FACTORS AND IMPACTS IN THE INFORMATION SOCIETY
A PROSPECTIVE ANALYSIS IN THE CANDIDATE COUNTRIES

REPORT ON SLOVENIA

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Preface

The Institute for Prospective Technological Studies (IPTS) of the Directorate General Joint Research Centre of the European Commission contracted the International Centre for Economic Growth, European Centre (ICEG EC) to act as the coordinator of a consortium of 11 research institutes to carry out this project.

The main objective of the project was to provide a series of national monographs studying the development of the Information Society (IS), including both the positive and negative impacts, in each of the candidate countries. These monographs offer an assessment of the strengths and weaknesses of each country regarding the development of the IS, and a view on possible outcomes; both strongly rooted in factual quantitative data. They provide a clear, contextualised, multi-factoral and multi-causal picture of the input factors that contribute to the success or failure of IS developments, and the relevant output parameters that support mid- and long-term impacts on economic growth, employment and other relevant aspects of the future of each country. Each monograph concludes with a set of alternative scenarios for the development of the IS in that country.

This report was carried out by the Institute of Macroeconomic Analysis and Development, Ljubljana, Slovenia, and aims to study the factors and impacts of the Information Society in Slovenia. The report reflects the research results, comments and opinions of the team of authors. It does not necessarily reflect the opinion of the European Commission. It is organised around 9 themes – economy, demography, government policies, industrial development and competitiveness, relevant economic activity, IST penetration rates, institutional capacity and regulatory background, education, and culture. The section on each of these themes concludes with a specific SWOT analysis. Finally, a general diagnosis is made of Slovenia's potential for IS developments, followed by a brief section on possible scenarios for the future and policy recommendations.

A Synthesis Report was also prepared by the Project Coordinator, the International Centre for Economic Growth, European Centre (ICEG EC), on the basis of all the country studies. This offers an integrated and prospective view on the future outlook for the Information Society in the Candidate Countries and can be found on the FISTE (Foresight in Information Society Technologies in Europe) website: http://fiste.jrc.es/

The contract was awarded by: Institute for Prospective Technological Studies (IPTS) of the Directorate General Joint Research Centre, European Commission
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List of abbreviations

ADSL – Asymmetric Digital Subscriber Line

AIF - Authorised Investment Funds

ARNES- Academic and Research Network of Slovenia

ATRP - Agency for Telecommunications, Broadcasting and Post

BPR- Business Process Reengineering

BSA - Business Software Alliance

B2B – Business to Business

B2C – Business to Consumer

CEFTA – Central European Free Trade Agreement

CS – Civil Society

DAI - Digital Access Index

DARS - Motorway Company of the Republic of Slovenia

EA - Europe Agreement on Association

EAN – European Article Numbering

EDI – Electronic Data Interchange

EITO - European Information Technology Observatory

ELES - Electric Power Transmition Company

ERA -European Research Area

ESIS - European Survey of Information Society

EU - European Union

EUR - Euro

FEE- Faculty of Electrical Engineering

FEECS- Faculty of Electrical Engineering and Computer Sciences

FCIS- Faculty of Computer and Information Science

FDI – Foreign Direct Investment

GCI Government Centre of the Republic of Slovenia for Informatics

GDP - Gross Domestic Product

GPRS – Global Positioning Radio System

GSM – Global System of Mobile Communication

G2B – Government to Business

G2P – Government to Public

3G – Third Generation

HDI - Human Development Index

ICT - Information and Communication Technologies

IMAD- Institute for Macroeconomic Analysis and Development

IS - Information Society

ISDN - Integrated System of Digital Network

IST - Information Society Technologies

IT – Information Technology

ITU – International Telecommunications Union

LLL- Life Long Learning

MID- Ministry of Information Society

NACE – Nomenclature Géneral des Activités Economique dans le Communautés Européennes

NATO - North Atlantic Treaty Organisation

NDP- National Development Plan

NKBM - Nova Kreditna Banka Maribor

NRDP- National Research and Development Programme NLB - Nova Ljubljanska Banka

NUTS - Nomenclature des Unites Territorielle pour Statistique

OECD - Organisation for Economic Cooperation and Development

OTA - Ownership Transformation Act

PC – Personal Computer

PPP – Purchasing Power Parity

PPS – Purchasing Power Standard

RIS - Research on Internet in Slovenia

RS - Republic of Slovenia

R&D – Research and Development

R&U - Research & University

SAEU - Strategy of the Republic of Slovenia for Accession to the European Union

SEDS- Strategy for Economic Development of Slovenia

SEPA - Strategy of E-Commerce in Public Administration of the Republic of Slovenia

SMEs - Small and Medium Enterprises

SIBIS - Statistical Indicators Benchmarking in the Information Society

SISS- Slovenian Information Society Strategy

SNE - Slovenian network for education

SORS - Statistical Office of the Republic of Slovenia

SPD- Single Programming Document

SYRS - Statistical Yearbook of the Republic of Slovenia

TQM- Total Quality Management

UMTS - Universal Mobile Telecommunication System

UNO- United Nations Organisation

VoIP-Voice over Internet Protocol

WIPO - World Intellectual Property Organisation

WTO - World Trade Organisation

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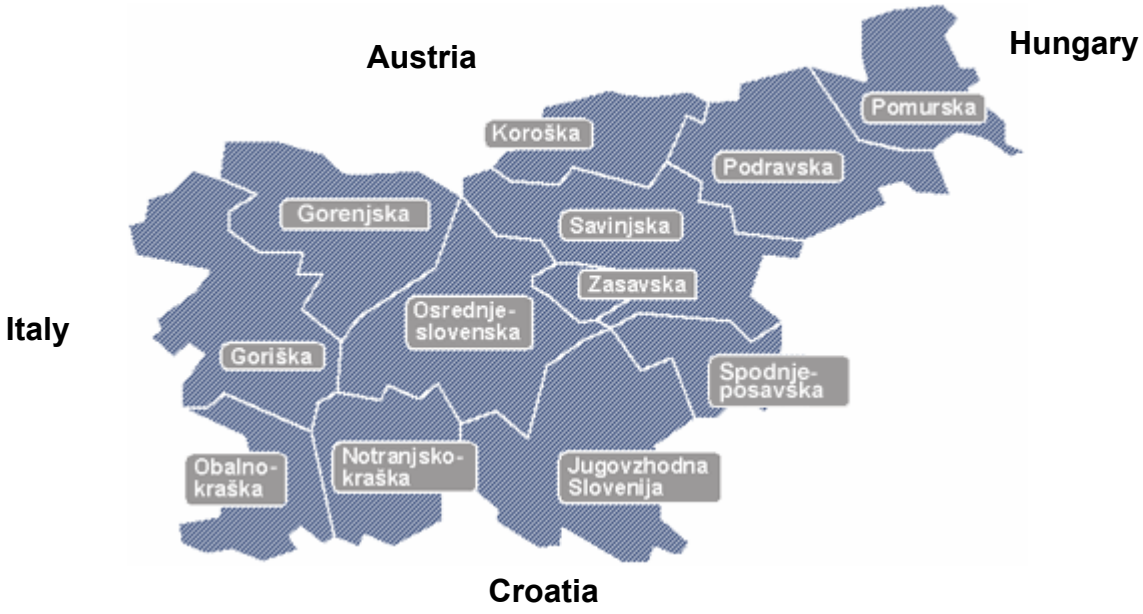
COUNTRY PROFILE: SLOVENIA – FACTS AND FIGURES

Population (2001)	1 994 000
Area (sq. Km)	20 273
GDP per capita PPS (2002)	18 050
GDP (real growth rate 2002)	3.2
GDP Composition (2002) (%)	
Agriculture	2.7
Industry, Construction	31.3
Services	54.9
International Trade (EUR)	
Exports (2002)	13 520 million
Imports (2002)	13 189 million
International Reserves (EUR) (2002)	6 738 million
Currency Units (SIT), 2002 average	1 EUR = 226.2 SIT

Geographical Location and Statistical Regions (NUTS 3)



A. NATIONAL AND REGIONAL ECONOMY

A.1. Background

At the time of its independence in 1991, Slovenia was the wealthiest and most open Yugoslav Republic (accounting in 1989 for 17% of total output and 26% of exports of the former Yugoslavia, though for only 8% of the population). However, it had suffered from growing obsoleteness of capital stock, declining living standards and increasing macroeconomic imbalances for most of the 1980s. This, combined with the loss of Yugoslav markets, led to a short but deep economic recession in 1992; in response, Slovenia swiftly embarked on a reform programme aimed at restoring macroeconomic stability and establishing a fully functioning market economy. In twelve years, Slovenia largely met these objectives, creating a modern, outward-oriented economy, integrated with western European countries through trade and investment links. Forthcoming membership in the EU and in the NATO is thus perceived as the confirmation of the successful finalisation of the transition.

The return to macroeconomic stability was achieved by conservative fiscal and monetary policies. For about a decade, Slovenia has run broadly balanced budgets; domestic and external debt were maintained at low levels; monetary targeting helped contain inflation; and the current account remained broadly in balance. In parallel, Slovenia deregulated its economy, albeit in a gradual manner. The liberalization of price and exchange controls was achieved step by step. Trade liberalization was driven by WTO commitments and the preparations for accession to the European Union. The process of privatisation was slow and gradual. Privatization occurred mainly through internal buyouts at preferential terms and a national voucher programme. A two-year freeze for share transfers from internal buyouts, and restrictions on foreign portfolio investment was aimed to provide time for adjustment in newly privatized enterprises.

A.2. Economic growth, employment and productivity

After the transition depression which hit Slovenia in 1987 and continued into the first two years of independence (declared in 1991), **gross domestic product** (GDP) started to grow in 1993, thereby heralding a period of production restructuring and looking for new markets. In 1996, GDP reached the level achieved before independence (1990 level) and in 1998 it surpassed the 1987 level, when the serious fall of GDP was recorded as the result of economic crisis in former Yugoslavia. Following the recession in 1992, Slovenia rapidly established a robust economic growth path, expanding to 4% annually in the period 1993-2002 (Table A1)[1] (Kajzer, 1999).

With regard to **expenditure side**, real GDP growth has been driven largely by exports: in 1993-2001, the average annual rise in exports of goods and services was 6.2%. Slovenia's exports of goods and services accounted to 60% of GDP in 2001; two thirds went to the EU markets. The opening-up of the economy was accompanied by rapid growth in imports (an average annual rise of 9.2% in 1993-2001). The structure of domestic demand was favourable from the point of view of development opportunities. The average annual rise in gross fixed capital formation was twice as fast as final consumption growth (10.1% as against 4.6%). Investment rose fastest in 1999, going up by 19.1% in real terms, its share in GDP was 27.4% (Tables A2-A4). In 2000, investment growth slowed down substantially and became negative

[1] References to tables throughout the text refer to tables in the Annex to the Report.

in 2001, which was mainly triggered by public funding restrictions that slowed down motorway construction in Slovenia. Private investment growth remained positive, albeit rising at a slower pace due to uncertainties in the global economic environment (Bednaš, 2002).

As regards the **supply side of GDP**, after the initial transition depression the recovery was first seen in the service sector (in 1992), which was also the main contributor to total gross value added growth in the 1990's (more details in Section C.1.2). In the period 1993-2001 services recorded a 4.1% average annual growth rate, which was driven predominantly by market services (especially real estate, renting and business services, wholesale and retail trade, transport, storage and communications), and also by public services (public administration) (Tables A5-A7). The growth of public services was a result of increasing activities related to the accession of Slovenia to the European Union and to other international organisations. Growth of value added in industry started only in 1994. Stimulated by strong exports the growth rate remained stable in the following years (in the period 1993-2001 the average annual real growth rate was 3.6%). Since the growth of services in terms of value added outpaced that of industry in the 1990's, the share of industry in GDP decreased from 36% in 1991 to 27.4% in 2001, while that of services increased (from 45.4% to 53.2%) (Table A6). Agriculture does not play a major role either in the country's gross domestic product or in the number of persons employed (Table A21). The relatively rapid change in the role of agriculture in the Slovenian economy (from 5.2% of GDP in 1991 to 2.7% in 2001) was additionally affected by natural disasters, which hit the agricultural production in the period 1997-1999 (Murn, Kmet, 2002).

Since 1995 the development gap of Slovenia behind advanced economies measured by **gross domestic product per capita at purchasing power parities** has been narrowing down[2]. According to Eurostat, Slovenia is in the lead among the 13 candidate countries: throughout the six-year period (1995-2001) it was the second-most developed country (behind Cyprus), achieving 64% of the EU average in 1995 and 70% in 2001. Measured in this way, Slovenia has already overtaken Greece, the least developed EU member state (64% of the EU average in 2001) and has drawn close to Portugal (71% of the EU average in 2001) (Murn, Kmet, 2003).

Slovenia's strong growth performance has translated into substantial improvements in its social indicators. While **unemployment** increased in the early years of the transition, it fell in parallel with the expanding economy (from 9% in 1994 to 7.4% in 1995). In the period 1995-1998 the ILO[3] unemployment rate fluctuated between 7 and 8% and it has been falling since 1998 (from 7.9% in 1998 to 6.3% in 2002) (Table A8). Regarding different age groups, in the 1990's the highest unemployment rate was recorded in the group of young people from 15 to 24 years (24.2% in 1993, 16.1% in 2001). The unemployment rate tends to decline up to the age group of 40-44 (3.5% in 2001) and increase again in the age group of 45-49 (Table A9). In the period 1995 - 2001 activity rate fluctuated between 57.6% and 60% (Table A10).

In line with the decrease of the number of unemployed the **employment** stopped falling in 1998. In the period 1999-2002 the average annual rise of employment was 1.3% and was

[2] Eurostat first published figures on gross domestic product per capita at purchasing power parities for candidate-countries for accession to the EU for 1995. A composite currency -Purchasing Power Standards (PPS) has been used as a measure of purchasing power.

[3] In Slovenia two measures of unemployment are used: registered unemployment rate, which is not internationally comparable, and ILO (International Labour Organisation) unemployment rate, which is internationally comparable.

mainly driven by increase of employment in the service sector (2.7%). In manufacturing (as well as in total industry) the employment growth began to increase only in 2001 and was much smaller pronounced than in services (in the period 2001-2002 the average annual employment growth rate was 1%). According to sectoral data, the main levers of employment growth in recent years were technology intensive and knowledge based sectors (Table A11), which might be a good starting point for the development of knowledge-based economy, including Information society. In service sector the highest growth rates were recorded in financial intermediation, business services and telecommunication. In manufacturing the most important job creators were the production of rubber, production of vehicles, production of electrical and optical equipment, production of machinery and equipment and metal industry (Table A11).

The overall **productivity** (GDP per employee) of Slovenian economy increased by almost 50% in real terms in the period 1991-2001 (by 4% on average each year). In the first years of transition, productivity increased mainly as the result of the lay-offs of redundant, usually older or insufficiently qualified workers. Since 1998 productivity growth was probably also influenced by the effects of restructuring, since the productivity growth was achieved in parallel to rising employment (Murn, Kmet, 2002). As manufacturing saw the highest drop in employment, it is not surprising that the highest increase in productivity was recorded in this sector (by approximately 7% on average each year). However, the biggest increase in value added per employee was recorded in those manufacturing sectors that have increased the number of employees in recent years[4] (production of rubber and rubber products, production of electrical and optical equipment[5], production of machinery and equipment, production of chemicals and chemical products and production of basic metals and fabricated products) (Table A12). Relatively good productivity growth performance in these sectors is not surprising bearing in mind that these are high export oriented sectors, realising more than 60% of their revenues on foreign markets (with the exception of the production of basic metals and fabricated products). Besides, most of these sectors have received above average inflows of FDI (foreign direct investment), which has also positively affected their productivity growth[6].

Price stabilisation played an important role in consolidating the economy in the early period of independence. The gradual deceleration of **consumer price rises**, which started after 1992,[7] was assisted by a restrictive monetary policy, the slowing depreciation of the national currency tolar, income policy reforms, and the beginning of structural reforms. Favourable price movements abroad further underpinned inflation deceleration. External price volatility was only partly translated into domestic prices because of the rigid system of administered prices. In 1999, the falling trend was interrupted by rising world commodity prices and the introduction of value-added tax in Slovenia. The increased monthly price volatility, which was partly due to a new system of regulating fuel prices, was accompanied by persistent rises up until the middle of 2002 when the inflation rate began to fall and reached 7.2% at the end of the year (Murn, Kmet, 2003).

[4] Beside these sectors, production of coke, petroleum and nuclear fuel also recorded high productivity growth rates in some years of the period observed. It is a very small activity accounting for only 0.1% of total manufacturing value added and characterised by high fluctuations in the number of employees and production volume in certain years (see also Table C2 and Table A11).

[5] In production of electrical and optical equipment (DL) one of the highest productivity growth rates was recorded in production of radio, TV and communication equipment (DL 32).

[6] Rojec et al (2001) argue that sectors with high FDI inflows show better economic performance (e.g. net operating profits, productivity growth rates) than the average for Slovenian economy.

[7] The average inflation rate in 1992 was 201%.

The overall macroeconomic performance of Slovenian economy has been stable since 1993 which, together with almost no imbalances in public finances and in balance of payments current account (see Section A.4.), lays down a solid foundation for further economic development of the country, including the transition to Information society. However, relative stability of Slovenian economy has been partly achieved by gradual approach to structural reforms[8]. As a result, the economy is still confronted with a number of structural deficiencies (underdeveloped financial sector[9], insufficient level of technological restructuring etc.), which can be seen as a threat to further increase in the competitiveness of the economy. The consequences of underdeveloped financial sector are seen in limited access to capital (e. g. lack of risk capital funds), especially for small and medium sized enterprises thus hindering development of new innovative enterprises, which seems to be crucial for ICT sector development. One of the consequences of rather slow pace of structural reforms (especially in non tradable sector of the economy) is also a relatively high and persisting inflation (Bednaš et al., 2002). Beside its general impact on economic growth, high and persisting inflation might impede fast liberalization of infrastructure sectors, including telecommunications, as the process of abolishment of relative price distortions in these sectors can put additional pressure on inflation rate. Also, expected deterioration of public finances may be seen as a threat to future Information society development in Slovenia. Despite the fact, that public finances were more or less balanced in the last decade, pressures related to implementation of EU legislation (requiring also establishment of new institutions) and policies (in particular Common Agricultural Policy) are expected to increase further in the future. This will require fiscal restrictions and restructuring of general government expenditures, which may prove especially difficult if development priorities are not well defined.

A.3. Regional development

Slovenia is divided into 12 statistical regions, which correspond to NUTS 3 (Nomenclature des Unites Territorielle pour Statistique) level. While new manufacturing and services clusters were developed essentially in the capital city (Ljubljana) and the surrounding areas, and the restructuring of older industries took place in other regions, disparities in regional development have increased in the 1990's, with main changes taking place in the first years of transition. At the end of the decade the increase of regional differences has slowed down. Compared to other countries, regional differences in Slovenia are rather low (measured by coefficient of regional GDP/per capita variation), due also to a long tradition of regional policy (since 1970's). In 1999 (the latest available data), only Sweden had lower coefficient of regional GDP/per capita variation than Slovenia, while in all other EU member-states and accession countries this measure of regional variation was much higher (Regions: Statistical Yearbook 2002).

The most developed regions, measured by gross domestic product/per capita and registered unemployment rate, are in the western part of the country (Central Slovenia, Obalno-kraška

[8] One of the characteristics of Slovenian transition to the market economy is gradual approach toward structural reforms, which is today assessed as a good option for the first years of transition (to stabilize the economy). However, many Slovenian experts suggest that in the second part of 1990's the process of structural reforms implementation should have been intensified in order to increase overall competitiveness of the economy as a condition for stable economic growth in the future (Bednaš et al, 2002).

[9] The main reasons for underdeveloped financial sector may be seen in the approach toward structural reforms in this sector. In the 1990's the priority was given to the re-capitalization and modernization of existing companies under the existing regulatory framework, rather than to creating a competitive environment. The changes of regulation needed for structural changes occurred only during the last years (see also Section F).

and Goriška region). The least developed region in Slovenia is Pomurje (23% lower GDP/per capita compared to national level), which is characterised by above average share of agriculture in economic structure (three times higher than the Slovenian average) and relatively low educational level of population (Pečar, 2001). Above average registered unemployment rates (Table A13) and lower level of GDP/per capita are also typical of those regions which were important industrial or mining regions in the past, and which are burdened by an outdated industrial structure (regions in eastern part of the country) (Pečar, 2001). The tendency of increasing regional disparities in the last decade may be seen as an obstacle to more balanced development of Information society in Slovenia, as less developed regions are expected to lag behind in the use of Information society technologies. However, there are some prospects that regional differences will stop increasing in the coming years as a result of active regional policy in the last few years and objectives set in the Strategy (Strategy of Regional Development of Slovenia, 2001).

A.4. Cross border capital flows and foreign direct investment

The absence of major macroeconomic imbalances since the early 1990s was largely reflected in Slovenia's **current account position**, which has been broadly in balance in the period 1993-1999. The saving-investment balance, as reflected by the current account position, widened in the period 1998-2000 (from -0.6% of GDP in 1998 to -3.5% of GDP in 1999, and -3% of GDP in 2000), as the investment rate grew faster than the national savings rate. The saving-investment balance has been restored since 2001.

In addition to balanced current account, Slovenia benefited from large surpluses of the **capital and financial accounts**, reflecting the surpluses in direct investment, portfolio investments, and other investments (Table A14). While these surpluses, on the inflows side, are testimony to the international attractiveness of the Slovenian economy, its high international ratings, and good macroeconomic performance, on the outflows side they also reflect the restrictedness of capital controls during the period 1995-1999, which reduced bank borrowing and portfolio investments abroad to negligible levels. Since then, bank borrowing abroad has been deregulated, and hence has picked up. Regular surpluses of the balance of payments (current account, plus the capital and financial accounts) allowed gross international reserves to increase regularly, covering approximately 4 months of imports of goods and services in 2001.

Stock of **inward foreign direct investment** (FDI) in Slovenia in the period 1993-2001 increased from 7.5% (EUR 817 million) to 17.1% of GDP (EUR 3586 million). Taking into account the record FDI inflows in 2002 of EUR 1949 million, total stock of inward FDI in Slovenia stands at about EUR 4400 million. While FDI inflows were relatively modest in the period 1993-2000 (with average annual inflow of EUR 150 million), the year 2001 brought about an important change in FDI inflows in Slovenia (EUR 562 million) and the same positive trends continued in 2002 when annual inflow of FDI grew to almost EUR 2 billion.

The limited participation of foreigners in the Slovenian economy till 2001 is due to variety of factors, in particular to capital controls, to method of privatisation, and specific restrictions in sectors that generally attract large FDI inflows (such as banking and insurance) (Murn, Kmet, 2003). Since 1999, most of these restrictions have been abolished. High wage levels

compared to other transition economies[10] and limited scale economies of the small market also diminished the attractiveness of Slovenia for foreign investors.

In 2001 the Slovenian government adopted the Program for the Promotion of FDI in 2001-2004, aimed to improve the perception of Slovenia as investment location and to decrease administrative barriers for new greenfield investment (Rojec, 2001). The most important FDI inflows in 2001 and 2002 were related to the privatisation of state property in banking sector, two relatively large FDI in mobile telecommunications (American Western Wireless and Austrian Mobilkom) and take-overs of some important Slovenian companies (mainly in banking and pharmaceutical sectors). Since further privatisation of the state property (mostly in the financial sector, telecommunications and public utilities) is planned for the coming years, the continuation of relatively high FDI inflows can be expect in the future, bringing new technologies and know-how which could positively influence also the implementation of Information society in Slovenia.

Investors from EU countries dominate FDI in Slovenia. By the end of 2001 87% of total inward FDI stock was accounted for by EU countries, the major investors among them being Austria (48%), France and Germany, followed by Italy, Netherlands and United Kingdom. FDI from other EU countries lags behind. Of non-EU countries, only Czech Republic, USA, Switzerland and Croatia are important investors (Bučar, Stare, 2001).

Manufacturing is the most important recipient of FDI with 36.5% of total 2001 end year stock. Within manufacturing, FDI is heavily concentrated in chemicals and chemical products, paper and paper products, machinery and equipment, rubber and plastic products, and motor vehicles and trailers[11]. Apart from manufacturing, significant share of FDI goes to financial intermediation (28.3% of total 2001 end year stock), trade and other business services. With relatively large FDI in mobile telecommunications in the last two years and expected involvement of foreign companies in privatisation of Telekom Slovenije, the FDI in telecommunications are gaining importance (approximately 4% of total 2001 end year stock). Sectoral distribution of FDI is to a major extent determined by a handful of large (for Slovenian circumstances) FDI projects, which as a rule emerged out of previous co-operation between foreign investor and invested-in Slovenian company. Foreign investors in Slovenia have been far more attracted by »attractiveness« of individual Slovenian companies (as target companies of joint venture partners), than by »attractiveness« of individual industries as such (Bučar, Stare, 2001).

Limited inflow of FDI in Slovenia is one of the reasons for insufficient technological restructuring of Slovenian economy in the last decade. Relatively low level of FDI in Slovenian economy is reflected in rather slow restructuring of manufacturing toward high technology intensive sectors (Damijan, et al., 2003). This can be also seen in low share of high technology intensive products in total exports (5% according to OECD methodology).

[10] In 2000, monthly gross earnings of full-time employees in industry and services (excluding public services amounted to EUR 860 in Slovenia, EUR 490 in Poland and EUR 400 in Czech Republic. In all other candidate countries monthly gross earnings were below EUR 400.

[11] See p. 13 for details on the productivity growth of manufacturing sectors.

A.5. Trade flows

The level of openness of Slovenian economy is relatively high as measured by the value of international trade relative to GDP. Slovenia's exports and imports of goods and services each account for approximately 60% of GDP. In a short period of time, Slovenia managed to overcome the loss of markets in former Yugoslavia at the beginning of 1990's. Trade flows were re-directed towards the European Union. The implementation of the Europe Agreement on Association[12] and the accession of Austria (Slovenia's fourth largest trading partner) in 1995 to the EU were contributing factors. In 2001, the EU accounted for approximately 62% of Slovenia's merchandise imports and 68% of its merchandise exports. Germany is Slovenia's largest single trading partner, accounting for 26% of exports and 19% of imports. Trade with CEFTA members (Central European Free Trade Agreement) expanded rapidly owing to the liberalization of trade barriers. Their share in Slovenia's trade has doubled since independence (8% of exports and 9.5% of imports in 2001). After declining for most of the 1990's, trade links with former Yugoslav Republics have been expanding since 2000 (17% of exports in 2002). Russia's share of 4% of Slovenia's imports and 3% of exports in 1992 was declining until 1999, but it has been rapidly increasing since that time (back again to 3% of exports in 2002). High and increasing openness of Slovenian economy forces the country to continuously improve competitiveness and exerts pressure on producers towards higher value added products and services.

As regards the **structure of merchandise trade**, manufacturing accounted for 98.5% of exports in 2002 (an increase of 2 percentage points since 1992) and 95.2% of imports (10 percentage points higher than in 1992) (Tables A15-A19). The share of manufacturing has increased at the expense of that of primary sectors (both agriculture and mining) that has declined since 1992. Sector- wise, medium to high technology intensive sectors, such as production of chemicals and chemical products, production of machinery and equipment, production of electrical and optical equipment and production of transport equipment, account for approximately half of merchandise exports and imports and their shares have increased since 1992 (Tables A16 and A18). Among the five largest exporters and importers of goods is also production of basic metals and fabricated products, an industry traditionally strong in Slovenian manufacturing. Manufacturing imports to a large extent reflect the structure of exports, and consist largely of raw industrial material (iron) and intermediate products that are used as inputs for the domestic production and exports. The shares of labour intensive industries, particularly of textile and leather industry, in total exports have dropped by more than a half in a decade (Table A16), while their shares in total imports slightly increased (Table A18).

ICT manufacturing accounted for 4.6% of **merchandise exports** (EUR 451 million) and 7.6% (EUR 786 million) of **imports** in 2002. Both, exports and imports recorded a very dynamic growth in the last decade (1992-2002) and accordingly increased their share in total exports and imports of goods (by 1 and 2 percentage points, respectively). The most important ICT exporters are manufacturing of instruments and appliances for measuring (3320 according to NACE) and manufacturing of television, radio transmitters, apparatus for line telephony and line telegraphy (3220). The latest also recorded the highest increase of its share in exports in ten years (by 0.4 percentage points) (see Section C.2.4 for details). About 30%

[12] The Europe Agreement on Association (EA) came into force in 1999. It established an association between the European Union and the Republic of Slovenia. Its basic goal was to provide a suitable institutional framework for political dialogue and the regulation of trade and economic relations between the parties.

of ICT manufacturing imports are computers and other information processing equipment (3002) while electronic components (3220) and TV and radio receivers (3230) compose further 30% of ICT goods imports (Tables A15 - A19).

Services trade has increased at a much slower pace than goods trade in the period 1996-2001. Accordingly, the share of services in total trade of goods and services declined and amounted to only 14 per cent in 2001 (Table A20). The respective share of services in total exports of goods and services accounted for 16%. Lower growth of services trade compared to goods trade may be explained by different factors. On one hand, demand for services on the Slovenian market was high throughout the nineties due to the restructuring of the economy and due to market oriented reforms; hence the pressure on service producers to export was very weak. On the other hand, the neglect of the importance of service exports in Slovenia may also be the result of the steady surplus in services trade, owing to high exports of travel services. As long as services trade generates surplus needed to compensate for the deficit in goods trade nobody seems to be concerned with the dynamic or structure of service exports (Stare, 2001). There is quite poor awareness of the fact that weak dynamic of service exports and low share of high value added services in export structure are only a reflection of the lagging of Slovenia behind developed countries in regard of knowledge intensive services development.

In 2002 negative trends in services trade have been stopped as service exports and imports recorded higher growth than goods trade. Nevertheless, the structure of Slovenian exports of services remains quite rigid with very slow changes in favour of high value added services. Dominant share is accounted for by travel and transport while the category of other services, consisting of high value added services accounted for approximately 25% of total exports of services in 2002, which is only a slight increase from 22.4 % in 1992. These services are much more important in Slovenian imports of services which reveals growing demand of Slovenian businesses for high quality and high value added services. The imports of these services are permanently increasing and account for approximately 40% of total imports of services. This points both to insufficient local supply of high value added services and to their deficient quality and range (Stare, 2001, Stare, 2003b). Inadequate supply of business and financial services negatively affects the competitiveness of the whole economy since they represent key input to most activities (for more details see Section C.1.2).

ICT services export growth was very dynamic in the period 1994-2002. Exports of these services (communication services and computer and information services) increased from EUR 15.3 million to EUR 144.2 million (Table A20). Their share in total exports of services accounted for 6 per cent in 2002. The growth of computer services exports was particularly remarkable, reflecting the success of few companies in finding niche markets. In the second half of the nineties Slovenian exporters of computer and information services and of communication services increased their market share on the EU markets suggesting that their competitiveness is being improved (Stare, 2001). Nevertheless, exports are highly concentrated on few computer services companies, while the rest serve local market. **Imports of ICT services** also increased fast between 1994-2002, indicating the growing requirements of Slovenian companies and the public sector for high-quality ICT services. Telecommunications services in particular marked dynamic import growth[13].

[13] This can to a certain extent be explained by high penetration rate of mobile telephony among the Slovenian population and their high propensity to spent holidays abroad, particularly in the neighbouring Croatia.

A.6. Impacts

With regard to the Information society development, trends in national economy in the last decade can be generally assessed as positive with the main strengths being:

- stable overall macroeconomic performance since 1993;
- narrowing development gap behind advanced economies;
- relatively high level of GDP per capita in PPS compared to other accession countries;
- almost balanced public finances and balance of payments current account;
- increasing importance of services in the structure of gross domestic product;
- falling and relatively low unemployment rate (6.3% in 2002);
- low regional disparities compared to EU member-states and candidate-countries;
- relatively high level of the openness of the economy, measured with the value of international trade relative to GDP;
- increasing volume and improving structure of merchandise trade (increasing importance of high value added sectors);
- dynamic growth rates of ICT goods and services exports and imports.

However, there are some weaknesses in the Slovenian economy that may impede fast transition to the Information society, in particular:

- existing structural deficiencies resulting from gradual approach to structural reforms in 1990's, in particular underdeveloped financial sector and insufficient level of technological restructuring,
- relatively high and persisting inflation,
- limited inflow of FDI in the Slovenian economy till 2001,
- decreasing share of services trade in total exports till 2001 and rigid structure of services exports.

A.7. SWOT analysis

Strengths	**Weaknesses**
– Stable macroeconomic environment with no major imbalances in public finances and balance of payments current account – Relatively low (compared to other accession countries) and narrowing development gap behind advanced economies – High level of openness of the economy, measured with the value of international trade relative to GDP	– Relatively high and persisting inflation – Insufficient level of technological restructuring of the economy – Modest stock of FDI in Slovenian economy – Under-developed financial sector
Opportunities	**Threats**
– With accession to EU Slovenia will become a part of large internal market which will increase the competition, and consequently also spur technological restructuring of the economy – Inflows of FDI are likely to increase due to accession to EU with positive spill-over effects on total economy – Push to faster development can be expected from policies aiming to meet Lisbon Strategy objectives, especially regarding faster implementation of structural reforms	– Recession in international economy, especially in Slovenian main trading partners, could diminish economic growth – Continuation of gradual approach to structural reforms and lack of economic policy consensus could jeopardize the competitiveness of the economy – Increased pressures on public finances related to implementation of EU legislation and policies

The macroeconomic performance of Slovenian economy has been stable since 1993. This, together with relatively high GDP per capita at purchasing power parities reaching 70% of EU average in 2001, lays down a solid foundation for IS development. Stable macroeconomic environment and high level of economic development enable the economy to increase investment, in particular in new technologies such as ICT. Public funds can be oriented to the support of IS implementation more easily when the government is not concerned with macroeconomic imbalances (e.g. rising unemployment, high inflation etc.). Besides, relatively high level of GDP per capita enables people to afford ICT products and services and thus positively influence ICT diffusion. Relatively high openness of the Slovenian economy can also be assessed as a **strength** in transition to IS. Imports of high technology intensive products and knowledge-based services are crucial elements of IS development.

The main **weaknesses** regarding economic development that negatively affect Information society arises from gradual approach toward structural reforms and from low inflow of FDI. As a result, the economy is still confronted with underdeveloped financial sector and insufficient level of technological restructuring. The consequences of underdeveloped financial sector are seen in limited access to capital (e. g. lack of risk capital funds), especially for small and medium sized enterprises thus hindering development of new innovative enterprises, which seems to be crucial for ICT sector development. Owing to gradual

approach to structural reforms, technological restructuring of Slovenian firms is slow, which hampers the demand for ICT and jeopardises the overall competitiveness of the economy. One of the consequences of rather slow pace of structural reforms (especially in non tradable sector of the economy) is also a relatively high and persisting inflation. Besides influencing economic growth, high inflation impedes fast liberalisation of infrastructure sectors, including telecommunications. As the process of abolishment of relative price distortions in these sectors often puts additional pressure on inflation, setting up cost oriented prices, which is crucial for the introduction of effective competition, is often postponed. Inflow of FDI to Slovenia was rather low till 2001, which can be assessed as a weakness for ICT/IST development, as FDI usually bring new technologies and know-how. It can also be argued that modest stock of FDI is one of the important factors of gradual technological restructuring of the economy in the past and could have a long-term negative effect on the economy.

The most important **opportunities** for future development of Slovenian economy are closely related to the accession to EU**.** Several positive effects of accession to the EU might influence Slovenian economy with important implications for Information society as well. With accession to the EU competitive pressure on Slovenian firms will increase and expectedly also spur technological restructuring of the economy. Inflows of FDI are likely to increase as well with positive spill-over effects on total economy. Furthermore, important push to faster development can be expected from engagement to meet Lisbon Strategy objectives. Improvements may be seen especially in faster implementation of structural reforms.

Three main factors may be seen as **threats** to future economic development with serious implications for IS as well: recession in international economy, gradualism in the implementation of structural reforms and deterioration of public finances. Slovenia, as a small economy, is highly dependant on the performance of main trading partners. Deteriorated international economic conditions can therefore severely affect economic growth. This can put high pressure on public finances leaving little room for economic policy to deal with other development issues. Another threat to future development arises from slow pace of structural reforms, which, if continued, could seriously undermine future economic development. Persistent structural deficiencies, such as underdeveloped financial sector, insufficient level of technological restructuring, relative price distortions, are also of high importance for ICT sector development and for IS implementation. Slovenian public finances were more or less balanced in the last decade. However, pressures related to implementation of EU legislation (requiring also establishment of new institutions) and policies (in particular Common Agricultural Policy) are expected to increase further in the future. This will require fiscal restrictions and restructuring of general government expenditures, which may prove especially difficult if development priorities are not well defined and may therefore hinder faster IS implementation.

B. NATIONAL INFORMATION SOCIETY POLICIES

B.1.Institutional settings

The topics like computer technology, informatics and Information society were present in Slovenia rather early. In the seventies there were several attempts in the development of national computer production, which stimulated the start of programmes of R&D in the field of computer science and automation. The **Informatika, Slovenian society of informatics and computer engineers**[14] was established back in 1976 and is still an important forum, where policies are discussed. They organize annual conferences where researchers in the field of informatics and computer science present their work. Traditionally, several round tables are also prepared where more policy-focused issues are discussed (like the role of civil society in the promotion of IS, the IS paradigm, eLearning, etc.).

With the collapse of some of the major corporations in electronic industry in the beginning of the nineties (especially conglomerate ISKRA[15]), there was a slight slow-down in this area, to be gradually replaced with a new, broader focus on information technology and Information society promotion and not only on industrial production of ICT- related products.

The first Slovenian government institution, dedicated to the issues, related to the informatisation, was set up in 1993. **The Government Centre for Informatics** (GCI)[16] was established as a government service, directly responsible to the government and in charge of the informatisation of state organs. GCI is responsible for the planning, consultation and formulation of methodological and technical solutions for developing the informatics infrastructure of state organisations. In practice, GCI coordinates and negotiates the purchase of hardware and software for the state organisations as well as training of government employees in ICT related skills.[17] The annual budget of GVI is around EUR 28 million.

Initially, it was the Ministry of Science and Technology, which acted as the partner to EU in the discussions and projects related to the Information Society Forum. Ministry of Education[18], on the other hand, initiated in 1994 projects in the area of bringing ICT to schools, especially equipping computer classrooms and bringing elementary and secondary-level schools on-line.

In late nineties, several professional debates raised the issue of a national policy in the area of Information society in Slovenia. The objective of such a policy was to bring under one roof several on-going initiatives in a coordinated fashion to achieve a more dynamic transition to Information Society and promote diffusion of ICT in the economy and society. Growing awareness of the importance of Information Society led the government to establish a special

[14] http://www.drustvo-informatika.si/
[15] At its peak, ISKRA employed over 20 000 people and was a leading producer of consumer electronics, electro and electronic equipment and machinery. In one of ISKRA's factories also a production of microchips was started as well as assembly of PCs (Iskra Delta).
[16] http://gov.si/cvi
[17] A more detailed description of GCI's tasks is provided in section B.4.
[18] With the reorganisation of the government in 2000, the two Ministries were joined into the Ministry of Education, Science and Sports.

Ministry of Information Society (MID)[19] in January 2001. The key tasks of the Ministry, according to the official statements and the programme of the Ministry, are:

- to enable all inhabitants of Slovenia to have equal access to information technologies and services;
- to promote a knowledge-based economy and eBusiness in private and public sectors of the economy;
- to promote eBusiness in public administration;
- to encourage and enable the largest possible scope of administrative and other public services via eBusiness;
- to promote education and training for Information society;
- to promote projects that reduce the digital divide, and to reduce the number of people excluded from the advantages brought about by information technology and services;
- to promote the development of new technologies in Slovenia and create new jobs in the information sector;
- to monitor and propose acts and implementing regulations in the area of infrastructure and eBusiness;
- to harmonise Slovenia's legislation with the acquis;
- to implement administrative procedures in accordance with the law;
- to found an independent regulatory body (Agency for Telecommunications, Broadcasting and Post);
- to evaluate sector-specific legislation from the aspect of eBusiness in public administration and put forward proposals for amendments;
- to be responsible for the security of eBusiness and prevent Internet misuse;
- to take measures to liberalise the telecommunications services market.

The setting up of the Ministry was to reflect the seriousness of the government in addressing the issue of Information Society. Yet, the Ministry remains one of the smallest, both in terms of its annual budget (approx. EUR 15 million) and in terms of the number of staff. This seriously jeopardises the implementation of the broad spectrum of tasks, laid out in its programme.

Parallel to government's institutions, the **Chamber of Commerce and Industry**[20] of Slovenia set up more business-focused networks. Some of the ICT producers were organized at the level of Chamber in the Association of Electrical Industry, but in 2000, the Information and Telecommunication Association was established, bringing together firms working in the area of IT: both hardware and software producers as well as service providers. Members of Information and Telecommunication Association are 1367 commercial companies and independent entrepreneurs active in the field of informatics and 130 commercial companies and independent entrepreneurs active in the field of telecommunications. The membership is automatic, since the membership in the Chamber is compulsory and the companies get "assigned" to different associations according to their main activity. The representatives of the Chamber and Association are normally invited to participate in policy debates, but do not formulate the policy itself. The Association has so far been mostly involved in preparation of

[19] http://www.gov.si/mid
[20] http://www.gzs.si

a catalogue of Slovenian ICT producers, the preparation of IT profiles for secondary level education and occasional promotion at fairs and visits abroad.

The Chamber of Commerce and Industry has been involved all through the nineties in several projects promoting the ICT diffusion and especially eBusiness issues. This way it acted as an important IS promoter in Slovenia and influenced also the actions, taken by the government[21].

In 2001, Information Society Forum was established by interested members of the civil society, with the ambition to raise public awareness on the forthcoming challenges of IS. Yet the initiative was unable to attract either public or private funding and the activities ceased.

B. 2. Chronological description of the national IS policies

During the nineties, several parallel activities in the field of IS were taking place. One line of such discussions was the activity of the society "Informatika", which at its annual meetings organised round tables on the importance of information technologies for Slovenian economic and social development. The most important "product" of the Informatika was the so-called "Blue Book" titled Slovenia as Information Society (Slovenija kot informacijska družba, 1999), calling for a more coherent policy in the field of informatics. The book was prepared by a number of experts in the field of information technologies and society who argued that the Information society is not going to happen as an automatic consequence of development but requires broad social consensus and vision how to implement Information society. Although the final objectives of establishing Information society in Slovenia may be similar or the same as in other countries, there is a need for difference in ways and methods to accomplish the transformation, which have to reflect Slovenian specificities. Several actions were suggested, but except the fact that the book was published, no direct follow-up of recommendations was put in place.

Another set of initiatives was coming from The Centre of Electronic Commerce, Faculty of Organisational Sciences at the University of Maribor, where internationally attended conferences on eBusiness were organized since 1988. These conferences, attended by many scientists and ICT experts from abroad, raised the awareness of the IS-related issues in Slovenia. E-Business initiative was supported also through Chamber of Commerce and Industry, where special meetings of directors of larger Slovenian companies on eBusiness resulted in pressure on the government to adjust the legislation to the new means of communication. On the other hand, the government established in 1995 within the Ministry of Economy an Office for business information (Trade Point Slovenia) to be responsible for eBusiness promotion in corporate sector[22]. Also, the Ministry of Education started in 1994 a programme on informatisation of education institutions with rather ambitious projects in the field of computer equipment, literacy, linkage of schools to Internet, eLearning and education of teachers in the use of multi-media. Yet, all these initiatives did not sum up into a specific Information Society policy at the national level.

[21] This was reflected especially in the preparation and acceptance of the Law on electronic signature.

[22] Trade Point Slovenia provides the state administration, trade, the chamber of commerce and industry, international hauliers, shipping agents, banks, insurance companies and other interested institutions with access to strategic business information via connections to specialised information centres around the world. Trade Point Slovenia is a legal entity. With the establishment of MID, Trade point was moved from Min. of Economy under umbrella of MID.

In 1999, on the initiative of the government, the preparation of the **Strategy for the Economic Development of Slovenia**[23] begun. A strategic orientation towards knowledge-based economy was to become one of the central focus points of the Strategy. The Strategy acknowledged that the pace of transition to a knowledge based Information society depends on the level of advancement in information and communication infrastructure and the capacity to apply the new technologies (SEDS, 2001). Accordingly, the SEDS states that Slovenia will act in line with the following guidelines:

- liberalise the telecommunications market and, at the same time ensure the security of operations for all players and privatise the dominant operator;
- modernise the telecommunications network;
- ensure access to the public telecommunications network on the basis of open and universal access, and provide inter-network connections;
- provide fast access to the Internet at affordable prices to all people.

The weakness of the SEDS is that it does not name the implementing agency, but only provides the general directives in which the policy should go.

The Strategy of Economic Development was the backbone for the government's preparation of the **National Development Programme** (NDP, 2002) where again the strategic priority of transition to knowledge economy was stressed. If SEDS provided general direction, the NDP focuses on specific goals and activities. Within the priority "Information society, infrastructure and the quality of living" main objectives are twofold. The first goal strives towards establishment of an appropriate infrastructure and favourable environment for the formation of Information society. The other main goal is to further improve the country's infrastructure in the area of energy and transport sectors, housing construction, waste management and environment protection in order to bring it in line with standards applicable in the EU. All together 21 measures in the areas of IT, telecommunications and eCommunication systems, solid waste management, protection of aquatic environment, closure of coal mines and mines and corresponding environmental ameliorations, housing construction, investments in energy sector and transport infrastructure are planned within this priority.

Addressing specifically the programme of informatisation of the government is the **Strategy of Electronic Commerce of the Public Administration of the Republic of Slovenia** (www.gov.si/cvi) for the period from 2001 to 2004, prepared by GCI and adopted by the government in February 2001. The strategy covers from the institutional point all the state organs and certain institutions of public administration. This Strategy is seen as the key element of the implementation of the eGovernment concept. It contains detailed suggestions and a time-frame for its implementation in the field of eCommerce of public administration[24] through specific mechanisms like procedures of planning, installation, implementation, supervision as well as responsible bodies (see also Section F.3.) (GCI Press release, 2001).

One of the key tasks of the Ministry of Information Society (MID) at its establishment was the preparation of the **Slovenian Information Society Strategy** (SISS, 2003). First draft was

[23] SEDS was prepared by IMAD on the basis of extensive background research projects specially commissioned for the Strategy. Final document was approved both by the Government and the parliament.

[24] A term eCommerce is used in official text, but does not refer to commercial activities of public administration, but to the means of communication between government offices as well as between the government and the citizens.

prepared in the 2001 and finally adopted by the government on February 13, 2003. The strategy covers different aspects of development of Slovenia in the field of IS infrastructure and services. The influence of EC documents on Information Society, especially the Action Plan eEurope+ is felt and several objectives are identical to the European ones. The Strategy, according to the authors, concentrates on direct benefits of citizens, determines sources of finances for deployment and content, which connects human resources and investment. The ambition is to stimulate the economy in order to improve the quality of life, the level of knowledge and especially enlarge the contribution of nationally generated knowledge, the creation of favourable investment environment and new jobs, growth of employment and productivity, modernization of public administration, the enhancement of the transparency of public sector information and access to information, as well as assuring equal opportunities for all citizens in terms of participation in the global IS. The adopted strategy and some of the on-going activities[25] of the MID express the IS policy focus of the government. Yet little was done to promote SISS outside the Ministry.

B.3. Driving motivation of IS policies

The Strategy of Economic Development (SEDS, 2001) focused on the transition to a knowledge-based economy (information/service society) via expanded use of information-communication technologies (ICTs). The analysis of international economic environment showed the positive impact of diffusion of ICT in corporate sector on economic growth, therefore the catching-up process of Slovenian corporate sector and its technological restructuring is to be based on active promotion of diffusion and uptake of ICT-related applications. The concept of Information Society is viewed primarily through the focus of economic growth and competitiveness. Closely linked to uptake of technologies is also the focus on increasing the ICT skills level of the human resources. Only better-qualified employees are to be able to fully utilize the ICT for increased output. This shows that the driving motivation of IS policies in view of the authors of Strategy was the economic growth and competitiveness.

The Slovenian Information Society Strategy (SISS, 2003), derived from one segment of SEDS, focuses more on provision of high quality IS services and infrastructure for daily needs of all citizens in Slovene language and the languages of minorities. Adoption and implementation of the Strategy has to ensure comparability with member states of EU and at the same time strengthen the role of Slovenia in the Central-Eastern European region. The Strategy is partly based on an inter-ministerial coordination within the framework of the National Development Plan of the Republic of Slovenia and on a preparation of the Single Programming Document[26] in 2003 as a part of a preparation for integration of Slovenia into European Commission structural policies. As already mentioned, many objectives and targets follow closely the eEurope+ programme, which Slovenia has decided to follow. The main motivation of this programme, prepared by EC for the candidate countries as a parallel to eEurope 2002 programme, is narrowing the gap between the candidate countries and EU in the areas critical to Information Society (eEurope+, 2003).

[25] Like e-schools or eVillages, for example.

[26] Information Society is one of the horizontal themes of the Single Programming Document. SPD is prepared for the purposes of obtaining EU structural funds.

B.4. Main actors and their tasks

As already mentioned, the policy formulation and its execution in the field of Information Society, including the implementation of the most recent Strategy on Information Society is, in principle, the responsibility of the **Ministry of Information Society (MID). MID** is divided in two parts: a part focusing on telecommunications and the one on IS programmes.
The *Department for Information Infrastructure* is, according to its documents, officially engaged in the following main tasks:

- preparation of development programmes in the field of post and telecommunications;
- control of the implementation of public investments in the field of post and telecommunications;
- preparation of a conceptual platform for different additional legal documents in the field of post and telecommunications, and in this context, the new Telecommunication Act[27], and the new bill on post services;
- co-operation with the Agency in the concession-granting procedure for post and telecommunication services.

The Department for Information Society Applications is divided into four related sectors, each responsible for specific area of IS applications. According to the official documentation their focus is on the following:

a) **sector for applications in public services**: the role of MID is the co-ordination of different activities at the state and local levels in designing various solutions for e-government, in support of eDemocracy and development of public services. This area requires close cooperation with GCI and other Ministries, especially the Ministry of Interior (citizens affairs).[28]

b) **sector for applications in business sector**: this sector is involved on one hand with providing as equal access to information technology as possible to all citizens and on the other with promotion of the use of new ICT technologies in business sector. The most visible is the role of this sector in preparing and monitoring IS indicators and their cooperation in international programmes (Interreg IIIA, Interreg IIIb, Phare CBC, eContent)

c) **sector for development programmes and monitoring** is a new sector created in 2003 with main tasks of introducing IS concepts in National Development Programme, in Single Programming Document and other government's documents. This sector is also responsible for cooperation with scientific community via so called Target Research Projects[29].

d) **sector for technological tasks** is involved in promotion and planning of open code software, in adjusting the IS content to people with special needs, assisting other ministries and public sector offices in design and planning of the information systems,

[27] See Section F for details.

[28] From the available documents, it is not entirely clear what are the tasks of MID and what of GCI in this area. On the basis of the informal discussions, one can conclude that there is lack of true cooperation in this area.

[29] Target Research Projects are projects selected each year on the basis of a public call and are meant to provide relevant background information on the current policy issues for each respective Ministry. Ministries define their needs in a manner of specific themes for the call (nine thematic areas, one of them being also Information Society) and the amount of financial support available. Research community proposes applied research projects, which address these themes. The projects are co-financed by Ministry of Education, Science and Sports and the relevant ministry or ministries.

data banks, web pages and management support systems. Among most important projects of this sector are e-schools, "Internet Cafés", co-financing of networks in academic environment (ARNES) and co-financing of open-code projects.

MID was also actively involved in the preparation of the Single Programming Document, where Information Society is treated as an important horizontal theme. Specific focus of MID was the impact of the proposed measures on lowering of regional barriers to IS and avoidance of potential digital divide. Many of the planned activities address a more equitable development towards IS in all the regions. Also, several measures are to be introduced in support of IST related education and training programmes. Currently, the Single Programming Document is under negotiation with EU and internally (budgetary commitments for the Slovenian part).

The other important actor in the field of Information Society is the Government Centre of Informatics. The **GCI** is, according to its statue, responsible for the implementation of the following main tasks:

- the preparation and monitoring of the implementation of the Strategy of Electronic Commerce of the Public Administration of the Republic of Slovenia;
- the formation of strategic plans of common functions for the administration (information support for office operations, legislative procedure, the monitoring of the activity of the government and ministries, the cadre system, decision-making system, public relations, etc.), the introduction of common information infrastructure and the renovation of operations, and the informatisation of individual organs;
- the preparation, formation, and realisation of a common harmonised yearly plan of informatisation (the purchase of information equipment and services);
- the organisation and/or implementation of common purchasing, distribution, and maintenance of common information equipment, and the uniformity and support for users of local information equipment of organs as well;
- the issuing of opinions prior to the purchasing of information equipment and services of individual organs in accordance with regulations, which regulate the preparation and adoption of unified technological claims, guidelines, and recommendations for information systems in state organs;
- ensuring the development and operation of the central server infrastructure and of the common telecommunication network and telecommunication services; ensuring the development and operation of the certificate agency;
- the formation of the policy, the establishment, monitoring and supervision of the system of protection and security;
- professional consulting and training in the fields of planning and the development of information systems, project management, monitoring and ensuring quality, and the use of information solutions and standard tools;
- co-operation with domestic and foreign institutions from this field on common projects and tasks.

Since the GCI's budget is nearly twice as large as MID's, its impact on informatisation of public administration is significant, especially since GCI also influences the ways and means in which the money allocated directly to various state organs is being spend. So while in principle MID is the Ministry and GCI a specific governmental body (therefore in hierarchy

bellow MID), in practice the roles are reversed. This is reflected in occasional overlapping of the activities of the two institutions.

B.5. Assessment of the national IS policies and the implementation

Slovenia had to wait for a long time for the fully-fledged Information society strategy. This does not mean, however, that no actions were taken prior to this or that the awareness of the need to move more actively towards Information Society was not present. As described in the beginning, all segments: the civil society, the business community and the government were active in the field of IS promotion. The key problem is **the lack of coordination among the three groups of actors as well as lack of integration of the objectives and the activities**. The civil society, as mentioned in B.1.of this Section, was pointing out the need for a more active approach of all parties, government, business and civil society, but counted on a clear and strong governmental support and strategy. The business community, particularly the large ICT companies, also established an informal consortium with the ambition to promote the diffusion of ICTs and therefore move more dynamically in the direction of IS. Their activities were often misunderstood as the "sales promotion" and not genuine expression of concern for too slow action by the government in the field of IS. The government answered to the critics from civil society and business with the establishment of the Ministry.

Both, the programmes and assigned tasks of the Ministry of Information Society and those of GCI are very ambitious. Several activities have already been initiated. MID focused a lot of attention during its first two years on the field of telecommunications (see Section F), but some progress was made also in the Information Society applications. Projects like eSchool (see Box E2) and eVillages[30] have raised the interest of the general public for Internet. Several other projects are still in the planning or research phase. Maybe the most underrepresented is again the business sector and the activities, which would promote more intensive use of ICT related technologies and applications there. From looking at the official pages of the MID or at the text of the Strategy one could not draw such a conclusion; sooner the opposite one. Many priorities are focused on business and entrepreneurship, on raising the ICT skills, technology transfer, etc. But when it comes down to specific actions, the business focus is lost.

A possible explanation lies in the fact that MID is a very small ministry, both in terms of personnel and in terms of its budget (its budget is only EUR 15 million or 0.2% of total Slovenian state budget). The programme in front of the MID should not be at all treated as the Ministry's only, but that of the government as a whole, where MID should give the coordinates and substantial guidance to achieve the synergy, while the implementation should be in the hands of each individual government department. Current state of affairs gives little proof of such approach. This makes the implementation of the Slovenian Information Society Strategy, particularly in the segments related to more complex issues (like diffusion of ICT applications in business sector, adjustment of labour legislation for facilitation of tele-work, raising the level of IS-related skills in general population, etc.) very difficult. Even the process of the adoption of the SISS reflects, that **the strategic importance of the transition to IS has not been fully understood and supported by the Slovenian government.** The Strategy received little public attention and was practically not promoted by the government.

[30] The project helps villages with poor telecommunications to upgrade them in order to provide a central village link to Internet.

The low level of awareness of the existence of the SISS partly explains the lack of more open criticism. So far, the only recorded reaction is the planned preparation of the business IS strategy by the Chamber of Industry and Trade. As a first step, they commissioned a market research study, which should give an assessment of the current ICT market in Slovenia. Next step is to be the preparation of the strategy by the Chamber and its IT business association, where specific attention will be given to the business needs.

The presence of mostly small and even micro firms in the ICT sector (as described in the next Section) has serious implications also at the policy level. This highly segmented and competitive group of actors has not been able to exert pressure on the government policy as a group. The attempt of few larger corporations to form a pressure group failed, at least partly on account of personal disagreements among their top managers.

Notwithstanding the results achieved in terms of Internet popularisation, the informatisation of government (at least from technical perspective), there seems to be a lack of coherent and well co-ordinated policy towards IS, which should be based on cooperation of all partners (business sphere, university and research sector, public administration and citizens), taking advantage of synergies.

B.6. SWOT analysis

Strengths	**Weaknesses**
– Good formal layout of the institutional setting for IS – Key documents in place, also IS included as a strategic goal in development strategy (SEDS) – Relatively active participation of MID in eEurope+ and other European Commission initiatives	– Low level of implementation of planned activities – Inability to exploit the institutional set-up in practice due to continuation of poor coordination and cooperation among various actors – Insufficient resources dedicated to the implementation of IS strategy – Strategic importance of transition to IS not fully supported by the government – Lack of active, not just formal, involvement of the business sector in policy planning
Opportunities	**Threats**
– Full implementation of ambitious and well-defined plans in the area of e-government – Readiness for a more active support of civil society and business community to the objectives of IS – Accomplishment of projects already initiated in areas like eSchools, eHealth[31], etc.	– Lack of focus on the implementation of the policies, which should have important impact on the economic aspects of IS – Slow take-off of eBusiness and eCommerce – Policy framework unsupportive to more progressive uptake of ICT in business, affecting competitiveness and growth in the long run

The establishment of the Ministry of Information Society was presented at the time as a strategic decision of Slovenian government on the road to IS. Along with the Government Centre of Informatics, the two bodies should constitute a good formal institutional setting to

[31] See Box E3.

promote the implementation of the IS and could be identified as a key **strength**. Additionally, both the Strategy of Economic Development and recently adopted Slovenian Information Society Strategy, recognize fully the importance of transition to IS.

The strategies and operational programmes include several ambitious targets in the area of e-government, eSchools and eCommerce. Particularly in the area of eGovernment, the plans are also well defined and a time frame set out. This provides for good **opportunity** to promote more dynamic transition to IS. Also, several running projects like eSchool, are well received by the target groups, which reflects positive attitude of the society towards IS. Even though not sufficiently exploited and poorly coordinated activities of civil society and business groups, both entities support the objectives of IS and present a dormant, but potentially very constructive pressure on the government to implement its policies.

The key **weakness** in the area of IS policies is unclear commitment of the government to the transition to IS, since there is a gap between the declared policies and those actually implemented. This undermines otherwise good institutional set up. Lack of cooperation and coordination between various actors additionally weakens the overall ability of Slovenia to successfully implement the transition to IS. The fact that the Ministry of Information Society has seriously limited both human and financial resources presents significant weakness in implementing the strategies and the plans it adopted. Due to the low level of active participation of business community in setting of the policy priorities, economic issues often receive insufficient attention.

One of the important **threats** is the missing focus on business issues with respect to IS, since the activities promoting more intensive use and diffusion of ICT related technologies and applications are seriously underrepresented in the current official strategic papers. This presents a serious threat to long-term growth and competitiveness of Slovenian economy.

C. INDUSTRIAL DEVELOPMENT AND COMPETITIVENESS

C.1. Structural changes

In the beginning of the nineties Slovenia was similarly to the other transition economies faced with very unbalanced structure of production. Industry was the dominant sector as a result of the past socio-economic system based on the material concept of production. Industry dominated all economic policy considerations, as well as investment. Most services were considered »unproductive« and their contribution to the efficient functioning of the economy was neglected (Stare, 1999). In the last decade, the perception of the importance of service activities for growth and competitiveness began to change gradually, in parallel to shifts in the structure of production.

C.1.1. Manufacturing

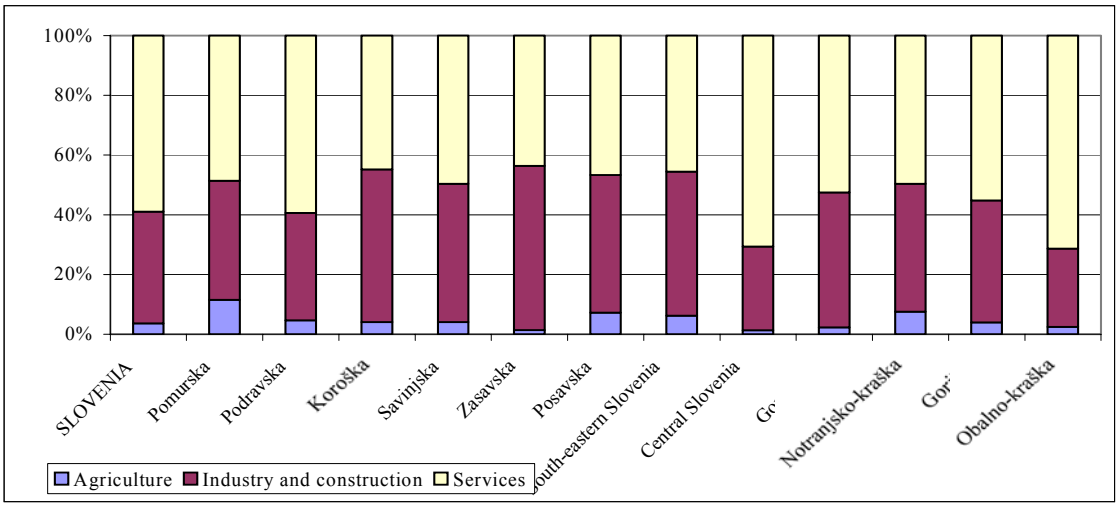
Slovenia enjoys strong manufacturing tradition, in some industries it extends back few hundred years. This is especially true of the processing of iron, the manufacture of furniture, paper, footwear, textile industries and the manufacture of sports equipment (Bučar, Stare, 2001). In recent decades other industries have also developed and in 2001 approximately 60% of total manufacturing value added was attributed to the manufacture of metals, electrical and optical equipment, chemicals, food and beverages, machinery and equipment (Table C1). During the first half of the nineties (mostly in years 1990-1993 when industrial output was decreasing), Slovenian manufacturing went through a period of restructuring, partly as a result of the loss of ex-Yugoslav, Russian and Eastern European markets and partly due to the beginning of the privatisation process. Industries that were hit the most by unfavourable circumstances in that period were mostly capital-intensive ones (e.g. manufacture of metals and chemicals) (Table C1). In all sectors, large companies faced more severe problems than the smaller ones, due to their high rigidity and over-sized employment.

From 1993 onwards, changes in the structure of Slovenian manufacturing show a clear trend away from labour-intensive manufacturing (with the shares of the textiles, leather, and woods industries declining) towards those sectors with higher value added or capital intensity per employee. This is an important step to increased competitiveness of manufacturing industry. The sharpest increase in production in volume terms in the period 1994 to 2001 was observed in the metals, chemicals (pharmaceuticals), electrical and optical equipment, and machinery and equipment industries (Table C2). In 2001, the highest value added per employee was recorded in manufacturing of chemicals that surpassed the average for total manufacturing by high margin (Table C3). Nevertheless, the restructuring of manufacturing was too gradual and slow resulting in low share of high technology products in manufacturing output (Bednaš et al., 2002). This was to a certain extent also the consequence of weaker cooperation of companies with research institutes and University, which is further explained in Section D.3.

The transition process and the accompanying restructuring of the economy brought about transformation from a predominantly manufacturing to a more service-based economy (Table A6). Nevertheless, manufacturing still contributes significant share to total gross value added. In 2001, it accounted for 27.3% of gross value added (34.3% in 1991) surpassing the share of manufacturing in almost all European Union countries. The role of manufacturing is even more pronounced in some regions where manufacturing accounted for 40% of total value added in 1999 (Table C4, Graph C1) (Koroška, Zasavska, South-Eastern Slovenia, Gorenjska) (Pečar, 2002). While the first two regions (Eastern parts of Slovenia) are less developed

regions burdened with old industrial structure, the other two are characterised with high value added industry (production of telecommunication equipment, transport equipment, pharmaceuticals).

Graph C1: Regional structure of value added by sectors in 1999, in %
Reference: Statistical Office of the Republic of Slovenia



The regions are listed from left to right as follows:
SLOVENIA, Pomurska, Podravska, Koroška, Savinjska, Zasavska, Posavska, South-Eastern Slovenia, Central Slovenia, Gorenjska, Notranjsko-kraška, Goriška, Obalno-kraška

C.1.2. Services

The end of the eighties and the beginning of the nineties marked the turning point of services development in Slovenia. The growth of services in terms of value added and employment outpaced that of manufacturing. As a result, the share of services in gross value added increased from 50.3% to 62.4% in the period 1991-2001. The increase was recorded both in market services and in public services. The most dynamic activities in terms of value added growth were real estate, renting and business services, public administration and compulsory social security (Table C5).

The strengthening of the service sector in the last decade is the consequence of several factors (Stare, 1999):

- technological change and modernisation of production processes, which require specialised services (e.g. computer aided manufacturing, computer aided design, computer aided stock monitoring, introduction of EAN code);
- outsourcing of non-core services due to changes in industrial organisation, such as the dissolution of large industrial conglomerates to smaller companies (e.g. security and cleaning services, catering, transport services);
- market oriented reforms (privatisation, deregulation of some professions) required new services not available in previous system (e. g. asset valuation, auditing) and stimulated the establishment of a number of private firms, predominantly in services (e.g. bookkeeping, accountancy, language schools, security services);
- increased demand for existing services (marketing, advertising, quality control), due to increased competition and the need to improve the efficiency and competitiveness of production;

– establishment of new institutions, mainly in public administration, related to the process of accession to the European Union and other international integrations (e.g. legal services related to the harmonisation of acquis communitaire, veterinary inspection services or regional business promotion centres and development agencies).

Despite the progress achieved in the last decade in terms of the increasing weight of services in value added, in employment and dynamic growth of high value added services, rather late withdrawal from the industry-led growth and the lack of service culture hampered smooth and qualitative changes of the service sector. Shortcomings refer in particular to the composition of service activities, to lack of competition in services, to modest efficiency and poor innovativeness of service activities. In the early nineties, the bulk of value added in market services was attributed to distribution, transportation, hotels and restaurants. The relative weight of these services in total value added remained significant throughout the nineties and in 2002 they accounted for 21.3 per cent of the gross value added. The share of financial and business services, which generate the highest value added per employee and strengthen the competitiveness of the economy was lower and in 2002 they accounted for 20 per cent of the total value added (SORS, 2003a). This reflects serious gap of Slovenia behind the EU average where financial and business services occupied the dominant position among services and in 2002 accounted for 27.3 per cent of the total value added (Statistics in Focus, 2003). However, a positive development of Slovenia towards narrowing the gap in that regard can be traced since 1998, when the difference amounted to 10 percentage points (Statistics in Focus, 2001).

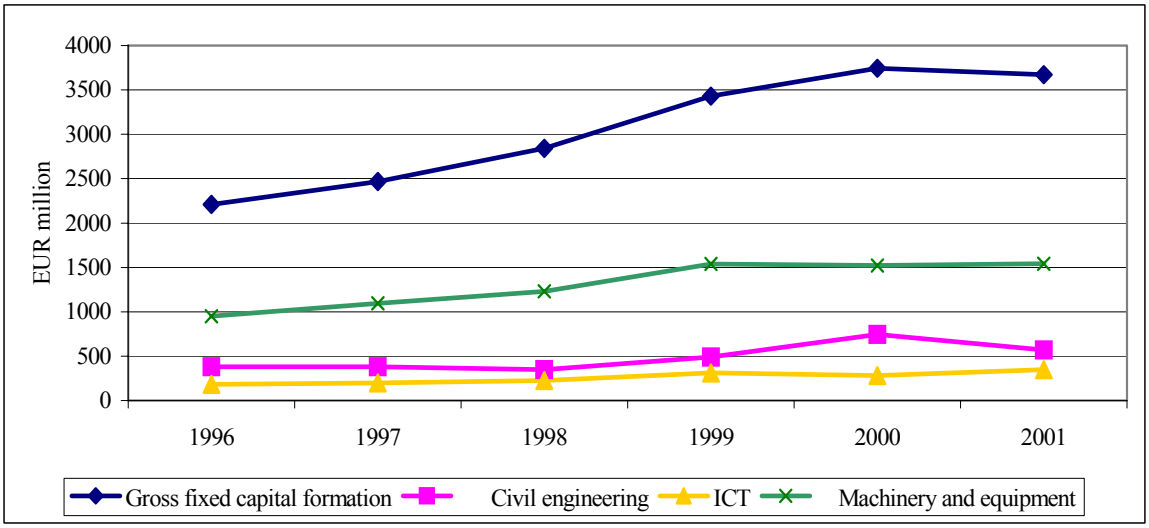
Nevertheless, the lack of knowledge intensive business services in Slovenia is critical for the efficiency of total economy as well as for its innovative capacity. These services not only generate innovations but also facilitate dissemination of innovation throughout the economy (e.g. research and development, consultancy services, protection of intellectual property rights). Poor availability of competitive knowledge intensive business services is a serious deficit in the innovation systems of other candidate countries as well (Stare, Bučar, 2002).

C.1.3. Investment

Investment is one of the key factors of economic growth, which increases production capacities and brings new technology and know-how. In Slovenia, investment demand rose sharply after 1993 and recorded the biggest rise in 1999 (19.1% in real terms). In the same year**,** gross fixed capital formation relative to GDP equalled 27.4%, 8.6 percentage points above the 1993 level. In 2000, investment activity decelerated and in 2001 negative growth rate of investment was recorded. Consequently, the share of gross fixed capital formation in GDP fell to 23.9%. In 2002, investment activity recovered with 3.1% real growth rate (Table C6).

The technical structure of investment in the period 1996-2001 (Table C7) reveals real growth of buildings and construction investment as well as of investment in machinery and equipment. Investment growth in buildings and construction works was to a large extent fuelled by accelerated motorways construction. However, high growth rates of investments were also recorded in industrial buildings, while investment growth in residential buildings was more modest. Investment in machinery and equipment was mainly spurred by increased investment in computers and office machinery and in electrical and electronic machinery and equipment, which lays down good foundations for further development as this investment has the strongest impact on productivity (Murn, Kmet, 2003).

Graph C2: Gross fixed capital formation* - new fixed assets, 1996-2001, EUR million



Reference: Statistical Office of the Republic of Slovenia
* In enterprises, companies and other organisations.

Slow-down of investment activity in 2000 and 2001 was on one hand influenced by fiscal restrictions, which slowed down motorway construction, while on the other hand modest economic activity had a negative impact on business investment. A pick-up of investment in 2002 was mainly due to the revival in motorway construction, while the recovery of business investment was not so evident due to low level of business expectations.

IT related investment (investment in office machinery and computers and in software) recorded dynamic growth rates in the observed period[32]. Consequently, the share of IT related investment in total gross fixed capital formation (new fixed assets) increased from 8.3% in 1996 to 9.5% in 2001[33] (Table C7) (distribution of IT investment by activities is explained in larger detail in Section D.1.). In 2000, the trends worsened to some extent due mainly to extremely high growth rates of IT related investment in 1999 fuelled by high demand for computers and software before the value added tax introduction in June 1999 and by expectations related to millennium bug. Nevertheless, dynamic growth of IT related investment continued in 2001.

C.2. The role of ICT industry[34]

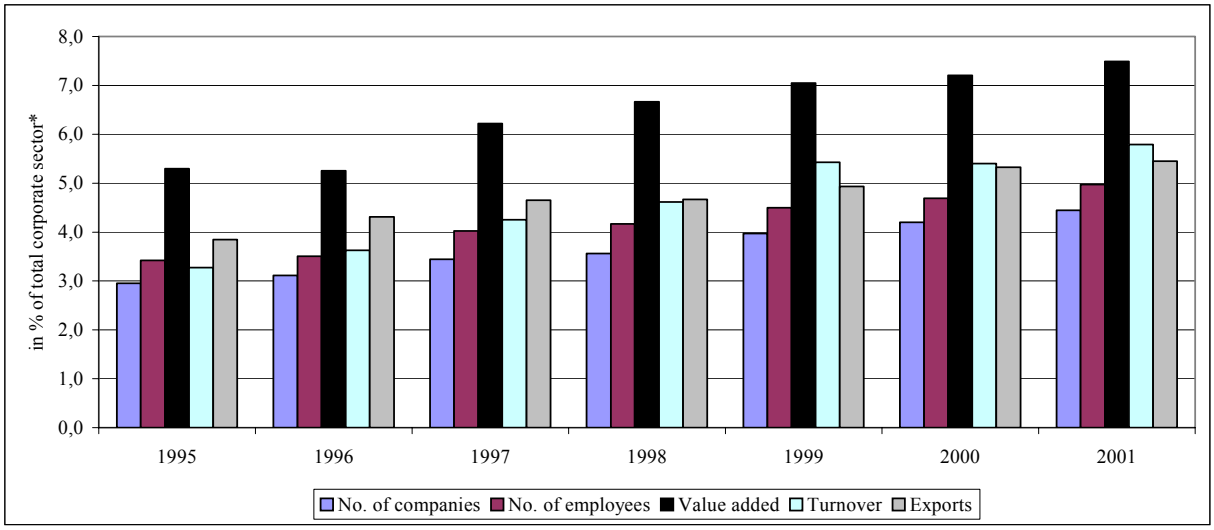
C.2.1. Growth and structure

Slovenia inherited relatively well-developed electronic and electrical engineering industry from the past, providing good basis for further development of ICT industry in the nineties. In the period 1995-2001, ICT industry (manufacturing and services) recorded dynamic growth,

[32] Prior to 2001 no data is available for investment in communication equipment.
[33] If investment into communication equipment is added to IT investment in 2001, the share of ICT investment in total gross fixed capital formation accounted to 14 per cent (see Section D for details).
[34] ICT sector is estimated on the basis of data for non-financial corporate sector (includes data for commercial companies, while individual private entrepreneurs are excluded). Account should be made for the fact that in manufacturing, the estimated share of non-financial corporate sector value added in total manufacturing value added accounts for approximately 90%, in wholesale and retail trade for 86%, in transport, storage and communications for 75% and in real estate, renting and business activities for approx. 40% (Kmet et al, 2002).

as in many developed countries. In 2001, ICT sector accounted for 5% of employment, 7.5% of value added, 5.8% of turnover and 5.4% of exports of the total Slovenian non-financial corporate sector. Compared to 1995, the importance of ICT sector increased significantly: in 1995 the respective shares in total employment and in total value added amounted to 3.4% 5.3% (Table C8 and Graph C3). The growth was substantial in absolute terms as well: in the period 1995-2001, the number of companies increased from 993 to 1 654 and the total number of employees grew from 16 591 to 23 532.

Graph C3: Weight of ICT sector in the non-financial corporate sector*, 1995-2001, in %
Reference: Own calculations based on Agency for Payments data on Balance Sheets of commercial companies



* Non-financial corporate sector is estimated on the basis of data for commercial companies, while individual private entrepreneurs are excluded.

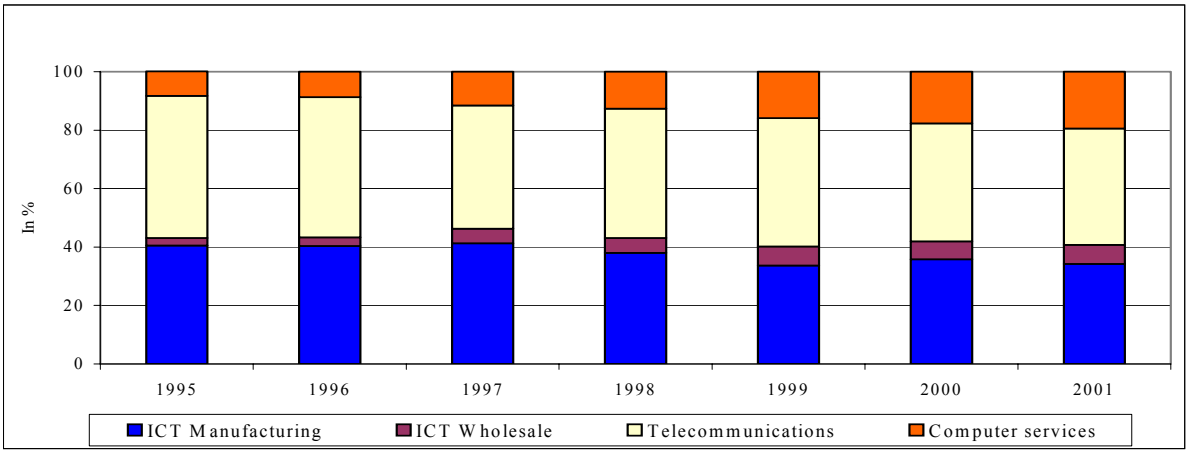
Relatively high difference between the ICT sector shares in value added and in employment (2.5 percentage points in 2001) shows that the productivity level measured by value added per employee exceeds the productivity in total non-financial corporate sector (Table C8). In 2001, the value added per employee in the ICT sector amounted to EUR 33 600 (Table C9) that was 51% higher than the average for non-financial corporate sector and 58% higher than in manufacturing. However, there are large differences between ICT manufacturing (EUR 21 300 in 2001) and services (EUR 48 000) and within ICT service activities with telecommunications recording the highest value added per employee (EUR 69 400 in 2001) (Table C9). Compared to EU countries, in 2001 Slovenian telecommunications value added per employee reached approximately 70% of relevant EU productivity in 1997 and computer services 66% of the respective level in the EU. This is considerably higher compared to overall productivity of Slovenian corporate sector, which stands at 45% of EU productivity in 2001 (Bešter, Uršič, 2002). Besides, Slovenian exporters of computer and communication services increased their share on the EU markets in the second half of the nineties suggesting that their competitiveness is being improved (Stare, 2001). This indicates that telecommunication and computer services are relatively well developed and might present an advantage in the implementation of Information society activities. However, there is much scope for further improvement in quality and better adaptation to customer needs. This

necessitates ICT experts with interdisciplinary knowledge able to combine technical, marketing and organisational skills[35].

On the other hand, telecommunication services' penetration and the level of infrastructure development point to relatively solid results (fixed lines penetration for inhabitants and households amounts to 47% and 90% respectively on a fully digitised network) (IBM, 2002). Nevertheless, deficiencies remain in particular regarding slow implementation of liberalisation of fixed telephony market that hampers competition (see more details in Section F.2.1.).

The bulk of the ICT sector growth in the period 1995-2001 is the result of dynamic growth of ICT services, particularly of software consultancy and supply and of telecommunication services. Consequently, the share of ICT services in total value added of ICT sector increased to 66% by 2001 (Table C9, Graph C4). Even more impressive is the increase of ICT services share in total turnover of the ICT sector: from 48 per cent in 1995 to 63.6 % in 2001. Within services, the most dynamic growth of value added, turnover and employment was recorded in software consultancy and supply and in wholesale of office machinery and equipment, as these two sectors used to be rather small in the past (Table C9, Table C10).

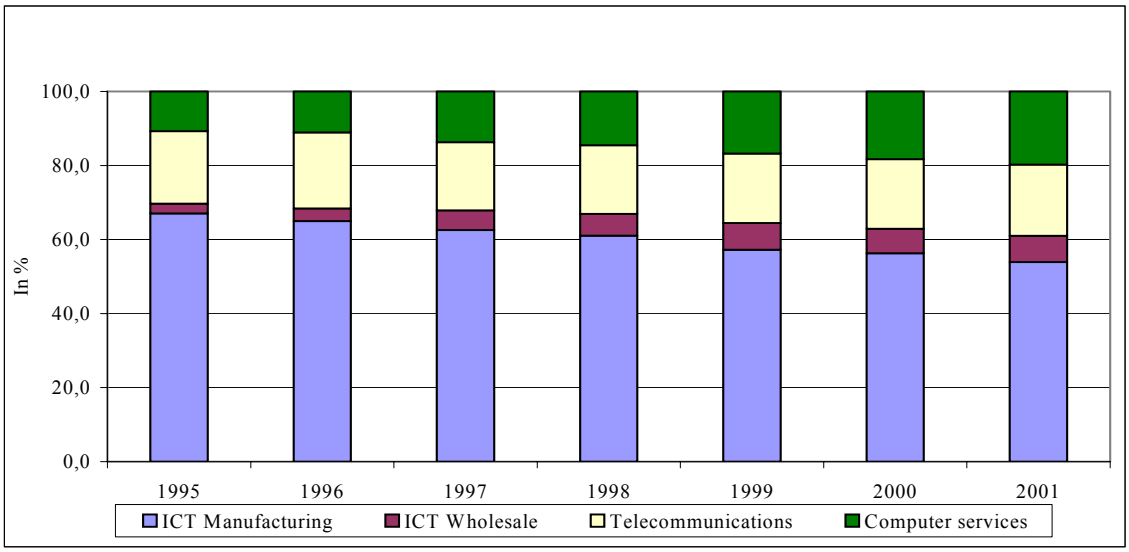
Graph C4: ICT sector value added structure in %, 1995-2001
Reference: Own calculations based on Agency for Payments data on Balance Sheets of commercial companies



In the period 1995-2001, the number of companies increased most in telecommunications - from 30 to 106 companies, followed by ICT wholesale (from 139 to 300) and by computer services (from 425 to 882 companies) (Table C9, Table C10). Despite the fact that the importance of ICT manufacturing in ICT sector value added has decreased since 1995 (see also Section C.2.4.), it still employed over half (54%) of ICT sector employees in 2001 (67% in 1995) (Graph C5).

[35] It has to be acknowledged that the problem of adapting the solutions to customer needs concerns not only the suppliers of solutions but also the customers (user companies). Usually, companies do not define their requirements adequately, as the persons in charge of the procurement of ICT and related solutions implementation are mostly ICT specialists and do not know the specificities of firm's business processes or have sufficient managerial skills.

Graph C5: ICT sector employment structure in 2001, per cent



Reference: Own calculations based on Agency for Payments data on Balance Sheets of commercial companies

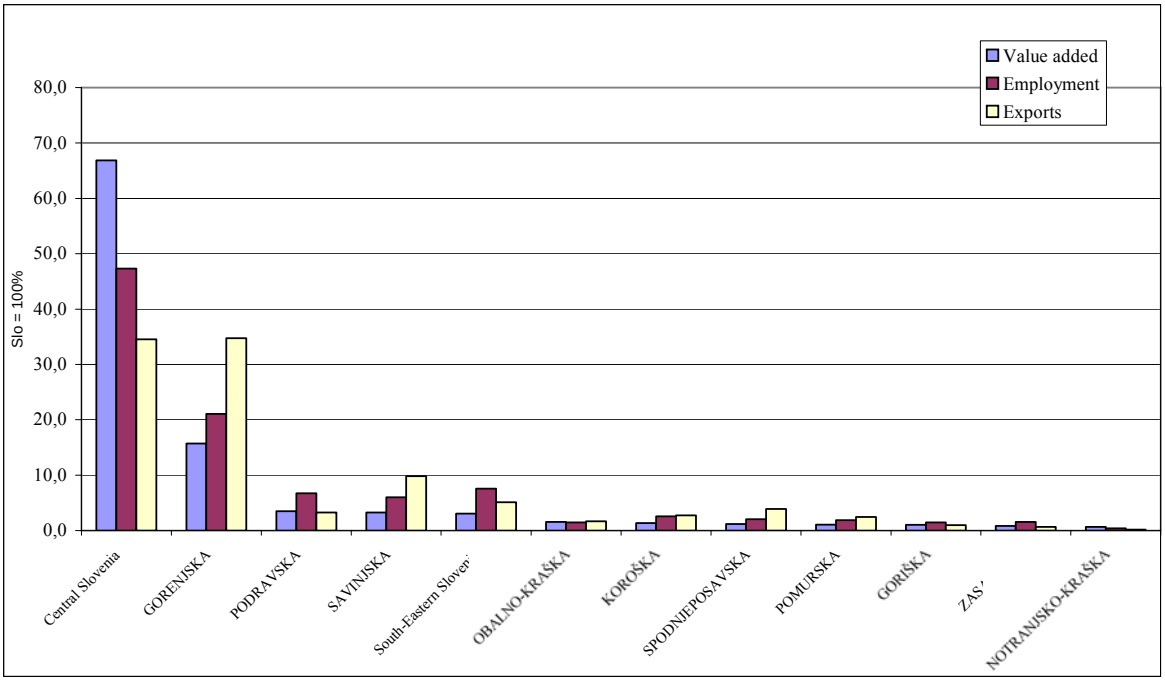
C.2.2. Regional distribution of ICT sector

As revealed by Table C11 and Graph C6, ICT sector is highly concentrated in two regions with the remaining ten regions lagging far behind. In 2001, Central Slovenia (the capital Ljubljana with surrounding cities) and Gorenjska accounted for approximately 85% of the total ICT sector value added and approximately 70% of ICT employment. In Central Slovenia high value added ICT services prevail (89% and 79% of ICT sector value added and employment), mostly telecommunications, software consultancy and supply services. The second most important region as regards ICT sector production is Gorenjska region (North-Western part of Slovenia) with 21% of ICT sector employment and 16% of value added in 2001.

Gorenjska region is the centre for ICT manufacturing: more than 40% of all Slovenian ICT manufacturing industries are located in this region, most notably the largest producer of telecommunication equipment[36]. High concentration of ICT sector activities in central region is not surprising due to the fact that major telecommunication operators, which generate over 40 % of total ICT sector value added (Graph C6), are located in Ljubljana. In the period 1995-2001, no major changes in regional concentration of ICT sector occurred apart for the decreased importance of Gorenjska region (Table C11).

[36] Iskratel produces equipment for telecommunication networks (fixed and mobile networks, data and optical networks, power supply systems, terminal equipment). See Box C1.

Graph C6: Share of ICT sector by regions in 2001, per cent



Reference: Own calculations based on Agency for Payments data on Balance Sheets of commercial companies
The regions are listed from left to right as follows:
Central Slovenia, GORENJSKA, PODRAVSKA, SAVINJSKA, South-Eastern Slovenia, OBALNO-KRAŠKA, KOROŠKA, SPODNJEPOSAVSKA, POMURSKA, GORIŠKA, ZASAVSKA, NOTRANJSKO-KRAŠKA

C.2.3. Trade balance of the ICT sector

Slovenia is net importer of ICT goods and services with the combined deficit of EUR 365 million in 2002 and the bulk of it is attributed to ICT goods[37] (Table C 12). In the last ten years a trade deficit in ICT goods doubled to account for EUR 335 millions in 2002. The extremely high deficit of EUR 470 millions was recorded in 1999 on account of the millennium bug and the introduction of value added tax in the middle of 1999[38]. The major part of the deficit is related to high imports of computers and other equipment for information processing as domestic production of hardware is very low. There are no plans for larger investment in manufacturing of computers and other processing equipment in Slovenia as the labour costs are much higher than in other acceding countries[39].

The most important ICT exporters are manufacturing of instruments and appliances for measuring (3320 according to NACE) and manufacturing of television, radio transmitters, apparatus for line telephony and line telegraphy (3220). The latter also recorded the highest increase of share in goods exports in the period 1992-2002 (by 0.4 percentage points, Table C13, see also Section C 2.4 for details). Approximately 30% of ICT manufacturing imports are computers and other information processing equipment (3002) while electronic components (3220) and TV and radio receivers (3230) compose further 30% of ICT goods imports (Table A15).

[37] Data for trade in ICT services is recorded in balance of payments statistics (Table C14) while data for trade in ICT goods is part of external trade statistics obtained from customs declarations (Table C12).
[38] Those who were planning to by new ICT equipment bought it prior to the introduction of value added tax.
[39] Hourly labour costs in 2000 amounted to EUR 8.98 in Slovenia, while the average for accession countries amounted to EUR 4.21 (Eurostat, 2002).

Trade deficit in ICT services is much lower than in ICT goods trade. The balance of trade in ICT services deteriorated in the period 1994-2002 from EUR 5 to 30 million due mainly to the increasing imports of communication services, which account for the bulk of trade deficit (Table C14). On the other hand, computer services reveal more balanced flows of exports and imports. In 1998, 1999 and in 2001 Slovenia even recorded a surplus in computer services trade (mainly in software) pointing to rather good foundations related to IS implementation.

The major export destinations for ICT products and services differ somewhat depending on the ICT product/service, but EU is leading in many ICT products, with Russia and CEFTA countries figuring higher in telecommunications equipment and ICT services exports (Bučar, Stare, 2001).

C.2.4. Size of the ICT market and major actors

Size of the ICT market

The fact that only few assessments exist so far, confirms that it is very difficult to estimate the **size of the ICT market**. According to Bučar and Stare (2001) two different estimates of Slovenian ICT market are: Slovenian European Survey of Information Society (ESIS)[40] and European Information Technology Observatory (EITO)[41]. At the end of 2000, ESIS estimated the market size of Slovenia for telecommunications at EUR 1 299 million, while the computer market was estimated at EUR 580 million. EITO figures for 2001 are more conservative: telecommunication market was valued at EUR 841 million and IT one at 403 million. The single largest discrepancy for telecommunication lies in assessment of mobile telephone services where ESIS figure was higher for EUR 300 million. The difference in estimation of the computer market size is attributed to different evaluation of IT services market, where ESIS values the market more than twice as large as EITO. According to EITO, the total value of Slovenia's ICT market expanded by only 0.7% in 2000 to reach EUR 1.24 billion, due to a downturn in telecommunications spending. Slovenia's ICT market according to EITO, was expected to grow in 2001 by 8.1% and in 2002 by 5.7%, with especially high rates predicted for IT services (2001: 11.4%; 2002: 8.6%), software (2001: 9.4%; 2002: 10.8%) and portable PCs (2001: 13.8%; 2002: 21.7%). In fact, growth of ICT market amounted to 8.4% in 2001. EITO estimates that Slovenian ITC market and infrastructure have reached maturity. Also, per capita IT spending in 2001 in Slovenia was the highest among the candidate countries, amounting to EUR 190, however it lagged far behind the average of Western Europe amounting to EUR 835 (EITO, 2002). This points to a serious handicap of Slovenia and of other candidate countries in catching-up with developed countries in terms of IST spending intensity.

The estimates of different international consulting houses (IDC, Gartner, Meta Group) differ as well, depending on the definition of the ICT sector and methodology in estimating future tendencies in growth of IT. IDC, for example, applies the method of extrapolating annual growth rates without taking into account macroeconomic environment in individual country and trends on the market. Recently published analysis by IDC estimates that the size of the Slovenian IT market (hardware, personal systems, communications equipment, software and services[42]) in 2002 accounted for approximately EUR 420 million (US$ 394 million). Some

[40] Basic Facts & Indicators Slovenia, January 2001, http://www.eu-esis.org/esis2basic/Sibasic7.htm. The survey was discontinued in 2002.

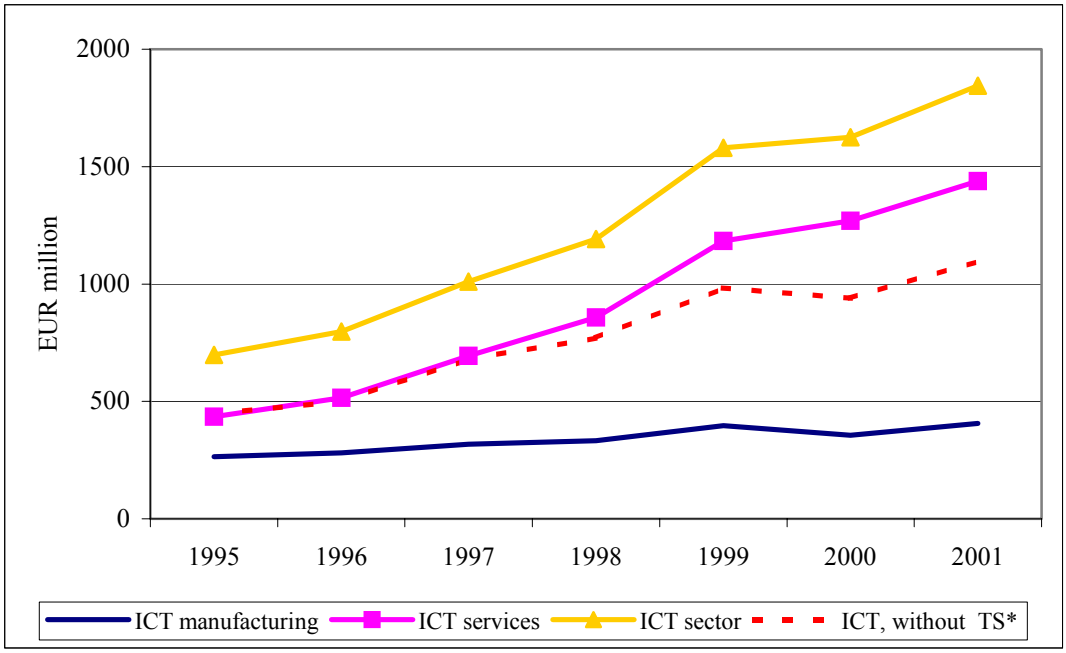
[41] EITO, 2001.

[42] Consulting, implementation, maintenance and training services related to IT, without telecommunication services.

managers of Slovenian IT companies believe that this estimate is too low and that more accurate estimate would range between EUR 480-530 million (US$ 450-500 million) (Delo, 7.2.2003). The above estimates exclude telecommunication services.

Our approach to estimate the size of the Slovenian ICT market differs from the above mentioned. It is based on data from balance sheets of ICT sector companies[43] and gives only the approximation of the ICT sector market value. The proxy used to estimate the market size is the value of sales of ICT companies on the local market (Table C15). This includes the value of ICT goods and services produced and sold locally and the value of imported ICT goods and services sold locally. Such assessment overestimates the sales of ICT goods and services as sales data from balance sheets refer to total activity of the company[44]. On the other hand, these data may not include the value of imported hardware, sold by foreign-owned ICT companies on the Slovenian market as this is billed directly by the parent company.

Graph C7: Local sales of ICT companies, 1995-2001, in EUR million



Reference: Own calculations based on Agency for Payments data on Balance Sheets of commercial companies
* TS- telecommunication services

Given the limitations of the above approach, we estimate that the ICT market in Slovenia has grown from EUR 700 million in 1995 to EUR 1 845 million in 2001 (EUR 450 million and EUR 1 100 million excluding telecommunication services) (Graph C7, Table C15). In the observed period the market for ICT goods has increased at a much slower pace than for ICT services even if telecommunication services are excluded. While ICT goods market experienced a downturn in 2000, following the impressive growth in 1999, there was no decline in ICT services market, owing primarily to further expansion of telecommunication and software services market (Table C15).

[43] We include companies registered in ICT activities as defined in the Technical annex of the project. Companies registered as legal entities in Slovenia irrespective of their ownership are included, while branch offices and activities of individual private entrepreneurs are excluded.

[44] We however consider that the bulk of activities are related to ICT manufacturing or services for which these companies are registered.

In 2001, the largest part of ICT goods' market was accounted for by telecommunications equipment and information processing equipment, while in ICT services, apart for telecommunication services, the bulk of the market size was attributed to the wholesale of ICT goods (notably resale of imported hardware and equipment) and to the software consultancy and supply. The latter has experienced particularly dynamic growth between 1995 and 2001. Such developments could indicate that Slovenian ICT market has already reached the level where services are determining the size and dynamics of the ICT market- this being the case in the developed countries already for some time.

Major actors on ICT market

ICT **manufacturing** is highly concentrated in three industries: manufacture of instruments and appliances for measuring etc. (NACE 3320), manufacture of electronic valves and tubes (NACE 3210), and manufacture of television and radio transmitters and apparatus for line telephony and telegraphy (NACE 3220), which in 2001 accounted for approximately 80% of value added and employment (Table C9). Among them, manufacturing of electronic components (3210) revealed largest expansion in the period 1995-2001 in terms of value added and employment, which rose by 1.6 and 5.2 percentage, points, respectively. In the other two industries a decline in the number of employees was characteristic for the nineties. As a result, their share in ICT sector value added decreased significantly (Table C9 and Table C10).

The following types of products are manufactured and also successfully exported: digital public and private telephone exchanges, ISDN (Integrated System of Digital Network) telephone exchanges and networks, terminal equipment, GSM equipment, equipment for optical communications, radio and encoded communication equipment, fibre-optic cable, various electrical and electronic components (capacitors, resistors, fuses and automatic circuit breakers, safety switches, contactors, relays, varistors, sensors), keyboards, soft ferrite cores, wound/inductive components. Particularly in the area of electronic components, a number of medium-sized firms with full or partial foreign ownership have been established recently.

There is a general tendency in the ICT sector worldwide that manufacturing companies are increasingly providing accompanying services in order to maintain or upgrade their competitiveness. Some Slovenian ICT manufacturing companies also engage in the supply of high quality ICT services which are packaged as «complete solutions«(see Box C1).

Box C1: Iskratel: Tradition and Innovation Combined

Iskratel, a joint venture with Siemens A.G. (47.7%shares), was established in 1989 and today employs over 800 people, of whom 61% have university degree. In 2000, the company's total revenue amounted to EUR 160 million, with more than half of it realised abroad. In 2001, the company invested EUR 1.1 million in education and EUR 33.7 million in research and development. Iskratel's latest complete solutions, combined with the upgraded versions of their telecommunication systems, can offer users integrated convergent telecommunications, computer and data networks. Many years of experience are built into Iskratel's highly sophisticated products, which cover all types of telecommunication networks (fixed networks like SI2000 and EWSD; mobile, data and optical networks, power supply systems, terminal equipment, etc.). Products for access networks are supplemented by products for wire line networks, and special attention is given to the upgrading of mobile GSM networks with GPRS and UMTS, the technologies of a new era. Iskratel keeps pace

with the rapid convergence of networks with new products for data/IP networks.
Further development of the telecommunication network in Slovenia imposes on Iskratel a demand to enter new market segments such as mobile telephony and corporate networks, by upgrading existing technology with new products and solutions, which the operators can offer to their end users. Its vision is to design complete telecommunications solutions for the Information society.
The small size of the Slovenian market directed the company towards foreign markets since its establishment on. Iskratel has been traditionally present in two regions: in the Balkan countries and in former Soviet Union, where a half of the overall export sales is realized. Iskratel's market shares on these markets range between 10% and 60%, which ranks it as the first or the second supplier. In these regions a powerful network of sales representative offices and JV companies (7) has been set up.
Iskratel is also among the best and most reliable development partners of Siemens A.G. The first development projects for Siemens A.G. mainly covered the development of application software that allowed the EWSD system to be used in various environments. Iskratel soon got the opportunity to become involved in the development of the latest versions of the EWSD system and the ratio between the generic and application development gradually changed. Iskratel professionals were therefore much more involved in the generic development of the basic ISDN functions for the EWSD system and also in the development projects for mobile telephony. Currently, Iskratel staff is involved in developing some of the building blocks for the Surpass concept - the next-generation telecommunications network designed by Siemens A.G.
www.iskratel.si

Even though 99 companies are registered as computer manufacturers, they are mostly small companies, involved in PC assembly based on imported components. Relative slow-down of PC market in 2000[45] has resulted in shifting of the activities towards providing installation, maintenance and other IT services as well as to mergers of some companies under single roof. All major brands of international computer manufacturers are present on Slovenian market (IBM, Compaq Hewlett Packard, Apple, etc.), but no assembly of these trademarks is performed.

The most important actors in **ICT services** are telecommunications and software consultancy and supply services. The latter is highly fragmented with large number of small companies (the average size of software consultancy company in 2001 was 3.6 employees, see Table C9). It is expected that the accession to EU will accelerate the process of consolidation of these companies. With 19% of all ICT sector employees in 2001, **telecommunication** companies created 40% of ICT sector value added and thus record the highest productivity in the ICT sector with EUR 69 400 value added per employee (Table C9). However, in recent years business results of telecommunication industry (in terms of profit and revenue) have been worsening[46], which was partly caused by the strengthening of competition in the mobile telephony market. New entrants are not able to raise profit from their businesses in the short term owing to high initial investment and to severe competition for market shares. On the

[45] Considerable consolidation is being witnessed on Slovenia's PC market. In 2001, several local firms ceased PC assembly and a series of acquisitions occurred. Consequently, international vendors are dominating the market. These trends are expected to continue through 2003 (EITO, 2002).
[46] Net profits decreased since 1998, while in 2001 net loss was recorded for the first time in the period observed (1995-2001).

other hand, lower prices of mobile communications on account of increased competitiveness resulted in lower demand for fixed telephony services, thus affecting business results of fixed telephony operator.

The major player on the telecommunications services' market is the incumbent fixed telephony operator Telekom of Slovenia, a majority state owned company (62.5%). Apart for commanding the fixed telephony market, Telekom Slovenije is the owner of the largest mobile telephony operator Mobitel and of the dominant Internet services provider Siol. Although the market of fixed telephony was fully liberalised in 2001, so far no new operator entered the market of fixed telephony for national calls, while several companies provide Internet telephony services (VoIP-Voice over Internet Protocol) for international calls (more details in Section F 2.1.). Fixed telephony accounts for 38 % and mobile telephony for 57% of the total telecommunication market in Slovenia, the rest is leased lines and data transmission (EITO, 2002).

The prices of national calls in fixed telephony are constantly being restructured and in mid 2002 they were lower compared to EU average, caused also by the size of the country (there is no difference between local and long distance calls). Prices of international calls are also below the EU average due to the existing competition in this market from VoIP operators. Quality of services provided by fixed incumbent operator in Slovenia is comparable to the level in other more developed candidate countries (IBM, 2003).

Competition was introduced to the *mobile telephony* market in 1998. In addition to the three mobile telephony operators (Mobitel, Simobil, Vega) there is also one re-seller of mobile telephony services (Debitel which uses Mobitel's network). Mobitel is a daughter company of Telekom Slovenije, while Simobil and Vega are majority foreign owned companies (Simobil is owned by Austrian Mobilkom, Vega is a subsidiary of Western Wireless International).

In 2001, the government had managed to successfully repeat the tender for the UMTS third generation mobile telephony concession, for which only Mobitel applied. The first tender was unsuccessful, due largely to a high concession fee requested by the government. This was the key reason why no other bidder applied for the second tender. In 2002, the tender was repeated and UMTS licence assigned to the biggest operator Mobitel who was bound to launch the service by the end of 2003. There is also quite large number of Internet services providers and 89 cable TV operators covering 44 per cent of households (IBM, 2003).

Software consultancy and supply (NACE 7220) is the second most important sector within ICT services and one of the most dynamic sectors of Slovenian economy. The number of software development companies tripled in the period 1995-2001 and the number of employees increased five fold. In 2001, software development industry employed 12.9% of total ICT sector employees and accounted for 13.5% of ICT sector value added. This is by 9.3 and 11 percentage points respectively, higher than in 1995 (Table C9 and Table C10). The sector is dominated by large number (almost 500 in 2001) of small companies operating mostly on the Slovenian market and developing specific software applications. Also, quite a few foreign providers of software are present on the market with Microsoft taking the lead, followed by Cisco, Oracle and SAP. All the major suppliers of software in Slovenia are faced with the lack of ICT experts with managerial experiences and knowledge, which seems to be crucial when companies exceed the level of small enterprises. This requires additional training and investment in human capital by companies themselves to compensate for the deficiencies of the education system (see details in Section G).

Although the export is concentrated on a limited number of companies, including foreign-owned[47] the share of revenues these companies realised in foreign markets in their total revenues increased from 4% in 1995 to 20.2% in 2001 (Table C10, Table C9) revealing the fact that software consultancy companies are increasingly looking for niche markets abroad (software for banking, wholesaling, geographic information systems). A closer view on Slovenian software production reveals that many innovative applications and solutions (e.g. eBanking, interactive content management, network solutions) are being developed, most initially for specific domestic client, but due to the small local market, majority of successful companies is opting for expansion abroad[48]. The Slovenian expertise has been well received in very different geographies and in very different areas. Significant share of USA as an export destination for IT services may be attributed to exports of largest Slovenian software company Hermes Softlab that has a partnership arrangement with Hewlett Packard. Similar explanation can be found for telecommunication services, where the share of Germany is large primarily thanks to a joint venture of the Slovenian company Iskratel with Siemens (certain solutions are being developed by Iskratel's engineers for the mother company). Ex-Yugoslav markets are important especially for exports of telecommunications services due to good reputation of Slovenian providers of telecommunication services (Bučar, Stare, 2001).

C.2.5. The role of FDI in ICT sector

In contrast to the other transition economies, Slovenia recorded rather modest inflow of FDI in the nineties. It increased substantially only in 2001 and 2002 as a result of the privatisation of banks and investment in mobile telecommunications. Nevertheless, the importance of companies with foreign capital[49] is gradually increasing and has by some indicators reached high levels. In 2000, companies with foreign capital accounted for 4.3 per cent of the total number of companies in Slovenia, 10 per cent of total employment, 16.7 per cent of turnover, and as much as 29.7 per cent of exports (Direct Investment, 2001).

The presence of FDI in the ICT sector is higher than is the average for all commercial companies. In 2000, foreign direct investors were engaged in 5.6% of ICT companies, these companies employed 14.8% of total ICT sector workforce, contributed 11.2% to total value added, 18.9% to total turnover and 27.6 per cent to total exports of ICT sector (Table C16). This shows that companies with foreign capital are strongly export oriented - probably due to the integration into networks of parent companies abroad.

In terms of the number of companies, the majority of FDI was concentrated in ICT services while in terms of employment and value added more than two thirds of investors were engaged in ICT manufacturing companies (e.g. Iskratel) (Table C17). Data on FDI penetration in ICT sector for 2001 and 2002 (not yet available) will probably indicate an increase of companies with foreign capital in ICT services as two relatively large investments took place in mobile telecommunications (American Western Wireless and Austrian

[47] The most important exporters of software are Iskratel (exporting solutions related to the operation of telecommunications networks), Hermes Softlab (exporting different software solutions for storage and data management) and Slovenian subsidiaries of foreign owned companies such as Microsoft, IBM, SAP and Oracle.

[48] On the other hand, managers of IT services companies think that Slovenia does not have enough professionals for larger IT projects that would compete on international markets. In their opinion this is one of the disadvantages of small economy (Bavec, 2003).

[49] Companies with at least 10 per cent share of foreign capital in total equity.

Mobilkom) in this period. Overall, ICT sector has quite a solid level of FDI compared to the level of all commercial companies.

C.3. Impacts

The gradual shift from manufacturing to services in the last decade has enabled the narrowing of the gap in economic structure between Slovenia and the EU countries. The fastest growing activities in manufacturing were those with higher value added and/or higher capital intensity per employee. Yet, the share of high technology products in manufacturing output remains modest. In spite of the significant advance of the services sector, weaknesses remain and relate mainly to the modest efficiency and low share of business and financial services in GDP. Both of these services are crucial for the strengthening of competitiveness of the economy as well as for the accelerated diffusion of information communication technology to business processes in private and public sector. The experience of developed economies reveals that competitive financial and business services are crucial for taking full advantage of new ICT.

High growth rates of gross fixed capital formation in the period to 2000 created favourable conditions for advanced development of the Slovenian economy. Although the bulk of investment growth was attributed to motorway construction, the performance of investment in ICT seems to have created rather good basis for further expansion of ICT use in different segments of economy and society. This might be perceived as a strength in the implementation of Information society.

Dynamic growth of ICT sector in the last six years has resulted in increasing share of ICT sector in value added of the non-financial corporate sector. ICT services are driving the growth of the ICT sector and account for two thirds of its value added. The productivity of ICT services lags behind the EU average much less than the productivity of total non-financial corporate sector. Slovenia is net importer of ICT goods and services mainly on account of high imports of hardware. It is important to note that trade in computer services is quite balanced, pointing to a good quality of these services and above all to familiarity of local suppliers with the specificities of the market. In the second half of the nineties, Slovenian exporters of computer and information services and of communication services increased their market share on the EU markets, suggesting that their competitiveness is being improved (Stare, 2001). This might be one of the strengths in introducing Information society, however there is much scope for further improvement in quality and better adaptation to customer needs. High concentration of the ICT sector value added and employment in the central region is not surprising given the fact that all telecommunications operators are located in the capital.

While the difficulties in estimating ICT sector market size abound, it is evident that the market in Slovenia has expanded dynamically since 1995, particularly in ICT services. Such trends could indicate that Slovenian ICT market has already reached the level where services are determining the size and dynamics of the ICT market, this being the case in developed countries already for some time. Major players on the ICT market are the subsidiaries of well known foreign ICT companies, which are distributors of hardware, software and accompanying services. Besides, there are also few local manufacturers who successfully export telecommunications equipment and local ICT service providers, most notably telecommunications operators and software consultancy companies. The share of companies with foreign capital in ICT sector is higher than on average for all commercial companies and

it might be expected that the share of ICT companies with foreign capital will increase further. This might strengthen the competition on the market and boost diffusion of advanced ICT and services.

C.4. SWOT analysis

Strengths	**Weaknesses**
– Dynamic growth of services in the nineties – Solid level of investment in ICT – Improved competitiveness of telecommunication and computer services – Services driven growth of ICT sector and ICT market size	– Low share of high technology products in manufacturing output – Modest efficiency and low share of business and financial services in GDP – Weak performance of ICT manufacturing
Opportunities	**Threats**
– Increasing the number of new start-ups in ICT sector by providing different financial mechanisms (e.g. risk capital funds) – Larger inflow of FDI to ICT sector may boost the supply of advanced ICT solutions – Competitive pressure of providers of alternative telecommunications networks could strengthen competition, provide wider range and better quality services – Export of telecommunication and computer services	– Continued slow restructuring of manufacturing – Inadequate supply of knowledge-intensive business services affects the competitiveness of total economy and hampers the diffusion of IST – Non-consolidated ICT sector – Orientation of ICT companies to domestic market – Lack of ICT experts with managerial experience and skills

The following **strengths** regarding structural changes and the role of ICT industry can be pointed out as important for IS development. Dynamic service sector expansion in the nineties resulted in enhanced supply of market and public services necessary for efficient functioning of economy. The increasing share of investment in ICT in the period 1996-2001 seems to have created rather good basis for further expansion of ICT use, which might be perceived as strength in the implementation of information society. Rather competitive telecommunications and computer services are also considered as a strength in that regard since they foster IST diffusion. The fact that expansion of ICT sector and ICT market size in Slovenia was mainly spurred by dynamic growth of services, could indicate that Slovenian ICT market has already reached the level where services are determining the size and dynamics of the ICT market, this being the case in developed countries already for some time. While the productivity of ICT services lags behind the EU average, this lag is much smaller than for the total Slovenian economy.

Notwithstanding the restructuring of manufacturing in the nineties, the share of high technology products in manufacturing output remains modest. Also, in spite of intensive structural changes towards increasing share of services in GDP and dynamic growth of ICT

sector, two main **weaknesses** may be detected in that area. First is modest efficiency and low share of business and financial services in GDP. Both services are crucial for the strengthening of competitiveness of the economy, as well as for accelerated diffusion of ICT to business processes. The experience of developed economies reveals that competitive financial and business services are crucial for efficient functioning of the total economy and for taking full advantage of new ICT. The second weakness refers to modest performance of ICT manufacturing which is highly concentrated in three industries. This is another manifestation of modest level of technological sophistication of manufacturing in general.

Continued slow restructuring of manufacturing could undermine its export potential on internal market of the EU. Coupled with inadequate supply of knowledge-intensive business services this could threaten the competitiveness of total economy and hamper its ability for faster diffusion of IST. Regarding further ICT sector development **threats** are seen in the fragmentation of ICT sector, prevailing orientation of companies to domestic market and in the lack of ICT experts with managerial experience and skills. The bulk of ICT sector consists of small companies, which are mainly oriented to domestic market and not integrated into broader networks. Such isolation puts a threat to further development of SMEs (small and medium enterprises) segment of ICT sector, in particular in circumstances of intensive competition on EU internal market. Additional threat to better ICT sector performance relates to the lack of ICT experts with managerial experiences and knowledge, which seems to be crucial when companies exceed the level of small enterprises.

The following main **opportunities** to push ICT sector development in the future were identified. By providing adequate financial mechanisms (risk and seed capital funds, investment financing) creation of new start-ups can be encouraged. This would help ICT development, as start-ups are usually related to innovative ideas, which are basic factor for ICT development. Successful start-ups grow fast and are often acquired by larger companies to improve the range of solutions they provide. It is expected that owing to EU accession, inflows of FDI to ICT sector will increase, opening up the opportunity for the supply of advanced ICT services/solutions and know-how with spill-over effects for total economy. With the entry to the market of the providers of alternative telecommunications networks, competitive pressure on telecommunication market will increase thus enabling further expansion of ICT services. The availability of highly productive telecommunications and computer services provides another window of opportunity for dynamic growth of ICT services.

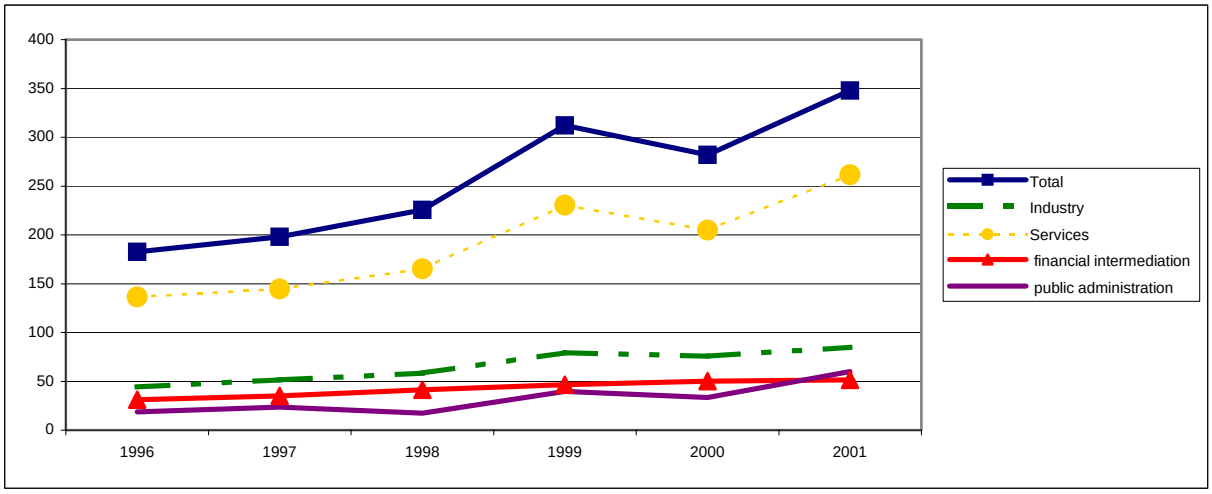
D. PRESENCE OF MOST RELEVANT ECONOMIC ACTIVITIES FOR IST APPLICATIONS

The spread of IST (Information society technologies) in different economic activities and diffusion of its applications is highly dependant on trends in sectoral distribution of ICT investment. We therefore start with the assessment of major characteristics of ICT investment since 1996.

D.1. Level of IT investment[50]

Investment in IT increased throughout the period 1996-2001, with the exception of the decline in 2000, which followed extraordinary growth in 1999 due to the millennium bug and the forthcoming introduction of value added tax in Slovenia. The share of IT investment in GDP increased from 1.2% 1996 to approximately 2% in 2001[51] (SORS, 2003). The growth of new IT investment in economy was driven mainly by service activities although other activities also invested in IT (Graph D1). Industrial activities increased the investment in IT (computers and software), from EUR 42 million to EUR 73 million. Table D1 reveals that industrial activities' investment in software increased much faster than investment in hardware: a similar trend as experienced in developed countries. Still, in Slovenia the amount invested by industrial activities in hardware was twice the amount invested in software. By 2001, the share of software accounted for 32% of total IT investment by industrial activities (in comparison to 11% in 1996). This tendency might suggest that industrial activities started to introduce computers to more complex business operations (like SAP, Baan, CRM etc.), apart from accountancy and bookkeeping.

Graph D1: Investment in new IT in the period 1996-2001, EUR million



Reference: Statistical Office of the Republic of Slovenia

[50] Data on investment in IT (computers and software) in the period 1996-2001 serve as the basis for the analysis as data on investment in communication equipment disaggregated by activities is not available. Data refer to new investment and do not include the expenditure on used equipment.

[51] This puts Slovenia far behind the EU average and most candidate countries. In 2001 the share of IT investment in GDP amounted to 3.8% in Czech Republic, 3.7% in Estonia, 3.0% in Hungary, 2.9% in Slovakia and 2.1% in Poland (Statistics in Focus, 2002).

In the period under consideration, the service activities' investment in IT increased at the same pace as in industry. However, in volume terms the IT investment by service activities was three times larger than in industry, both in 1996 and in 2001. Wholesale and retail, transport and communications, financial intermediation and public administration were the major investors in IT among service activities, each investing above EUR 40 million in 2001. While the share of investment in software by services activities was quite modest in 1996 it increased significantly by 2001, particularly in transport and communications, where it accounted for almost 50 per cent of the total IT investment. Since 1996 on, public administration gained the leading position among service activities in terms of IT investment dynamics and in 2001 also in terms of total amount of money invested in IT. The bulk of expenditure was related to the procurement of PCs and computer systems. IT investment by public administration increased from EUR 18.6 million in 1996 to EUR 60 million in 2001, with the strongest upward push in 1999 and in 2001. To put it in another perspective, in 2001 the amount of IT investment by public administration for the first time exceeded that of financial intermediation and almost equalled that of the total manufacturing sector.

The trends in IT investment seem to indicate that economic sectors are preparing for the introduction of IS with different intensity as confirmed by the comparison of shares of IT investment in total investment expenditure in 1996 and in 2001 (Table D1). Overall, the share of investment in new IT in total new investment amounted to 9.5 per cent in 2001, an increase of 1.2 percentage points since 1996. However, in some activities such as manufacturing, wholesale and retail, public administration and education the share of IT investment in total investment declined. The discrepancy between high growth of IT investment and decreasing share of IT investment in total investment by the public administration might indicate that this sector was in 1996 poorly equipped with the IT and needed dynamic investment although other investment increased as well[52]. In the past six years real estate and business services, transport and communications and financial services experienced much higher growth of IT investment than of their total investment expenditure. This suggests that service sector firms are technically well equipped for broader implementation of eCommerce although other preconditions have to be met as well to fully utilize technical capacities (e.g. organisational change, skilled and educated people as explained in the next section) Due to intensive interlinking of the service sector with other sectors wider use of eCommerce in services will also generate spill-over effects on other segments of economy and society.

If investment into communication equipment for which disaggregated data is available only since 2001 is added to IT investment in 2001 the share of ICT investment in total investment accounted for 14 per cent[53]. The bulk of investment in communication equipment was made by transport and communications, followed by electricity, gas and water supply and by public administration (Table D1).

D.2. The most relevant potential spill-over effects of IST

Regarding the potential spill-over effects of IST introduction the debate in Slovenia points to macroeconomic effects as well as to effects at the sectoral level. Some analyses argue that apart for investment in IT the successful catching up is a complex and demanding process

[52] Given the fact that Slovenia is a new state it is understandable that also investment to buildings was substantial and increased dynamically.

[53] This puts Slovenia at the lower end of EU member countries in terms of ICT investment intensity (OECD, 2003).

which requires a set of accompanying organisational, managerial and institutional changes if optimal benefits of new technologies are to be captured by transition economies (Bučar, 2001). Besides, this requires innovative and coordinated development and technology policies (Bučar, 1999). The ICT bears multidimensional impact for producer services and via their linkages with manufacturing and other services it increases the competitiveness of the economy in general. The ICT improves efficiency and quality of existing producer services, it introduces new producer services and new distribution channels for the supply of services. ICT also facilitates outsourcing of "non core" services thus significantly improving the competitiveness of enterprises (Stare, Bučar, 1999).

The public sector (public administration, education, health and social work) accounts for a significant share of value added in Slovenian economy (28.4% in 2001, Table C3) and it is also the largest user of IT. The fact that the public sector remains quite inefficient raised discussions on the possibilities of improving the public sector efficiency with the solutions provided by IT. Some authors emphasize that modern IT is only the infrastructure precondition for the change and renovation of processes in the public sector. Also, they claim that application of new IT in public services requires in the first place better skills and investment in people, which was neglected. The implementation of renovation processes in public sector so far confirms that change is very complex, due not only to open questions related to the content of change but also due to resistance of employees. Only co-ordinated approach to informatisation and reforms of public sector and administration at all levels can improve the quality and efficiency of public services (Vintar, 1998, Banovec, 1998, Setnikar-Cankar, 2001). To improve efficiency and quality of public services in the second half of the nineties public administration has to undergo informatisation, which in the first place requires renovation of structures and processes based on the introduction of advanced ICT.

As evidenced elsewhere in the world, financial services in general and banking services in particular are among the early up takers of new ICT, due to the expected large benefits. This trend has even intensified with the Internet and eServices. Although Slovenian banks lag behind developed countries' banks in the dynamics of introducing modern ICT and related services (Berdnik-Vozel, 2000) they are still well ahead of other sectors of economy. Internet banking is seen as the new distribution channel of banking services, which has many advantages, but the management of its introduction and of changes it brings is difficult (Bobek, 1999, Glogovšek, Beloglavec, 2000). New communication ways are established between banks and customers requiring adaptation in behaviour of both partners.

ICT is perceived as the key element in development of management methods and introduction of new management techniques. The introduction of new ICT requires constant innovation activities in organisation and in management (Bučar, 1999). Also, ICT has a central role in reorganising the division of labour in knowledge creation process. The introduction of ICT dismantles traditional managerial hierarchies necessitating flexible organisations (Močnik, 1999). Management of such changes poses major problems. Obstacles for successful implementation of new technologies in services management are evident and range from the resistance of management and employees to the resistance to changing the technology. Regarding new managerial methods induced by ICT, reference is most often made to total quality management (TQM) and business process re-engineering (BPR) and its tools.

While analysis on the impact of ICT on growth, productivity or trade for the Slovenian economy is only in its infancy (Dimovski, Škerlavaj, 2003) the literature survey and fragmented evidence on the experience of individual sectors and companies point to the fact

that the most relevant potential spill-over effects of IST refer to improved efficiency and competitiveness of companies via technological and organisational changes, better quality of products and services, increased variety of distribution channels, improved communication and interactivity with suppliers/customers, easier access to goods and services (in time and space).

Large ICT investment in the period 1996-2001 undertaken by different sectors provided solid preconditions for IST diffusion. Nevertheless, it has to be borne in mind that this alone is not sufficient for the utilisation of the opportunities provided by the ICT and that organisational changes, retraining of employees and acquisition of new skills need to be undertaken in parallel if full gains are to be captured from ICT. Such changes require far longer time to take effect than the sole purchase and installation of ICT. This fact is however often overlooked in planning the investment in ICT, be it at the level of companies, banks or public administration. The result is that in spite of large investment in ICT, efficiency might not be improved significantly. This was confirmed also by the evidence of Slovenian companies and banks. Furthermore, the cost of organisational change and accompanying training are very important element of the total budget of ICT implementation. Hence, data on investment in ICT should be interpreted with caution.

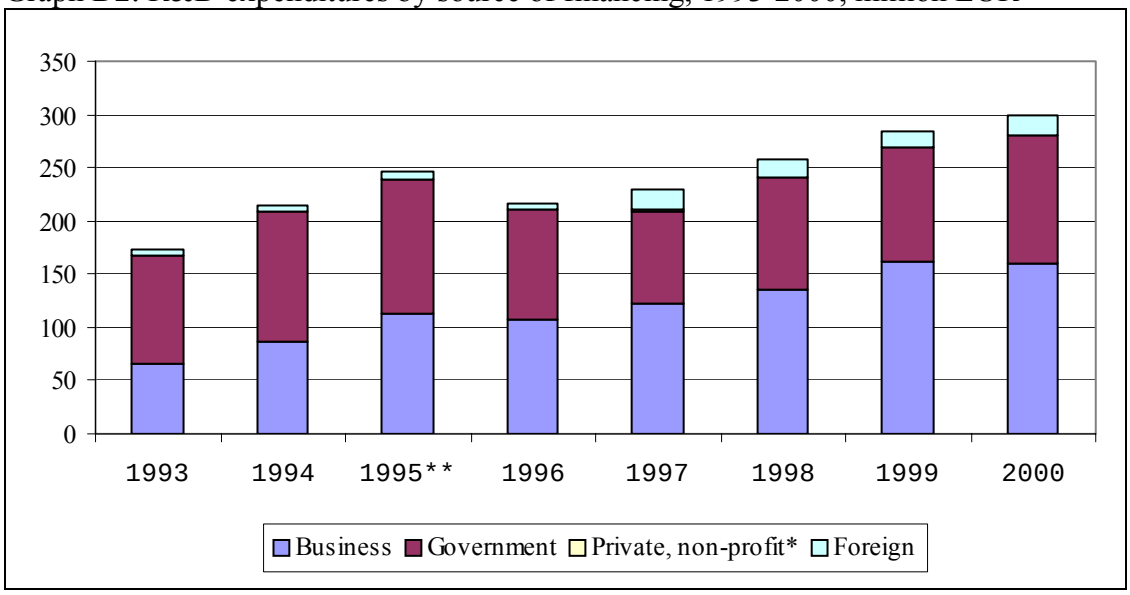
D.3. Trends in innovation and R&D

Slovenia's government has in the nineties followed the strategy advocated by orthodox liberal economists, where technological restructuring is to be led by market forces. The increased competition due to open and liberalised trade policy would by itself force the enterprises to act innovatively and rapidly introduce necessary technological and organisational changes. The role of the government was therefore seen primarily in focusing on elimination of obstacles to full competition (liberalisation, de-regulation) in all sectors of economy.

Even so, several measures to support technological restructuring and innovation were introduced, like the establishment of technology parks and centres, cluster initiative, financial support to R&D projects in business sector, etc. (see for details, Bučar and Stare, 2001, 2002). Often they were introduced as a follow-up of the recommendations of various foreign studies (for example: GOPA, 1994; Coopers & Lybrand, 1997), but with limited funding and insufficient overall coordination and systematic implementation or evaluation. So far, there has been no integral innovation policy, which would link the R&D policy, innovation promotion and financing and macroeconomic measures and systematically promote more innovative behaviour of Slovenian economy/ society.

Slovenia was rather successful in preserving its R&D system after the transition (Bučar and Stanovnik, 2001). Some decrease of funds was experienced only in the first years due to the collapse of large industrial conglomerates. The state picked up the financing of R&D (1.52% of GDP in 2000), which allowed survival of most of the major public research units (Table D2, Graph D2).

Graph D2: R&D expenditures by source of financing, 1993-2000, million EUR



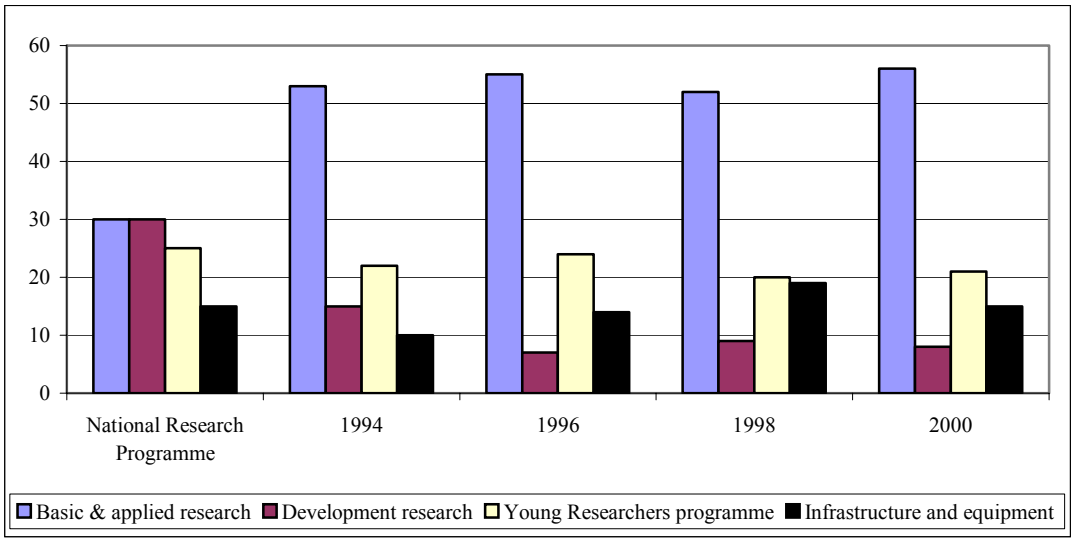
Reference: Rapid Reports on R&D for consecutive years, Statistical Office of the Republic of Slovenia
* the values are too low to appear in the graph.
**In 1995, the figures for R&D expenditures were overvalued due to the statistical error made in higher education.

The side consequence of increased share of public funds for R&D and the change of the financing system was reorientation of academic and public research organisations in direction of a more basic[54] research for which the money was available at Ministry of Science and Technology[55] (Graph D3) and looser ties with business sector. This has happened even though the National Research Programme, accepted in 1995, had set as one of its goals the increase of funds for development research.

The negative implication of these trends is the often criticised poor link between relatively well developed public research sector and business community needs: the latter is not satisfied with the level of response or the type of knowledge available in public R&D. The output of relatively well developed R&D sector is not contributing to the innovation process, since the researchers are evaluated by the number of publications in academic literature and not by transfer of knowledge and technology to business units. Relatively slow technological restructuring of business sector was part of the reason for modest demand for new knowledge and technology on the side of business. Particularly those, arguing for increased government's spending on R&D, were quick to point out the lack of motivation in business sector for investing in public R&D and innovation (Slak, 2000; Bavec, 1999).

[54] For definition of basic, applied and development research see Frascati manual, OECD 2002.
[55] The Ministry designed a special scheme of financing public research institutions called Programme groups. Under this scheme Programme groups, focusing on basic research, were formed, comprising Ph.D. researchers and if approved by the Ministry, received 5-year financing. This scheme accounted for nearly 85% of all the money available for research funding at the Ministry.

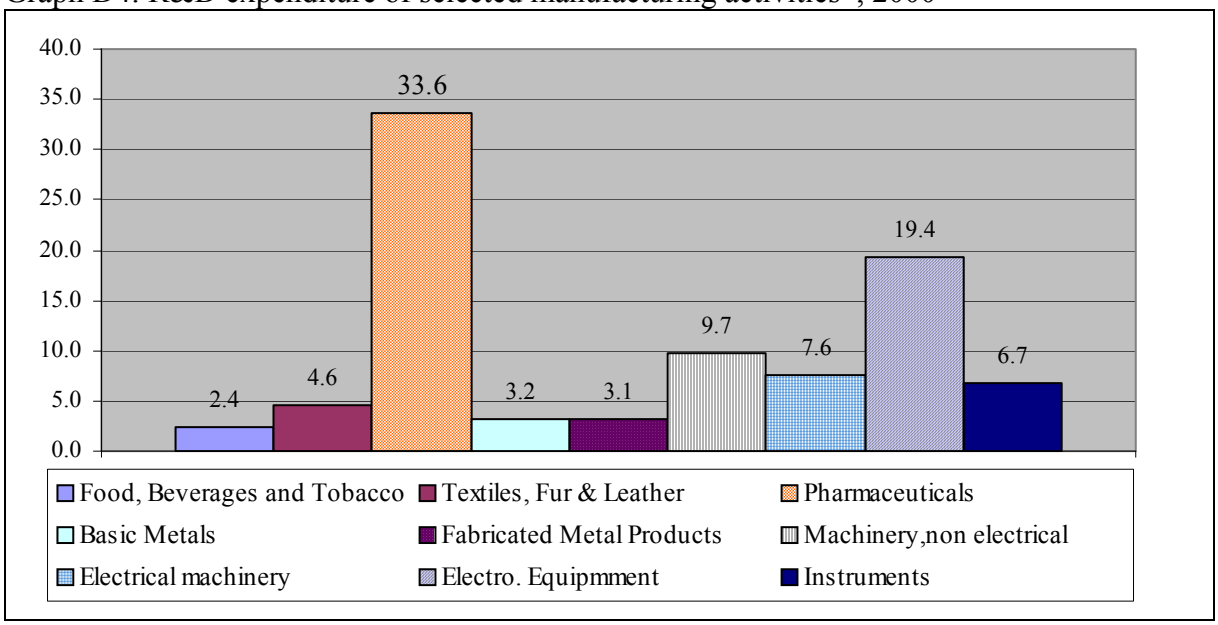
Graph D3: The structure of public funds for R&D, 1994, 1996, 1998, 2000, in %



Reference: Ministry of Science and Technology, 1995 for NRP, where the planned ratio between different types of activity was set; Min. of Education, Sport and Science, 2002: actual budget figures for corresponding years

In recent years the investment of business sector in R&D is growing (Graph D2) and by 2000 amounted to 0.87% of GDP, yet little of that money finds its way in the public research sector (Table D3). Also, the business R&D investment is concentrated in few sectors in manufacturing (Graph D4, Table D4), which have traditionally invested in R&D due to the nature of business they're in (like for example, pharmaceuticals or telecommunication). The service sector is only gradually spending more of R&D and innovation.

Graph D4: R&D expenditure of selected manufacturing activities*, 2000



Reference: Calculated from Rapid Reports on R&D for consecutive years, Statistical Office of the Republic of Slovenia
* as a % of total expenditure of manufacturing on R&D.

Formation of closer links between business sector and academic and public research units along with a stronger focus of the latter on the business needs are the issues in the forefront of

the ongoing debate on Slovenian R&D and innovation policy[56]. The new Law on R&D activity (passed by the Parliament in Oct. 2002) along with the planned establishment of a *Technology agency*, which should focus on promotion of innovation & R&D in business sector and a *Science agency*, focused on support of public R&D[57] and adoption of the new National research and development programme (under preparation) have the ambition to improve the links between R&D sector and business by stimulating more the applied and developmental research. This would also help channel some of the business sector R&D investment in the public sector and help in more dynamic technological restructuring. Many projects prepared for the financing via EU structural funds are in the area of increased competitiveness and innovation. Yet one of the key problems with Slovenian innovation policy so far has been the gap between declared and implemented, where several programmes have not been realised as planned (see in more detail in Bučar and Stare, 2002).

The recent results of *Slovenian Innovation Survey* (2003) (Table D5) were not encouraging in view of the innovation policy. Data (while not fully comparable with previous surveys due to somewhat changed sample) reflects no positive trends in relation to the results of earlier surveys, except for small increase in the share of innovative enterprises in the service sector. Slovenian enterprises are too slow in changing and innovating their production programmes, techniques, products and/or services. Wholly Slovenian owned companies introduce some sort of innovation to only 37% of their production programmes over a five-year period, those with majority foreign ownership 55%, while in the developed market economies the most competitive companies change 75% of their programmes during the same time period (Sočan, 1998).

Apart for major barriers to innovation process, which refer to the process of marketisation of invention, attitudinal and behavioural barriers need to be mentioned as well. The lack of innovation culture and risk-averse behaviour hampers innovation orientation not only in enterprises but also in the public sector institutions, and in the administration. Also, the understanding of innovation activity in Slovenia is still biased in favour of strictly technical issues. Hence improvements in organisational methods or business culture change are usually not deemed as instrumental to increasing the competitiveness of firms to such an extent as technical innovation. This refers in particular to services where innovation is usually not carried out through formal research and development, but mostly through organisational change and marketing methods. Poor perception of innovation potential in services is further aggravated by the historical neglect of services in transition economies (Bučar, Stare, 2002).

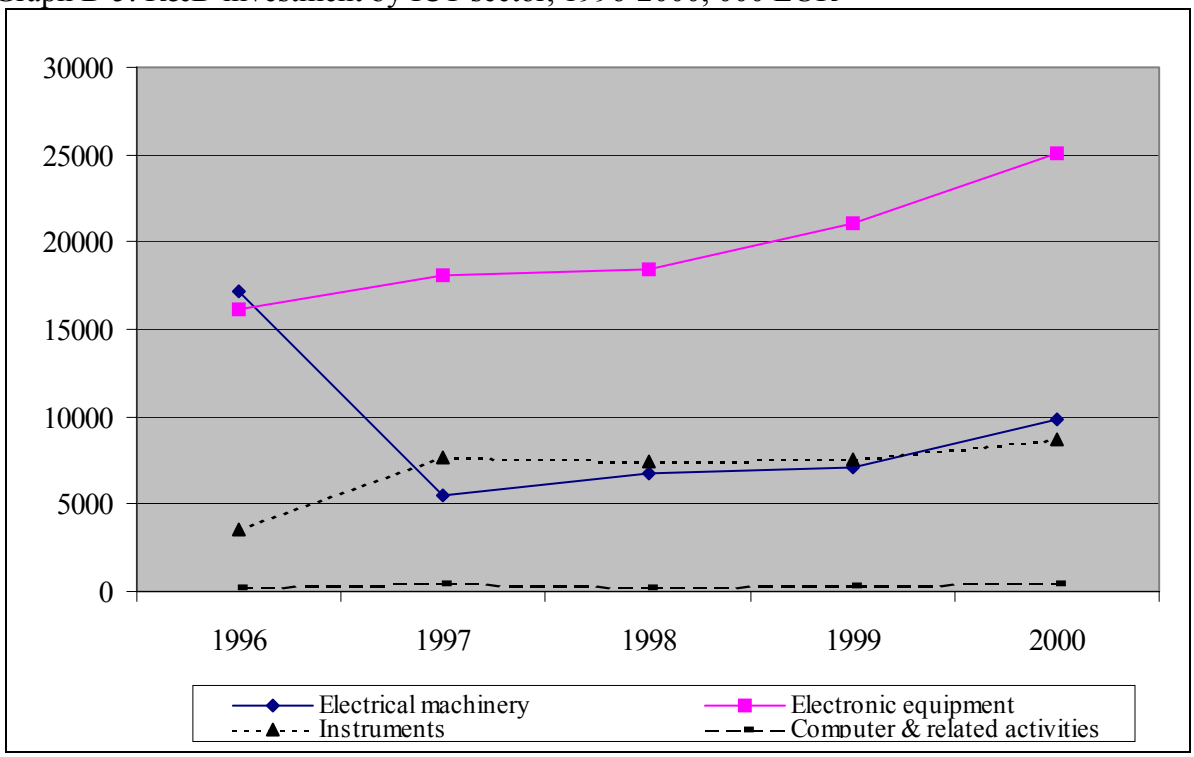
D.3.1. R&D and innovation in ICT related sectors

Investment in R&D of sectors like electrical machinery, electric and electronic equipment and the production of instruments accounted for nearly 30% of total business sector spending on R&D (Table D4). The time series of R&D expenditure by ICT sector show variations in some years, partly on account of different statistical methodology, and partly due to decline/growth of certain ICT-related activities (Table D6 and Graph D5).

[56] During both, the preparation of the new R&D law and currently, National research and Development Programme, the debate on what should be the priorities in public R&D and how and why should closer cooperation between business sector and public R&D be achieved among representatives of each community and the government is quite active.

[57] Exact tasks of the two agencies are to be defined in their statues, but neither has been established yet.

Graph D 5: R&D investment by ICT sector, 1996-2000, 000 EUR

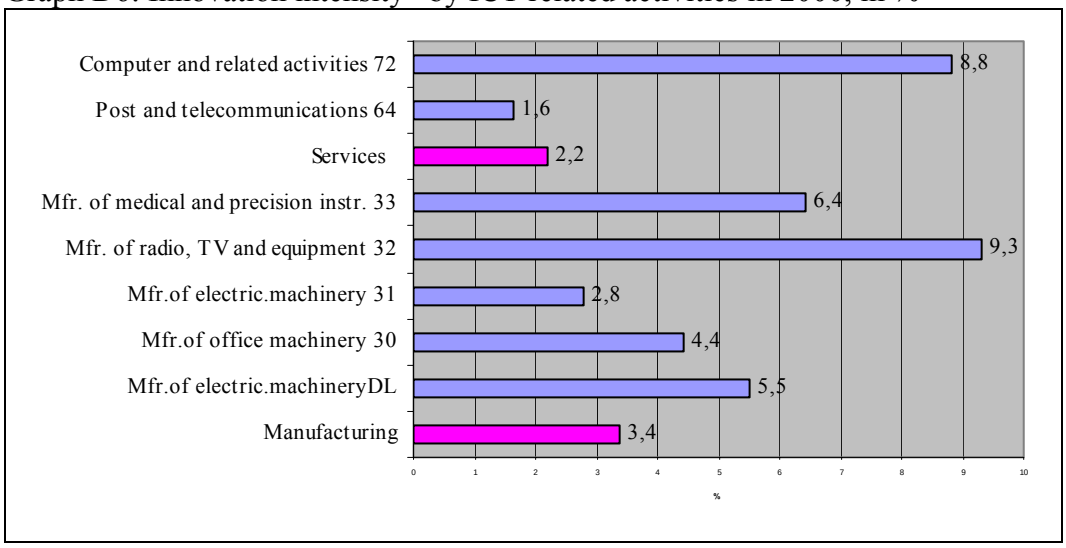


Reference: Calculated from Rapid Reports on R&D for consecutive years, Statistical Office of the Republic of Slovenia

In spite of dynamic growth in the number of ICT companies in service sector, there is little growth in R&D investment of these companies (Graph D5). Possible explanation of this fact is their small size: it is rather typical that small companies spend less on R&D than their larger counterparts. Another explanation is that these companies are mainly involved in installation and customisation of software and not so much in developing in-house software solutions.

Innovation intensity (relation between the innovation expenditure and turnover) of firms in ICT-related sectors (Graph D6, Table D7) is in many activities above the average both in manufacturing and services. As in R&D investment, also in innovation intensity the manufacturing of radio, TV and telecommunication equipment is leading with 9.32%. This activity is characterised by the highest share of innovative enterprises (over 48%) and high number of in-house research facilities. All these facts are reflecting at least two things: ICT sector is highly innovative and due to this, companies wanting to survive and grow have to actively invest in R&D and innovation. In the area of radio, TV and equipment the high innovation intensity can be attributed to one company mainly (Iskratel), where significant number of staff is engaged in R&D for Siemens.

Graph D6: Innovation intensity* by ICT related activities in 2000, in %



Reference: Calculated from Rapid Report on Innovation Activity, 2003, Statistical Office of the Republic of Slovenia

* Relation between the innovation expenditure and turnover

D.4. Impacts

The trends in IT investment reflect different level of readiness for IS among economic sectors. However, high levels of investment in ICT by the public administration have to be accompanied by organisational changes and training to fully absorb IT potential and to contribute to the efficiency of public administration. This approach should also convey the message to those in corporate sector who pay insufficient attention to investing in ICT. More needs to be done in demonstrating the positive impact of ICT on productivity and value added, but as it usually happens, it is the unsuccessful stories that attract most attention.[58]

Current innovation and R&D policy, while well equipped with various mechanisms to promote innovation, has not earned sufficient attention of the top economic policy makers when it comes to the funding of these mechanisms. This is why many planned activities focusing on innovation and R&D promotion in business sector are left non-implemented or the funding available covers less than 20% of the needs. Especially the links between relatively well-funded and organized public research and the corporate sector need to be strengthened. This would enable the researchers to contribute more fully to the economic growth and technological restructuring, including the diffusion of IST applications. Another obstacle to closer cooperation between public research and business is relatively low educational level of the R&D personnel in business sector (in 2000, only 172 researchers with PhD. out of total 2701 Ph.D. researchers employed in R&D units worked in business sector), implying that much of the internal research is more in the category of developmental projects than basic or applied research.

[58]Let us mention only two such cases: since 2001 the government had tried to commission an IT company to prepare on-line income tax software programme. So far, none of the public calls was successful: following an appeal on those not selected, the calls had to be annulled and the process started over again. Another such case is happening during summer 2003: Ljubljanska banka, the largest Slovenian bank, invested heavily in new IT system to help overcome a major account change (prescribed by legal regulations). Due to large number of account holders, the system is still functioning erratically, seriously diminishing the business reputation and causing some of the clients to actually leave the bank. Both cases achieve high level of media attention.

The overall weaknesses of innovation and R&D system (see some of the indicators in EU Innovation Scoreboard, 2002) apply also for the innovation and R&D in the areas relevant for IS. Here, too, the cooperation between research capacity in public research institutes and industry needs to be further strengthened, especially since many of the important actors in the ICT business[59] can help increase the sophistication level of the on-going research by providing new equipment and information from their global activities on the new solutions and research trends. The cooperation is somewhat stronger in the area of telecommunications, where researchers at public R&D institutions are traditionally more linked with business sector.

One of the weaknesses in the area of ICT public research is also lack of cooperation among researchers at different public R&D (be at research institutes or at the universities) laboratories, which leads to already fragmented capacity being further broken in very small units of three to four researchers per topic. Such small teams are unable to provide the kind of systematic support and complete solutions the industry would need. On the other hand, there are several Slovenian internationally recognized researchers in ICT field, who carry out their research as individuals in cooperation with colleagues abroad. A formation of networks of excellence- following EU VIth Framework example could be one of the ways to increase cooperation among researchers at academia and public research institutions and combine the knowledge of all in developing solutions and new technologies for the business.

The planned reorientation of current R&D policy towards strengthening business focus of R&D (The Guidelines for National Research and Development Programme, 2003) should significantly contribute to transition to the Information society. Identification of priority areas[60] has even in preliminary phase clearly identified information technologies and related applications as one of the major priority areas, not only because of current high level of investment in R&D by electro and electronic sector (telecommunication equipment)[61], but also because of expected spill-over effects of ICT diffusion and use on other sectors in economy. In the policy circles it is believed that promotion of IS-related research is one of the most important instruments in successful transition to IS. This is reflected in debates on "technology networks", which are to receive special governmental support and should combine industrial and research capabilities. ICT technology network is to be among priorities, since the current level of innovation and R&D activity of IS related sectors is already an important strength and should be build upon. The research should focus on ICT as specific new technologies, but should also include research on ICT enabled business solutions, eCommerce and eBusiness and development of new commercial and public services. The Guidelines for NRDP stress the importance of treating research in a more thematic fashion and not strictly by scientific fields, thus focusing on finding overall solutions: technical, economic and social to specific issue.

[59] With their ties to foreign partners or being from abroad themselves, like Microsoft Slovenia, or IBM Slovenia.
[60] Research project on technology networks, carried out by Institute of Economic Research as a background for the prepration of NRDP (Stanovnik et al, 2003).
[61] See Graph D4.

D.5. SWOT analysis

Strengths	**Weaknesses**
– Most of the sectors significantly increased IT investment in last six years – Maintaining the share of R&D expenditure in GDP in last five years – Adoption of strategic documents in the area of R&D and innovation, where IS-related research is identified as one of the priorities – IS related fields perform relatively well in terms of innovation and R&D intensity	– Organisational change and retraining related to IT implementation neglected – Weak links between public R&D sphere and business – Poor implementation of science and technology policies – Insufficient financing of innovation and R&D both by government and business, lack of appropriate mechanism – Weak innovative intensity of business sector as a whole – Low level of innovation activity in SMEs, both in services and in manufacturing, thus limiting the ICT uptake – Fragmentation of public research capacities in IS related fields
Opportunities	**Threats**
– High level of IT investment by the service sector sets the ground for the expansion of eCommerce – Improved links of public R&D with IT industries can raise the value-added in IT industries and services – A holistic approach to ICT related research will generate applicable results for business and public sector and promote ICT usage – ICT introduction will increase the efficiency of the private and public sector when coupled with organisational change.	– Further delays in technological restructuring of economy leading to slow uptake of ICT and therefore low growth – Non-coordination of technology and development policies will fragment resources and capacities for IS implementation – Slow restructuring of education sector (see Section G) will result in poor availability of experts integrating technical, managerial and organisational skills in IST applications, threatening the diffusion – Often found underestimation of complexity of ICT uptake

In the second half of the nineties Slovenia succeeded to maintain solid general conditions necessary for further development of IS. The major **strength** in that regard refers to IT investment dynamics and to the government R&D expenditure. Notwithstanding the fact that investment in motorway construction was the clear priority of governmental policies, IT investment kept the momentum, resulting in the dynamic expansion of ITC market. Particularly encouraging from the point of further diffusion of IST is solid innovation

capacity of IS related sectors which provide applications and solutions specifically adapted to local socio-economic context.

The above strengths are not so overwhelming when confronted with accompanying **weaknesses**. The most prominent of them refer to neglect of organisational change and retraining of skills aspects of IT investment, to weak cooperation between public R&D and business sphere which jeopardizes the chances of diffusion of local ICT know-how and solutions. Apart for limited expenditure of some business sectors for R&D, the lack of financial mechanisms for the support of R&D and innovation (e.g. venture and seed capital funds, underdevelopment of investment funding, see also Bučar, Stare, 2001) hamper faster introduction of new technologies directly affecting the pace of IS implementation. Additional deficiency refers to inadequate organisational structure of academic research capacities (fragmentation) in ICT-related field affecting their capacity to match the requirements of industry.

High IT investment by service activities provides infrastructure **opportunities** for quick take-up of eCommerce and other IST applications if other conditions are met. These concern the availability of necessary skills mix, particularly the combination of technical with organisational and managerial skills, the costs of telecommunication services, competitive market. The largest opportunities in regard to eCommerce seem to exist in public services and in particular in public administration, subject to the implementation of the adopted action plans. Due to public administration intensive interlinking with other segments of economy and society, eCommerce in that sector could produce significant spill-over effects, contributing to faster implementation of IS.

The continuation of non-coordinated policy approach to innovation and development will fail to provide right signals to major actors regarding future priorities and also IS implementation. This will **threaten** the efficient use of available funds. The low level of innovative activity in manufacturing and in services, especially in SMEs, might decrease the demand for advanced IST applications and consequently delay technological upgrading of Slovenian industries. Critical to that process is insufficient availability of skills and knowledge, which take account of multidimensional character of ICT implementation. A disappointment with ICT impact is often the result of underestimation of the complexity of ICT solutions, which require technological, but also organisational and human resource upgrading. Costs related to organisational change, training programmes for all, not just the technical staff, are often underestimated, which can lead to poorer results than expected. Such negative cases (receiving more publicity than the positive ones) may threaten faster uptake of more sophisticated IST solutions.

E. INFORMATION SOCIETY TECHNOLOGIES' (IST) DIFFUSION

E.1. General trends

While no systematically collected data on the use of Information society technologies (IST) in different service or manufacturing sectors is available, it could be presumed from the evidence in Section D.1. (Table D1) that sectors which have invested in IT more heavily are probably also the more intensive users of ICT. Accordingly, service activities should have much higher IST diffusion rates than industry, and among them wholesale and retail, transport and communications, financial intermediation and public administration should be in the forefront. Such approximation does provide some indication on IST diffusion, however our assessment of IST diffusion relies on the data related to the use of individual elements of IST (e.g. computers, telephony, Internet, eCommerce) in general or in the households, in public services and in the corporate sector. These data are collected by the research team at the Faculty of Social Sciences and were recently published also by the Statistical Office of the Republic of Slovenia as official data[62] (see Box E1). Where available, data on individual sectors are also presented.

According to numerous surveys, Slovenia ranks high or highest among the transition countries both in terms of telecommunications infrastructure and equipment, fixed and mobile lines, and in terms of number of PCs per inhabitant and Internet penetration (Statistics in Focus, 2002[63], ICT, Enlargement Futures, 2002). Recently published Digital Access Index (DAI) by ITU confirms high rating of Slovenia, which is the only candidate country to be categorised **among high access countries concerning ICT access**. DAI combines eight variables, covering five areas to provide an overall country score: availability of infrastructure, affordability of access, educational level, quality of ICT services, and Internet usage (ITU, 2003).

Another important advantage of Slovenia is high interest for IST services, which is the highest among EU15 and CC10. The analysis reveals that people in Slovenia are much more interested in the use of e-services than in the EU15. Slovenians are highly interested in on-line tax declaration (40% of Internet users vs. 29% in EU15), in on-line document request service (45% vs. 35% in EU15), in on-line car registration (42% vs. 38% EU15) or in on-line announcement of changes of address (SIBIS+, 2003). So far, this interest was not met by the supply and offers large opportunities for the future.

There is no data on regional differences in the use of IST in Slovenia however some analysis confirms that Ljubljana as the capital city has the above average IST penetration rates (Trček, Lenarčič, 2003).

[62] However, the Statistical Office publishes these data once a year and with a delay. Thus, we rely mostly on RIS data which are frequently updated.

[63] PCs per 100 inhabitants in 2001: Slovenia 27.5, Cyprus 25.0; Internet users per 100 inhabitants in 2001: Slovenia 30.0, Estonia 30.1; mobile phone subscriptions per 100 inhabitants in 2001: Slovenia 75.8, Czech Republic 65.9.

E.2. Penetration and diffusion of Information society technologies

E.2.1. Telephony

From the middle of the nineties on, Slovenia invested heavily in the modernisation of the telecommunication network. Fixed telephone network is fully digitalized and the penetration rates for fixed lines reached 50 lines per 100 inhabitants in 2002 thus more than doubling the penetration rate of 21 in 1990 (Table E1). In the past, the tariff structure was heavily distorted in favour of low tariffs for domestic calls, very low subscription rates (monthly rental charges) while tariffs for international calls and connection charges were very high (Stare, 1998). With the reform processes in the nineties and the approximation with EU laws, tariff rebalancing is being continuously implemented. Monthly line rental charge of fixed incumbent operator in mid 2002 amounted to 15.7 €/PPP[64] which was close to EU average. Prices of local and of international calls are below EU average (IBM, 2003). In 2003, further rebalancing towards increasing the costs of local calls was scheduled but not implemented due to possible impact on inflation.

Is seems that other costs of telecommunication services are becoming increasingly important for further penetration of Internet (e.g. interconnection charges for Internet providers and tariffs for leased lines set-up by incumbent operator of fixed telephony). In that regard the Agency for Telecommunications, Post and Broadcasting should efficiently regulate the market and provide competitive environment for all suppliers of Internet.

Analogue mobile telephony was introduced already in 1991 but its expansion was quite limited due to high costs of equipment, subscription and services. On the contrary, the penetration of digital mobile telephony advanced much faster. This was additionally spurred by the introduction of prepaid packages, driven by the entrance of the second operator on the market. While the penetration rate amounted to 1.4 mobile subscriber lines per 100 inhabitants in 1995, it increased to 88 in 2002 (including users of prepaid packages) (Table E1). In parallel to dynamic developments in both areas of telephone services, the number of applications for fixed telephony connection decreased substantially[65].

E.2.2. Computers and Internet

The availability of computers among population and households is rather good compared to other candidate countries (Table E1, Table E2). In the late nineties Slovenia easily matched the EU average in terms of number of PCs per 100 inhabitants, which was very important for fast Internet uptake. In 2000, Slovenia started to lag behind the EU average in terms of PCs penetration and in 2002 had 30 computers per 100 inhabitants.

Slovenia picked up the Internet use relatively early and reached the EU level in 1999 with 14 percent of population using Internet[66] (Table E1). However, the dynamic of Internet usage

[64] Purchasing power parity.

[65] The number of those who applied for the first time for fixed telephone connection in 2002 accounted to only 611 individual cases revealing that the demand for fixed lines decreased substantially from the mid nineties (Table E3).

[66] The measurement of Internet use is faced with severe methodological difficulties. It depends on how the Internet users are defined (daily, weekly, monthly use, general use) and on the population selected (total population, population above 12 or 15 years of age, population between 15-65 years of age). Depending on the type of users and of population group selected, the Internet penetration rate differs substantially and in

slowed down by the end of the nineties. Since 1995 the share of active users of Internet (those which use the Internet at least once per month[67]) in total population increased from 3 to 29 per cent in 2002 (Table E1). The analysts state that the **diffusion of Internet in Slovenia happened in three waves.** In the first wave, prior to 1995 the users of Internet were predominantly students and academic people who could use free access to Internet via Arnes (academic server). The second wave came in 1995 and 1996 when computer oriented users joined, together with the pupils from secondary and primary schools, due to the start of the programme of computer literacy (see Section E.2.6). Since 1997, the Internet using population became more diversified as the access to Internet from households begun to increase (Trček, 1999).

Box E1: Research on Internet in Slovenia (RIS)

RIS was launched in 1996 as an academic and non-profit undertaking at the University of Ljubljana, Faculty of Social Sciences, Centre for Methodology and Informatics, to measure and study the changes initiated by the Internet and new technology in Slovenia. Both, the governmental office (Ministry of Science) and businesses (large companies, primarily telecom operator) were highly interested in the initiative and in providing financial back up of the project.

The RIS project has systematically researched the IS issues from 1996 and it has become the leading and the most comprehensive Slovenian institution in this field. The representative telephone surveys are conducted regularly on a yearly basis among households, companies and educational institutions. A rich series of data has been established and over 60 substantial reports have been written on a variety of ICT related topics, from security, addiction, usability, mobile phones, hardware/software studies, e-commerce to eBanking, web-site visitation, eGovernment, tele-work, digital divide, ICT indicators etc.

The project RIS regularly, twice a year, measures the Internet penetration. In 2002, besides the standard definition of the Internet user - "Do you use the Internet (including Email, Mobile) - definition from the Eurostat survey applied in EU countries, June 2002, was applied in RIS June 2002 survey. Similarly, the Eurobarometer definition from December Flash Eurobarometer survey was also applied in the RIS December 2002 survey. The study shows serious discrepancies among the three definitions of the Internet users, which has to be taken into account in international comparisons of Internet penetration.

http://www.sisplet.org/ris/ris/index.php

Data for mid 2002 revealed that Internet penetration amounted to 35 per cent[68] while data for December 2002 again pointed to the steep increase in Internet penetration rate to 45 per cent of population over 15 years. However, the lag behind EU average of 53% remains significant (SIBIS+, 2003). The use of Internet in Slovenia is growing both for business and private

Slovenia ranged between 21 and 31 per cent in 2001 (Vehovar, Kuhar, 2001). As the methodologies and variables change frequently it is almost impossible to present consistent time series. This requires caution in the analysis of the dynamics of Internet use in individual country and in comparisons of Internet usage between countries.

[67] The measurement of Internet use in Slovenia is performed by the project Raba Interneta v Sloveniji –RIS (The use of Internet in Slovenia) within the Faculty of Social Sciences. As a standard, the users of Internet are those persons using Internet at least once per month - monthly users. Flash Eurobarometer and other EU sources define users of Internet as persons who use Internet in general (not mentioning the frequency of its use) from different locations.

[68] This refers to general users of Internet in the population over 15 years of age.

needs. For private needs, Internet is most frequently used for eMail, for search of general information and also for training and education (RIS, 2003a).

The main reason for Slovenia's lagging behind the EU is believed to be the costs of Internet access[69] (including the costs of PCs) and relatively low share of population with tertiary education[70]. The available data show that the latter are the most intensive users of the Internet. In 2001, 72 percent of the sample population with tertiary education were Internet users (Vehovar, Kuhar, 2001). Another obstacle, important for further expansion of Internet, seems to be the **lack of eContent and eServices** in Slovenian language attractive for different segments of users although the interest for IST services among the population is among the highest in the EU and in newly acceding countries. This is further confirmed by the fact that in Slovenia Internet is more often used for general purposes (e.g. search of the information, education) than in the EU while the opposite is true for advanced applications (e.g. to file the forms) (RIS, 2003b).

Currently, there are several Internet service providers active on Slovenian market. Most widely used is Siol (50% of households and two-third of the corporate sector), which is a subsidiary of national fixed lines operator Telekom, followed by Voljatel. The latter was established in late 2001 and provides free Internet access[71]. This has attracted quite a large number of Internet users as the total costs for Internet use decreased.

It seems that Slovenian Internet users are less concerned with online security than users in the EU although they are faced with similar difficulties (virus, Spam, credit card misuse). 63% of Internet users experienced difficulties with the security of Internet use in Slovenia and 52% in the EU. With regard to credit cards misuse only 1% of Internet users experienced troubles both in Slovenia and in the EU (RIS, 2003b). However, only 3.8% of Internet users in Slovenia would stop buying online due to security concerns while the respective share in the EU is 25% (SIBIS+, 2003). This might point to lower awareness of the security problems in Slovenia than in the EU, also confirmed by the fact that 22% of Internet users in Slovenia do not know, whether they have any kind of protection for Internet use. The respective share for EU Internet users is 9% (RIS, 2003b). Concerning the security problems experienced by Slovenian companies, the evidence shows some type of security breaches was faced by 75 per cent of Slovenian companies in the last 12 months (in 2002) compared to only 19 percent in the EU-7. However, this basically refers to viruses, while other types were in fact much less frequent in Slovenia (unauthorised entry, manipulation of software application, identity theft, on-line fraud) (RIS, 2003c).

Digital Divide Index[72] for Slovenia accounts 45%, meaning that the risk groups are 45% as likely to use PC/Internet (EU average accounts to 53%, newly acceding countries' average 42%). The smallest gap between the risk group and the average population is observed for gender (93%) while the gaps for income risk group and for age risk group amount to 43% and

[69] Dial-up Internet access costs for residential users are high due to high ISP charges (above EU maximum), but ADSL technology is used by approximately 1.3 per cent of households and is relatively cheap (IBM, 2003).

[70] It is interesting to note that the majority of the population in all candidate countries perceives Internet usage as requiring advanced computer skills (SIBIS+, 2003).

[71] Voljatel charges no subscription fee; users pay only costs of telephone calls. The company has an agreement with incumbent fixed telephone operator on the sharing of income resulting from telephone traffic of Internet users.

[72] Digital Divide Index is a compound indicator presenting the likelihood of risk groups (by gender, age, education and income) to use the computer/Internet in comparison to population average. The higher the value, the lower the divide.

35% respectively. The largest divide between the average population and the risk groups is evident in terms of education and accounts to 7.5% in Slovenia and 27% in the EU countries (SIBIS+, 2003).

E.2.3. eCommerce

The number of safe servers (Secure Socket Layer) apart for Internet penetration ratio is increasingly used as an indicator of ICT use. In 2000, Slovenia had 51 safe servers per million of population which was slightly behind the EU average (RIS, 2003a). It is believed that safe servers, data privacy protection, competitive costs of Internet access and reliability of systems are the most important drivers of eCommerce expansion. While these drivers are not yet sufficiently developed in Slovenia the shift from "normal" to eBusiness requires also the change in business culture and in organisational structures. This is not an easy task and takes longer period of time.

E-commerce is only in its infancy in Slovenia, looking from the supply or the demand point of view. According to data collected by RIS for the end of 2001, 20% of companies were selling goods or services via Internet and 12% were selling and buying via Internet. Anecdotal evidence suggests that eCommerce is introduced as a supplementary channel for selling goods and services, mostly by large companies that also organise the delivery of goods (e.g. wholesale and retail companies). The major suppliers of services via Internet are the banks, although other companies are also introducing parallel distribution channels (e.g. on-line tourist services booking, tickets sale for different cultural events). On the other hand, the share of Internet users that bought or ordered goods and services via the Internet in 2000, 2001 and 2002 amounted to 16 per cent, 12 per cent and 21 per cent respectively (RIS, 2003a). 18 per cent of Internet users carried out on-line banking in 2002 (Table E1)[73]. The comparable shares for the EU in 2002 amounted to 35 per cent for e-commerce and 31 per cent for eBanking, which confirms the lagging of Slovenia behind the EU (RIS, 2003a).

Nevertheless, new applications are being developed which will further eCommerce use among the companies. In 2002, the Chamber of Commerce and Industry[74] (CCI) started a project e-SLOG to develop and harmonise standards for the exchange of eDocuments between the companies (orders, dispatch documents, invoices, payments) and incorporating eSignature. The project will be implemented in consecutive phases and in four sub-projects. The final objective of the project is to link on a common ePlatform business sector, banks and public institutions to facilitate and encourage eCommerce.

E.2.4. IST in companies

Companies differ in the IST use depending on their size. The number of computers per 10 employees tends to be higher in smaller than in larger companies (Table E4). In 1996, companies differed significantly regarding the access to the Internet, with large companies taking the lead, while in 2002 these differences disappeared as almost all companies,

[73] While there is no data on the share of e-banking in total operations, the banks in Slovenia intend to increase the share of e-banking to 70 per cent of total operations. All major banks provide e banking.

[74] A large number of Slovenian companies participate in the project either as users of eCommerce or as suppliers of hardware, software and related solutions. Bank of Slovenia, Government Centre for Informatics, Tax Authority of the Republic of Slovenia, Statistical Office of the Republic of Slovenia are also cooperating in the project.

irrespective of size had Internet access. Companies with Internet access increasingly use it to order goods and services from business partners or to accept orders from partners (Table E4).

Recent survey of establishments with Internet access by size or sector reveals that Slovenia is rated very high in comparison to EU-7[75] (RIS, 2003c). To access the Internet, companies in 2002 most widely used ISDN access, followed by ADSL and modem access, while the access through leased lines declined significantly (RIS, 2003a). The share of companies with Web pages increased in all size groups and in 2002 around 60 per cent of companies had Web pages- this being similar to the EU-7 average. On the other hand Slovenia lags behind EU-7 average in terms of more advanced technologies, e.g. Intranet, Extranet, video-conferencing and EDI technologies (RIS, 2003c).

Another view on the use of IT in companies is provided by the results of the survey in manufacturing companies (Bučar, 2001). It suggests that IT is most extensively used in accountancy, bookkeeping and in stock monitoring (over 90 per cent of companies from the sample), while IT use is much lower in computer-aided programming or computer-aided designing of products (approximately 50 per cent of companies from the sample). The available evidence shows that only the largest companies, which have reorganised their processes use IT also to support their relations with suppliers or clients. The major obstacles for faster introduction of IT in the total production process are related to **deficient knowledge of IT by employees, lack of IT specialists in companies, lack of capital in general and relatively high costs of IT investment.** The study on ICT use in small companies reveals that these companies use fairly advanced IT to support some business processes, but only to a limited scale to support decision- making process or to achieve competitive advantages[76] (Werber, Zupančič, 2002). On one hand, PCs and Internet penetration in companies is quite high, while on the other hand the exploitation of ICT potentials is limited to individual business functions. This can be explained both by the lack of accompanying organisational change which integrate ICT to business processes in a holistic way and by the lack of interdisciplinary skills. This points both to deficiencies in education system (IT specialists do not get the knowledge on organisational and managerial changes that accompany IT introduction) and to underestimation of complexity of changes by the management of companies when introducing IT.

The empirical study on opportunities and threats of eCommerce based on the survey of companies revealed that companies are aware of eCommerce benefits and believe that those, which will be the first in introducing eCommerce, will gain substantial competitive advantages over the followers. Safety of data, protection of privacy of transactions and of personal data is considered as the main factors hampering e-commerce in Slovenia. As to the factors which could foster eCommerce the following were attributed the largest importance: use of secure electronic transactions standard, diffusion of new digital media (e.g. interactive TV, mobile telephony), legal framework in the EU that encourages confidence in e-commerce, competition among new suppliers of services (Pucihar, 1999).

eCommerce offers extraordinary expansion of opportunities for services trade domestically or in international trade. Its significance is much higher in domestic than in foreign trade of services, but for the latter eCommerce is an important way of improving rather modest

[75] Finland, France, Germany, Spain, Italy, UK and Greece.

[76] The survey included 122 small enterprises, which on average employed 5 employees. Out of the total, 23% of enterprises did not have computers.

tradability[77]. Although services have been traded electronically before (phone, fax, EDI) the Internet dramatically increased the scale and scope of such transactions both locally and globally. Indeed, the Internet facilitates services trade, extends the range of services, which are tradable, and transforms local services into internationally tradable ones (e.g. education). However, to take full advantage of eCommerce for trade in services, a country has to generate competitive services that can be exported electronically[78], apart from providing infrastructure networks and Internet access services. Recent analysis reveals that Slovenia and other candidate countries dispose of very limited capacity in services, which could be traded electronically (Stare, 2003a). These are only those sub-categories of services that are already to a large extent traded cross-border over communication networks (e.g. financial services, computer and information services, communication services and other business services). In fact, Central and Eastern European countries' exports of electronically tradable services in 2000 only slightly surpassed the value of those services' exports in 1993, while the share of electronically tradable services in total services exports declined significantly from approximately 43 per cent to only 23.6 per cent. This shows that the CEECs will be able to reap only modest benefits from eEnabled services exports in the future if they do not expand exports of the above mentioned sub-categories of services, which can be traded across the border electronically.

E.2.5. IST in households

In spite of the fact that the penetration of fixed telephone lines in households was rather high in the middle of the nineties it increased further and in 2001 reached 95 per cent of all households (Table E2). The share of households with computers in 2002 amounted to 58 per cent surpassing significantly the figures for 1996. **Household's access to Internet increased quite dynamically** since 1996 and in 2002 it accounted for 37 percent. Slower growth in 2001 is attributed to relatively high costs of equipment and of Internet access (Vehovar, Vukčevič, 2000). Dial-up access is most widely used mode of access to Internet for households as well as for companies, due to high charges for leased lines.

Slovenia experienced significant improvements in the share of households with Internet access during 2002 and 2003. Data for October 2003 reveal that 44 percent of households had Internet access, only 4 percentage points behind the EU (RIS, 2003b). This reflects more intensive competition between the Internet providers using fixed telephone infrastructure and those using cable, aggressive marketing of ISDN/ADSL by largest Internet provider Siol and the decrease of total costs for Internet access.

E.2.6. IST in education system

The situation regarding the availability of IST is worse in schools. The number of PCs in the elementary/secondary schools per 100 pupils was 4.5/4.1 in 2000, far behind the EU average. Improvement was marked in 2002 with 6.1/5.9 computers per 100 pupils, nevertheless the gap to the EU didn't narrow (Table E5). The access of schools to Internet improved significantly

[77] Due to their nature (intangibility, non-storability, need for close interaction between the producer and consumer), services face much higher barriers in international trade than goods. eCommerce decreases some of the barriers in foreign trade of services.

[78] The term electronic services trade and e-enabled trade in services is used to stress the importance of e-commerce as a tool/medium for foreign trade in services. It applies to only those services for which pre-purchase stage, ordering/payment and delivery can be provided electronically across borders.

since 1995 and in 2000 almost all elementary and secondary schools had Internet access[79] (Table E5). However, the share of pupils using Internet in schools in Slovenia amounted to 49 per cent (June, 2002) in comparison to 62 per cent in the EU. The lagging of Slovenia might be explained by the small number of PCs in schools and by the fact that only one fifth of the schools has high-speed access to the Internet through leased lines.

Steps are increasingly being undertaken to increase the use of ICT in education. Already in 1994 the Ministry of Education launched a six-years programme *Computer Literacy Education* to stimulate the use of computers in schools through providing finance and training. Overall, this programme was successful as it provided the additional finance to schools to buy computers and enabled the pupils to acquire basic computer knowledge. However, deficiencies remain and refer to availability of infrastructure (PCs, high-speed Internet access) and to deficient knowledge and skills of teachers to use ICT in the education process to a larger extent. Phase II of the programme named Information Literacy Education is currently being discussed and will integrate the activities of the Ministry of Education, Science and Sport and the Ministry of the Information Society, the local authorities and schools. Major initiatives to be implemented include: Slovenian network for education (SNE),[80] computerisation of the educational structures,[81] improving ICT education and training of educational staff, stimulating research and development related to ICT use in the schools, etc (ICT in education, 2003). Another action undertaken jointly by the two Ministries refers to eSchools (Box E2).

Box E2: eSchool Project

Within the framework of Project named eSchool, undertaken by the Ministry of Information Society in co-operation with the Ministry of Education, Science and Sport, the doors of the first four eSchools in Slovenia have opened in October 2001. E-schools are regular primary or secondary schools, however their use of ICT is much broader than in other schools, owing to better infrastructure and equipment. In 2001 and 2002 both ministries spent approximately EUR 590 000 on equipping the eSchools with hardware, software and Internet access. Each of the eSchools has local area network, wide area network (usually via leased lines), server, 11 computers, laser printer, colour printer, scanner and the related software. The main objective of this project is to ensure free access to Internet to students and teachers, as well as to broader public, since the eSchools are included into the network of freely accessible public ePoints with the aim of teaching the people to live with IS. In eSchools, users can communicate electronically and use other eServices, irrespective of their computer skills as mentors provide help and instructions on how to use the ICT.

At present (April 2003) there are 21 eSchools all over Slovenia although they are located primarily in places where ICT infrastructure is modest and where no other public ePoints are located. The activities (especially education, group work, discussion, workshops, etc) in the e-school are prepared by the schools themselves or in co-operation with the local authorities and companies. Non-school users mainly use eSchools to search for information on Internet, to work with the documents, for educational purposes, for mail service. So far, there are 25 non-school users per day on average in eSchool.

[79] The education and research institutions access the Internet via ARNES (a research and education network provider). The government subsidizes this service.

[80] SIO was introduced already in 1995 with the objective to connect the different servers with education content thus facilitating the access to available contents to education sphere and to general population.

[81] In this framework, the co-financing of the purchase of 60 000 network multimedia computers and peripherals is envisaged.

E.2.7. IST in health system

There is no data on the use of ICT in health sector, except for the data on investment in IT by the health sector in the period 1996-2001 (Table D1). These data reveal that health sector lags behind other public services in the dynamics of investment in IT. However, health institutions increasingly use IT to improve the efficiency of the system. One of the IT applications related to health sector refers to the introduction of health insurance card. It simplifies the procedures of health insurance rights' authorisation, which proved very useful and convenient for citizens and health professionals (see Box E3).

Box E3: Health Insurance Card

One of the more advanced segments of informatisation in health sector is the introduction of health insurance card. The project to develop and introduce the card was started in 1995 and from October 2000 the health insurance card is the only document applicable in the implementation of the compulsory and voluntary health insurance rights in Slovenia. This electronic document was issued to all persons dully covered by the compulsory health insurance in Slovenia, i.e. to the entire population of close to 2 million. The card is a means of easy and direct transfer of data between the insured persons, the insurance company and the health care organisations. Data electronically recorded in the card are accessible for reading only to authorised health professional card holders. Procedures associated with the card and the self-service terminals are fast and ensure data security. The health insurance card is a microprocessor card with a 16 kB memory. The card microchip is a miniature computer; this type f cards is called a smart card. Any reading from and writing to the card is controlled; the use of a health professional card and appropriate hardware and software is required.

Presently, the card only stores health insurance, identification and administrative data. Yet, the card system is available for the recording of additional medical data and can be implemented gradually. Following an initiative by the extended expert group for the field of transplants, the health insurance card is provided with a memory record designed to record an individual's voluntary commitment to posthumously donate organs and tissues for transplants. In June 2002, the legal bases prerequisite to implement the system were established. In accordance with these legal bases, technical and organisational conditions for system operation are planned for implementation in 2003. The self-service terminals used for validating and extending the validity of health insurance cards also support the ordering of convention certificates for health insurance during a stay abroad. This service is very popular among insured persons since they can order the certificates electronically and receive them by regular mail. ***http://www.zzzs.si/kzz/ang/enghtml/elementshtm/hic.htm***

E.2.8. IST in public administration

The traditional role of public administration as an investor and regulator is being abandoned and oriented towards developing efficient, cheap and user-friendly public services (Slovenia-the Information society, 1999). To achieve this objective public administration still has a long way to go. To improve efficiency and quality of public services, public administration has to pay much more attention to the renovation of structures and processes based on the introduction of advanced ICT. This requires more time and above all **additional training and improvement of skills** of civil servants.

The awareness of the significance of ICT for the efficiency of public administration is increasing. According to Economist (October 20, 2001) Slovenia is pioneering electronic government by holding most of its cabinet meetings online. Preliminary results of the analysis on the use of ICT in public administration reveal that Slovenian public administration is quite well equipped with ICT (PCs, Internet access). In the beginning of 2003, 94 per cent of workplaces in public administration had Internet access, while 87.5 per cent public administration bodies had web presentation (Berce, 2003).[82] However, the ICT infrastructure for the supply of eServices by public administration is only the precondition that needs to be supplemented with solutions and services for citizens and for public administration itself. At present, only limited range of eServices is available to citizens (information, downloading of official forms, communicating with public administration via eMail). Modest availability of eGovernment services on one hand and large interest which exists among Internet users for different e-government services on the other hand (e.g. on-line tax declaration, on-line document request service, on-line car registration, etc.), point to future opportunities in that regard (SIBIS+, 2003). It is believed that the implementation of e-government strategy and of the Action plan will spur the expansion of eGovernment services to citizens, businesses and public administration (see Section F).

E.2.9. IST in media

Media are increasingly adopting IST to support their regular activities as well as to broaden the scope of their activities thereby increasing the quality and variety of services they provide to customers. From a basic presentation on the Internet, media gradually adds more content and services to their electronic appearance in order to grasp other opportunities enabled by IST as well and increase attractiveness for potential customers. All the major newspapers and magazines have their Internet presentations with current issues available to readers either in entirety or as abstracts. Broadcasting companies supplying TV programmes also have presentation on the web and apart for daily news provide additional contents to the audience. Due to broad audience the media are well suited to popularise the use of IST and contribute to diffusion of eContent. Box E4 serves as an illustration how media promotes the attractiveness of eServices with interesting contents.

Box E4: Health advice over Internet

Some years ago, commercial broadcasting company POP TV introduced a weekly show on health into its regular TV news. The show provided short information on various illnesses, on novelties in healthcare system, on new medicines, etc. The response of the viewers was very positive and they could also obtain additional information related to health and disease from the website of the broadcasting company. Recently, POP TV launched an Internet website related to health advice (POP's doctors) that enables contacts with doctors from different disciplines by eMail. The visitors can ask for advice and consultancy regarding health problems and get answers by e-mail free of charge. The service provides for anonymity. At present, over 30 doctors provide consultancy and advice. The archives of questions and answers can also be accessed through website. The inquiry revealed that the major advantage of contacts with doctors via eMail, as perceived by users of services is: simple way of communication with doctors (39 %), anonymity (20%) and the access to advice of

[82] The analysis is based on the survey of different public administration bodies. It has to be taken into account that the response rate of ministries, administrative units and governmental bodies was very high (100 %, 95 % and 79 % respectively) and the response rate of local administration was low (18%). Further analysis at the local level is needed to reveal whether local administrations are less equipped or make less use of ICT.

doctors from different disciplines (18%). Short time for getting the answer is also much appreciated by users of the service. The interest for the service was very strong immediately after its introduction (in fact, some doctors were filled up with eMails) and additional doctors had to be included into the team. This case points to the fact that Information society services enabled by the Internet bring advantages to all parties involved. Media gets popularity and eventually wider audience, doctors additional patients and users of POP's doctors services get easy and free access to health advice. By enabling the access to the archive of questions and answers to all visitors of website the spill-lover effects are even broader. On the other hand, the perception of users of services that the website provides easy way of communication with doctors shows high extent of user friendliness of such services. This fact is very important for the attractiveness of Information society services among general population. In addition, such services are of largest importance for senior people who are not intensive users of Internet. Thus, interesting contents could also increase the familiarity of senior population with the new media or at least dismantle negative perceptions.
http://24ur.com/zdravniki/index.php?section_id=140

E.3. Impacts

The above survey of ICT use in different sectors suggests that Slovenian society was relatively quick in the uptake of new technology, particularly referring to the use of mobile telephones, computers and the Internet. Such developments are both spontaneous and driven by actions of the government or by the competition. The spontaneity is related to the "attractiveness" of new technologies for individual segments of the population. On the other hand, the government has already in 1994 launched the programme of computer literacy at the early stages of the education. Also, the introduction of competition to mobile telephony and consequent entry of pre-paid packages brought extraordinary dynamics to penetration of mobile telephony.

In the late nineties, the increase in PCs and Internet penetration lost momentum. This can on one hand be explained by excessive costs (of equipment, Internet access) and on the other hand by the low level of population with tertiary education who is usually the first to adopt and use new technologies (Murn, Kmet, 2003). The lack of eContent and eServices in Slovenian language also presents important barrier for the expansion of Internet use. Data for 2002 reveal that Internet penetration again gained dynamics and amounted to 45% of the population although the lagging behind the EU average is still substantial. eCommerce is developing very slowly due to different obstacles (lack of necessary skills, safety considerations), but also due to the lack of policy push in the implementation process of some projects.

Companies introduce ICT with different dynamics, depending primarily on their size and financial situation. So far, companies have not fully integrated the use of ICT in their complex business operations. ICT is used mainly in individual business functions and only best ranking companies have introduced IT as a part of comprehensive business processes reorganisation. The experience with the latter demonstrates that the emphasis is predominantly on informatisation of existing processes without the necessary organisational change and change of business culture. Besides, interdisciplinary knowledge related to ICT introduction to business process, is deficient.

There are examples of successful introduction of IST in some segments of the public sector that need to be upgraded in terms of content and in terms of linking different activities of the sector in a network which would enable fuller utilisation of IST. For example, the use of health insurance card could be extended to recording and storing additional medical data and not only to health insurance data, identification and administrative data. This would improve the efficiency of administrative procedures in different health institutions, make medical records of patients easily accessible to doctors and eliminate the inconveniences for patients when changing the doctor and transferring the personal medical records. Public administration has only in the last two or three years undertaken more vigorous actions towards intensive introduction of IST. The effective implementation of different actions (e.g. electronic filing of income tax and availability of broad range of eGovernment services) is critical to further dissemination of IST among the population and to building confidence of citizens in IST.

In general, the scope and scale for possible IST applications seem to be unlimited. At present, the capacity of IST and its diffusion in private and public sector in Slovenia is utilized only to a limited extent. Apart for infrastructure availability and costs, the capacity to absorb new technologies and services matters as well. This is determined by knowledge and skills of all actors involved, perception of the utility of services and of user friendliness of new technologies for the majority of the population. Knowledge and skills are not reflected only in the attained level of education, but also in interdisciplinary skills, in functional literacy and in life-long learning (more in Section F.2.).

It seems that the actions of individual actors (private sector, public administration, other public services) for the introduction of IST so far have been largely undertaken without much cooperation with other actors who could also be involved (e.g. public administration activities towards Information society implementation pay insufficient attention to the interests of Slovenian ICT industry in that regard). So far, only few projects have succeeded in integrating partners from different institutional settings and created networks that could make more efficient use of IST (e.g. eSchools enable the cooperation with local authorities and firms).

E.4. SWOT analysis

Strengths	**Weaknesses**
- Solid level of ICT infrastructure development and of equipment availability - Quick up-take of IST among the population (mobile phone, computers, Internet) - Actions of private and public sphere towards IST diffusion	– High cost of internet access – Low share of population with tertiary education – Lack of eContent in Slovenian language and of eServices – Education institutions lag behind in IST use due to modest ICT infrastructure and lack of skills of the staff – Lack of experts with interdisciplinary skills – ICT use in companies not integrated fully in business processes
Opportunities	**Threats**
– High interest for IST services among the population – Expansion of eCommerce via broadband access, adding new services and contents (in Slovenian language) – Creation of networks connecting the efforts of different actors with spill-over effects – Adoption of IST by broader population through government induced actions(eGovernment, eSchools)	– Continuation of fragmented, non-coordinated approach of different stakeholders to IS implementation – Lack of awareness of security problems related to eCommerce – Education gap as the major determinant of digital divide

Slovenia embarked relatively early on the path towards the adoption of IS technologies, which is to a certain extent the result of its development level and of the openness of economy. It also reflects high interest of the population for IST usage The **strength** of Slovenia refers also to the fact that quick up-take of IST was both spontaneous and driven by actions of the government (computer literacy education programme) or by introduction of competition (mobile telephony). Coupled with advanced ICT infrastructure and equipment such evolution provides rather solid preconditions for further diffusion of IST.

Weaknesses in regard of IST diffusion are detected in several areas. High costs of Internet access, low share of the population with tertiary education and poor availability of eContent in Slovenian language hamper faster expansion of Internet usage and of eCommerce. Inadequate ICT equipment in the education system (insufficient number of PCs per 100 pupils), coupled with deficient ICT skills of the educational staff presents further weakness for IS implementation as the education sector has the largest potential and responsibility to generate a pool of human capital with advanced skills for Information society. Business sector is well equipped with the ICT, however ICT capacities and applications are poorly exploited. This has to do with the lack of interdisciplinary knowledge and skills needed for better utilisation of the ICT. This factor seems to be crucial for IS implementation in private and public sphere.

The basic **opportunity** for the diffusion of IST refers to the expansion of eCommerce in all areas of private and public life (within businesses and within government, between these two partners and in their relations with consumers and citizens) as the interest for eServices is very high. New services and contents will increase the efficiency of businesses and the public sector and benefit other actors as well. Creation of networks of interested actors could be very instrumental in this regard. If the utility and user friendliness of new services and technologies is provided for, they could be adopted by large numbers of the population.

If the policies fail to provide a coherent and coordinated approach towards IS implementation at the national and local levels this may present a major **threat** to the efficient diffusion of IST in the future and to creating balanced Information society. All stakeholders (business sector, government, public sector, civil society) should make parallel efforts in encouraging IST use thereby exploiting the synergies. With the growing use of eCommerce, issues related to safety will increase in importance. If the awareness of safety problems is not raised and the threats not treated at all levels, damages may occur, undermining the confidence of businesses and individuals for eCommerce. As a consequence, all stakeholders could be deprived of benefits and IST diffusion might experience slower pace. Also, the education gap needs to be narrowed by a systematic policy approach towards increasing the share of population with tertiary education, towards acquisition of interdisciplinary skills, towards dismantling the problem of functional illiteracy and of low level of engagement in life-long learning. Failing to improve the situation regarding the education gap may become the main determinant of digital divide.

F. INSTITUTIONAL CAPACITIES AND REGULATORY BACKGROUND

F.1. Regulation of the major markets affecting IST industries

F.1.1. Privatisation

The process of privatisation was rather slow and gradual in Slovenia compared to the other acceding countries. The Ownership Transformation Act (OTA), as the core legal basis for mass privatisation scheme, was adopted already in 1992. Public utilities and financial institutions were not part of the scheme. The Slovenian privatisation concept has been a mixture of free distribution of shares, internal buy-outs with discount for employees and commercial privatisation. Foreign investors were able to participate in the privatisation programs under the Ownership Transformation Act as minority or controlling partners, but have not played an important role in the main privatisation process in Slovenia. This is to a large extent due to the characteristic of Slovenian privatisation concept that favoured internal buy-outs and free distribution of shares. On the other hand, most FDI projects in Slovenia in the period of privatisation have been realised as foreign acquisitions, in most cases of companies that were not directly included in the main privatisation law[83] (Rojec, 2001).

Although the privatisation process was mainly concluded in 1999, there still remains important non-privatised segment of the economy; most of it refers to the state-owned enterprises (public utilities) and financial institutions excluded from mass privatisation. So far, the privatisation process has not been implemented in the steel industry, the energy sector, telecommunications, railways, airport, the insurance companies and the two largest banks (in the process since autumn of 2001[84]) (Program of State Property Privatisation in the period 2003-2004, 2002).

With regard to the privatisation of Telekom Slovenije - fixed telephone operator, the privatisation process was originally scheduled to start in 2001. Due to drastically worsened international environment for telecommunications business the process has been delayed.

F.1.2. Capital market and financial services

Consistent with the gradual approach toward reforms in the financial sector, in the 1990's the priority was given to the re-capitalization and modernization of existing companies under the existing – and protected – regulatory framework, rather than creating a competitive environment. The changes in regulation, which were the driver of structural change in the

[83] This was effectuated through various modalities: (i) already before adoption of the OTA, on the basis of federal legislation; (ii) before and after adoption of the OTA, some Slovenian companies for various reasons sold off some of their subsidiary companies; (iii) there have been some foreign acquisitions of companies that were the results of court-led rehabilitation or liquidation procedures; (iv) some foreign investors formed a joint-venture company with part of an existing Slovenian company; (v) a specific case of foreign privatization is the transformation of existing contractual joint venture with foreign partners, formed in the 1970s and 1980s, into equity joint ventures; and (vi) the last type has been the foreign acquisition of already privatized Slovenian companies (Rojec, 2001).

[84] In May 2001, the Government endorsed a framework programme for privatisation of two state owned banks, NLB and NKBM. The first phase of privatisation of Nova Ljubljanska Banka - NLB (34% minus one share), the country's largest bank, was carried out in 2002. The process of selling 65% of shares in Nova Kreditna Banka Maribor (NKBM), the country's second largest bank, to a strategic investor started in spring 2002, but was stopped because none of the offers met the goals, settled in the privatisation program of NKBM.

Slovenian financial sector, occurred only during the last years. The adoption of the Banking Act and the Securities Market Act in 1999 and the Insurance Act in 2000 brought the opening of the market to foreign competition in banking, insurance and investment services area. Pursuant to this legislation, Slovenia continued to control the financial sector through the coordinated activity of three supervisory institutions: the Bank of Slovenia for banking, the Insurance Control Agency for insurance, and the Securities Agency for the capital market. The adopted legislation is completely harmonized with the rules on establishment, operation and supervision of financial institutions and markets with the EU law and other relevant international standards. In 1999, a new Foreign Exchange Act liberalized credit transactions for domestic firms, allowing them to borrow from non-resident banks. In addition to the above mentioned changes in legislation, a number of other measures, such as the elimination of foreign credit deposit requirements and the easing of regulations regarding custody accounts for foreign portfolio investors, helped to restore normal financial relations between Slovenia and the rest of the world and fostered competition on the domestic financial markets (Simoneti et al, 2001).

In terms of the basic indicators of the financial system's development, Slovenia belongs to the more developed among the accession countries, but lags far behind the EU member states. In 2002 the share of total assets in GDP was 86.4% (EU average 244.2% in 1997), the share of insurance premiums in GDP was 5.1% (EU average 8.4% in 2001), and the share of market capitalisation 23.4% (EU average 86.8% in 2001) (Murn, Kmet, 2003).

The most important financial intermediaries are banks, which have on average created more than 70% of the financial sector's value-added in the past years. The consolidation process in the banking sector evolved gradually, most intensely in 2001, when several amalgamations of smaller banks to the bigger banks took place. At the end of 1997 there were 28 banks operating in Slovenia, yet in the middle of 2003 there were only 20. The share of the biggest bank in the banking sector's total balance sheet has increased from 27.2% in 1997 to 35.5% at the end of 2002. The share of foreign ownership in banks' capital is also rising. At the end of 1998 it was at the level of 11.2 % and increased to 32.5% by the end of 2002, following several takeovers and the beginning of the privatisation process of the biggest bank (Nova Ljubljanska banka; see also Section F.1.1.).

The slow development of the non-banking financial sector was mainly influenced by the ownership transformation (privatisation) of the insurance companies[85], as well as by the concept of Slovenian economy privatisation, especially concerning the long-lasting transformation of authorised investment funds into normal financial institutions (that is into mutual funds)[86]. As regards, the capital market, its effectiveness is also partly determined by

[85] The Ownership Transformation of Insurance Companies Act is fundamental for the restructuring of the Slovenian insurance sector. Its main purpose was to determine the share of non-nominated (social) capital, which remained in some insurance companies after their transformation into joint stock companies, and to determine their present ownership structure. This act concerns Triglav insurance company (which has the highest market share, that is 42.7%) and Sava reinsurance company. The ownership transformation of Sava Reinsurance company is already finished and the share of non-nominated capital has been set at 99.87%. The procedure is still going on in Triglav insurance company. With the completion of ownership transformation of insurance companies, the ownership structure of the insurance sector is expected to be establisheds.

[86] In the process of privatisation small blocks of nontradable shares were distributed through closed-end funds (Authorised Investment Funds - AIF) to a large number of small Slovenian investors. However, although privatization had started already in 1994, it took eight years for AIFs to exchange all vouchers for privatized shares; the delay was due to the so-called privatization gap, caused by the fact that AIFs collected much more vouchers than there was available property for privatization. Moreover, upon the postponement of formal

low economies of scale and high unit costs related to this (National Report on Structural Reforms, 2003).

Changes in the regulatory framework, together with the forthcoming privatisation in banking and insurance sector, should increase the efficiency of the financial sector, which is one of the crucial determinants of the competitiveness of businesses and the public sector.

F.2. Regulation in the main services and infrastructures sectors

In the main services and infrastructure sectors, including telecommunications, the legislation is harmonised with EU rules and already in place. However, the implementation of accepted laws is rather slow as it requires setting up of new institutions (regulatory, supervising institutions etc.), skilled labour force and usually also additional financial sources.

F.2.1. Telecommunications

Owing to distorted tariff policy and insufficient investment into telecommunication infrastructure, the penetration rate in Slovenia lagged far behind that in the EU (Jagodič, Medved, 1998, SAEU, 1998). In the past, tariffication policy was not based on cost considerations, but on cross-subsidisation among different post and telecommunications services. The principal reason for lagging behind the EU telephone penetration standards was the inadequate regulatory framework which came under pressure for change only in the middle of the nineties in parallel to the harmonisation of legislation with the acquis.

Liberalization of the telecommunications sector has been gradual. At the beginning of 1995, the Slovenian Post and Telecommunication was split into Telekom and Post. In line with the 1997 Telecommunications Law, Telekom Slovenije was granted an exclusive right to operate public telecommunications network for fixed telephony and provide voice telephony services until the end of 2000. The development of infrastructure and the provision of services relied exclusively on government funding of the state-owned monopoly. The provision of telecommunication services for which the use radio frequency spectrum is needed, was liberalized in order to encourage investment, technical expertise and competition (Hrovatin, 2000).

In mobile telephony a subsidiary of the fixed telephony operator was initially running the two mobile telephony networks (with digital and analogue standards). At the end of 1997, the government granted a second licence for GSM mobile telephony, and the third licence in 2001, both through a public tender. More than 40 licences have been granted for the provision of Internet services. In order to make the fixed telephony operator more flexible and more responsive to the new competitive market environment, the government has started to divest its majority holding in Telekom Slovenije (the current share is 62.5%) by transferring the part of the State's share to authorised investment companies and to the pension fund.

transformation of AIFs into normal institutional investors or holding companies, AIFs' management companies have taken advantage of the situation, charging relatively high fees for managing the funds, doing little on restructuring of portfolios, and gradually becoming the main owners of the funds for a very low price. As a result, much more property from privatization ends up in holding companies controlled by management companies. In addition, many initial small investors in AIFs have sold shares at huge discounts to book value and will have no confidence in institutional investors for many years in the future (Rojec et al, 2001).

In 2001, a new Telecommunications Act was introduced to complete the deregulation of the market. The Act opened the fixed voice telephony market to competition by unbundling the local loop. It provided for the creation of a regulator, the Agency for Telecommunications, Broadcasting and Post (ATRP), which is mainly in charge of price monitoring and administration of network interconnections. The regulator is responsible for the granting of licences to new operators. The Agency started regulating the market in May 2002. The Ministry of Information Society remains in charge of telecommunications policy and of the main regulations in the sector. The 2001 Act also provided for the creation of the Telecommunications Council, an advisory body composed of members chosen by Parliament among telecommunications experts. The Council provides opinions and recommendations on telecommunications policy and affairs (Kmet, 2001).

The new Telecommunications Act liberalised both the construction of networks and the provision of basic telecommunications services: for providing public mobile radio services, fixed public telephone services and broadcasting services it is necessary to obtain a licence from the Agency, while for other telecommunications services only the notification to the Agency is required. The Act made the network accessible to all operators under equal conditions, for the purpose of network interconnection. To guarantee such access, operators with significant market power (those with 25% market share) have to ensure access to their networks and public services on a non-discriminatory basis and under transparent conditions.

Prices of telecommunications services are no longer administered. According to the Act they should be formed on the basis of cost efficient provision of services and cross-subsidisation of prices for different types of calls should be eliminated. The Agency supervises prices, in particular the prices of companies with significant market power. Universal service obligation is imposed on licensed operators. Telekom Slovenije is required to provide universal service without financial compensation for a period of at least two years after the entry into force of the Act. The Act assures the protection of consumers of telecommunication services, particularly regarding payment of bills for services and related disputes (the right to request the itemisation of calls), and the confidentiality and secrecy of data transmitted via the telecommunications equipment.

In parallel to Telekom's fixed telephony infrastructure there also exist infrastructure of Slovenian railways, Electric power transmission company- ELES, Company for motorways- DARS and cable operators infrastructure (at present there are 38 cable TV operators). It is expected that these companies will provide competitive pressure on the incumbent operator of fixed telephony in the near future. In January 2003 a new independent company Elektro.tk was established for managing telecommunication capacities of Slovenian electric power companies.[87] The process of establishing a daughter company of DARS started in the beginning of 2003. Slovenian railways are currently lagging behind in adjusting their telecommunication activity to the legislation (Dekleva Humar, 2003).

Regarding the international calls, in 2001 a foreign-owned company providing telecommunications services entered the market with Internet telephony services. It provides cheaper international calls than the incumbent operator for businesses and individual customers. It was followed by other providers of such services thus increasing competitive

[87] Pursuant to Telecommunication Act (2001), operators that beside telecommunications carry out other economic activity where they have prevailing position in the market, should establish an independent company to carry out telecommunication activity.

pressure and forcing the dominant operator to decrease the tariffs of international calls (Bučar, Stare, 2001).

Despite the fact that fixed telephony market was liberalised in 2001, Telekom Slovenije remains the only operator of fixed telephony for national calls. At the end of 2002 and at the beginning of 2003, two operators obtained the licence for fixed telephony, but they have not entered the market yet. The main obstacle for new entrants is high price of inter network connections. The Agency for Telecommunications, Broadcasting and Post (an independent regulator) whose main goal is to enable competition on the market has started setting up the cost-oriented prices. The process is expected to be finished by the end of 2004 (Murn, Kmet, 2003). It is believed that competition on the fixed telephony market would provide a new growth momentum for this sector in the future.

The implementation of the new Telecommunications Act appears to be quite difficult and slow process. The fixed telephony operator seems to be very innovative in trying to maintain its monopolistic position and in non complying to the regulation, the most obvious being delay in concluding agreements for inter network connections and in unbundling the local loop. Internet service providers and providers of telephone over Internet (VoIP) complain that Telekom discriminates against them in regard of the tariffs for leased lines in comparison to the Telekom's subsidiary SIOL (dominant Internet provider). Also, they argue that the Agency for Telecommunications, Broadcasting and Post does not regulate the market efficiently although it has the authority to do so (Finance, 2003). While this can to a certain extent be explained by the lack of experience and of qualified personnel[88] in the Agency it seems that the political will to implement regulation might also be lacking. Such developments do not benefit the development of telecommunications market in Slovenia and could hamper the implementation of different projects related to Information society.

F.2.2. eCommerce

E-commerce as the most important Information society service was legally settled in 2000 by the adoption of Electronic Commerce and Electronic Signature Act, harmonised with EU legislation. One of the most important aims of the Act is to encourage technological development of the eCommerce by abolishing all normative obstacles to eCommerce and by making eSignature (digital signature technology) equal to hand signature. The Act provides clear rules in the field of electronic message exchange, the use of eSignature and the rules, which settle the acting of the eSignature verifiers. The Act also enables international recognition of the electronic signature (Kmet, 2001). Pursuant to the law on eCommerce, two providers of eSignature are certified in Slovenia, the Faculty for Electrical Engineering and Computer Science and Government Centre for Informatics. However, eSignature has not been widely used till now, which may be explained by the lack of eServices requiring the use of eSignature. Nevertheless, rather early adoption of law on eCommerce can be assessed as a good foundation for further diffusion of eBusiness. It can also be expected that the use of digital signature technology will increase in the near future in parallel to wider range of eServices (for instance via implementation of eGovernment project) (see Sections B.4 and E.2.8).

[88] The main reason behind this lack of experience is that ATRP is a newly established institution. Its employees have almost no experiences in telecommunication market regulation from their previous jobs. They need a lot of additional learning (e.g. from regulatory authorities in EU member states) and practice to be able to regulate the market efficiently.

F.2.3. Intellectual property rights

Protection of intellectual property rights, such as patents, trade marks, copyrights, is crucial for increasing the competitiveness of ICT sector. As a member of World Trade Organisation (WTO), Slovenia respects all intellectual property rights and promptly accommodates its legislation in line with recommendations of international organisations in this field. In 2001, Copyrights Act was adopted to World Intellectual Property Organisation (WIPO) rules and new law on intellectual property came into force (Kmet, 2001).

In 1995, a subsidiary of Business Software Alliance (BSA) was established in Slovenia. Its main goal is to decrease the piracy level in Slovenia and for this purpose BSA actively cooperate with other institutions which fight against copyrights violations (police, public prosecutor's office, market inspectorate). According to BSA, the level of software piracy is still high in Slovenia, albeit falling. In 1999, 70% of computer software was illegal and the piracy level fell to 60% in 2001 (http://www.bsa.si).

F.2.4. Transport

In the field of transport, regulatory changes aimed to provide cost-effective and modern transport services have taken place only recently, while secondary legislation needed for the implementation of the new regulatory framework is being gradually formulated.

The new Railways Act was adopted in 1999 and set infrastructure access conditions and opened the way for the restructuring and the privatisation of Slovenian Railways. However, due to the resistance of trade unions, the law defining the reorganisation and providing the conditions for privatisation of Slovenian Railways (Act on Reorganisation and Privatisation of the Public Company Slovenian Railways) was adopted only in March 2003. According to the legislation, the railway services market will be opened to foreign competition at the time of entrance of Slovenia to the European Union.

In the road transport the main legislation bringing the harmonisation with EU rules is already in place. The most important is the Transport Contract in Road Transportation (adopted in 2001) defining conditions and the modes of operation of passenger and goods transport in inland and international road transport. According to the law, foreign haulers should obtain a special licence to carry out the transport of goods between two places in Slovenia (cabotage). After Slovenia enters the EU, the hauliers from EU countries will be able to carry out the cabotage under the same conditions as domestic hauliers (without a special licence). In passenger road traffic, an establishment of public commercial company for the provision of public line transfers of passengers (with buses) is envisaged by the law, but has not been implemented yet. For the time being, public bus line hauliers are being subsidised.

F.2.5. Energy sector

In the energy sector, the main regulation for the liberalisation of monopolistic activity and its harmonisation with EU rules was adopted already at the end of 1999, while in 2001 the implementing acts were adopted, regulating: (i) the electricity market, (ii) provision of energy services and (iii) prices for the use of electricity networks. Liberalisation of electricity market therefore started in 2001 upon opening up of the domestic market. At the beginning of 2002, part of the market for energy imports was opened ahead of schedule and since January 2003 the electricity market is fully liberalised. The liberalisation of the electricity market is

controlled by the Agency for Energy as an independent regulatory body. The Agency is also responsible for network-subscription fee, while retail electricity prices for final consumers are regulated by the government.

Electricity distribution companies are majority state owned (approximately 80%). According to the Program of State Property Privatisation in the period 2003-2004 (National Assembly Bulletin, 2002), the state intends to sell 25% plus one share by the end of 2004. The main goals of privatisation of electricity distribution companies are primarily to increase the competitiveness of these companies, to increase investment in electricity distribution, to enable transfer of knowledge and technology and to acquire financial resources for investment in electricity production companies.

In a short-term, liberalisation of electricity market is expected to have rather mixed impact on prices. The prices are likely to decrease for the biggest consumers who were successful bidders for the import tender, but in the rest of industry the positive effects are uncertain. The prices for tariff-system consumers (households represent approx. 70% of these) are expected to increase, since their rise have been restricted by the government for some years. In a long-term period, liberalisation of electricity market as well as privatisation of electricity distribution companies is expected to have a positive impact on the quality and range of services provided at competitive prices (Murn, Kmet, 2003).

F.2.6. eHealth

One of the characteristics of Slovenian health system related to IST is poor information and documentation system for both hospitals and patients. The problem was addressed in the Ministry of Health document Strategic Directives for the Period 2001-2004, which recognized the setting up of adequate information system as one of the priorities of health sector development. In 2003, the Ministry of Health accepted White Paper on Health Reform, where important emphasis was again given to development of information base in the health system. In this context, the White Paper envisages the establishment of a special department for health information science within the Institute for Health Protection with the following tasks: elaboration and implementation of health information policy, enforcement of information standards, data collection and data processing.

The objective of the White Paper related to IST is also related to upgrading the health insurance card (see Box E3), which currently stores health insurance, identification and administrative data. The process of upgrading the card contents with all data on health protection of each citizen will be implemented gradually in next 5-10 years. The project has already started and at the moment some elements of "new eHealth card" are already prepared (data on allergies, issued medicines and other remedies).

F.2.7. Media

In recent years internet has become an important media, which needs to be legally settled. In Slovenia the main regulation concerning media is the Media Act adopted in 2001. One of the novelties of the Media Act, compared to the law that regulated this field before 2001, is its definition of media, which considers also electronic publications. According to the Act, electronic publications are media, which are used by legal or natural persons to transfer media contents via computer connections.

F.3. Regulation of the IST based public information and services sector

An important step to foster the implementation of Information society is to create a modern and efficient state administration capable of providing a wide range of public services to economic agents and individuals through information and communication infrastructure. In line with this guideline, **Strategy of eCommerce in Public Administration of the Republic of Slovenia** for the period 2001-2004 (SEPA-2004) was adopted by the government in February 2001. The Strategy was prepared and is being coordinated by Government's Centre of Republic of Slovenia for Informatics (GCI), which is responsible for the planning, consultation and formulation of methodological and technical solutions for developing the informatics infrastructure of state organisations. In October 2002 the GCI prepared the Action Plan E-Government up to 2004 which defines the objectives, determines the mechanisms for implementation and monitoring of SEPA-2004.

In 2001, the Government's Centre for Informatics established a web portal for eGovernment, providing information and services to citizens, businesses, employees in public administration and institutions in public administration (http://e-gov.gov.si/e-uprava/english/index.jsp). The main objective of the portal is to provide information and services from different public administration units and to enable its users single access to all public data bases, administrative procedures and corresponding forms. For the time being the portal mostly provides information to citizens while only one eService is available (the citizen can electronically apply and obtain copies of attestation from the register-office)[89]. To fulfil the goals set up by the SEPA the public administration will have to overcome several organisational and technological difficulties (Skrt, 2003). Since public administration influences also the private sector, it is expected that the implementation of the SEPA will indirectly have even bigger influence outside public administration (Bučar, Stare, 2001).

The Ministry of Information Society actively co-operates in the implementation of the tasks specified above with other governmental bodies in various programmes aimed at improving the informatisation of Slovenia. As explained in Section B and E, many new activities were introduced in the short period of its existence (since 2001).

Beside the regulation, which is directly related to the IST industries, some other regulation may also have a positive impact on the future development of IS in the country. One of recently adopted laws that will encourage the use of Internet and other Information society services is the **Act on the Access to Information of Public Character** (2003). It defines the procedure of free access to information of public character at the disposal of public administration bodies. Pursuant to this Act, public administration bodies are obliged to publish on their web sites the following information of public character[90]: (i) regulation related to their field of work, (ii) programs, strategies, views, opinions and similar documents related to their field of work, (iii) proposals of regulation, programs, strategies, (iv) public procurement documentation, (v) information on administrative services and (vi) other information of public character.

[89] The Administrative Unit of Ljubljana provides information and services to Slovenian citizens and foreigners on official matters in electronic form. One can find instructions, costs, working hours, forms and price lists for the following matters: associations, citizenship, firearms, personal identity card, personal names, marriage, passport, residence, events, registration of vehicles, birth, death, foreigners, driving licenses, and driving tests.

[90] Details, such as terms of publishing information on the Internet, will be set up in implementing regulation, which is not accepted yet.

F.4. Impacts

Economic policy should create favourable economic conditions for IS development. Notwithstanding the fact that the transition to a market economy is almost accomplished in Slovenia, serious efforts should be made to complete the privatisation process and to increase the efficiency of financial market. There remains important non-privatised segment of the economy, most of it refers to state-owned enterprises (public utilities) and financial institutions. The level of development of Slovenian financial sector is modest, as the main structural reforms in this sector occurred only during the last years. However, changes in the regulatory framework together with the forthcoming privatisation in banking and insurance sectors seem to be promising with regard to increasing the financial sector efficiency. The latter is crucial for the competitiveness of the economy and bears strongly on the environment for IS development.

In the main services and infrastructure sectors, including telecommunications, the legislation is harmonised with the EU rules and already in place. However, the implementation of accepted laws is rather slow as it requires setting up of new institutions (regulatory, supervising institutions etc.), skilled labour force and usually also additional financial sources. The implementation of regulation in telecommunications and related institutional capacity are lagging behind, postponing further the efficient functioning of the market. In addition, fixed telephony operator is trying to maintain monopolistic position and is very slow in complying with the regulation. Such developments may seriously hamper dynamic development of the telecommunications market and introduction of new services, which seem to be the drivers of ICT diffusion and Information society implementation.

Beside the regulation, which is directly related to the IST industries, some other laws and documents have been accepted and projects have been started recently in Slovenia, such as the Strategy of e-commerce in public administration of the Republic of Slovenia, Act on the Access to Information of Public Character, introduction of web portal eGovernment, eHealth card, eSchools and eCities[91] projects. These are quite big and complex projects, which, if implemented smoothly, could have a major positive impact on further development of Information society.

[91] Currently, the most important activities within the project eCities are introduction of eBusiness in local communities and development of uniform e-business services on the local level.

F.5. SWOT analysis

Strengths	**Weaknesses**
– Adoption of legislation in telecommunications and its harmonisation with EU rules – Early adoption of Electronic Commerce and Electronic Signature Act – The government has adopted strategy of IS development and initiated several projects aiming to enhance Information society development (eGovernment, eHealth, eSchools, eCities)	– Slow implementation of fixed telephony market liberalisation – Postponing privatisation of incumbent operator of fixed telephony – Lack of skilled and experienced personnel at the Agency for Telecommunication, Broadcasting and Post
Opportunities	**Threats**
– Full implementation of defined projects and strategies in public sector and full liberalization of telecommunication market – Improvement of human resources at regulatory bodies needed for efficient implementation of regulation	– Weak political will and commitment to fully implement liberalisation of telecommunications and implementation of strategies and policies aiming to enhance IS development

The main **strength** in the field of regulatory background and institutional capacity related to Information society is adoption of legislation in telecommunications and in other Information society services, which is harmonised with EU rules. The Telecommunication Act that completed deregulation of the market was adopted in 2000. eCommerce, as the most important Information society service, was legally settled in 2000 by the adoption of Electronic Commerce and Electronic Signature Act. Both regulations are fundamental for IST development. In addition to this, government adopted Strategy of eCommerce in Public Administration of the Republic of Slovenia, which is an important step to foster implementation of IS by providing a range of public services using ICT. It has also initiated several projects aiming to enhance Information society development, for example eSchools, eCities.

Weaknesses in that regard mostly arise from slow implementation of adopted legislation, deficiencies of human resources in ATRP and postponing privatisation of incumbent operator of fixed telephony. Despite the fact that regulatory framework for fixed telephony liberalisation was set up in 2001, Telekom Slovenije remains the only operator for national calls and is very slow in complying to the regulation, the most obvious being delay in concluding agreements for inter network connections and in unbundling the local loop. An important impediment to faster implementation of regulation is lack of skilled and experienced personnel in independent regulator, which is therefore not able to regulate the market promptly and efficiently. Furthermore, privatisation of Telekom Slovenije has been postponed for several times because of deteriorated international environment for telecommunications business. Both, lack of competition and delaying privatisation seem to be crucial for faster development of telecommunications.

A major **threat** related to regulatory background and institutional capacities that could stem Information society development is lack of political will to complete deregulation of fixed telephony market and to implement strategies and policies to enhance IS development. Although slow implementation of regulation is mostly linked to deficiencies in human resources in the ATRP, it also seems that political will for full de-monopolisation is lacking as well. Slow implementation of deregulation of fixed telephony market would result not only in expensive telecommunication services, but also in lower quality and range of these services. Together with slow or incomplete implementation of IS strategies and policies this would have a negative effect on IST diffusion in general for both public and private sector as well for civil society.

Major **opportunities** regarding regulation and institutional capacities are seen in full and accurate implementation of defined strategies and projects in public sector as well as in full and accurate implementation of regulation in telecommunications. As a member of EU Slovenia will be encouraged to fully implement its regulation and to further adjust legislation to current changes in EU rules. Simultaneous adjustment of regulatory framework and its prompt implementation could give impetus to telecommunications market development. Also, realisation of eProjects and strategies started or adopted by the government would spur ICT diffusion not only in the public sector but also in the private sector and in the civil society at large. Further opportunity for better functioning of the market may be seen in human resources improvement at regulatory bodies. Lack of sufficiently qualified and experienced personnel is in particular evident in the ATRP, which has the authority to regulate the market. Highly trained personnel with learning by doing experiences could improve the efficiency of market regulation, which underpins smooth transition to Information society.

G. EDUCATIONAL SECTOR

G.1. Main characteristics of educational system

The education level of labour force in Slovenia, measured by the average years of schooling (10 years in industry; Murn, Kmet, 2002), or by the share of employees with tertiary education (14.8 per cent) (EU Scoreboard, 2002) is not sufficiently high to guarantee a smooth transition to knowledge economy. This means that the education level and the level of skills are lagging behind the current demands of technological development. New technologies and services require highly educated and skilled employees, while the number of non-skilled blue-collar workers is rapidly decreasing. The transition to a more service-based and more knowledge-demanding economy has already been reflected in the structure of demand for labour, where better educated and skilled labour is asked for. This is shown on one hand in the unemployment statistics and on the other in registered employment opportunities. Among unemployed, the share of non-skilled workers with very low or no education dominate (the figure of 47% of all registered unemployed remains constant from 1998 on in spite of various training programmes (Autumn Report, 2002), illustrating that the unemployment in Slovenia is largely a structural problem. Just the opposite is the composition of demand for new employees, where a very different type and level of education is sought (for example at least basic computer literacy)[92]. These trends are gradually being incorporated in the re-skilling and re-training programmes offered by the Employment Agency.

The attained education level of population reflects some regional disparities, especially once tertiary school education is analysed[93]. The figures for most regions are close to the average, but the attained education in the region with highest score and the one with the lowest varies significantly. The Central region had 20.2% of population with tertiary education, while the lowest score was achieved in Pomurje (East of Slovenia), where only 5.7% of population had tertiary education (Pečar, 2002).

While there seems to be growing general awareness of lack of required knowledge and skills, action is not yet taken with sufficient determination and intensity. Out-dated education systems and programmes are an important obstacle to the transition to knowledge society and a thorough reform of educational and training system from kindergarten to the university is gradually being implemented. Slovenia is introducing a nine-year elementary school and is pushing for reforms at high school level (change of curriculum, change of teaching methods, better mobility of pupils between different types of secondary schools, etc.), but more needs to be done[94] in the area of university education and especially in life-long learning (Bučar, Stare, 2003).

The greatest contribution to the raising educational level in the 1990s came from the significant increase in participation rates of young people in education. The share of

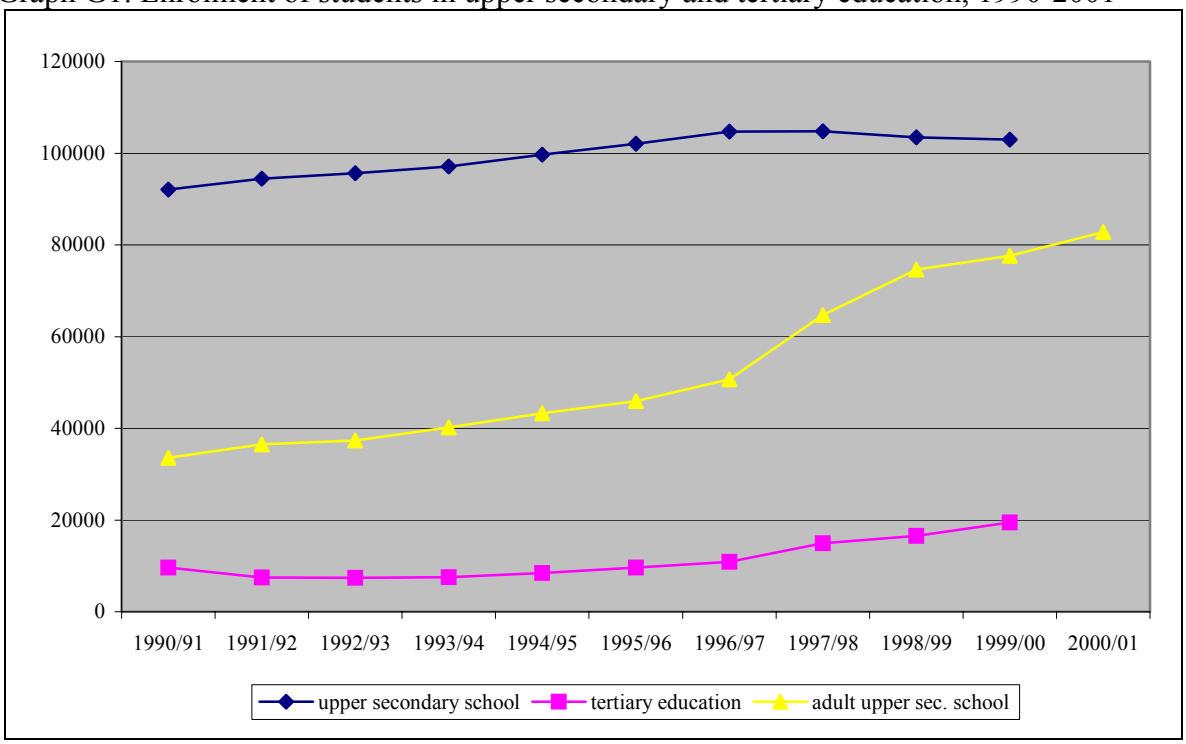
[92] A random check of job opportunity announcements in major local daily, showed that out of 77 new openings, 76 were in service sector and only 1 in manufacturing. 53 jobs required university degree, 18 secondary level education. For 56 out of 77 positions the employers specifically requested computer literacy.

[93] At least two reasons can be mentioned: one is the fact that tertiary education is mostly organised in Ljubljana and Maribor, with graduates often remaining in the cities. The second reason is that the employment opportunities for people with high education are better in urban centres than in more remote regions.

[94] At University level, restructuring of curriculum is slow and requires complicated procedure, interdisciplinary approach is lacking, teaching skills are left to individuals, etc. More also needs to be done to implement the Bologna strategy.

generations involved in the education system for longer periods of time is increasing at all levels. Nearly all of pupils (97.9 per cent in 2002) go to upper secondary schools after elementary school (Table G1, Graph G1). The share of university students in Slovenia is comparable to the EU countries – post-secondary education enrolment rate has exceeded 50 per cent in 2002. This means that younger generations stay in education longer and exit the education system higher qualified than previous generations.

Graph G1: Enrolment of students in upper secondary and tertiary education, 1990-2001

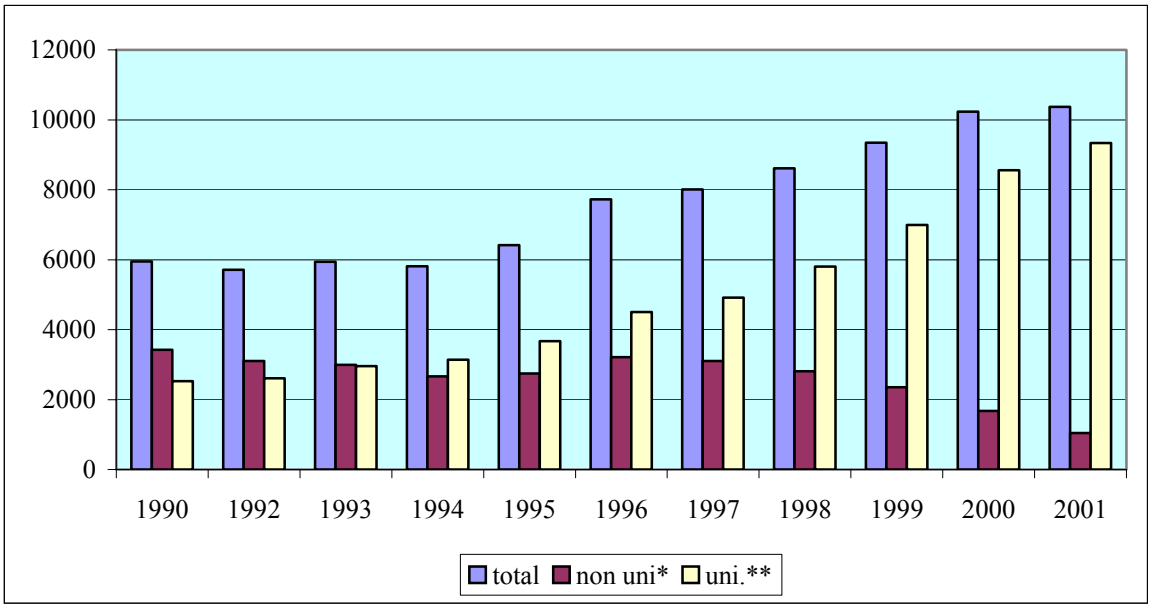


Reference: Statistical Yearbook for selected years, SORS

While the number of students of University level education grows (Table G2), this has not been true to the same extend for the resources (financial resources, professor/student ratio and in available physical space). This means that quantitative growth of student population was not followed by quality growth of studying, which is a common complaint both among the students and professors. Additionally slow is a programme and organisational change of universities, where approach to a more interdisciplinary and cooperative study is often being blocked by rigid rules of academic world. A relatively common European trend in student enrolment towards social studies, economics and law on account of natural sciences and engineering[95] is present in Slovenia, too. Some attribute this to downturn in manufacturing, while others criticise technical universities as being unable to modernize their programmes and link them more with technologically-advanced industries. One of the reasons for staying longer in education (average duration of study at the University is 6.5 years), also for enrolling in post-graduate studies, is the fact that it is more and more difficult for the young graduates to find employment (see the high rate of unemployed among the youth (Table A9).

[95] With the exception of IS related studies, where demand is exceeding the number of student placements offered.

Graph G2: Number of graduating students from tertiary education, 1990-2001



Reference: Statistical Yearbook for selected years, SORS
* two year higher education programme
** university programme

G.2. Key educational issues related to labour market

From the point of view of educational system and the corresponding human capital, the Slovenian labour market is faced with the following problems (SPD, 2003):

a) **Lower share of adults (above 25 years) with finished tertiary education.** The proportion of people with college or university education in Slovenia in 2002 was 14.1 per cent, while the corresponding level in EU was 21.6 per cent in 2001 (Eurostat, 2002). That places Slovenia among the countries whose shares of adults with college or higher education are below the OECD average (at the level of e.g. Czech Republic and Portugal). The higher number of university students in the recent years has brought about an increase in the share of university graduates below 30 years of age (see also Table G3). Still, the share of graduates in Slovenia aged over 30 is below the shares in EU.

b) **Low level of functional literacy[96].** According to an international survey (OECD, 2000) of functional literacy of adults between 16 and 65 years of age the population of Slovenia scored similarly to the inhabitants of Poland, Portugal and Chile; namely, the functional literacy of the majority (around 70 per cent) is only at the 1st or 2nd level, which in the opinion of the OECD experts is inadequate in terms of mobility, employability and participation of individuals in social processes. Unfavourable situation in terms of functional literacy calls for an improved network of educational institutions, a greater accessibility and, above all, a stimulative environment for adult education.

[96] Functional literacy is defined as ability to understand a written text and ability to express oneself in writing. The methodology, the ranking at different levels etc. has been developed by OECD, who regularly conducts the research in countries, who decide to participate (OECD, 2000).

c) **Loose connection of post-graduate studies and corporate sector**. A new system of budgetary co-financing of post-graduate studies was set up recently, which facilitated enrolment and stimulated the co-operation and networking between the two Slovenia's universities, college-level institutions, research institutes and established foreign educational institutions. However, post-graduate programmes are still too fragmented and loosely connected with the corporate sector, affecting in particular the content of the curriculum, where insufficient attention is given to the needs of business. This results also in lack of development of research potential (of students and employees) as well as to the creation and transfer of new know-how. Recently, corporate sector has initiated development of post-graduate specialised studies for their employees, following more closely specific needs of the companies. While this initiative is a positive development, it also reflects slow change in university post-graduate programmes in direction of better fulfilment of labour market needs.

d) **Low education enrolment of adults**. According to the level of participation of adults in the education system Slovenia classifies itself among those countries, which are only beginning to pave their way into a society where the life-long learning culture is carried into effect. Participation of adults in education and training is low comparing to EU countries, even though on the supply side there has been considerable growth of different course offerings[97]. Slovenia is also lagging behind in the share of the unemployed included in education. This can be attributed primarily to a lack of incentives for those participating in the field of life-long learning and to high costs incurred. The most troublesome indicator here is the expressed low interest in life-long learning among those with lower educational attainment: those who most need additional education and training are the least prepared to get involved (Mohorčič-Špolar, 2001).

e) **High amount of drop out and repetitions.** Slovenia still faces important losses (dropping out and repeating) at all levels of education (compulsory primary, secondary and especially vocational, specialised and post-secondary and tertiary). The result of dropouts is a greater inflow of workforce that has difficulty finding a job on the market, which is ever harder for job seekers without formal education. Young people leaving school without qualification are exposed to a greater risk of social marginalisation. The latest data on dropping out according to generation statistics (performance of the '93 generation by academic year 1998/99) shows 13 per cent of final dropouts from secondary education (the percentage of those who left a secondary school without any secondary qualification). Part of the explanation can be found in very demanding education programmes and high level of competition among pupils for the qualifications for further university programmes. Some of the planned education reforms try to address this issue more specifically.

f) **Gap between education programmes and labour demand**. Despite an extensive network of education and training institutions, the range of educational programmes is lagging behind the new demand for modern methods of training and re-training of active labour force and certification of professional qualification. The adaptation and restructuring processes of school network are too slow. Among great obstacles which hinder more efficient education and training as well as quicker application of the latest discoveries in this field are: (i) too slow adjustment of training programmes and curricula for teachers and teaching staff, (ii) relatively weak consultancy support to the educational institutions and teachers in the introduction of novelties (iii) limited

[97] The problem on the supply side is that proliferation of different courses and trainings, mostly run by private sources, makes the selection difficult, since most are new and have yet to prove the quality.

budget for professional advancement of teachers and management of educational institutions (iv) inefficient vocational guidance and career counselling.

g) **Unsatisfactory co-operation between the spheres of education and work.** Inter-institutional and inter-ministerial co-ordination at national and local levels (education, culture, health care, economy etc.) has not yet reached the stage that would ensure the functional inclusion of education system into wider socio-economic processes and development arising from knowledge-based society through the concept of life-long learning. The opening of educational infrastructure to wider community (e.g. by the creation of multipurpose life-long learning – multimedia – Internet access point centres[98]) needs to be enhanced. A stimulative policy environment for life-long learning needs to be developed.

Many of the key issues are being addressed in the National Development Programme and put in the annual programmes of the Ministry of Education, Science and Sports. Also, improving the level of human resources is one of the three priorities in the Single Programme Document. This reflects the fact that Slovenia is increasingly aware of the need to reform its educational system. Yet, even the on-going reforms (introduction and development of nine-year elementary school, changes at the secondary level of education, etc.) are only going to show the results with a certain time lag, which means that the positive impact of the reforms, which are still in the planning stage (like promotion of life-long learning, Bologna strategy for university education), is even further away.

G.3. Domestic and international mobility of scientific personnel

Low level of mobility of scientific personnel from public R&D to business sector is an open problem and often discussed both at the Ministry of Economy as well as at the Ministry of Education, Science and Sports. In the attempt to increase the mobility especially from public research organisations to corporate sector the government had introduced various support schemes, including co-financing of salary costs for specific time periods. So far, these schemes have generated only very limited results, partly explained by the evaluation criteria in the science: both in the process of project assessment and especially in the process of promotion[99]. This is why the debate on preparation of new National Research Programme (see also Section D.3.) has brought the evaluation criteria in the forefront both as a reason for low cooperation between the corporate and research sector as well as for low mobility.

One of the recent initiatives is providing scholarships for post-graduate students (masters and doctoral programmes) or young researchers for candidates from corporate sector: similar programme is run rather successfully for a number of years[100] by the ex-Ministry of Science and Technology. Originally, this programme also had as a policy objective the training of research personnel from corporate sector at higher education institutions, but no systematic follow-up of the candidate upon completion was carried out. The instrument was used intensively by the public research organisations and academic sector for recruitment of young researchers, who were (funds permitting) employed after the graduation in the same institution. Current changes in the programme should assure that more of newly trained researchers would continue their careers in corporate sector. This would not only contribute to

[98] One of the proposed activities under Single Programming Document is addressing this issue.

[99] The promotion criteria favour strongly the publication activity of the candidate. The practical experience in corporate sector has no validity at all.

[100] The programme was started in 1985 with the ambition to generate 2000 new researchers by the year 2000. By the end of 1999, 2652 young researchers have completed their studies (Kump, Podmenik, Macur, 2002).

the higher number and better quality of research staff in corporate sector but also provide ground to closer cooperation between academic and public research sector with the corporate one.

Much better results have been achieved in the field of international mobility of researchers, especially in the second half on the nineties, when Slovenia has been able to participate fully in various EU schemes for mobility of researchers and academics. In the multilateral field Slovenia has developed an extensive cooperation with individual European research programmes[101] running within the EU, with other independent European programmes and with the programmes from the UNO system. Active participation in mobility schemes like Socrates and Leonardo da Vinci is also developing, with high annual growth in the number of participants (in 2000 there were 288, in the first half of 2002 already 717). Yet, while the participation in these programmes is growing in the public research sector, the programmes are seldom of interest to corporate sector.

G.4. Tertiary sector and research performance in IST-related subjects

In public research institutions and at the both universities approximately 200 researchers (FTE-full time equivalent) work in the area of information and telecommunication technologies (data from the questionnaire among public R&D units (Stanovnik et al, 2003). According to the same source, they had at their disposal EUR 6.48 million, with 66.7% coming from the government, 25.7% from Slovenian business, EU and other international projects accounted for 6.6% and only 1% from foreign business.

Directly involved in research in IST field are the main three Faculties: Faculty of Computer and Information Science (FCIS) and Faculty of Electrical Engineering (FEE) at the University of Ljubljana and Faculty of Electrical Engineering and Computer Science—FEEC at the University of Maribor. Research in IST-related courses is also conducted at the Faculty of Mechanical Engineering, Faculty of Social Sciences (see box E1) and Faculty of Economics at the University of Ljubljana and the Faculty of Organisational Science at the University of Maribor. An important contributor to the research in IST field is the largest Slovenian research institute Jožef Stefan where several departments are dedicated to this area.

Research activities (as well as most Diploma, Master and Doctoral theses research) at the Faculty of Computer and Information Science at University of Ljubljana are performed in fourteen research laboratories, which are grouped in six departments[102]. The main sources of research funding are the Ministry of Education, Science, and Sports, Ministry of Information Society, European Union programmes (COST, INCO-Copernicus, 5th FP), various bilateral programmes: US-Slovenian, French-Slovenian (Proteus), Austrian-Slovenian, Czech-Slovenian, and UK-Slovenian (ALINK). The Ministry of Education, Science, and Sports also supports the majority of postgraduate students by means of individual scholarships. Many

[101] Slovenia has been cooperating on equal terms in several programmes of the EU: TEMPUS and ACE since 1991, PECO since 1992, COPERNICUS since 1994, within the projects of the 4th Framework Programme of the EU since January 1995, and within the projects of the 5th Framework programme in which Slovenia has been a full associate member since 1999. Slovenia has also been cooperating in the COST programme from its very foundation in 1971, and in the programme EUREKA since June 1994. Since 1996, Slovenian organisations can also join the activities within the scientific programme of NATO (Gnamuš, 2002).

[102] Department for Software, Department for Computer Logic, Systems and Neural Networks: Department for Information Science, Department for Theoretical Computer Science, Department for Artificial Intelligence and Department for Mathematics and General subjects.

applied research projects are co-financed by Slovenian companies. Research carried out in such highly fragmented manner is mostly focusing on relatively specific and narrow fields in the area of researcher's teaching, since the Faculty has no full time researchers[103] (except for those under the programme of Young Researchers). The research priorities are left for individuals to decide and find financing. Also, a growing number of students enrolled leads to more academic work for professors with negative impact on their research work.

Research work at the Faculty of Electrical Engineering at the University of Ljubljana operates in 9 major fields, which are covered by 229 registered (but not full-time) researchers (inc1uding 49 external researchers) working in 49 laboratories. These fields are: electrica1 energy, electric machines and power e1ectronics, e1ectronics, microe1ectronics, bio-cybernetics and biomedicine, measuring systems, automation and cybernetics, robotics and telecommunications. Faculty's participation in the international projects is also growing. In the EU 5th Framework Programme, Faculty has participated in eight projects. Several other international projects (COST, NATO, bilateral) are also running.

Faculty of Electrical Engineering and Computer Science FEECS at the University of Maribor has several research institutes. Institutes[104] are further divided into basic organizational units called laboratories. These units include groups of courses with similar contents matching the contents of research performed by individual institutes. In 1997, income generated by research activities amounted to almost 40% of the faculty's total income. What is additionally important is that more than half of this earnings come from business sector, which is much better than most of the other faculties. (http://www.feri.uni-mb.si/).

The observation on small-scale research capacities of FCIS holds true for the entire tertiary sector. Low level of cooperation within and between different faculties diminishes possibilities for large scale research projects in IST field; so better basic research results are actually achieved in public research institutes. Narrow focus of ICT research at universities consequently prohibits development of more complex solutions, which could be transferred to business. The academic personnel at all three faculties, and in fact in tertiary sector as a whole are so burdened with teaching tasks that research and innovation are of secondary importance. With growing number of students and slow hiring of new education staff the situation is likely to worsen.

Slovenian tertiary education sector has not attracted foreign capital yet. Even within the sector, the level of competition is low and has many advocates to remain such. The suggestions as to the diversification of types of schools, of opening new universities, of privatisation in tertiary education sector have met a lot of resistance in academic circles. As long as such attitudes prevail, it is hard to expect any foreign interest in investing in the field in general or in IST education/research specifically.

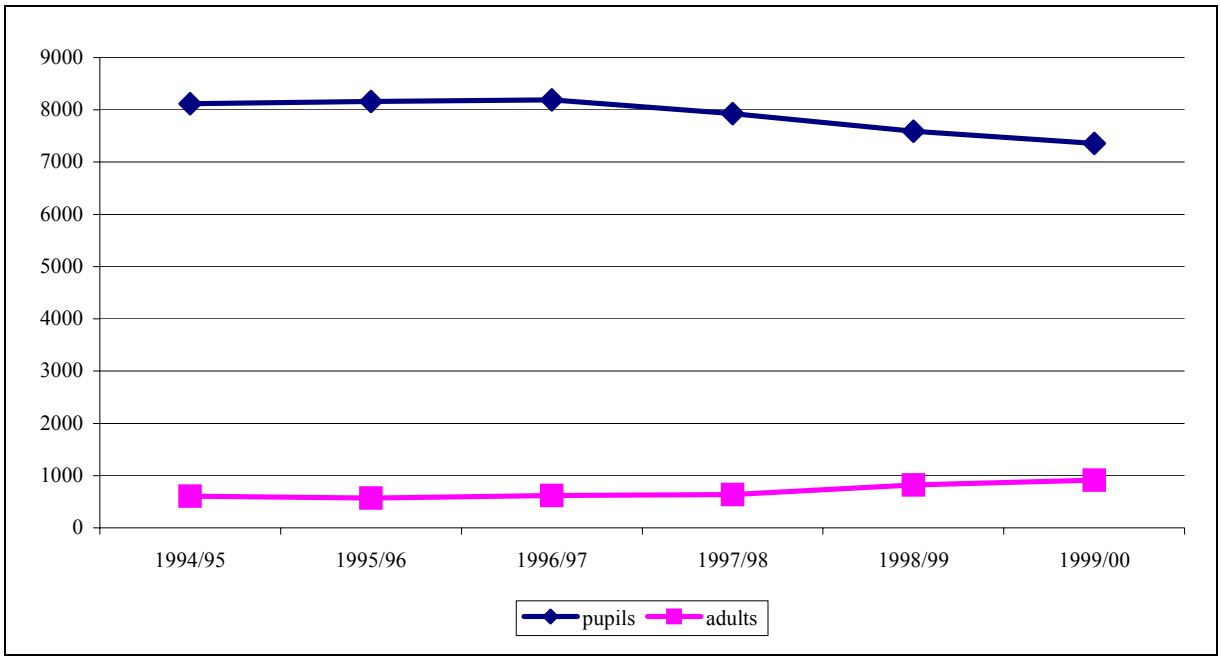
[103] According to current regulations, members of the faculty staff who are fully engaged in teaching, can on top of 100% teaching commitment get involved in research work up to 20% extra hours. But if teaching commitment is increased beyond 100%, there is no room left for research within regular hours.

[104] Institute for automatics, Institute for Electronics, Institute for Informatics, Institute for Electrotechnics, Institute for Computer Science, Institute for Robotics and Institute for Mathematics and Physics.

G.5. IST related education

Currently, Slovenia has specialised IST-related education (computer science and electronics) at the (upper) secondary level, open both to pupils and adults (Table G4, Graph G3). The enrolment trends are rather similar as in other specialised secondary education: the numbers are slowly decreasing. Key reason is the growing attractiveness of a more general programme of secondary level education (so called gymnasium), which allows the graduates to enrol in any type of tertiary education, while a more focused secondary education allows the enrolment on selected faculties only. The number of adults enrolling in these programmes is, on the other hand, slowly growing, reflecting their need for specific skills in the selected field of education.

Graph G3: Enrolment in upper secondary schools: electronics and computer science, 1994-2000



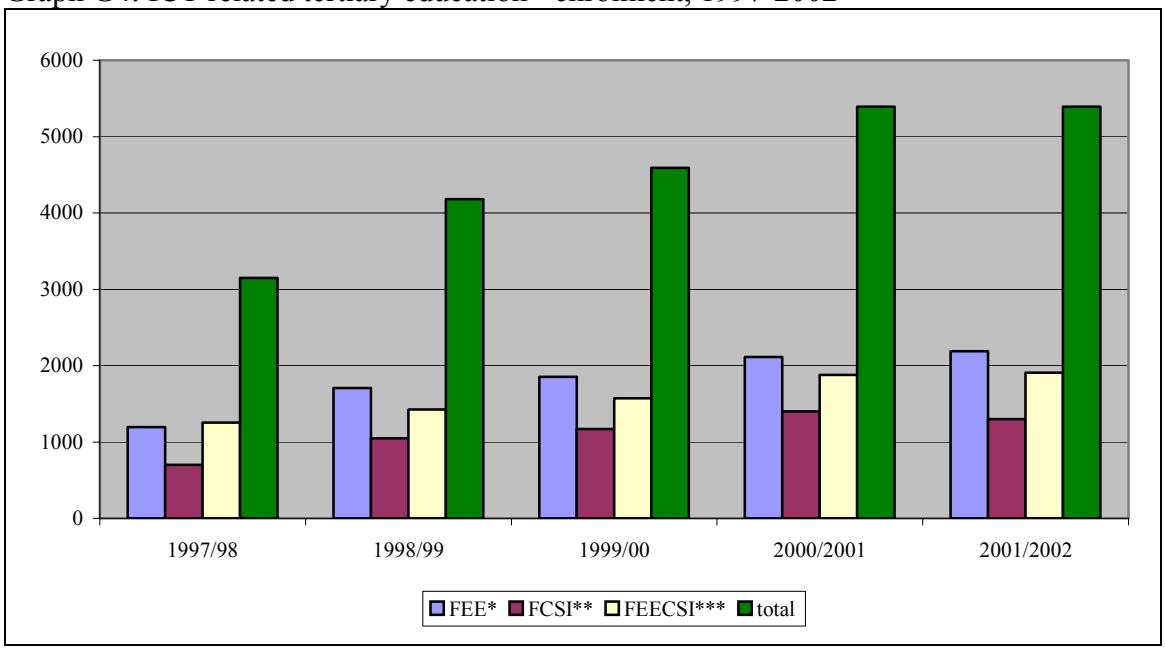
Reference: Statistical Yearbooks for selected years, SORS

At the tertiary level, both universities, University of Ljubljana and University of Maribor offer programmes of college (2-years) and university level (4+ years). At University of Ljubljana, two different Faculties are involved in ICT related education: Faculty of Electrical Engineering - FEE (especially in the field of telecommunications) and the Faculty of Computer Science and Informatics (FCSI). University of Maribor still keeps the two programmes at one Faculty: Faculty of Electrical Engineering and Computer Science. The programmes at all three faculties are further split into more specialised options.

The enrolment in all programmes of ICT related education is growing (Table G5). If not limited by the number of places in the first year of studying, the number of students would have grown even faster. The data for the applications since 2000 show that every year the number of applications exceeds the number of places. According to the staff at the faculties, such limitations of enrolment are necessary due to the limited space, equipment and teaching staff. Besides applying for higher public funds, all three faculties are looking for sponsors in

the corporate sector as well. Especially ICT companies provide some of the hardware and software for the students.

Graph G4: ICT related tertiary education - enrolment, 1997-2002



Reference: Statistical Yearbook for selected years, SORS
* FEE- Faculty of Electrical Engineering
** FCIS- Faculty of Computer and Information Science
*** FEECS- Faculty of Electrical Engineering and Computer Sciences

Particular problem for faculties in the field of computer science is **low number of graduates** in comparison to the number of first year students[105] (Table G5). Part of the reason can be attributed to the already mentioned fast increase of number of newly enrolled without parallel increase in the funds, leading to lower quality of education[106]. The other reason is more specific for ICT education. Due to a fast growing demand for ICT specialists, many of the students enter the labour market as part-time employees already during their study. This affects their ability to complete the studies and receive diploma. This may cause difficulties in the financing of the faculties, since the level of public resources is increasingly being determined not only by the number of enrolment but also by number of graduates.

As with most university programmes, programmes at the Faculties mentioned, change only gradually towards new, more interdisciplinary content. The reasons for such attitude are rather complex: from the fact that introduction of new course has to go on the expense of taking away some of the existing courses or at least assigning them fewer hours (which is objected to by those teaching the particular course), to the lack of qualified professors to teach such content and low level of interest of students in content not (in their view) directly relevant for

[105] The discrepancy between the numbers of those enrolled to the number of those graduating is a general problem of university education in Slovenia, since many young people enrol (no tuition) to have a status of a student, even if they do not plan to study. By enrolment they are provided with health security and ability to work as students: part-time jobs offered to students is a wide practice among employers, since it allows them a higher level of flexibility in hiring/firing than other options.

[106] Insufficient funds prevent hiring new teaching staff and purchasing equipment. Also, student classes are much bigger and individual work practiced only in the senior year.

them. Usually it is the pressure from the outside (business sector) that is needed to make such programme changes.

An important source of IST related education, especially for adult population are several small, mostly private schools offering basic computer literacy courses. All major IT suppliers have their educational centres or branches, providing IT training to their customers. There is no centralised data either on the number of schools or on the number of students attending various programmes.

Systematic training in ICT skills is being supported by the Employment Agency for the registered unemployed. The programmes are being financed in full and the students are eligible to certain financial support during their training.

G.6. Impacts

The education level of labour force in Slovenia, measured by the average years of schooling or by the share of employees with tertiary education is not sufficiently high to guarantee a smooth transition to knowledge economy. Out-dated education systems and programmes are an important obstacle to the transition to IS and a thorough reform of educational and training system from kindergarten to the university is being implemented. The impressive and positive growth in number of students enrolled in tertiary education was not paralleled with the growth of resources (financial and human) dedicated to this education level. Also, programme reforms in direction of more interdisciplinary studies, which would ease the transition to IS, have been severely hindered.

Even so, the increasing number of younger generation with tertiary level of education should in the future gradually provide for better supply of the required human capital for IS. The level of basic ICT skills is also much higher among the young population. What remains worrisome is the current limitation of enrolment at the tertiary level for ICT studies[107]. This is of serious concern not only to ICT-related industries, but also for business and public sector alike. Additional efforts need to be made to open these studies to all those wanting to study (regular students and adults alike). At the same time, it is necessary to promote secondary level education in ICT to assure the needed technical support for the IST development. Also, the content of the studies needs to be upgraded, since the labour market is specifically demanding people with multi-skills, not just narrow IT specialists (basic programmers) for which the demand is more or less met with the supply.

Looking at the current policies, Slovenia is well aware of the gap in the existing quality of human resources and the needs to upgrade their knowledge and skills in view of the transition to Information Society. While some improvements have already been achieved, the challenges are still substantial, both in terms of resources and in terms of content of reforms in educational system. One of the major problems is the promotion of life-long learning, especially among the adult population with lower educational attainment.

In the field of IST related education, more resources are needed especially at the tertiary level, where new options for closer cooperation with corporate sector will have to be explored. While the employment statistics does not reflect the shortage of ICT specialists, the ICT

[107] For the school year 2003/2004 enrolment of regular students was no longer limited, but quotas remain in place for adults.

companies express their concern and feel the lack of high-quality personnel. The mobility of skilled ICT personnel from one company to another is high and so is their "price" on the labour market. The promotion of diffusion of IST related applications in corporate sector and in public administration should go hand in hand with increasing the number of openings at the IST-related tertiary studies and the introduction of more multi-disciplinary education.

G.7. SWOT Analysis

Strengths	**Weaknesses**
- Increasing number of adults with tertiary education – High growth in enrolment at tertiary level, also in IT education – Continuous and raising interest in ICT education at tertiary level – Public institutions awareness of the need to promote life-long learning and initiation of education reforms in this direction	– Current level of functional literacy insufficient for IS – Educational and skills level of older generation insufficient to allow transition to IS – High level of drop-outs at all educational levels – Insufficient resources dedicated to tertiary education and consequently too slow reforms – Low awareness among the students and the staff of ICT faculties of the labour market needs
Opportunities	**Threats**
– Successful implementation of on-going reforms of education system stressing the importance of tertiary education and more interdisciplinarity – Successful implementation of life-long learning plans in Single Programming Document, which is to be one of the key measures, with significant resources Raising awareness among the society about the importance of education to meet market demands, and in particular in the area of ICT	– Continuation of too slow reform of tertiary education due to institutional rigidities – Low level of interest among adult population for life-long learning – Public financial, personnel and physical constraints to expansion of IT-related tertiary education and its modernisation towards more business-related topics

The education level of labour force in Slovenia, measured by the average years of schooling or by the share of employees with tertiary education is showing a positive tendency of growth in the nineties. Especially high is the enrolment of current generation between 19-24 in tertiary education. This dynamic growth of attained educational level along with growth of enrolment in IT-related studies is a key **strength** in the area of human resources. The level of basic ICT skills is also much higher among the young population.

The planned (and some already under implementation) reforms of the education system stress as strategically important all the topics highly relevant for IS: special attention to promotion of tertiary education, increase of interdisciplinarity in education content and active support to life-long learning. The successful implementation would be a substantial **opportunity**. With

life-long learning (LLL) being a special focus within Single Programming Document the gap in participation in LLL is expected to close at increased pace. The interest in ICT-related education is rising as well.

On the other hand, current level of education, especially if measured by the level of functional literacy of adult population is not sufficiently high to guarantee a smooth transition to knowledge economy. Out-dated education systems and programmes are an important **weakness** to the transition to IS along with the current under-representation of tertiary education in terms of public resources, devoted to education. The need to follow trends on the labour market is not something majority of tertiary students would be concerned with. In fact some study to avoid facing the labour market reality. Modern educational concepts also call for closer cooperation of academia with business sector. The low level of such cooperation and missing motivation to improve this cooperation can be a significant threat for successful adjustement of the education system to the needs of IS.

The lack of resources, both human and financial could hinder the implementation of planned reforms of the educational sector. Programme reforms in direction of more interdisciplinary studies, which would ease the transition to IS, have been severely hindered also by the traditional rigidities within Universities, where changes take much longer. These, along with lack of interest among adult population for life-long learning, represent significant **threats** for IS implementation.

H. NATIONAL AND REGIONAL DEMOGRAPHIC DATA AND PROSPECTIVE

H.1. General characteristics and trends

Beside changes in economic development, a break in demographic development also marked the Slovenian economy at the beginning of 1990's. The number of inhabitants increased till 1990 and started falling afterwards. **Fertility rate** has been on a decreasing trend in the last 100 years, but only since 1980 it fell under the level that allows single reproduction of generations. In 2001, it equalled only to 1.21, which is one of the lowest fertility rates in Europe. The number of births is affected by various economic reasons: limited possibilities for employment and consequently still high unemployment rate of young people (Table A9), a lack of housing, and unwillingness to employ young women (on account of maternity leave in the future). Young families therefore decide to have fewer children and at a later age (Hanžek, 1998). Nevertheless, data for recent years reveal that the number of inhabitants has stopped falling since 1999.

Mortality rate has been falling for at least 150 years. Over the last 20 years, **life expectancy** increased by four years, slightly more for men than for women. In 1995-2001 alone, after a short stall in the early 1990s, life expectancy increased by 2 years for men and 1.6 year for women. In 2001, it was 72.1 years for men and 79.6 years for women (Table H1). A comparison of Slovenia's mortality with that of other European countries shows that life expectancy in Slovenia is lower than in any EU member-state, but longer than in other candidate countries. However, the gaps behind the EU average have reduced over the last few years (Murn, Kmet, 2002). These trends are also confirmed by gradual improvement of human development index (HDI)[108] in the period 1995-2000. The value of HDI was 0,852 in 1995 and 0,879 in 2000, while the rank of Slovenia dropped from 28 in 1995 to 29 in 2000 (out of 173 countries), indicating that improvement of HDI for Slovenia was slower compared to other countries (Table H2) (Javornik, Korošec, 2003).

The increasing life expectancy coupled with a birth rate lower than the one necessary to maintain a stable level of the population lead to the **ageing of the population.** In the last decade, the share of young people (0-14) in total population fell by 5.4 percentage points to 15.4% in 2001. Population aged between 15 and 64 years accounted for 70.1%, which is by 1.6 percentage points higher than in 1990, and population older than 65 years accounted for 14.5% of total population (3.8 percentage points higher than in 1990 (Table H3). The bulk of population ageing problem is concentrated in border regions, mainly in Western and South-Western parts of Slovenia (at the border with Italy), and in North-eastern region Pomurje lying close to the Hungarian border (Table H4). These are remote regions, where living conditions are rather poor. As a result, these regions have been faced with emigration of young people for a long period of time (Pečar, 2001). Coupled with large share of employment in agriculture this has slowed down economic development in the case of Pomurje region, which remains the region with lowest per capita GDP (see Section A.3.).

Demographic trends, especially ageing of population, bring about various problems related to this process. The most important are economic problems of growing demand for health and social protection of the elderly and of covering the cost of pension insurance. These problems can undermine public finance stability on one hand and the level of health and social security

[108] HDI is composed of life expectancy index, enrolment ratio, literacy rate and GDP index.

of the population on the other. Slovenia has already carried out the reform of pension system, which is the main step responding to accelerated ageing of population. However, it will be necessary to further adjust both the pension and health systems.

With regard to Information society development, ageing population is manifested in higher share of population with lower education level, lower ability to use ICT and benefit from its utilisation. This population faces high risk of poor direct participation in Information society. Such threats stress further the importance of life-long learning to enable the participation of entire population in Information society.

H.2. SWOT analysis

Strengths	**Weaknesses**
- Gradual improvement of human development index	– Increasing share of older population which do not dispose with knowledge and skills needed for active integration into IS – Continued emigration of young population from remote border regions
Opportunities	**Threats**
– Life-long learning to buffer negative effects of ageing population on IS implementation	– Problem of ageing population concentrated in remote and border regions

From the perspective of IS implementation the main **weakness** seems to be related to demographic and educational issues. On one hand, there is an increasing share of ageing population that acquired education and skills in times when ICT was not a dominant technology. On the other hand there is another segment of population with low level of education which do not dispose of skills necessary for active participation in IS. Both groups will necessitate the introduction of specific policies and measures in order not to be deprived of IS benefits.

The major **opportunity** in overcoming these weaknesses points to the implementation of life-long learning, which could compensate for the drawbacks. Nevertheless, the results are to be expected only in the longer term. Therefore, these weaknesses may turn to **threats** of digital divide, particularly in remote and border regions with high concentration of aging population coupled with emigration of young population. Timely awareness of these threats and decisive countervailing actions for their alleviation in deprived regions could mitigate the difficulties.

I. CULTURAL AND SOCIOLOGICAL ASPECTS

I.1. Income distribution

While income inequality had been increasing continuously since 1983, a clear shift occurred in the late 1990's. Comparing the period 1997-1999 to 1993, the income shares of the first seven deciles increased much more than the income shares of the top three deciles (Table I1). A decrease in income inequality is also confirmed by changes in Gini coefficient, which decreased from 0.2696 in 1993 to 0.2356 in the period 1997-1999 (Stropnik, Stanovnik, 2002).

I.2. Migration

International migrations played an important role in changes of the number and structure of Slovenian population. Slovenia received its greatest immigration flow between 1971 and 1981 when it became attractive to immigrants from other parts of former Yugoslavia (net migration represented 41% of population growth) due to Slovenia's strong economic development and the lack of young workforce. This was first reflected in cities with strong industrial base but later also in other cities with increasing needs for low-skilled workforce in some services and in construction.

The economic crisis in the eighties gradually reduced the number of immigrants and political changes in 1991 (Slovenia declared its independence) discontinued these inflows for a while. Net migration was negative in 1991, 1992 and 1998 (Table I2). Simultaneously, the features of migration also changed. Migration flows caused by different levels of economic development were replaced by migration flows due to political and ethnic reasons. In 1992 and 1993, Slovenia received more than 30000 refugees (persons under temporary protection) from Croatia and Bosnia and Herzegovina (Hanžek, 1998). As a result, the number of immigrants was very high particularly in 1996 and 1997 (almost 15,000 persons in two years) (Table I2). Since 1995, many of them have been integrated in the population of Slovenia.

Overall, the ethnic structure of the Slovenian population is quite homogenous. According to census data for 2002 Slovenes accounted for 92% of the population[109], Serbs for 2.2%, Croats for 2.0 % and Muslims[110] for 0.6% of the population. Italian and Hungarian minorities are very small (SYRS, 2003).

After Slovenia gained independence, many Slovenian citizens temporarily working in West European countries returned back to Slovenia. Their number was largest in 1995 and decreased afterwards. Consequently, also net migration of Slovenian citizens was on a decrease since 1995 (data for previous years are not available) and became even negative in 2000 (-624) and 2001 (-412) which was due to the increase in the number of emigrants in this period (1559 in 2000 and 1442 in 2001) (Table I2). Nevertheless, net migration represented only 0.07% of the total population.

[109] This relates to the population, which declared its ethnic affiliation and accounted for 90 per cent of the total population. Other categories (undeclared, unknown and did not want to reply) accounted for 10 per cent of the total population.

[110] According to census data in Slovenia, Muslims are treated as ethnic and not as religious group.

Migration mobility within Slovenia is very low. In the period 1995-1997 only 9 per 1000 inhabitants moved between municipalities (3 between regions), while in Germany in 1994 the relevant number was 48 (13 between regions), and in Denmark in 1997 63 (Dolenc, 1998). In the following years the number of inhabitants that changed their residence (migration between municipalities) gradually increased to 10 per 1000 of inhabitants in 2001 (Table I2). The main reasons for relatively low migration within Slovenia are the following (Dolenc, 1998):

- smallness of the country,
- underdeveloped labour market,
- aversion of people towards seeking job in other part of the country,
- lack of residential facilities for renting in city centres,
- ownership of a house (or at least of the apartment) is still an ideal for many Slovenes, which is in contrast with mobility,
- a large part of housing construction has taken place on inherited land parcels.

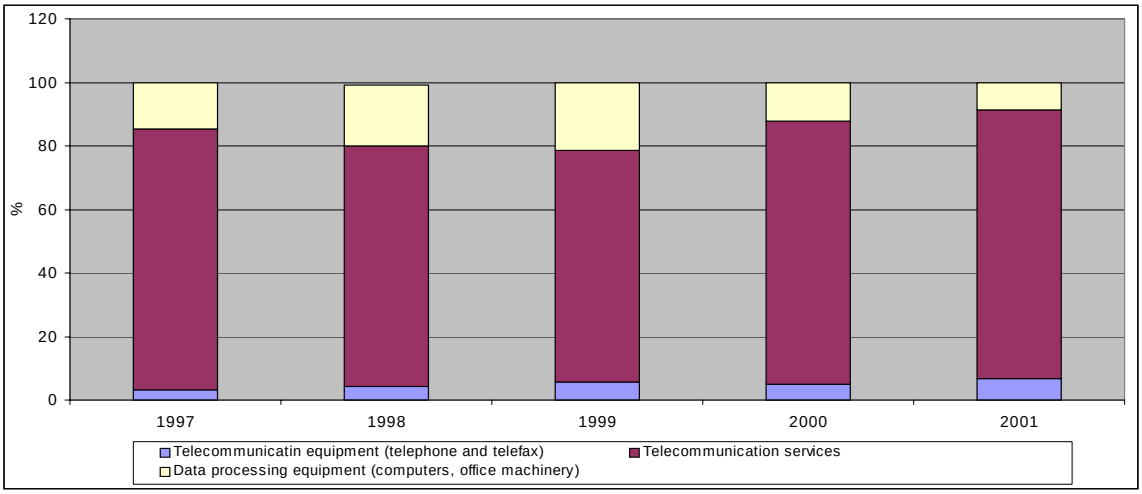
I.3. Consumption patterns

Data on the structure of consumption are available only since 1997, thus hampering the analysis of changes in consumption patterns. Nevertheless, in the period 1997-2001 a clear trend away from expenditure for food and beverages was seen. Despite a decreasing trend, with 19.8% of total consumption expenditure in 2001 food and beverages still represent the most important part of consumption. The share is also considerably higher than in the European Union, where food and beverages account for 14% of total consumption expenditure (Tršelič, 2001). On the other hand, expenditures for communications, social protection services (subgroup of miscellaneous goods and services), recreation and culture, and residential costs recorded the highest growth in total consumption in the same period (Table I3). After stagnation in the period from 1997 to 2000, an increase of education services in consumption structure was recorded in 2001.

ICT related consumption composed of expenditures for telecommunication equipment and services, and data processing equipment recorded one of the most dynamic growth rates in the observed period. In 1997, ICT consumption accounted for 2.3% of total expenditure for consumption, while by 2001 its share almost doubled and reached 4.2% of total consumption. The bulk of the increase came from the rise in expenditure for telecommunication services, mainly for mobile telephony (subscription for mobile telephony included prepayment systems), which reflected fast expansion of mobile phones penetration since 1997 (details in Section E.2.1.). Expenditure for mobile telephony services thus accounted for 41% of total ICT related consumption in 2001. On the other hand, the share of expenditure for fixed telephony subscription (the second highest share in the structure of ICT consumption) has been falling since 1999 (37% in 2001). As revealed by Table I3 and Graph I1, an increase is also evident in the share of telecommunication equipment consumption, while expenditure for data processing equipment (mainly computers) reached the top in 1999 when the demand for computers was spurred by value added tax introduction and expectations related to the millennium bug. In 2000, consumption of data processing equipment decreased significantly and in 2001 stagnation was recorded.

Together with increasing importance of education expenditure in consumption structure, expansion of ICT related consumption might be seen as an important change in consumption patterns towards Information society development.

Graph I1: Structure of ICT related consumption in the period 1997-2001, in %
Reference: Statistical Office of the Republic of Slovenia



I.4. Attitudinal and cultural aspects

While the above mentioned aspects (migration, income distribution and consumption patterns) can be expressed in quantitative terms and to some extent assessed in view of the prospective Information society evolution there exist an array of aspects that are much less visible but are in the background of different actors' behaviour. This relates in particular to values, cultures and attitudes of the Slovenian population and individuals as producers and consumers, which indirectly impact their capabilities to make full use of opportunities offered by the Information society.

IS technologies development and diffusion are driven by innovation, entrepreneurial spirit, flexibility and combination of skills. These characteristics are lacking in Slovenia owing to the legacies of the past socio-economic system, to traditional perceptions and to prevailing value system, which is risk averse. However, entrepreneurship is inextricably linked to risk-taking and this is often neglected in business sphere in Slovenia. The lack of innovation culture (Mulej, 2000) hampers innovation orientation not only in enterprises but also in the public sector institutions, and in the administration.

Apart for that, the understanding of innovation activity in Slovenia is still biased in favour of strictly technical issues. The improvements in organisational methods or business culture change are usually not deemed as instrumental to increasing the competitiveness of firms to such an extend as technical innovation. Consequently, the scope for innovation is narrowed in terms of activity and people involved and innovation policy typically thought of as the R&D policy. This refers in particular to services where innovation is usually not carried out through formal research and development, but mostly through organisational change and marketing methods (also enabled by information-communication technology). Poor perception of innovation potential in services is further aggravated by the historical understanding of services as non-productive activities which was characteristic for transition economies (Bučar, Stare, 2002).

Short reference to some attitudinal and cultural aspects reveal that due to their historical embeddedness and slow changes they could threaten the capabilities of businesses and

individuals to grasp the opportunities provided by information communication technologies and accompanying organisational change.

I.5. SWOT analysis

Strengths	**Weaknesses**
- Homogeneous structure of the population by nationality - Low emigration from Slovenia	– Increasing income inequality – Low migration mobility within Slovenia
Opportunities	**Threats**
– Increasing consumption of ICT related products and services	– Weak entrepreneurship and innovation culture and risk-averse behaviour

The lack of in-depth analysis of the cultural and societal patterns in Slovenia does not enable the assessment of their impacts on the evolution of Information society. However, simplified SWOT analysis reflects certain characteristics, values and patterns of behaviour of the Slovenian population, which indirectly affect the changes brought about by IS.

Low emigration from Slovenia reflects solid welfare of the population and above all good quality of life while low migration within the country might also indicate the inherent bias of the Slovenes against changes and risk taking. Different reflection of such attitude can be discerned in weak entrepreneurship and innovation culture present in Slovenia. Since such characteristics are historically embedded and change very slowly, they could to a certain extent threaten the capabilities of businesses and individuals to grasp and utilize new challenges and opportunities provided by information communication technologies and accompanying organisational changes.

DIAGNOSIS OF FACTORS AND IMPACTS IN THE INFORMATION SOCIETY IN SLOVENIA

1. Economic features, institutional policy and regulatory framework

After gaining the independence in 1991 Slovenia faced a shock related to the establishment of legal and institutional framework of a sovereign state and above all related to the loss of the large market within ex-Yugoslavia. Nevertheless, the initial difficulties and economic downturn were soon overcome and Slovenia embarked upon positive growth rates already in 1993. Since then Slovenia progressed gradually along economic and structural reforms underpinned by stable macroeconomic and political environment. Forthcoming membership in the EU and in the NATO is thus perceived as the confirmation of the successful finalisation of transition.

The major achievements in the last decade, which are considered as strengths also in regard to the IS development relate to the growth dynamics as well as to the structural changes. Convergence of Slovenia with the EU 15 in terms of GDP/per capita in PPS has increased from 64 % in 1996 to 70 % in 2001 putting Slovenia in the second place among candidate countries. Parallel to that the gradual shift from manufacturing to services has narrowed the gap in economic structure between Slovenia and the EU countries. In the period 1991-2001, the share of services in the gross value added increased from 50.3% to 62.4%. The increase was recorded both in market services and in public services. Further strengths relate to the falling and relatively low unemployment rate (6.3% in 2002) and to the low regional disparities compared to the EU member-states and candidate countries.

Balanced public finances and balance of payments current account enabled the economy to increase investment, also in ICT (public funds could be oriented towards support of Information society implementation more easily when the government is not occupied with macroeconomic imbalances). Besides, high growth rates of gross fixed capital formation in the period to 2000 created favourable conditions for advanced development of the Slovenian economy. However, high and persisting inflation affects economic growth, and faster liberalisation of infrastructure sectors, including telecommunications. As the process of abolishing relative price distortions in these sectors often puts additional pressure on inflation, setting up cost oriented prices bound to introduce effective competition, is often postponed.

Gradual approach to structural reforms in the nineties therefore resulted in solid macroeconomic achievements with no major imbalances. However, some important structural deficiencies remain, having effect on implementation of Information society as well. An important segment of the economy is non-privatised, mostly state-owned enterprises (public utilities) and financial institutions. The level of development of Slovenian financial market is modest compared to EU countries, as the main structural reforms in this sector occurred only recently. Gradual approach to the reforms also resulted in slow technological restructuring which hampers the demand for ICT and jeopardises the overall competitiveness and dynamic economic development of Slovenia. Further drawback refers to low share of business and financial services in GDP. These services are crucial to improve competitiveness of the economy and to accelerate the diffusion of information communication technology to business processes in the private and public sector. The advancement of financial and business services could also be encouraged by FDI as they usually bring new technologies, managerial skills and contemporary business know-how. However, Slovenia did not utilize this opportunity to a larger extent. The inflow of FDI was rather low till 2001 due to the

chosen pattern of privatisation, due to high wage levels and also due to non-conducive environment for entrepreneurship in general. It is expected that the inflows of FDI will increase with the accession to the EU and with implementation of privatization projects in public utilities and financial sector, which would also dynamize the development of financial and business services.

Being a small economy with 2 million inhabitants bears advantages and disadvantages for the positioning of Slovenia. The former are best reflected in high level of trade openness of the economy, enabling inflows of high technology intensive products and knowledge based services, which are of utmost importance from the perspective of Information society evolution. With the accession to the EU, the openness will increase even further and competitive pressure on Slovenian firms is expected to spur also the technological restructuring. Important push to faster development can be expected from the policy engagement to meet the Lisbon Strategy objectives. On the other hand the disadvantages of the small economy are mainly related to modest scale economies, which do not attract foreign investors and in some sectors make achievement of efficient and competitive production nearly impossible. Also, due to its openness Slovenia is highly exposed to international economic environment and its deterioration can seriously affect economic growth and put high pressure on public finances. In such cases economic policy has limited room to deal with other development issues.

Some indications suggest that the Slovenian government is increasingly aware of the challenges of Information society. In 2001, the Strategy for the Economic Development of Slovenia was adopted for the period 2002-2006. The Strategy acknowledged that the pace of transition to a knowledge based information society depends on the level of advancement in information and communications infrastructure and the capacity to apply the new technologies. It was the first strategic document to recognize fully the importance of transition to information society. In late 2000 the government established the Ministry of Information Society. Apart for focusing on telecommunications (liberalisation of telecommunication market was implemented in 2001), progress was also made in the Information society applications. MID initiated some important projects aiming to enhance Information society development, for example eSchools and ePoints. Together with the Government Centre of Informatics, the two bodies constitute a good institutional setting to promote the implementation of the IS. An important step in that regard is to create a modern and efficient state administration, capable of providing a wide range of public services to businesses and individuals electronically. In line with this guideline, Strategy of E-commerce in Public Administration of the Republic of Slovenia for the period 2001-2004 (SEPA-2004) was adopted by the government in 2001 and followed by the Action Plan E-Government up to 2004 which defines the objectives, determines the mechanisms for implementation and monitoring of SEPA-2004.

Discussions and actions towards raising the awareness on the need to move more actively towards Information society were evolving since 1995 but got impetus only after 2000. All actors - the business community, the civil society, R&D sphere and the government - were active in the field of IS promotion. The key problem is non-coordinated approach of key stakeholders as well as the lack of integration of their objectives and activities. In 2003, the government adopted Slovenian Information Society Strategy that proposed operational programmes and several ambitious targets in the area of eGovernment and eCommerce. This provides good opportunity to promote more dynamic transition to IS. Perhaps the most underrepresented in the preparation of SISS was the business sector and consequently, the

activities to promote more intensive use of ICT related technologies and applications there. From looking at the official pages of the MID or at the text of the SISS one could not draw a conclusion that business sector is not well integrated into government actions. Many priorities are focused on business and entrepreneurship, on raising the ICT skills, technology transfer, etc. But when it comes down to specific actions, the business focus is lost.

The fact that the Ministry of Information Society has seriously limited both human and financial resources presents significant threat to its ability to implement the strategies and the plans it adopted. The SISS should not be treated as the MID only, but that of the government as a whole. MID should give the coordinates and substantial guidance to achieve the synergy, while the implementation should be in the hands of each individual government department. Current state of affairs gives little proof of such approach. This makes the implementation of the Slovenian Information Society Strategy, particularly in the segments related to more complex issues (like diffusion of ICT applications in business sector, adjustment of labour legislation for facilitation of tele-work, raising the level of IS-related skills in general population, etc.) very difficult. On the other hand, there are several areas where significant progress was achieved, like the penetration of Internet, relatively high level of PCs used, eSchool and eHealth projects, several legal provisions for eCommerce, etc.

The key weakness in the area of IS policies is rather unclear commitment of the government to the transition to IS, since there is a significant gap between the declared policies and those actually implemented. Slow implementation of adopted legislation, postponing privatisation of incumbent operator of fixed telephony and hesitant approach of the Agency for Telecommunications, Radio Diffusion and Post to efficiently regulate the telecommunication market serve to illustrate insufficient commitment of the government. Poor monitoring of the effects of various government policies and regulations, lack of cooperation and coordination between different actors involved in IS implementation could also be listed as a significant weakness on the way towards IS.

2. Building the capacity for IS implementation

Beside solid macroeconomic results and establishment of regulatory and institutional framework the implementation of IS critically depends on the availability of modern information communication technologies/infrastructures and of skilled human capital which contribute to the absorption capacity in regard of IST and its diffusion by different actors in economy and society. How does Slovenia stand in that regard?

2.1. ICT production and IST diffusion

Empirical analyses reveal that ICT/IST bears multidimensional impacts on economies and societies (OECD, 2002). While ICT production contributes significant share to value added and employment in some countries and brings dynamics to their economies, in other countries IST diffusion and its impact on the economy and society is perceived as a much more important element of ICT/IST. The latter holds true also for Slovenia.

Dynamic growth of ICT sector in Slovenia in the period 1995-2001 resulted in the increased share of ICT sector in total value added of non-financial corporate sector. The growth of the ICT sector was driven mainly by ICT services, which account for two thirds of ICT sector value added. The productivity of ICT services lags behind the EU average much less than the productivity of total Slovenian economy. In the second half of the nineties

Slovenian exporters of computer and of communication services increased their market share on the EU markets suggesting that their competitiveness is being improved. This indicates that ICT services are relatively well developed and might present a strength in the implementation of Information society activities. However, there is much scope for further improvement in quality and in better adaptation to customer needs. Less favourable is the performance of ICT manufacturing. It is highly concentrated in three industries among which only production of electronic components is performing well while the other two (instruments and appliances for measuring and telecommunication equipment) were in the nineties facing the decline in employment. Nevertheless, innovation intensity (relation between the innovation expenditure and turnover) of firms in ICT-related sectors is in many activities above the average for total corporate sector. The manufacturing of telecommunication equipment is leading in that regard, followed by computer services which might suggest that the competitivness of both activities will increase further.

Slovenia is net importer of ICT goods and services mainly on account of high imports of hardware, which is not produced locally. However, trade in computer services is quite balanced, pointing to good quality of these services and to familiarity of local suppliers with the specificities of the market. Foreign investors are present in Slovenian ICT sector to a larger extent than in total corporate sector. All major brands of international ICT companies are present in Slovenia. The share of companies with foreign capital in total ICT sector turnover (18.9%) is higher than on average for all commercial companies (16.7%). It might be expected that FDI to ICT companies will increase when Slovenia becomes part of the Single market. This will bring new technologies and know-how, strengthen the competition and boost diffusion of advanced ICT and services with spill-over effects.

Threats to ICT sector development are seen in its fragmentation and in prevailing orientation of companies to domestic market. Also, many companies are faced with the lack of experts combining ICT and managerial experience and skills. Qualified human resources are also fundamental for participation in international projects and for internationalisation in general. These characteristics weaken the ability of Slovenian ICT companies to compete on the EU internal market. Future development of ICT sector in Slovenia depends to a large extent on the creation of encouraging environment for entrepreneurship and risk-taking. Opportunities are seen in providing appropriate financial mechanisms (risk and seed capital funds, investment financing) and instruments for the growth of existing companies and for the creation of new start-ups. This would stimulate ICT development, as start-ups are usually based on innovative ideas, driving ICT development. In addition to that, full and effective implementation of telecommunication regulation would exert competitive pressure on telecommunication market and accordingly enable further expansion of ICT service providers.

The experience of Slovenia with the **diffusion of IST** reveals advantages but also deficiencies. The size and depth of IST diffusion can be captured by different indicators, which measure the effective demand for ICT (ICT market), investment in ICT and IST penetration. ICT market in Slovenia expanded dynamically since 1995, particularly ICT services. This could indicate that Slovenian ICT market has already reached the level when services are determining the size and dynamics of the ICT market, this being the case in developed countries already for some time. Major players on the ICT market are the subsidiaries of well known foreign ICT companies which are distributors of hardware, software and accompanying services, along with few local manufacturers who successfully export telecommunications equipment and local ICT service providers, most notably telecommunications operators and software consultancy companies. Data on investment in

ICT for the period 1996-2001 confirm increased demand for ICT, especially by service activities and public administration. This provides solid infrastructure preconditions for quick uptake of eCommerce and other IST applications in these sectors.

In general, indicators of IST penetration suggest that Slovenia was relatively quick in the uptake of new technology, particularly referring to the use of mobile telephones, computers and the Internet. This seems to be the consequence of the development level of Slovenia, of the openness of its economy and also of the high interest of the population for eServices. Quick adoption of some elements of IST was on one hand spontaneous, while on the other hand driven by actions of the government (computer literacy education) and by the introduction of competition (mobile telephony). However, eCommerce is developing very slowly. This can to a certain extent be explained by excessive costs (of equipment, Internet access), lack of e-content in Slovenian language, by the low share of the population with tertiary education who is usually the first to adopt and use new technologies, and also by the lack of policy push for the implementation of some projects. Very slow and hesitant approach of the incumbent telecom operator to comply with the regulation, the most obvious being delay in concluding agreements for inter-network connections and in unbundling the local loop, hampers not only competition in telecommunication services but also slows down IST diffusion.

Companies introduce ICT with different dynamics, depending primarily on their size and financial situation. ICT is mostly used in individual business functions and only best ranking companies have introduced ICT to complex business processes. The experience with business process reengineering demonstrates that the emphasis is predominantly on informatisation of existing processes without the necessary organisational change and change of business culture. This is due also due to the lack of interdisciplinary knowledge and skills related to ICT introduction to business processes.

There are signs of successful introduction of IST in some segments of the public sector, which needs to be upgraded in terms of content and in terms of linking different activities of the sectors in a network that will enable fuller utilisation of IST. Weaknesses in regard of IST diffusion are detected in several areas. They refer to inadequate equipment of the education institutions with ICT (insufficient number of PCs per 100 pupils) and modest share of schools with high-speed access to Internet, coupled with deficient ICT skills of the educational staff. Due to high interest among the population for e-services the largest opportunities seem to exist in eGovernment services for which action plans were already put in place. As public administration is intensively interlinked with other segments of the economy and society, eGovernment services could produce significant spill-over effects, contributing to faster implementation of IS. Public administration has only in the last two or three years undertaken more vigorous actions towards intensive introduction of IST.

The capacity of IST and its diffusion in private and in public sector in Slovenia is utilized only to a limited extent. Apart for infrastructure availability and costs, the capacity to absorb new technologies and services matters as well. This is determined by knowledge and skills of all actors involved, perception of the utility of services and of user friendliness of new technologies for the majority of the population. Knowledge and skills are not reflected only in the attained level of education, but also in interdisciplinary skills, in functional literacy and life-long learning. If the policies fail to provide a coherent and coordinated approach towards IS implementation at the national and local levels this may present a major threat to the efficient diffusion of IST in the future and to creating a balanced Information society (without

substantial digital divide). All stakeholders (business sector, government, public sector, civil society) should make efforts to encourage IST use, thereby exploiting the synergies. With the growing use of eCommerce issues related to safety will increase in importance. If the awareness of safety problems is not raised and the threats not treated at all levels damages may occur undermining the confidence of businesses and individuals for eCommerce. As a consequence, all stakeholders could be deprived of benefits and IST diffusion might experience a slower pace.

2.2. Research and education

R&D and education are crucially interrelated in creating new technologies, in generating absorptive capacity for IST adoption and its diffusion throughout the society. On the other hand, research& education sphere has to cooperate closely with businesses to strengthen the competitiveness of economy.

In the second half of the nineties Slovenia succeeded in maintaining quite solid share of R&D expenditure in GDP (close to 1.5%) and in increasing participation of business in total R&D expenditure. Also, the current level of innovation and R&D activity of IS related sectors is quite good and should be build upon. However, deficiencies related to the generation and transfer of new technologies from the public research sphere to the business sphere remain. They are the result of weaknesses in the public R&D system (emphasis on basic research), of the low innovation activity of the business sector in general, and of non-accomplished reforms of the financial sector (lack of financial mechanisms for the support of R&D and innovation - e.g. venture and seed capital funds, underdevelopment of investment funding). Poor implementation of R&D/innovation policies and non-coordination of different policies also play a part in deficiencies. So far, innovation and R&D policy has not earned sufficient attention of the top economic policy makers when it comes to the funding of these mechanisms and many planned activities are left non-implemented. The resulting weak cooperation between R&D and business sphere hampers faster introduction of new technologies/processes to existing firms or to start-ups, deters technological upgrading of the Slovenian economy and jeopardizes the chances of diffusion of local IST solutions. The reorientation of current R&D policy towards strengthening business focus should significantly encourage the implementation of IST applications. Identification of priority areas, based on analysis of key technologies has even in preliminary phase clearly identified information technologies and related applications as one of the major areas. In the policy circles it is believed that promotion of IS-related research is one of the most important instruments in successful transition to Information society.

Adoption of IST and its diffusion critically depends on educated and skilled people. In the nineties Slovenia achieved the impressive growth of enrolment in tertiary education and accordingly also the dynamic growth of attained educational level. The growth of enrolment in IT-related studies was also significant. Notwithstanding these positive tendencies, the general education level of labour force in Slovenia, measured by the average years of schooling, by the share of employees with tertiary education or by the level of functional literacy of adult population is not sufficiently high to guarantee a smooth transition to knowledge economy. Out-dated education systems and programmes, rigidities of the University are an important obstacle for the transition to IS. The growth in number of students enrolled in tertiary education was not paralleled with the growth of resources (financial and human) dedicated to this education level. Also, programme reforms in direction of more interdisciplinary studies, which would ease the transition to IS, have been severely hindered.

Concerning the availability of ICT specialists the employment statistics does not reflect any shortage, but ICT companies express their concern and feel the lack of high-quality personnel especially those capable of integrating technical, organisational and managerial skills.

Looking at the current policies, Slovenia is well aware of the gap in the existing quality of human resources and the needs to upgrade their knowledge and skills in view of the transition to IS. While some improvements have already been achieved, the challenges are still substantial, both in terms of resources and in terms of content of reforms in educational system. The planned reforms (some are already under implementation) of the education system stress as strategically important all the topics highly relevant for IS: special attention to promotion of tertiary education, increase of interdisciplinarity in education content and active support to life-long learning. Nevertheless, the interest among adult population for life-long learning is lacking and this represents significant threat not only to IS implementation but to the digital gap as well.

2.3. Societal, demographic and cultural aspects

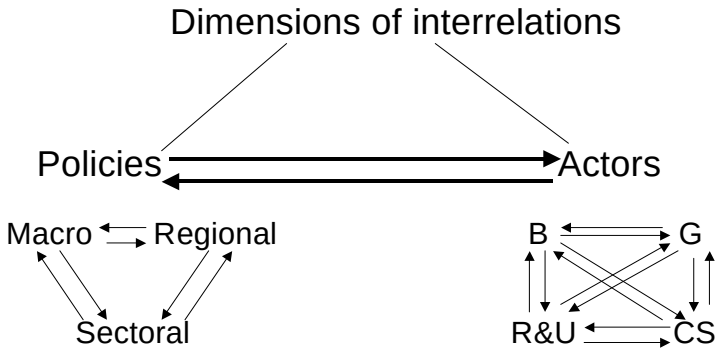
The trajectories of Slovenia towards IS are affected by demographic, educational and cultural characteristics of the Slovenian population, by their values and behaviour. As most European countries Slovenia is also faced with an increasing share of ageing population, which had acquired education and skills in times when ICT was not the dominant technology. On the other hand there is a segment of population with inadequate level of education or skills, necessary for active participation in IS. Both groups necessitate the introduction of specific policies and measures in order not to be deprived of IS benefits. The major opportunity in overcoming these weaknesses points to the implementation of life-long learning which could compensate for the drawbacks. Nevertheless, the results are to be expected only in the longer term. Therefore, these weaknesses may turn to threats of digital divide, particularly in remote and border regions with high concentration of aging population with low education attainment, coupled with emigration of young population. Timely awareness of these threats and decisive countervailing actions for their alleviation in deprived regions could mitigate the difficulties.

Low emigration from Slovenia reflects solid welfare of the population and above all good quality of life while low migration within the country might also indicate the inherent bias of the Slovenes against changes and risk taking. The reflection of such attitude can also be discerned in weak entrepreneurship and innovation culture present in Slovenia. Since such characteristics are historically embedded and change very slowly they could affect the capabilities of businesses and of individuals to grasp and utilize new challenges and opportunities provided by the information communication technologies. This could seem contradictory to quite spontaneous adoption of IST and high interest of the Internet users for IS services. Nevertheless, it could be explained by the fact that becoming an Internet user or eServices user does not involve risk taking or involves limited risk taking (except in case of ePayment). However, entrepreneurs engaging in the supply of eServices undertake much higher risks and this might partly explain slow progress in the provision of these services. Promoting entrepreneurship and innovation culture at all levels of education system is of utmost importance for gradual change in the behavioural and cultural patterns.

3. Interrelations, multi-causality and multidimensionality

As exemplified throughout the diagnosis, interlinkages and causalities between factors of IS in Slovenia abound. They are complex, multidimensional, multi-causal and some may not be evident at first sight. Since it is impossible to capture and identify all of them we first present a more generalized picture of these interrelations coming out of the analysis of factors of IS evolution in Slovenia. These interrelations are aligned along two major dimensions relevant from the perspective of past experience and also of future prospects of IS development in Slovenia. As shown in a very simplified way in the Graph 1 policies and actors are seen as the key dimensions of these interrelations.

Graph 1: Interrelations between policies and actors



Policies and actors are deeply interrelated in the process of IS implementation at different levels. Policies at the macro, regional and sectoral levels interact among themselves, as do the different actors: business (B), government (G), research & university (R&U) sphere, civil society (CS). However, policies at different levels are also interrelated with various actors. This framework could be further elaborated and illustrated by a number of cases, each revealing specific interrelations. Instead we describe two of them which are considered relevant from the Slovenian experience with IS implementation. One relates to interrelations of policies and the other to interactions among actors although both include other interrelations as well.

Policies' interrelations

The analysis of R&D and innovation in Slovenia in the nineties revealed that notwithstanding the policies and instruments introduced to encourage these activities (technology parks, technology centres, Innovation relay centre, Technology development fund) their implementation was poor. Beside the fact that financial resources were insufficient other hampering factors came to the forefront as well. These relate to the business environment, which was not conducive to entrepreneurship or to private investment. It includes complicated and protracted administrative procedures, deficient cooperation between R&D and business sphere and the lack of appropriate financial instruments (venture capital funds, investment

financing). This shows that implementation of R&D policy alone without the necessary support measures of other policies brought poor results and consequently contributed to slower technological restructuring of the Slovenian economy. In such environment also the diffusion of IST was slower as it could have been would the interrelations among different policies be acknowledged and taken into account. If these deficiencies are not getting due attention in the future and synergies of coordinated policies approach not utilized, also the implementation of IS policies may lag. The above case shows that sectoral policies (R&D) are closely interrelated with other sectoral policies and affect national and regional capacities for IS implementation.

Actors' interrelation

We selected as an example the suppliers of business services in Slovenia (as representatives of business sector) and looked at their interrelations with other actors. On one hand, business service suppliers intensively use ICT to increase efficiency, to improve the quality and the range of services for their customers. On the other hand, they generate solutions and new knowledge-intensive business services (e.g. consultancy related to integration of ICT to business processes or consultancy related to intellectual property rights protection) for other actors (businesses, public administration, research and university sphere, individuals). The lack of such services in Slovenia, which would be adapted to the requirements of different customers, hinders technology transfer and diffusion of innovation. The interrelations of business suppliers with other actors encompass other areas as well. For example, to get highly educated experts, business services firms rely not only on Universities, but they themselves also participate in shaping the curricula for University programmes, according to their and other businesses needs. In Slovenia this was rarely the case so far and companies were not satisfied with the skills and knowledge of graduates. On the other hand, although the functioning of business service firms is mainly market led, regulatory and institutional environment set up by the government can enhance certain business options and ways of doing business. For example, the adoption of e-signature Act in Slovenia gave clear signal to firms that the government supports eCommerce by providing the regulatory framework. However other preconditions have to be met as well to enable quick up take of eCommerce. Last but not least, business service suppliers interact with individuals or civil society needs via developing user-friendly ICT solutions (e.g. for disabled persons). In everyday life however, interlinkages and interactions among major actors are much more diversified.

The investigation of factors in IS in Slovenia, of their interlinkages and the consequent SWOT analysis revealed that the most cross-cutting issue refers to knowledge and skills, which seem to be the determinants of the scope and dynamics of IS implementation not only in the past but even more so in the future. The availability of appropriate knowledge and skills pervades further progress in IS implementation be it at the level of policies or actors. The education level of Slovenian population is deficient, especially when measured by the share of tertiary educated people. Functional illiteracy is a further problem, coupled with low share of participation in life-long learning which prevents certain segments of the population to actively participate in IS. Broader diffusion of IST in business is hampered by the lack of experts with multidisciplinary skills that enable the integration of technical, organisational and managerial aspects of ICT introduction to business processes. Lack of skills necessary to cope with IS challenges is evident in public administration and in regulatory institutions as well. Hence the need to bridge the skills mismatch, to accommodate the existing or/and to acquire new knowledge is of utmost importance for IS implementation. Advanced telecommunications infrastructure, ICT equipment and competitive markets, while being fundamental enablers of IS implementation, cannot compensate for the lack of skills and

knowledge which ultimately define the absorptive capacity of individuals, companies and economies regarding the IS adoption.

The analysis of factors of IS in Slovenia shows the overwhelming dichotomy between relatively solid regulatory and institutional framework and poor implementation of policies, action plans and strategic documents. It is revealed in different areas bearing on IS implementation. This above all points to the lack of political will and of commitment to carry out the necessary reforms, but also to inadequate and non-coordinated governance of changes which again have to do with deficient managerial and organisational knowledge and skills in administration. The breakthrough related to the above dichotomy is of utmost importance for faster progress in overall development of Slovenia.

The integration to the EU brings new opportunities also in regard of more coherent approach towards IS implementation. The Lisbon process towards building the most competitive, knowledge based economy provides broad economic policy guidelines to meet the targets in different areas. This puts certain pressure and push on domestic policies to act in the same direction, which is already being reflected in Slovenia. Particularly relevant for the progress towards IS are policies related to increased investment in R&D, innovation diffusion and education & training which enhance both the supply of new technologies and their utilisation throughout the economy.

As a concluding remark it can be perceived that solid macroeconomic situation, political stability and absence of major shocks in the last decade on one hand present the advantage of Slovenia for further development, also in regard of IST diffusion and IS implementation. On the other hand, this does not provide any impulses for dynamism or leap-frogging in development. Nevertheless, Slovenia has a good starting position to progress quite successfully along the path of IS. To spur this process, there is a need for a coherent and well co-ordinated policy towards IS, which should be based on decisive leadership, cooperation and the consensus of all partners (business sphere, university and research sector, public administration and citizens), taking advantage of synergies. Recently, some indications from different actors (Slovenian government, political parties) show that the awareness of the need for coordinated action is growing.

SCENARIOS FOR FUTURE DEVELOPMENT

The purpose of this Section is to describe three scenarios of possible development of Slovenian economy with particular reference to ICT/IST. Scenarios were prepared on the basis of SWOT analysis of factors and impacts in IS and further complemented by interviews with individuals representing major actors in IS (public administration, business sector, university and research sphere).

SWOT analysis revealed that the accession to EU and the economic performance in EU are an important opportunity/threat to further implementation of Information society given the fact that EU is the major Slovenian trading partner. Being a small open economy strongly exposes Slovenia to the circumstances in the external environment. Even so, it is assumed in the scenarios that the external environment does not exert major pressures on domestic economy to focus more clearly on domestic policies. Overall, the integration of Slovenia into the EU is expected to have positive impact on structural reforms and on strengthening the competitiveness of businesses. The main challenges will be faced by those sectors where reforms were slow over the last decade (e.g. financial system) and by those companies with low levels of technological sophistication and low investment in ICT and innovation. The negative impact of these challenges may be reflected in increased unemployment and consequent pressure on the budget expenditure.

According to SWOT analysis, the majority of opportunities and threats related to future ICT/IST development in Slovenia arises from the political will and ability of setting up adequate IS related policies and their prompt and efficient implementation. The scenarios are therefore based on three different policy mix options. The main conclusion derived from the scenarios is that the level of transition to the IS is expected to increase further during the observed period to 2010. However, the pace of development will be rather slow in the case of passive IS related policies, which would maintain the position of Slovenia behind EU 25 average in terms of IS and in terms of general economic development. In contrast, determined and well coordinated IS related policies would result in rather fast convergence with EU 15. The third scenario, although based on initial pro-active policy and consensus fails to provide fast convergence with the EU as Slovenian policies might face severe financial constraints due to unemployment growth.

The comparison of probable Slovenian achievements related to general development or to IS development with the EU benchmark is highly speculative as this benchmark is changing as well.

1. Baseline scenario

As a point of departure for this scenario it is expected that policies aimed to spur IS development and the pace of their implementation will not change radically up to 2010, which will render difficult the fast catching up of Slovenia with most advanced economies in terms of IS implementation and general economic development.

As evidenced in the first part of the monograph, the Information society evolution in Slovenia has been a combination of spontaneous developments and sporadic policy push, the latter being reinforced particularly in the new millennium (emphasis on e-government). It is therefore expected that the governmental IS policies will remain focused mainly on measures to increase IST penetration in public administration and on the promotion of IST use among

the general population. In contrast, the government will likely fail to provide efficient incentives to the business sector to increase the use of IST and to establish linkages between public and business sector.

Implementation of IS related policies and regulation is expected to lag behind the proclaimed goals. First of all this will be due to inability of the government (not so much individual ministries) to set common priorities for the future development and implement them efficiently. Further, it will be reinforced by the fragmented approach of different actors, lack of institutional capacities (e.g. concerning efficient implementation of regulation of telecommunication market), and by insufficient resources, in particular public finance resources. Despite the fact, that public finances were more or less balanced in the last decade, pressures related to implementation of EU legislation (requiring also establishment of new institutions) and policies (in particular Common Agricultural Policy) are expected to increase further in the future. This will require fiscal restrictions and restructuring of general government expenditures, which may render difficult, especially in the case of not well-defined development priorities, and may therefore hinder faster IS implementation.

After the expansion in the last decade, ICT sector growth will gradually slow down to the level of the average rates of growth. It will be predominantly services driven, as it has been the case in recent years. The demand for computer & information services and for telecommunication services will expand on account of relatively more intensive use of ICT in almost all spheres of economic and social life. Telecommunication services suppliers will continue to be major players, which is also due to the fact that alternative telecommunication networks providers will enter the market. Increased demand for computer & information services will be predominantly met by local suppliers (rather small companies) although foreign companies will increasingly enter the market due to the integration to the EU both via FDI in ICT service companies and as independent companies.

The bulk of ICT manufacturers in Slovenia will remain small-scale producers. Some new specialised producers may appear as niche suppliers on the basis of innovative products and enhanced cooperation between the research sphere and businesses. This cooperation coupled with increased public and private expenditure on R&D will contribute to gradually increasing share of high-tech products, including ICT products, in export portfolio of Slovenian companies. However, no major expansion of ICT manufacturing is expected since Slovenia is not attractive for foreign investors due to high wages compared to the other candidate countries and due to relatively small domestic market. Furthermore, the lack of experts with combined technical and managerial skills will additionally decrease the attractiveness of Slovenia for foreign or/and domestic investors in ICT manufacturing.

Owing to the fact that Slovenia invested quite heavily in ICT in the last decade and achieved relatively high levels of IST penetration, it could be expected that the pace of IST diffusion will not be as dynamic as in the past. Nevertheless, it will spread broader and deeper throughout the economy and society. It seems probable that with the implementation of most strategic documents adopted by the government related to IS the diffusion of IST will be the strongest in public administration. It is however not yet clear if this will produce spill-over effects on other segments and pull the businesses to intensively apply ICT as well. The companies, which are already well integrated into global networks, will further expand the applications of ICT supported solutions to ever-broader spectrum of functions with positive spill-over effects on their suppliers as well. On the other hand, companies serving mostly the local market will be poorly equipped to participate in IS, particularly due to the lack of

interdisciplinary knowledge related to ICT introduction to business processes. Should the policies concentrate on ICT adoption in public administration and in public services only (which is to some extent also encouraged by the integration to the EU and related to eEurope^{+} action plans) and fail to establish linkages and incentives to the business sphere, the risk of fragmented and unbalanced developments might appear with poor synergies and inferior results than in the case of coordinated policies.

With regard to education policy, which seems to be crucial factor of efficient IS development in Slovenia in the coming years, it may be expected that the thorough reform of tertiary education system and setting up of measures to foster life-long learning will be postponed and not fully implemented in the period to 2010. Nevertheless, the government will recognize the importance of education and R&D for future development in line with Lisbon/Bologna objectives; so public resources for these two fields are expected to slightly increase. In circumstances of postponing education reform and lack of (or weak) policies promoting life-long learning, education level of labour force will present additional risk for faster progress of Slovenia on the way to IS. Lack of skills necessary for IS will pose serious problem for the adoption of IST in society at large. In that regard low share of population included in life-long learning will preclude broader use of IST by older segments of the population. This could lead to the deprivation of the increasing share of the total population from the IS benefits and create a significant digital divide.

Notwithstanding the progress which will be achieved in the diffusion of IST in economy and in society, the lack of well defined development priorities, the lack of coordinated and mutually reinforcing approach of major actors (government, businesses, research and university, civil society), the lack of skills for IS adoption and expected public finance restrictions will result in rather slow catching up of Slovenia with most advanced economies both in terms of IS development and the general economic development. Additionally, Slovenia may loose its advantage in the level of Information society implementation compared to some accession countries.

2. Pro-active policy approach with strong leadership scenario

This scenario is based on a considerable shift towards pro-active and coordinated policy mix for dynamic transition to Information society, which could enable Slovenia to substantially reduce the gap between domestic economy and most advanced EU economies in terms of IS and the general economic development by the end of 2010.

A new policy approach to Information society is to be adopted by the Slovenian government, which includes also the leadership of high–profile person who will pursue decisive implementation of policy documents in favour of knowledge-based society. This person will have the support of business and public sphere. Media will also be integrated into the promotion of knowledge- based society, which might help to mobilize wider audience for the achievement of this goal. Rapid and pro-active transition to the IS (within the context of knowledge-based society) is expected to become the primary goal of economic and social policies. The centrality of knowledge-based society and of IS as a development priority will be based on a consensus among partners within the government as well as on the consensus among different stakeholders (government, business, civil society). Instead of a piecemeal strategy, which was characteristic in the past, a holistic and a coordinated approach of different policies and actors is likely to be put in place. The coordination of macro and micro

economic policies with clear objective of development catching up based on ICT promotion, will be put in action, supported integrally by education and R&D policies.

However, education system reform is expected to be a long process bearing most of its fruits in a period beyond 2010. This will prevent swift implementation of IS in different fields. The regulatory environment and the government administration will be organised so as to fully support the implementation of IS. Nevertheless, newly established institutions with substantial lack of experienced personnel (e.g. regulatory institutions) are not expected to be able to immediately operate efficiently. Also, temporary public finance restrictions may impede faster implementation of IS related policies and projects.

ICT sector is expected to grow dynamically (both manufacturing and service companies). The impetus will come both from increased competition on the EU internal market and from the tax policy incentives, where special provisions will be made for ICT and R&D investments. Accordingly, business investments in more complex ICT are expected to grow dynamically, stimulating local ICT companies to innovate and to supply more sophisticated services. Furthermore, enlarged EU market, together with pro-active domestic economic policy, is expected to exert positive impact on the consolidation and integration process of ICT companies and towards building strategic alliances (clusters, technological networks) between smaller independent firms. This will increase their competitiveness, due, on one hand, to the pooling of resources and on the other, due to further product/service specialisation. With the growth of quality in the specialised segments, the attractiveness of the Slovenian ICT sector is expected to increase also for foreign investors. An important market for Slovenian ICT companies will remain the Balkan area, where solutions developed for Slovenia are successfully transferred. Because of familiarity with the languages and business practices in the Balkan markets, Slovenian companies may also become an important partner for Western European companies entering these markets. This will contribute to the growth of exports of ICT sector of both, products and services. Increased level of technological upgrading will result in the dynamic growth of high-tech and higher value-added exports in other sectors as well.

The period to 2010 is characterised by the effective introduction of competitive telecommunication market, further stimulating faster uptake of ICT by businesses, households, and society at large. Providers of alternative telecommunications infrastructure will enter the market encouraging effective competition. The privatisation of Telekom Slovenije will be successfully implemented. This is expected to increase investment capacities of incumbent operator in fixed telephony and bring new services of higher quality. The tariffs of some telecommunication services will be lowered (e.g. inter-network connections, leased lines) while tariffs for others could increase (e.g. mobile and fixed telephony calls). A number of new, innovative services will be introduced to the market based on 3G and mobile-internet technologies, both for business and household use. This will provide sufficient stimuli even to laggards to upgrade their telecommunication installations to fit the needs of IS. Household use of Internet based on broadband will also grow substantially as a result of lower total costs of Internet use, the availability of diverse on-line services (especially those related to eGovernment) and of more content in Slovenian language. This will provide the needed incentive to the growth of eCommerce, in B2B, B2C, G2B and G2P sphere.

The centrality of transition to Information society will be felt in the education and R&D sector, with substantially higher private and public expenditure on R&D, innovation and tertiary education. Long-discussed shift in public R&D expenditure toward applied research

will help strengthen the link between research sphere and business, since the business sees the opportunities to directly apply research results of the science sector to their ongoing activities. More R&D investment is needed to tap into new prospective business areas; so business and public financing of research will collaborate in priority setting and joint financing which will help in fulfilling the Barcelona objectives. R&D sector is expected to be increasingly internationalised and researchers to participate actively in ERA (European Research Area). This will enable transfer of international R&D results to Slovenia and also bring foreign expertise to research sector and to the businesses.

The high levels of tertiary enrolment at the end of nineties and beginning of this century is likely to contribute efficiently to higher overall educational level of the labour force, enabling a more dynamic introduction of complex Information society technologies. Special focus on the general computer literacy will be achieved by changes introduced to regular education system as well as by specialised programmes for adult education. The government and the corporate sector will systematically promote life-long learning and private investment in education will be given additional tax incentive. Reforms of the education system will focus on multidisciplinary and flexible education programmes at all levels, but especially at tertiary levels. However, as already mentioned, the bulk of benefits from education system reform is expected to come after the observed period to 2010 especially taking into account the inertia of old patterns of education. Consequently, the lack of skills necessary for IS will still be an impediment to smooth IS implementation, particularly in remote regions.

Pro-active policy approach coupled with strong leadership toward IS implementation is critical for the realisation of this optimistic scenario. Despite deficiencies hindering faster ICT/IST development (insufficient institutional capacities, modest level of technological restructuring, insufficient labour force skills due to inadequate educational system in the past, public finances limitations) such approach is assessed to bring Slovenia above the EU 25 average regarding the level of IS development (measured by different IS indicators) and to close the gap between Slovenia and the EU 25 average in terms of GDP per capita.

3. Pro-active policies, but unfavourable circumstances scenario

Just as the second one, this scenario is also based on a considerable shift towards pro-active and coordinated policy mix for dynamic transition to Information society, which could enable Slovenia to substantially reduce the gap between domestic economy and most advanced EU economies in terms of IS and the general economic development by the end of 2010.

Rapid and pro-active transition to the IS (within the context of knowledge-based society) is expected to become the primary goal of economic and social policies. The centrality of knowledge-based society and of IS as a development priority will be based on a consensus among partners within the government as well as on the consensus among different stakeholders (government, business, civil society). A holistic and a coordinated approach of different policies and actors are to be put in place. The coordination of macro and micro economic policies with clear objective of development catching up based on ICT promotion, will be put in action, supported integrally by education and R&D policies.

But proactive government policy is to be confronted with severe difficulties in the area of public finances. Despite the fact, that public finances were more or less balanced in the last decade, pressures related to implementation of EU legislation (requiring also establishment of new institutions) and policies (in particular Common Agricultural Policy) are expected to

increase further in the future. Also, with business confronted by the increased competition of the Single Market, the consequences of slow and insufficient technological restructuring will surface and result in increased inability to compete. This will consequently lead to closure of several more labour-intensive (and therefore important employers) industries (such as textile and clothing industry, leather industry), increasing the demand for social transfers (unemployment benefits, social funds) and additional pressure on budget. All these will require fiscal restrictions and restructuring of general government expenditures, which will result in lowering the investment in IS implementation, in reforms of tertiary education and in public R&D investment. In fact, the government will have to cut back on some incentives for more dynamic ICT diffusion and severely restrict its programmes in the area of IS and digital divide prevention. Public finance restrictions may impede also the ability to draw on EU Structural Funds and several programmes prepared within Single Programming Document will remain on paper.

ICT sector is expected initially to grow dynamically (both manufacturing and service companies). The impetus will come both from increased competition on the EU internal market and from the tax policy incentives, where special provisions will be made for ICT and R&D investments. But with withdrawal of tax incentives and lower government investment in ICT sector, the smaller companies will experience serious business problems. Business investments in more complex ICT by larger or foreign-owned companies are expected to grow, stimulating on one hand the local ICT companies to innovate and to supply more sophisticated services and on the other, foreign suppliers of such services. The enlarged EU market is expected to exert positive impact on the consolidation and integration process of ICT companies and towards building strategic alliances (clusters, technological networks) between smaller independent firms. But these expectations will be met only partly, due to absence of government's incentives for ICT diffusion and for strategic alliances and its own low spending. While the competitiveness of some may increase and lead to further product/service specialisation, others will be forced to exit. For those remaining, exporting will become a priority. An important market for Slovenian ICT companies will remain the Balkan area, where solutions developed for Slovenia are successfully transferred. Because of familiarity with the languages and business practices in the Balkan markets, Slovenian companies may also become an important partner for Western European companies entering these markets. This will contribute to the growth of exports of ICT sector of both, products and services.

The period to 2010 will be characterised by the effective introduction of competitive telecommunication market, further stimulating faster uptake of ICT by businesses, households, and society at large. Providers of alternative telecommunications infrastructure will enter the market encouraging effective competition. The privatisation of Telekom Slovenije will have to be rapidly implemented, since the government will need the extra resources. This may limit the government's ability to negotiate the best possible outcome. The tariffs of some telecommunication services will be lowered (e.g. inter-network connections, leased lines) while tariffs for others could increase (e.g. mobile and fixed telephony calls). A number of new, innovative services will be introduced to the market based on 3G and mobile-internet technologies, both for business and household use. Household use of Internet based on broadband will also grow as a result of lower total costs of Internet use, but not as dynamically as expected due to the slow down of the availability of diverse on-line services (especially those related to eGovernment) and of more content in Slovenian language.

Public finance limitations will affect the education and R&D sector, with lower private and public expenditure than previously planned on R&D, innovation and tertiary education. Long-discussed shift in public R&D expenditure toward applied research will be a must and should help strengthen the link between research sphere and business. More R&D investment will be coming from business sector and therefore refocus the content of research in public R&D as well. Increased business financing of research will affect the priority setting.

Education system reform will be a long process bearing most of its fruits in a period beyond 2010, and will be further delayed due to insufficient funding. This will prevent swift implementation of IS in different fields. The high levels of tertiary enrolment at the end of nineties and beginning of this century is likely to contribute efficiently to higher overall educational level of the labour force, enabling a more dynamic introduction of complex Information society technologies in the parts of business sector, where technological transformation was timely. Special focus on the general computer literacy will be achieved by changes introduced to regular education system as well as by specialised programmes for adult education. Life-long learning programmes will be left to the corporate sector and private investment in education with no additional tax incentive. Reforms of the education system will be focused on multidisciplinary and flexible education programmes at all levels, but especially at tertiary levels their implementation will be slow due to lack of financial assistance from the government. However, as already mentioned, the bulk of benefits from education system reform is expected to come after the observed period to 2010 especially taking into account the inertia of old patterns of education. Consequently, the lack of skills necessary for IS will still be an impediment to smooth IS implementation, particularly in remote regions. With the reduced or cancelled government programmes on e-villages, e-schools and computer literacy programmes for adults, the digital divide is going to increase, along with growing differences among regions. The risk groups (elderly, those with low education or low income) will be affected most severely.

In spite of pro-active policy approach in the beginning the lack of financial means to support IS policies will hinder the transition toward IS. Such development of events may result in loosing Slovenia's favourable position in relation of the EU 25 average regarding the level of IS development (measured by different IS indicators) and make it impossible to close the gap between Slovenia and the EU 25 average in terms of GDP per capita.

References

Action Plan E-Government up to 2004, http://e-gov.gov.si/e-uprava/english/prevod-an2004.pdf

Autumn Report, 2002, Institute of Macroeconomic Analysis and Development, Ljubljana.

Banovec, Tomaž (1998): Državna in javna uprava, definicije na osnovi nove sektorizacije poslovnih subjektov in informatika ter njena evropeizacija (State and public administration, informatization in the European context), in Informatika v ministrstvih, vladnih službah, državnem zboru, upravnih enotah, lokalni samoupravi in javnih službah. INDO'98, Kongresni center Bernardin, 21-23. September 1998, pp. 45-57.

Basic Facts & Indicators Slovenia, January 2001, http://www.euesis.org/esis2basic/Sibasic7.htm

Bavec, Cene (1999): Tehnološka politika (Technology policy), Scientia, 29. December 1999.

Bavec, Cene (2003): Information Technology Impact on Business- Managements' View and Assessment, Information Society 2003, Proceedings B of the 6th International Multi-Conference, Ljubljana, 2003.

Berce, Jaro (2003): Hierarhija ni znanje per se (Hierarchy is not knowledge per se), referat na konferenci Sistemi za upravljanje z dokumenti dok.sis, May 2003.

Berdnik-Vozel, Mojca (2000): Razvojni tempo je prepočasen! (Development dynamic is too slow!), Gospodarski vestnik, Vol. IL. No. 40. pp. 38-41.

Bednaš, Maja (2002): Ocena gospodarskih gibanj v letu 2001 in analitična utemeljitev pomladanske napovedi gospodarskih gibanj v letih 2002 in 2003, Pomladansko poročilo 2002 (Economic developments in 2001 and analytical explication of spring economic forecasts for 2002 and 2003, 2002 Spring Report), Institute of Macroeconomic Analysis and Development, Ljubljana.

Bednaš M., Rojec M., Šušteršič J., Vasle B. (2002): Vstop v EU: konec gradualizma v Sloveniji? (Accession to EU: End of Gradualism in Slovenia?), 7. letna konferenca Zveze ekonomistov Slovenije, Ljubljana, 29. November 2002.

Bešter, Janez, Uršič, Sonja (2002): Analiza konkurenčnosti po dejavnostih glede na slovensko povprečje in v primerjavi z državami EU: Storitvene dejavnosti (The Analysis of competitiveness of Slovenian service activities compared to the EU), IER, December 2002.

Bobek, Samo (1999): Business process reengineering : lessons learned from a project in a Slovenian bank, IDIMT '99, 7th Interdisciplinary Information Management Talks, 2-3. September 1999, Linz : Universitatsverlag Rudolf Trauner, Schriftenreihe Informatik, No. 2. pp. 49-59.

Bučar, Maja (2001): Razvojno dohitevanje z informacijsko tehnologijo? (Catching-up with Information Technology?), Fakulteta za družbene vede, pp. 267.

Bučar, Maja (1999): Inovativnost v razmerah informacijske družbe (Innovativeness in information society), Naše gospodarstvo, Vol. XLV. No. 5/6. pp. 395-403.

Bučar, Maja and Stanovnik, Peter (1999): Some Implications for the Science and Technology System in a Transition Economy: the Case of Slovenia, in Brundenius et al.: Reconstruction or Destruction ? S&T at Stake in Transition Economies, Hyderabad, Universities Press (India) Ltd.

Bučar, Maja, Stare, Metka (2001): Information Technology: Country Profile-Exports Potential, SLOVENIA, background paper, Regional Business Roundtable for Economies in Transition, International Trade Centre, Bled.

Bučar, Maja, Stare, Metka (2001): National Innovation Policy Profile: Slovenia. Ljubljana: background study to the project Innovation Policy in Six Applicant Countries: The Challenges (INNO-99-02, ADE).

Bučar, Maja and Stare, Metka (2002): Slovenian Innovation Policy: Underexploited Potential for Growth, The Journal of International relations and Development, 5(4) pp. 427-448.

Bučar, Maja and Stare Metka (2003): From Quantity to Quality: Critical Assessment of Slovenia's Potential for Knowledge – based Growth, paper presented at the conference "The Knowledge-Based Economy in CEEC: Exploring the New Policy and Research", SSEES, Univeristy College, London, 28-29. April 2003.

Coopers & Lybrand (1997): Country Reports RTD Infrastructures: Extended Managemnet Summaries. Luxembourg: Coopers & Lybrand.

Damijan, Jože et al. (2003): Ocena makro in mikroekonomskih učinkov vstopa Slovenije v EU (Assessment of macroeconomic effects of integration of Slovenia to the EU), GZS, Ljubljana.

Dekleva, Humar, Luka (2003): Ni vedno za vse kriv Telekom (It's not always Telekom's fault), Interview with Minister for Information Society Pavel Gantar in the newspaper Delo, 19. April 2003.

Delo (2003): Vrednost slovenskega trga informacijske tehnologije (The value of Slovenian IT market), 7. February 2003.

Dimovski, Vlado, Škerlavaj, Miha (2003): Vpliv investicij v informacijkos-komunikacijske tehnologije na produktivnost v Sloveniji: empirična raziskava (The impact of ICT on productivity in Slovenia:empirical investigation), zbornik Dnevi slovenske informatike, Portorož 16.-18. April 2003. pp. 488-495.

Direct Investment 1996-2001, 2001, Bank of Slovenia.

Dolenc, Danilo (1998): Srateška vprašanja statističnega spremljanja selitev in regionalni vidik notranje migracijske (ne)povezanosti Slovenije (Strategic questions of statistical surveys of migration and regional view of internal migration connectedness of Slovenija), Statistični dnevi 1998, Radenci 23-25. November.

Economist (2001): Slovenia online- Brave new world, 20. October 2001.

eEurope+ (2001) Action Plan. European Commission. DG Information Society (pdf.file).

EITO (2002) European Information Technology Observatory.

EITO (2001) European Information Technology Observatory.

European Innovation Scoreboard 2002; Cordis Focus; European Commission.

Eurostat, 2002, Key structural data for the 10 Acceding Countries, News release, no. 143/2002.

Finance, Evropa opazovala boj med skupino Telekoma Slovenije in večino preostalih telekomunikacijskih ponudnikov v Sloveniji (Europe observed the fight between the Telekom group and other suppliers of telecommunications in Slovenia), 31. March 2003.

GCI Press release, February 2001.

Glogovšek, Jože, Beloglavec, Sabina (2000): Holistic reorganization of a bank business process STIQE '00, Miroslav Rebernik, Matjaž Mulej (eds.), Maribor, Institute for Entrepreneurship at Faculty of Business Economics, pp. 47-58.

Gnamuš, Aleš (2002): Mednarodno sodelovanje Republike Slovenije na področju znanosti in raziskav v obdobju 1992-2002 (International cooperation of Slovenia in R&D during 1992-2002) in Sorčan, S. editor (2002) Raziskovalna dejavnost na Slovenskem v 90.letih dvajsetega stoletja (Research activity in Slovenia during the nineties), Slovenian Academy of Science and Arts, Ljubljana.

GOPA (1994): A Science and Technology Strategy for Slovenia. Brussels. Phare Operational Programme, mimeo.

Hanžek, Matjaž (1998) Poročilo o človekovem razvoju Slovenija 1998 (Human Development Report Slovenia 1998), Institute of Macroeconomic Analysis and Development, UNDP

Hrovatin, Nevenka, et a.l (2000): Regulacija trgov po vstopu Slovenije v Evropsko unijo, Raziskovalno delo za Strategijo gospodarskega razvoja Slovenije 2001-2006 (Market regulation after accession to EU, Research work in the process of preparation of the Strategy of Economic Development of Slovenia 2001-2006), Faculty of Economics,Faculty of Economics Research Centre, Ljubljana.

IBM (2002): 2nd Report on Monitoring of EU Candidate Countries (Telecommunication Services Sector), 16. December 2002. Version 2.5.

IBM (2003): 3rd Report on Monitoring of EU Candidate Countries (Telecommunication Services Sector), 16. June 2003. Version 3.2.

ICT in education (2003): http://www.mszs.si/eng/education/system/ict.asp, 15.April 2003.

Innovation Survey (2002): Innovation Activity in Manufacturing and Selected Services 1999-2000, Rapid Reports No.2, 3. February 2003.

Information and Communication Technologies (2002): Enlargement Futures Report Series 05, Institute for prospective Technology Studies, March 2002.

ITU (2003) Press Release, ITU Digital Access Index, 19. November 2003. http://www.itu.int/newsroom/press_releases/2003/30.html

Jagodič, Marko, Medved, Alfonz (1998): Slovenske telekomunikacije in vključevanje Slovenije v evropske in svetovne integracije (Slovenian telecommunications and the integration of Slovenia to European and world integtration), Teorija in praksa, Vol. XXXL. No. 1. pp. 95-108.

Javornik, Jana, Korošec, Valerija (2003): Poročilo o človekovem razvoju, Slovenija 2003 (Human Development Report, Slovenia 2003), Institute of Macroeconomic Analysis and Development, UNDP.

Kajzer, Alenka (1999): Slovenija: Analiza ekonomskih gibanj in ciljni razvojni scenarij do leta 2003, Pomladansko poročilo 1999 (Slovenia: Analysis of economic developments and target developmental scenario by 2003, 1999 Spring Report), Institute of Macroeconomic Analysis and Development, Ljubljana.

Kmet, Rotija et al. (2002): Sektorska analiza poslovanja gospodarskih družb v obdobju 1995-2001 (The analysis of corporate sector in the period 1995-2001), Delovni zvezek, Vol. XI. No. 4. Urad za makroekonomske analize in razvoj.

Kmet, Rotija (2001): Razvoj informacijske družbe v Evropi in v Sloveniji (Information society development in Europe and in Slovenia), IMAD Working Papers, Vol. X. No. 9, 2001, Institute of Macroeconomic Analysis and Development, Ljubljana.

Kump, Sonja, Podmenik, Darka in Macur Mirna (2002): Človeški potencial v slovenskki raziskovalno razvojni dejavnosti (RRD) v obdobju 1990-1999 (Human Potential in Slovenian R&D during the period 1990-1999), in Sorčan, S. Ed., Research activity in Slovenia during the nineties), Slovenian Academy of Science and Arts.

Močnik, Dijana (1999) Fleksibilne organizacije za razvoj znanja (Flexible organizations for knowledge creation), Naše gospodarstvo, Vol. 45. No. 5/6. pp. 455-462.

Mohorčič-Špolar, Vida (2001): Kakovost človeškega kapitala v Sloveniji: informacijska družba in udeležba odraslih v izobraževanju (The quality of human capital in Slovenia: information society and participation of adults in education), Andragoška spoznanja, Vol. 7. No. 1. pp. 78-85.

Mulej, Matjaž (2000): Ekspertiza o vgrajevanju inovacij in inovativnega poslovanja v vizijo, strategijo in taktiko v Sloveniji, (Expert opinion on incorporation of innovation and innovative business practice in the vision, strategy and tactics in Slovenia). Maribor: Mimeo.

Murn, Ana, Kmet, Rotija (2002): Poročilo o razvoju 2002 (Slovenian Development Report 2002), Institute of Macroeconomic Analysis and Development, Ljubljana.

Murn, Ana, Kmet, Rotija (2003): Poročilo o razvoju 2003 (Slovenian Development Report 2003), Institute of Macroeconomic Analysis and Development, Ljubljana.

National Report on Structural Reforms, Slovenia, 2003, Ljubljana.

OECD (2000): Literacy in the Information Age, Final report of the International Adult Literacy Survey.

OECD (2002): OECD Information Technology Outlook.

OECD (2003): Seizing the Benefits of ICT in a Digital Economy. Meeting of the OECD Council.

Pečar, Janja (2001): Regionalni vidiki razvoja Slovenije (Regional Aspects of the Development of Slovenia), Delovni zvezek, Vol. X. No.6. Urad za makroekonomske analize in razvoj.

Pečar, Janja (2002): Regionalni vidiki razvoja Slovenije (Regional aspects of development in Slovenia), Delovni zvezek, Vol. XI. No. 2. Urad za makroekonomske analize in razvoj.

Program of State Property Privatisation in the period 2003-2004, Poročevalec Državnega zbora RS, October 2002.

Pucihar, Andreja (1999): Priložnosti in težave elektronskega poslovanja med organizacijami v Sloveniji (Opportunities and difficulties of e-commerce among enterprises in Slovenia), Uporabna informatika, Vol. 7. No. 4. pp. 7-13.

Regions: Statistical Yearbook 2002, European Commission, Eurostat (2002).

RIS (2003a): Gospodinjstva 2002/1, Primerjava Slovenija – EU (Households, the comparison Slovenia-EU), Fakulteta za družbene vede, January 2003, http://www.ris.org

RIS (2003b): Gospodinjstva 2002/2, Primerjava Slovenija – EU (Households, the comparison Slovenia-EU), Fakulteta za družbene vede, June 2003, http://www.sisplet.org/ris/uploads/publikacije/2003/36%20Slo%20eu.pdf

RIS (2003c): Comparisons Slovenia-EU: Enterprises 2002, RIS Report No. 46. October 2003, http://www.sisplet.org/ris/uploads/publikacije/2003/SIBIS_RIS_DMS_october_2003_x_vesna4.doc

Rojec, Matija, et al (2001): Slovenia: Foreign Direct Investment Review, Paper prepared for the Ministry of Economy of the Republic of Slovenia, Ljubljana.

SAEU (1998): Strategy of the Republic of Slovenia for Accession to the European Union, Institute of Macroeconomic Analysis and Development.

SEDS (2001): Slovenia in the New Decade, The Strategy for the economic Development of Slovenia 2001-2006, Institute of Macroeconomic Analysis and Development.

SEPA (2001): Strategy of E-commerce in Public Administration of the Republic of Slovenia, http://e-gov.gov.si/e-uprava/english/pdf/sep2004-daljsa-angleska.pdf

SPD (2003): Single Programme Document, unofficial draft, April 2003, mimeo.

Setnikar-Cankar, Stanka (2001): Celovitost spreminjanja delovanja javne uprave (Integrated change in public administration functioning), Ekonomika javnega sektorja s proračunskim financiranjem, Ljubljana, Visoka upravna šola, pp. 105-112.

Simoneti et al. (2001): Razvoj trga kapitala v Sloveniji, Razvojno poročilo o finančnem sektorju, Slovenija 2000 (Capital market development in Slovenia, Financial sector development report, Slovenia 2000), CEEPN, Ljubljana

SIBIS+ (2003): Statistical Indicators Benchmarking in the Information Society, Country Topic report: SLOVENIA, WP 5, April 25, http://www.sibis-eu.org/sibis/

SISS (2003): Slovenian Information Society Strategy, http://www2.gov.si/mid/mideng.nsf

Slak, Janez (2000): Slovenska znanost je večinoma že usmerjena v gospodarstvo (Slovenian science is already focused on economy), Scientia, 28. June 2000.

Slovenija kot informacijska družba (1999), (Slovenia – the information society), Modra knjiga, Slovensko društvo Informatika.

Skrt, Radoš (2003): Hitro, preprosto in vedno dosegljivo (Fast, simple and always accessible), Gospodarski vestnik, Vol. LII. no. 15. pp. 53-55. 20. April

Sočan Lojze (1998): Odločilno je strateško zaostajanje (Strategic lagging behind is decisive). Gospodarski vestnik, Ljubljana. 46(1998), pp. 2.

SORS (2002): Rapid Reports on R&D, No.182, Statistical Office of the Republic of Slovenia.

SORS (2003a): Rapid Reports: National Accounts, No. 114, Statistical Office of the Republic of Slovenia.

SORS (2003b): Rapid Reports; National Accounts, No. 78, Statistical Office of the Republic of Slovenia.

SORS (2003c): Rapid Reports, No.92, Statistical Office of the Republic of Slovenia.

SORS (2003d): Rapid Reports on Innovation Activity, No.2, Statistical Office of the Republic of Slovenia.

SORS, Rapid Reports on R&D for consecutive years, Statistical Office of the Republic of Slovenia.

SORS, Rapid Reports on Innovation Activity for consecutive years, Statistical Office of the Republic of Slovenia.

Stanovnik et al., (2003): Analiza ključnih tehnologij in možnosti razvoja tehnoloških mrež v Sloveniji (The analysis of key technologies and potentials of technology networks development in Slovenia), Inštitut za ekonomska raziskovanja.

Stare, Metka (1998): Telekomunikacije v luči približevanja EU in sodobnim tendencam v svetu (Telecommunications and the accession to the EU), Teorija in praksa, Vol. XXXV. No. 1. pp. 109-117.

Stare, Metka (1999): Determinants of Producer Services Development in Slovenia, East European Economy, Vol. 37. No. 6. pp. 54-70.

Stare, Metka (2001): Vpliv liberalizacije na področju trgovine z nefinančnimi storitvami na slovenske storitvene sektorje (The impact of liberalisation of trade in non-financial services on Slovenian service sectors), analiza za Ministrstvo za gospodarstvo.

Stare, Metka (2003a): The Scope for E-Commerce in Central and Eastern European Countries' Services Trade, Service Industries Journal, 2003, Vol. XXIII. No. 1. pp. 27-42.

Stare, Metka (2003b) Trade in Services, Slovenian Economic Mirror Vol. IX. No.2. Institute of Macroeconomic Analysis and Development.

Stare, Metka, Bučar, Maja (1999): Posledice in odzivi na prehod v storitveno-informacijsko družbo (The consequences and challenges of transition to information society), Pospeševanje razvoja Slovenije, 20. PODIM, Maribor.

Stare, Metka ,Bučar, Maja (2002): Innovation in Services in Accession Countries: Double Trouble. 12th International Conference of RESER, Services and Innovation, Manchester, 26-27. September 2002.

Statistical Yearbook of the Republic of Slovenia (2003): Statistical Office of the Republic of Slovenia.

Statistics in Focus (2003): GDP of the Candidate Countries 2002, first results, Theme 2, No.47, Eurostat

Statistics in Focus (2002): Information Society Statistics, Data for Candidate Countries, Theme 4, No. 17, Eurostat.

Statistics in Focus (2001): Value added, employment, remuneration and labour productivity in the Candidate Countries, Theme 2, No. 13, Eurostat.

SYRS (2003): Statistical Yearbook of the Republic of Slovenia, Statistical Office of the Republic Slovenia.

Statistical Yearbooks, different years, Statistical Office of the Republic Slovenia .

Strategy of Regional Development of Slovenia (2001): Agency for Regional Development, Ljubljana.

Stropnik, Nada, Stanovnik, Tine (2002): Combating Poverty and Social Exclusion, Vol. 2, A Case Study of Slovenia, International Labour Office, Central Eastern European Team, Budapest.

Trček, Franc (1999): Problemi informatizacije Slovenije (The problems of informatisation of Slovenia), Razgledi, Vol. 8. No. 22.

Trček, Franc, Lenarčič, Blaž (2003): Internet kot medij politične participacije-priprava novega prostorskega plana mestne občine Ljubljana (Internet as a media of political participation), in Lukšič, Oblak (eds.), S poti v digitalno demokracijo, Fakulteta za družbene vede, http://odks.fdv.uni-lj.si/eknjige/edemokracija.pdf

Tršelič, Ana (2001): Analiza obnašanja gospodinjstev v Sloveniji v obdobju 1997-2000 (Analysis of household consumption in Slovenia in the period 1997-2000), Working Paper Vol. X. No. 8, 2001, Instiute of Macroeconomic Analysis and Development, Ljubljana.

University of Ljubljana enrolment office, 2002/2003. mimeo.

Uršič, Duško, Stare, Metka, Bučar, Maja, Mulej, Matjaž, Pivka, Marjan (2000): National uptake study : Slovenia, (Process re-engineering in Europe: choice, people and technology, TSER-PRECEPT project, Brussels: Directorate General XII.

Vehovar, Vasja, Kuhar, Metka (2001): Indikatorji informacijske-telekomunikacijske tehnologije v Sloveniji in Evropski Uniji (Indicators of information –communication technology in Slovenia and in EU), Fakulteta za družbene vede.

Vintar, Mirko (1998): Informatizacija kot priložnost za prenovo poslovanja državne uprave: informatizirati ali ne avtomatizirati (The informatisation as an opportunity for renovation of public administration: to informatise or not to automatise), Uporabna informatika, Vol. 6. No. 2. pp. 11-19.

Werber, Borut, Zupančič, Jože (2002): Uporaba informacijske tehnologije v malih podjetjih v Sloveniji (The use of IT in small enterprises in Slovenia), Organizacija, Vol. 35. No. 1. pp. 23-32.

ANNEX – TABLE OF CONTENTS

A. NATIONAL AND REGIONAL ECONOMY

Table A1.: Gross domestic product - real growth rates, nominal level and PPS, 1991-2002

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
GDP, real growth rates* in %	-8.9	-5.5	2.8	5.3	4.1	3.5	4.6	3.8	5.2	4.6	2.9	3.2
GDP, in EUR (millions), current prices**	9 451.3	10 341.6	10 832.1	12 129.6	14 343.1	14 876.0	16 062.7	17 497.2	18 760.4	20 436.3	21 749.7	23 385.1
GDP, millions of PPS	19 230.6	18 712.7	19 394.8	20 842.8	22 041.1	23 592.3	25 346.5	26 770.7	28 826.9	31 611.0	33 524.7	36 013.7
GDP per capita, PPS	9 610.0	9 380.0	9 740.0	10 480.0	11 090.0	11 850.0	12 760.0	13 500.0	14 530.0	15 890.0	16 830.0	18 050.0

Reference: Eurostat: New Cronos Database, Statistical Office of the Republic of Slovenia.

* For the period 1991-1994 1992 constant prices, for the period 1995-2000 1995 constant prices, for the period 2001-2002 2000 constant prices.

** Up to 31.12.1998 ECU.

Data from 2000 onwards are revised and therefore not completely comparable with data for previous years. The revised GDP value for 2000 is 4.6% higher than previous estimate. The main reasons of GDP value increase are new methodology of imputed rent estimate, estimate of consumption of fixed capital for the general government sector and improvements of GDP exhaustiveness adjustments.

Table A2.: Gross domestic product (expenditure side), current prices, EUR millions, 1991-2002*

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Gross domestic product	9 451.3	10 341.6	10 832.1	12 129.6	14 343.1	14 876.0	16 062.7	17 497.2	18 760.4	20 436.3	21 749.7	23 385.1
Domestic demand	8 573.7	9 622.1	10 714.2	11 864.2	14 633.6	15 031.1	16 194.8	17 764.5	19 589.9	21 166.3	21 877.9	23 053.7
Final consumption	6 975.2	7 803.4	8 618.7	9 324.4	11 285.1	11 547.8	12 327.4	13 286.4	14 256.0	15 656.7	16 640.9	17 622.6
Private consumption	5 178.9	5 700.5	6 334.6	6 874.3	8 395.7	8 552.6	9 053.7	9 742.7	10 459.1	11 576.9	12 171.1	12 817.0
Government consumption	1 796.3	2 103.0	2 284.1	2 450.1	2 889.5	2 995.3	3 273.7	3 543.8	3 796.9	4 079.8	4 469.8	4 805.6
Gross capital formation	1 598.4	1 818.7	2 095.6	2 539.8	3 348.4	3 483.3	3 867.3	4 478.1	5 334.0	5 509.6	5 237.0	5 431.0
Gross fixed capital formation	1 948.0	1 926.2	2 039.7	2 439.4	3 064.5	3 345.2	3 754.0	4 305.4	5 137.9	5 255.8	5 193.0	5 350.7
Changes in inventories and valuables	-349.6	-107.5	55.8	100.4	283.9	138.1	113.3	172.7	196.1	253.7	44.0	80.3
External balance of goods and services	877.6	719.5	117.8	265.4	-290.5	-155.1	-132.1	-267.3	-829.5	-730.0	-128.2	331.5
Exports of goods and services	7 895.1	6 530.0	6 364.1	7 274.7	7 916.5	8 293.4	9 226.6	9 910.3	9 853.4	11 554.4	12 600.4	13 520.0
Imports of goods and services	7 017.5	5 810.5	6 246.2	7 009.3	8 206.9	8 448.5	9 358.7	10 177.6	10 682.9	12 284.4	12 728.6	13 188.5

Reference: Eurostat: New Cronos Database; Statistical Office of the Republic of Slovenia.

***** from 1.1.1999 / ECU up to 31.12.1998.
Data from 2000 onwards are revised and therefore not completely comparable with data for previous years. The revised GDP value for 2000 is 4.6% higher than previous estimate. The main reasons of GDP value increase are new methodology of imputed rent estimate, estimate of consumption of fixed capital for the general government sector and improvements of GDP exhaustiveness adjustments.

Table A3.: Main components of gross domestic product (expenditure side) in %, 1991-2002

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Gross domestic product	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Domestic demand	90.7	93.0	98.9	97.8	102.0	101.0	100.8	101.5	104.4	103.6	100.6	98.6
Final consumption	73.8	75.5	79.6	76.9	78.7	77.6	76.7	75.9	76.0	76.6	76.5	75.4
Private consumption	54.8	55.1	58.5	56.7	58.5	57.5	56.4	55.7	55.8	56.6	56.0	54.8
Government consumption	19.0	20.3	21.1	20.2	20.1	20.1	20.4	20.3	20.2	20.0	20.6	20.5
Gross capital formation	16.9	17.6	19.3	20.9	23.3	23.4	24.1	25.6	28.4	27.0	24.1	23.2
Gross fixed Capital formation	20.6	18.6	18.8	20.1	21.4	22.5	23.4	24.6	27.4	25.7	23.9	22.9
Changes in Inventories and valuables	-3.7	-1.0	0.5	0.8	2.0	0.9	0.7	1.0	1.0	1.2	0.2	0.3
External balance of goods and services	9.3	7.0	1.1	2.2	-2.0	-1.0	-0.8	-1.5	-4.4	-3.6	-0.6	1.4
Exports of goods and services	83.5	63.1	58.8	60.0	55.2	55.8	57.4	56.6	52.5	56.5	57.9	57.8
Imports of goods and services	74.2	56.2	57.7	57.8	57.2	56.8	58.3	58.2	56.9	60.1	58.5	56.4

Reference: Eurostat: New Cronos Database; Statistical Office of the Republic of Slovenia.

Data from 2000 onwards are revised and therefore not completely comparable with data for previous years. The revised GDP value for 2000 is 4.6% higher than previous estimate. The main reasons of GDP value increase are new methodology of imputed rent estimate, estimate of consumption of fixed capital for the general government sector and improvements of GDP exhaustiveness adjustments.

Table A4.: Gross domestic product (expenditure side), real growth rates in %, 1991-2002*

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Gross domestic product	-8.9	-5.5	2.8	5.3	4.1	3.5	4.6	3.8	5.2	4.6	2.9	3.2
Domestic demand	-8.7	-2.2	11.4	5.5	9.9	2.7	4.8	6.0	9.1	1.1	1.0	2.5
Final consumption	-8.4	-3.1	11.6	3.5	7.4	2.3	3.2	3.9	5.6	1.4	3.0	2.1
Private consumption						2.0	2.8	3.3	6.0	0.8	2.6	2.0
Government consumption	-0.3	-1.7	5.3	2.1	2.5	3.4	4.3	5.8	4.6	3.1	4.0	2.7
Gross capital formation	-15.7	-3.7	20.5	15.8	23.0	3.9	10.4	12.4	18.9	0.5	-4.6	3.7
Gross fixed capital formation	-11.5	-12.9	10.7	14.1	16.8	8.9	11.6	11.3	19.1	0.2	-0.8	3.1
Changes in Inventories and valuables	24.3	-66.7	-154.4	78.0	168.7	-49.8	-18.2	47.1	16.2	6.1		
External balance of goods and services												
Exports of goods and services	-20.1	-23.5	0.6	12.3	1.1	3.6	11.6	6.7	1.7	12.7	6.4	6.1
Imports of goods and services	-22.4	-22.9	17.6	13.1	11.3	2.1	11.9	10.4	8.2	6.1	3.0	4.9

Reference: Eurostat: New Cronos Database; Statistical Office of the Republic of Slovenia.

* For the period 1991-1994 1992 constant prices, for the period 1995-2000 1995 constant prices, for the period 2001-2002 2000 constant prices. Data from 2000 onwards are revised and therefore not completely comparable with data for previous years. The revised GDP value for 2000 is 4.6% higher than previous estimate. The main reasons of GDP value increase are new methodology of imputed rent estimate, estimate of consumption of fixed capital for the general government sector and improvements of GDP exhaustiveness adjustments.

Table A5.:Gross domestic product (supply side), current prices, EUR millions, 1991-2002*

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Gross domestic product	9 451.3	10 341.6	10 832.1	12 129.6	14 343.1	14 876.0	16 062.7	17 497.2	18 760.4	20 436.3	21 749.7	23 385.1
Gross value added	8 526.8	9 231.8	9 514.8	10 590.8	12 450.0	12 968.1	14 149.8	15 365.0	16 350.6	18 340.9	17 925.9	17 808.7
A..B Agriculture, Fishing	486.9	537.2	488.5	480.4	564.7	574.6	597.7	627.7	591.7	627.1	634.2	628.5
C…E Industry	3 405.9	3 315.9	3 176.7	3 670.1	4 057.5	4 145.6	4 495.5	4 921.4	5 107.8	5 504.4	5 875.8	6 152.5
F - Construction	346.9	393.1	444.3	500.3	623.6	720.9	790.9	856.7	1 007.2	1 125.5	1 117.2	1 155.6
G…O Services	4 287.1	4 985.5	5 405.4	5 940.0	7 204.2	7 527.0	8 265.7	8 959.1	9 643.9	11 083.9	11 779.9	12 839.3
FISIM	186.0	168.5	190.5	215.7	283.7	320.9	323.5	356.8	356.6	-521.6	-455.8	-570.7
Taxes less subsidies on products	1 110.5	1 278.2	1 507.7	1 754.6	2 176.8	2 228.9	2 236.3	2 489.0	2 766.4	2 777.7	2 876.5	3 173.4

Reference: Eurostat: New Cronos Database.

***** from 1.1.1999 / ECU up to 31.12.1998.

Note: Data from 2000 onwards are revised and therefore not completely comparable with data for previous years.
The revised GDP value for 2000 is 4.6% higher than previous estimate. The main reasons of GDP value increase are new methodology of imputed rent estimate, estimate of consumption of fixed capital for the general government sector and improvements of GDP exhaustiveness adjustments.

Table A6.: Main components of gross domestic product (supply side) in %, 1991-2002

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Gross domestic product	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Gross value added	90.2	89.3	87.8	87.3	86.8	87.2	88.1	87.8	87.2	89.7	82.4	76.2
A..B Agriculture, Fishing	5.2	5.2	4.5	4.0	3.9	3.9	3.7	3.6	3.2	3.1	2.9	2.7
C…E Industry	36.0	32.1	29.3	30.3	28.3	27.9	28.0	28.1	27.2	26.9	27.0	26.3
F – Construction	3.7	3.8	4.1	4.1	4.3	4.8	4.9	4.9	5.4	5.5	5.1	4.9
G…O Services	45.4	48.2	49.9	49.0	50.2	50.6	51.5	51.2	51.4	54.2	54.2	54.9
FISIM	2.0	1.6	1.8	1.8	2.0	2.2	2.0	2.0	1.9	-2.6	-2.1	-2.4
Taxes less subsidies on products	11.7	12.4	13.9	14.5	15.2	15.0	13.9	14.2	14.7	13.6	13.2	13.6

Reference: Eurostat: New Cronos Database; Statistical Office of the Republic of Slovenia.

Note: Data from 2000 onwards are revised and therefore not completely comparable with data for previous years. The revised GDP value for 2000 is 4.6% higher than previous estimate. The main reasons of GDP value increase are new methodology of imputed rent estimate, estimate of consumption of fixed capital for the general government sector and
improvements of GDP exhaustiveness adjustments.

Table A7.: Gross domestic product (supply side), real growth rates in %, 1991-2002*

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Gross domestic product	-8.9	-5.5	2.8	5.3	4.1	3.5	4.6	3.8	5.2	4.6	2.9	3.2
Gross value added	-8.4	-5.2	1.1	5.0	3.5	3.7	4.5	3.7	4.5	5.0	3.6	3.5
A..B Agriculture, Fishing	-2.5	-6.7	-4.3	4.2	1.5	1.1	-2.9	3.1	-2.1	-1.0	0.5	1.1
C…E Industry	-11.2	-12.4	-2.5	6.6	2.2	1.5	6.2	4.1	2.7	7.8	4.9	4.7
F - Construction	-11.4	-5.6	-8.3	0.4	9.2	13.2	7.7	4.6	15.8	2.8	-2.2	3.3
G…O Services	-6.5	0.8	4.8	4.2	4.1	4.2	3.8	3.4	4.8	4.2	3.6	3.0
FISIM	-3.8	-7.2	-0.2	-1.4	-0.5	14.3	-2.6	4.3	-1.5	1.9	10.8	6.5
Taxes less subsidies on products	-11.5	-7.9	15.2	6.9	7.7	4.2	4.1	4.5	8.6	1.9	-0.3	1.9

Reference: Eurostat: New Cronos Database; Statistical Office of the Republic of Slovenia.

* For the period 1991-1995 1992 constant prices, for the period 1996-2000 1995 constant prices, for the period 2001-2002 2000 constant prices.

Note: Data from 2000 onwards are revised and therefore not completely comparable with data for previous years. The revised GDP value for 2000 is 4.6% higher than previous estimate. The main reasons of GDP value increase are new methodology of imputed rent estimate, estimate of consumption of fixed capital for the general government sector and improvements of GDP exhaustiveness adjustments.

Table A8.: Unemployment rates in %, 1991-2002

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Rate of registered unemployment, %	8.0	11.5	14.4	14.4	13.9	13.9	14.4	14.5	13.6	12.2	11.6	11.6
Rate of unemployment by ILO*, %			9.1	9.0	7.4	7.3	7.4	7.9	7.6	7.0	6.4	6.3

Reference: Statistical Office of the Republic of Slovenia.

* The Labour Force Survey was introduced in Slovenia in 1993.

Table A9.: Unemployment rates by age groups in %, 1993-2001***

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Total	9.1	9.0	7.4	7.3	7.1	7.7	7.4	7.2	5.9
15-24	24.2	22.2	18.8	18.8	17.4	18.2	18.2	16.6	16.1
25-29	10.3	10.9	7.5	8.2	8.2	9.2	8.0	7.5	6.4
30-34	7.3	7.0	6.0	5.7	5.5	7.6	5.8	5.3	4.8
35-39	7.3	7.3	5.3	5.4	6.9	5.2	5.3	5.2	4.3
40-44	5.4	7.1	6.0	5.2	4.5	4.3	4.7	4.9	3.5
45-49	6.1	5.7	5.3	5.1	4.5	6.2	6.9	6.1	5.4
50+	4.5	5.1	3.9	4.3	2.4	3.6	4.3	6.9	3.9

Reference: Statistical Office of the Republic of Slovenia (Labour Force Survey).

Note: The Labour Force Survey was introduced in Slovenia in 1993.
* ILO methodology
** Data refers to 2nd quarter of each year.

*Table A10.: Activity rates in %, 1993-2001**

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Total	57.8	57.6	58.7	57.6	59.1	60.0	58.3	57.7	57.8
Men	65.0	64.3	67.7	64.4	65.7	66.6	65.1	64.1	64.8
Women	51.2	51.4	53.5	51.3	52.9	53.7	51.9	51.7	51.3

Reference: Statistical Office of the Republic of Slovenia (Labour Force Survey).

Note: The Labour Force Survey was introduced in Slovenia in 1993.
* Data refers to 2nd quarter of each year.

Table A11.: Employment growth by sectors in %, 1999-2002

	1999	2000	2001	2002
TOTAL	1.8	1.3	1.4	0.6
A Agriculture, forestry, hunting	-8.8	-5.2	-3.3	3.2
B Fishery	-1.8	-14.9	-4.1	-1.4
C-E Industry	-1.6	-0.6	0.7	0.9
C Mining and quarrying	-5.6	-18.0	-5.3	-6.5
D Manufacturing	-1.6	0.0	0.9	1.0
DA Mfr. of food, beverages and tobacco	-1.4	-0.1	-1.2	-1.4
DB Mfr. of textiles and textile products	-3.7	-5.5	-3.8	-4.9
DC Mfr. of leather and leather products	-11.6	-4.0	0.6	-0.3
DD Mfr. of wood and wood products	2.1	1.8	-0.8	-2.1
DE Mfr. of paper, publishing and printing	-1.8	-0.2	-0.4	2.3
DF Mfr. of coke, petroleum and nuclear fuel	93.9	8.1	-3.2	-3.0
DG Mfr. of chemicals, prod. & man-made fibres	-2.4	-1.7	0.0	1.9
DH Mfr. of rubber and plastic products	0.1	0.0	3.1	6.2
DI Mfr. of other non-metal. mineral products	-2.5	0.2	0.3	-1.6
DJ Mfr. of basic metals & fabricated products	3.4	4.4	4.0	1.9
DK Mfr. of machinery and equipment	-3.0	-0.4	1.8	3.1
DL Mfr. of electrical and optical equipment	-1.5	4.5	2.2	3.7
DM Mfr. of transport equipment	-4.4	-6.7	6.3	2.2
DN Mfr. of furniture, recycling	-3.5	0.2	1.6	4.3
E Electricity, gas, steam and water supply	0.6	-2.2	-0.8	2.3
F Construction	4.1	4.1	-0.9	0.4
G-O Services	5.3	2.9	2.9	-0.1
(G-I)	4.4	2.7	1.7	1.4
G Wholesale and retail trade, motor vehicle repair	3.4	3.4	1.9	1.3
H Hotels and restaurants	7.0	3.0	0.5	0.3
I Transport, storage and communication	4.8	1.0	2.0	2.1
(J-K)	7.1	3.2	5.2	6.3
J Financial intermediation	9.0	3.6	2.9	2.4
K Real estate, renting and business services	6.3	3.1	6.1	8.0
L-O Public services	5.1	2.8	2.7	-3.3
L Public administration	2.7	3.2	3.8	2.3
M Education	1.6	1.7	2.0	1.8
N Health and social work	9.5	3.3	2.8	-15.3
O Other personal and community activities	8.1	3.6	2.0	2.0

Reference: Statistical Office of the Republic of Slovenia.

Table A12.:Productivity growth rates in manufacturing in real terms, in %, 1990-2002 Part A*

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Manufacturing	-7.3	-1.1	-3.3	5.8	13.2	6.3	9.2	3.5	5.9	3.6	9.1	3.4	4.9
DA Mfr. of food; beverages and tobacco								-5.1	5.6	3.1	8.9	1.7	1.9
15 Mfr. of food products & beverages								-0.4	5.8	-5.6	7.1	3.9	1.7
DB Mfr. of textiles and textile products								13.7	-0.7	-4.0	7.0	-3.2	-1.5
17 Manufacture of textiles								17.9	-12.8	-15.7	11.6	-11.3	8.0
18 Mfr. wearing apparel; dressing fur								22.3	-16.2	-16.1	8.7	5.2	-12.3
DC Mfr. of leather and leather products								-25.9	9.2	2.1	11.0	-1.2	-10.0
DD Manufacture of wood and wood products								-23.5	-4.7	10.0	6.7	-3.6	7.4
DE Mfr. of paper; publishing and printing								-14.5	-23.7	-0.4	5.0	-1.1	6.6
21 Mfr of pulp, paper & paper products								11.1	-52.5	23.8	-26.1	2.5	9.2
22 Publishing, printing & record media[2)]								8.7	-52.1	24.4	-26.5	-3.8	4.6
DF Mfr. of coke, petroleum prods.&nuc. fuel								9.6	9.0	6.3	15.8	-61.4	15.3
DG Mfr. of chemicals, prod.&man-made fibres								27.3	15.4	-0.6	18.0	7.1	5.7
DH Mfr. of rubber and plastic products								22.1	7.3	5.6	-3.2	0.6	-0.9
DI Mfr. of other non-metal. mineral products								0.8	4.8	2.6	12.6	0.9	8.0
DJ Mfr. of basic metals & fabricated products								7.6	6.3	6.1	15.2	2.8	3.6
27 Manufacture of basic metals								-1.0	13.3	2.6	7.1	3.7	2.7

Table A12.:Productivity growth rates in manufacturing in real terms, in %, 1990-2002 Part B*

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
28 Mfr. fabricated metal, not machines								-34.0	13.3	3.8	5.9	2.2	4.2
DK Mfr. of machinery and equipment nec.								36.8	8.0	7.6	17.0	13.2	10.7
DL Mfr. of electrical and optical equipment								-47.0	5.1	6.4	14.5	4.1	6.6
30 Mfr. of office machinery & computers									10.2	2.6	38.9	8.3	4.0
31 Mfr. of electrical machinery etc nec									9.9	-2.7	-2.0	5.5	7.5
32 Mfr. of radio, TV & equipment								-9.3	27.5	-0.3	5.1	3.5	12.4
33 Mfr. of medical & precision instruments									32.4	3.7	8.7	2.8	-1.2
DM Manufacture of transport equipment								-52.7	-1.1	16.9	12.8	0.5	5.8
34 Mfr. of motor vehicles, trailers etc								44.4	3.3	1.4	5.7	2.0	5.9
35 Mfr. of other transport equipment								63.7	-3.1	0.0	5.3	-8.4	4.9
DN Manufacturing nec.								-3.7	17.7	15.5	15.2	8.5	-4.3
36 Mfr. of furniture; manufacturing nec								0.9	8.2	0.9	3.4	8.4	-4.4
37 Recycling								0.7	8.5	1.1	3.7	6.2	-7.4

Reference: Statistical Office of the Republic of Slovenia and own calculations.

* Untill 1996 data are related to industry (manufacturing+mining+electricity supply) according to the National Classification of Activities, since 1997 data are related to manufacturing according to NACE.

Note: Data on labour productivity for years before 1997 are not availabe on the detailed level because of changes of the classification of activities.

Table A13.: Registered unemployment rates by regions in %, 1997-2001*

	1997	1998	1999	2000	2001
Slovenia	14.4	14.5	13.6	12.2	11.6
Central Slovenia	10.2	10.5	10.1	9.2	8.3
Obalno-kraška	11.0	10.6	10.1	9.2	9.0
Gorenjska	12.0	12.6	11.9	10.1	9.0
Goriška	9.6	9.2	7.7	6.2	5.8
Savinjska	16.1	16.7	15.3	13.6	13.5
South-eastern Slovenia	14.0	12.0	11.7	10.8	9.9
Pomurska	17.8	18.7	18.2	17.2	16.7
Notranjsko-kraška	12.0	12.5	12.2	10.8	9.7
Podravska	22.4	22.0	20.6	18.7	17.9
Koroška	13.0	13.0	11.7	10.3	10.2
Spodnjeposavska	16.4	15.9	14.9	13.9	14.3
Zasavska	17.9	19.2	17.5	15.5	14.7

Reference: Statistical Office of the Republic of Slovenia.

* Unemployment rates according to ILO methodology are not available for regional level.

*Table A14.: Financial account balance, EUR millions, 1994-2002**

	1994	1995	1996	1997	1998	1999	2000	2001	2002
B. Financial account	-438.5	205.8	-32.4	-112.3	54.2	625.3	537.6	-103.9	-424.6
1. Direct investment	109.2	125.2	132.6	267.3	199.2	54.5	77.4	414.7	1 827.6
Abroad	10.9	7.8	-5.6	-27.7	4.9	-44.7	-71.7	-147.7	-121.9
In Slovenia	98.3	117.4	138.2	294.9	194.3	99.2	149.1	562.4	1 949.5
2. Portfolio investment	-29.5	-10.6	507.5	212.5	82.2	323.7	185.2	79.8	-69.4
Abroad	-29.5	-22.6	4.5	1.0	-26.3	-5.1	-65.5	-119.3	-94.6
In Slovenia	0.0	12.0	503.0	211.5	108.5	328.8	250.8	199.1	25.2
3. Other investment	12.3	272.0	-209.5	549.0	-80.9	158.6	461.8	849.4	-242.2
3.1. Assets	-186.4	-197.2	-343.9	230.2	-404.8	-540.3	-576.0	234.4	-915.2
Commercial credits	-11.7	-8.3	-235.1	-320.1	-415.8	-275.6	-174.3	-225.8	-371.9
Long-term	-0.5	9.8	7.2	7.7	-15.7	-23.1	1.5	40.1	13.8
Short-term	-11.3	-18.2	-242.4	-327.9	-400.1	-252.4	-175.9	-265.9	-385.7
Loans	-8.8	-13.2	-4.0	-57.4	-49.3	-39.5	-72.4	11.6	-225.3
Banks	-9.2	-10.9	-2.9	-61.6	-28.1	-8.1	11.2	-7.1	-86.7
Other sectors	0.4	-2.2	-1.1	4.2	-21.1	-31.3	-83.5	18.8	-138.7
Currency and deposits	-70.1	-54.7	-226.9	658.7	54.5	-194.4	-296.1	480.5	-246.0
Banks	-281.0	-160.2	-272.7	524.2	-24.5	21.7	-271.7	-300.7	351.3
Other sectors	211.0	105.5	45.8	134.5	79.0	-216.1	-24.4	781.2	-597.3
Other assets	-95.7	-121.0	122.2	-51.0	5.8	-30.8	-33.2	-31.9	-72.0
Bank of Slovenia	-84.3	-51.9	106.3	-6.4	-4.9	-4.9	-5.9	-6.7	-6.9
Banks	-11.5	-67.7	16.6	-45.0	8.3	-26.8	-26.4	-22.8	-62.8
Other sectors	0.3	0.3	0.3	1.6	4.1	2.4	0.3	-1.9	-1.6
3.2. Liabilities	199.2	469.2	134.4	318.7	323.9	698.9	1 037.9	614.9	673.0
Commercial credits	-8.8	-2.9	17.1	7.9	39.0	-18.7	-20.6	-5.8	-6.6
Loans	272.5	436.9	-7.7	292.8	240.7	709.6	1 038.1	470.2	510.7
General government	79.4	106.9	-54.9	-22.7	-21.0	-3.6	85.5	-32.3	-4.4
Banks	89.4	167.9	-141.6	-12.3	37.5	242.5	305.9	101.0	211.9
Other sectors	108.0	164.8	190.8	328.9	224.2	470.6	646.6	401.6	303.2
Deposits	-4.3	29.4	128.5	17.5	39.0	1.6	33.6	152.4	130.5
Banks	-4.3	29.3	128.4	17.5	38.9	1.6	33.9	152.4	130.5
Other liabilities	-60.2	5.8	-3.5	0.5	5.1	6.4	-13.2	-1.8	38.5
Banks	-58.8	9.3	-5.0	0.3	2.7	8.2	-11.5	3.9	39.1
4. Reserve assets	-530.4	-180.8	-463.1	-1 141.1	-146.3	88.5	-186.8	-1 447.7	-1 940.6

Reference: Bank of Slovenia.

* Data for 2002 are preliminary.
Note: Balance of Payments data according to the IMF Fifth Manual are available since 1994.

Table A15.: Exports of goods, EUR million, 1994-2002 Part A*

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Total	8 636.7	8 046.5	8 076.4	10 743.5	10 405.9	9 454.2	10 147.2	9 103.3	8 040.0	8 278.1	9 752.4
A - Agriculture, hunting, forestry	143.2	87.6	96.9	101.0	63.5	54.1	56.8	55.2	39.6	36.4	41.5
B - Fishing	1.2	0.7	0.6	0.4	0.9	0.7	0.5	0.4	0.3	0.2	0.1
C - Mining and quarrying	161.7	302.8	18.6	7.2	6.4	4.8	5.9	4.5	3.5	5.1	6.7
D - Manufacturing	8 318.9	7 576.2	7 879.0	10 499.8	10 266.7	9 316.5	10 002.8	9 009.1	7 963.6	8 169.4	9 601.3
DA Mfr. of food; beverages and tobacco	475.3	334.2	330.3	357.9	408.4	357.2	377.9	339.0	295.0	304.7	355.4
DB Mfr. of textiles and textile products	1 169.6	1 138.5	1 012.2	1 215.0	1 087.7	898.9	884.7	726.0	560.0	563.4	561.9
DC Mfr. of leather and leather products	308.4	302.9	287.9	307.0	254.2	214.3	189.2	152.9	135.9	143.1	154.2
DD Manufacture of wood and wood products	339.5	334.0	376.7	488.5	452.4	375.9	392.2	339.6	283.0	250.3	296.4
DE Mfr. of paper; publishing and printing	464.2	396.9	425.5	631.7	531.2	490.1	479.9	451.9	439.1	418.0	462.6
DF Mfr. of coke, petroleum prods.&nuc. fuel	70.0	47.7	12.8	16.9	31.6	36.9	19.2	24.6	20.0	12.3	11.9
DG Mfr. of chemicals, prod.&man-made fibres	788.5	732.5	831.0	1 115.0	1 107.2	1 062.9	1 074.2	1 006.1	910.3	968.8	1 226.0
DH Mfr. of rubber and plastic products	325.3	297.4	300.1	431.5	438.6	420.9	429.2	410.7	361.8	408.1	484.2
DI Mfr. of other non-metal.mineral products	245.1	230.8	237.9	310.0	313.2	285.2	299.0	276.3	228.3	229.9	265.9
DJ Mfr. of basic metals & fabricated products	896.8	793.4	856.4	1 246.0	1 155.8	1 079.2	1 123.6	1 039.2	987.9	999.6	1 134.9
DK Mfr. of machinery and equipment nec.	967.0	866.6	934.5	1 267.2	1 294.7	1 265.2	1 416.7	1 291.9	1 106.9	1 180.3	1 425.8
DL Mfr. of electrical and optical equipment	751.2	763.7	811.8	1 102.2	1 169.0	1 039.4	1 061.7	976.7	960.1	987.9	1 147.9
DM Manufacture of transport equipment	1 037.3	828.7	943.6	1 331.6	1 336.7	1 171.7	1 535.0	1 243.4	1 064.0	1 064.3	1 313.9
DN Manufacturing nec.	480.7	509.0	518.4	679.3	686.0	618.5	720.3	730.7	611.5	638.7	760.2
E - Electricity, gas and water supply	3.1	60.3	62.8	109.7	64.1	76.7	79.3	32.3	31.8	65.6	92.3
K - Real estate, renting & business service	6.0	4.5	2.3	2.6	2.2	1.2	1.4	1.4	0.7	1.1	8.7
O - Other social and personal services	0.3	0.8	0.8	0.4	2.0	0.2	0.5	0.4	0.5	0.3	1.7

Table A15.: Exports of goods, EUR million, 1994-2002 Part B*

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
ICT Manufacturing	305.5	283.1	336.9	465.9	501.1	422.9	435.7	375.5	402.9	404.9	451.0
3001 Mfr. of office machinery	2.3	2.6	2.0	2.2	3.2	2.8	4.2	5.5	5.5	7.2	5.9
3002 Mfr. of computers and other information processing equipment	7.1	9.5	14.2	13.7	14.4	12.9	16.8	19.0	16.0	15.5	21.6
3130 Mfr. of insulated wire and cable	14.5	15.3	19.8	30.9	25.5	25.5	25.9	24.0	21.9	23.7	27.5
3210 Mfr. of electronic valves and tubes and other electronic components	55.5	58.2	66.8	79.3	68.2	62.1	72.0	69.1	103.8	78.9	78.0
3220 Mfr. of television and radio transmitters and apparatus for line telephony and line telegraphy	68.9	45.7	44.2	90.4	132.4	95.1	94.7	52.7	66.6	109.8	112.4
3230 Mfr. of television and radio receivers, sound or video recording or reproducing apparatus and associated goods	37.8	30.8	55.1	59.9	70.1	62.1	55.3	47.2	58.8	44.7	59.9
3320 Mfr. of instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process control equipment	119.4	121.0	134.8	189.6	187.3	162.5	166.9	158.0	130.2	125.2	145.7

Reference: Statistical Office of the Republic of Slovenia.

* Recalculation from USD at EUR/USD annual average exchange rate.

Note: The sum of sectors' export and import values is not always equal to total export and import value because some exports and imports are unclassified.

Table A16: Structure of exports of goods in %, 1992-2002 Part A

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
A - Agriculture, hunting, forestry	1.7	1.1	1.2	0.9	0.6	0.6	0.6	0.6	0.5	0.4	0.4
B - Fishing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C - Mining and quarrying	1.9	3.8	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1
D - Manufacturing	96.3	94.2	97.6	97.7	98.7	98.5	98.6	99.0	99.0	98.7	98.5
DA Mfr. of food; beverages and tobacco	5.5	4.2	4.1	3.3	3.9	3.8	3.7	3.7	3.7	3.7	3.6
DB Mfr. of textiles and textile products	13.5	14.1	12.5	11.3	10.5	9.5	8.7	8.0	7.0	6.8	5.8
DC Mfr. of leather and leather products	3.6	3.8	3.6	2.9	2.4	2.3	1.9	1.7	1.7	1.7	1.6
DD Manufacture of wood and wood products	3.9	4.2	4.7	4.5	4.3	4.0	3.9	3.7	3.5	3.0	3.0
DE Mfr. of paper; publishing and printing	5.4	4.9	5.3	5.9	5.1	5.2	4.7	5.0	5.5	5.0	4.7
DF Mfr. of coke, petroleum prods.&nuc. fuel	0.8	0.6	0.2	0.2	0.3	0.4	0.2	0.3	0.2	0.1	0.1
DG Mfr. of chemicals, prod.&man-made fibres	9.1	9.1	10.3	10.4	10.6	11.2	10.6	11.1	11.3	11.7	12.6
DH Mfr. of rubber and plastic products	3.8	3.7	3.7	4.0	4.2	4.5	4.2	4.5	4.5	4.9	5.0
DI Mfr. of other non-metal.mineral products	2.8	2.9	2.9	2.9	3.0	3.0	2.9	3.0	2.8	2.8	2.7
DJ Mfr. of basic metals & fabricated products	10.4	9.9	10.6	11.6	11.1	11.4	11.1	11.4	12.3	12.1	11.6
DK Mfr. of machinery and equipment nec.	11.2	10.8	11.6	11.8	12.4	13.4	14.0	14.2	13.8	14.3	14.6
DL Mfr. of electrical and optical equipment	8.7	9.5	10.1	10.3	11.2	11.0	10.5	10.7	11.9	11.9	11.8
DM Manufacture of transport equipment	12.0	10.3	11.7	12.4	12.8	12.4	15.1	13.7	13.2	12.9	13.5
DN Manufacturing nec.	5.6	6.3	6.4	6.3	6.6	6.5	7.1	8.0	7.6	7.7	7.8
E - Electricity, gas and water supply	0.0	0.7	0.8	1.0	0.6	0.8	0.8	0.4	0.4	0.8	0.9
K - Real estate, renting & business service	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
O - Other social and personal services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table A16: Structure of exports of goods in %, 1992-2002 Part B

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
ICT Manufacturing	3.5	3.5	4.2	4.3	4.8	4.5	4.3	4.1	5.0	4.9	4.6
3001 Mfr. of office machinery	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
3002 Mfr. of computers and other information processing equipment	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
3130 Mfr. of insulated wire and cable	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3
3210 Mfr. of electronic valves and tubes and other electronic components	0.6	0.7	0.8	0.7	0.7	0.7	0.7	0.8	1.3	1.0	0.8
3220 Mfr. of television and radio transmitters and apparatus for line telephony and line telegraphy	0.8	0.6	0.5	0.8	1.3	1.0	0.9	0.6	0.8	1.3	1.2
3230 Mfr. of television and radio receivers, sound or video recording or reproducing apparatus and associated goods	0.4	0.4	0.7	0.6	0.7	0.7	0.5	0.5	0.7	0.5	0.6
3320 Mfr. of instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process control equipment	1.4	1.5	1.7	1.8	1.8	1.7	1.6	1.7	1.6	1.5	1.5

Reference: Statistical Office of the Republic of Slovenia.

Note: The sum of sectors' export and import values is not always equal to total export and import value because some exports and imports are unclassified.

Table A17.: Imports of goods, EUR* million, 1992-2002 Part A

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Total	7 938.4	8 613.8	8 639.5	12 262.6	11 797.9	10 581.2	11 336.1	10 740.2	9 314.0	9 079.0	10 290.7
A - Agriculture, hunting, forestry	321.7	336.9	364.0	458.7	432.4	372.4	348.5	306.0	253.3	242.2	249.4
B - Fishing	4.3	4.7	4.5	6.4	6.5	5.6	5.4	5.6	4.3	4.3	5.2
C - Mining and quarrying	529.5	547.4	240.5	349.8	336.0	326.2	242.4	248.3	219.5	205.4	186.9
D - Manufacturing	6 705.2	7 345.1	7 722.9	11 045.3	10 990.2	9 854.3	10 719.5	10 168.6	8 822.1	8 607.9	9 799.2
DA Mfr. of food; beverages and tobacco	512.0	505.1	524.3	693.2	656.0	569.3	572.5	497.1	411.4	426.3	496.6
DB Mfr. of textiles and textile products	515.5	567.3	536.5	738.2	971.5	842.7	900.7	777.8	621.2	609.2	638.3
DC Mfr. of leather and leather products	162.2	170.2	165.6	195.0	180.4	186.3	193.9	198.5	163.3	192.7	247.3
DD Manufacture of wood and wood products	101.8	103.2	119.5	159.0	152.4	136.9	150.2	154.2	128.4	118.7	150.1
DE Mfr. of paper; publishing and printing	295.5	267.0	318.2	528.0	455.4	391.3	415.7	388.7	387.2	354.2	377.0
DF Mfr. of coke, petroleum prods.&nuc. fuel	387.2	415.8	420.2	522.7	682.5	616.1	448.9	498.8	671.1	572.3	560.6
DG Mfr. of chemicals, prod.&man-made fibres	1 035.0	1 023.8	1 073.4	1 490.2	1 380.8	1 262.7	1 323.8	1 216.6	1 126.8	1 126.3	1 329.8
DH Mfr. of rubber and plastic products	225.3	306.0	256.0	376.6	380.9	337.0	386.4	387.1	330.4	345.6	417.7
DI Mfr. of other non-metal.mineral products	214.0	186.5	186.7	275.8	265.9	242.9	266.1	268.0	216.0	224.9	262.0
DJ Mfr. of basic metals & fabricated products	891.5	856.5	982.5	1 402.7	1 331.9	1 262.3	1 424.1	1 315.4	1 212.1	1 197.5	1 357.4
DK Mfr. of machinery and equipment nec.	728.3	770.5	914.1	1 252.2	1 112.7	1 042.9	1 156.5	1 136.9	910.0	907.8	1 021.9
DL Mfr. of electrical and optical equipment	750.8	887.0	949.5	1 352.3	1 378.1	1 261.7	1 398.6	1 406.9	1 200.9	1 148.7	1 357.0
DM Manufacture of transport equipment	750.1	1 114.2	1 102.0	1 808.6	1 785.5	1 471.1	1 837.1	1 667.9	1 251.3	1 190.8	1 349.8
DN Manufacturing nec.	136.2	172.0	174.6	250.8	256.0	231.0	244.9	254.7	191.9	192.9	233.6
E - Electricity, gas and water supply	5.5	19.8	8.7	24.4	27.1	19.5	18.5	10.3	13.4	17.7	32.0
K - Real estate, renting & business service	17.1	18.8	14.8	24.8	1.0	0.6	0.4	0.6	0.3	0.3	13.2
O - Other social and personal services	0.7	1.0	0.8	1.9	3.9	1.3	1.3	0.8	1.1	1.1	4.7

Table A17.: Imports of goods, EUR million, 1992-2002 Part B*

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
ICT Manufacturing	464.1	545.0	574.0	845.9	799.7	736.7	800.8	845.6	731.0	662.7	785.9
3001 Mfr. of office machinery	17.5	23.3	21.9	34.1	27.3	24.5	26.3	24.5	16.4	16.4	18.8
3002 Mfr. of computers and other information processing equipment	137.1	178.2	167.8	255.3	237.7	208.4	238.4	250.2	184.9	190.1	233.5
3130 Mfr. of insulated wire and cable	101.3	91.2	109.6	129.2	112.9	101.3	98.8	89.5	79.0	82.0	85.5
3210 Mfr. of electronic valves and tubes and other electronic components	37.9	42.6	66.0	86.0	107.4	90.4	95.1	97.9	139.4	108.0	126.1
3220 Mfr. of television and radio transmitters and apparatus for line telephony and line telegraphy	42.4	46.8	53.5	81.4	94.1	109.5	125.4	191.0	165.3	128.2	136.8
3230 Mfr. of television and radio receivers, sound or video recording or reproducing apparatus and associated goods	43.1	62.2	69.3	105.1	100.3	97.7	106.2	88.1	68.2	63.1	87.6
3320 Mfr. of instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process control equipment	84.8	100.7	85.9	154.7	120.0	104.8	110.6	104.4	77.8	74.8	97.5

Reference: Statistical Office of the Republic of Slovenia.

* Recalculation from USD at EUR/USD annual average exchange rate.

Note: The sum of sectors' export and import values is not always equal to total export and import value because some exports and imports are unclassified.

Table A18.: Structure of imports in %, 1992-2002 Part A

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
A - Agriculture, hunting, forestry	4.1	3.9	4.2	3.7	3.7	3.5	3.1	2.8	2.7	2.7	2.4
B - Fishing	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.1
C - Mining and quarrying	6.7	6.4	2.8	2.9	2.8	3.1	2.1	2.3	2.4	2.3	1.8
D - Manufacturing	84.5	85.3	89.4	90.1	93.2	93.1	94.6	94.7	94.7	94.8	95.2
DA Mfr. of food; beverages and tobacco	6.5	5.9	6.1	5.7	5.6	5.4	5.1	4.6	4.4	4.7	4.8
DB Mfr. of textiles and textile products	6.5	6.6	6.2	6.0	8.2	8.0	7.9	7.2	6.7	6.7	6.2
DC Mfr. of leather and leather products	2.0	2.0	1.9	1.6	1.5	1.8	1.7	1.8	1.8	2.1	2.4
DD Manufacture of wood and wood products	1.3	1.2	1.4	1.3	1.3	1.3	1.3	1.4	1.4	1.3	1.5
DE Mfr. of paper; publishing and printing	3.7	3.1	3.7	4.3	3.9	3.7	3.7	3.6	4.2	3.9	3.7
DF Mfr. of coke, petroleum prods.&nuc. fuel	4.9	4.8	4.9	4.3	5.8	5.8	4.0	4.6	7.2	6.3	5.4
DG Mfr. of chemicals, prod.&man-made fibres	13.0	11.9	12.4	12.2	11.7	11.9	11.7	11.3	12.1	12.4	12.9
DH Mfr. of rubber and plastic products	2.8	3.6	3.0	3.1	3.2	3.2	3.4	3.6	3.5	3.8	4.1
DI Mfr. of other non-metal.mineral products	2.7	2.2	2.2	2.2	2.3	2.3	2.3	2.5	2.3	2.5	2.5
DJ Mfr. of basic metals & fabricated products	11.2	9.9	11.4	11.4	11.3	11.9	12.6	12.2	13.0	13.2	13.2
DK Mfr. of machinery and equipment nec.	9.2	8.9	10.6	10.2	9.4	9.9	10.2	10.6	9.8	10.0	9.9
DL Mfr. of electrical and optical equipment	9.5	10.3	11.0	11.0	11.7	11.9	12.3	13.1	12.9	12.7	13.2
DM Manufacture of transport equipment	9.4	12.9	12.8	14.7	15.1	13.9	16.2	15.5	13.4	13.1	13.1
DN Manufacturing nec.	1.7	2.0	2.0	2.0	2.2	2.2	2.2	2.4	2.1	2.1	2.3
E - Electricity, gas and water supply	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.3
K - Real estate, renting & business service	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1
O - Other social and personal services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table A18.: Structure of imports in %, 1992-2002 Part B

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
ICT Manufacturing	5.8	6.3	6.6	6.9	6.8	7.0	7.1	7.9	7.8	7.3	7.6
3001 Mfr. of office machinery	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
3002 Mfr. of computers and other information processing equipment	1.7	2.1	1.9	2.1	2.0	2.0	2.1	2.3	2.0	2.1	2.3
3130 Mfr. of insulated wire and cable	1.3	1.1	1.3	1.1	1.0	1.0	0.9	0.8	0.8	0.9	0.8
3210 Mfr. of electronic valves and tubes and other electronic components	0.5	0.5	0.8	0.7	0.9	0.9	0.8	0.9	1.5	1.2	1.2
3220 Mfr. of television and radio transmitters and apparatus for line telephony and line telegraphy	0.5	0.5	0.6	0.7	0.8	1.0	1.1	1.8	1.8	1.4	1.3
3230 Mfr. of television and radio receivers, sound or video recording or reproducing apparatus and associated goods	0.5	0.7	0.8	0.9	0.8	0.9	0.9	0.8	0.7	0.7	0.9
3320 Mfr. of instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process control equipment	1.1	1.2	1.0	1.3	1.0	1.0	1.0	1.0	0.8	0.8	0.9

Reference: Statistical Office of the Republic of Slovenia.

Note: The sum of sectors' export and import values is not always equal to total export and import value because some exports and imports are unclassified.

Table A19.: Trade balance, EUR* million, 1992-2002 Part A

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Total	698.2	-567.3	-563.1	-1 519.1	-1 392.0	-1 127.0	-1 188.8	-1 636.9	-1 274.0	-800.9	-538.3
A - Agriculture, hunting, forestry	-178.4	-249.3	-267.1	-357.7	-369.0	-318.3	-291.7	-250.8	-213.7	-205.7	-207.9
B - Fishing	-3.1	-4.0	-3.9	-6.0	-5.7	-4.9	-4.8	-5.2	-4.0	-4.1	-5.1
C - Mining and quarrying	-367.8	-244.6	-221.9	-342.6	-329.6	-321.4	-236.5	-243.8	-216.0	-200.3	-180.2
D - Manufacturing	1 613.6	231.1	156.1	-545.5	-723.5	-537.8	-716.8	-1 159.5	-858.5	-438.5	-197.9
DA Mfr. of food; beverages and tobacco	-36.7	-170.9	-194.0	-335.2	-247.6	-212.1	-194.6	-158.1	-116.4	-121.5	-141.2
DB Mfr. of textiles and textile products	654.1	571.2	475.7	476.8	116.2	56.2	-16.0	-51.8	-61.2	-45.9	-76.4
DC Mfr. of leather and leather products	146.2	132.7	122.3	112.0	73.8	28.0	-4.7	-45.6	-27.4	-49.6	-93.1
DD Manufacture of wood and wood products	237.7	230.8	257.2	329.6	300.0	239.0	241.9	185.4	154.7	131.6	146.3
DE Mfr. of paper; publishing and printing	168.7	129.9	107.4	103.6	75.8	98.7	64.2	63.2	51.9	63.8	85.6
DF Mfr. of coke, petroleum prods.&nuc. fuel	-317.3	-368.1	-407.4	-505.7	-650.9	-579.2	-429.7	-474.2	-651.1	-560.0	-548.7
DG Mfr. of chemicals, prod.&man-made fibres	-246.5	-291.3	-242.4	-375.2	-273.6	-199.8	-249.6	-210.5	-216.5	-157.5	-103.7
DH Mfr. of rubber and plastic products	100.0	-8.6	44.1	54.9	57.7	83.9	42.8	23.6	31.4	62.4	66.5
DI Mfr. of other non-metal.mineral products	31.0	44.3	51.2	34.2	47.3	42.4	32.9	8.3	12.3	5.0	3.9
DJ Mfr. of basic metals & fabricated products	5.3	-63.1	-126.1	-156.8	-176.1	-183.1	-300.5	-276.2	-224.2	-197.9	-222.5
DK Mfr. of machinery and equipment nec.	238.8	96.1	20.4	15.0	182.0	222.3	260.3	155.0	196.9	272.5	403.9
DL Mfr. of electrical and optical equipment	0.4	-123.4	-137.7	-250.1	-209.1	-222.3	-337.0	-430.2	-240.8	-160.8	-209.2
DM Manufacture of transport equipment	287.2	-285.4	-158.4	-477.0	-448.8	-299.4	-302.1	-424.5	-187.3	-126.5	-35.9
DN Manufacturing nec.	344.5	337.0	343.8	428.4	429.9	387.6	475.4	476.0	419.5	445.8	526.7
E - Electricity, gas and water supply	-2.4	40.5	54.1	85.4	37.0	57.2	60.8	22.1	18.4	47.9	60.3
K - Real estate, renting & business service	-11.1	-14.3	-12.5	-22.2	1.2	0.5	1.0	0.8	0.4	0.8	-4.5
O - Other social and personal services	-0.4	-0.2	0.0	-1.4	-1.9	-1.0	-0.8	-0.4	-0.6	-0.8	-3.0

Table A19.: Trade balance, EUR million, 1992-2002 Part B*

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
ICT Manufacturing	-158.6	-261.9	-237.1	-379.9	-298.5	-313.8	-365.1	-470.2	-328.1	-257.8	-334.9
3001 Mfr. of office machinery	-15.1	-20.7	-20.0	-31.8	-24.1	-21.7	-22.1	-19.0	-11.0	-9.3	-12.9
3002 Mfr. of computers and other information processing equipment	-130.0	-168.7	-153.6	-241.6	-223.3	-195.6	-221.6	-231.3	-168.9	-174.7	-211.9
3130 Mfr. of insulated wire and cable	-86.8	-75.9	-89.8	-98.4	-87.4	-75.9	-72.9	-65.5	-57.1	-58.2	-58.1
3210 Mfr. of electronic valves and tubes and other electronic components	17.6	15.6	0.9	-6.8	-39.2	-28.3	-23.1	-28.8	-35.6	-29.2	-48.1
3220 Mfr. of television and radio transmitters and apparatus for line telephony and line telegraphy	26.5	-1.1	-9.3	9.0	38.3	-14.3	-30.7	-138.3	-98.6	-18.4	-24.4
3230 Mfr. of television and radio receivers, sound or video recording or reproducing apparatus and associated goods	-5.2	-31.4	-14.2	-45.2	-30.1	-35.6	-50.9	-40.9	-9.4	-18.4	-27.7
3320 Mfr. of instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process control equipment	34.6	20.2	48.9	34.9	67.3	57.6	56.3	53.6	52.5	50.4	48.2

Reference: Statistical Office of the Republic of Slovenia.

* Recalculation from USD at EUR/USD annual average exchange rate.

Note: The sum of sectors' export and import values is not always equal to total export and import value because some exports and imports are unclassified.

Table A20.: Exports and imports of services, EUR million, 1994-2002*

	1994	1995	1996	1997	1998	1999	2000	2001	2002
Total exports of services	1 528.6	1 568.9	1 703.9	1 809.9	1 804.2	1 763.5	2 051.5	2 193.8	2 416.0
Communication services	10.7	9.2	11.1	19.1	22.1	22.7	27.0	37.8	60.7
Computer services	4.6	9.3	23.4	28.8	42.4	51.3	58.5	71.7	83.4
ICT services exports	15.3	18.5	34.5	47.9	64.5	73.9	85.5	109.5	144.2
ICT services as % of service exports	1.0	1.2	2.0	2.6	3.6	4.2	4.2	5.0	6.0
Total imports of services	984.7	1 117.9	1 192.6	1 249.1	1 357.3	1 434.0	1 562.3	1 634.2	1 824.3
Communication services	4.7	8.9	13.1	24.0	27.6	35.0	55.3	67.0	89.0
Computer services	16.1	21.1	24.9	45.5	41.5	49.9	62.2	64.3	85.1
ICT services imports	20.7	29.9	38.0	69.5	69.1	84.9	117.5	131.4	174.1
ICT services as % of service imports	2.1	2.7	3.2	5.6	5.1	5.9	7.5	8.0	9.5

Reference: Bank of Slovenia (Balance of Payments Statistics).

* Prior to 1994 data are not methodologically comparable to 1994-2002 series.

Table A21.: Changes in employment structure, in %, 1997-2002

		1997	1998	1999	2000	2001	2002
A-B	**Agriculture, forestry, fishing**	6.6	6.7	6.0	5.6	5.4	5.5
C-E	**Industry**	34.9	34.5	33.3	32.7	32.4	32.6
F	**Construction**	7.1	7.1	7.3	7.5	7.3	7.3
G-O	**Services**	51.3	51.6	53.3	54.1	54.8	54.6
G-I	Trade, hotels and restaurants, transport	22.0	21.8	22.3	22.6	22.7	22.9
G	*Trade, hotels and restaurants, transport*	12.5	12.2	12.4	12.7	12.7	12.8
H	*Hotels and restaurants*	3.6	3.5	3.7	3.8	3.7	3.7
I	*Transport, storage, communication*	5.9	6.0	6.2	6.2	6.2	6.3
J-K	Business and financial services	7.7	7.9	8.3	8.5	8.8	9.3
J	*Financial intermediation*	2.1	2.3	2.5	2.5	2.5	2.6
K	*Real estate, renting and business services*	5.6	5.6	5.9	6.0	6.3	6.7
L-O	Public services	21.7	21.9	22.6	23.0	23.3	22.4
L	*Public administration*	5.7	5.6	5.6	5.7	5.9	6.0
M	*Education*	6.8	6.9	6.9	6.9	6.9	7.0
N	*Health and social work*	6.2	6.4	6.9	7.1	7.1	6.0
O	*Other communitiy, social and personal services*	2.9	3.0	3.2	3.3	3.3	3.3

Reference: Statistical Office of the Republic of Slovenia.

Note: Data on employment structure according to NACE are available only since 1997 as before this year National Classification of Activities was used.

B. NATIONAL AND REGIONAL INFORMATION SOCIETY POLICIES

No tables are assigned to Section B.

C. INDUSTRIAL DEVELOPMENT AND COMPETITIVENESS

Table C1.: Structure of value added in manufacturing, in %, 1990-2001

	1990	1993	1994	1995	1996	1997	1998	1999	2000	2001
D Manufacturing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
DA Mfr. of food; beverages and tobacco	11.7	13.9	15.2	13.1	14.5	13.7	13.5	12.9	10.1	9.9
DB Mfr. of textiles and textile products	12.1	12.1	10.8	10.1	9.3	8.5	8.4	7.8	7.6	7.4
DC Mfr. of leather and leather products	3.0	3.0	3.0	2.2	2.0	1.8	1.6	1.7	1.8	1.9
DD Manufacture of wood and wood products	3.7	3.7	3.7	4.1	4.3	3.9	3.9	3.9	3.9	3.5
DE Mfr. of paper; publishing and printing	6.4	7.8	7.5	7.4	8.0	7.8	7.7	7.6	8.5	8.6
DF Mfr. of coke, petroleum prods.&nuc. fuel	0.2	0.3	0.3	0.3	0.1	0.3	0.2	0.3	0.1	0.1
DG Mfr. of chemicals, prod.&man-made fibres	9.4	7.7	9.8	10.4	10.8	11.4	11.3	11.3	10.0	10.2
DH Mfr. of rubber and plastic products	4.1	4.9	5.0	5.3	5.5	5.6	5.6	5.6	5.6	5.8
DI Mfr. of other non-metal.mineral products	4.9	4.8	4.9	5.3	5.3	5.0	4.8	5.2	4.7	4.7
DJ Mfr. of basic metals & fabricated products	16.1	12.4	11.8	13.3	12.5	12.6	13.1	14.0	16.6	16.7
DK Mfr. of machinery and equipment nec.	7.5	7.3	7.3	7.6	8.1	8.8	9.2	8.9	9.5	9.4
DL Mfr. of electrical and optical equipment	10.6	9.9	10.0	10.6	11.0	11.7	11.3	11.5	12.1	12.2
DM Manufacture of transport equipment	5.6	5.0	4.7	4.2	3.1	2.8	3.3	3.4	4.1	4.4
DN Manufacturing nec.	4.7	7.1	6.2	5.9	5.3	6.1	6.1	6.0	5.5	5.4

Reference: Statistical Office of the Republic of Slovenia and own estimations on the basis of balance sheets of commercial companies (for two digit level data for years 1995-1999).

Note: Data from 2000 onwards are revised and therefore not completely comparable with data for previous years. The revised GDP value for 2000 is 4.6% higher than previous estimate. The main reasons of GDP value increase are new methodology of imputed rent estimate, estimate of consumption of fixed capital for the general government sector and improvements of GDP exhaustiveness adjustments.

Table C2: Industrial production, volume indices, 1994-2002 Part A

	1994	1995	1996	1997	1998	1999	2000	2001	2002
TOTAL INDUSTRIAL PRODUCTION*	106.4	102.0	101.0	101.0	103.7	99.5	106.2	102.9	102.4
A Intermediate goods industries	108.6	102.4	98.5	99.4	103.1	100.2	106.7	102.1	103.8
AE Energy related industries	...	...	...	107.2	100.2	95.4	100.0	103.6	106.6
AI Intermediate goods industries (except energy)	...	...	...	96.7	104.0	101.8	108.8	101.6	102.9
B Capital goods industries	113.5	107.5	110.1	75.5	111.3	101.3	103.5	108.3	105.5
C Consumer goods industries	102.4	100.3	101.6	113.3	101.4	97.7	106.8	92.1	99.3
CD Durable consumer goods industries	...	...	...	140.1	109.8	99.5	109.9	110.1	107.4
CN Non-durable consumer goods industries	...	...	...	105.7	98.9	97.2	105.8	98.9	96.3
SECTORS, SUBSECTORS, DIVISIONS OF ACTIVITY									
C Mining and quarrying	94.9	100.9	100.4	101.8	99.6	96.0	97.3	92.1	107.7
CA Mining & quarrying of energy materials	93.2	99.9	96.4	104.7	99.3	93.0	98.1	92.4	110.1
CB Mining & quarrying, not energy materials	102.1	103.9	115.9	85.7	101.8	111.8	94.1	90.4	96.9
D Manufacturing	106.7	102.8	100.9	100.2	103.9	100.0	107.0	102.8	102.0
DA Mfr. of food; beverages and tobacco	102.7	99.8	105.4	97.0	103.2	102.1	105.4	100.2	98.4
DB Mfr. of textiles and textile products	96.0	102.8	99.6	100.0	101.4	93.0	104.3	92.0	87.5
DC Mfr. of leather and leather products	96.2	88.3	80.6	111.9	84.8	78.8	104.1	98.4	84.9
DD Manufacture of wood and wood products	106.6	99.3	100.9	72.3	103.2	95.3	101.6	91.5	103.0
DE Mfr. of paper; publishing and printing	110.0	93.4	97.2	88.4	87.3	96.8	102.9	95.8	105.4
DF Mfr. of coke, petroleum prods.&nuc. fuel	67.2	135.9	76.6	109.2	45.2	117.7	70.9	32.6	107.6
DG Mfr. of chemicals, prod.&man-made fibres	115.7	103.2	103.4	103.8	105.1	101.6	110.4	108.1	105.9
DH Mfr. of rubber and plastic products	107.3	105.5	98.3	114.1	100.4	98.1	110.1	101.1	98.6
DI Mfr. of other non metal.mineral products	112.0	101.0	106.3	104.8	106.7	103.9	96.4	100.1	100.8
DJ Mfr. of basic metals & fabricated products	106.6	105.0	94.4	96.3	103.4	104.0	112.5	104.6	103.5
DK Mfr. of machinery and equipment nec.	117.8	103.1	93.1	88.5	108.8	99.4	105.4	115.4	111.4
DL Mfr. of electrical and optical equipment	121.0	116.9	116.4	97.0	103.7	105.0	114.1	106.4	103.6

Table C2: Industrial production, volume indices, 1994-2002 Part B

	1994	1995	1996	1997	1998	1999	2000	2001	2002
Mfr. of office machinery & computers	104.6	102.9	98.3	75.4	84.1	72.0	38.1	105.6	105.0
Mfr. of electrical machinery etc nec	109.4	115.0	102.9	64.5	106.6	105.3	114.7	109.8	103.7
Mfr. of radio, TV & equipment	135.7	133.3	135.3	90.3	102.6	109.6	134.7	104.7	104.6
Mfr. of medical & precision instruments	130.5	101.8	118.4	...	102.3	103.9	95.1	101.4	101.7
DM Manufacture of transport equipment	97.3	104.4	92.9	92.2	129.4	100.7	111.0	101.4	105.0
DN Manufacturing nec.	103.5	94.6	100.2	116.4	109.5	96.3	99.6	108.4	98.1
E Electricity, gas and water supply	107.8	99.8	100.8	108.2	103.3	95.9	101.6	109.3	105.4

Reference: Statistical Office of the Republic of Slovenia.

* Until 1997, data on production were collected by the National Classification of Activities. Later on they were recalculatedto the Standard Classification of Activities with a conversion table.

Table C3.: Value added per employee in manufacturing, current prices EUR, 1995-2001

	1995	1996	1997	1998	1999	2000	2001
D Manufacturing	13 359	14 458	16 535	17 582	18 921	20 606	21 303
DA Mfr. of food; beverages and tobacco	20 135	21 911	23 851	24 538	24 475	24 900	24 615
DB Mfr. of textiles and textile products	8 838	9 053	10 141	10 974	11 127	11 653	12 521
DC Mfr. of leather and leather products	8 678	8 180	10 123	8 574	9 377	12 390	12 878
DD Manufacture of wood and wood products	10 399	10 421	11 382	12 206	13 183	14 228	14 013
DE Mfr. of paper; publishing and printing	17 068	17 903	19 576	22 190	23 904	26 995	27 854
DF Mfr. of coke, petroleum prods.&nuc. fuel	24 272	5 286	15 038	10 939	19 115	11 880	9 425
DG Mfr. of chemicals, prod.&man-made fibres	28 032	29 017	32 423	35 003	36 395	41 529	44 464
DH Mfr. of rubber and plastic products	15 351	17 550	19 452	17 274	20 544	21 468	23 566
DI Mfr. of other non-metal.mineral products	14 186	15 247	17 396	18 903	21 380	22 538	22 849
DJ Mfr. of basic metals & fabricated products	12 330	13 072	14 430	16 057	18 004	20 202	20 389
DK Mfr. of machinery and equipment nec.	9 421	12 664	15 492	16 218	18 404	19 718	20 056
DL Mfr. of electrical and optical equipment	13 562	14 355	17 264	17 814	18 631	20 676	21 179
DM Manufacture of transport equipment	12 587	13 331	13 854	17 158	18 986	21 702	21 503
DN Manufacturing nec.	10 330	9 981	12 965	13 008	14 554	14 319	15 796

Reference: Own calculations on the basis of Agency for Payments data on balance sheets of commercial companies.

Table C4.: Value added by sectors and regions, EUR million (current price), 1999 Part A

EUR million, current price	TOTAL	A-B	C-E	C-D	F	G-O	G-I	J-K	J	K	L-O	L	M	N	O
SLOVENIA	16 350.6	591.7	5 114.0	4 609.5	1 007.2	9 637.7	3 698.0	2 647.8	689.9	1 957.8	3 291.9	918.1	910.7	871.2	592.0
Pomurska	788.4	90.7	260.7	245.8	53.8	383.2	152.4	98.0	22.1	75.9	132.9	38.2	43.7	39.7	11.4
Podravska	2 183.4	101.1	647.2	582.8	138.0	1 297.1	455.6	383.9	99.3	284.6	457.6	99.8	149.1	141.0	67.7
Koroška	527.5	21.6	244.1	218.1	25.7	236.1	79.3	67.0	11.6	55.4	89.7	20.3	27.5	31.9	10.1
Savinjska	1 925.0	79.2	753.7	666.7	136.9	955.1	388.9	250.3	53.5	196.7	315.9	68.6	93.9	102.6	50.9
Zasavska	307.7	4.3	151.3	126.4	17.9	134.3	40.8	45.1	8.3	36.8	48.3	9.1	13.9	16.2	9.1
Posavska	482.2	35.1	195.2	124.3	26.8	225.2	85.3	60.6	14.4	46.2	79.3	23.2	21.8	25.6	8.7
South-eastern Slovenia	1 034.2	64.5	422.1	396.5	76.1	471.6	164.8	132.2	36.6	95.6	174.6	50.7	51.2	58.1	14.5
Central Slovenia	5 358.2	71.8	1 208.1	1 103.1	294.0	3 784.3	1 397.9	1 118.2	323.9	794.4	1 268.1	434.9	329.2	272.8	231.2
Gorenjska	1 490.3	34.6	587.4	558.1	84.9	783.3	346.8	190.5	37.2	153.3	246.0	58.9	71.9	70.0	45.2
Notranjsko-kraška	355.0	26.8	127.2	117.4	24.9	176.0	71.3	42.4	10.4	32.1	62.2	23.1	18.3	16.5	4.4
Goriška	1 008.2	40.1	338.9	308.9	72.8	556.3	212.3	123.0	31.4	91.6	221.0	42.9	46.4	54.1	77.7
Obalno-kraška	890.5	21.9	178.0	161.5	55.4	635.2	302.6	136.5	41.2	95.3	196.1	48.4	44.0	42.7	61.0

in %	TOTAL	A-B	C-E	C-D	F	G-O	G-I	J-K	J	K	L-O	L	M	N	O
SLOVENIA	100.0	3.6	31.3	28.2	6.2	58.9	22.6	16.2	4.2	12.0	20.1	5.6	5.6	5.3	3.6
Pomurska	100.0	11.5	33.1	31.2	6.8	48.6	19.3	12.4	2.8	9.6	16.9	4.8	5.5	5.0	1.4
Podravska	100.0	4.6	29.6	26.7	6.3	59.4	20.9	17.6	4.5	13.0	21.0	4.6	6.8	6.5	3.1
Koroška	100.0	4.1	46.3	41.3	4.9	44.8	15.0	12.7	2.2	10.5	17.0	3.8	5.2	6.0	1.9
Savinjska	100.0	4.1	39.2	34.6	7.1	49.6	20.2	13.0	2.8	10.2	16.4	3.6	4.9	5.3	2.6
Zasavska	100.0	1.4	49.2	41.1	5.8	43.6	13.3	14.7	2.7	12.0	15.7	3.0	4.5	5.3	2.9
Posavska	100.0	7.3	40.5	25.8	5.5	46.7	17.7	12.6	3.0	9.6	16.4	4.8	4.5	5.3	1.8
South-eastern Slovenia	100.0	6.2	40.8	38.3	7.4	45.6	15.9	12.8	3.5	9.2	16.9	4.9	5.0	5.6	1.4
Central Slovenia	100.0	1.3	22.5	20.6	5.5	70.6	26.1	20.9	6.0	14.8	23.7	8.1	6.1	5.1	4.3
Gorenjska	100.0	2.3	39.4	37.4	5.7	52.6	23.3	12.8	2.5	10.3	16.5	4.0	4.8	4.7	3.0
Notranjsko-kraška	100.0	7.6	35.8	33.1	7.0	49.6	20.1	12.0	2.9	9.0	17.5	6.5	5.1	4.6	1.2
Goriška	100.0	4.0	33.6	30.6	7.2	55.2	21.1	12.2	3.1	9.1	21.9	4.3	4.6	5.4	7.7
Obalno-kraška	100.0	2.5	20.0	18.1	6.2	71.3	34.0	15.3	4.6	10.7	22.0	5.4	4.9	4.8	6.9

Table C4.: Value added by sectors and regions, EUR million (current price), 1999 Part B

Reference: Statistical Office of the Republic of Slovenia.

Legend:

A-B Agriculture, Forestry, Fishery
C Mining
D Manufacturing
E Electricity, gas and water supply
F Construction
G-O Services
G Wholesale and retail trade, motor vehicle repair
H Hotels and restaurants
I Transport, storage communications
J Financial intermediation
L-O Public services
L Public administration and compulsory social security
M Education
N Health and social work
O Other community, social and personal services

Table C5.: Structure of value added in services sector, 1991-2001, in % Part A

NACE activity	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
G…O Services	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
G - Wholesale, retail trade, repair	**19.5**	**19.5**	**19.5**	**21.0**	**20.8**	**19.9**	**19.7**	**19.6**	**19.5**	**18.7**	**18.9**
50 Sale and repair of motor vehicles; sale of fuel	…	…	…	…	…	…	…	…	…	3.5	3.3
51 Wholesale trade and commission trade	…	…	…	…	…	…	…	…	…	7.7	8.1
52 Retail trade; repair of personal and household goods	…	…	…	…	…	…	…	…	…	7.5	7.5
H - Hotels and restaurants	**4.0**	**4.6**	**5.1**	**5.3**	**5.1**	**5.3**	**5.2**	**5.0**	**5.1**	**4.2**	**4.1**
551 Hotels	…	…	…	…	…	…	…	…	…	1.6	1.5
552 Camping sites	…	…	…	…	…	…	…	…	…	0.2	0.2
553 Restaurants	…	…	…	…	…	…	…	…	…	1.6	1.6
554 Bars	…	…	…	…	…	…	…	…	…	0.5	0.5
555 Canteens and catering	…	…	…	…	…	…	…	…	…	0.2	0.2
I - Transport, storage, communications	**15.8**	**13.5**	**13.7**	**13.4**	**13.3**	**13.1**	**13.7**	**14.0**	**13.8**	**11.9**	**11.7**
60 Land transport	…	…	…	…	…	…	…	…	…	5.0	4.9
61 Water transport	…	…	…	…	…	…	…	…	…	0.2	0.2
62 Air transport	…	…	…	…	…	…	…	…	…	0.3	0.3
63 Supporing transport activities; travel agencies	…	…	…	…	…	…	…	…	…	2.7	2.5
64 Post and telecommunictions	…	…	…	…	…	…	…	…	…	3.6	3.8
642 Telecommunications	…	…	…	…	…	…	…	…	…	2.7	2.8
J - Financial intermediation	**7.8**	**6.5**	**7.0**	**5.9**	**6.9**	**7.2**	**7.3**	**7.1**	**7.2**	**8.2**	**7.2**
65 Financial intermediation	…	…	…	…	…	…	…	…	…	6.1	5.2
66 Insurance and pension funding	…	…	…	…	…	…	…	…	…	1.4	1.3
67 Activities auxiliary to financial intermediation	…	…	…	…	…	…	…	…	…	0.8	0.7
K - Real estate, renting and business activites	**19.2**	**19.4**	**18.7**	**20.1**	**20.1**	**20.4**	**19.5**	**20.1**	**20.4**	**24.0**	**24.2**
70 Real estate activities	…	…	…	…	…	…	…	…	…	13.1	12.7
71 Renting of machinery and equipment	…	…	…	…	…	…	…	…	…	0.1	0.1
72 Computer and related activities	…	…	…	…	…	…	…	…	…	1.4	1.6
73 Research and development	…	…	…	…	…	…	…	…	…	1.1	1.1
74 Other business activities	…	…	…	…	…	…	…	…	…	8.4	8.8

Table C5.: Structure of value added in services sector, 1991-2001, in % Part B

NACE activity	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
L - Public administration and compulsory social security	**7.0**	**8.2**	**8.6**	**9.1**	**9.2**	**9.4**	**10.0**	**9.7**	**9.5**	**10.1**	**10.6**
M - Education	**9.4**	**9.2**	**9.5**	**9.6**	**9.7**	**9.6**	**9.8**	**9.5**	**9.4**	**9.1**	**9.4**
801 Primary education	…	…	…	…	…	…	…	…	…	4.9	5.1
802 Secondary education	…	…	…	…	…	…	…	…	…	1.7	1.8
803 Higher education	…	…	…	…	…	…	…	…	…	1.8	1.9
804 Adult and other education	…	…	…	…	…	…	…	…	…	0.6	0.6
N Health and social work	**8.6**	**9.8**	**8.9**	**9.2**	**9.1**	**9.2**	**9.0**	**8.9**	**9.0**	**8.2**	**8.4**
O - Other community and personal activities	**8.8**	**9.2**	**9.1**	**6.4**	**5.7**	**6.0**	**5.9**	**6.0**	**6.1**	**5.6**	**5.6**

Reference: Statistical Office of the Republic of Slovenia.

Note: Data from 2000 onwards are revised and therefore not completely comparable with data for previous years.
The revised GDP value for 2000 is 4.6% higher than previous estimate. The main reasons of GDP value increase are new methodology of imputed rent estimate, estimate of consumption of fixed capital for the general government sector and improvements of GDP exhaustiveness adjustments.

Table C6.: Gross fixed capital formation, 1991-2002, real growth rates in %

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Gross fixed Capital formation	-11.5	-12.9	10.7	14.1	16.8	8.9	11.6	11.3	19.1	0.2	-0.8	3.1

Reference: Statistical Office of the Republic of Slovenia.

Table C7.: Technical structure of gross fixed capital formation, 1996-2001*

EUR million	1996	1997	1998	1999	2000	2001
Gross fixed capital formation	2 208.6	2 469.3	2 843.6	3 430.8	3 746.4	3 673.4
Tangible fixed assets	2 124.7	2 345.7	2 712.1	3 237.2	3 557.3	3 491.2
Buildings and construction works	968.3	1 069.5	1 203.1	1 435.2	1 724.0	1 619.1
Machinery and equipment	949.2	1 094.5	1 232.1	1 537.7	1 523.0	1 542.1
Transport equipment	202.0	175.7	270.2	256.5	304.7	325.7
Breeding stocks and orchard development	5.1	6.0	6.7	7.9	5.5	4.3
Intangible fixed assets	83.8	123.6	131.5	193.5	189.2	182.2
ICT related investment	182.6	198.1	225.6	312.0	282.1	348.0
Computers and office machinery	167.3	177.8	193.2	257.6	226.2	265.5
Software	15.3	20.3	32.4	54.4	56.0	82.5

in %	1996	1997	1998	1999	2000	2001
Gross fixed capital formation	100.0	100.0	100.0	100.0	100.0	100.0
Tangible fixed assets	96.2	95.0	95.4	94.4	95.0	95.0
Buildings and construction works	43.8	43.3	42.3	41.8	46.0	44.1
Machinery and equipment	43.0	44.3	43.3	44.8	40.7	42.0
Transport equipment	9.1	7.1	9.5	7.5	8.1	8.9
Breeding stocks and orchard development	0.2	0.2	0.2	0.2	0.1	0.1
Intangible fixed assets	3.8	5.0	4.6	5.6	5.0	5.0
ICT related investment	8.3	8.0	7.9	9.1	7.5	9.5
Computers and office machinery	7.6	7.2	6.8	7.5	6.0	7.2
Software	0.7	0.8	1.1	1.6	1.5	2.2

Reference: Statistical Office of the Republic of Slovenia.

* New fixed assets in enterprises, companies and other organisations. Data are derived form the survey which has been carried out since 1996. For years 2000 and 2001 recalculation for the total population was made.

Table C8.: Share of ICT sector in non-financial corporate sector in 1995 and 2001, %*

	Number of companies		Employment		Value added		Exports		Turnover	
	1995	**2001**	**1995**	**2001**	**1995**	**2001**	**1995**	**2001**	**1995**	**2001**
ICT sector	**2.95**	**4.45**	**3.42**	**4.97**	**5.30**	**7.49**	**3.84**	**5.45**	**3.27**	**5.79**
ICT manufacturing	**1.19**	**0.98**	**2.30**	**2.68**	**2.15**	**2.56**	**3.34**	**4.17**	**1.70**	**2.11**
30010	0.02	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00
30020	0.25	0.24	0.15	0.18	0.19	0.25	0.04	0.17	0.31	0.34
31300	0.01	0.01	0.01	0.04	0.02	0.04	0.02	0.06	0.01	0.02
32100	0.38	0.24	0.46	0.93	0.34	0.61	0.46	1.02	0.21	0.38
32200	0.10	0.07	0.46	0.34	0.47	0.57	0.87	1.01	0.39	0.58
32300	0.05	0.04	0.21	0.15	0.14	0.10	0.42	0.49	0.16	0.17
33200	0.25	0.23	0.91	0.91	0.93	0.82	1.45	1.20	0.56	0.48
33300	0.13	0.15	0.08	0.13	0.05	0.18	0.06	0.22	0.06	0.13
ICT services	**1.77**	**3.46**	**1.13**	**2.29**	**3.15**	**4.93**	**0.51**	**1.28**	**1.57**	**3.68**
51430	0.17	0.26	0.03	0.13	0.06	0.18	0.02	0.05	0.14	0.32
51640	0.09	0.27	0.02	0.15	0.03	0.19	0.00	0.15	0.07	0.35
51650	0.15	0.28	0.04	0.08	0.05	0.11	0.01	0.07	0.07	0.16
64200	0.09	0.28	0.67	0.96	2.58	2.98	0.33	0.41	0.92	1.84
72100	0.10	0.16	0.05	0.09	0.10	0.16	0.11	0.11	0.08	0.16
72200	0.49	1.34	0.12	0.64	0.13	1.01	0.02	0.47	0.15	0.66
72300	0.20	0.19	0.13	0.09	0.15	0.11	0.00	0.01	0.07	0.05
72400	0.03	0.13	0.00	0.03	0.00	0.04	0.00	0.01	0.00	0.03
72500	0.40	0.40	0.06	0.10	0.05	0.09	0.01	0.01	0.07	0.09
72600	0.04	0.16	0.00	0.03	0.00	0.05	0.00	0.00	0.01	0.02

Reference: Own calculations on the basis of Agency for Payments data on Balance Sheets of commercial companies.

* Corporate sector includes only commercial companies, while individual private entrepreneurs are excluded.

Table C9.: Weight of ICT industry, 2001

	No companies	No employees	Employment in %	VA 000 EUR	VA in %	VA/empl. EUR	Exports 000 EUR	Exports in %	Export as % of sale	Turnover 000 EUR	Turnover in %
ICT sector	**1 654**	**23 532**	**100.0**	**790 640**	**100.0**	**33 598**	**663 807**	**100.0**	**26.5**	**2 508 144**	**100.0**
ICT manufacturing	**366**	**12 694**	**53.9**	**270 348**	**34.2**	**21 297**	**507 377**	**76.4**	**55.6**	**913 033**	**36.4**
30010	2	18	0.1	415	0.1	23 053	0	0.0	0.0	1 466	0.1
30020	89	848	3.6	26 247	3.3	30 951	20 373	3.1	13.9	146 557	5.8
31300	5	181	0.8	3 702	0.5	20 455	7 780	1.2	81.0	9 606	0.4
32100	91	4 400	18.7	64 381	8.1	14 632	123 921	18.7	75.3	164 675	6.6
32200	25	1 628	6.9	59 744	7.6	36 698	122 561	18.5	48.9	250 562	10.0
32300	14	712	3.0	10 791	1.4	15 156	59 433	9.0	80.6	73 697	2.9
33200	84	4 300	18.3	86 392	10.9	20 091	146 629	22.1	70.4	208 206	8.3
33300	56	607	2.6	18 676	2.4	30 767	26 680	4.0	45.8	58 263	2.3
ICT services	**1 288**	**10 838**	**46.1**	**520 292**	**65.8**	**48 006**	**156 430**	**23.6**	**9.8**	**1 595 110**	**63.6**
51430	96	593	2.5	19 408	2.5	32 729	6 631	1.0	4.7	140 031	5.6
51640	101	707	3.0	20 514	2.6	29 016	18 335	2.8	12.1	150 925	6.0
51650	103	364	1.5	12 105	1.5	33 254	8 265	1.2	12.0	68 707	2.7
64200	106	4 530	19.3	314 472	39.8	69 420	49 424	7.4	6.2	796 871	31.8
72100	59	419	1.8	17 307	2.2	41 305	12 809	1.9	18.3	69 929	2.8
72200	497	3 040	12.9	107 056	13.5	35 216	57 614	8.7	20.2	284 613	11.3
72300	70	426	1.8	11 283	1.4	26 486	824	0.1	4.1	19 939	0.8
72400	48	155	0.7	4 210	0.5	27 161	873	0.1	6.9	12 690	0.5
72500	147	456	1.9	9 065	1.1	19 879	1 366	0.2	3.3	41 130	1.6
72600	61	148	0.6	4 873	0.6	32 924	291	0.0	2.8	10 275	0.4

Reference: Own calculations on the basis of Agency for Payments data on Balance Sheets of commercial companies.

VA - value added

Table C10.: Weight of ICT industry, 1995

	No companies	No employees	Employment in %	VA 000 EUR	VA in %	VA/empl. EUR	Exports 000 EUR	Exports in %	Export as % of sale	Turnover 000 EUR	Turnover in %
ICT sector	**993**	**16 591**	**100.0**	**386 846.6**	**100.0**	**23 316.7**	**281 532.3**	**100.0**	**28.7**	**979 852.7**	**100.0**
ICT manufacturing	**399**	**11 132**	**67.1**	**156 713.3**	**40.5**	**14 077.7**	**244 330.6**	**86.8**	**48.1**	**508 425.1**	**51.9**
30010	6	51	0.3	729.3	0.2	14 300.8	227.8	0.1	8.3	2 747.0	0.3
30020	84	710	4.3	13 719.7	3.5	19 323.5	3 272.9	1.2	3.5	92 244.3	9.4
31300	3	71	0.4	1 258.5	0.3	17 724.7	1 700.7	0.6	78.4	2 168.8	0.2
32100	127	2 240	13.5	24 964.2	6.5	11 144.7	33 947.8	12.1	53.2	63 859.0	6.5
32200	34	2 224	13.4	34 202.5	8.8	15 378.8	63 661.1	22.6	54.9	115 939.6	11.8
32300	16	1 028	6.2	10 248.8	2.6	9 969.6	31 092.6	11.0	66.3	46 893.1	4.8
33200	85	4 405	26.6	67 585.1	17.5	15 342.8	105 981.0	37.6	63.4	167 067.6	17.1
33300	44	403	2.4	4 005.3	1.0	9 938.6	4 446.7	1.6	25.4	17 505.7	1.8
ICT services	**594**	**5 459**	**32.9**	**230 133.3**	**59.5**	**42 156.7**	**37 201.7**	**13.2**	**7.9**	**471 427.6**	**48.1**
51430	58	152	0.9	4 048.9	1.0	26 637.6	1 679.6	0.6	3.9	43 383.4	4.4
51640	30	93	0.6	2 092.7	0.5	22 502.5	12.6	0.0	0.1	21 062.9	2.1
51650	51	182	1.1	3 557.4	0.9	19 546.0	757.8	0.3	3.9	19 678.7	2.0
64200	30	3 250	19.6	188 311.9	48.7	57 942.1	24 175.6	8.6	8.8	275 682.6	28.1
72100	35	262	1.6	7 563.3	2.0	28 867.6	8 085.4	2.9	35.7	22 652.2	2.3
72200	165	595	3.6	9 597.9	2.5	16 130.9	1 769.9	0.6	4.0	44 490.9	4.5
72300	66	612	3.7	10 937.8	2.8	17 872.1	152.7	0.1	0.7	21 556.2	2.2
72400	9	9	0.1	125.0	0.0	13 886.3	0.0	0.0	0.0	322.3	0.0
72500	136	285	1.7	3 656.1	0.9	12 828.4	525.1	0.2	2.5	20 819.2	2.1
72600	14	19	0.1	242.3	0.1	12 754.3	43.0	0.0	2.4	1 779.2	0.2

Reference: Own calculations on the basis of Agency for Payments data on Balance Sheets of commercial companies.

VA - value added

Table C11.: Regional structure of ICT sector value added, 1995 and 2001, in %

	1995	2001
Central Slovenia	66.9	66.9
Gorenjska	21.2	15.7
Podravska	2.2	3.5
Savinjska	3.7	3.2
South-Eastern Slovenia	1.6	3.0
Obalno-kraška	0.5	1.5
Koroška	0.9	1.4
Spodnjeposavska	0.1	1.2
Pomurska	0.9	1.1
Goriška	0.7	1.0
Zasavska	0.7	0.8
Notranjsko-kraška	0.1	0.7

Reference: Own calculations on the basis of Agency for Payments data.

Table C12.: Trade in ICT goods, EUR million, 1992-2002

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Total exports of goods	**8 637**	**8 047**	**8 076**	**10 743**	**10 406**	**9 454**	**10 147**	**9 103**	**8 040**	**8 278**	**9 752**
ICT Manufacturing	**306**	**283**	**337**	**466**	**501**	**423**	**436**	**375**	**403**	**405**	**451**
3001	2	3	2	2	3	3	4	5	5	7	6
3002	7	10	14	14	14	13	17	19	16	15	22
3130	14	15	20	31	25	25	26	24	22	24	27
3210	55	58	67	79	68	62	72	69	104	79	78
3220	69	46	44	90	132	95	95	53	67	110	112
3230	38	31	55	60	70	62	55	47	59	45	60
3320	119	121	135	190	187	162	167	158	130	125	146
Total imports of goods	**7 938**	**8 614**	**8 640**	**12 263**	**11 798**	**10 581**	**11 336**	**10 740**	**9 314**	**9 079**	**10 291**
ICT Manufacturing	**464**	**545**	**574**	**846**	**800**	**737**	**801**	**846**	**731**	**663**	**786**
3001	17	23	22	34	27	24	26	25	16	16	19
3002	137	178	168	255	238	208	238	250	185	190	234
3130	101	91	110	129	113	101	99	89	79	82	86
3210	38	43	66	86	107	90	95	98	139	108	126
3220	42	47	53	81	94	109	125	191	165	128	137
3230	43	62	69	105	100	98	106	88	68	63	88
3320	85	101	86	155	120	105	111	104	78	75	98
Trade balance - total	**698**	**-567**	**-563**	**-1 519**	**-1 392**	**-1 127**	**-1 189**	**-1 637**	**-1 274**	**-801**	**-538**
ICT Manufacturing	**-159**	**-262**	**-237**	**-380**	**-299**	**-314**	**-365**	**-470**	**-328**	**-258**	**-335**
3001	-15	-21	-20	-32	-24	-22	-22	-19	-11	-9	-13
3002	-130	-169	-154	-242	-223	-196	-222	-231	-169	-175	-212
3130	-87	-76	-90	-98	-87	-76	-73	-65	-57	-58	-58
3210	18	16	1	-7	-39	-28	-23	-29	-36	-29	-48
3220	26	-1	-9	9	38	-14	-31	-138	-99	-18	-24
3230	-5	-31	-14	-45	-30	-36	-51	-41	-9	-18	-28
3320	35	20	49	35	67	58	56	54	52	50	48

Reference: Statistical Office of the Republic of Slovenia.

Table C13.: Structure of exports and imports of ICT goods, in %, 1992-2002

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Total exports of goods	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
ICT Manufacturing	**3.5**	**3.5**	**4.2**	**4.3**	**4.8**	**4.5**	**4.3**	**4.1**	**5.0**	**4.9**	**4.6**
3001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
3002	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
3130	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3
3210	0.6	0.7	0.8	0.7	0.7	0.7	0.7	0.8	1.3	1.0	0.8
3220	0.8	0.6	0.5	0.8	1.3	1.0	0.9	0.6	0.8	1.3	1.2
3230	0.4	0.4	0.7	0.6	0.7	0.7	0.5	0.5	0.7	0.5	0.6
3320	1.4	1.5	1.7	1.8	1.8	1.7	1.6	1.7	1.6	1.5	1.5
Total imports of goods	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
ICT Manufacturing	**5.8**	**6.3**	**6.6**	**6.9**	**6.8**	**7.0**	**7.1**	**7.9**	**7.8**	**7.3**	**7.6**
3001	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
3002	1.7	2.1	1.9	2.1	2.0	2.0	2.1	2.3	2.0	2.1	2.3
3130	1.3	1.1	1.3	1.1	1.0	1.0	0.9	0.8	0.8	0.9	0.8
3210	0.5	0.5	0.8	0.7	0.9	0.9	0.8	0.9	1.5	1.2	1.2
3220	0.5	0.5	0.6	0.7	0.8	1.0	1.1	1.8	1.8	1.4	1.3
3230	0.5	0.7	0.8	0.9	0.8	0.9	0.9	0.8	0.7	0.7	0.9
3320	1.1	1.2	1.0	1.3	1.0	1.0	1.0	1.0	0.8	0.8	0.9

Reference: Statistical Office of the Republic of Slovenia.

Table C14.: Trade in ICT services (ICTS), 1994-2002, EUR million*

	1994	1995	1996	1997	1998	1999	2000	2001	2002
Export									
Services	1 528.6	1 568.9	1 703.9	1 809.9	1 804.2	1 763.5	2 051.5	2 193.8	2 416.0
ICTS**	15.3	18.5	34.5	47.9	64.5	73.9	85.5	109.5	144.2
Communication services	10.7	9.2	11.1	19.1	22.1	22.7	27.0	37.8	60.7
Computer services	4.6	9.3	23.4	28.8	42.4	51.3	58.5	71.7	83.4
ICTS as % of service exports	1.0	1.2	2.0	2.6	3.6	4.2	4.2	5.0	6.0
Import									
Services	984.7	1 117.9	1 192.6	1 249.1	1 357.3	1 434.0	1 562.3	1 634.2	1 824.3
ICTS	20.7	29.9	38.0	69.5	69.1	84.9	117.5	131.4	174.1
Communication services	4.7	8.9	13.1	24.0	27.6	35.0	55.3	67.0	89.0
Computer services	16.1	21.1	24.9	45.5	41.5	49.9	62.2	64.3	85.1
ICTS as % of service imports	2.1	2.7	3.2	5.6	5.1	5.9	7.5	8.0	9.5
Balance									
Communication services	-5.3	-11.9	-13.8	-26.4	-19.4	-27.2	-35.2	-26.5	-24.4
Computer services	-11.5	-11.8	-1.5	-16.7	0.9	1.4	-3.7	7.4	-1.7
ICTS	-5.4	-11.4	-3.5	-21.7	-4.6	-11.0	-32.0	-21.9	-29.9

Reference: Bank of Slovenia .

*Prior to 1994 data are not methodologically comparable to 1994-2002 series.
** ICTS - ICT services

Table C15.: Local sales of ICT sector, 1995-2001, EUR million

	1995	1996	1997	1998	1999	2000	2001	2001/1995
ICT manufacturing	**264.1**	**281.2**	**317.3**	**332.9**	**396.4**	**355.8**	**405.7**	**153.6**
30010	2.5	2.9	1.3	1.4	1.3	1.4	1.5	58.2
30020	89.0	101.3	102.1	121.8	152.8	134.3	126.2	141.8
31300	0.5	0.4	0.8	0.9	1.2	1.7	1.8	390.1
32100	29.9	33.7	34.9	36.4	35.9	38.6	40.8	136.3
32200	52.3	53.6	90.7	78.8	108.2	83.7	128.0	244.8
32300	15.8	17.0	11.6	11.7	13.1	10.8	14.3	90.3
33200	189.9	59.2	55.9	58.3	59.2	52.0	61.6	32.4
33300	13.1	13.1	20.1	23.6	24.7	33.3	31.6	241.8
ICT services	**434.2**	**515.7**	**693.4**	**858.0**	**1 183.6**	**1 269.4**	**1 438.7**	**331.3**
51430	41.7	51.8	103.5	117.7	144.0	124.3	133.4	319.9
51640	21.1	24.1	44.9	66.4	116.0	104.4	132.6	629.9
51650	18.9	23.1	37.2	43.1	47.9	52.4	60.4	319.4
64200	251.5	296.4	330.2	419.9	597.3	685.5	747.4	297.2
72100	14.6	22.0	27.7	39.4	48.1	47.6	57.1	392.1
72200	42.7	51.9	95.4	106.8	157.7	180.7	227.0	531.4
72300	21.4	18.4	21.7	21.3	22.9	19.5	19.1	89.3
72400	0.3	0.5	3.5	5.3	7.2	8.2	11.8	3 666.4
72500	20.3	25.6	26.7	34.6	36.0	37.3	39.8	195.9
72600	1.7	1.9	2.6	3.3	6.5	9.4	10.0	575.1
ICT sector	**698.3**	**796.9**	**1 010.8**	**1 190.9**	**1 580.0**	**1 625.2**	**1 844.3**	**264.1**
ICT, without TS*	**446.8**	**500.5**	**680.5**	**771.0**	**982.7**	**939.7**	**1 096.9**	**245.5**

Reference: Own calculations on the basis of Agency for Payments data on Balance Sheets of commercial companies.

* TS - telecommunication services

Table C16.: Weight of companies with FDI in ICT in %, 2000

	No. of companies	Employment	Value added	Exports	Turnover
ICT sector	5.6	14.8	11.2	27.6	18.9

Reference: Own calculations on the basis of Agency for Payments data on Balance Sheets of commercial companies.

Table C17.: ICT sector companies with FDI, in 2000

	Number of companies	Number of employees	Employment structure in %	Turnover 000 EUR	Turnover structure in %	Exports 000 EUR	Exports structure in %	Export as % of sales
Total	**93**	**3 489**	**100.0**	**418 524**	**100.0**	**194 085**	**100.0**	**46.4**
ICT Manufacturing	**26**	**2 684**	**76.9**	**242 079**	**57.8**	**170 984**	**88.1**	**70.6**
3002	3	61	1.7	10 683	2.6	9 145	4.7	85.6
3210	11	1 161	33.3	57 796	13.8	54 389	28.0	94.1
3220	1	1 091	31.3	132 590	31.7	74 875	38.6	56.5
3230	2	144	4.1	10 233	2.4	7 408	3.8	72.4
3320	5	62	1.8	4 895	1.2	3 369	1.7	68.8
3330	4	165	4.7	25 881	6.2	21 798	11.2	84.2
ICT Services	67	805	23.1	176 445	42.2	23 101	11.9	13.1
5143	11	203	5.8	70 854	16.9	2 522	1.3	3.6
5164	10	60	1.7	11 827	2.8	662	0.3	5.6
5165	17	36	1.0	7 139	1.7	808	0.4	11.3
6420	9	211	6.0	47 469	11.3	2 271	1.2	4.8
7210	3	170	4.9	18 930	4.5	9 074	4.7	47.9
7220	14	115	3.3	15 273	3.6	7 763	4.0	50.8
7230	1	1	0.0	9	0.0	0	0.0	0.0
7250	1	9	0.3	4 944	1.2	0	0.0	0.0
7260	1	0	0.0	0	0.0	0	0.0	0.0

Reference: Own calculations on the basis of Agency for Payments data on Balance Sheets of commercial companies.

D. PRESENCE OF THE MOST RELEVANT ECONOMIC ACTIVITIES FOR IST APPLICATIONS

Table D1.: ICT investment by NACE activities, EUR million, 1996-2001 Part A

NACE	1996				1997			
	Total	Comput.	Software	IT	Total	Comput.	Software	IT
Total	2 208.42	167.33	15.27	182.60	2 469.37	177.82	20.26	198.07
A Agriculture	24.16	1.71	0.10	1.81	28.70	1.62	0.25	1.87
B Fishing	0.27	0.03	0.00	0.03	0.43	0.02	0.00	0.02
C Mining and quarrying	30.10	0.20	0.03	0.23	27.65	0.20	0.03	0.23
D Manufacturing	535.19	32.14	4.05	36.19	682.47	39.33	4.79	44.12
E Education	198.62	5.08	0.58	5.66	208.65	3.61	0.66	4.27
F Construction	49.96	2.08	0.16	2.24	56.19	2.56	0.30	2.85
G Wholesale, retail, repair	240.67	21.50	1.98	23.48	292.88	21.38	2.70	24.07
H Hotels and restaurants	43.77	0.98	0.12	1.10	43.38	0.85	0.15	1.00
I Transport, communications	279.13	18.48	1.77	20.25	311.80	19.56	0.66	20.22
J Financial intermediation	138.77	29.66	1.40	31.06	88.06	29.46	5.70	35.16
K Real estate, rent, bussines services	317.71	14.91	1.14	16.05	93.00	17.08	1.61	18.69
L Public administration	149.33	16.36	2.27	18.62	425.22	21.84	1.76	23.61
M Education	61.58	13.47	0.54	14.01	59.54	11.02	0.30	11.32
N Health and social work	79.67	4.89	0.56	5.45	85.38	5.55	0.71	6.26
O Other community activities	59.50	5.83	0.57	6.40	66.01	3.75	0.64	4.40

NACE	1998				1999			
	Total	Comput.	Software	IT	Total	Comput.	Software	IT
Total	2 844.13	193.23	32.39	225.63	3 430.31	257.55	54.44	311.99
A Agriculture	34.87	1.47	0.45	1.93	39.41	1.64	0.31	1.95
B Fishing	0.10	0.01	0.00	0.01	0.39	0.03	0.00	0.03
C Mining and quarrying	28.85	0.84	0.05	0.88	32.79	0.77	0.05	0.82
D Manufacturing	752.88	38.64	8.19	46.83	834.89	49.85	11.18	61.03
E Education	227.90	4.41	1.06	5.47	347.89	4.61	7.30	11.91
F Construction	90.83	4.56	0.62	5.19	121.45	4.55	1.06	5.60
G Wholesale, retail, repair	348.96	30.34	3.83	34.17	386.48	35.56	5.60	41.16
H Hotels and restaurants	51.22	1.43	0.15	1.58	83.27	5.28	0.51	5.79
I Transport, communications	450.98	19.88	3.00	22.88	489.76	27.72	8.04	35.76
J Financial intermediation	120.60	33.26	8.15	41.41	145.45	35.16	11.29	46.45
K Real estate, rent, bussines services	95.06	15.04	2.57	17.60	128.38	24.69	3.78	28.47
L Public administration	363.53	15.07	2.25	17.32	510.42	37.56	2.25	39.81
M Education	79.93	12.59	0.40	13.00	86.38	11.83	0.59	12.42
N Health and social work	95.52	7.77	0.73	8.49	105.89	10.00	1.18	11.18
O Other community activities	102.89	7.92	0.94	8.86	117.45	8.32	1.30	9.62

Table D1.: ICT investment by NACE activities, EUR million, 1996-2001 Part B

% of total investment

NACE	2000				2001				*2001*		IT	IT	*ICT*
	Total	**Comput.**	**Software**	**IT**	**Total**	**Comput.**	**Software**	**IT**	*Telecom*	*ICT*	**1996**	**2001**	*2001*
Total	3 745.87	226.13	55.96	282.09	3 673.64	265.54	82.49	348.03	*166.94*	*514.97*	8.27	9.47	*14.02*
A Agriculture	31.06	1.15	0.21	1.37	34.09	1.07	0.31	1.38	*0.08*	*1.45*	7.49	4.03	*4.26*
B Fishing	0.07	0.01	0.00	0.01	0.22	0.01	0.00	0.01	*0.00*	*0.01*	12.78	2.55	*2.61*
C Mining and quarrying	32.13	0.69	0.18	0.86	28.28	0.68	0.17	0.85	*0.14*	*0.99*	0.77	3.01	*3.52*
D Manufacturing	891.70	49.31	14.95	64.26	1 058.60	42.69	20.39	63.09	*4.92*	*68.01*	6.76	5.96	*6.42*
E Education	326.70	3.93	2.24	6.17	265.51	7.71	1.62	9.33	*9.27*	*18.60*	2.85	3.52	*7.00*
F Construction	110.39	3.48	1.12	4.60	104.90	9.95	1.68	11.63	*1.51*	*13.14*	4.48	11.09	*12.53*
G Wholesale, retail, repair	464.14	28.72	5.43	34.15	448.28	35.01	7.45	42.46	*3.14*	*45.60*	9.76	9.47	*10.17*
H Hotels and restaurants	74.50	1.61	0.21	1.82	73.43	2.08	0.30	2.38	*0.59*	*2.97*	2.51	3.24	*4.04*
I Transport, communications	559.11	22.14	12.98	35.12	434.83	21.19	20.91	42.10	*124.86*	*166.96*	7.26	9.68	*38.40*
J Financial intermediation	200.16	40.17	9.89	50.06	184.54	39.35	12.11	51.46	*3.60*	*55.06*	22.38	27.88	*29.84*
K Real estate, rent, bussines services	111.27	17.88	2.48	20.36	126.20	19.32	9.11	28.43	*2.02*	*30.45*	5.05	22.53	*24.13*
L Public administration	677.43	31.52	2.03	33.55	588.48	55.25	4.81	60.06	*7.55*	*67.61*	12.47	10.21	*11.49*
M Education	101.43	10.80	0.92	11.71	79.85	11.25	0.69	11.94	*1.13*	*13.07*	22.75	14.95	*16.37*
N Health and social work	78.44	6.89	1.43	8.32	127.78	6.18	1.02	7.20	*0.96*	*8.16*	6.84	5.64	*6.39*
O Other community activities	87.34	7.82	1.89	9.71	118.66	13.80	1.92	15.71	*7.17*	*22.89*	10.76	13.24	*19.29*

Reference: Statistical Office of the Republic of Slovenia.

Table D2.: R&D expenditures by source of financing, EUR million,1993- 2000

	1993	1994	1995*	1996	1997	1998	1999	2000
Business	66.0	86.5	112.8	106.6	122.9	135.5	162.2	159.8
Government	101.9	121.8	125.7	104.0	86.7	104.9	106.6	121.1
Private, non-profit	0.2	0.3	0.2	0.8	0.5	0.1	0.2	0.1
Foreign	5.5	5.5	7.2	5.8	18.9	17.3	16.0	18.6
Total	173.7	214.1	245.9	217.2	229.0	257.8	285.0	299.6
As % of GDP	1.6	1.8	1.7	1.4	1.4	1.5	1.5	1.5

Reference: SORS, Rapid Reports on R&D for consecutive years.

*In 1995, the figures for R&D expenditures were overvalued due to the statistical error made in higher education.

Table D3.: Gross domestic expenditures on R&D by source of financing, in %

	1993	1994	1995	1996	1997	1998	1999	2000
Business enterprises	38.0	40.4	45.5	49.1	53.7	52.6	56.9	53.3
Government funds	48.3	45.1	40.9	43.4	37.1	39.9	36.8	40.0
Higher education funds	10.4	11.6	10.2	4.5	0.8	0.8	0.6	0.4
Private non-profit org.	0.1	0.4	0.1	0.4	0.2	0.0	0.1	0.1
Funds from abroad	3.2	2.5	3.3	2.7	8.3	6.7	5.6	6.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Reference: SORS, Rapid Reports on R&D for consecutive years.

Table D4.: Business expenditure on R&D (BERD), in % and EUR thousand, 2000

	% of BERD	BERD in EUR 000
AGRICULTURE	**0.11**	**193**
FISHING	**0.01**	**11**
MINING	**3.93**	**6 624**
MANUFACTURING	**76.61**	**129 279**
Food, Beverages and Tobacco	1.82	3 072
Textiles, Fur & Leather	3.51	5 926
Wood, Paper, Printing and Publishing	0.34	579
Coke, Petroleum, Chemicals	30.26	51 068
Pharmaceuticals	*25.71*	*43 386*
Non-Metalic Mineral Products	1.40	2 364
Basic Metals	2.48	4 182
Fabricated Metal Products	2.36	3 988
Machinery Equip., Instruments & Transport Equip.	33.94	57 277
Machinery	*7.42*	*12 518*
Electrical machinery	*5.85*	*9 865*
Electro. equipment	*14.83*	*25 033*
Electronic components	1.29	2 176
TV, Radio & Communications Equipm.	13.54	22 857
Instruments	*5.13*	*8 651*
Motor vehicles	0.66	1 107
Other transport equip.	0.06	103
Furniture	0.49	824
SERVICES	**19.34**	**32 643**
Wholesale, Ret. Mot.Veh.Repair, etc.	0.39	651
Realestate, Renting & Business Activities	18.63	31 440
Computer & related activties	*0.26*	*445*
Software Consultancy	0.04	66
Other Computer Services	0.22	379
Research and Development	*15.21*	*25 671*
Other Business Activities	*3.15*	*5 323*
Community, social, personal and other services	0.33	552
TOTAL	**100.00**	**168 750**

Reference: Statistical Office of the Republic of Slovenia.

Table D5.: Innovation activity in ICT related sectors, 2000

	All enterprises	Inno. enterprises	% of inno. enterprises	No of enter. with R&D	% of enter. with R&D
D Manufacturing	**1 536**	**434**	**28.3**	**355**	23.1
DL Mfr.of electric.machinery	185	73	39.5	69	37.3
30 Mfr.of office machinery	17	5	29.4	2	11.8
31 Mfr.of electric.machinery	75	30	40.0	30	40.0
32 Mfr. of radio, TV and equipment	39	19	48.7	19	48.7
33 Mfr. of medical and precision instr.	54	19	35.2	18	33.3
Services	**1 257**	**90**	**13.0**	**73**	5.8
64 Post and telecommunications	20	6	30.0	1	5.0
72 Computer and related activities	84	26	31.0	23	27.4

Reference: Statistical Office of the Republic of Slovenia.

Table D6.: Business expenditure on R&D (BERD) by ICT related sectors, EUR 000

	1994	1995	1996	1997	1998	1999	2000
Electrical machinery	10 954.6	16 306.8	17 202.5	5 521.1	6 756.4	7 124.1	9 864.7
Electronic equipment			16 176.0	18 126.4	18 395.8	21 092.8	25 033.0
Electronic components	*1 659.1*	*2 388.1*	*1 929.1*	*809.3*	*1 387.5*	*3 054.5*	*2 176.2*
TV, Radio & Communications Equipm.	*962.9*	*11 905.0*	*14 246.9*	*17 317.1*	*17 008.3*	*18 038.2*	*22 856.8*
Instruments	2 669.9	3 127.8	3 521.9	7 666.3	7 463.7	7 546.8	8 651.5
Office, accounting & computing machinery*	1 740.5	1 937.6	2 159.2				
Computer & related activities**	293.6	76.2	182.9	415.7	187.1	328.4	445.1
Software Consultancy				*66.5*	*39.1*	***	*65.6*
Other Computer Services				*349.2*	*147.9*		*379.5*
Total BERD	**90 614.6**	**114 577.6**	**110 011.2**	**121 513.3**	**134 156.5**	**156 693.0**	**168 751.4**

Reference: SORS, Rapid Reports on R&D for consecutive years.

* The category was no longer in use after 1996.
** Only from 1997 the figures have been disaggregated into two separate categories: software consultancy and other computer services.
*** No disaggreagtion available.

Table D7.: Innovation intensity of ICT related sectors, in %, 2000

	Innovation intensity %
D Manufacturing	3.39
DL Mfr.of electric.machinery	5.50
30 Mfr.of office machinery	4.43
31 Mfr.of electric.machinery	2.79
32 Mfr. of radio, TV and equipment	9.32
33 Mfr. of medical and precision instr.	6.44
64 Post and telecommunications	1.64
72 Computer and related activities	8.81

Reference: Statistical Office of the Republic of Slovenia.

E. INFORMATION SOCIETY TECHNOLOGIES (IST) PENETRATION

Table E1.: Basic indicators of information society, 1990, 1995-2002

	1990	1995	1996	1997	1998	1999	2000	2001	2002
Number of fixed telephone subscribers per 100 inhabitants	21.1	30.9	33.3	35.8	39.0	39.6	40.6	47.4	50.0
Number of PCs per 100 inhabitants	…	…	…	…	21.0	25.0	28.0	28.0	30.0
Number of Internet hosts per 100 000 inhabitants*	…	168.0	506.0	877.0	1 029.0	1 159.0	1 089.0	1 436.0	1 679.0
Number of Internet users per 100 inhabitants**	1.0	3.0	6.0	9.0	11.0	14.0	19.0	23.0	29.0
Use of e-banking (share of Internet users, %)***	…	…	…	…	…	7.0	15.0	...	18.0
Use of e-shopping (share of Internet users, %)******	…	…	…	…	…	…	16.0	12.0	21.0
Number of mobile subscriptions**** per 100 inhabitants**		1.4	2.1	4.6	9.9	32.6	57.2	75.8	87.8

Reference: SYRS, 2003.

* Mid-year data.
** Active Internet users who use the Internet at least once a month.
*** Active Internet users who use e-banking.
**** Active Internet users who bought something via the Internet in the past 12 months.
***** Users of prepaid packages included.

Table E2.: ICT penetration in households, 1996-2002, in %

	1996	1998	1999	2000	2001	2002
% share of households with:						
Personal computer	24	35	42	46	47	58
Access to the Internet	3	9	15	21	24	37
Phone lines	83	92	93	96	95	91
Mobile phone	6	20	43	75	79	82
Television set	…	97	96	97	97	97
Video recorder	48	52	56	57	58	62

Reference: SYRS, 2003.

Table E3.: Telecommunication network penetration, 1990, 1995-2002

	Telefax	Fixed telephony		Mobile telephony			
				subscriber lines			users of prepaid
	subscribers	telephone subscribers	number of applications for subscriber's connection*	total	analogue - NMT	digital - GSM	package
1990	3 925	421 803	...	...	...	...	...
1995	15 541	614 796	58 438	27 301	27 301	...	...
1996	17 727	661 902	48 701	41 205	36 977	4 228	...
1997	19 464	710 044	25 041	93 611	42 430	51 181	...
1998	20 754	771 310	10 051	166 506	42 741	123 765	29 005
1999	18 290	786 229	5 719	325 048	42 396	282 652	323 360
2000	19 739	808 012	1 183	468 351	41 145	427 206	669 484
2001	11 072	945 295	1 026	662 619	40 913	621 706	848 914
2002	8 850	998 414	611	847 759	40 733	807 026	901 757

Reference: SYRS, 2003.

* First application.

*Table E4.: Indicators of information society by size of enterprises**, 1996-2000, 2002*

	1996	1997	1998	1999	2000	2002
Regular users of the computers, share (%)**						
Small enterprises	…	…	31	31	39	33
Medium-sized enterprises	…	…	26	30	33	34
Large enterprises	…	…	25	24	27	38
Number of PCs per 10 employees****						
Small enterprises	…	…	3.1	3.2*	3.9*	4.3
Medium-sized enterprises	…	…	2.2	2.5*	3.1*	3.3
Large enterprises	…	…	1.8	2.1*	2.4*	3.1
Access to the Internet, share (%)						
Small enterprises	7	31	57	77	88	96
Medium-sized enterprises	16	37	69	89	97	99
Large enterprises	25	53	82	96	99	99
Home page, share (%)*****						
Small enterprises	2	9	20	31	38	53
Medium-sized enterprises	6	14	31	39	52*	55
Large enterprises	8	22	41	58	66	68
ISDN line, share (%)						
Small enterprises	…	14	40	54	78	51
Medium-sized enterprises	…	19	40	71	86	48
Large enterprises	…	23	62	79	89	37
Ordering goods and services from business partners via the internet, share (%)*****						
Small enterprises	…	…	…	18	31	62
Medium-sized enterprises	…	…	…	24	34	53
Large enterprises	…	…	…	15	29	49
Accepting orders via the internet, share (%)*****						
Small enterprises	…	…	…	12	29	69
Medium-sized enterprises	…	…	17	23	29	58
Large enterprises	…	…	14	18	24	54
Electronic data interchange (EDI), share (%)****						
Small enterprises	…	…	…	18	22	37
Medium-sized enterprises	…	…	…	18	23	42
Large enterprises	…	…	…	42	44	48

Reference: SYRS, 2003.

* Revised data

** Only companies are taken into account. Enterprises with fewer than 5 employees, individual . private entrepreneurs without computers are eliminated.

*** The share of regular users of the computers among all employees.

**** The ratio between the number of all computers and the number of all employees.

***** The share of enterprises accepting orders via the Internet among all enterprises with access to the Internet .

Table E5.: Indicators of information society in elementary and secondary schools, 1996-2000, 2002

	1996	1997	1998	1999	2000	2002
Number of PCs per 100 pupils*						
Elementary schools	…	2.5	3.1	4.0	4.5	6.1
Secondary schools	…	3.6	…	4.0	4.1	5.9
Access of schools to the Internet, share (%)**						
Elementary schools	26.0	54.0	86.0	93.0	98.9	99.8
Secondary schools	90.0	91.0	92.0	96.0	100.0	99.4
Home page, share (%)**						
Elementary schools	11.0	19.0	25.0	39.0	53.8	81.3
Secondary schools	28.0	48.0	60.0	75.0	96.7	95.5
ISDN line share(%)						
Elementary schools	…	10.0	…	56.0	85.0	79.0
Secondary schools	…	43.0	…	67.9	83.6	39.5

Reference: SYRS, 2003.

* Arithmetic mean of the ratios at schools. The ratio between the sum of pupils and the sum of computers is lower ; in 2000 it was 3.7 for elementary schools and 3.5 for secondary schools.

** Due to non-response (about 15%), the shares can be slightly overestimated.

F. INSTITUTIONAL CAPACITIES AND REGULATORY BACKGROUND

No tables are assigned to Section F.

G. EDUCATIONAL SECTOR AND LABOUR FORCE SUPPLY

Table G1.: Number of students in secondary and tertiary education, including adults, 1990/91 - 2000/01

School year	Pupils	Adult sec.*	Students
1990/91	92 060	9 610	33 565
1991/92	94 423	7 457	36 504
1992/93	95 621	7 370	37 362
1993/94	97 072	7 517	40 239
1994/95	99 657	8 460	43 249
1995/96	102 079	9 617	45 951
1996/97	104 679	10 891	50 667
1997/98	104 786	14 968	64 678
1998/99	103 469	16 562	74 642
1999/00	102 969	19 449	77 609
2000/01			82 812

Reference: SYRS, selected years.

*adult upper secondary programe

Table G2.: Data on enrolment in the first year of study in school year 2002/03

	Regular		Part-time students	
	Announced	**Enrolled**	**Announced**	**Enrolled**
Uni. LJ*	10 267	12 999	3 879	4 235
Uni.MB**	4 278	5 074	2 535	3 174
In. edu inst.***	650	775	1 180	1 589
Total	**15 195**	**18 848**	**7 594**	**8 998**

Reference: University of Ljubljana enrollment office, 2002/2003.

* University of Ljubljana
** University of Maribor
*** Independent tertiary education institutions

Table G3.: Number of graduating students from tertiary education, 1990-2001

Year	Total	Non uni*	Uni.**
1990	5 951	3 421	2 530
1992	5 711	3 104	2 607
1993	5 943	2 991	2 952
1994	5 812	2 668	3 144
1995	6 419	2 746	3 673
1996	7 724	3 217	4 507
1997	8 011	3 099	4 912
1998	8 612	2 809	5 803
1999	9 345	2 355	6 990
2000	10 232	1 674	8 558
2001	10 375	1 041	9 334

Reference: SYRS, selected years.

* 2-year higher education programmes
** University degree

Table G4.: Enrolment in upper secondary schools: electronics and computer science, 1994/95-1999/00

School year	Pupils	Adults
1994/95	8 116	607
1995/96	8 163	569
1996/97	8 194	620
1997/98	7 926	640
1998/99	7 592	818
1999/2000	7 359	914

Reference: SYRS, selected years.

Table G5.: ICT related education (enrolment and graduating students), 1997/98-2001/02

Student enrolment	FEE*	FCSI**	FEECSI***	Total
1997/98	1 197	700	1 253	3 150
1998/99	1 706	1 049	1 426	4 181
1999/00	1 852	1 168	1 572	4 592
2000/2001	2 113	1 402	1 879	5 394
2001/2002	2 187	1 300	1 907	5 394

Graduating students	FEE	FCSI	FEECSI	Total
1996	286	79	167	532
1997	246	80	154	480
1998	226	61	183	470
1999	272	52	238	562
2000	289	84	158	531

Reference: SYRS, selected years.

* Faculty of Electrical Engineering, University of Ljubljana
** Faculty of Computer Sciences and Informatics, Uni. of Ljubljana
*** Faculty of Electrical Engineering and Computer Science, University of Maribor

H. NATIONAL AND REGIONAL DEMOGRAPHIC DATA AND PROSPECTIVE

Table H1.: Population dynamics, including mortality, birth rates and life expectancy, 1980-2001

	Population	Population	Fertility rate	Deaths per	Life expectancy	
Year	(end year)	growth rate, %	%	1000 inhabitants	Men	Women
1980	1 909 566			9.90		
1981	1 924 690	0.79	2.11	9.77	67.23	75.14
1982	1 929 292	0.24	2.08	10.21	66.23	75.12
1983	1 937 588	0.43	1.96	10.71	66.99	75.04
1984	1 948 577	0.57	1.79	10.40	67.38	75.52
1985	1 975 273	1.37	1.72	10.06	67.85	75.89
1986	1 985 486	0.52	1.69	9.84	68.14	76.10
1987	1 994 066	0.43	1.70	9.97	68.26	76.26
1988	1 996 325	0.11	1.66	9.56	68.86	76.72
1989	1 996 377	0.00	1.52	9.34	69.38	77.19
1990	1 999 945	0.18	1.46	9.29	69.54	77.38
1991	1 998 912	-0.05	1.42	9.65	69.45	77.25
1992	1 994 084	-0.24	1.34	9.69	69.40	77.29
1993	1 989 408	-0.23	1.34	10.05	69.58	77.38
1994	1 989 477	0.00	1.32	9.73	70.27	77.76
1995	1 990 266	0.04	1.29	9.54	70.14	77.96
1996	1 986 989	-0.16	1.28	9.35	70.37	78.15
1997	1 984 923	-0.10	1.25	9.53	70.61	78.35
1998	1 978 334	-0.33	1.21	9.60	70.84	78.54
1999	1 987 755	0.48	1.21	9.50	71.40	78.80
2000	1 990 094	0.12	1.26	9.30	71.90	79.10
2001	1 994 026	0.20	1.21	9.30	72.10	79.60

Reference: Statistical Office of the Republic of Slovenia.

Table H2. :Human development index (HDI) and its main components, 1995-2000

	1995*	1997*	1998*	1999**	2000**
HDI	0.852	0.864	0.864	0.874	0.879
Rank (number of countries)	28.	28. (174)	28. (174)	29. (162)	29. (173)
Index for life expectancy	0.83	0.83	0.83	0.84	0.84
Index for education	0.924	0.93	0.93	0.94	0.94
Index for GDP in purchasing power	0.81	0.83	0.83	0.85	0.86

Reference: Human Development Report - Slovenia, 1999, Human Development Report - Slovenia, 2001. (1999 -2002) Human Development Report, UNDP.

* IMAD calculation.

** UNDP calculation.

Table H3.: Age distribution, 1981-2001

Year	Age distibution			Age distribution, in %		
	0 - 14	15 - 64	65 -	0 - 14	15 - 64	65 -
1981	440 799	1 265 093	211 577	23.0	66.0	11.0
1982	439 163	1 279 753	205 961	22.8	66.5	10.7
1983	438 139	1 294 861	200 103	22.7	67.0	10.4
1984	437 113	1 308 710	196 979	22.5	67.4	10.1
1985	437 548	1 336 935	198 667	22.2	67.8	10.1
1986	432 482	1 348 528	199 708	21.8	68.1	10.1
1987	429 766	1 357 083	202 613	21.6	68.2	10.2
1988	427 434	1 365 921	206 633	21.4	68.3	10.3
1989	421 199	1 367 050	211 155	21.1	68.4	10.6
1990	414 678	1 369 555	213 857	20.8	68.5	10.7
1991	406 575	1 376 266	218 927	20.3	68.8	10.9
1992	394 969	1 376 646	224 217	19.8	69.0	11.2
1993	384 520	1 375 911	230 192	19.3	69.1	11.6
1994	373 626	1 378 568	236 656	18.8	69.3	11.9
1995	365 572	1 377 166	244 767	18.4	69.3	12.3
1996	354 553	1 383 945	252 671	17.8	69.5	12.7
1997	342 715	1 385 322	258 811	17.2	69.7	13.0
1998	333 034	1 383 982	265 587	16.8	69.8	13.4
1999	320 374	1 391 981	275 400	16.1	70.0	13.9
2000	313 406	1 395 282	281 406	15.7	70.1	14.1
2001	306 721	1 398 757	288 473	15.4	70.1	14.5

Reference:Statistical Office of the Republic of Slovenia.

Table H4.: Regional overview of demographic development, 2001

	Age dependancy ratio*	Population growth rate
	2001	2001/1981, in %
SLOVENIA	**91.9**	**5.3**
Gorenjska	83.4	10.0
Goriška	108.1	1.6
South-Eastern Slovenia	78.3	7.5
Koroška	78.3	5.8
Notranjsko-Kraška	102.8	2.3
Obalno-Kraška	116.1	11.5
Central Slovenia	88.9	11.6
Podravska	99.2	-0.1
Pomurska	100.4	-4.9
Savinjska	83.2	5.4
Spodnjeposavska	96.9	-3.6
Zasavska	104.5	-0.2

Reference: Pečar, 2001.

*Age dependancy ratio = population older than 65 / population (0 - 14)

I. CULTURAL AND SOCIOLOGICAL ASPECTS

Table I1.: Income shares by income deciles, in %, 1993, 1997-1999

Income deciles	1993 (1)	1997-1999 (2)	Differences (2-1)
1	3.4	3.6	0.2
2	5.5	5.8	0.3
3	6.5	6.5	0.0
4	7.7	8.1	0.4
5	8.8	9.6	0.8
6	9.2	10.2	1.0
7	10.4	11.3	0.9
8	12.2	12.1	-0.1
9	14.9	13.6	-1.3
10	21.4	19.3	-2.1
Total	**100.0**	**100.0**	**0.0**
Gini coefficient	**0.270**	**0.236**	**-0.034**

Reference: Stropnik, Stanovnik, 2002.

Table I2.: Migration - internal and international, 1991-2001

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Internal migration	35 965	42 741	34 997	31 420	25 736	28 655	29 313	30 110	30 509	29 781	30 967
Between municipalities					16 099	17 687	18 029	18 727	20 176	19 674	20 450
Between settlements					9 637	10 968	11 284	11 383	10 333	10 107	10 517
International migration											
Immigrants	5 989	3 461	2 745	1 919	5 879	9 495	7 889	4 603	4 941	6 185	7 803
Citizens of the Republic of Slovenia					2 191	1 500	1 093	857	1 362	935	1 030
Foreigners					3 688	7 995	6 796	3 746	3 579	5 250	6 773
Emigrants	9 060	3 848	1 390	983	3 372	2 985	5 447	6 708	2 606	3 570	4 811
Citizens of the Republic of Slovenia					776	803	807	705	963	1 559	1 442
Foreigners					2 596	2 182	4 640	6 003	1 643	2 011	3 369
Net migration	-3 073	-387	1 355	936	2 507	6 510	2 442	-2105	2 335	2 615	2 992
Citizens of the Republic of Slovenia					1 415	697	286	152	399	-624	-412
Foreigners					1 092	5 813	2 156	-2 257	1 936	3 239	3 404

Reference: Statistical Office of the Republic of Slovenia.

Table I3.: Household consumption expenditure structure, in %, 1997-2001*

	1997	1998	1999	2000	2001
Consumption expenditure	100.0	100.0	100.0	100.0	100.0
Food and nonalcoholic beverages	23.1	22.8	20.8	19.8	19.8
Alcoholic beverages and tobacco	2.4	2.1	2.3	2.1	2.0
Clothes and footwear	9.0	9.6	9.1	9.0	9.2
Housing, electricity, water, gass	10.7	10.2	10.3	11.5	11.5
Furniture, domestic appliances	7.2	7.1	7.5	7.6	7.5
Health	1.7	2.0	1.8	1.8	2.0
Transport	17.6	17.9	18.5	19.5	15.3
Communications	2.0	2.0	2.7	2.9	3.9
Recreation and culture	9.4	9.7	9.2	8.7	10.3
Education	0.8	0.7	0.8	0.8	1.1
Hotels, cafes and restaurants	6.3	6.2	6.3	6.0	6.4
Miscellaneous goods and services	9.8	9.8	10.7	10.7	11.0
ICT consumption expenditure	2.3	2.5	3.3	3.3	4.2
Telecommunication equipment (telephone and telefax)	0.1	0.1	0.2	0.2	0.3
Telecommunication services	1.9	1.9	2.4	2.7	3.6
Fixed telephony subscription	1.5	1.5	1.7	1.7	1.6
Mobile telephony subscription (including prepayment systems)	0.2	0.2	0.5	0.9	1.8
Data processing equipment (computers, office machinery)	0.3	0.5	0.7	0.4	0.4
Repair of computers, office machinery	0.0	0.0	0.0	0.0	0.0

Reference: Statistical Office of the Republic of Slovenia.

* Survey on household consumption has been carried out only since 1997.