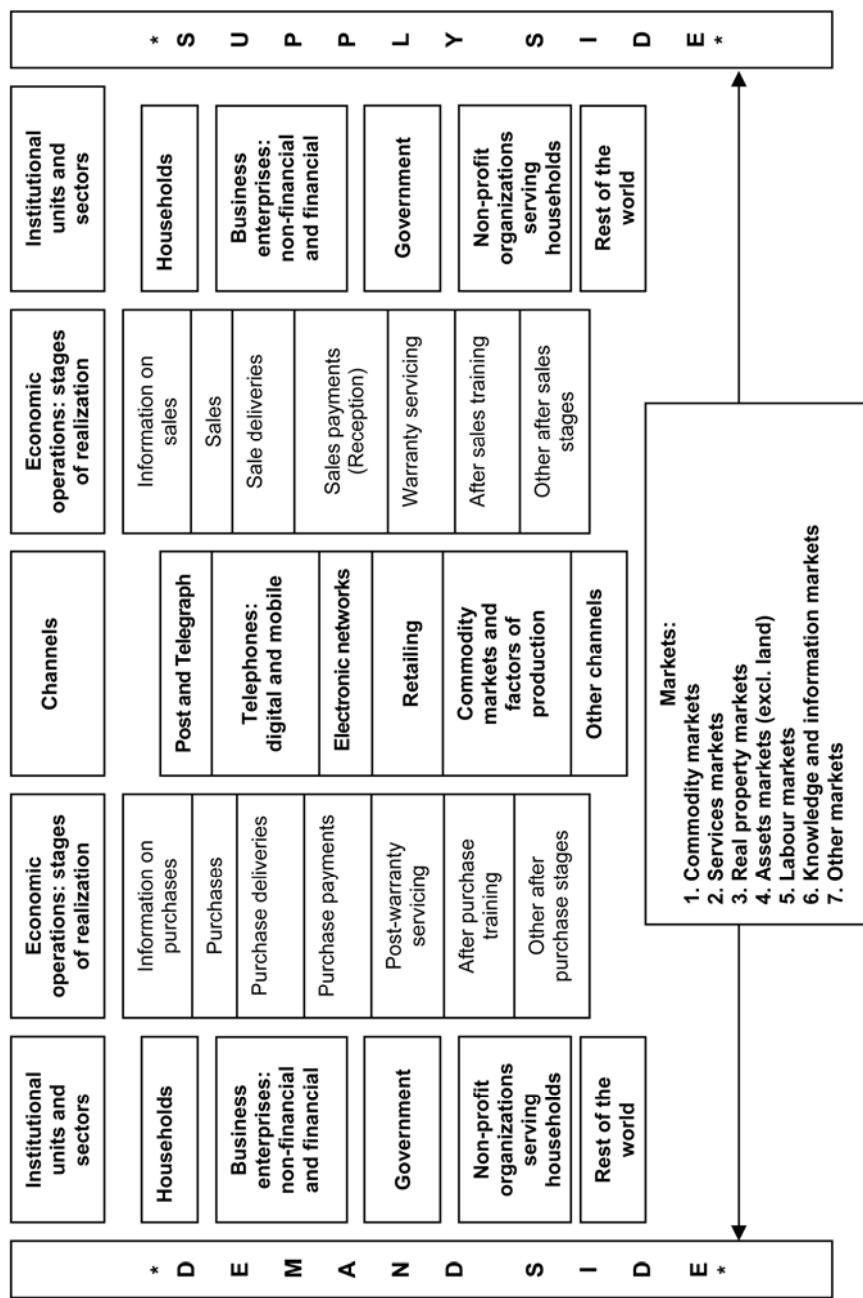


Diagram. Subjects and interactions in the economy

Source. Kuijpers, A.D., 2002, p. 6. The diagram above is based on the source given and has been enriched with some of the author's ideas.

In the institutional sectors of non-financial and financial enterprises there can be made certain differentiation between enterprises which buy goods and services, and those which supply them, including enterprises linked through electronic networks. It is important to note that in order to accomplish the sales-purchase process (irrespective of the type of market), it is necessary for the institutional units on the demand side, i.e. those doing the purchasing, to be certain, to have access to the Internet, in order to be able to use everything the network offers without having to make any additional arrangements, using all that is available to third parties. On the other hand, enterprises engaged in sales have created certain conveniences in the information on offer, which can also be used by third parties. It is obvious that the two sides (demand and supply) are interrelated, and if either one of them withdraws the economic transaction can not be carried out. According to the SNA, institutional sectors and units, which perform their functions in the microeconomy, generate economic flows (salaries, taxes, fixed capital augmentation, etc.) as a result of which assets and liabilities change. There are certain peculiarities in the supply and demand side of those.

The institutional sector "Non-financial enterprises" is a group of resident institutional units, whose activities constitute mainly production of goods and non-financial services on the market for a profit. *When offering goods and services*, the enterprises included in the sector perform only some of their activities electronically. The actual delivery of goods with electronic sales is carried out only with respect to a limited number of goods, which allow full digitalization. "In the car industry the delivery channel will never be fully automated, since the main product is a physical unit, which has to be delivered physically. The production, sales and consumption of newspapers for example, can be fully digitized" (Kuipers, 2002, p. 5). When in demand for goods and services, institutional units and sectors can use the structure and potential of ICT for automating most of the processes of communication (see diagram) in the existing supply channels. They can allow potential suppliers to offer their goods and services mainly through a certain protocol, for instance within electronic markets.

The institutional sector of "Households" represents an aggregate of households in their capacity of consumers of goods and services and non-corporate enterprises - property of the households - which produce goods and services for sale on the market and for internal consumption. The main functions of that sector are connected with the consumption of goods and services and partly with the production of the latter, with the provision of workforce and communication with the sector "State Administration". The consumption of goods and services by households is facilitated by the use of ICT in order to "gather information on certain products, compare prices, order and get goods delivered electronically". The new information technologies and communications facilitate the work of households with regard to ensuring workforce, while the potential of ICT

The New Economy: Statistical Measurements

facilitates communication (for instance that between taxpayers and the government).

The institutional sector "State administration" represents an aggregate of institutional units, which are unique legal subjects. They have been formed as a result of political processes and possess legislative, judicial and executive power with regard to other institutional units over certain territory. Here belong agencies of the central government, the district and local (municipality) government, enterprises, financed and controlled by the government and centralized social security funds as well as institutional households (prisons, orphanages, etc.). The use of ICT aims at improving communication between state administration and the citizens, the civil society and the other institutional sectors, i.e. at the global coverage of that sector in its communication with the civil society.

The institutional sector "Non-profit organizations, catering for households" (NOCH), comprises legal persons or social subjects, established for the production of goods and services. Their legal status does not allow them to be sources of income, benefits or any other financial gain to the people who created them, who control and finance them. They provide goods and services to their members or to third parties for free or at economically insignificant prices. The sector comprises the following: syndicates, trade unions, political parties (excluding countries where there is a single political party system), religious organizations, charity organizations, foundations and other non-profit or social organizations, financed mainly through membership dues. The use of ICT aims at improving the connections between households and legal persons (or social subjects) of the civil society on the one hand, and the sector of "State administration", on the other.

The sector "the rest of the world" comprises all foreign institutional non-resident units, which have economic relationships with institutional units and sectors from the national economy. Here the use of ICT is connected with the development of transnational corporations and international markets.

The diagram is a generalized representation of the interaction between the institutional units and sectors as subjects of the demand and supply of goods and services on the various markets, the economic operations between them and the channels which link them. It also shows combinations of various channels through which a given operation can be carried out. "One possibility is offline shopping, in which case electronic networks are used only in order to gather information. The buyer does the purchase itself by actually visiting the store, placing an order by mail or telephone. Electronic networks can be classified into the accessible-to-all Internet and other freely accessible networks" (Kuipers, 2002, p. 7). The use of electronic networks lets us avoid the use of physical intermediaries between the demand and supply side

(small dealers, vendors, specialized fairs, etc.), who confirm orders, arrange meetings, send bills and invoices, etc., which would reduce transaction costs significantly.

The subjects and interactions in the economy are just a starting point for the statistical measurement of the New Economy. According to our definition it includes all changes and effects in productivity and growth, caused by ideas, information, ICT and their specific infrastructure in market conditions. The goods and services of the New Economy provide the opportunity for ideas and information to be recorded, altered and sent through ICT and their infrastructure. In addition, those goods and services are produced by certain non-financial enterprises and are sold to others. According to Kuipers' classification (Kuipers, 2002, p. 10) those fall into the following groups: enterprises, producing goods related to the telecommunications structure, which invest in telecommunication equipment; those ensuring the conditions for the telecommunication structure to operate - the producers and suppliers of applied software.

Those two groups of enterprises, taken as a whole, represent the ICT sector. Their production is sold on the electronic markets to ICT consumers. They incur expenses over the purchase of computers, modems, mobile phones, etc. in order to get connected to the telecommunication infrastructure.

While measuring the New Economy statistically it is necessary to define the range of economic activities, included in the sector of "Information and communication technologies". It should be noted that in global perspective that issue has not been solved satisfactorily. According to M. Rothgang the main criterion is the use of digital signals and miniaturized equipment (Rothgang, 2002, p. 3). The same criterion was adopted by the working group of the OECD (WPIIS) on Information Society indicators at the April 1998 meeting. The classification of economic activities, related to the ICT sector, adopted by the OECD, includes five production industries (30.00, 31.30, 32.00, 33.20 and 33.30) and five service-related industries (51.64, 52.48, 64.20, 72.00 and 72.50 - 72.90), given in Table 1. It must be noted that in Germany, for national as well as statistical purposes, there is a supplementary classification of economic activities in the ICT sector (RWI), which is narrower in range than that of the OECD, since it lacks items 31.30, 33.20 and 31.30. The Dutch statistician Van Ark (Jalava, 2002, pp. 7, 9) offers a wider classification of economic activities, included in the sector range, in connection with the research on the contribution of the New Economy to the growth in labour productivity (Table 1). He suggests broadening the scope of production industries, adding 3 new items, and adding 10 new items to that of the service sphere. We believe the classification of Van Ark may be taken as a future widening the scope of ICT. Currently the predominantly used ICT classification is the one adopted by the OECD, not only in EU countries, but also in those in accession.

The New Economy: Statistical Measurements

Table 1

Classification of economic activities in the ICT sector

| Code | Item name and contents | ICT sector range | | |
|---|---|------------------|------------------|-----------------------------|
| | | OECD | Germany (RWI) | Van Ark's classification |
| A | B | 1 | 2 | 3 |
| I. Production | | | | |
| 30.00 | Office, Accounting and Computing Machinery | x | xx | xxx |
| 31.30 | Insulated Wire and Cable | x | | xxx |
| 32.00 | Radio, Television and Communication Equipment | x | xx | xxx |
| 33.20 | Instruments & Appl. For measuring, etc. | x | | xxx |
| 33.30 | Industrial Process Control Equipment | x | | xxx |
| Other production types according to van Ark's classification | | | | |
| 33.10 | Medical Appl. & Instruments & Appl. for Measurement, etc. | | | xxx |
| 64.00 | Post and Telecommunications | | | xxx |
| 72.00 | Computer and Related services | | | xxx |
| II. Services | | | | |
| 51.64 | Wholesaling of Office Machinery and Equipment | x | xx | xxx |
| 52.48 | Specialty Store Retailing of Other Goods not Classified Elsewhere | x | xx | xxx |
| 64.20 | Telecommunications | x | xx | xxx |
| 72.00 | Computer and Related services | x | xx | xxx |
| 72.50-90 | Repair and Maintenance of Office, Accounting and Computer equipment - Other Computer Related Services | x | xx | xxx |
| ICT-using industries according to van Ark's classification | | | | |
| 22.00 | Publishing | | | xxxx |
| 24.00 | Chemicals and Chemical Products | | | xxxx |
| 31.00 | Electrical Machinery, Apparatus, etc. not Classified Elsewhere, excl. 31.30 | | | xxxx |
| 33.00 | Medical, Precision and Optical Instruments, excl. 31.30 | | | xxxx |
| 65.00 | Financial Intermediation | | | xxxx |
| 66.00 | Insurance and Pension Funding | | | xxxx |
| 67.00 | Activities Related to Financial Intermediation | | | xxxx |
| 71.00 | Renting of Machinery and Equipment | | | xxxx |
| 73.00 | Research and Development | | | xxxx |
| 74.1-74.3 | Legal, Accounting and Auditing Services, Advertising | | | xxxx |

Source: NCEA ,2001, p. 23, 24, 32, 34, 18, 23.

In order to calculate the production of the ICT sector, we need information on all stages in the process of adding value. It starts with "measuring the input

factors (labour and capital), market capacity (production and import), demand by intermediaries (investments and consumption) and end-user demand (export and consumption) for the hardware produced (computers, cables, wires and components) and the software (wholesale and retail, telecommunications and services) in the industry" (Rothgang, 2002, p. 5).

The statistical measurements of the ICT sector production are currently very promising. There are certain problems with their further precision, connected mainly with the development of the classification of economic activities in the sector, calculation of the added value and the design of appropriate price indexes as implicit deflators in order to correct the current effect of inflation.

Analysis of the New Economy Empirical Measurement Data

The development of the New Economy, based on ICT sector measurements, can be assessed through the use of statistical data on selected countries of the EU, USA and Japan. Despite the abovementioned major weaknesses of its measurement, it is believed that currently economic statistics has made some progress in Germany, Finland, France, Italy, Sweden, Great Britain, the OECD, USA and Japan. Naturally, a precise analysis of the sector, starting with detailed statistical data on the input factors of production and ending with consumer demand, is still to be done in the near future even for the countries, mentioned above. This is why one should be careful with published data on assessing added value, employment, trade and labour productivity in the New Economy, since there are certain differences concerning the use of classifications and definitions. The data in Table 2 shows that as of 1999, the percentage of gross added value in the ICT sector against the total gross added value is of major importance in some small countries such as Finland (13.2%) and Sweden (11.5%). Currently they are considered to be the leading countries with regard to advancement towards the Information Society and the production of goods in the ICT sphere as a percentage of total foreign trade, 21.7 and 19.5%, respectively (1999). At the same time that percentage is of limited importance in Germany, France, Italy and Great Britain and varies between 7.0 - 10.7%. There is substantial growth in the market volume of ICT production for 2000 in Japan - 208 bln USD, and USA - 683 bln USD, as opposed to 108 bln USD in Germany, and 58 bln USD in Italy. With the exception of Finland, Sweden and Japan, all the rest of the countries that have been chosen for analysis here, feature a negative trade balance for ICT products in terms of foreign trade (Table 2). In addition, the percentage of goods produced in the export sector, over the average volume of export/import of the same type of goods varies between 12.5% (Germany) and 20.7% (Great Britain). The negative trade balance of those countries with regard to ICT products is quite alarming and shows that they still have to import such goods.

The New Economy: Statistical Measurements

Table 2

Size and Growth in the Information and Communication Technologies (ICT) Sector

| No | Indicators | a | b | Germany | Finland | France | Italy | Sweden | Great Britain | USA | Japan |
|------|---|-------|------|---------|---------|--------|-------|--------|---------------|------|-------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | |
| 1. | Value added, employment and trade in the ICT sector as % of total business | | | | | | | | | | |
| 1.1. | Value added | 7.0 | 13.2 | 9.8 | 7.1 | 11.5 | 10.7 | | | 10.5 | 8.1 |
| 1.2. | Employment | 4.5 | 9.4 | 9.0 | 4.7 | 8.7 | 7.7 | | | 5.8 | 6.9 |
| 1.3. | Trade balance | -0.4 | 3.0 | -0.2 | -0.9 | 2.1 | -0.4 | | | -0.4 | 1.3 |
| 1.4. | ICT as % of total goods trade average exports/imports | 12.5 | 21.7 | 12.8 | 8.4 | 19.5 | 20.7 | | | 22.7 | 24.6 |
| 2. | Market volume of ICT products in bin. USD, 2000 – total | 108.0 | 7.0 | 80.0 | 58.0 | 17.0 | 94 | | | 683 | 208 |
| 2.1. | Information | 52.0 | 4.0 | 41.0 | 19.0 | 10.0 | 50 | | | 429 | 115 |
| 2.2. | Telecommunications* | 56.0 | 4.0 | 40.0 | 38.0 | 7.0 | 44 | | | 254 | 93 |
| 3. | Annual growth rate, 1998/2000 – total | 10.2 | 11.0 | 12.8 | 14.6 | 10.9 | 12.4 | | | . | . |
| 3.1. | Information | 9.9 | 12.2 | 11.6 | 11.5 | 11.1 | 11.9 | | | . | . |
| 3.2. | Telecommunications | 10.5 | 9.9 | 14.1 | 16.3 | 10.6 | 13.1 | | | . | . |
| 4. | ICT as % of GDP, 2000 - total | 5.0 | 5.6 | 5.5 | 4.8 | 7.2 | 6.7 | | | 7.8 | 5.3 |
| 4.1. | Information | 2.4 | 2.6 | 2.8 | 1.6 | 4.2 | 3.5 | | | 4.9 | 2.9 |
| 4.2. | Telecommunications | 2.6 | 3.0 | 2.7 | 3.2 | 3.0 | 3.1 | | | 2.9 | 2.4 |

Source: Rothgang, M., 2002, p. 6.

* These include telecommunication services (64.20) on the transfer of data and information (local, long-distance and international, mobile, business phone services over hired or local area networks, on the transmission of data, electronic messages and information services), other telecommunication services (television, radio, ISDN services, paging, teleconferencing and other non-classified services) as well as public cable, radio and television services (NEAPC, 2001, p. 160).

The state and development of the ICT sector can be assessed using economic statistical data provided by the Organization of the leading EU enterprises in the sector (EITO). Its data is of less importance to analysis of the sector, since it is based on narrower definitions of its range. That affects the classifications used. What is more, the sector's export is excluded from the assessment of production market volume. The ICT production market volume growth rate (based on EITO data) for the period 1998 - 2000 changes from 14.6% (Italy) to 10.2% (Germany). However, the relative share of ICT production as percentage of GDP for 2000 in Germany is 5%, while in Italy it is 4.8%. Those rates are lower than their respective values for the countries under analysis (see Table 2). It must be noted, that Germany and Italy are least advanced with respect to ICT market volume growth rates, as compared to the USA, which features a volume of 683 bln. USD (2000), while Japan features 208 bln. USD, having in mind the structural importance of the relative share of Information related production. We exclude Finland and Sweden from the above comparison, since they possess small economic potential and absolute data comparative analysis against other countries would not be sufficiently accurate and reliable.

In the present analysis of empirical data on the development of the New economy with regard to the ICT sector, which does not claim to be exhaustive or to be the only possible approach, the data on added value, employment and labour productivity in the ICT sector in Germany is of particular interest. We chose Germany as the object of a more profound study because of its adoption of an ambitious government programme on the development of the New Economy during the period 2001 - 2010. The programme envisages 14.5% growth in e-commerce in 2010; a rise in per capita turnover from 230 USD in 2001 to 8,650 USD in 2010, while the US estimation for the same year is 11,350 USD (Rothgang, 2002, p. 20).

The economic analysis of the ICT sector added value structure in German industry for 2000, shows the prevailing importance of telecommunication and computer services, whose relative shares are 38.9% and 28.8% respectively, or a total of 67.7%. In those the absolute added value (2000) is 84.5 bln. DM and 62.5 bln. DM respectively, and the employment figures are 229,900 and 379,000, or a total of 608,900 people, that is, 57.4% of all employment in the ICT sector (see Table 3). There is a relatively low added value growth during the period 1995 - 2000, created through the production of instruments and appliances for measuring (3320), of industrial process control equipment, and even a negative growth in the production of insulated cable and wire.

The New Economy: Statistical Measurements

Table 3

Value added and employment in the German ICT sector by industry

| Code | Indicators, names and content of items according to the ICT sector classification | 2000 | | 1995/2000 |
|--|---|-------------------|----------------------|--------------------------------|
| | | Absolute value | Relative share, % | Growth rate, % ¹ |
| I. Value added, in 1995 prices, in bln DM | | | | |
| 30.00 | Office, accounting and computing machinery | 12,4 | 5,7 | 10,1 |
| 31.30 | Insulated cables and wires | 2,5 | 1,1 | -1,8 |
| 32.00 | Electronic components, Radio, TV & Teleph. | 27,1 | 12,5 | 13,0 |
| 33.20 | Instruments & appl. For measuring, etc. | 11,5 | 5,3 | 4,1 |
| 33.30 | Industrial process control equipment | 0,8 | 0,4 | 3,9 |
| 51.64 | Wholesaling of machinery, etc. | 6,6 | 3,0 | 11,9 |
| 52.48 | Specialty store retailing of other goods, not classified elsewhere | 3,9 | 1,8 | 11,9 |
| 64.20 | Telecommunications | 84,5 | 38,9 | 7,3 |
| 72.00 | Computer and related services | 62,5 | 28,8 | 12,6 |
| 72.50-90 | Maintenance and repair of office, accounting and computer equipment – other computer related services | 5,5 | 2,5 | 9,3 |
| ICT sector total (OECD classification) | | 217,3 | 100,0 | 9,5 |
| ICT sector total (RWI classification) | | 202,4 | · | 10,1 |
| Non-agricultural private business total | | 2047,3 | · | 2,5 |
| II. Employment in thousands | | | | |
| 30.00 | Office, accounting and computing machinery | 43,0 | 4,1 | -9,0 |
| 31.30 | Insulated cables and wires | 21,8 | 2,1 | -3,5 |
| 32.00 | Electronic components, Radio, TV & Teleph. | 178,3 | 16,8 | -0,7 |
| 33.20 | Instruments & appl. For measuring, etc. | 103,3 | 9,7 | -1,1 |
| 33.30 | Industrial process control equipment | 8,7 | 0,8 | 3,7 |
| 51.64 | Wholesaling of machinery, etc. | 39,9 | 3,8 | 7,8 |
| 52.48 | Specialty store retailing of other goods, not classified elsewhere | 23,9 | 2,3 | 7,8 |
| 64.20 | Telecommunications | 229,9 | 21,7 | -3,7 |
| 72.00 | Computer and related services | 379,0 | 35,7 | 8,5 |
| 72.50-90 | Maintenance and repair of office, accounting and computer equipment – other computer related services | 33,2 | 3,1 | 5,4 |
| ICT sector total (OECD classification) | | 1061,1 | 100,0 | 1,3 |
| ICT sector total (RWI classification) | | 927,2 | · | 1,7 |
| Non-agricultural private business total | | 10 813,4 | · | 0,9 |
| III. Labour productivity in 1,000 DM per employee | | | | |
| 30.00 | Office, accounting and computing machinery | 287,5 | 140,5 | 21,0 |
| 31.30 | Insulated cables and wires | 112,9 | 55,1 | 1,7 |
| 32.00 | Electronic components, Radio, TV & Teleph. | 151,8 | 74,1 | 13,8 |
| 33.20 | Instruments & appl. For measuring, etc. | 111,8 | 54,6 | 5,2 |
| 33.30 | Industrial process control equipment | 95,9 | 46,8 | 0,2 |
| 51.64 ² | Wholesaling of machinery, etc. | 164,8 | 80,5 | 3,7 |
| 64.20 | Telecommunications | 367,6 | 179,5 | 11,8 |
| 72.00 ³ | Computer and related services | 164,8 | 80,5 | 3,7 |
| ICT sector total (OECD classification) | | 204,8 | 100,0 | 8,1 |
| ICT sector total (RWI classification) | | 218,3 | · | 8,3 |
| Non-agricultural private business total | | 89,1 | · | 1,6 |

Source. Rothgang, M., 2002, p.10.

¹ Annual growth rate.

² Incl. retailing.

³ Incl. other services.

These growth rates taken as a whole are substantially lower than the added value average growth rate for the ICT sector, which is 9.3%. As already mentioned, in Germany the range of the New Economy, represented through the ICT sector, is based on the standards adopted by the OECD, however, for national research purposes, there are parallel narrower definitions of the sector (RWI), according to which the added value, employment and labour productivity values do not coincide with the OECD assessment values and that should be borne in mind in comparative analysis. For instance, the ICT sector added value in Germany (2000), according to the definitions, range and classifications of the OECD, is 217.3 bln. DM, while according to the RWI approach it is 202.4 bln. DM, whereas employment is 1061.1 thousand in the first case and 927.2 thousand people in the second (see Table 2).

The insufficient development of the methodology of economic statistics as well as its practice, not only in Germany but also in the other countries of the European Union with respect to measuring the New Economy, and the fact that it still uses direct proportions, does not provide reliable data on investment, prices and their correction using suitable deflators. In this respect it would be advisable for foreign trade statistics to supply detailed data on the volume and export/import structure of products in the ICT sector. That could help the development of an effective EU foreign trade policy towards the USA and Japan.

The research outlined above has led to some general conclusions and recommendations in connection with the development of the New Economy and its statistical measurement and analysis:

- The rise of the New Economy is part of the development of the Information Society.
- Internationally, there is no single widely-accepted definition of the New Economy, although there exist narrow and broad ones.
- The New Economy encompasses all changes and effects in the growth of productivity, caused by ideas, information, information and communication technologies and their infrastructure in the conditions of market globalization.
- It is necessary to widen the scope of the currently used classification of economic activities in the ICT sector, including new items mainly in the area of services.
- It is necessary to develop a methodology for the measurement of the New Economy also in Bulgaria, which would be compatible and in harmony with the one used in EUROSTAT.

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