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Slovenia – On the Way to the Information Society

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Contents

List of abbreviations used in this report

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 Transmission 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 of 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	Lifelong Learning
MID	Ministry of the 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 Co-operation and Development
OTA	Ownership Transformation Act
PC	Personal Computer
PPP	Purchasing Power Parity
PPS	Purchasing Power Standards
RIS	Research on the 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 the Economic Development of Slovenia
SEPA	Strategy of E-commerce in the 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

Preface

Dear readers,

I am honoured to have been given the chance to introduce the following analysis to you. It encompasses a multidisciplinary insight in the development factors and especially the development challenges involved in Slovenia's future as an Information Society.

By establishing the Ministry of the Information Society in early 2001 the Government of the Republic of Slovenia took an important step towards a more systematic and pro-active Information Society policy. The Information Society is itself a horizontal priority task, that has from the outset been in line with the EU's key strategic objectives, such as those defined in the Lisbon Strategy (2000), in order to make Europe the world's most competitive and dynamic economy by 2010. The knowledge society is one of the most important development goals that interlaces with other future challenges including sustainable development, social cohesion and inclusion, a dynamic and competitive economy, an innovative job creation system and a contemporarily designed regional policy to overcome regional disparities.

The Ministry of the Information Society has from the very beginning taken an active part in all major EU initiatives concerning the development of information infrastructure on one hand, and the services of the Information Society on the other. In the last few months significant work has been undertaken in the field of the national legislative framework which is now in harmony with the EU's legal framework in the field. In the last few years a comprehensive and transparent system of Information Society indicators adjusted to the EU's 2005 Action Plan has been established. The Ministry and the Government have been involved in several European Commission programmes such as the IDA, eContent and eTEN that all aim to promote the development of e-content and thus foster e-government and e-business.

Slovenia has in a short time made significant progress in developing the Information Society. This is also reflected in the Final Progress Report on achieving the goals set in the EU's eEurope 2005 Action Plan. General use of the Internet, expansion of networks of public Internet access points, better ICT-equipped schools, increasing mobile telephony penetration and greater accessibility of e-government services are some areas where progress is most visible. At the same time, it has to be stressed that some very important future challenges remain like the digital divide, the general level of digital literacy and putting research achievements into practice, particularly in the business IT sector.

Clearly, the analysis before you is an important expert compendium on the potential obstacles, advantages and development scenarios that must be taken into account when evolving multidisciplinary and comprehensive pro-active policies. Such

policies are needed to accomplish the above goals, make Slovenia a reliable partner in the new, enlarged EU, enable our citizens to play an active role in the global labour market and to be equal actors in general political discussions on our common future in the e-society which has to be both sustainable and socially responsible.

Dr. Pavel Gantar

Minister for the Information Society

Introduction

The analysis presents a broad range of the factors and capabilities that are shaping Slovenia's present and future potential on its way to the Information Society (IS). It offers an assessment of the country's strengths and weaknesses regarding the development of IS, and a view of the possible outcomes. The analysis' key conclusion is that Slovenia has achieved solid results with regard to realising the IS and has a good starting position to progress quite successfully along the path to the IS. To spur this process on, there is a need for a coherent and well co-ordinated policy on IS, which should be based on decisive leadership, co-operation and the consensus of all partners (business, research&education, the public administration, civil society) so as to take advantage of synergies. The analysis has been prepared by the Institute of Macroeconomic Analysis and Development as part of a wider project studying the factors and impacts of the Information Society in the candidate countries[1].

The analysis provides a multi-factoral and multi-causal picture of the input factors that contribute to the success or failure of IS developments. These factors have encompassed the main features of economic development since the beginning of the 1990s, the evolution of Information Society policies, along with the characteristics of industrial development and competitiveness in Slovenia in general. Specifically, the area of information-communication technologies and services is addressed. Slovenia's achievements with the diffusion of Information Society technologies (IST) are assessed through basic penetration indicators (telephony, the Internet, e-commence) and substantiated by evidence of IST diffusion by the main stakeholders (businesses, households, public services). On the other hand, the capacities of IS implementation are examined from the point of view of the results and trends in ICT investment, research and development, innovation, education, regulatory framework and institutional set-up. National and regional demographic characteristics, cultural and social aspects complement the multi-dimensional and holistic approach to evaluating Slovenia's capacities and potential on its way to the Information Society.

The chapters are structured so as to provide the reader with an immediate insight into the major strengths, weaknesses, opportunities and threats of the major factors determining implementation of the IS in Slovenia. Consequently, the chapters (from A to I) start with a SWOT analysis and are then followed by a detailed examination of various elements that bear on the uptake and diffusion of information communication technologies and implementation of the IS in Slovenia. The second part of the analysis (the Diagnosis) places the different factors of the IS into a complex and comprehensive framework and points to their mutual interlinkages in determining Slovenia's absorptive capacity in relation to the IS. In addition, this part of the analysis sets the stage for the formulation of a coherent and holistic policy approach to the IS. The analysis concludes with three alternative scenarios for the development

[1] The project was carried out in 2003 by the International Centre for Economic Growth, European Centre (ICEG EC) and a consortium of 11 other research institutes as sub-contractors to the Institute of Prospective Technological Studies (IPTS) of the Directorate General Joint Research Centre of the European Commission. On the basis of the country studies, a Synthesis Report is prepared in the framework of the project. The Synthesis Report offers an integrating and prospective view of the future outlook of IS in the candidate countries.

of the IS in Slovenia. Finally, a summary of the main findings and conclusions is presented in the Slovenian language.

The analysis is based on data that were available up until the end of December 2003. They are presented in the Statistical Annex.

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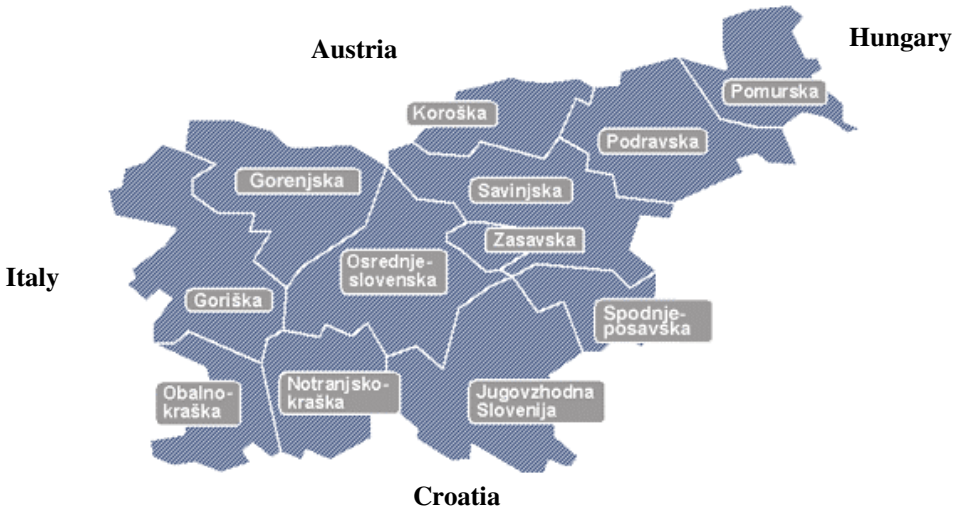
Country Profile: Slovenia – Facts and Figures

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. SWOT analysis

Strengths	**Weaknesses**
- Stable macroeconomic environment with no major imbalances in public finances and the 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 by 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 the Slovenian economy - Underdeveloped financial sector
Opportunities	**Threats**
- By joining the EU Slovenia will become part of a large internal market which will increase the competition and thus also spur the technological restructuring of the economy - FDI inflows are likely to grow due to accession to the EU with positive spill-over effects on the total economy - A push towards faster development can be expected from policies aiming to meet the Lisbon Strategy objectives, especially regarding the faster implementation of structural reforms	- Recession in the international economy, especially in Slovenia's main trading partners, could limit economic growth - Continuation of the gradual approach to structural reforms and the lack of an economic policy consensus could jeopardise the competitiveness of the economy - Increased pressures on public finances related to implementation of EU legislation and policies

The Slovenian economy's macroeconomic performance has been stable since 1993. Together with the relatively high GDP per capita at purchasing power parities reaching 70% of the EU average in 2001, this lays down solid foundations for the development of the IS. The 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 support the IS' implementation more easily when the government is not concerned with macroeconomic imbalances (e.g. rising unemployment, high inflation etc.). Besides, a relatively high level of GDP per capita enables people to afford ICT products and services and thus positively influences the diffusion of ICT. The Slovenian economy's relatively high level of openness can also be assessed as a **strength** in the transition to the IS. Imports of high-technology-intensive products and knowledge-based services are crucial elements in the development of the IS.

The main **weaknesses** regarding economic development that negatively affect the Information Society arise from the gradual approach to structural reforms and the low FDI inflows. As a result, the economy is still confronted with an underdeveloped

financial sector and an 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 the development of new innovative enterprises, which seems to be crucial for the ICT sector's development. Owing to the gradual approach taken to structural reforms, the technological restructuring of Slovenian firms is slow, which dampens the demand for ICT and jeopardises the overall competitiveness of the economy. Another of the consequences of the relatively slow pace of structural reforms (especially in the non-tradable sector of the economy) is the relatively high and persisting levels of inflation. Besides influencing economic growth, high inflation impedes the rapid liberalisation of infrastructure sectors, including telecommunications. As the process of abolishing the relative price distortions in these sectors often puts additional pressure on inflation, the establishment of cost-oriented prices is often postponed even though it is crucial for the introduction of effective competition. Inflows of FDI to Slovenia was relatively low before 2001, which can be assessed as a weakness in ICT/IST development as FDI usually brings new technologies and know-how. It can also be argued that the modest stock of FDI is one of the important factors of the economy's gradual technological restructuring in the past and could have a long-term negative effect on the economy.

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

Three main factors may be seen as **threats** to future economic development with serious implications for the IS as well: recession in the international economy, gradualism in the implementation of structural reforms and the deterioration of public finances. As a small economy, Slovenia is highly dependant on the performance of its 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 the slow pace of structural reforms which, if it continues, could seriously undermine future economic development. Persistent structural deficiencies, such as an underdeveloped financial sector, insufficient level of technological restructuring, relative price distortions, are also very important for the ICT sector's development and for realising the IS. Slovenian public finances were more or less balanced in the last decade. However, pressures related to the implementation of EU legislation (also requiring the establishment of new institutions) and policies (in particular the Common Agricultural Policy) are expected to increase further in the future. This will require fiscal restrictions and the restructuring of general government expenditures, which may prove especially difficult if development priorities are not well defined and which may therefore hinder faster implementation of the IS.

A.2. 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, although for only 8% of the population). However, it had suffered from the growing obsoleteness of its 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 in the process creating a modern, outward-oriented economy integrated with Western European countries through trade and investment links. Membership in the EU and in NATO is thus perceived as a confirmation of the successful finalisation of the transition.

The return to macroeconomic stability was achieved through 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 liberalisation of price and exchange controls was achieved step by step. Trade liberalisation was driven by WTO commitments and the preparations for accession to the European Union. The process of privatisation was slow and gradual. Privatisation occurred mainly through internal buyouts on 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 the newly privatised enterprises.

A.3. Economic growth, employment and productivity

After the transition depression which hit Slovenia in 1987 and continued into the first two years of its 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 a serious fall in GDP was recorded as a result of the economic crisis in former Yugoslavia. Following the recession in 1992, Slovenia rapidly established a robust economic growth path, expanding to 4% annually in the 1993-2002 period (Table A1)[2] (Kajzer, 1999).

With regard to the **expenditure side**, real GDP growth has largely been driven 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

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

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 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 a recovery was first seen in the service sector (in 1992), which was also the main contributor to total gross value added growth in the 1990s (for more details, see Section C.2.2). In the 1993-2001 period 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 Slovenia's accession to the European Union and other international organisations. Growth of value added in industry only started in 1994. Stimulated by strong exports the growth rate remained stable in the following years (in the 1993-2001 period 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 1990s, 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 in either the country's gross domestic product nor in the number of people 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 that hit agricultural production in the 1997-1999 period (Murn, Kmet, 2002).

Since 1995 Slovenia's development gap behind advanced economies measured by **gross domestic product per capita at purchasing power parities** has been narrowing[3]. According to Eurostat, Slovenia was 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 parallel to the expanding economy (from 9% in 1994 to 7.4% in 1995). In the 1995-1998 period, the ILO[4] unemployment rate fluctuated between 7% and 8% and has been falling since 1998 (from 7.9% in 1998 to 6.3% in 2002)

[3] 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.

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

(Table A8). Regarding different age groups, in the 1990s 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 1995-2001 period the activity rate fluctuated between 57.6% and 60% (Table A10).

In line with the decrease in the number of unemployed, **employment** stopped falling in 1998. In the 1999-2002 period the average annual rise of employment was 1.3%, mainly driven by increased employment in the service sector (2.7%). In manufacturing (as well as in total industry) employment growth began to increase only in 2001 and was much less pronounced than in services (in the 2001-2002 period 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 a knowledge-based economy, including the Information Society. In the 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 the Slovenian economy increased by almost 50% in real terms in the 1991-2001 period (by 4% on average each year). In the first years of the transition, productivity increased mainly as the result of the lay-offs of redundant, usually older or insufficiently qualified workers. Since 1998 productivity growth has probably also been 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 their employees in recent years[5] (production of rubber and rubber products, production of electrical and optical equipment[6], 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 performances in these sectors are not surprising bearing in mind that these are high export-oriented sectors, realising more than 60% of their revenues in 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, which has also positively affected their productivity growth[7].

[5] Beside these sectors, the production of coke, petroleum and nuclear fuel also recorded high productivity growth rates in some years in the observed period. 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 volumes in certain years (also see Table C2 and Table A11).

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

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

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,[8] was assisted by a restrictive monetary policy, the slowing depreciation of the national currency the tolar, income policy reforms, and the beginning of structural reforms. Favourable price movements abroad further underpinned inflation's 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).

The Slovenian economy's overall macroeconomic performance has been stable since 1993 which, together with almost no imbalances in public finances and in the balance of payments current account (see Section A.5.), lays down solid foundations for the further economic development of the country, including the transition to the Information Society. However, the Slovenian economy's relative stability has been partly achieved by the gradual approach taken to structural reforms[9]. As a result, the economy is still confronted with a number of structural deficiencies (underdeveloped financial sector[10], insufficient level of technological restructuring etc.), which can be seen as a threat to any further increase in the competitiveness of the economy. The consequences of the 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 the development of new innovative enterprises, which seems to be crucial for the ICT sector's development. Another of the consequences of the relatively slow pace of structural reforms (especially in the non-tradable sector of the economy) is the fairly high and persisting inflation (Bednaš et al., 2002). Beside its general impact on economic growth, high and persisting inflation can impede the fast liberalisation of infrastructure sectors, including telecommunications, as the process of abolishing the relative price distortions in these sectors can exert additional pressure on the inflation rate. In addition, the 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 the implementation of EU legislation (also requiring the establishment of new institutions) and policies (in particular the Common Agricultural Policy) are expected to increase further in the future. This will require fiscal restrictions and the restructuring of general government expenditures, which may prove especially difficult if development priorities are not well defined.

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

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

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

A.4. Regional development

Slovenia is divided into 12 statistical regions, which correspond to the NUTS 3 (*Nomenclature des Unites Territorielle pour Statistique*) level. While new manufacturing and services clusters have mainly developed in the capital city (Ljubljana) and the surrounding areas, and the restructuring of older industries took place in other regions, disparities in regional development increased in the 1990s, with the core changes taking place in the first years of transition. At the end of the decade the increase in regional differences had slowed down. Compared to other countries, regional differences in Slovenia are relatively low (measured by the coefficient of the regional GDP/per capita variation), also due to the long tradition of regional policy (since the 1970s). In 1999 (the latest available data), only Sweden had a 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, when measured by gross domestic product/per capita and registered unemployment rates, are in the western part of the country (Central Slovenia, Obalno-kraška and Goriška regions). The least developed region in Slovenia is Pomurje (23% lower GDP/per capita compared to the national level), which is characterised by an above-average share of agriculture in the economic structure (three times higher than the Slovenian average) and a relatively low education level of the population (Pečar, 2001). Above-average registered unemployment rates (Table A13) and lower levels 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 the eastern part of the country) (Pečar, 2001). The tendency of growing regional disparities in the last decade may be seen as an obstacle to the more balanced development of the Information Society in Slovenia, as less developed regions are expected to lag behind in their use of Informa-tion Society technologies. However, there are some prospects that regional differences will stop increasing in the coming years as a result of the active regional policy applied in the last few years and the objectives set in the Strategy (Strategy of Regional Development of Slovenia, 2001).

A.5. Cross-border capital flows and foreign direct investment

The absence of any major macroeconomic imbalances since the early 1990s was largely reflected in Slovenia's **current account position**, which was broadly in balance in the 1993-1999 period. The saving-investment balance, as reflected by the current account position, widened in the 1998-2000 period (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 a balanced current account, Slovenia has benefited from large surpluses in its **capital and financial accounts**, reflecting 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 applied during the 1995-1999 period, which reduced bank borrowing and portfolio investments abroad to negligible levels. Since then, bank borrowing abroad has been deregulated and has hence picked up. Regular surpluses in the balance of payments (current account, plus the capital and financial accounts) allowed gross international reserves to increase regularly, covering approximately 4 months' worth of imports of goods and services in 2001.

The stock of **inward foreign direct investment** (FDI) in Slovenia in the 1993-2001 period 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, the total stock of inward FDI in Slovenia stands at about EUR 4400 million. While FDI inflows were relatively modest in the 1993-2000 period (with an average annual inflow of EUR 150 million), 2001 brought about an important change in FDI inflows in Slovenia (EUR 562 million) and the same positive trends continued in 2002 when the annual inflow of FDI grew to almost EUR 2 billion.

The limited participation of foreigners in the Slovenian economy before 2001 is due to a variety of factors, in particular capital controls, the 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[11] and limited scale economies of the small market have also diminished the attractiveness of Slovenia to foreign investors.

In 2001 the Slovenian government adopted the Programme for the Promotion of FDI in 2001-2004, aimed at improving the perception of Slovenia as an investment location and reducing administrative barriers to new greenfield investment (Rojec, 2001). The most important FDI inflows in 2001 and 2002 were related to the privatisation of state property in the banking sector, two relatively large FDIs in mobile telecommunications (American Western Wireless and Austrian Mobilkom) and the 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, a continuation of such relatively high FDI inflows can be expect in the future, bringing new technologies and know-how which could also positively influence the creation of the 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, with the main investors being Austria (48%), France and Germany, followed by Italy, Netherlands and the United Kingdom. FDI from other EU countries lags behind. Of non-EU countries,

[11] In 2000, the 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.

only Czech Republic, the 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[12]. Apart from manufacturing, a significant share of FDI goes to financial intermediation (28.3% of total 2001 end-year stock), trade and other business services. With the relatively large FDI seen in mobile telecommunications in the last two years and the expected involvement of foreign companies in the privatisation of Telekom Slovenije, FDI in telecommunications is gaining in importance (approximately 4% of total 2001 end-year stock). The sectoral distribution of FDI is chiefly determined by a handful of large (for Slovenia) FDI projects, which as a rule emerged out of previous co-operation between the foreign investor and the invested-in Slovenian company. Foreign investors in Slovenia have been far more attracted by the »attractiveness« of individual Slovenian companies (as target companies of joint-venture partners) than by the »attractiveness« of individual industries as such (Bučar, Stare, 2001).

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

A.6. Trade flows

The level of openness of Slovenia's 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 at the beginning of 1990s, Slovenia managed to overcome the loss of markets in former Yugoslavia. Trade flows were re-directed towards the European Union. Implementation of the Europe Agreement on Association[13] 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 its exports and 19% of its imports. Trade with CEFTA (Central European Free Trade Agreement) members expanded rapidly owing to the liberalisation 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 1990s, trade links with former Yugoslav republics have been expanding since 2000 (17% of exports in 2002). Russia's share of 4% of

[12] See p. 21 for details on the productivity growth of manufacturing sectors.

[13] 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.

Slovenia's imports and 3% of exports in 1992 was declining up until 1999, but has been rapidly increasing since then (back again to 3% of exports in 2002). The high and increasing openness of the Slovenian economy is forcing the country to continuously improve its competitiveness and is exerting pressure on producers to create 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) which has declined since 1992. Sector-wise, medium- to high-technology-intensive sectors such as the 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 one-half of merchandise exports and imports and their shares have increased since 1992 (Tables A16 and A18). Included among the five largest exporters and importers of goods is the production of basic metals and fabricated products, an industry that has traditionally been strong in Slovenian manufacturing. Manufacturing imports to a large extent reflect the structure of exports, and consist mostly of raw industrial materials (iron) and intermediate products that are used as inputs for domestic production and exports. The shares of labour-intensive industries, particularly of the textile and leather industry, in total exports have dropped by more than a half within a decade (Table A16), while their shares in total imports have 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 very dynamic growth in the last decade (1992-2002) and have 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 last one 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% of ICT manufacturing imports are computers and other information-processing equipment (3002) while electronic components (3220) and TV and radio receivers (3230) comprise a further 30% of ICT goods imports (Tables A15 - A19).

Services trade increased at a much slower pace than goods trade in the 1996-2001 period. Accordingly, the share of services in total trade of goods and services declined and amounted to only 14 percent in 2001 (Table A20). The respective share of services in total exports of goods and services accounted for 16%. This lower growth of services trade compared to goods trade may be explained by different factors. On one hand, demand for services in the Slovenian market was high throughout the 1990s due to restructuring of the economy and 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 the surplus needed to compensate for the deficit in

goods trade nobody seems to be concerned with the dynamics or structure of service exports (Stare, 2001). There is quite a poor level of awareness of the fact that the weak dynamics of service exports and low share of high value added services in the export structure are only a reflection of how Slovenia is lagging behind developed countries with regard to the development of knowledge-intensive services.

In 2002 negative trends in services trade came to a stop 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. A 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 the 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 to both the insufficient local supply of high value added services and to their deficient quality and range (Stare, 2001, Stare, 2003b). The inadequate supply of business and financial services negatively affects the competitiveness of the whole economy since they represent key input for most activities (for more details, see Section C.2.2).

ICT services export growth was very dynamic in the 1994-2002 period. 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 percent in 2002. The growth of computer services exports was particularly remarkable, reflecting the success of a few companies in finding niche markets. In the second half of the 1990s Slovenian exporters of computer and information services and of communication services increased their market share in EU markets, suggesting their competitiveness is improving (Stare, 2001). Nevertheless, exports are highly concentrated within a few computer services companies, while the rest serve the 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 saw dynamic import growth[13].

A.7. Impacts

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

- stable overall macroeconomic performance since 1993;
- narrowing of the development gap behind advanced economies;
- a relatively high level of GDP per capita in PPS compared to other accession countries;
- almost balanced public finances and balance of payments current account;
- the increasing importance of services in the structure of gross domestic product;

- a falling and relatively low unemployment rate (6.3% in 2002);
- low regional disparities compared to EU member-states and candidate countries;
- a relatively high level of openness of the economy, measured by the value of international trade relative to GDP;
- the increasing volume and improving structure of merchandise trade (growing importance of high value added sectors); and
- dynamic growth rates of ICT goods and services exports and imports.

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

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

B. National Information Society Policies

B.1. SWOT analysis

Strengths	**Weaknesses**
- Good formal layout of the institutional setting for the IS - Key documents in place, the IS also included as a strategic goal in the development strategy - Relatively active participation of the Ministry of the Information Society 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 a continuation of poor co-ordination and co-operation between various actors - Insufficient resources dedicated to implementation of the IS strategy - Strategic importance of transition to the 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 the more active support of civil society and business community of the objectives of the IS - Accomplishment of projects already initiated in areas like e-schools, e-health[15] etc.	- Lack of focus on the implementation of policies that should have an important impact on the economic aspects of the IS - Slow take-off of e-business and e-commerce - Policy framework unsupportive of the more progressive uptake of ICT in business, affecting competitiveness and growth in the long run

The establishment of the Ministry of the Information Society was presented at the time as a strategic decision of the Slovenian government on the road to the IS. Along with the Government Centre of Informatics, the two bodies should constitute a good formal institutional setting to promote implementation of the IS and may be identified as a key **strength**. Additionally, both the Strategy of Economic Development and the recently adopted Slovenian Information Society Strategy fully recognise the importance of the transition to the IS.

The strategies and operational programmes include several ambitious targets in the area of e-government, e-schools and e-commerce. Particularly in the area of e-government, the plans are also well defined and a time frame set out. This provides a good **opportunity** to promote a more dynamic transition to IS. In addition, several projects underway like the e-school are well received by the target groups, which reflects the positive attitude of society to the IS. Even though not sufficiently exploited and poorly co-ordinated, the activities of civil society and business groups both support the objectives of the IS and present a dormant, yet potentially very constructive pressure on the government to implement its policies.

[15] See Box E3.

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

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

B.2. Institutional settings

Topics like computer technology, informatics and the Information Society were present in Slovenia relatively early. In the 1970s there were several attempts at the development of national computer production, which stimulated the start of R&D programmes in the field of computer science and automation. **Informatika, the Slovenian society of informatics and computer engineers**[16] was established back in 1976 and is still an important forum where policies are discussed. It organises annual conferences at which 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 promoting the IS, the IS paradigm, e-learning etc.).

With the collapse of some of the major corporations in the electronic industry at the beginning of the 1990s (especially the ISKRA[17] conglomerate), there was a slight slowdown in this area that was gradually replaced by a new, broader focus on information technology and Information Society promotion and not just on the industrial production of ICT-related products.

The first Slovenian government institution dedicated to issues related to informatisation was set up in 1993. **The Government Centre for Informatics** (GCI)[18] was established as a government service directly responsible to the government and in charge of the informatisation of state organs. The GCI is responsible for the planning, consultation and formulation of methodological and technical solutions for developing the informatics infrastructure of state organisations.

[16] http://www.drustvo-informatika.si/

[17] 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, the production of microchips was also started as well as the assembly of PCs (Iskra Delta).

[18] http://gov.si/cvi

In practice, the GCI co-ordinates and negotiates the purchase of hardware and software for state bodies as well as the training of government employees in ICT-related skills.[19] The annual budget of the GCI is around EUR 28 million.

Initially, it was the Ministry of Science and Technology that acted as a partner to the EU in discussions and projects related to the Information Society Forum. In 1994 the Ministry of Education[20], on the other hand, initiated projects in the area of bringing ICT to schools, especially equipping computer classrooms and bringing primary and high schools on-line.

In the late 1990s, several professional debates raised the issue of a national policy in the area of the Information Society in Slovenia. The objective of such a policy was to bring under the one roof several on-going initiatives in a co-ordinated fashion to achieve a more dynamic transition to the Information Society and to promote the diffusion of ICT in the economy and society. Growing awareness of the importance of the Information Society led the government to establish a special **Ministry of the Information Society (MID)**[21] in January 2001. According to the official statements and programme of the Ministry, the Ministry's key tasks, 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 e-business in private and public sectors of the economy;
- to promote e-business in the public administration;
- to encourage and enable the largest possible range of administrative and other public services via e-business;
- to promote education and training for the 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 e-business;
- 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 e-business in the public administration and put forward proposals for amendments;

[19] A more detailed description of the GCI's tasks is provided in Section B.4.

[20] With the reorganisation of the government in 2000, the two Ministries were joined to form the Ministry of Education, Science and Sports.

[21] http://www.gov.si/mid

- to be responsible for the security of e-business and prevent Internet misuse; and
- to take measures to liberalise the telecommunications services market.

Setting up of the Ministry was to reflect the government's seriousness in addressing the issue of the 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 staff numbers. This seriously jeopardises the implementation of the broad spectrum of tasks laid out in its programme.

Parallel to the government's institutions, the **Chamber of Commerce and Industry**[22] of Slovenia has set up more business-focused networks. Some ICT producers were organised at Chamber level in the Association of Electrical Industry. However, 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 the Information and Telecommunication Association are 1,367 commercial companies and independent entrepreneurs active in the field of informatics and 130 commercial companies and independent entrepreneurs active in the field of telecommunications. Their membership is automatic since membership in the Chamber is compulsory and companies are 'assigned' to different associations according to their main activity. Representatives of both the Chamber and Association are normally invited to participate in policy debates, but do not formulate the policy itself. The Association has so far mostly been involved in the preparation of a catalogue of Slovenian ICT producers; the preparation of IT profiles for high school level education and occasional promotions at fairs and visits abroad.

The Chamber of Commerce and Industry was involved in the 1990s in several projects promoting ICT diffusion and especially e-business issues. It thereby acted as an important IS promoter in Slovenia and also influenced the actions taken by the government[23].

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

B.3. Chronological description of the national IS policies

During the 1990s several parallel activities in the field of IS were taking place. One line of such discussions was the activity of the 'Informatika' society, which at its annual meetings organised round tables on the importance of information technologies for Slovenia's economic and social development. The most important 'product' of Informatika was the so-called 'Blue Book' entitled 'Slovenia as an

[22] http://www.gzs.si

[23] This was especially reflected in the preparation and acceptance of the Law on Electronic Signatures.

Information Society' (Slovenija kot informacijska družba, 1999), calling for 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 will not happen as an automatic consequence of development but requires a broad social consensus and vision on how to implement the Information Society. Although the final objectives of establishing the Information Society in Slovenia may be similar or the same as in other countries, there is a need for a difference in the ways and methods to accomplish the transformation that have to reflect the Slovenian specificities. Several actions were suggested but, except for the fact that the book was published, no direct follow-up of recommendations has been put in place.

Another set of initiatives came from the Centre of Electronic Commerce at the Faculty of Organisational Sciences at the University of Maribor, where conferences on e-business have been organised since 1988. These conferences have been attended by many scientists and ICT experts from abroad and have raised the awareness of IS-related issues in Slovenia. An e-business initiative was also conferences on e-business by the Chamber of Commerce and Industry, where special meetings of directors of larger Slovenian companies on e-business resulted in pressure on the government to adjust the related legislation to the new means of communication. On the other hand, in 1995 the government established within the Ministry of the Economy an office for business information (Trade Point Slovenia) responsible for e-business promotion in the corporate sector[24]. In addition, in 1994 the Ministry of Education started a programme on the informatisation of education institutions with relatively ambitious projects in the field of computer equipment, literacy, linking schools to the Internet, e-learning and the education of teachers in the use of multimedia. Yet, all these initiatives together did not amount to a specific Information Society policy at the national level.

In 1999, on the initiative of the government preparations began on the **Strategy for the Economic Development of Slovenia**[25]. A strategic orientation towards a knowledge-based economy was to become one of the central focal 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;

[24] 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 the MID, Trade Point moved from the Ministry of the Economy under the umbrella of the MID.

[25] SEDS was prepared by the IMAD on the basis of extensive background research projects specially commissioned for the Strategy. The final document was approved by both the government and the parliament.

- ensure access to the public telecommunications network on the basis of open and universal access, and provide inter-network connections; and
- 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 directions the policy should follow.

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

Specifically addressing the government's programme of informatisation 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 the GCI and adopted by the government in February 2001. The strategy covers from the institutional point all the state organs and certain institutions of the public administration. This Strategy is seen as the key element in implementation of the e-government concept. It contains detailed suggestions and a timeframe for its implementation in the field of e-commerce of the public administration[26] through specific mechanisms like procedures of planning, installation, implementation, supervision as well as responsible bodies (also see Section F.4.) (GCI Press Release, 2001).

One of the key tasks of the Ministry of the Information Society at its establishment was the preparation of the **Slovenian Information Society Strategy** (SISS, 2003). The first draft was prepared in 2001 and finally adopted by the government on 13 February, 2003. The strategy covers different aspects of Slovenia's development in the field of IS infrastructure and services. The influence of EC documents on the 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 for citizens, determines the sources of finance 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 to enlarge the contribution of nationally generated

[26] The term e-commerce is used in official text but does not refer to the commercial activities of the public administration, only to the means of communication between government offices as well as between the government and the citizens.

knowledge, the creation of a favourable investment environment and new jobs, the growth of employment and productivity, modernisation of the public administration, the enhanced 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[27] of the MID express the IS policy focus of the government. Yet little has been done to promote the SISS outside the Ministry.

B.4. 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 the expanded use of information-communication technologies (ICTs). The analysis of the international economic environment showed the positive impact of the diffusion of ICT in the corporate sector on economic growth. Therefore, the catching-up process of Slovenia's corporate sector and its technological restructuring is to be based on the active promotion of the diffusion and uptake of ICT-related applications. The Information Society concept is viewed primarily through the lenses of economic growth and competitiveness. Closely linked to the uptake of technologies is the focus on increasing the ICT skill levels of human resources. Only better-qualified employees are to be able to fully utilise ICT for increased output. This shows that the underlying motivation of IS policies, in view of the Strategy's authors, was economic growth and competitiveness.

The Slovenian Information Society Strategy (SISS, 2003), deriving from one segment of SEDS, focuses more on the provision of high quality IS services and infrastructure for the daily needs of all citizens in the Slovenian language and the languages of minorities. Adoption and implementation of the Strategy has to ensure comparability with EU member-states and at the same time strengthen Slovenia's role in the Central and Eastern European region. The Strategy is partly based on inter-ministerial co-ordination within the framework of the National Development Plan of the Republic of Slovenia and on preparation of the Single Programming Document[28] in 2003 as part of preparations for Slovenia's integration into European Commission structural policies. As mentioned, many objectives and targets closely follow the eEurope+ programme, which Slovenia has decided to pursue. The main motivation of this programme, prepared by EC for the candidate countries as a parallel to the eEurope 2002 programme, is to narrow the gap between candidate countries and the EU in areas critical to the Information Society (eEurope+, 2003).

B.5. 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

[27] Like e-schools or e-villages, for example.

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

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[29], and the new bill on post services; and
- 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 a 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 the MID is the co-ordination of different activities at state and local levels in designing various solutions for e-government to support e-democracy and develop public services. This area requires close co-operation with the GCI and other ministries, especially the Ministry of the Interior (citizens affairs).[30]
b) **sector for applications in the business sector**: this sector is on one hand involved with providing as equal access to information technology as possible to all citizens and on the other with promoting the use of new ICT technologies in the business sector. The most visible area is the role of this sector in preparing and monitoring IS indicators and their co-operation 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 the main tasks of introducing IS concepts in the National Development Programme, in the Single Programming Document and other government documents. This sector is also responsible for co-operation with the scientific community via so-called Target Research Projects[31].
d) **sector for technological tasks** is involved in the 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 the design and planning of their information systems, data banks, web pages and management support

[29] See Section F for details.

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

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

systems. Among the most important projects of this sector are e-schools, 'Internet Cafés', co-financing of networks in the academic environment (ARNES) and the co-financing of open-code projects.

The MID was also actively involved in preparations of the Single Programming Document, where the Information Society is treated as an important horizontal theme. A specific focus of the MID was the impact of the proposed measures on lowering regional barriers to the IS and the avoidance of a potential digital divide. Many of the planned activities address more equitable development towards the IS in all regions. In addition, several measures are to be introduced to support IST-related education and training programmes. Currently, the Single Programming Document is under negotiation both with the 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 carrying out the following main tasks:

- preparation and monitoring of 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, monitoring the activity of the government and ministries, the cadre system, the decision-making system, public relations etc.), the introduction of common information infrastructure and the upgrading 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 the common purchasing, distribution and maintenance of common information equipment, and the uniformity and support for users of local information equipment of organs;
- the issuing of opinions prior to purchases of information equipment and services of individual organs in accordance with the 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 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; and
- co-operation with domestic and foreign institutions in this field on common projects and tasks.

Since the GCI's budget is nearly twice the size of the MID's, its impact on informatisation of public administration is significant especially since the GCI also influences the ways and means in which the money allocated directly to various state organs is being spent. So while in principle the MID is the Ministry and the GCI a specific governmental body (therefore in hierarchical terms below the MID), in practice the roles are reversed. This is reflected in the occasional overlapping of activities of the two institutions.

B.6. Assessment of the national IS policies and their implementation

Slovenia had to wait a long time for a fully-fledged Information Society strategy. This does not mean, however, that no action was taken prior to this or that there was no awareness of the need to move more actively towards the Information Society. As described at the beginning, all segments: civil society, the business community and the government were active in the field of IS promotion. The key problem is **the lack of co-ordination among the three groups of actors as well as the lack of integration of the objectives and activities**. Civil society, as mentioned in B.3. of this section, has pointed out the need for a more active approach by all parties (government, business and civil society), but has counted on 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 to move more dynamically in the direction of the IS. Their activities were often misunderstood as 'sales promotion' and not a genuine expression of concern for the too slow action taken by the government in the IS field. The government responded to the critics from civil society and business by establishing the Ministry.

Both the programmes and assigned tasks of the Ministry of the Information Society and those of the GCI are very ambitious. Several activities have already been initiated. The MID focused a lot of attention during its first two years on the field of telecommunications (see Section F), but some progress was also made in Information Society applications. Projects like e-school (see Box E2) and e-villages[32] have raised the interest of the general public in the Internet. Several other projects are still in the planning or research phase. Maybe the most underrepresented is again the business sector and those activities that would promote the more intensive use of ICT-related technologies and applications there. By reading the official pages of the MID or the text of the Strategy one cannot draw such a conclusion, in fact more likely the opposite one. Many priorities are focused on business and entrepreneurship, raising ICT skills, technology transfer etc. But when it comes to specific actions, the business focus is lost.

A possible explanation here lies in the fact that the MID is a very small ministry, in terms of both personnel and its budget (its budget is just EUR 15 million or 0.2% of the total Slovenian state budget). The programme in front of the MID should not at

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

all be treated as the Ministry's only but that of the government as a whole, whereby the MID should give the details and substantial guidance to achieve synergy, while the implementation should be in the hands of each individual government department. The current state of affairs gives little proof of such an approach. This makes implementation of the Slovenian Information Society Strategy, particularly in those segments related to more complex issues very difficult (like the diffusion of ICT applications in the business sector, adjustment of labour legislation to facilitate telework, raising the level of IS-related skills in the general population etc.). Even the process of adopting the SISS shows that **the strategic importance of the transition to the IS has not been fully understood and supported by the Slovenian government.** The Strategy has received little public attention and has practically not been promoted by the government.

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

The presence of mostly small and even micro firms in the ICT sector (as described in the next section) also holds serious implications at the policy level. This highly segmented and competitive group of actors has been unable to exert pressure on government policy as a group. The attempt of a few larger corporations to form a pressure group have failed, at least partly on account of personal disagreements between the top managers involved.

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

C. Industrial Development and Competitivness

C.1. SWOT analysis

Strengths	**Weaknesses**
- Dynamic growth of services in the 1990s - 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 the ICT sector by providing different financial mechanisms (e.g. risk capital funds) - Larger inflow of FDI to the ICT sector may boost the supply of advanced ICT solutions - Competitive pressure of providers of alternative telecommunications networks could strengthen competition, provide a 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 the total economy and hampers the diffusion of IST - Non-consolidated ICT sector - Orientation of ICT companies to the 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 being important for IS development. Dynamic service sector expansion in the 1990s resulted in the enhanced supply of market and public services necessary for the efficient functioning of the economy. The increasing share of investment in ICT in the 1996-2001 period seems to have created a relatively good basis for the further expansion of ICT use, which may be perceived as a strength in implementation of the Information Society. The relatively competitive telecommunications and computer services are also considered a strength in this regard since they foster IST diffusion. The fact that expansion of the ICT sector and ICT market size in Slovenia was mainly spurred by the dynamic growth of services could indicate that the Slovenian ICT market has already reached the level where services are determining the size and dynamics of the ICT market, this already being the case in developed countries 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 1990s, the share of high-technology products in manufacturing output remains modest. In addition, in spite of intensive structural changes towards an increasing share of services in GDP and

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

The continued slow restructuring of manufacturing could undermine its export potential in internal EU market. Coupled with an inadequate supply of knowledge-intensive business services this could threaten the competitiveness of the total economy and hamper its ability for any faster diffusion of IST. Regarding further ICT sector development, **threats** are seen in the fragmentation of the ICT sector, the prevailing orientation of companies to the domestic market and in the lack of ICT experts with managerial experience and skills. The bulk of the ICT sector consists of small companies mainly oriented to the domestic market and not integrated into broader networks. Such isolation threatens the further development of the SME (small and medium enterprise) segment of the ICT sector, in particular in the circumstances of intensive competition in the EU's internal market. An additional threat to better ICT sector performance relates to the lack of ICT experts with managerial experience 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) the creation of new start-ups can be encouraged. This would help ICT development as start-ups are usually related to innovative ideas, which are the key 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 the ICT sector will increase thereby opening up an opportunity for the supply of advanced ICT services/solutions and know-how with spill-over effects for the total economy. With the entry to the market of the providers of alternative telecommunications networks, competitive pressure on the telecommunication market will increase thus enabling the further expansion of ICT services. The availability of highly productive telecommunications and computer services provides another window of opportunity for the dynamic growth of ICT services.

C.2. Structural changes

At the beginning of the 1990s Slovenia was, like other transition economies, faced with a 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, parallel to shifts in the structure of production.

C.2.1. Manufacturing

Slovenia enjoys a strong manufacturing tradition, in some industries it extends back a 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 manufacturing's total 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 1990s (mostly in 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 hit 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 smaller ones due to their high rigidity and over-sized employment levels.

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 the increased competitiveness of manufacturing industry. The sharpest increase in production in

Graph C1: **Regional structure of value added by sectors in 1999, in %**

Source: Statistical Office of the Republic of Slovenia.

volume terms in the 1994 to 2001 period 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 the manufacturing of chemicals that exceeded the average for total manufacturing by a high margin (Table C3). Nevertheless, the restructuring of manufacturing was too gradual and slow resulting in a low share of high-technology products in manufacturing output (Bednaš et al., 2002). To a certain extent this was also the consequence of the weaker co-operation of companies with research institutes and the universities, which is further explained in Section D.4.

The transition process and accompanying restructuring of the economy brought about a transformation from a predominantly manufacturing to a more service-based economy (Table A6). Nevertheless, manufacturing still contributes a 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 by an old industrial structure, the other two are characterised by high value added industry (production of telecommunication equipment, transport equipment, pharmaceuticals).

C.2.2. Services

The end of the 1980s and the beginning of the 1990s marked the turning point of the development of services 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 1991-2001 period. The increase was recorded in both market services and 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 a 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 codes);
- outsourcing of non-core services due to changes in industrial organisation, such as the breaking up of large industrial conglomerates into smaller companies (e.g. security and cleaning services, catering, transport services);
- market-oriented reforms (privatisation, deregulation of some professions) required new services that were not available in the 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 the public administration, related to the process of accession to the European Union and other international integrations (e.g. legal services related to harmonisation of the *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, the relatively late withdrawal from industry-led growth and the lack of a service culture hampered smooth and qualitative changes in the service sector. Shortcomings refer in particular to the composition of service activities, to the lack of competition in services, to the modest efficiency and poor innovativeness of service activities. In the early 1990s, 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 1990s and in 2002 they accounted for 21.3 percent of 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 accounted for 20 percent of total value added (SORS, 2003a). This reflects Slovenia's serious gap behind the EU average where financial and business services occupied the dominant position among services and in 2002 accounted for 27.3 percent of total value added (Statistics in Focus, 2003). However, Slovenia's positive developments towards narrowing the gap in this regard can be traced since 1998 when the difference amounted to 10 percentage points (Statistics in Focus, 2001).

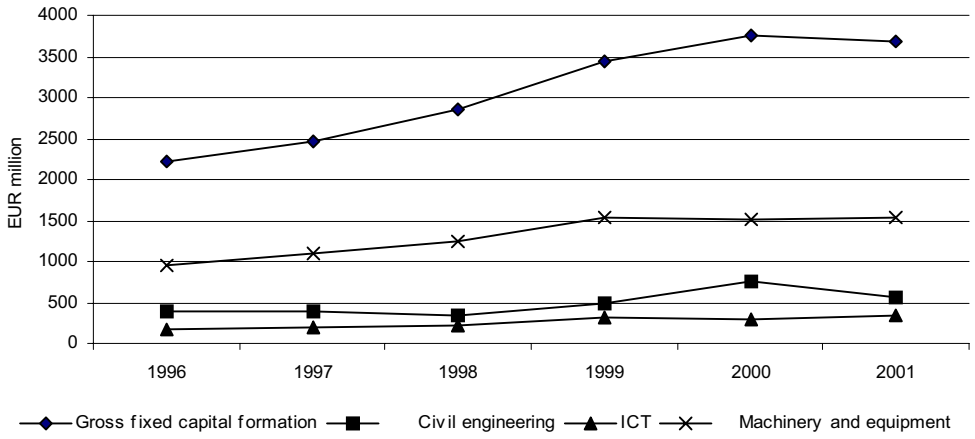
Nevertheless, the lack of knowledge-intensive business services in Slovenia is critical for the efficiency of the total economy as well as for its innovative capacity. These services not only generate innovations but also facilitate the dissemination of innovation throughout the economy (e.g. research and development, consultancy services, protection of intellectual property rights). The low level of 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.2.3. 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 a 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 a 3.1% real growth rate (Table C6).

The technical structure of investment in the 1996-2001 period (Table C7) reveals real growth of buildings and construction investment as well as of investment in

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



Source: Statistical Office of the Republic of Slovenia.
Note: * in enterprises, companies and other organisations.

machinery and equipment. Investment growth in buildings and construction works was largely fuelled by accelerated motorway 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).

The slowdown of investment activity in 2000 and 2001 was influenced on one hand by fiscal restrictions which slowed down motorway construction while, on the other hand, the modest economic activity had a negative impact on the business investment. The pick-up of investment in 2002 was mainly due to the revival seen in motorway construction, while the recovery of business investment was not so evident due to the 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[33]. 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[34] (Table C7) (distribution of IT investment by activities is explained in greater detail in Section D.2.). In 2000, the trends worsened to some extent due mainly to the extremely high growth rates of IT-related investment in 1999 fuelled by high demand for computers and software before value added tax was introduced in June 1999 and by expectations related to the millennium bug. Nevertheless, the dynamic growth of IT-related investment continued in 2001.

[33] Prior to 2001 no data is available for investments in communication equipment.

[34] If investments in communication equipment are added to IT investment in 2001, the share of ICT investment in total gross fixed capital formation accounted for 14 percent (see Section D for details).

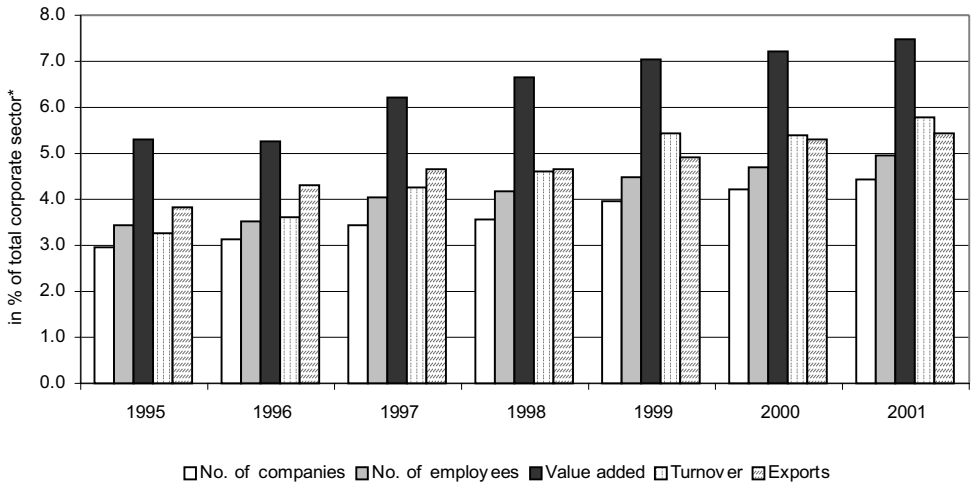
C.3. The role of ICT industry[35]

C.3.1. Growth and structure

Slovenia inherited a relatively well-developed electronic and electrical engineering industry from the past, providing a good basis for the further development of ICT industry in the 1990s. In the 1995-2001 period, ICT industry (manufacturing and services) recorded dynamic growth, like in many developed countries. In 2001, the 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 the ICT sector increased significantly: in 1995 the respective shares in total employment and total value added amounted to 3.4% and 5.3% (Table C8 and Graph C3). Growth was substantial in absolute terms as well: in the 1995-2001 period the number of companies increased from 993 to 1 654 and the total number of employees grew from 16 591 to 23 532.

The 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 the total non-financial corporate sector (Table C8). In 2001, value added per employee in the ICT

Graph C3: **Weight of the ICT sector in the non-financial corporate sector*, 1995-2001, in %**



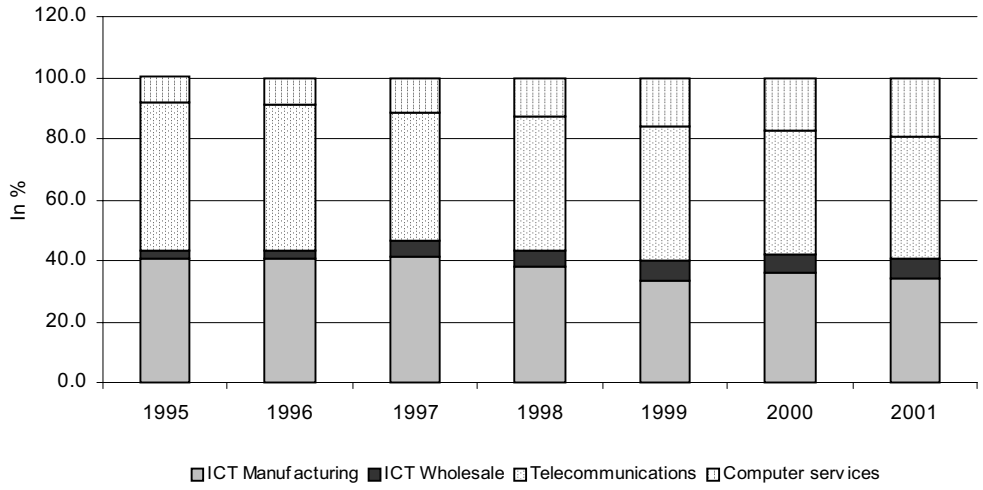
Source: own calculations based on Agency for Payments' data on the balance sheets of commercial companies.
Note: * The non-financial corporate sector is estimated on the basis of data for commercial companies, while individual private entrepreneurs are excluded.

[35] The ICT sector is estimated on the basis of data for the non-financial corporate sector (it includes data for commercial companies, while individual private entrepreneurs are excluded). Account should be made of the fact that in manufacturing the estimated share of the non-financial corporate sector's value added in total manufacturing's 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 approximately 40% (Kmet et al., 2002).

sector amounted to EUR 33 600 (Table C9), 51% higher than the average for the 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 the relevant EU productivity in 1997 and computer services 66% of the respective level in the EU. This is considerably higher compared to the overall productivity of the Slovenian corporate sector, which stood at 45% of EU productivity in 2001 (Bešter, Uršič, 2002). Besides, Slovenian exporters of computer and communication services increased their share in EU markets in the second half of the 1990s, suggesting 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 customers' needs. This necessitates ICT experts with interdisciplinary knowledge able to combine technical, marketing and organisational skills[36].

On the other hand, telecommunication services' penetration and the level of infrastructure development point to relatively solid results (fixed-line penetration for inhabitants and households amounts to 47% and 90%, respectively, on a fully digitised network) (IBM, 2002). Nevertheless, deficiencies remain particularly

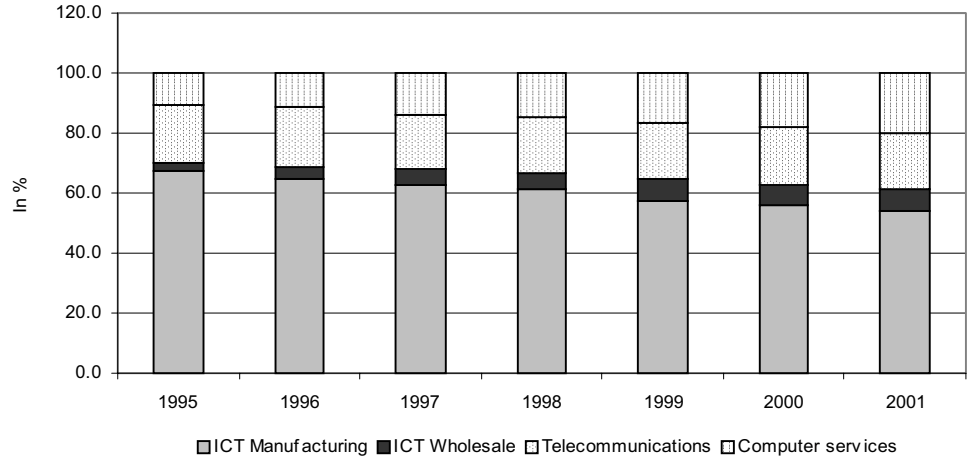
Graph C4: **ICT sector value added structure in %, 1995-2001**



Source: own calculations based on Agency for Payments' data on balance sheets of commercial companies.

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

Graph C5: **ICT sector employment structure in 2001, percent**



Source: own calculations based on Agency for Payments' data on balance sheets of commercial companies.

regarding the slow implementation of liberalisation of the fixed telephony market that is hampering competition (for more details, see Section F.3.1.).

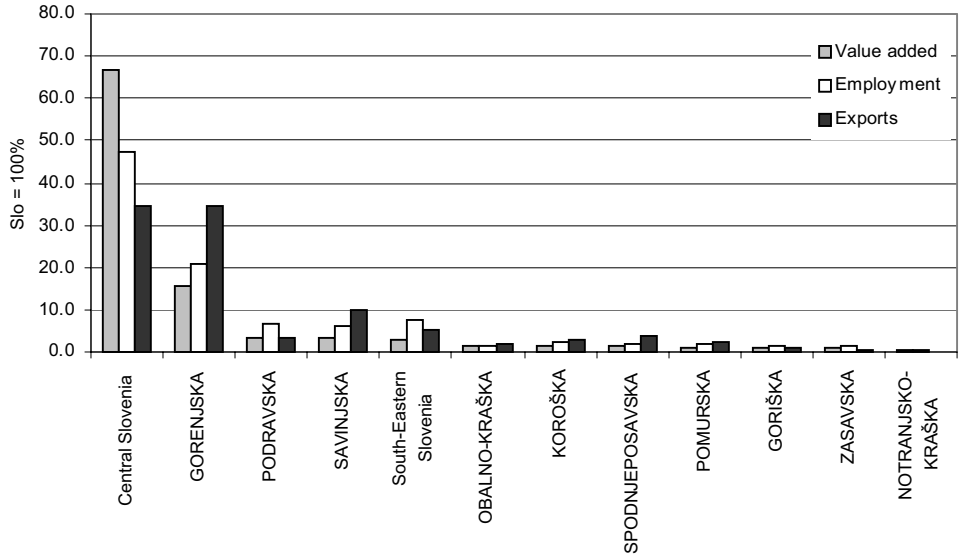
The bulk of the ICT sector growth in the 1995-2001 period is the result of the dynamic growth of ICT services, particularly software consultancy and supply of telecommunication services. Consequently, the share of ICT services in total value added of ICT sector increased to 66% by 2001 (Table C9, Graph C4). Even more impressive is the increase of ICT services share in total turnover of the ICT sector: from 48% 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 relatively small (Table C9, Table C10).

In the 1995-2001 period, 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 the ICT sector's value added has decreased since 1995 (also see Section C.3.4.), it still employed over half (54%) of ICT sector employees in 2001 (67% in 1995) (Graph C5).

C.3.2. Regional distribution of the ICT sector

As revealed by Table C11 and Graph C6, the ICT sector is highly concentrated in two regions with the remaining ten regions lagging far behind. In 2001, Central Slovenia (the capital Ljubljana with its surrounding towns) and Gorenjska accounted for approximately 85% of the total ICT sector's value added and approximately 70% of ICT employment. In Central Slovenia, high value added ICT services prevail (89% and 79% of the ICT sector's value added and employment), mostly

Graph C6: **Share of ICT sector by regions in 2001, percent**



Source: own calculations based on Agency for Payments' data on balance sheets of commercial companies.

telecommunications, software consultancy and supply services. The second most important region as regards ICT sector production is the Gorenjska region (north-western part of Slovenia) with 21% of ICT sector employment and 16% of value added in 2001.

The Gorenjska region is the centre of ICT manufacturing: more than 40% of all Slovenian ICT manufacturing industries are located in this region, most notably the largest producer of telecommunication equipment[37]. This high concentration of ICT sector activities in the central region is not surprising due to the fact that the major telecommunication operators, which generate over 40% of total ICT sector value added (Graph C6), are located in Ljubljana. In the 1995-2001 period, no major changes in the regional concentration of the ICT sector occurred, apart from the decreased importance of the Gorenjska region (Table C11).

C.3.3. Trade balance of the ICT sector

Slovenia is a net importer of ICT goods and services with a combined deficit of EUR 365 million in 2002, the bulk of which is attributed to ICT goods[38] (Table C 12). In the last ten years a trade deficit in ICT goods doubled to account for EUR 335 million in 2002. The extremely high deficit of EUR 470 million was recorded

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

[38] 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).

in 1999 on account of the millennium bug and introduction of value added tax in the middle of 1999[39]. The lion's share of the deficit is related to high imports of computers and other equipment for information processing since the domestic production of hardware is very low. There are no plans for any larger investment in the manufacturing of computers and other processing equipment in Slovenia as the labour costs here are much higher than in other acceding countries[40].

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 the share in goods exports in the 1992-2002 period (by 0.4 percentage points, Table C13, also see 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) comprise a further 30% of ICT goods imports (Table A15).

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

The major export destinations for ICT products and services differ somewhat depending on the ICT product/service, but the 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.3.4. Size of the ICT market and the main actors

Size of the ICT market

The fact that only a few assessments exist so far confirms it is very difficult to estimate the **size of the ICT market**. According to Bučar and Stare (2001), two different estimates of the Slovenian ICT market come from the Slovenian European Survey of the Information Society (ESIS)[41] and the European Information Technology Observatory (EITO)[42]. At the end of 2000, the ESIS estimated the market size of Slovenia for telecommunications at EUR 1299 million, while the computer market was estimated at EUR 580 million. The EITO's figures for 2001 are more

[39] Those planning to buy new ICT equipment bought it prior to the introduction of value-added tax.

[40] Hourly labour costs in 2000 amounted to EUR 8.98 in Slovenia, while the average for accession countries was EUR 4.21 (Eurostat, 2002).

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

[42] EITO, 2001.

conservative: the telecommunication market was valued at EUR 841 million and the IT one at EUR 403 million. The single largest discrepancy for telecommunication lies in the assessment of mobile telephone services where the ESIS figure was EUR 300 million higher. The difference in the estimation of the computer market's size is attributed to a different evaluation of the IT services market, whereby the ESIS values the market as being more than twice as large as the EITO. According to the 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 the 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 the ICT market amounted to 8.4% in 2001. The EITO estimates that the Slovenian ITC market and infrastructure have reached their maturity. In addition, per capita IT spending in 2001 in Slovenia was highest among the candidate countries, amounting to EUR 190, however it lagged far behind the average of Western Europe of EUR 835 (EITO, 2002). This points to the serious handicap of Slovenia and 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 IT growth. The IDC, for example, applies the method of extrapolating annual growth rates without taking into account the macroeconomic environment in an individual country and trends in the market. The recently published analysis by the IDC estimates that the size of the Slovenian IT market (hardware, personal systems, communications equipment, software and services[43]) in 2002 accounted for approximately EUR 420 million (USD 394 million). Some managers of Slovenian IT companies believe this estimate is too low and that a more accurate estimate would range between EUR 480-530 million (USD 450-500 million) (Delo, 7.2.2003). The above estimates exclude telecommunication services.

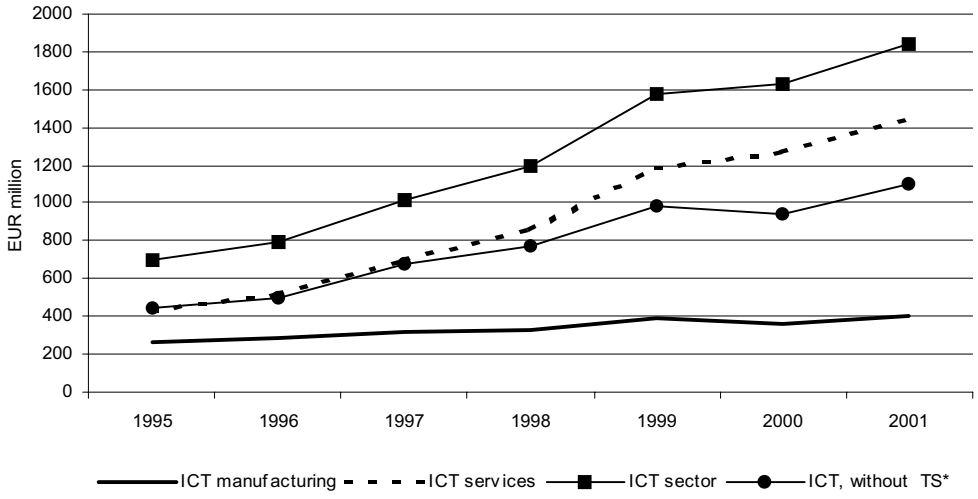
Our approach to estimating the size of Slovenia's ICT market differs from the above methods. It is based on data from balance sheets of ICT sector companies[44] and gives only an approximation of the ICT sector's market value. The proxy used to estimate market size is the value of sales of ICT companies in 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 the total activity of a company[45]. On the other hand, these data may not include the value of imported hardware sold by foreign-owned ICT companies in the Slovenian market as this is billed directly by the parent company.

[43] Consulting, implementation, maintenance and training services related to IT, excluding telecommunication services.

[44] 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 the activities of individual private entrepreneurs are excluded.

[45] However, we consider that the bulk of activities are related to ICT manufacturing or services for which these companies are registered.

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



Source: own calculations based on Agency for Payments' data on balance sheets of commercial companies.
Note: * TS - telecommunication services

Given the limitations of the above approach, we estimate that the ICT market in Slovenia grew from EUR 700 million in 1995 to EUR 1,845 million in 2001 (EUR 450 million and EUR 1100 million, excluding telecommunication services) (Graph C7, Table C15). In the observed period the market for ICT goods increased at a much slower pace than for ICT services even if telecommunication services are excluded. While the ICT goods market experienced a downturn in 2000 following the impressive growth seen in 1999, there was no decline in the ICT services market owing primarily to the further expansion of the telecommunication and software services markets (Table C15).

In 2001, the largest part of the ICT goods market was accounted for by telecommunications equipment and information-processing equipment, while in ICT services, apart from telecommunication services, the bulk of the market size was attributed to the wholesale of ICT goods (notably the resale of imported hardware and equipment) and to software consultancy and supply. The latter experienced particularly dynamic growth between 1995 and 2001. Such developments could indicate that the 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.

Main actors in the 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

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, 61% of whom have a 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 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 equipmen, 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 the 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 network, 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 to foreign markets after its establishment. Iskratel has traditionally been present in two regions: in the Balkan countries and in the former Soviet Union, where half of the overall export sales is realised. Iskratel's market shares in these markets range between 10% and 60%, which ranks it as the first or 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's 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 are 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**

C9). Among them, the manufacturing of electronic components (3210) revealed the largest expansion in the 1995-2001 period 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 1990s. As a result, their share in the ICT sector's value added decreased significantly (Tables C9 and C10).

The following types of products are manufactured and 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, and wound/inductive components. Particularly in the area of electronic components, a number of medium-sized firms involving full or partial foreign ownership have recently been established.

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

Even though 99 companies are registered as computer manufacturers, they are mostly small companies involved in PC assembly based on imported components. The relative slowdown of the PC market in 2000[46] resulted in the shifting of activities towards providing installation, maintenance and other IT services as well as mergers of some companies under one single roof. All major brands of international computer manufacturers are present in the Slovenian market (IBM, Compaq Hewlett Packard, Apple, etc.), but no assembly relating to 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 a large number of small companies (the average size of a software consultancy company in 2001 was 3.6 employees, see Table C9). It is expected that EU accession will accelerate the process of consolidation of these companies. With 19% of all ICT sector employees in 2001, **telecommunication** companies created 40% of the ICT sector's value added and thus recorded the highest productivity in the ICT sector with EUR 69,400 value added per employee (Table C9). However, in recent years the business results of the telecommunication industry (in terms of profit and revenue) have been worsening[47], which has partly been caused by the strengthening of competition in the mobile telephony market. New entrants are unable to make a profit from their businesses in the short term owing to the high initial investment needed and the severe competition for market shares. On the other hand, the lower prices of mobile communications on account of increased competitiveness have resulted in lower demand for fixed telephony services, thus affecting the business results of the fixed telephony operator.

The biggest player in the telecommunications services' market is the incumbent fixed telephony operator Telekom of Slovenia, a majority state-owned company (62.5%). Apart from commanding the fixed telephony market, Telekom Slovenije

[46] Considerable consolidation is being witnessed in 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 were expected to continue in 2003 (EITO, 2002).

[47] Net profits decreased after 1998, while in 2001 a net loss was recorded for the first time in the period observed (1995-2001).

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 has entered the market of fixed telephony for national calls, while several companies provide Internet telephony services (VoIP-Voice over Internet Protocol) for international calls (for more details, see 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 than the EU average, also caused by the size of the country (there is no difference between local and long distance calls within the country). Prices of international calls are also below the EU average due to the existing competition in this market from VoIP operators. The quality of services provided by the fixed incumbent operator in Slovenia is comparable to the level seen 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 reseller 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 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 the 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 the UMTS licence assigned to the biggest operator Mobitel which was bound to launch the service by the end of 2003. There is also quite a large number of Internet service providers and 89 cable TV operators covering 44 percent 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 the Slovenian economy. The number of software development companies tripled in the 1995-2001 period while the number of employees increased fivefold. In 2001, the software development industry employed 12.9% of all ICT sector employees and accounted for 13.5% of the ICT sector's value added. This is 9.3 and 11 percentage points higher than in 1995, respectively (Tables C9 and C10). The sector is dominated by a large number (almost 500 in 2001) of small companies operating mostly in the Slovenian market and developing specific software applications. In addition, quite a few foreign providers of software are present in the market with Microsoft taking the lead, followed by Cisco, Oracle and SAP. All the main suppliers of software in Slovenia are faced with the lack of ICT experts with managerial experience and knowledge, which seems to be crucial when companies exceed the level of a small enterprise. This requires additional training and investment in human capital by companies themselves to compensate for the deficiencies of the education system (for more details, see Section G).

Although exports are concentrated in a limited number of companies, including foreign-owned[48] ones, the share of revenues these companies realised in foreign markets in their total revenues increased from 4% in 1995 to 20.2% in 2001 (Tables C10 and 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 of Slovenian software production reveals that many innovative applications and solutions (e.g. e-banking, interactive content management, network solutions) are being developed, most being initially for a specific domestic client but, due to the small local market, the majority of successful companies is opting for expansion abroad[49]. Slovenian expertise has been well received in very different geographies and in very different areas. A significant share of the USA as an export destination for IT services may be attributed to the exports of the largest Slovenian software company Hermes Softlab that has a partnership arrangement with Hewlett Packard. A similar explanation can be found for telecommunication services, where the share of Germany is large primarily thanks to the 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 the good reputation enjoyed by Slovenian providers of telecommunication services (Bučar, Stare, 2001).

C.3.5. The role of FDI in the ICT sector

In contrast to the other transition economies, Slovenia recorded a relatively modest inflow of FDI in the 1990s. It increased substantially only in 2001 and 2002 as a result of the privatisation of banks and investments in mobile telecommunications. Nevertheless, the importance of companies with foreign capital[50] is gradually increasing and has, according to some indicators, reached high levels. In 2000, companies with foreign capital accounted for 4.3 percent of the total number of companies in Slovenia, 10 percent of total employment, 16.7 percent of turnover, and as much as 29.7 percent of exports (Direct Investment, 2001).

The presence of FDI in the ICT sector is higher than 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 the total ICT sector's workforce, contributed 11.2% to total value added, 18.9% to total turnover and 27.6 percent to total exports of the ICT sector (Table C16). This shows that companies with foreign capital are strongly export oriented – probably due to their integration into the networks of parent companies abroad.

[48] 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.

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

[50] Companies with at least a 10 percent share of foreign capital in total equity.

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 the 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 (the American Western Wireless and the Austrian Mobilkom) in this period. Overall, the ICT sector has quite a solid level of FDI compared to the level of all commercial companies.

C.4. Impacts

The gradual shift from manufacturing to services in the last decade has enabled a narrowing of the gap in the economic structure between Slovenia and 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 strengthening the economy's competitiveness as well as for the accelerated diffusion of information communication technology to business processes in the private and public sectors. 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 up to 2000 created favourable conditions for the 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 a relatively good basis for the further expansion of ICT use in different segments of the economy and society. This may be perceived as a strength in implementing the Information Society.

The dynamic growth of the ICT sector seen in the last six years has resulted in an increasing share of the 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 the total non-financial corporate sector. Slovenia is a 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 the good quality of these services and above all to the familiarity of local suppliers with the specificities of the market. In the second half of the 1990s, Slovenian exporters of computer and information services and of communication services increased their market share in EU markets suggesting that their competitiveness is being improved (Stare, 2001). This might be one of the strengths in introducing the Information Society, however there is much scope left for a further improvement in quality and better adaptation to customers' needs. The high concentration of the ICT sector's value added and employment in the central region is not surprising given that all telecommunications operators are located in the capital.

While difficulties in estimating the ICT sector's 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 the 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 in the ICT market are the subsidiaries of well-known foreign ICT companies which are the distributors of hardware, software and accompanying services. Besides, there are also a few local manufacturers which 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 the 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 even further. This might strengthen competition in the market and boost the diffusion of advanced ICT and services.

D. Presence of the Most Relevant Economic Activities for IST Applications

D.1. SWOT analysis

Strengths	**Weaknesses**
- Most sectors significantly increased information technology (IT) investments in the last six years - Maintaining the share of R&D expenditure in GDP in the last five years - Adoption of strategic documents in the areas 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 being neglected - Weak links between the public R&D sphere and business - Poor implementation of science and technology policies - Insufficient financing of innovation and R&D by both the government and business, lack of an appropriate mechanism - Weak innovative intensity of the business sector as a whole - Low level of innovation activity in SMEs, in both services and 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 grounds for the expansion of e-commerce - Improved links of public R&D with IT industries can raise value-added in IT industries and services - A holistic approach to ICT-related research will generate applicable results for business and the public sector and promote the use of ICT - ICT's introduction will increase the efficiency of the private and public sectors when coupled with organisational change	- Further delays in technological restructuring of the economy leading to the 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 the education sector (see Section G) will result in poor availability of experts integrating technical, managerial and organisational skills within IST applications, threatening diffusion - underestimation of the complexity of ICT uptake often encountered

In the second half of the 1990s Slovenia succeeded to maintain the solid general conditions needed for the further development of the IS. The biggest **strength** in this regard refers to IT investment dynamics and government R&D expenditure. Notwithstanding the fact that investment in motorway construction was the clear priority of governmental policies, IT investment kept up its momentum resulting in the dynamic expansion of the ITC market. Particularly encouraging in terms of the further diffusion of IST is the solid innovation capacity of IS-related sectors, which provide applications and solutions specifically adapted to the local socio-economic context.

The above strengths are not so overwhelming when they are confronted with the accompanying **weaknesses**. The most prominent of these refer to the neglect of organisational change and retraining of skills aspects of IT investment, the weak co-operation between the public R&D and business sphere which jeopardises the chances of the diffusion of local ICT know-how and solutions. Apart from limited expenditure by some business sectors on R&D, the lack of financial mechanisms to support R&D and innovation (e.g. venture and seed capital funds, underdevelopment of investment funding, also see Bučar, Stare, 2001) is hampering any faster introduction of new technologies directly affecting the pace of implementing the IS. Another deficiency involves the inadequate organisational structure of academic research capacities (fragmentation) in ICT-related fields affecting their capacity to match the requirements of industry.

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

The continuation of a non-coordinated policy approach to innovation and development will fail to provide the right signals to the key actors regarding future priorities and 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 reduce the demand for advanced IST applications and consequently delay the technological upgrading of Slovenian industries. Critical to that process is the insufficient availability of skills and knowledge, which point to the multidimensional character of ICT's implementation. A disappointment with ICT's impact is often the result of underestimating the complexity of ICT solutions, which require technological, 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 the faster uptake of more sophisticated IST solutions.

D.2. Level of IT investment[51]

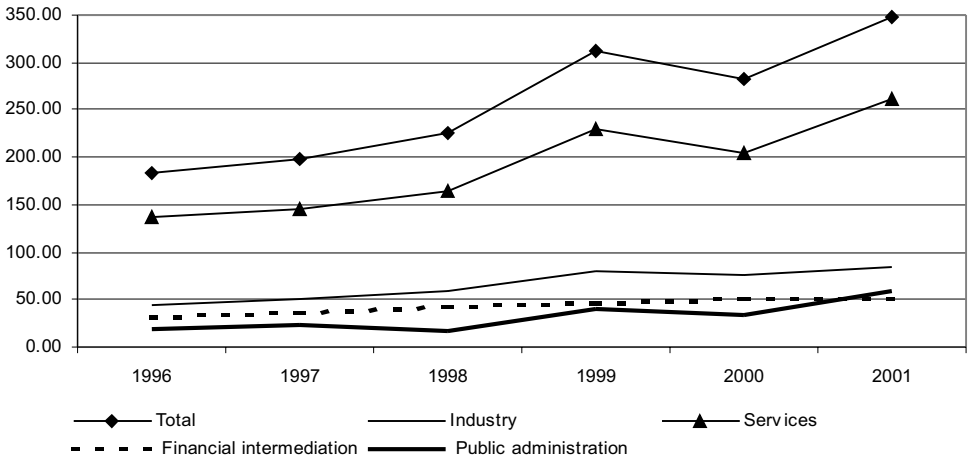
The spread of IST (Information Society technologies) in different economic activities and the diffusion of its applications is highly dependent on trends in the sectoral distribution of ICT investment. We therefore start with an assessment of the major characteristics of ICT investment seen since 1996.

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

Investment in IT increased throughout the 1996-2001 period, 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[52] (SORS, 2003). The growth of new IT investment in the economy was driven mainly by service activities, although other activities also invested in IT (Graph D1). Industrial activities increased their 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 was 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 have started to introduce computers to more complex business operations (like SAP, Baan, CRM etc.), apart from accountancy and bookkeeping.

In the period under consideration, service activities' investment in IT increased at the same pace as that in industry. However, in volume terms the IT investment made by service activities was three times larger than in industry, in both 1996 and 2001. Wholesale and retail, transport and communications, financial intermediation and the public administration were the major investors in IT among service activities, each investing over 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

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



Source: Statistical Office of the Republic of Slovenia.

[52] 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).

50 percent of the total IT investment. Since 1996, the public administration has gained the leading position among service activities in terms of IT investment dynamics and, in 2001, also in terms of the total amount of money invested in IT. The bulk of expenditure was related to the procurement of PCs and computer systems. IT investment by the public administration increased from EUR 18.6 million in 1996 to EUR 60 million in 2001, with the strongest upward push seen in 1999 and 2001. To put it in another perspective, in 2001 the amount of IT investment by the public administration exceeded for the first time 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 the IS with different intensities 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 percent 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 the high growth of IT investment and decreasing share of IT investment in total investment by the public administration might indicate that in 1996 this sector was poorly equipped with IT and needed dynamic investment although other investment increased as well[53]. 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 the broader implementation of e-commerce although other preconditions have to be met as well to fully utilise technical capacities (e.g. organisational change, skilled and educated people as explained in the next section). Due to the intensive interlinking of the service sector with other sectors, the wider use of e-commerce in services will also generate spillover effects on other segments of the economy and society.

If investment in communication equipment (for which disaggregated data is only available since 2001) is added to IT investment in 2001, the share of ICT investment in total investment accounted for 14 percent[54]. The bulk of investment in communication equipment was made by transport and communications, followed by electricity, gas and water supply and by the public administration (Table D1).

D.3. The most relevant potential spill-over effects of IST

Regarding the potential spill-over effects from introducing IST, the debate in Slovenia points to macroeconomic effects as well as effects at the sectoral level. Some analyses argue that, apart from investment in IT, successful catching up is a complex and demanding process which requires a set of accompanying organisational, managerial

[53] Given that Slovenia is a new state, it is understandable that investment in buildings was also substantial and increased dynamically.

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

and institutional changes if the optimal benefits of new technologies are to be captured by transition economies (Bučar, 2001). Besides, this requires innovative and co-ordinated development and technology policies (Bučar, 1999). ICT bears a multidimensional impact for producer services and, via their linkages with manufacturing and other services, it increases the economy's competitiveness in general. ICT improves the efficiency and quality of existing producer services, while it also introduces new producer services and new distribution channels for the supply of services. It also facilitates the 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 the 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 has led to discussions on ways of improving the public sector's efficiency with the solutions provided by IT. Some authors emphasise that modern IT is only the infrastructural precondition for changing and upgrading processes in the public sector. In addition, they claim that the application of new IT in public services initially requires better skills and investment in people, which has been neglected. The implementation of upgrading processes in the public sector so far confirms that such change is very complex, not only due to open questions relating to the contents of change but also due to the resistance of employees. Only a co-ordinated approach to informatisation and reforms of the 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 the efficiency and quality of public services in the second half of the 1990s the public administration had to undergo informatisation, which in the first place requires the renewal 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 those taking up the new ICT early due to the expected large benefits. This trend has even intensified with the Internet and e-services. 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 the economy. Internet banking is seen as the new distribution channel of banking services, which has many advantages but the management of its introduction and the changes it brings is difficult (Bobek, 1999, Glogovšek, Beloglavec, 2000). New communication ways are established between banks and customers requiring an adaptation in the behaviour of both partners.

ICT is perceived as the key element in the development of management methods and introduction of new management techniques. The introduction of new ICT requires constant innovation activities in both organisation and management (Bučar, 1999). In addition, ICT has a central role in reorganising the division of labour in the knowledge-creation process. The introduction of ICT dismantles traditional managerial hierarchies for it necessitates flexible organisations (Močnik, 1999). Management of such changes poses significant problems. Obstacles to the successful implementation of new technologies in services management are evident and range from the resistance of management and employees to 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 the analysis of 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 the improved efficiency and competitiveness of companies via technological and organisational changes, better quality of products and services, the increased variety of distribution channels, improved communication and interactivity with suppliers/customers, easier access to goods and services (in time and space).

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

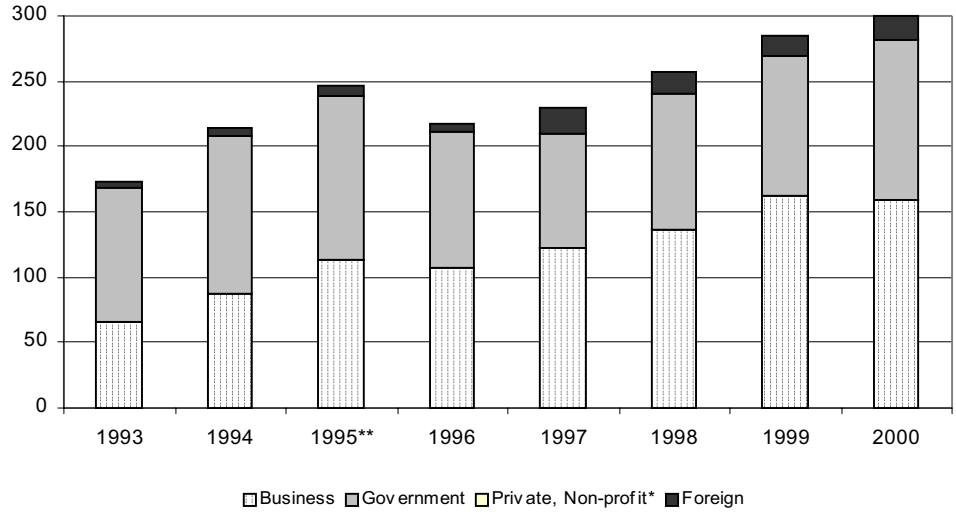
D.4. Trends in innovation and R&D

In the 1990s the Slovenian government followed the strategy advocated by orthodox liberal economists, whereby technological restructuring was to be led by market forces. The increase in competition due to the open and liberalised trade policy would by itself force enterprises to act innovatively and rapidly introduce the necessary technological and organisational changes. The government's role was therefore primarily seen as focusing on the elimination of obstacles to full competition (liberalisation, de-regulation) in all sectors of the economy.

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

Slovenia was relatively successful in preserving its R&D system after the transition

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

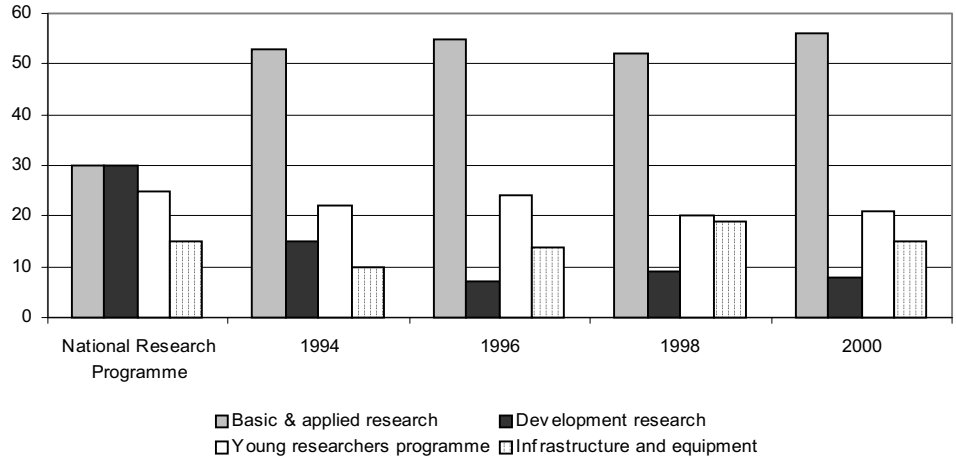


Source: Rapid Reports on R&D for consecutive years, Statistical Office of the Republic of Slovenia.
Notes: * the values are too low to appear in the graph. ** In 1995, the figures for R&D expenditures were overvalued due to a statistical error made in higher education.

(Bučar and Stanovnik, 2001). Some decrease in 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 the survival of most of major public research units (Table D2, Graph D2).

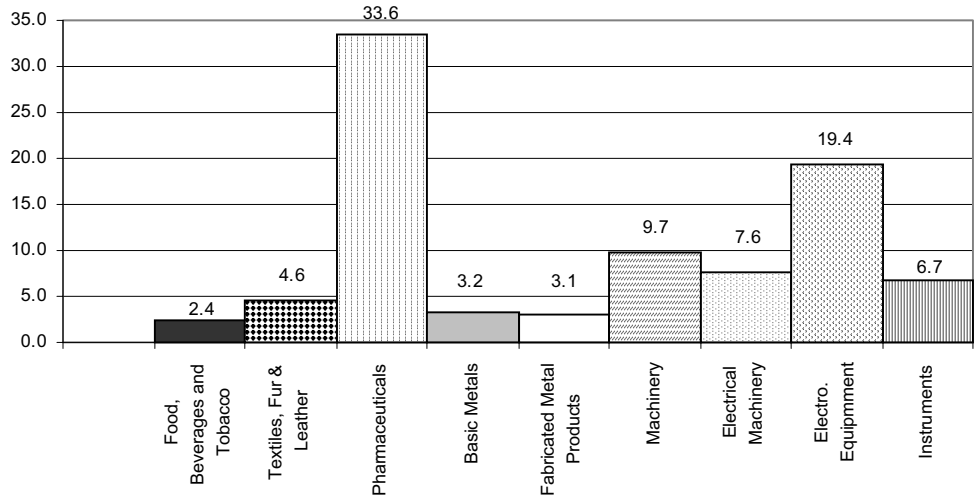
The consequence of the increased share of public funds for R&D and change in the financing system was the reorientation of academic and public research organisations

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



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

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



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

in the direction of more basic[55] research for which money was available at the Ministry of Science and Technology[56] (Graph D3) and looser ties with the business sector. This happened even though the National Research Programme accepted in 1995 had set as one of its goals an increase in funds for development research.

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

In recent years business sector investment in R&D has been growing (Graph D2) and by 2000 it amounted to 0.87% of GDP, yet little of that money finds its way into the public research sector (Table D3). In addition, business R&D investment is concentrated in a few sectors in manufacturing (Graph D4, Table D4), which have

[55] For a definition of basic, applied and development research, see the Frascati Manual, OECD 2002.

[56] 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.

traditionally invested in R&D due to the nature of business they are in (for example, pharmaceuticals or telecommunication). The service sector is only gradually spending more on R&D and innovation.

The formation of closer links between the business sector and academic and public research units, along with the stronger focus of the latter on business needs, are issues lying at the forefront of the ongoing debate on Slovenian R&D and innovation policy[57]. The new Law on R&D Activity (passed by Parliament in October 2002) along with the planned establishment of a *Technology Agency*, which should focus on the promotion of innovation & R&D in the business sector and a *Science Agency*, focused on support of public R&D[58] and adoption of the new National Research and Development Programme (under preparation) have the ambition to improve the links between the R&D sector and business by further stimulating applied and developmental research. This would also help channel some of the business sector's R&D investment into the public sector and help in more dynamic technological restructuring. Many projects prepared for financing via EU structural funds involve the area of increased competitiveness and innovation. Yet one of the key problems with Slovenian innovation policy has so far been the gap between what is declared and actually implemented, since several programmes have not been realised as planned (for more details, see Bučar and Stare, 2002).

The recent results of the *Slovenian Innovation Survey* (2003) (Table D5) were not encouraging in view of innovation policy. Data (while not fully comparable with previous surveys due to the somewhat changed sample) reflects no positive trends in relation to the results of earlier surveys, except for a 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 just 37% of their production programmes over a five-year period, for those with majority foreign ownership the figure is 55%, while in developed market economies the most competitive companies change 75% of their programmes during the same time period (Sočan, 1998).

Apart from major barriers to the innovation process, which refer to the process of marketing an 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 public sector institutions, and in the administration. In addition, the understanding of innovation activity in Slovenia is still biased in favour of strictly technical issues. Hence, improvements in organisational methods or a business culture change are usually not deemed instrumental for increasing the competitiveness of firms to such an extent as a technical innovation. This refers in particular to services where innovation is usually not carried out through formal research and development, but mostly through

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

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

organisational change and marketing methods. This poor perception of innovation potential in services is further aggravated by the historical neglect of services in transition economies (Bučar, Stare, 2002).

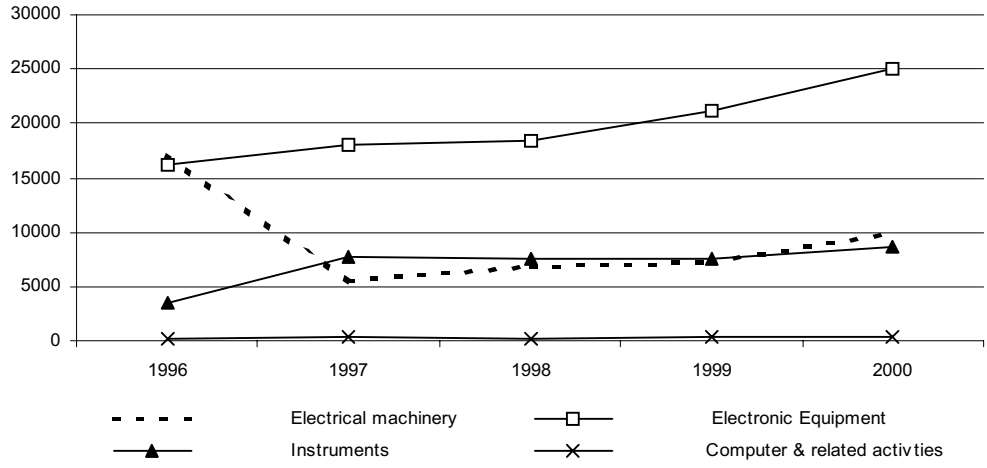
D.4.1. R&D and innovation in ICT-related sectors

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 shows variations in some years, partly on account of a different statistical methodology and partly due to the decline/growth of certain ICT-related activities (Table D6 and Graph D5).

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

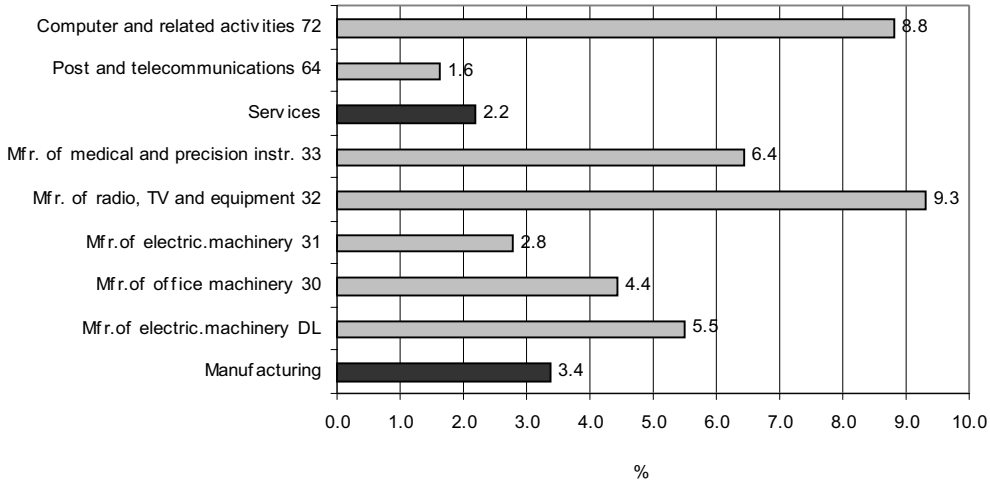
Innovation intensity (the relation between innovation expenditure and turnover) of firms in ICT-related sectors (Graph D6, Table D7) is in many activities above the average in both manufacturing and services. Like in R&D investment, also in innovation intensity the manufacturing of radio, TV and telecommunication equipment leads with 9.32%. This activity is characterised by the highest share of innovative enterprises (over 48%) and a high number of in-house research facilities. All these facts reflect at least two things: the ICT sector is highly innovative and, due to this, companies wanting to survive and grow have to actively invest in R&D

Graph D5: **R&D investment by ICT sector, 1996-2000, EUR ’000**



Source: calculated from Rapid Reports on R&D for consecutive years, Statistical Office of the Republic of Slovenia.

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



Source: calculated from Rapid Report on Innovation Activity, 2003, Statistical Office of the Republic of Slovenia.
Note: * the relation between innovation expenditure and turnover

and innovation. In the area of radio, TV and equipment the high innovation intensity can mainly be attributed to one company (Iskratel), where a significant number of staff is engaged in R&D for Siemens.

D.5. Impacts

The trends in IT investment reflect a different level of readiness for the IS among economic sectors. However, the high levels of investment in ICT made by the public administration have to be accompanied by organisational changes and training to fully absorb IT's potential and contribute to the efficiency of the 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 usually happens, it is the unsuccessful stories that attract most attention.[59]

Current innovation and R&D policy, while well equipped with various mechanisms to promote innovation, has not gained sufficient attention of the top economic policy-makers when it comes to funding these mechanisms. This is why many planned activities focusing on innovation and R&D promotion in the business sector are left

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

unimplemented or their funding covers less than 20% of actual needs. Especially the links between the relatively well-funded and organised public research and the corporate sector need to be strengthened. This would enable researchers to better contribute to economic growth and technological restructuring, including the diffusion of IST applications. Another obstacle to closer co-operation between public research and business is the relatively low education level of R&D personnel in the business sector (in 2000, only 172 researchers with a Ph.D. out of a total of 2,701 Ph.D. researchers employed in R&D units worked in the business sector), implying that much internal research is more in the category of developmental projects than basic or applied research.

The overall weaknesses of the innovation and R&D system (see some of the indicators in the EU Innovation Scoreboard, 2002) also apply to innovation and R&D in areas relevant to the IS. Here, too, the co-operation between research capacity in public research institutes and industry needs to be further strengthened, especially since many important actors in the ICT business[60] can help increase the sophistication level of the on-going research by providing new equipment and information from their global activities on new solutions and research trends. The co-operation is somewhat stronger in the area of telecommunications, where researchers at public R&D institutions are traditionally more linked to the business sector.

Another of the weaknesses in the area of ICT public research is the lack of co-operation among researchers at different public R&D laboratories (be they research institutes or universities), which leads to the already fragmented capacity being further broken down into very small units of three to four researchers per topic. Such small teams are unable to provide the kind of systematic support and the complete solutions industry needs. On the other hand, there are several Slovenian internationally recognised researchers in the ICT field, who carry out their research as individuals in co-operation with colleagues abroad. The formation of networks of excellence – following the EU's VIth Framework example – could be one of the ways to boost co-operation among researchers at academic and public research institutions and combine the knowledge of them all in developing solutions and new technologies for business.

The planned reorientation of current R&D policy towards strengthening the business focus of R&D (Guidelines for the National Research and Development Programme, 2003) should significantly contribute to the transition to the Information Society. Identification of priority areas[61] has even in the preliminary phase clearly pointed to information technologies and related applications as one of the major priority areas, not only because of the current high level of investment in R&D by the electro and electronic sectors (telecommunications equipment)[62], but also because of the expected spill-over effects of ICT diffusion and use on other sectors in the economy. In policy circles it is believed that the promotion of IS-related research is one of the most important instruments in the successful transition to the IS. This is reflected in debates

[60] With their ties to foreign partners or being from abroad themselves, like Microsoft Slovenia, or IBM Slovenia.

[61] Research project on technology networks carried out by Institute of Economic Research as a background to the preparation of the NRDP (Stanovnik et al., 2003).

[62] See Graph D4.

on ‘technology networks’, which are to receive special governmental support and should combine industrial and research capabilities. The 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 built upon. The research should focus on ICT as specific new technologies, but should also include research on ICT-enabled business solutions, e-commerce and e-business and the development of new commercial and public services. The Guidelines for the 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 ones to a specific issue.

E. Information Society Technologies Diffusion

E.1. SWOT analysis

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

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

Weaknesses with regard of IST's diffusion are detected in several areas. High costs of Internet access, the low share of the population with a tertiary education and the low availability of e-content in the Slovenian language hamper the faster expansion of Internet use and of e-commerce. Inadequate ICT equipment in the education system (insufficient number of PCs per 100 pupils), coupled with deficient ICT skills of educational staff present a further weakness in the IS' implementation as the education sector has the largest potential and responsibility to generate a pool of human capital with advanced skills for the Information Society. The business sector

is well equipped with ICT, however ICT capacities and applications are poorly exploited. This has to do with the lack of interdisciplinary knowledge and skills needed to better utilise ICT. This factor seems to be crucial for the IS' implementation in the private and public spheres.

The fundamental **opportunity** for the diffusion of IST refers to the expansion of e-commerce 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) since interest in e-services is very high. New services and contents will increase the efficiency of businesses and the public sector and benefit other actors as well. The creation of networks of interested actors could be very instrumental in this regard. If the utility and user-friendliness of the new services and technologies is provided, they could be adopted by large numbers of the population.

If the policies fail to provide a coherent and co-ordinated approach to realising the IS at 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. All stakeholders (business sector, government, public sector, civil society) should make parallel efforts to encourage IST use to thereby exploit the possible synergies. With the growing use of e-commerce, issues related to security will grow in importance. If the awareness of security problems is not raised and threats not addressed at all levels, losses could arise, undermining the confidence of businesses and individuals in e-commerce. As a consequence, all stakeholders could be deprived of the benefits and IST diffusion might experience a slower pace. In addition, the education gap needs to be narrowed by a systematic policy approach towards increasing the share of the population with a tertiary education, the acquisition of interdisciplinary skills, dismantling the problem of functional illiteracy and the low level of engagement in lifelong learning. Failing to improve the situation regarding the education gap may become the main determinant of the digital divide.

E.2. General trends

While no systematically collected data on the use of Information Society technologies (IST) in different service or manufacturing sectors is available, it may be presumed from the evidence in Section D.5. (Table D1) that those sectors which have invested in ICT more heavily are probably also more intensive users of ICT. Accordingly, service activities should have much higher IST diffusion rates than industry, and of those wholesale and retail, transport and communications, financial intermediation and public administration should be at the forefront. Such an approximation does provide some indication of IST's diffusion, however, our assessment of IST diffusion relies on data related to the use of individual elements of IST (e.g. computers, telephony, the Internet, e-commerce) in general or in households, public services and the corporate sector. These data are collected by the research team at the Faculty of Social Sciences and were also recently published by the Statistical Office of the Republic of Slovenia as official data[63] (see Box E1). Where available, data on individual sectors are also presented.

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

According to many surveys, Slovenia ranks high or the highest among transition countries in terms of both telecommunications infrastructure and equipment, fixed and mobile lines, and in terms of the number of PCs per inhabitant and Internet penetration (Statistics in Focus, 2002[64], ICT, Enlargement Futures, 2002). The recently published Digital Access Index (DAI) by the ITU confirms the high rating of Slovenia, which is the only candidate-country to be categorised **among high-access countries concerning ICT access**. The DAI combines eight variables, covering five areas to provide an overall country score: availability of infrastructure, affordability of access, education level, quality of ICT services, and Internet usage (ITU, 2003).

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

There is few data on regional differences in the use of IST in Slovenia. However, some analysis confirms that Ljubljana as the capital city has above-average IST penetration rates (Trček, Lenarčič, 2003).

E.3. Penetration and diffusion of Information Society technologies

E.3.1. Telephony

Since the middle of the 1990s, Slovenia has invested heavily in modernising its telecommunication network. The fixed telephone network is fully digitalised and the penetration rates for fixed lines reached 50 lines per 100 inhabitants in 2002, thereby 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 and 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 1990s and approximation with EU laws, tariff rebalancing is being continuously implemented. The monthly line rental charge of the fixed incumbent operator in mid-2002 amounted to 15.7 €/PPP[65] which was close to the EU average. Prices of local and international calls are below the EU average (IBM, 2003). In 2003, a further rebalancing towards increasing the costs of local calls was scheduled but not implemented due to the possible impact on inflation.

[64] 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.

[65] Purchasing power parity.

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

Analogue mobile telephony was introduced in 1991 but its expansion was quite limited due to the high costs of equipment, subscription and services. On the contrary, penetration of digital mobile telephony has advanced much faster. This was additionally spurred on by the introduction of prepaid packages, driven by the entrance of the second operator in the market. While the penetration rate amounted to 1.4 mobile subscriber lines per 100 inhabitants in 1995, it had increased to 88 in 2002 (including users of prepaid packages) (Table E1). Parallel to dynamic developments in both areas of telephone services, the number of applications for fixed telephony connection has decreased substantially[66].

E.3.2. Computers and the Internet

The availability of computers among the population and households is relatively good compared to other candidate countries (Table E1, Table E2). In the late 1990s Slovenia easily matched the EU average in terms of the number of PCs per 100 inhabitants, which was very important for a fast Internet uptake. In 2000, Slovenia started to lag behind the EU average in terms of PC penetration and, in 2002, it had 30 computers per 100 inhabitants.

Slovenia picked up on Internet use relatively early and reached the EU level in 1999 with 14 percent of the population using Internet[67] (Table E1). However, the dynamics of Internet usage slowed down by the end of the 1990s. Since 1995 the share of active users of the Internet (those using the Internet at least once a month[68]) in the total population increased from 3 to 29 percent in 2002 (Table E1). The analysts state that **diffusion of the Internet in Slovenia came in three waves.** In the first wave, prior to 1995 Internet users were predominantly students and academic people who could use their free access to the Internet via Arnes (an academic server).

[66] The number of those who applied for the first time for a fixed telephone connection in 2002 accounted for only 611 individual cases, revealing that the demand for fixed lines decreased substantially from the mid-1990s (Table E3).

[67] 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 population group selected, the Internet penetration rate differs substantially and in Slovenia it ranged between 21 and 31 percent 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 an individual country and in comparisons of Internet usage between countries.

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

Box E1: Research on the Internet in Slovenia (RIS)

The RIS was launched in 1996 as an academic and non-profit undertaking at the Centre for Methodology and Informatics, Faculty of Social Sciences of the University of Ljubljana, 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 the telecom operator) were highly interested in the initiative and in providing financial support to the project. The RIS project has systematically researched IS issues since 1996 and become the leading and most comprehensive Slovenian institution in this area. The representative telephone surveys are conducted regularly on a yearly basis among households, companies and education 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 e-banking, web-site visitation, e-government, tele-work, the digital divide, ICT indicators etc. The RIS project regularly (twice a year), measures the Internet penetration. In 2002, besides the standard definition of an Internet user - "Do you use the Internet (including E-mail, Mobile) – the definition drawn from the Eurostat survey applied in EU countries, in June 2002, was applied in the RIS June 2002 survey. Similarly, the Eurobarometer definition from the December Flash Eurobarometer survey was also applied in the RIS December 2002 survey. The study shows serious discrepancies among the three definitions of Internet users, which has to be taken into account in any international comparisons of Internet penetration. http://www.sisplet.org/ris/ris/index.php

The second wave came in 1995 and 1996 when computer-oriented users joined, together with the pupils from high and primary schools due to the start of computer literacy programme (see Section E.3.6). Since 1997, the Internet using population has become more diversified since access to the Internet from households has started to increase (Trček, 1999).

Data for mid-2002 reveal that Internet penetration amounted to 35 percent[69] while data for December 2002 again pointed to the steep increase in the Internet penetration rate to 45 percent of the population aged over 15 years. However, the lag behind the EU average of 53% remains significant (SIBIS+, 2003). The use of the Internet in Slovenia is growing for both business and private needs. For private needs, the Internet is most frequently used for e-mail, searches for general information and also for training and education (RIS, 2003a).

The main reason for Slovenia lagging behind the EU is believed to be the costs of Internet access[70] (including the costs of PCs) and the relatively low share of the population with a tertiary education[71]. The available data show that the latter are the

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

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

[71] 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).

most intensive users of the Internet. In 2001, 72 percent of the sample population with a tertiary education were Internet users (Vehovar, Kuhar, 2001). Another obstacle important for any further expansion of the Internet seems to be the **lack of e-content and e-services** in the Slovenian language attractive to different segments of users, although interest in IST services among the population is among the highest in the EU and newly acceding countries. This is further confirmed by the fact that in Slovenia the Internet is more often used for general purposes (e.g. searches for information, education) than in the EU, while the opposite is true for advanced applications (e.g. filing various forms) (RIS, 2003b).

Currently, several Internet service providers are active in the Slovenian market. The most widely used is Siol (50% of households and two-thirds of the corporate sector), which is a subsidiary of the national fixed lines operator Telekom, followed by Voljatel. The latter was established in late 2001 and provides free Internet access[72]. This has attracted quite a large number of Internet users as the total costs for Internet use have 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 (viruses, 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 card misuse, only 1% of Internet users experienced troubles in both 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 a lower awareness of 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 percent 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).

The Digital Divide Index[73] for Slovenia is 45%, meaning that the risk groups are 45% as likely to use a PC/Internet (the EU average is 53%, and the average for newly acceding countries is 42%). The smallest gap between the risk group and the average population is observed for gender (93%) while gaps for income risk group and age risk group amount to 43% and 35%, respectively. The largest divide between the average population and the risk groups is evident in terms of education and amounts to 7.5% in Slovenia and 27% in the EU countries (SIBIS+, 2003).

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

[73] The 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 the population average. The higher the value, the lower the divide.

E.3.3. E-commerce

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

E-commerce is only in its infancy in Slovenia, looking from the supply or demand points of view. According to data collected by RIS for the end of 2001, 20% of companies sold goods or services via the Internet and 12% were selling and buying via the Internet. Anecdotal evidence suggests that e-commerce 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 biggest suppliers of services via the Internet are the banks, although other companies are also introducing parallel distribution channels (e.g. on-line tourist service bookings, ticket sales for different cultural events). On the other hand, the share of Internet users who bought or ordered goods and services via the Internet in 2000, 2001 and 2002 amounted to 16 percent, 12 percent and 21 percent, respectively (RIS, 2003a). 18 percent of Internet users carried out on-line banking in 2002 (Table E1)[74]. The comparable shares for the EU in 2002 amounted to 35 percent for e-commerce and 31 percent for e-banking, which confirms Slovenia is lagging behind the EU (RIS, 2003a).

Nevertheless, new applications are being developed which will enhance e-commerce use among companies. In 2002, the Chamber of Commerce and Industry[75] (CCI) started the e-SLOG project to develop and harmonise standards for the exchange of e-documents between companies (orders, dispatch documents, invoices, payments) and incorporating e-signatures. The project will be implemented in consecutive phases and over four sub-projects. The final objective of the project is to link the business sector, banks and public institutions on a common e-platform to facilitate and encourage e-commerce.

E.3.4. IST in companies

Companies differ in their IST use depending on their size. The number of computers per 10 employees tends to be higher in smaller companies than in larger ones (Table E4). In 1996, companies differed significantly regarding their access to the Internet,

[74] While there are no data on the share of e-banking in total operations, banks in Slovenia intend to increase the share of e-banking to 70 percent of total operations. All major banks provide e-banking.

[75] A large number of Slovenian companies participate in the project either as users of e-commerce or as suppliers of hardware, software and related solutions. The Bank of Slovenia, Government Centre for Informatics, Tax Authority of the Republic of Slovenia, Statistical Office of the Republic of Slovenia are also co-operating in the project.

with large companies taking the lead, while in 2002 these differences had disappeared as almost all companies, 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).

A recent survey of establishments with Internet access by size or sector reveals that Slovenia is rated very high in comparison to the EU-7[76] (RIS, 2003c). To access the Internet, companies in 2002 most commonly used ISDN access, followed by ADSL and modem access, while 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 percent of companies had web pages, this being similar to the EU-7 average. On the other hand, Slovenia lags behind the EU-7 average in terms of more advanced technologies, e.g. Intranet, Extranet, video-conferencing and EDI technologies (RIS, 2003c).

Another view of 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 stock monitoring (over 90 percent of companies in the sample), while IT use is much lower in computer-aided programming or computer-aided designing of products (approximately 50 percent of companies in the sample). The available evidence shows that only the largest companies which have reorganised their processes also use IT to support their relations with suppliers or clients. The main obstacles to any faster introduction of IT in the total production process are related to the **deficient knowledge of IT by employees, the lack of IT specialists in companies, the lack of capital in general and the 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[77] (Werber, Zupančič, 2002). On one hand, PCs and Internet penetration in companies is quite high while, on the other, the exploitation of ICT potential is limited to individual business functions. This can be explained by both the lack of accompanying organisational change which integrates ICT into business processes in a holistic way and the lack of interdisciplinary skills. This points to both deficiencies in the education system (IT specialists do not get knowledge of the organisational and managerial changes that accompany IT introduction) and to an underestimation of the complexity of changes by the management of companies when introducing IT.

The empirical study on the opportunities and threats of e-commerce based on a survey of companies revealed that companies are aware of e-commerce's benefits and believe that those which will be the first to introduce e-commerce will gain substantial competitive advantages over the followers. The security of data, protection of the privacy of transactions and of personal data are considered the main factors hampering e-commerce in Slovenia. As to those factors which could foster e-commerce, the following were attributed the most importance: use of a secure

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

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

electronic transactions standard, the diffusion of new digital media (e.g. interactive TV, mobile telephony), the legal framework in the EU that encourages confidence in e-commerce, and competition among new suppliers of services (Pucihar, 1999).

E-commerce offers an extraordinary expansion of opportunities for trade in services domestically and in international trade. Its significance is much higher in the domestic than in the foreign trade of services, but for the latter e-commerce is an important way of improving relatively modest tradability[78]. Although services have been traded electronically before (phone, fax, EDI), the Internet has 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 e-commerce for trade in services, a country has to generate competitive services that can be exported electronically[79], apart from providing infrastructural networks and Internet-access services. Recent analysis reveals that Slovenia and other candidate countries have a very limited capacity in services that 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 percent to just 23.6 percent. This shows that CEECs will only be able to reap modest benefits from e-enabled services exports in the future if they do not expand their exports of the above mentioned sub-categories of services, which can be traded across borders electronically.

E.3.5. IST in households

In spite of the fact that the penetration of fixed telephone lines in households was relatively high in the middle of the 1990s, it increased further and in 2001 reached 95 percent of all households (Table E2). The share of households with computers in 2002 amounted to 58 percent, significantly surpassing the figures for 1996. **Households' access to the Internet has grown quite dynamically** since 1996 and in 2002 it accounted for 37 percent. The slower growth seen in 2001 is attributed to the relatively high costs of equipment and of Internet access (Vehovar, Vukčevič, 2000). Dial-up access is the most widely used mode of access to the Internet for households as well as for companies due to the high charges for leased lines.

[78] 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. E-commerce decreases some of the barriers in the foreign trade of services.

[79] 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 only applies to those services for which pre-purchase stage, ordering/payment and delivery can be provided electronically across borders.

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 Internet providers using the fixed telephone infrastructure and those using cable, the aggressive marketing of ISDN/ADSL by the largest Internet provider Siol and the fall in the total costs of Internet access.

E.3.6. IST in the education system

The situation regarding the availability of IST is worse in schools. The number of PCs in primary/high 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 with the EU did not narrow (Table E5). Schools' access to the Internet has improved significantly since 1995 and in 2000 almost all primary and high schools had Internet access[80] (Table E5). However, the share of pupils using the Internet in schools in Slovenia amounted to 49 percent (June, 2002) in comparison to 62 percent in the EU. Slovenia's lag here might be explained by the small number

Box E2: E-School Project

Within the framework of the project named E-school, undertaken by the Ministry of Information Society in co-operation with the Ministry of Education, Science and Sport, the doors to the first four E-schools in Slovenia opened in October 2001. E-schools are regular primary or high schools, however their use of ICT is much broader than in other school, owing to their better infrastructure and equipment. In 2001 and 2002 both ministries spent approximately EUR 590 000 on equipping the e-schools with hardware, software and Internet access. Each of the e-schools has a local area network, a wide area network (usually via leased lines), a server, 11 computers, laser printer, colour printer, scanner and related software. The main objective of this project is to ensure free access to the Internet to students and teachers, as well as to the broader public, since e-schools are included within the network of freely accessible public e-points with the aim of teaching people to live with the IS. In e-schools, users can communicate electronically and use other e-services, irrespective of their computer skills as mentors provide help and instructions on how to use the ICT. At present (April 2003) there are 21 e-schools across Slovenia although they are located primarily in places where ICT infrastructure is modest and where no other public e-points are located. The activities (especially education, group work, discussion, workshops, etc) in e-schools are prepared by the schools themselves or in co-operation with local authorities and companies. Non-school users mainly use e-schools to search for information on the Internet, to work with documents, for educational purposes, for e-mail services. So far, there are 25 non-school users per day on average in e-schools.

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

of PCs in schools and by the fact that only one-fifth of schools have 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-year programme Computer Literacy Education to stimulate the use of computers in schools by providing finance and training. Overall, this programme was successful as it provided additional finance to schools to buy computers and enabled pupils to acquire basic computer knowledge. However, deficiencies remain and refer to the availability of infrastructure (PCs, high-speed Internet access) and to the 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, local authorities and schools. Major initiatives to be implemented include: a Slovenian network for education (SNE),[81] computerisation of education structures,[82] improving ICT education and training of educational staff, stimulating research and development related to ICT use in schools etc (ICT in Education, 2003). Another action undertaken jointly by the two Ministries refers to e-schools (Box E2).

E.3.7. IST in the health system

There is no data on the use of ICT in the health sector, except for data on investments in IT by the health sector in the 1996-2001 period (Table D1). These figures reveal that the 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 the health sector refers to the introduction of a health insurance card. It simplifies the procedures of health insurance rights' authorisation, which has proved very useful and convenient for both citizens and health professionals (see Box E3).

Box E3: Health Insurance Card

One of the more advanced segments of informatisation in the health sector is the introduction of the health insurance card. The project to develop and introduce the card started in 1995 and since October 2000 the health insurance card is the only document for implementing compulsory and voluntary health insurance rights in Slovenia. This electronic document was issued to all people duly covered by compulsory health insurance in Slovenia, i.e. to the entire population of close to 2 million. The card allows the easy and direct transfer of data between insured persons, the insurance company and health care organisations. Data electronically recorded in the card are accessible for reading only to authorised health professional

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

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

Box E3: Health Insurance Card - continued

cardholders. 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 of card is called a smart card. Any reading from and writing to the card is controlled; the use of a health professional's card and the appropriate hardware and software is required.
Presently, the card only stores health insurance, identification and administrative data. Yet, the card system is available for recording 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 required to implement the system were established. In accordance with these legal bases, technical and organisational conditions for system operation were 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 certificates electronically and receive them by regular mail. **http://www.zzzs.si/kzz/ang/enghtml/elementshtm/hic.htm**

E.3.8. IST in the public administration

The traditional role of the 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, the public administration still has a long way to go. To improve the efficiency and quality of public services, the public administration has to pay much more attention to upgrading the structures and processes based on the introduction of advanced ICT. This requires more time and above all **additional training and improvement of the skills** of civil servants.

Awareness of the significance of ICT for the efficiency of the public administration is increasing. According to the Economist (October 20, 2001), Slovenia is a pioneering electronic government by holding most of its cabinet meetings on-line. Preliminary results of the analysis on the use of ICT in the public administration reveal that the Slovenian public administration is quite well equipped with ICT (PCs, Internet access). At the beginning of 2003, 94 percent of workplaces in the public administration had Internet access, while 87.5 percent of public administration bodies had a web presentation (Berce, 2003).[83] However, the ICT infrastructure for

[83] 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 the 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.

the supply of e-services by the public administration is only a precondition that needs to be supplemented by solutions and services for citizens and for the public administration itself. At present, only a limited range of e-services is available to citizens (information, downloading of official forms, communicating with the public administration via e-mail). The modest availability of e-government 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 this regard (SIBIS+, 2003). It is believed that implementation of the e-government strategy and the Action plan will spur the expansion of e-government services to citizens, businesses and the public administration (see Section F).

E.3.9. IST in the media

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

Box E4: Health advice over the Internet

Some years ago, the commercial broadcasting company POP TV introduced a weekly show on health in its regular TV news. The show provided brief information on various illnesses, novelties in the healthcare system, new medicines, etc. The response of viewers was very positive and they could also obtain additional information related to health and disease from the broadcasting company's website. Recently, POP TV launched an Internet website related to health advice (POP's doctors) that enables contacts with doctors from different disciplines by e-mail. Visitors can ask for advice and consultancy regarding health problems and get answers by e-mail free of charge. The service provides anonymity. At present, over 30 doctors provide consultancy and advice. The archives of questions and answers can also be accessed through the website. The inquiry revealed that the biggest advantage of contacts with doctors via e-mail, as perceived by the users of these services is a simple way of communication with doctors (39 %), anonymity (20%) and access to the advice of doctors from different disciplines (18%). The short time needed to get an answer is also well appreciated by users of the service.. Interest in the service was very strong immediately after its introduction (in fact, some doctors were flooded by e-mails) and additional doctors had to be included on the team. This points to the fact that Information Society services enabled by

Box E4: Health advice over the Internet - continued

the Internet bring advantages to all parties involved. The media gets popularity and eventually a wider audience, doctors take on additional patients and the users of POP's doctors' services get easy and free access to health advice. By enabling access to the archive of questions and answers to all visitors to the website the spill-over effects are even broader. On the other hand, the perception of the users of services that the website provides easy way of communication with doctors shows the high level of user-friendliness of such services. This fact is very important for the attractiveness of Information Society services among the general population. In addition, such services are most important for senior people who are not intensive users of the Internet. Thus, interesting contents could also increase the familiarity of the senior population with the new media or at least to dismantle any negative perceptions.http://24ur.com/zdravniki/index.php?section_id=140

E.4. Impacts

The above survey of ICT use in different sectors suggests that Slovenian society has been relatively quick in taking on the new technology, particularly 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 in 1994 launched the programme of computer literacy in the early stages of the education. In addition, the introduction of competition to mobile telephony and consequent entry of pre-paid packages brought extraordinary dynamics to the penetration of mobile telephony.

In the late 1990s, the increase in PCs and Internet penetration lost its 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 the population with a tertiary education, who are usually the first to adopt and use new technologies (Murn, Kmet, 2003). The lack of e-content and e-services in the Slovenian language also presents an important barrier for any expansion of Internet use. Data for 2002 reveal that Internet penetration again gained dynamics and amounted to 45% of the population, although the lag behind the EU average is still substantial. E-commerce is developing very slowly due to different obstacles (lack of necessary skills, security considerations), but also due to the lack of a 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 mainly used in individual business functions and only top ranking companies have introduced IT as part of their comprehensive business processes reorganisation. The experience with the latter demonstrates that the emphasis is predominantly on the informatisation of existing processes without the necessary organisational change and change in business culture.

Besides, interdisciplinary knowledge related to ICT's introduction to the business process is deficient.

There are examples of the 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 within a network that would enable a fuller utilisation of IST. For example, use of the health insurance card could be extended to recording and storing additional medical data and not only to health insurance, 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 inconvenience to patients when changing their doctor and transferring personal medical records. The public administration has only in the last two or three years undertaken more vigorous actions leading towards the intensive introduction of IST. The effective implementation of different actions (e.g. electronic filing of income tax returns and the availability of a broad range of e-government services) is critical to the further dissemination of IST among the population and to building up citizens' confidence in IST.

In general, the scope and scale of possible IST applications seem unlimited. At present, the capacity of IST and its diffusion in the private and public sectors in Slovenia is utilised only to a limited extent. Apart from infrastructural availability and costs, the capacity to absorb new technologies and services matters as well. This is determined by the knowledge and skills of all actors involved, the perception of the utility of services and the user-friendliness of new technologies for the majority of the population. Knowledge and skills are not only reflected in the attained level of education, but also in interdisciplinary skills, functional literacy and lifelong learning (for more details, see Section G.3.).

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

F. Institutional Capacities and Regulatory Background

F.1. SWOT analysis

Strengths	**Weaknesses**
- Adoption of legislation in telecommunications and its harmonisation with EU rules - Early adoption of the Electronic Commerce and Electronic Signature Act - The government has adopted a strategy of the IS' development and initiated several projects aiming to enhance the Information Society's development (e-government, e-health, e-schools, e-cities)	- Slow implementation of fixed telephony market's liberalisation - Postponing of the privatisation of the 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 the public sector and full liberalisation of the telecommunication market - Improvement of human resources in regulatory bodies needed for the efficient implementation of regulations	- Weak political will and commitment to fully implement the liberalisation of telecommunications and implementation of strategies and policies aiming to enhance the IS' development

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

Weaknesses in this regard mostly arise from slow implementation of the adopted legislation, human resource deficiencies in ATRP and the postponed privatisation of the incumbent operator of fixed telephony. Despite the fact that the regulatory framework for fixed telephony's liberalisation was set up in 2001, Telekom Slovenije remains the only operator for national calls and is very slow in complying with the regulation, the most obvious area being a delay in concluding agreements for inter-network connections and in unbundling the local loop. An important impediment to any faster implementation of the regulations is the lack of skilled and experienced

personnel in the independent regulator, which is therefore unable to regulate the market promptly and efficiently. Further, the privatisation of Telekom Slovenije has been postponed several times because of the deteriorated international environment for telecommunications business. Both the lack of competition and delaying of privatisation seem to be crucial in hampering the faster development of telecommunications.

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

Big **opportunities** regarding regulation and institutional capacities are seen in the full and accurate implementation of defined strategies and projects in the public sector as well as in the full and accurate implementation of regulations in telecommunications. As a member of the EU Slovenia will be encouraged to fully implement its regulations and further adjust its legislation to current changes in the EU's rules. Simultaneous adjustment of the regulatory framework and its prompt implementation could give an impetus to the telecommunications market development. In addition, realisation of e-projects 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 civil society at large. A further opportunity to improve the functioning of the market may involve upgrading the human resources in regulatory bodies. A lack of sufficiently qualified and experienced personnel is particularly 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 the smooth transition to the Information Society.

F.2. Regulation of the main markets affecting IST industries

F.2.1. Privatisation

The privatisation process was relatively slow and gradual in Slovenia compared to other acceding countries. The Ownership Transformation Act (OTA), as the core legal basis for the mass privatisation scheme, was adopted in 1992. Public utilities and financial institutions were not part of that scheme. The Slovenian privatisation concept has been a mixture of the free distribution of shares, internal buy-outs with

a discount for employees, and commercial privatisation. Foreign investors were able to participate in the privatisation programmes 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 largely due to the characteristic of the Slovenian privatisation concept that has favoured internal buy-outs and the free distribution of shares. On the other hand, most FDI projects in Slovenia in the privatisation period have been realised as foreign acquisitions, mostly involving companies that were not directly included in the main privatisation law[84] (Rojec, 2001).

Although the privatisation process was mainly concluded in 1999, there still remains an important non-privatised segment of the economy; most of this 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 (underway since autumn 2001[85]) (Programme of State Property Privatisation in the period 2003-2004, 2002).

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

F.2.2. Capital market and financial services

Consistent with the gradual approach taken to reforms in the financial sector, in the 1990s priority was given to the recapitalisation and modernisation of existing companies under the existing – and protected – regulatory framework rather than creating a competitive environment. Changes in regulation, which were the driver of structural change in the Slovenian financial sector, have only occurred during the last few years. The adoption of the Banking Act and the Securities Market Act in 1999 and the Insurance Act in 2000 brought about the opening of the market to foreign competition in the banking, insurance and investment services areas. Pursuant to this legislation, Slovenia continued to control the financial sector through the co-ordinated activity of three supervisory institutions: the Bank of Slovenia for banking,

[84] 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 privatisation is the transformation of an 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 privatised Slovenian companies (Rojec, 2001).

[85] In May 2001, the government endorsed a framework programme for the privatisation of two state-owned banks, the NLB and the 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 the 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 set in the privatisation programme of the NKBM.

the Insurance Control Agency for insurance, and the Securities Agency for the capital market. The adopted legislation is completely harmonised with the rules on the establishment, operation and supervision of financial institutions and markets with EU law and other relevant international standards. In 1999, a new Foreign Exchange Act liberalised 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 have helped restore normal financial relations between Slovenia and the rest of the world and fostered competition in domestic financial markets (Simoneti et al., 2001).

In terms of the basic indicators of the financial system's development, Slovenia is a more developed accession country, but it lags far behind the EU member-states. In 2002 the share of total assets in GDP was 86.4% (the EU average was 244.2% in 1997), the share of insurance premiums in GDP was 5.1% (the EU average was 8.4% in 2001), and the share of market capitalisation 23.4% (the EU average was 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 few years. The consolidation process in the banking sector has evolved gradually, most intensely in 2001, when several amalgamations of smaller banks with 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 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 had 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; also see Section F.2.1.).

The slow development of the non-banking financial sector has mainly been influenced by the ownership transformation (privatisation) of insurance companies[86], as well as by the concept of the Slovenian economy's privatisation, especially concerning the long-lasting transformation of authorised investment funds into normal financial institutions (that is, into mutual funds)[87]. As regards the capital market, its

[86] 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 the Triglav insurance company (which has the highest market share, that is 42.7%) and the Sava reinsurance company. The ownership transformation of the Sava Reinsurance company has already finished and the share of non-nominated capital has been set at 99.87%. The procedure is still going on in the Triglav insurance company. With the completion of the ownership transformation of insurance companies, the ownership structure of the insurance sector is expected to be established.

[87] 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 privatisation had started already in 1994, it took eight years for AIFs to exchange all vouchers for privatised shares; the delay was due to the so-called privatisation gap, caused by the fact that AIFs collected much more vouchers than there was available property for privatisation. Moreover, upon the postponement of formal

effectiveness is also partly determined by the related low economies of scale and high unit costs (National Report on Structural Reforms, 2003).

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

F.3. Regulation of the main services and infrastructural sectors

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

F.3.1. Telecommunications

Owing to a distorted tariff policy and insufficient investment in telecommunications infrastructure, the penetration rate in Slovenia lags far behind that in the EU (Jagodič, Medved, 1998, SAEU, 1998). In the past, the tariff policy was not based on cost considerations but on cross-subsidisation among different postal and telecommunications services. The principal reason for lagging behind the EU's telephone penetration standards was the inadequate regulatory framework which came under pressure for change only in the middle of the 1990s parallel to the harmonisation of legislation with the *acquis*.

Liberalisation 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 the public telecommunications network for fixed telephony and provide voice telephony services until the end of 2000. The development of infrastructure and provision of services relied exclusively on government funding of the state-owned monopoly. The provision of telecommunication services for which use of the radio frequency spectrum is needed was liberalised 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

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 privatisation 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).

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 part of the state's share to authorised investment companies and to the Pension Fund.

In 2001, a new Telecommunications Act was introduced to complete the deregulation of the market. The Act opened the fixed voice telephony market up 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 granting licences to new operators. The Agency started regulating the market in May 2002. The Ministry of the Information Society remains in charge of telecommunications policy and 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 from 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 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 a 25% market share) have to ensure access to their networks and public services on a non-discriminatory basis and transparently.

The prices of telecommunications services are no longer administered. According to the Act they should be formed on the basis of the 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. A universal service obligation is imposed on licensed operators. Telekom Slovenije is required to provide a universal service without financial compensation for a period of at least two years after the Act came into force. The Act ensures the protection of consumers of telecommunication services, particularly regarding the payment of bills for services and related disputes (the right to request an itemisation of calls), and the confidentiality and secrecy of data transmitted via telecommunications equipment.

Parallel to Telekom's fixed telephony infrastructure there is also the infrastructure of Slovenian railways, the electric power transmission company – ELES, the 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

the telecommunication capacities of Slovenian electric power companies.[88] The process of establishing a daughter company of DARS started at the beginning of 2003. Slovenian railways are currently lagging behind in adjusting their telecommunication activity to the legislation (Dekleva Humar, 2003).

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

Despite the fact that the 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 a licence for fixed telephony, but they have not entered the market yet. The main obstacle to new entrants is the high price of inter-network connections. The Agency for Telecommunications, Broadcasting and Post (an independent regulator) whose main goal is to enable competition in the market has started setting up cost-oriented prices. The process is expected to be finished by the end of 2004 (Murn, Kmet, 2003). It is believed that competition in the fixed telephony market will provide a new growth momentum for this sector in the future.

The implementation of the new Telecommunications Act appears to be quite a difficult and slow process. The fixed telephony operator seems to be very innovative in trying to maintain its monopolistic position and in not complying with the regulation, the most obvious being the 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 with regard to the tariffs for leased lines in comparison to Telekom's subsidiary SIOL (the dominant Internet provider). In addition, they argue that the Agency for Telecommunications, Broadcasting and Post does not regulate the market efficiently even though 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[89] in the Agency it seems that the political will to implement the regulation is also lacking. Such developments do not benefit development of the telecommunications market in Slovenia and could hamper the implementation of different projects related to the Information Society.

[88] 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.

[89] 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.3.2. E-commerce

E-commerce as the most important Information Society service was legally settled in 2000 by adoption of the Electronic Commerce and Electronic Signature Act, harmonised with EU legislation. One of the Act's most important aims is to encourage the technological development of e-commerce by abolishing all normative obstacles to e-commerce and by making the e-signature (digital signature technology) equal to a hand signature. The Act provides clear rules in the field of electronic message exchange, the use of an e-signature and the rules which settle the actions of e-signature verifiers. The Act also enables the international recognition of the electronic signature (Kmet, 2001). Pursuant to the law on e-commerce, two providers of e-signatures are certified in Slovenia, the Faculty for Electrical Engineering and Computer Science and the Government Centre for Informatics. However, e-signatures have not been widely used till now, which may be explained by the lack of e-services requiring the use of an e-signature. Nevertheless, the relatively early adoption of the law on e-commerce can be seen as giving good foundations for the further diffusion of e-business. It can also be expected that the use of digital signature technology will increase in the near future parallel to a wider range of e-services (for instance, via implementation of the e-government project) (see Sections B.5 and E.3.8).

F.3.3. Intellectual property rights

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

In 1995, a subsidiary of the Business Software Alliance (BSA) was established in Slovenia. Its main goal is to cut piracy levels in Slovenia and, for this purpose, the BSA actively co-operates with other institutions which fight against copyright violations (police, the public prosecutor's office, market inspectorate). According to the 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.3.4. Transport

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

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

In road transport, the main legislation bringing about harmonisation with EU rules is already in place. The most important is the Transport Contract in Road Transportation (adopted in 2001) defining the conditions and modes of operation of passenger and goods transport in inland and international road transport. According to the law, foreign hauliers should obtain a special licence to carry out the transport of goods between two places in Slovenia (cabotage). After Slovenia enters the EU, hauliers from EU countries will be able to carry out cabotage on the same conditions as domestic hauliers (without a special licence). In passenger road traffic, the establishment of a 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.3.5. Energy sector

In the energy sector, the main regulation for liberalisation of monopolistic activity and its harmonisation with EU rules was adopted at the end of 1999, while in 2001 the implementing acts were adopted, regulating: (i) the electricity market, (ii) the provision of energy services and (iii) prices for the use of electricity networks. Liberalisation of the electricity market therefore started in 2001 upon the 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 has been fully liberalised. Liberalisation of the electricity market is controlled by the Agency for Energy as an independent regulatory body. The Agency is also responsible for the 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 Programme of State Property Privatisation in the 2003-2004 period (National Assembly Bulletin, 2002), the state intends to sell 25% plus one share by the end of 2004. The main goals of privatising electricity distribution companies are to increase the competitiveness of these companies, increase investment in electricity distribution, enable the transfer of knowledge and technology and acquire financial resources for investment in electricity production companies.

In the short-term, liberalisation of the electricity market is expected to have a relatively mixed impact on prices. Prices are likely to drop for those 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 approximatley 70% of these) are expected to increase, since

rises here have been restricted by the government for some years. In the long-term, liberalisation of the electricity market as well as the privatisation of electricity distribution companies are expected to have a positive impact on the quality and range of services provided at competitive prices (Murn, Kmet, 2003).

F.3.6. E- Health

One of the characteristics of Slovenia's health system related to IST is the poor information and documentation system for both hospitals and patients. The problem was addressed in the Ministry of Health document Strategic Directives for the 2001-2004 Period, which recognised the setting up of an adequate information system as one of the priorities of health sector development. In 2003, the Ministry of Health accepted the White Paper on Health Reform, where an important emphasis was again given to the development of an 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 also calls for an upgrading of the health insurance card (see Box E3), which currently stores health insurance, identification and administrative data. The process of upgrading card contents with all data regarding the health of each citizen will be implemented gradually in the next 5-10 years. The project has already started and, at the moment, some elements of the "new e-health card" are already prepared (data on allergies, medicines issued and other remedies).

F.3.7. Media

In recent years the Internet has become an important media form, which needs to be legally settled. In Slovenia the main regulation concerning the 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 the media which also encompasses electronic publications. According to the Act, electronic publications are media used by legal or natural persons to transfer media contents via computer connections.

F.4. Regulation of the IST-based public information and services sector

An important step to foster implementation of the 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 an information and communication infrastructure. In line with this guideline, the **Strategy of E-commerce in Public Administration of the Republic of Slovenia** for the 2001-

2004 period (SEPA-2004) was adopted by the government in February 2001. The Strategy was prepared and is being co-ordinated by Government Centre 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 Centre for Informatics established a web portal for e-government providing information and services to citizens, businesses, employees and institutions in the 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 databases, administrative procedures and corresponding forms. For the time being, the portal mostly provides information to citizens while only one e-service is available (citizens can electronically apply and obtain copies of attestation from the register-office)[90]. To fulfil the goals set by the SEPA the public administration will have to overcome several organisational and technological difficulties (Skrt, 2003). Since the public administration also influences the private sector, it is expected that implementation of the SEPA will indirectly have an even bigger influence outside the public administration (Bučar, Stare, 2001).

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

Beside the regulation directly related to IST industries, some other regulations may also have a positive impact on the future development of the IS in the country. One recently adopted law that will encourage use of the Internet and other Information Society services is the **Act on Access to Information of a Public Character** (2003). It defines the procedure of free access to information of a public character at the disposal of public administrative bodies. Pursuant to this Act, public administrative bodies are obliged to publish on their web sites the following information of a public character[91]: (i) regulations related to their field of work; (ii) programmes, strategies, views, opinions and similar documents related to their field of work; (iii) proposals of regulation, programmes, strategies; (iv) public procurement documentation; (v) information on administrative services; and (vi) other information of a public character.

[90] 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.

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

F.5. Impacts

Economic policy should create favourable economic conditions for the 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 increase the efficiency of the financial market. There remains an important non-privatised segment of the economy, with most of it involving state-owned enterprises (public utilities) and financial institutions. The Slovenian financial sector's development level is modest as the main structural reforms in this sector have occurred only during the last few years. However, changes in the regulatory framework together with the forthcoming privatisation in the banking and insurance sectors seem to be promising with regard to increasing the financial sector's efficiency. The latter is crucial for the economy's competitiveness and bears strongly on the environment for the IS' development.

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

Beside the regulation directly related to ICT 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 the public administration of the Republic of Slovenia, the Act on Access to Information of a Public Character, introduction of the web portal e-government, the e-health card, e-schools and e-cities[92] projects. These are quite big and complex projects which, if implemented smoothly, could have a major positive impact on the continuing development of the Information Society.

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

G. Education Sector

G.1. SWOT analysis

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

The education level of the labour force in Slovenia, measured by the average years of schooling or by the share of employees with a tertiary education, showed a positive growth tendency in the 1990s. Especially high is the enrolment of the current generation aged between 19-24 in tertiary education. This dynamic growth of attained education levels 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 reforms of the education system (some are already being implemented) stress as strategically important all topics highly relevant for IS: special attention to the promotion of tertiary education, increase of interdisciplinarity in education contents and active support for lifelong learning. Successful implementation here is a substantial **opportunity**. With lifelong learning (LLL) being a special focus within the Single Programming Document the gap in participation in LLL is expected to close at an increased pace. The interest in ICT-related education is rising as well.

On the other hand, the current level of education, especially if measured by the level of functional literacy of the adult population, is insufficiently high to guarantee the smooth transition to a knowledge economy. Outdated education systems and

programmes are an important **weakness** of the transition to the IS along with the current under-representation of tertiary education in terms of the public resources devoted to education. The need to follow trends in the labour market is not something the majority of tertiary students is concerned with. In fact, some study to avoid facing the labour market reality. Modern educational concepts also call for the closer co-operation of academia with the business sector. The low level of such co-operation and missing motivation to improve this co-operation could be a significant threat to the education system's successful adjustment to IS needs.

The lack of both human and financial resources could hinder implementation of the planned reforms of the education sector. Programme reforms in the direction of more interdisciplinary studies, which would ease the transition to the IS, have been severely hindered by the traditional rigidities within the universities, where change takes much longer. Along with the lack of interest among the adult population in lifelong learning, these represent significant **threats** to bringing the IS into a reality.

G.2. Main characteristics of education 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 a tertiary education (14.8 percent) (EU Scoreboard, 2002) is insufficiently high to guarantee a smooth transition to the knowledge economy. This means that the education level and 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 called for. This is shown on one hand in the unemployment statistics and, on the other, in registered employment opportunities. Among the unemployed, the share of non-skilled workers with very low or no education dominate (the figure of 47% of all registered unemployed has remained constant since 1998 in spite of the various training programmes (Autumn Report, 2002), illustrating that 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)[93]. These trends are gradually being incorporated into the re-skilling and re-training programmes offered by the Employment Agency.

The education level of the population reflects some regional disparities, especially once tertiary-level education is analysed[94]. The figures for most regions are close to the average, but the education attained in the region with highest score and the one

[93] 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.

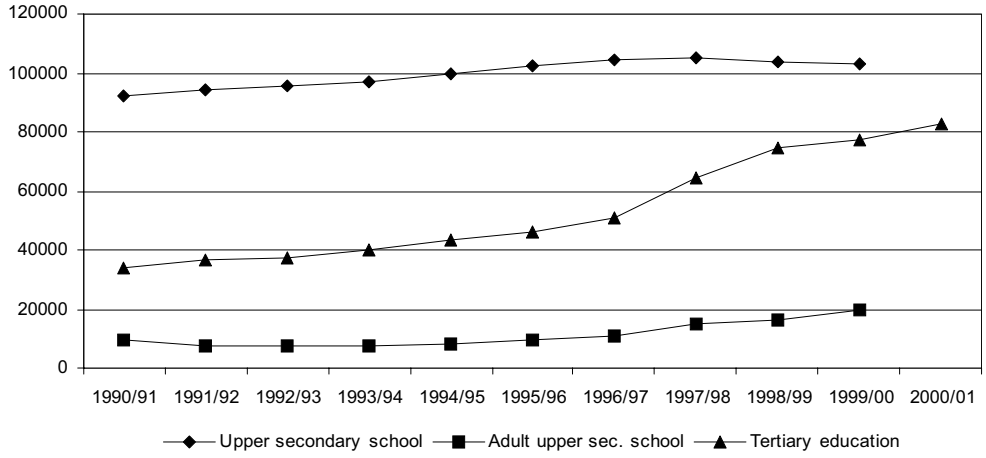
[94] At least two reasons can be mentioned: one is the fact that tertiary education is mostly organised in Ljubljana and Maribor, with graduates often remaining in the cities. The second reason is that the employment opportunities for people with high education are better in urban centres than in more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

with the lowest varies significantly. The Central region had 20.2% of the population with a tertiary education, while the lowest score was achieved in Pomurje (east of Slovenia), where only 5.7% of the population had a tertiary education (Pečar, 2002).

While there seems to be a growing general awareness of the lack of the required knowledge and skills, action is not yet being taken with sufficient determination and intensity. Outdated education systems and programmes are an important obstacle to the transition to the knowledge society and a thorough reform of the education and training system from kindergarten to the university is gradually being implemented. Slovenia is introducing the nine-year primary school and pushing for reforms at high-school level (a change of curriculum, change of teaching methods, enhanced mobility of pupils between different types of secondary schools etc.), but more needs to be done[95] in the area of university education and especially in lifelong learning (Bučar, Stare, 2003).

The greatest contribution to the rising education level in the 1990s came from the significant increase in the education participation rates of young people. The share of generations involved in the education system for longer periods of time is increasing at all levels. Nearly all pupils (97.9 percent in 2002) go to upper high schools after primary school (Table G1, Graph G1). The share of university students in Slovenia is comparable to EU countries – the post-secondary education enrolment rate exceeded 50 percent in 2002. This means that younger generations are staying in education longer and exiting the education system better qualified than previous generations.

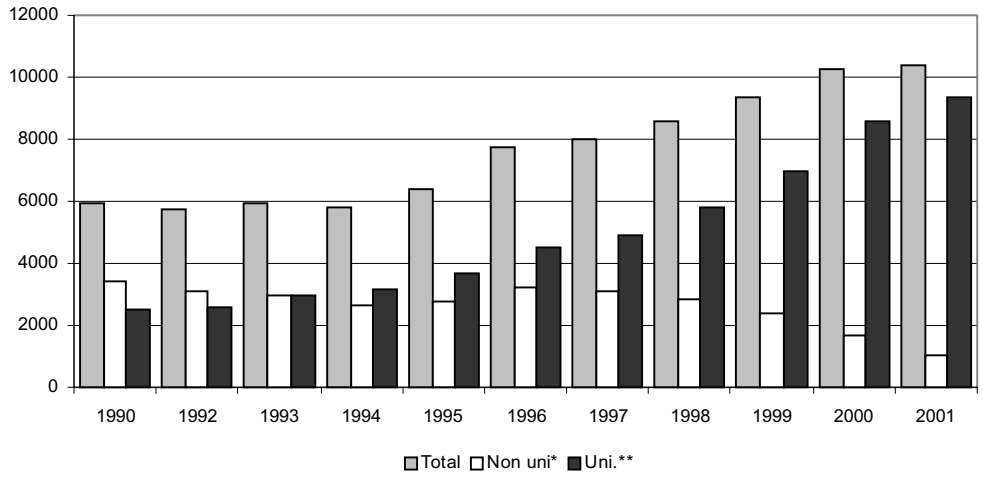
Graph G1: **Enrolment of students in upper secondary and tertiary education, 1990-2001**



Source: Statistical Yearbooks for selected years, SORS.

[95] 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.

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



Source: Statistical Yearbooks for selected years, SORS.
Notes: * two-year higher education programme, ** university programme

While the number of students of university-level education is growing (Table G2), this has not been true to the same extent for the resources involved (financial resources, the professor/student ratio and in the physical space available). This means that the quantitative growth of the student population is not being followed by the quality growth of studying, which is a common complaint among both students and professors. In addition, the programme and organisational change of universities is slow, where the approach leading to more interdisciplinary and co-operative study is often blocked by the rigid rules of the academic world. A relatively common European trend in student enrolment towards social studies, economics and law on account of natural sciences and engineering[96] is present in Slovenia, too. Some attribute this to the downturn in manufacturing, while others criticise technical universities as being unable to modernise their programmes and link them more with technologically-advanced industries. One reason for staying longer in education (the average duration of study at university is 6.5 years), also for enrolling in postgraduate studies, is the fact that it is becoming more and more difficult for young graduates to find employment (see the high unemployment rate among youth in Table A9).

G.3. Key educational issues related to the labour market

From the point of view of the education system and corresponding human capital, Slovenia's labour market faces the following problems (SPD, 2003):

a) **A lower share of adults (above 25 years) who have finished tertiary education.** The proportion of people with a college or university education in

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

Slovenia in 2002 was 14.1 percent, while the corresponding level in the EU was 21.6 percent in 2001 (Eurostat, 2002). This places Slovenia among those countries whose shares of adults with a 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 seen in recent years has brought about an increase in the share of university graduates below 30 years of age (also see Table G3). Still, the share of graduates in Slovenia aged over 30 is below the shares found in the EU.

b) **A low level of functional literacy[97].** According to an international survey (OECD, 2000) of the functional literacy of adults between 16 and 65 years of age Slovenia's population scored similarly to the inhabitants of Poland, Portugal and Chile; namely, the functional literacy of the majority (around 70 percent) is only at the 1st or 2nd level, which in the opinion of the OECD experts is inadequate in terms of the mobility, employability and participation of individuals in social processes. The unfavourable situation in terms of functional literacy calls for an improved network of education institutions, greater accessibility and, above all, a stimulative environment for adult education.

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

d) **The low education enrolment of adults**. According to the level of participation of adults in the education system, Slovenia is classified among those countries which are only beginning to pave their way to a society where the lifelong learning culture is being carried into effect. The participation of adults in education and training is low compared to EU countries, even though on the supply side there has been considerable growth in different course offerings[98]. Slovenia is also lagging behind in the share of the unemployed included in education. This can primarily be attributed to a lack of incentives for those participating in the field of lifelong learning and to the high costs incurred. The

[97] 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).

[98] 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.

most troublesome indicator here is the expressed low interest in lifelong learning among those with a lower educational attainment: those who most need additional education and training are the least prepared to get involved (Mohorčič-Špolar, 2001).

e) **A high amount of drop-outs 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 drop-outs is a greater inflow of workers that have difficulty finding a job in the market, which is ever harder for job seekers without a formal education. Young people leaving school without a qualification are exposed to a greater risk of social marginalisation. The latest data on dropping out according to generation statistics (performance of the 1993 generation by the 1998/99 academic year) shows 13 percent of final drop-outs from secondary education (the percentage of those who left high school without any secondary qualification). Part of the explanation can be found in the very demanding education programmes and the 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) **The 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 the active labour force and certification of professional qualifications. The adaptation and restructuring processes of the school network are too slow. Among the great obstacles which hinder more efficient education and training as well as the quicker application of the latest discoveries in this field are: (i) the too slow adjustment of training programmes and curricula for teachers and teaching staff; (ii) the relatively weak consultancy support for educational institutions and teachers in the introduction of novelties; (iii) the limited budget for the professional advancement of teachers and management of educational institutions; and (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 can ensure the functional inclusion of the education system into wider socio-economic processes and development arising from the knowledge-based society through the concept of lifelong learning. The opening of the educational infrastructure to the wider community (e.g. by the creation of multi-purpose life-long learning – multi-media – Internet access-point centres[99]) needs to be enhanced. A stimulative policy environment for lifelong learning needs to be developed.

Many of the key issues are being addressed in the National Development Programme and included in the annual programmes of the Ministry of Education, Science and

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

Sports. In addition, improving the level of human resources is one of the three priorities found in the Single Programme Document. This reflects the fact that Slovenia is increasingly aware of the need to reform its education system. Yet, even the on-going reforms (introduction and development of the nine-year primary 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 their planning stage (like the promotion of lifelong learning, the Bologna strategy for university education), is even further away.

G.4. Domestic and international mobility of scientific personnel

The low level of mobility of scientific personnel from public R&D to the business sector is an open problem and often discussed at both the Ministry of the Economy and the Ministry of Education, Science and Sports. In an attempt to increase mobility especially from public research organisations to the corporate sector, the government introduced various support schemes including the 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[100]. This is why the debate on the preparation of a new National Research and Development Programme (also see Section D.5.) has brought the evaluation criteria to the fore both as a reason for the low co-operation levels between the corporate and research sectors as well as for the low mobility.

One recent initiative provides scholarships for postgraduate students (master's and doctoral programmes) or young researchers for candidates from the corporate sector: a similar programme was run relatively successfully for a number of years[101] by the former Ministry of Science and Technology. Originally, this programme also had as a policy objective the training of research personnel from the 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 public research organisations and the academic sector for the recruitment of young researchers who were (funds permitting) employed after their graduation in the same institution. Current changes in the programme should ensure that more newly trained researchers will continue their careers in the corporate sector. This would not only contribute to a higher number and better quality of research staff in the corporate sector but also provide the grounds for closer co-operation between the academic and public research sectors with the corporate one.

Much better results have been achieved in the field of the international mobility of researchers, especially in the second half of the 1990s, when Slovenia was able to fully participate in various EU schemes for the mobility of researchers and academics.

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

[101] 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).

In the multilateral field, Slovenia has developed extensive co-operation with individual European research programmes[102] running within the EU, other independent European programmes and with 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 the corporate sector.

G.5. Tertiary sector and research performance in IST-related subjects

In public research institutions and at both universities approximately 200 researchers (in the full-time equivalent – FTE) 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, 6.6% from EU and other international projects and only 1% from foreign business.

Directly involved in research in the IST field are the main three faculties: the Faculty of Computer and Information Science (FCIS) and the Faculty of Electrical Engineering (FEE) at the University of Ljubljana and the 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, the Faculty of Social Sciences (see box E1) and the Faculty of Economics at the University of Ljubljana and the Faculty of Organisational Science at the University of Maribor. An important contributor to research in the 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's and doctoral theses research) at the Faculty of Computer and Information Science at the University of Ljubljana are performed in fourteen research laboratories, which are grouped into six departments[103]. The main sources of research funding are the Ministry of Education, Science, and Sports, the Ministry of the 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

[102] 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).

[103] 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.

supports the majority of postgraduate students by means of individual scholarships. Many applied research projects are co-financed by Slovenian companies. Research carried out in such a highly fragmented manner mostly focuses on relatively specific and narrow fields in the area of the researcher's teaching since the Faculty has no full-time researchers[104] (except those in the Young Researchers programme). The research priorities are left for individuals to decide on and to find financing for. In addition, a growing number of enrolled students leads to more academic work for professors with a negative impact on their research work.

Research work at the Faculty of Electrical Engineering at the University of Ljubljana operates in 9 major fields, 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. The Faculty's participation in international projects is also growing. In the EU 5th Framework Programme, the Faculty participated in eight projects. Several other international projects (COST, NATO, bilateral) are also running.

The Faculty of Electrical Engineering and Computer Science (FEECS) at the University of Maribor has several research institutes[105] which are further divided into basic organisational units called laboratories. These units include groups of courses with similar contents matching the contents of research performed by the 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 these earnings come from the business sector, which is much better than most other faculties. (http://www.feri.uni-mb.si/).

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

Slovenia's tertiary education sector has not attracted any foreign capital yet. Even within the sector, the level of competition is low and has many advocates to remain so. Suggestions on the diversification of types of schools, opening of new universities, privatisation in the tertiary education sector have met a lot of resistance in academic

[104] 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.

[105] 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.

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.

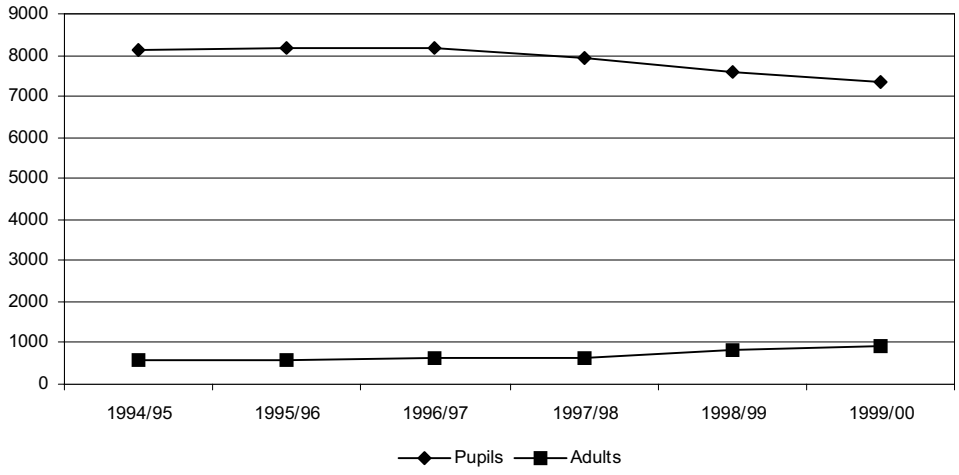
G.6. IST-related education

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

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

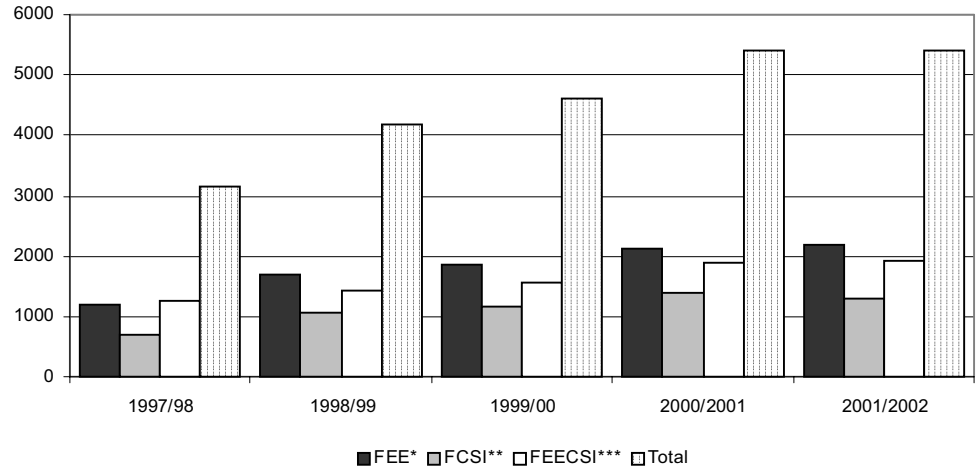
The enrolment level in all programmes of ICT-related education is growing (Table G5). If not limited by the number of places in the first year of studying, the number of students would have grown even faster. The data for applications made since

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



Source: Statistical Yearbooks for selected years, SORS.

Graph G4: **ICT-related tertiary education – enrolment levels (number of students), 1997-2002**



Source: Statistical Yearbooks for selected years, SORS.
Notes: * FEE - Faculty of Electrical Engineering, ** FCIS - Faculty of Computer and Information Science, *** FEECS - Faculty of Electrical Engineering and Computer Sciences

2000 show that every year the number of applications exceeds the number of places. According to the staff at the faculties, such limitations on 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 students.

One particular problem for faculties in the field of computer science is the **low number of graduates** in comparison to the number of first-year students[106] (Table G5). Part of the reason for this can be attributed to the already mentioned fast increase in the number of newly enrolled students without a parallel increase in the funds, leading to the lower quality of education[107]. The other reason is more specific to ICT education. Due to the fast growing demand for ICT specialists, many students enter the labour market as part-time employees already during their studies. This affects their ability to complete their studies and receive diploma. This may cause difficulties in financing the faculties since the level of public resources is increasingly being determined not only by enrolment numbers but also by the number of graduates.

As with most university programmes, the programmes at the the faculties are only gradually changing towards new, more interdisciplinary content. The reasons for

[106] 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.

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

this attitude are relatively complex: from the fact that introduction of a new course has to be at the expense of taking away some 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 the low level of interest of students in content (in their view) not directly relevant to them. Usually it is pressure from the outside (the business sector) that is needed to make such programme changes.

An important source of IST-related education, especially for the 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 on either the number of schools or number of students attending such 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 students are eligible for certain financial support during their training.

G.7. Impacts

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

Even so, the increasing number of the younger generation with a tertiary level of education should in the future gradually provide a better supply of the required human capital for the IS. The level of basic ICT skills is also much higher among the young population. What remains worrisome is the current limitation of enrolments at the tertiary level for ICT studies[108]. This is of serious concern not only to ICT-related industries, but also for business and the public sector alike. Additional efforts need to be made to open these studies to all those wanting to study (regular students and adults). At the same time, it is necessary to promote secondary-level education in ICT to ensure the technical support needed for IST development. In addition, the content of 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 demand is more or less met by supply.

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

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

In the field of IST-related education, more resources are needed especially at the tertiary level, where new options for closer co-operation with the corporate sector have to be explored. While the employment statistics do not reflect the shortage of ICT specialists, the ICT 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' in the labour market. The promotion of the diffusion of IST-related applications in the corporate sector and public administration should go hand in hand with increasing the number of openings at IST-related tertiary studies and the introduction of more multi-disciplinary education.

H. National and Regional Demographic Data and Prospective

H.1. SWOT analysis

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

From the perspective of implementing the IS, the main **weakness** seems to be related to demographic and educational issues. On one hand, there is an increasing share of an 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 the population with a low level of education which do not have the skills necessary for active participation in the IS. Both groups will necessitate the introduction of specific policies and measures in order for them not to be deprived of the IS' benefits.

The biggest **opportunity** in overcoming these weaknesses involves implementation of lifelong learning, which could compensate for the drawbacks. Nevertheless, the results can only be expected in the longer term. Therefore, these weaknesses may turn into **threats** of a digital divide, particularly in remote and border regions with a high concentration of ageing population coupled with the emigration of young people. Timely awareness of these threats and decisive countervailing actions for their alleviation in deprived regions could mitigate the difficulties.

H.2. General characteristics and trends

Beside changes in economic development, a break in demographic development also marked the Slovenian economy at the beginning of the 1990s. The number of inhabitants increased till 1990 and started falling afterwards. The **fertility rate** has been on a falling trend in the last 100 years, but only since 1980 has it fallen under the level that allows the single reproduction of generations. In 2001, it only equalled 1.21, which is one of the lowest fertility rates in Europe. The number of births is affected by various economic factors: limited possibilities for employment and consequently the 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.

The mortality rate has been falling for at least 150 years. Over the last 20 years, **life expectancy has** 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 years 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-states, but longer than in other candidate countries. However, the gaps behind the EU average have been reduced over the last few years (Murn, Kmet, 2002). These trends are also confirmed by a gradual improvement in the human development index (HDI)[109] in the 1995-2000 period. The value of the HDI was 0.852 in 1995 and 0.879 in 2000, while Slovenia's rank dropped from 28 in 1995 to 29 in 2000 (out of 173 countries), indicating that an improvement in the 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 what is necessary to maintain a stable population level lead to the **ageing of the population.** In the last decade, the share of young people (0-14) in the total population fell by 5.4 percentage points to 15.4% in 2001. The population aged between 15 and 64 years accounted for 70.1%, which is 1.6 percentage points higher than in 1990, and the population older than 65 years accounted for 14.5% of the total population (3.8 percentage points higher than in 1990 (Table H3). The bulk of the population ageing problem is concentrated in border regions, mainly in western and south-western parts of Slovenia (on 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 relatively poor. As a result, these regions have been faced with the emigration of young people for a long period of time (Pečar, 2001). Coupled with the large share of employment in agriculture, this has slowed down economic development in the case of the Pomurje region, which remains the region with the lowest GDP per capita (see Section A.4.).

Demographic trends, especially ageing of the population, bring about various problems related to this process. The most important ones are the 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 of the population on the other. Slovenia has already carried out the reform of the pension system, which is the main step responding to the population's accelerated ageing. However, it will be necessary to further adjust both the pension and health systems.

With regard to the Information Society's development, the ageing population is manifested in a higher share of people with a lower education level, the reduced ability to use ICT and benefit from its utilisation. This population faces a high risk

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

of poor direct participation in the Information Society. Such threats further stress the importance of lifelong learning to enable the participation of the entire population in the Information Society.

I. Cultural and Sociological Aspects

I.1. 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 cultural and societal patterns in Slovenia does not enable an assessment of their impacts on the evolution of the Information Society. However, a simplified SWOT analysis reflects certain characteristics, values and patterns of behaviour of the Slovenian population, which indirectly affect the changes brought about by the IS.

Low emigration from Slovenia reflects the solid welfare of the population and above all the good quality of life, while low migration levels within the country might also indicate the inherent bias of Slovenians against change and risk-taking. A different reflection of such attitudes can be discerned in the 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 utilise the new challenges and opportunities provided by information communication technologies and the accompanying organisational changes.

I.2. Income distribution

While income inequality had been increasing continuously after 1983, a clear shift occurred in the late 1990s. Comparing the 1997-1999 period 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 the Gini coefficient, which decreased from 0.2696 in 1993 to 0.2356 in the 1997-1999 period (Stropnik, Stanovnik, 2002).

I.3. Migration

International migration played an important role in changes in the number and structure of the 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 lack of a young workforce. This was first reflected in cities with a strong industrial base but later also in other cities with increasing needs for low-skilled workers in some services and construction.

The economic crisis in the 1980s gradually reduced the number of immigrants, while the 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 for political and ethnic reasons. In 1992 and 1993, Slovenia received more than 30,000 refugees (people 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 people in two years) (Table I2). Since 1995, many of them have been integrated into the population of Slovenia.

Overall, the ethnic structure of the Slovenian population is quite homogenous. According to census data for 2002, Slovenians accounted for 92% of the population[110], Serbs for 2.2%, Croats for 2.0% and Muslims[111] for 0.6% of the population. The Italian and Hungarian minorities are very small (SYRS, 2003).

After Slovenia gained its independence, many Slovenian citizens temporarily working in Western European countries returned to Slovenia. Their number was largest in 1995 and decreased afterwards. Consequently, also the net migration of Slovenian citizens has been on a decrease since 1995 (data for previous years are unavailable) and even became 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.

Migration mobility within Slovenia is very low. In the 1995-1997 period 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 63 in Denmark in 1997 (Dolenc, 1998). In the following years, the number of inhabitants that changed their residence (migration between municipalities) gradually increased to 10 per 1000 inhabitants in 2001 (Table I2). The main reasons for the relatively low migration levels seen within Slovenia are the following (Dolenc, 1998):

- smallness of the country;
- the underdeveloped labour market;
- people's aversion to seeking a job in another part of the country;
- the lack of residential facilities avaiable for rent in city centres;
- owning a house (or at least an apartment) is still the ideal for many Slovenians, which stands in contrast with mobility; and
- a large part of housing construction has taken place on inherited parcels of land.

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

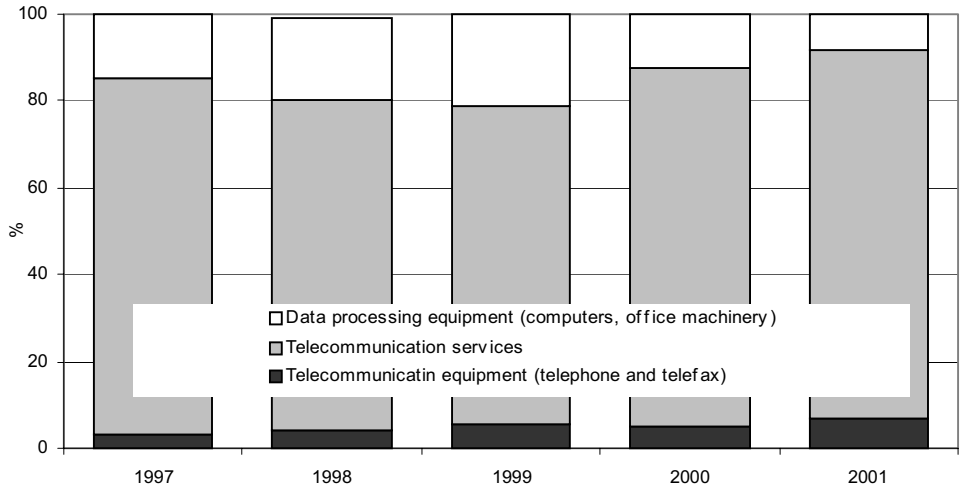
[111] According to census data in Slovenia, Muslims are treated as ethnic and not as religious group.

I.4. Consumption patterns

Data on the structure of consumption are only available since 1997, thus hampering any analysis of changes in consumption patterns. Nevertheless, in the 1997-2001 period a clear trend away from expenditure on food and beverages was seen. Despite the 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 on communications, social protection services (the 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 1997 to 2000 period, an increase of education services in the consumption structure was recorded in 2001.

ICT-related consumption composed of expenditure on 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 on consumption, while by 2001 its share had almost doubled and reached 4.2% of total consumption. The bulk of the increase came from the rise in expenditure on telecommunication services, mainly for mobile telephony (subscription for mobile telephony included prepayment systems), which reflected the fast expansion of mobile phone penetration since 1997 (for details, see Section E.3.1.). Expenditure on 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 subscriptions (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 on data-processing equipment (mainly computers)

Graph I1: **Structure of ICT-related consumption in the 1997-2001 period, in %**



Source: Statistical Office of the Republic of Slovenia.

reached its peak in 1999 when the demand for computers was spurred by the introduction of value-added tax and expectations related to the millennium bug. In 2000, the consumption of data-processing equipment dropped significantly and stagnation was recorded in 2001.

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

I.5. 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 Information Society's prospective evolution there is an array of aspects that are much less visible but which lie in the background of different actors' behaviour. This relates in particular to the values, cultures and attitudes of the Slovenian population and individuals as producers and consumers, which indirectly impact on their capabilities to make full use of the opportunities offered by the Information Society.

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

Apart from 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 instrumental for increasing the competitiveness of firms to such an extent as technical innovation. Consequently, the scope for innovation is narrowed in terms of the activity and people involved and innovation policy typically thought of as the R&D policy. This in particular refers 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). The poor perception of innovation potential in services is further aggravated by the historical understanding of services as non-productive activities, which is characteristic of transition economies (Bučar, Stare, 2002).

This short reference to some attitudinal and cultural aspects reveals 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 the accompanying organisational change.

Diagnosis of Factors and Impacts on the Information Society in Slovenia

1. Economic features, institutional policy and the regulatory framework

After gaining its independence in 1991 Slovenia faced a shock related to the establishment of the legal and institutional framework of a sovereign state and above all 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 in 1993. Since then, Slovenia has progressed gradually with economic and structural reforms underpinned by a stable macroeconomic and political environment. Forthcoming membership in the EU and in NATO is thus perceived as confirmation of the successful finalisation of transition.

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

Balanced public finances and the balance of payments current account enabled the economy to increase investment, including in ICT (public funds can be oriented to support the Information Society's implementation more easily when the government is not occupied by macroeconomic imbalances). Besides, high growth rates of gross fixed capital formation in the period up to 2000 created favourable conditions for the advanced development of the Slovenian economy. However, the high and persisting inflation affects economic growth and any faster liberalisation of infrastructural 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 that is linked to introducing effective competition is often postponed.

The gradual approach taken to structural reforms in the 1990s therefore resulted in solid macroeconomic achievements with no major imbalances. However, some important structural deficiencies remain, having an effect on implementation of the Information Society as well. An important segment of the economy is non-privatised, mostly state-owned enterprises (public utilities) and financial institutions. The Slovenian financial market's level of development is modest compared to EU countries, as the main structural reforms in this sector have occurred only recently.

The gradual approach to reforms also resulted in slow technological restructuring which hampers demand for ICT and jeopardises the overall competitiveness and dynamic economic development of Slovenia. A further drawback refers to the low share of business and financial services in GDP. These services are crucial for improving the economy's competitiveness and to accelerate the diffusion of information communication technology to business processes in the private and public sectors. The advancement of financial and business services could also be encouraged by FDI as it usually brings new technologies, managerial skills and contemporary business know-how. However, Slovenia has not utilised this opportunity to any significant extent. The inflow of FDI was relatively low till 2001 due to the chosen pattern of privatisation, high wage levels and the non-conducive environment for entrepreneurship in general. It is expected that FDI inflows will increase with accession to the EU and implementation of privatisation projects in public utilities and the financial sector, which would also dynamise the development of financial and business services.

Being a small economy with 2 million inhabitants carries advantages and disadvantages for the positioning of Slovenia. The former are best reflected in the high level of trade openness of the economy, enabling inflows of high-technology-intensive products and knowledge-based services, which are of the utmost importance from the perspective of the Information Society's evolution. With accession to the EU, such openness will increase even further and competitive pressure on Slovenian firms is also expected to spur on technological restructuring. An important push for faster development can be expected from the policy engagement to meet the Lisbon Strategy's 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 the achievement of efficient and competitive production nearly impossible. In addition, due to its openness Slovenia is highly exposed to the international economic environment and its deterioration can seriously affect economic growth and put great 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 the Information Society. In 2001, the Strategy for the Economic Development of Slovenia was adopted for the 2002-2006 period. 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 fully recognise the importance of the transition to the Information Society. In late 2000 the government established the Ministry of the Information Society. Apart from focusing on telecommunications (liberalisation of the telecommunication market was implemented in 2001), progress was also made in Information Society applications. The MID initiated some important projects aiming to enhance the Information Society's development, for example e-schools and e-points. Together with the Government Centre of Informatics, the two bodies constitute a good institutional setting to promote implementation of the IS. An important step in this 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, the Strategy of E-commerce in the Public Administration

of the Republic of Slovenia for the 2001-2004 period (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 implementing and monitoring the SEPA-2004.

Discussions and actions towards raising awareness of the need to move more actively towards the Information Society were evolving after 1995 but only gained impetus after 2000. All actors – the business community, civil society, the R&D sphere and the government – were active in the field of promoting the IS. The key problem is the non-coordinated approach of key stakeholders as well as the lack of integration of their objectives and activities. In 2003, the government adopted the Slovenian Information Society Strategy that proposed operational programmes and several ambitious targets in the area of e-government and e-commerce. This provides a good opportunity to promote a more dynamic transition to the IS. Perhaps the most underrepresented area in the preparation of SISS was the business sector and, consequently, the activities to promote the more intensive use of ICT-related technologies and applications there. By reading the official pages of the MID or the text of the SISS one cannot draw a conclusion that the business sector is not well integrated into government activities. Many priorities are focused on business and entrepreneurship, on raising ICT skills, technology transfer etc, but when it comes down to specific actions the business focus is lost.

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

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

2. Building the capacity to implement the IS

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

2.1. ICT production and IST diffusion

Empirical analyses reveal that ICT/IST has multidimensional impacts on economies and societies (OECD, 2002). While ICT production contributes a 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 applies in Slovenia.

Dynamic growth of the ICT sector in Slovenia in the 1995-2001 period resulted in an increased share of the ICT sector in the total value added of the non-financial corporate sector. The growth of the ICT sector was mainly driven by ICT services, which account for two-thirds of the ICT sector's value added. The productivity of ICT services lags behind the EU average much less than the productivity of the total Slovenian economy. In the second half of the 1990s Slovenian exporters of computer and communication services increased their market shares in 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 a further improvement in quality and in better adaptation to customers' needs. Less favourable is the performance of ICT manufacturing. It is highly concentrated in three industries, among which only the production of electronic components is performing well while the other two (instruments and appliances for measuring and telecommunication equipment) in the 1990s were facing a decline in employment. Nevertheless, innovation intensity (the relation between innovation expenditure and turnover) of firms in ICT-related sectors is in many activities above the average for the total corporate sector. The manufacturing of telecommunication equipment is leading in that regard, followed by computer services which might suggest that the competitiveness of both activities will increase further.

Slovenia is a net importer of ICT goods and services mainly on account of its high imports of hardware, which is not produced locally. However, trade in computer services is quite balanced, pointing to the good quality of these services and to the familiarity of local suppliers with the specificities of the market. Foreign investors are present in the Slovenian ICT sector to a larger extent than in the total corporate sector. All major brands of international ICT companies are found 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 in new technologies and know-how, strengthen the competition and boost the diffusion of advanced ICT and services with spill-over effects.

Threats to ICT sector development are seen in its fragmentation and the prevailing orientation of companies to the domestic market. In addition, 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 in the EU's internal market. Future development of the ICT sector in Slovenia depends to a large extent on the creation of an 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, thereby driving ICT development. In addition, full and effective implementation of telecommunication regulation would exert competitive pressure on the telecommunication market and, accordingly, enable a further expansion of ICT service providers.

Slovenia's experience with the **diffusion of IST** reveals advantages and 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. The ICT market in Slovenia has expanded dynamically since 1995, particularly ICT services. This could indicate that the 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 in the ICT market are the subsidiaries of well-known foreign ICT companies which are the distributors of hardware, software and accompanying services, along with a few local manufacturers which successfully export telecommunications equipment and local ICT service providers, most notably telecommunications operators and software consultancy companies. Data on investment in ICT for the 1996-2001 period confirm the increased demand for ICT, especially by service activities and the public administration. This provides solid infrastructural preconditions for the quick uptake of e-commerce and other IST applications in these sectors.

In general, the 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, the openness of its economy and the high level of interest of the population in e-services. Quick adoption of some elements of IST was on one hand spontaneous while, on the other hand, it was driven by actions of the government (computer literacy education) and the introduction of competition (mobile telephony). However, e-commerce is developing very slowly. This can to a certain extent be explained by the excessive costs (of equipment, Internet access), lack of e-content in the Slovenian language, the low share of the population with a tertiary education who is usually the first to adopt and use new technologies, and also by the lack of any policy push for the implementation of some projects. The

very slow and hesitant approach of the incumbent telecom operator to comply with the regulation, the most obvious shortfall being the 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's 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 the top ranking companies have introduced ICT to complex business processes. The experience with business process reengineering demonstrates that the emphasis is predominantly on the informatisation of existing processes without the necessary organisational change and change in business culture. This is also due to the lack of interdisciplinary knowledge and skills related to ICT's introduction to business processes.

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

The capacity of IST and its diffusion in the private and public sectors in Slovenia is utilised only to a limited extent. Apart from infrastructure's availability and costs, the capacity to absorb new technologies and services matters as well. This is determined by the knowledge and skills of all actors involved, the perception of the utility of services and user-friendliness of new technologies for the majority of the population. Knowledge and skills are not only reflected in the attained level of education, but also in interdisciplinary skills, functional literacy and lifelong learning. If the policies fail to provide a coherent and co-ordinated approach to the IS' implementation at the national and local levels this may pose a major threat to the efficient diffusion of IST in the future and to creating a balanced Information Society (without a substantial digital divide). All stakeholders (business sector, government, public sector, civil society) should make efforts to encourage IST use, thereby exploiting the available synergies. With the growing use of e-commerce, issues related to security will increase in importance. If the awareness of security problems is not raised and the threats not treated at all levels losses may occur thereby undermining the confidence of businesses and individuals in e-commerce. As a consequence, all stakeholders could be deprived of the 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 1990s 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. In addition, 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 jeopardises 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 1990s 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. In addition, 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 ageing 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 utilise 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 e-services user does not involve risk taking or involves limited risk taking (except in case of e-payment). However, entrepreneurs engaging in the supply of e-services 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

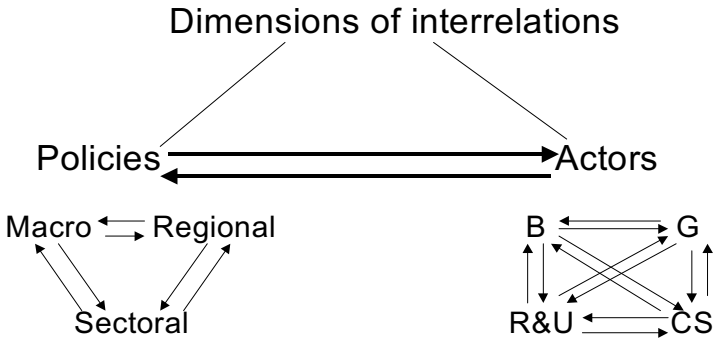
As exemplified throughout the diagnosis, interlinkages and causalities between factors of IS in Slovenia abound. They are complex, multidimensional, multi-causal and some may not be evident at first sight. Since it is impossible to capture and identify all of them we first present a more generalised 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.

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 1990s 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.

Graph 1: **Interrelations between policies and actors**



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 utilised, 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 e-commerce by providing the regulatory framework. However other preconditions have to be met as well to enable quick up take of e-commerce. 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 relatively 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 relatively 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 (relatively 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 recognise 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 relatively 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 mobilise 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. In addition, 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 e-government) and of more content in Slovenian language. This will provide the needed incentive to the growth of e-commerce, 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 1990s 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. In addition, 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 e-government) 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 1990s 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.

Slovenija na poti v informacijsko družbo

Povzetek glavnih ugotovitev in zaključkov

Analiza obravnava širok nabor dejavnikov in vplivov, ki oblikujejo sedanje in bodoče zmogljivosti Slovenije na poti v informacijsko družbo (ID). Na podlagi izčrpne in s podatki utemeljene analize podaja pregled prednosti in slabosti Slovenije pri razvoju ID kot tudi vpogled v priložnosti in izzive prihodnjega razvoja ID[1]. Osnovna ugotovitev analize je, da je Slovenija dosegla solidne rezultate pri uvajanju informacijske družbe in da ima dober izhodiščni položaj za naprej. Da bi pospešila napredek, potrebuje celovito in usklajeno politiko uvajanja ID, ki mora temeljiti na sodelovanju in soglasju vseh partnerjev (poslovna skupnost, raziskovalno-izobraževalna sfera, javna uprava, civilna družba) in izkoriščanju sinergij. Analiza v zaključku predstavlja alternativne scenarije razvoja informacijske družbe v Sloveniji.

1. Značilnosti gospodarskega razvoja, institucionalni in zakonodajni okvir

Postopnost pri uvajanju strukturnih reform je Sloveniji prinesla solidne makroekonomske rezultate, brez večjih neskladij v razvoju, vendar pa tudi nekatere strukturne pomanjkljivosti, ki pomembno vplivajo na dinamiko prehoda v informacijsko družbo. Del gospodarske dejavnosti ni privatiziran, predvsem podjetja v lasti države (javne storitve) in finančne institucije. Razvoj finančnega trga v Sloveniji je skromen v primerjavi z EU, saj se je največ strukturnih reform v tem sektorju odvilo šele v bližnji preteklosti. Postopnost v reformah je imela za posledico zelo počasno tehnološko prestrukturiranje, kar ogroža konkurenčnost in pospešen gospodarski razvoj Slovenije. Hkrati je to nespodbudno vplivalo na naložbe v informacijsko-komunikacijsko tehnologijo (IKT). Skromno razvite poslovne in finančne storitve, ki so ključnega pomena za dvig konkurenčnosti gospodarstva ter za pospešeno uvajanje IKT v poslovne procese v privatnem in javnem sektorju, dodatno zavirajo hitrejši napredek v smeri ID. Z vstopom v EU se bo odprtost slovenskega gospodarstva še povečala, s tem pa tudi pritisk konkurence na podjetja, ki se bodo morala hitreje tehnološko prestrukturirati. Doseganje ciljev Lizbonske strategije bo zahtevalo večjo vključitev in sodelovanje različnih politik.

Nekateri dejavniki kažejo na povečano zavedanje slovenske vlade o izzivih informacijske družbe. V letu 2001 sprejeta Strategija gospodarskega razvoja Slovenije (SGRS) za obdobje 2002–2006 je dinamiko prehoda v družbo znanja vezala na razvoj IKT infrastrukture ter sposobnosti uporabe novih tehnoloških rešitev. SGRS je prvi strateški dokument, ki poudarja pomen prehoda v informacijsko družbo. Konec leta 2000 je bilo ustanovljeno Ministrstvo za informacijsko družbo (MID),

[1] Analiza je del širšega projekta, ki ga je v letu 2003 opravil International Centre for Economic Growth, European Centre (ICEG EC) skupaj s konzorcijem 11 raziskovalnih inštitutov kot podizvajalcev Institute of Prospective Technological Studies (IPTS), Directorate General Joint Research Centre of the European Commission. Na podlagi analiz po državah je pripravljeno sintezno poročilo projekta, ki podaja celovit pogled na prihodnost informacijske družbe v državah kandidatkah.

ki je poleg prednostne obravnave telekomunikacijskega področja (liberalizacija telekomunikacijskega trga) vzpodbudilo razvoj tudi na področju informacijske družbe. MID je pričel izvajati nekatere pomembne projekte v tej smeri, kot so e-šole in spletne kavarne. Skupaj s Centrom vlade za informatiko tvorita obe telesi dobro institucionalno ogrodje za promocijo informacijske družbe. Pomemben korak v to smer so tudi načrti za oblikovanje sodobne in učinkovite javne uprave, ki bo državljanom zagotavljala vrsto storitev prek elektronskih medijev (Strategija in akcijski načrt e-poslovanja v javni upravi).

Leta 2003 je vlada sprejela Strategijo RS v informacijski družbi (SID), ki je predlagala številne programe in cilje na področju e-vlade in e-poslovanja. To ponuja dobro podlago za bolj dinamičen prehod k informacijski družbi. Morda je bil v pripravah Strategije premalo vključen poslovni sektor, kar se odraža v skromnem omenjanju dejavnosti za promocijo bolj intenzivne uporabe IKT in aplikacij v gospodarstvu. Dejstvo, da je MID med najmanjšimi ministrstvi z zelo skromnim proračunom, lahko pomembno ogrozi realizacijo široko zastavljenih načrtov prehoda v informacijsko družbo. Prav zato ne bi smeli dopustiti, da je Strategija »RS v informacijski družbi« le strategija MID-a, ampak vlade kot celote. MID mora dati ustrezne smernice in zagotavljati koordinacijo dejavnosti, v izvrševanje strategije pa morajo biti vključeni številni drugi resorji. Sedanje stanje ne kaže na tak pristop, pomanjkanje skupnega delovanja pa lahko povzroči nedoseganje rezultatov in predvsem kompleksnejših ciljev, kot so difuzija IKT uporabe v poslovnem sektorju, prilagajanje delovne zakonodaje novim oblikam organiziranja dela (npr. teledelo), dvig ravni informacijskega znanja celotne populacije itd. Ob tem ne smemo spregledati številnih področij, kjer so bili doseženi pomembni premiki: razmeroma visoka uporaba interneta, relativno visoka stopnja uporabe osebnih računalnikov, e-šole in pravna ureditev e-poslovanja itd.

Ključna slabost na področju politike informacijske družbe je razkorak med načrtovanimi dejavnostmi ter usmeritvami in tistimi, ki se dejansko uresničijo. Počasno uvajanje že sprejete zakonodaje, prelaganje privatizacije monopolnega fiksnega operaterja ter neodločen pristop Agencije za telekomunikacije, radiodifuzijo in pošto k učinkovitejši regulaciji telekomunikacijskega trga kažejo na pomanjkanje zaveze s strani vlade. Slabo spremljanje učinkov različnih vladnih ukrepov in politik, nezadostno sodelovanje in pomanjkanje koordinacije med različnimi akterji na področju informacijske družbe so prav tako pomanjkljivosti na poti v informacijsko družbo.

2. Ustvarjanje zmogljivosti za uresničevanje informacijske družbe

Poleg dobre makroekonomske osnove ter ustreznega institucionalnega in regulativnega okvira je uresničevanje informacijske družbe odvisno od razpoložljivosti sodobnih IKT in infrastrukture, ki se odražajo v proizvodnji IKT proizvodov in storitev in naložb v IKT, od čim širše uporabe IKT v gospodarstvu in družbi, od ustvarjanja novih tehnoloških rešitev in naložb v raziskovanje in razvoj ter od ustrezno izobraženih ljudi. Navedene dejavnike obravnavamo v nadaljevanju.

2. 1.Proizvodnja IKT sektorja ter uporaba IKT

Številne mednarodne analize opozarjajo na široke razsežnosti vpliva informacijskih in telekomunikacijskih tehnologij na gospodarstvo in družbo. V nekaterih državah je IKT sektor (IKT proizvodnje in storitve) spodbujevalec dinamičnega gospodarskega razvoja in pomembno prispeva k dodani vrednosti in zaposlovanju. V drugih državah pa je aktivna uporaba IKT v vseh sektorjih vir dinamičnega vpliva na gospodarstvo in družbo, kar velja tudi za Slovenijo.

V obdobju 1995-2001 se je delež **IKT sektorja** v dodani vrednosti gospodarskih družb v Sloveniji dinamično povečeval. Rast celotnega sektorja so spodbujale predvsem IKT storitve, ki predstavljajo 2/3 dodane vrednosti v IKT sektorju[2]. Poleg tega produktivnost IKT storitev zaostaja za EU povprečjem dosti manj kot produktivnost celotnega gospodarstva. V drugi polovici devetdesetih let so slovenski izvozniki računalniških in telekomunikacijskih storitev povečali tržni delež na trgih EU, kar priča o povečanju njihove konkurenčnosti. Relativno visoka raven razvitosti IKT storitev je zato pomemben pozitivni dejavnik prehoda v informacijsko družbo. Še vedno pa je tudi na tem področju dovolj prostora za dvig kakovosti in večjo prilagodljivost storitev porabnikom.

Manj ugoden je položaj na področju IKT proizvodnje. Sektor se močno koncentrira na tri dejavnosti (proizvodnja elektronskih komponent, instrumenti in naprave za merjenje ter telekomunikacijska oprema). Inovacijska intenzivnost (razmerje med naložbami v inovacije in prodajo) v IKT sektorju je v številnih dejavnostih nad slovenskim povprečjem. Najvišjo inovacijsko intenzivnost beleži proizvodnja telekomunikacijske opreme, sledijo računalniške storitve, kar lahko pomeni, da se bo njuna konkurenčnost v prihodnje še izboljšala.[3]

Slovenija je neto uvoznik IKT opreme in storitev predvsem na račun visokega uvoza strojne opreme, ki se ne proizvaja doma. Menjava na področju računalniških storitev je precej uravnotežena, kar po eni strani kaže na kakovost teh storitev in po drugi strani na dobro poznavanje specifičnih zahtev domačega trga. Tuje naložbe so v IKT sektorju nekoliko bolj prisotne kot v povprečju v slovenskem gospodarstvu. Pričakovati je, da se bodo tuje naložbe v IKT še okrepile z vstopom v EU. To bo prineslo nove tehnologije in know-how, okrepilo konkurenco in spodbudilo difuzijo najsodobnejših IKT proizvodov in storitev.

Razdrobljenost IKT sektorja[4] in prevelika usmeritev podjetij na domači trg je največja grožnja prihodnjemu razvoju. Številna podjetja se srečujejo tudi s pomanjkanjem ustreznih strokovnjakov, ki so sposobni kombinirati tehnična IKT znanja z menedžerskimi znanji in izkušnjami. Kvalificirani človeški viri so tudi osnova za sodelovanje v mednarodnih projektih in za internacionalizacijo na sploh. Pomanjkanje takih znanj zmanjšuje možnosti za nastopanje na evropskem trgu.

[2] Glej tabeli C8 in C9 v Statistični prilogi.

[3] Glej tabelo D7 v Statistični prilogi.

[4] Podatki v tabelah C9, C10 v Statistični prilogi.

Nadaljnji razvoj IKT sektorja v Sloveniji bo odvisen od ustvarjanja okolja, ki bo spodbujalo podjetništvo in tveganje. Treba je zagotoviti ustrezne finančne mehanizme (tvegani in začetni kapital, investicijsko financiranje) ter instrumente, ki bodo spodbujali rast obstoječih podjetij in nastajanje novih. Tudi učinkovito uresničevanje telekomunikacijske regulative bo privedlo do povečanja konkurence na telekomunikacijskem trgu in razširilo ponudbo IKT storitev.

Izkušnje Slovenije z **difuzijo IKT** kažejo vrsto uspehov, pa tudi pomanjkljivosti. Obseg in intenzivnost uporabe IKT merimo z različnimi kazalci, ki kažejo na povpraševanje po IKT (IKT trg), investicije v IKT ter razširjenost uporabe IKT. Trg IKT se je v Sloveniji dinamično povečeval od 1995, še posebno IKT storitve. To kaže, da je slovenski trg dosegel takšno razvitost, da raven storitev vpliva na dinamiko in velikost IKT trga, kar je dejstvo v razvitih državah že nekaj let. Glavni akterji na IKT trgu so podružnice svetovnih IKT podjetij, ki so distributerji strojne opreme, programske opreme in spremljajočih storitev. Poleg njih so na trgu tudi lokalni proizvajalci, med njimi tudi uspešni izvozniki telekomunikacijske opreme in elektronskih elementov ter lokalne storitvene firme IKT: telekomunikacijski operaterji ter računalniško-svetovalne firme. Podatki o naložbah v IKT za obdobje 1996–2001 potrjujejo povečano povpraševanje po IKT, posebno s strani storitvenih dejavnosti in javne uprave[5]. To daje trdne infrastukturne temelje za hiter razmah e-poslovanja in uvajanje drugih IKT aplikacij v te sektorje.

Indikatorji razširjenosti informacijske družbe kažejo, da je bila Slovenija relativno hitra v prevzemanju novih tehnologij, še posebno na področju mobilne telefonije, računalnikov in interneta[6]. Delno je to pripisati razvojni stopnji Slovenije, odprtosti gospodarstva in velikemu zanimanju prebivalstva za e-storitve. Relativno hitro sprejemanje nekaterih tehnologij in storitev informacijske družbe je bilo po eni strani spontano, po drugi so ga spodbudile dejavnosti države (npr. programi računalniškega opismenjevanja) ter nastop konkurence (npr. mobilna telefonija). Nekateri drugi elementi informacijske družbe prodirajo bolj počasi. To se dogaja z elektronskim poslovanjem, kar razlagamo delno z relativno visokimi stroški (oprema, dostopnost in uporaba interneta), pomanjkanjem vsebin v slovenskem jeziku ter nizkim deležem prebivalstva s terciarno izobrazbo, ki je običajno prvo pri prevzemanju in uporabi novih tehnologij in aplikacij. Zelo počasen in oklevajoč pristop glavnega telekomunikacijskega operaterja, da se prilagodi regulativi, najbolj očitno na področju sklepanja dogovora o medomrežnem povezovanju in razvezi lokalne zanke, zavira ne le razvoj konkurence na področju telekomunikacijskih storitev, ampak negativno vpliva tudi na difuzijo tehnologij informacijske družbe.

Podjetja uvajajo IKT z različno dinamiko, odvisno predvsem od njihove velikosti in finančnega položaja. IKT se uporablja predvsem kot podpora posamičnim poslovnim funkcijam in samo vodilna podjetja so se lotila uvajanja IKT kot podpore kompleksnim poslovnim procesom. Izkušnje s prenovo poslovnih procesov kažejo, da je poudarek na informatizaciji obstoječih procesov brez potrebnih organizacijskih sprememb in sprememb v poslovni kulturi. Ob tem prihaja v ospredje pomanjkanje interdisciplinarnega znanja in sposobnosti povezovanja IKT s poslovnimi procesi.

[5] Glej Tabelo D1 v Statistični prilogi.

[6] Tabela E1 v Statistični prilogi.

V nekaterih segmentih javnega sektorja (uprave) je prišlo do uspešnega uvajanja IKT, kar bo treba nadgraditi v smislu novih vsebin in povezav med različnimi dejavnostmi v mrežno ponudbo, ki bo omogočila še večji izkoristek IKT. Pomanjkljivosti v difuziji IKT so vidne na različnih področjih. Zadevajo zastarelo in nezadostno IKT opremo v izobraževalnih institucijah ter skromen delež šol z zmogljivejšim dostopom do interneta[7] kot tudi pomanjkljivo IKT usposobljenost pedagoškega kadra. Glede na izraženo veliko zanimanje prebivalstva je veliko možnosti za razvoj informacijske družbe prav na področju storitev e-vlade. Ker se javna uprava intenzivno povezuje z vsemi drugimi segmenti gospodarstva in družbe, je pričakovati, da bodo imele državne e-storitve pomembne širše učinke (spill-over) na uveljavljanje informacijske družbe.

Ugotavljamo, da so potenciali IKT v zasebnem in javnem sektorju zaenkrat izkoriščeni le v omejenem obsegu. Poleg razpoložljivosti in stroškov infrastrukture je pomemben zaviralni dejavnik tudi absorpcijska sposobnost za nove tehnologije in storitve. Le-ta je določena z znanjem in usposobljenostjo vseh sodelujočih, z uporabnostjo novih storitev ter s prijaznostjo novih tehnologij do uporabnikov. Znanje in usposobljenost se ne odražata le v številu let izobraževanja: pomembna so interdisciplinarna znanja, funkcionalna pismenost in vse-življenjsko učenje. Če bo politika neuspešna pri zagotavljanju skladnega in koordiniranega pristopa pri prehodu v informacijsko družbo na nacionalni in lokalni ravni, bo to ključna grožnja učinkoviti razširitvi tehnologij informacijske družbe v prihodnje in bo povzročilo neenakomeren razvoj te družbe (digitalni razkorak). Vsi sodelujoči (poslovni sektor, raziskovalno-izobraževalna sfera, javni sektor, civilna družba) se morajo zavestno vključiti v spodbujanje uporabe tehnologij informacijske družbe, da bi zagotovili sinergijo. Z rastočo uporabo e-poslovanja se bo povečalo vprašanje varnosti poslovanja. Zavedanje o tveganjih pri e-poslovanju ter o možnih poteh zaščite je treba povečati, preden pride do večjih oškodovanj, ki lahko porušijo zaupanje podjetij in posameznikov v e-poslovanje.

2.2. Raziskave in izobraževanje

Raziskave in razvoj (R&R) ter izobraževanje so tesno povezani tako s pojavom novih tehnologij kot z razvojem absorpcijske sposobnosti za tehnologije informacijske družbe. Prav tako lahko R&R in izobraževanje pomembno vplivajo na konkurenčnost gospodarstva. Slovenija je v drugi polovici devetdesetih let uspela zadržati relativno soliden nivo naložb v R&R in povečati delež poslovnega sektorja v teh naložbah. Tudi trenutna stopnja inovacijske in raziskovalno-razvojne dejavnosti v IKT sektorju je dobra osnova za nadaljnji razvoj[8]. Pomanjkljivosti se pojavljajo predvsem na področju prenosa znanja iz javne raziskovalne sfere v gospodarstvo. K temu prispeva tako osredotočanje javnega raziskovalnega sektorja na bazične raziskave (programsko financiranje), nizka stopnja inovacijske dejavnosti v poslovnem sektorju sploh ter nedokončanje reform v finančnem sektorju (pomanjkanje finančnih mehanizmov za podporo RR in inovacijski dejavnosti – skladi tveganega kapitala, začetno financiranje, nerazvito investicijsko financiranje).

[7] Tabela E5 v Statistični prilogi.

[8] Tabele D4, D5 in D6 v Statistični prilogi.

Načrtovani zasuk raziskovalno-razvojne politike v smeri večjega uveljavljanja interesov gospodarstva lahko uspešno spodbudi tudi uvajanje tehnologij informacijske družbe. Izbor prioritet, ki temelji na analizi ključnih razvojnih tehnologij in slovenskega gospodarskega potenciala, je že v prvi fazi opozoril na informacijske tehnologije in z njimi povezane aplikacije kot na eno od prioritetnih področij. V tej luči bi bilo treba spodbuditi tudi R&R na področju informacijske družbe.

Širitev in uporaba tehnologij informacijske družbe je tesno povezana in odvisna od stopnje izobraženosti in usposobljenosti. V devetdesetih letih je Slovenija močno povečala vpis v visokošolski študij. Tudi vpis na študijske smeri s področja informacijske družbe je stalno naraščal. Kljub tem pozitivnim tendencam se je treba zavedati, da je stopnja izobraženosti zaposlenih v Sloveniji merjena ali z deležem terciarno izobraženega prebivalstva ali izražena v povprečnih letih šolanja (10 let za zaposlene v gospodarstvu) ali s stopnjo funkcionalne pismenosti (70 % na 1. oz. 2. stopnji) nezadostna za gladek prehod v informacijsko družbo. Zastareli študijski sistem in programi ter rigidnost Univerz tvorijo pomembno oviro informacijski družbi. Rast števila študentov na Univerzah ni spremljalo vzporedno povečanje virov (ne finančnih ne števila pedagoških delavcev). Programske spremembe, ki bi spodbujale interdisciplinarni študij, zamujajo. Čeprav statistika Zavoda za zaposlovanje ne kaže pomanjkanja IKT kadra, številni delodajalci že opozarjajo na pomanjkanje predvsem visoko usposobljenega kadra, ki zna povezovati tehnična, organizacijska in menedžerska znanja.

Sodeč po formalno sprejetih politikah se Slovenija zaveda pomanjkljivosti v sedanji kakovosti človeških virov in potreb po dvigu splošnega znanja in usposobljenosti za prehod v informacijsko družbo. Določene izboljšave so bile dosežene, a izzivi so še vedno veliki, tako z vidika sredstev kot vsebin izobraževalnih reform. Načrtovane reforme (od katerih se nekatere že izvajajo) poudarjajo prav tista področja, ki so strateškega pomena tudi za informacijsko družbo: poudarek na visokošolskem izobraževanju, na povečanju interdisciplinarnosti v izobraževalnih vsebinah ter aktivni podpori vseživljenjskemu izobraževanju. Treba pa bo spodbuditi tudi zanimanje med odraslo populacijo za nadaljnje izobraževanje in usposabljanje, ki je prav med tistimi z nižjimi stopnjami izobraženosti najmanjše, to pa posledično lahko pomeni nevarnost digitalnega razkoraka.

2.3. Družbeni, demografski in kulturni vidiki

Prehod Slovenije v informacijsko družbo opredeljujejo tudi družbene, demografske in kulturne značilnost slovenskega prebivalstva, njihove vrednote in obnašanje. Tako kot večina evropskih držav se tudi Slovenija srečuje s povečevanjem deleža starejše populacije, ki se je izobraževala v obdobju pred prihodom IKT. Poleg te skupine je prisotna tudi relativno številčna skupina prebivalstva z znanjem in sposobnostmi, ki niso zadostni za aktivno vključitev v informacijsko družbo. Obe skupini zahtevata uvajanje posebnih ukrepov in mehanizmov, ki bi preprečili njihovo izključitev iz aktivnega sodelovanja v ID. Ena od takih možnosti je širše uvajanje vseživljenjskega izobraževanja, kar pa lahko da rezultate šele na daljši rok. Zato bo treba paziti na pojavljanje digitalnega razkoraka, ki so mu posebno izpostavljene nekatere regije in nekatera obmejna področja z visoko koncentracijo starejšega prebivalstva in

odlivom mlajše generacije. Pravočasno ukrepanje lahko zmanjša negativne posledice takega razvoja.

Nizka stopnja emigracije Slovencev odraža relativno blagostanje in predvsem visoko kakovost življenja, ki ga uživamo v Sloveniji. Nizka stopnja notranje migracije pa je vsaj delno tudi posledica odnosa Slovencev do sprememb in tveganja. Nepripravljenost na tveganje in spremembe je kriva tudi za relativno šibko podjetniško in inovacijsko kulturo. Ker so takšne značilnosti zgodovinsko pogojene in se zelo počasi spreminjajo, lahko pomembno vplivajo tudi na sposobnost podjetij in posameznikov, da izkoristijo priložnosti in izzive, ki jih ponujajo tehnologije informacijske družbe. To se morda zdi nasprotujoče glede na spontan prevzem nekaterih IKT in veliko zanimanje za internet in storitve informacijske družbe. Delno lahko to pojasnimo z dejstvom, da sama uporaba interneta in elektronskih storitev še ne pomeni prevzemanja posebnega tveganja (z izjemo e-plačil). Seveda ponudniki elektronskih storitev kot nove oblike poslovanja tvegajo bistveno več, to pa pomeni relativno počasno rast ponudbe različnih e-storitev. Spodbujanje podjetništva in inovacijske kulture na vseh ravneh izobraževanja je zato ključnega pomena za postopno spreminjanje v obnašanju posameznikov in podjetij.

3. Medsebojna prepletenost dejavnikov informacijske družbe

Analiza dejavnikov na področju informacijske družbe ter njihovih medsebojnih povezav ter SWOT analiza po posameznih poglavjih kažejo, da sta **znanje in usposobljenost** najbolj pogosto izpostavljen problem. Ustrezno znanje in usposobljenost odločata o napredku pri uresničevanju informacijske družbe tako na ravni posameznih akterjev kot politik. Izobrazbena raven slovenskega prebivalstva ne ustreza zahtevam informacijske družbe, še posebno nizek delež prebivalstva z visokošolsko izobrazbo. Funkcionalna pismenost je nadaljnji problem, ki jo spremlja še nizka vključenost v vseživljenjsko učenje. To pomeni, da določeni segmenti populacije niso sposobni aktivno sodelovati v informacijski družbi. Širšo difuzijo IKT v poslovnem svetu ovira pomanjkanje strokovnjakov z interdisciplinarnimi znanji, ki omogočajo integracijo tehničnih, organizacijskih in menedžerskih vidikov uvedbe IKT v poslovne procese. Pomanjkanje usposobljenosti, potrebne za soočanje z izzivi informacijske družbe, je prisotno tudi v javni upravi. Prav zaradi navedenega je za uveljavljanje informacijske družbe nujno premostiti razkorak na področju znanja in usposobljenosti. Napredna telekomunikacijska infrastruktura, IKT oprema in konkurenčni trgi so sicer osnovni dejavniki, ki omogočajo razvoj informacijske družbe, vendar pa na doseženi razvojni stopnji ne morejo nadomestiti znanja in usposobljenosti ljudi, ki določata absorpcijsko sposobnost posameznikov, podjetij in gospodarstev, da izkoristijo priložnosti ID.

Analiza dejavnikov informacijske družbe v Sloveniji odkriva tudi prevladujoči **razkorak med relativno kakovostnim zakonodajnim in institucionalnim okvirom ter skromnim uresničevanjem sprejetih politik, programov in strateških dokumentov**. Ta razkorak se kaže na različnih področjih, relevantnih za informacijsko družbo in odraža pomanjkanje politične volje in zavezanosti, da se izpeljejo potrebne reforme, pa tudi na neustrezno in nekoordinirano izvajanje

sprememb. Tudi to je moč pripisati nezadostnim organizacijskim in upravljavskim sposobnostim in znanju v javni upravi. Premik v smeri bolj doslednega izvrševanja sprejetega je za hitrejši razvoj v Sloveniji nujen.

Vključevanje v EU prinaša nove priložnosti tudi na področju bolj usklajenega pristopa k uvajanju informacijske družbe. Lizbonska strategija, ki je usmerjena v bolj konkurenčno, na znanju temelječo družbo, daje široka navodila ekonomski politiki in postavlja konkretne cilje. Doseganje le-teh predstavlja določen pritisk na nacionalne politike, kar je že čutiti tudi v Sloveniji. Za uveljavljanje informacijske družbe so še posebej pomembni ukrepi na področju povečanih naložb v R&R, difuzijo inovacij in izobraževanje ter usposabljanje, kar bo spodbudilo ponudbo novih tehnologij in storitev in njihovo uporabo v vseh segmentih gospodarstva.

Relativno ugodna makroekonomska situacija, politična stabilnost in odsotnost večjih šokov v zadnjem desetletju so omogočili ugodne razmere za razvoj Slovenije in ugodno vplivali tudi na difuzijo IKT in uvajanje informacijske družbe. Tako okolje pa ni dalo zadostnih spodbud za večjo dinamiko in dohitevanje v razvojnem procesu. Slovenija ima tako dobro začetno pozicijo za prehod v informacijsko družbo. Da pa se ta prehod spodbudi, je potrebno oblikovati **skladno in dobro koordinirano politiko do informacijske družbe**, ki bo oprta na jasno in odločno vodenje, **sodelovanje in soglasje vseh partnerjev** (poslovni subjekti, univerzitetno-raziskovalni sektor, javna administracija in civilna družba). Sodeč po aktualnih dogajanjih se krepi spoznanje o nujnosti koordiniranega delovanja na razvojnem področju. To odpira nove možnosti za pospešen prehod v informacijsko družbo.

4. Scenariji prehoda v informacijsko družbo[9]

4. 1. Osnovni (izhodiščni) scenarij

Pri osnovnem scenariju izhajamo iz izhodišča, da se politika do uveljavljanja informacijske družbe v obdobju do leta 2010 ne bo bistveno spremenila. To pomeni, da se bo nadaljeval razkorak med sprejetimi dokumenti in njihovo realizacijo, da ne bo prišlo do bolj koordiniranega nastopa različnih akterjev informacijske družbe in da se bo informacijska družba še naprej uvajala postopoma. Rast IKT sektorja se bo upočasnila in približala povprečju gospodarstva, z nekaj več dinamike na področju IKT storitev. Večina podjetij v IKT sektorju bo ostala majhna, pomembnejših novih tujih naložb v tem sektorju ne bo. Dinamika naložb v tehnologije informacijske družbe bo upadla, do povezav med naložbami v javni sektor in v gospodarstvo ne bo prišlo. Počasen napredek pri prehodu Slovenije v informacijsko družbo bo pomenil tudi počasno dohitevanje razvitejših članic EU ter možnost, da nas prehitijo nekatere države pristopnice.

[9] Podrobnejša utemeljitev scenarijev je sestavni del originalnega angleškega besedila.

4.2. Proaktivni scenarij

Prehod v informacijsko družbo postane osrednja točka slovenske strategije družbeno-ekonomskega razvoja. Koordinirana in dinamična politika do informacijske družbe, ki jo vodi vplivni posameznik z visoko stopnjo ugleda v državnih krogih, poslovnem sektorju in civilni družbi, uspešno poveže različne akterje. Makro- in mikro-ekonomska politika ob podpori R&R in izobraževalne politike zasleduje jasen cilj uporabiti IKT za čim hitrejši in uspešnejši prehod v informacijsko družbo. Kot prioritetni razvojni sektor IKT pospešeno raste: delno po zaslugi novih trgov (EU in Balkan), delno zaradi spodbujevalne davčne in R&R politike. Povečanje konkurence na telekomunikacijskem trgu odpre pot razvoja novim telekomunikacijskim storitvam ter prek znižanja cen omogoči hitrejšo difuzijo v gospodarstvo. Povečuje se uporaba e-poslovanja v poslovnem in javnim sektorju. Naložbe v R&R in izobraževanje dinamično rastejo, vseživljenjsko izobraževanje ter računalniško opismenjevanje se hitro razvija ob pospešenem vključevanju depriviligiranih skupin. Javna R&R sfera se tesneje poveže s poslovnim sektorjem. Ovira še hitrejšemu prehodu v informacijsko družbo je pomanjkanje visoko usposobljenih kadrov z interdisciplinarnimi znanji, saj začete izobraževalne reforme v tem obdobju še ne bodo dale rezultatov. Proaktivni scenarij vodi v preseganje povprečja EU25 na področju kazalcev informacijske družbe ter približa Slovenijo povprečnemu BDP na prebivalca EU25 do leta 2010.

4.3. Proaktivni scenarij v neugodnih okoliščinah

Čeprav pride do sprejetja bolj aktivne politike prehoda v informacijsko družbo in uskladitve med sodelujočimi akterji, se Slovenija sooči z resnimi težavami na področju javnih financ. Na povečanje javnih izdatkov pritiska izvajanje evropske zakonodaje (ustanavljanje novih institucij) ter skupne kmetijske politike. Prepočasno tehnološko prestrukturiranje podjetij pripelje do zapiranja številnih delovno-intenzivnih dejavnosti, s tem pa do dodatnih pritiskov na proračun (socialni transferji). Javno-finančni primanjkljaj oteži črpanje iz evropskih strukturnih skladov, to pa prepreči izvajanje Enotnega programskega dokumenta na področjih, pomembnih za informacijsko družbo. Uvedba davčnih spodbud za IKT in nove tržne možnosti spodbudijo rast IKT sektorja, vendar le začasno. Zaradi proračunskih omejitev pride so ukinjanja spodbud, s tem se prekine proces razvoja tehnoloških mrež in grozdov. Posledično številna manjša podjetja zaradi pritiska konkurence propadejo. Privatizacija Telekoma se mora zaključiti hitro, saj država potrebuje sredstva. Pomanjkanje javnih sredstev se odrazi tudi na področju izobraževanja, kjer reforme praktično obstanejo. Posebno prizadete so ciljne skupine javnih programov (starejši, manj izobraženi) in digitalni razkorak je vse večji. Tak razvoj dogodkov omeji možnosti Slovenije za zmanjševanje zaostanka za povprečjem EU25 tako na področju kazalcev informacijske družbe kot na področju BDP na prebivalca.

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Statistical Annex

Contents

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
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
GDP, in EUR (million), current prices**	9451	10342	10832	12130	14343	14876	16063	17497	18760	20436	21750
GDP, PPS (million)	19231	18713	19395	20843	22041	23592	25346	26771	28827	31611	33525
GDP per capita, PPS	9610	9380	9740	10480	11090	11850	12760	13500	14530	15890	16830

* 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.
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 the previous estimate. The main reasons of GDP value increase are the new methodology for the imputed rent estimate, the estimate of the consumption of fixed capital by the general government sector and improvements of GDP exhaustiveness adjustments.
Source: Eurostat: New Cronos Database, Statistical Office of the Republic of Slovenia.

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

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Gross domestic product	9451.3	10341.6	10832.1	12129.6	14343.1	14876.0	16062.7	17497.2	18760.4	20436.3	21749.7	23385.1
Domestic demand	8573.7	9622.1	10714.2	11864.2	14633.6	15031.1	16194.8	17764.5	19589.9	21166.3	21877.9	23053.7
Final consumption	6975.2	7803.4	8618.7	9324.4	11285.1	11547.8	12327.4	13286.4	14256.0	15656.7	16640.9	17622.6
Private consumption	5178.9	5700.5	6334.6	6874.3	8395.7	8552.6	9053.7	9742.7	10459.1	11576.9	12171.1	12817.0
Government consumption	1796.3	2103.0	2284.1	2450.1	2889.5	2995.3	3273.7	3543.8	3796.9	4079.8	4469.8	4805.6
Gross capital formation	1598.4	1818.7	2095.6	2539.8	3348.4	3483.3	3867.3	4478.1	5334.0	5509.6	5237.0	5431.0
Gross fixed capital formation	1948.0	1926.2	2039.7	2439.4	3064.5	3345.2	3754.0	4305.4	5137.9	5255.8	5193.0	5350.7
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	7895.1	6530.0	6364.1	7274.7	7916.5	8293.4	9226.6	9910.3	9853.4	11554.4	12600.4	13520.0
Imports of goods and services	7017.5	5810.5	6246.2	7009.3	8206.9	8448.5	9358.7	10177.6	10682.9	12284.4	12728.6	13188.5

* 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 the previous estimate. The main reasons of GDP value increase are the new methodology for the imputed rent estimate, the estimate of the consumption of fixed capital by the general government sector and improvements of GDP exhaustiveness adjustments.
Source: Eurostat: New Cronos Database; Statistical Office of the Republic of Slovenia.

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

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 the previous estimate. The main reasons of GDP value increase are the new methodology for the imputed rent estimate, the estimate of the consumption of fixed capital by the general government sector and improvements of GDP exhaustiveness adjustments.
Source: Eurostat: New Cronos Database; Statistical Office of the Republic of Slovenia.

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	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	2.1
Private consumption	...	...	...	...	...	2.0	2.8	3.3	6.0	0.8	2.6	2
Government consumption	-0.3	-1.7	5.3	2.1	2.5	3.4	4.3	5.8	4.6	3.1	4	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	4.9

* For the period 1991-1994 1992 constant prices, for the period 1995-2000 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 the previous estimate. The main reasons of GDP value increase are the new methodology for the imputed rent estimate, the estimate of the consumption of fixed capital by the general government sector and improvements of GDP exhaustiveness adjustments.
Source: Eurostat: New Cronos Database; Statistical Office of the Republic of Slovenia.

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

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Gross domestic product	9451.3	10341.6	10832.1	12129.6	14343.1	14876.0	16062.7	17497.2	18760.4	20436.3	21749.7	23385.1
Gross value added	8526.8	9231.8	9514.8	10590.8	12450.0	12968.1	14149.8	15365.0	16350.6	18340.9	17925.9	17808.7
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	3405.9	3315.9	3176.7	3670.1	4057.5	4145.6	4495.5	4921.4	5107.8	5504.4	5875.8	6152.5
F - Construction	346.9	393.1	444.3	500.3	623.6	720.9	790.9	856.7	1007.2	1125.5	1117.2	1155.6
G…O Services	4287.1	4985.5	5405.4	5940.0	7204.2	7527.0	8265.7	8959.1	9643.9	11083.9	11779.9	12839.3
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	1110.5	1278.2	1507.7	1754.6	2176.8	2228.9	2236.3	2489.0	2766.4	2777.7	2876.5	3173.4

* 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 the previous estimate. The main reasons of GDP value increase are the new methodology for the imputed rent estimate, the estimate of the consumption of fixed capital by the general government sector and improvements of GDP exhaustiveness adjustments.
Source: Eurostat: New Cronos Database.

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

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 the previous estimate. The main reasons of GDP value increase are the new methodology for the imputed rent estimate, the estimate of the consumption of fixed capital by the general government sector and improvements of GDP exhaustiveness adjustments.
Source: Eurostat: New Cronos Database; Statistical Office of the Republic of Slovenia.

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

* 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 the previous estimate. The main reasons of GDP value increase are the new methodology for the imputed rent estimate, the estimate of the consumption of fixed capital by the general government sector and improvements of GDP exhaustiveness adjustments.
Source: Eurostat: New Cronos Database; Statistical Office of the Republic of Slovenia.

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

* The Labour Force Survey was introduced in Slovenia in 1993.
Source: Statistical Office of the Republic of Slovenia.

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

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Total	9.1	9	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	7.5	6.4
30-34	7.3	7	6	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	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

Note: The Labour Force Survey was introduced in Slovenia in 1993.
* ILO methodology
** Data refer to the 2nd quarter of each year.
Source: Statistical Office of the Republic of Slovenia (Labour Force Survey).

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	58.3	57.7	57.8
Men	65	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

Note: The Labour Force Survey was introduced in Slovenia in 1993.
* Data refer to the 2nd quarter of each year.
Source: Statistical Office of the Republic of Slovenia (Labour Force Survey).

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

Source: Statistical Office of the Republic of Slovenia.

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

	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 media2)	...	...	...	...	...	...	...	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
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

* Until 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 the period before 1997 are not availabe on the detailed level due to the changes in the classification of activities.
Source: Statistical Office of the Republic of Slovenia and own calculations.

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

* Unemployment rates according to ILO methodology are not available for the regional level.
Source: Statistical Office of the Republic of Slovenia.

Table A14.: **Financial account balance, EUR million, 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	1827.6
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	1949.5
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	-26.3	-5.1	-65.5	-119.3	-94.6
In Slovenia	0	12	503	211.5	108.5	328.8	250.8	199.1	25.2
3. Other investment	12.3	272	-209.5	549	-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	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	-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
Banks	-281	-160.2	-272.7	524.2	-24.5	21.7	-271.7	-300.7	351.3
Other sectors	211	105.5	45.8	134.5	79	-216.1	-24.4	781.2	-597.3
Other assets	-95.7	-121	122.2	-51	5.8	-30.8	-33.2	-31.9	-72
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	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	1037.9	614.9	673
Commercial credits	-8.8	-2.9	17.1	7.9	39	-18.7	-20.6	-5.8	-6.6
Loans	272.5	436.9	-7.7	292.8	240.7	709.6	1038.1	470.2	510.7
General government	79.4	106.9	-54.9	-22.7	-21	-3.6	85.5	-32.3	-4.4
Banks	89.4	167.9	-141.6	-12.3	37.5	242.5	305.9	101	211.9
Other sectors	108	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	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	0.3	2.7	8.2	-11.5	3.9	39.1
4. Reserve assets	-530.4	-180.8	-463.1	-1141.1	-146.3	88.5	-186.8	-1447.7	-1940.6

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

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

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Total	8636.7	8046.5	8076.4	10743.5	10405.9	9454.2	10147.2	9103.3	8040.0	8278.1	9752.4
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	8318.9	7576.2	7879.0	10499.8	10266.7	9316.5	10002.8	9009.1	7963.6	8169.4	9601.3
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	1169.6	1138.5	1012.2	1215.0	1087.7	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	1115.0	1107.2	1062.9	1074.2	1006.1	910.3	968.8	1226.0
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	1246.0	1155.8	1079.2	1123.6	1039.2	987.9	999.6	1134.9
DK Mfr. of machinery and equipment nec.	967.0	866.6	934.5	1267.2	1294.7	1265.2	1416.7	1291.9	1106.9	1180.3	1425.8
DL Mfr. of electrical and optical equipment	751.2	763.7	811.8	1102.2	1169.0	1039.4	1061.7	976.7	960.1	987.9	1147.9
DM Manufacture of transport equipment	1037.3	828.7	943.6	1331.6	1336.7	1171.7	1535.0	1243.4	1064.0	1064.3	1313.9
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
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

* Recalculation from USD at the EUR/USD annual average exchange rate. **Note**: the sum of a sectors' export and import values is not always equal to the total export and import value because some exports and imports are unclassified.
Source: Statistical Office of the Republic of Slovenia.

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

	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
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

* Recalculation from USD at the EUR/USD annual average exchange rate. **Note**: the sum of a sectors' export and import values is not always equal to the total export and import value because some exports and imports are unclassified.
Source: Statistical Office of the Republic of Slovenia.

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

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Total	7938.4	8613.8	8639.5	12262.6	11797.9	10581.2	11336.1	10740.2	9314.0	9079.0	10290.7
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	6705.2	7345.1	7722.9	11045.3	10990.2	9854.3	10719.5	10168.6	8822.1	8607.9	9799.2
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	1035.0	1023.8	1073.4	1490.2	1380.8	1262.7	1323.8	1216.6	1126.8	1126.3	1329.8
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	1402.7	1331.9	1262.3	1424.1	1315.4	1212.1	1197.5	1357.4
DK Mfr. of machinery and equipment nec.	728.3	770.5	914.1	1252.2	1112.7	1042.9	1156.5	1136.9	910.0	907.8	1021.9
DL Mfr. of electrical and optical equipment	750.8	887.0	949.5	1352.3	1378.1	1261.7	1398.6	1406.9	1200.9	1148.7	1357.0
DM Manufacture of transport equipment	750.1	1114.2	1102.0	1808.6	1785.5	1471.1	1837.1	1667.9	1251.3	1190.8	1349.8
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
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

* Recalculation from USD at the EUR/USD annual average exchange rate. **Note**: the sum of a sectors' export and import values is not always equal to the total export and import value because some exports and imports are unclassified.
Source: Statistical Office of the Republic of Slovenia.

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

	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
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

Note: the sum of a sectors' export and import values is not always equal to the total export and import value because some exports and imports are unclassified.
Source: Statistical Office of the Republic of Slovenia.

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

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Total	698.2	-567.3	-563.1	-1519.1	-1392.0	-1127.0	-1188.8	-1636.9	-1274.0	-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	1613.6	231.1	156.1	-545.5	-723.5	-537.8	-716.8	-1159.5	-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
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

* Recalculation from USD at the EUR/USD annual average exchange rate. **Note**: the sum of a sectors' export and import values is not always equal to the total export and import value because some exports and imports are unclassified.
Source: Statistical Office of the Republic of Slovenia.

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

* Prior to 1994 data are not methodologically comparable to the 1994-2002 series.
Source: Bank of Slovenia (Balance of Payments Statistics).

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

Note: Data on the employment structure according to NACE are available only since 1997 as before that year the National Classification of Activities was used.
Source: Statistical Office of the Republic of Slovenia.

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

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 the previous estimate. The main reasons of GDP value increase are the new methodology for the imputed rent estimate, the estimate of the consumption of fixed capital by the general government sector and improvements of GDP exhaustiveness adjustments.
Source: Statistical Office of the Republic of Slovenia and own estimations on the basis of the balance sheets of commercial companies (for two digit level data for years 1995-1999).

Table C2: **Industrial production, volume indices, 1994-2002**

	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
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

* Until 1997, data on production were collected by the National Classification of Activities. Later on they were recalculated to the Standard Classification of Activities with a conversion table.
Source: Statistical Office of the Republic of Slovenia.

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

	1995	1996	1997	1998	1999	2000	2001
D Manufacturing	13359	14458	16535	17582	18921	20606	21303
DA Mfr. of food; beverages and tobacco	20135	21911	23851	24538	24475	24900	24615
DB Mfr. of textiles and textile products	8838	9053	10141	10974	11127	11653	12521
DC Mfr. of leather and leather products	8678	8180	10123	8574	9377	12390	12878
DD Manufacture of wood and wood products	10399	10421	11382	12206	13183	14228	14013
DE Mfr. of paper; publishing and printing	17068	17903	19576	22190	23904	26995	27854
DF Mfr. of coke, petroleum prods.&nuc. fuel	24272	5286	15038	10939	19115	11880	9425
DG Mfr. of chemicals, prod.&man-made fibres	28032	29017	32423	35003	36395	41529	44464
DH Mfr. of rubber and plastic products	15351	17550	19452	17274	20544	21468	23566
DI Mfr. of other non-metal.mineral products	14186	15247	17396	18903	21380	22538	22849
DJ Mfr. of basic metals & fabricated products	12330	13072	14430	16057	18004	20202	20389
DK Mfr. of machinery and equipment nec.	9421	12664	15492	16218	18404	19718	20056
DL Mfr. of electrical and optical equipment	13562	14355	17264	17814	18631	20676	21179
DM Manufacture of transport equipment	12587	13331	13854	17158	18986	21702	21503
DN Manufacturing nec.	10330	9981	12965	13008	14554	14319	15796

Source: 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 prices), 1999**

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	16350.6	591.7	5114.0	4609.5	1007.2	9637.7	3698.0	2647.8	689.9	1957.8	3291.9	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	2183.4	101.1	647.2	582.8	138.0	1297.1	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	1925.0	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	1034.2	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	5358.2	71.8	1208.1	1103.1	294.0	3784.3	1397.9	1118.2	323.9	794.4	1268.1	434.9	329.2	272.8	231.2
Gorenjska	1490.3	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	1008.2	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

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
Source: Statistical Office of the Republic of Slovenia.

Table C4 continued.: **Value added by sectors and regions, EUR million (current prices), 1999**

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

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
Source: Statistical Office of the Republic of Slovenia.

Table C5.: **Structure of value added in services sector, 1991-2001, in %**

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
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**

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 the previous estimate. The main reasons of GDP value increase are the new methodology for the imputed rent estimate, the estimate of the consumption of fixed capital by the general government sector and improvements of GDP exhaustiveness adjustments.
Source: Statistical Office of the Republic of Slovenia.

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

Source: 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	2208.6	2469.3	2843.6	3430.8	3746.4	3673.4
Tangible fixed assets	2124.7	2345.7	2712.1	3237.2	3557.3	3491.2
Buildings and construction works	968.3	1069.5	1203.1	1435.2	1724.0	1619.1
Machinery and equipment	949.2	1094.5	1232.1	1537.7	1523.0	1542.1
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

* New fixed assets in enterprises, companies and other organisations. Data are derived from the survey which has been carried out since 1996. For 2000 and 2001 a recalculation for the total population was prepared.
Source: Statistical Office of the Republic of Slovenia.

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

* The corporate sector only includes commercial companies, while individual private entrepreneurs are excluded.
Legend: See Definition of ITC sector at the end of Statistical Annex.
Source: Own calculations on the basis of Agency for Payments data on balance sheets of commercial companies.

Table C9.: **Weight of ICT industry, 2001**

	No. of companies	No. of 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	**1654**	**23532**	**100.0**	**790640**	**100.0**	**33598**	**663807**	**100.0**	**26.5**	**2508144**	**100.0**
ICT manufacturing	**366**	**12694**	**53.9**	**270348**	**34.2**	**21297**	**507377**	**76.4**	**55.6**	**913033**	**36.4**
30010	2	18	0.1	415	0.1	23053	0	0.0	0.0	1466	0.1
30020	89	848	3.6	26247	3.3	30951	20373	3.1	13.9	146557	5.8
31300	5	181	0.8	3702	0.5	20455	7780	1.2	81.0	9606	0.4
32100	91	4400	18.7	64381	8.1	14632	123921	18.7	75.3	164675	6.6
32200	25	1628	6.9	59744	7.6	36698	122561	18.5	48.9	250562	10.0
32300	14	712	3.0	10791	1.4	15156	59433	9.0	80.6	73697	2.9
33200	84	4300	18.3	86392	10.9	20091	146629	22.1	70.4	208206	8.3
33300	56	607	2.6	18676	2.4	30767	26680	4.0	45.8	58263	2.3
ICT services	**1288**	**10838**	**46.1**	**520292**	**65.8**	**48006**	**156430**	**23.6**	**9.8**	**1595110**	**63.6**
51430	96	593	2.5	19408	2.5	32729	6631	1.0	4.7	140031	5.6
51640	101	707	3.0	20514	2.6	29016	18335	2.8	12.1	150925	6.0
51650	103	364	1.5	12105	1.5	33254	8265	1.2	12.0	68707	2.7
64200	106	4530	19.3	314472	39.8	69420	49424	7.4	6.2	796871	31.8
72100	59	419	1.8	17307	2.2	41305	12809	1.9	18.3	69929	2.8
72200	497	3040	12.9	107056	13.5	35216	57614	8.7	20.2	284613	11.3
72300	70	426	1.8	11283	1.4	26486	824	0.1	4.1	19939	0.8
72400	48	155	0.7	4210	0.5	27161	873	0.1	6.9	12690	0.5
72500	147	456	1.9	9065	1.1	19879	1366	0.2	3.3	41130	1.6
72600	61	148	0.6	4873	0.6	32924	291	0.0	2.8	10275	0.4

VA - value added
Legend: See Definition of ITC sector at the end of Statistical Annex.
Source: Own calculations on the basis of Agency for Payments data on balance sheets of commercial companies.

Table C10.: **Weight of ICT industry, 1995**

	No. of companies	No. of 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**	**16591**	**100.0**	**386846.6**	**100.0**	**23316.7**	**281532.3**	**100.0**	**28.7**	**979852.7**	**100.0**
ICT manufacturing	**399**	**11132**	**67.1**	**156713.3**	**40.5**	**14077.7**	**244330.6**	**86.8**	**48.1**	**508425.1**	**51.9**
30010	6	51	0.3	729.3	0.2	14300.8	227.8	0.1	8.3	2747.0	0.3
30020	84	710	4.3	13719.7	3.5	19323.5	3272.9	1.2	3.5	92244.3	9.4
31300	3	71	0.4	1258.5	0.3	17724.7	1700.7	0.6	78.4	2168.8	0.2
32100	127	2240	13.5	24964.2	6.5	11144.7	33947.8	12.1	53.2	63859.0	6.5
32200	34	2224	13.4	34202.5	8.8	15378.8	63661.1	22.6	54.9	115939.6	11.8
32300	16	1028	6.2	10248.8	2.6	9969.6	31092.6	11.0	66.3	46893.1	4.8
33200	85	4405	26.6	67585.1	17.5	15342.8	105981.0	37.6	63.4	167067.6	17.1
33300	44	403	2.4	4005.3	1.0	9938.6	4446.7	1.6	25.4	17505.7	1.8
ICT services	**594**	**5459**	**32.9**	**230133.3**	**59.5**	**42156.7**	**37201.7**	**13.2**	**7.9**	**471427.6**	**48.1**
51430	58	152	0.9	4048.9	1.0	26637.6	1679.6	0.6	3.9	43383.4	4.4
51640	30	93	0.6	2092.7	0.5	22502.5	12.6	0.0	0.1	21062.9	2.1
51650	51	182	1.1	3557.4	0.9	19546.0	757.8	0.3	3.9	19678.7	2.0
64200	30	3250	19.6	188311.9	48.7	57942.1	24175.6	8.6	8.8	275682.6	28.1
72100	35	262	1.6	7563.3	2.0	28867.6	8085.4	2.9	35.7	22652.2	2.3
72200	165	595	3.6	9597.9	2.5	16130.9	1769.9	0.6	4.0	44490.9	4.5
72300	66	612	3.7	10937.8	2.8	17872.1	152.7	0.1	0.7	21556.2	2.2
72400	9	9	0.1	125.0	0.0	13886.3	0.0	0.0	0.0	322.3	0.0
72500	136	285	1.7	3656.1	0.9	12828.4	525.1	0.2	2.5	20819.2	2.1
72600	14	19	0.1	242.3	0.1	12754.3	43.0	0.0	2.4	1779.2	0.2

VA - value added
Legend: See Definition of ITC sector at the end of Statistical Annex.
Source: Own calculations on the basis of Agency for Payments data on balance sheets of commercial companies.

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

Source: 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	**8637**	**8047**	**8076**	**10743**	**10406**	**9454**	**10147**	**9103**	**8040**	**8278**	**9752**
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	**7938**	**8614**	**8640**	**12263**	**11798**	**10581**	**11336**	**10740**	**9314**	**9079**	**10291**
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**	**-1519**	**-1392**	**-1127**	**-1189**	**-1637**	**-1274**	**-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

Legend: See Definition of ITC sector at the end of Statistical Annex.
Source: 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

Legend: See Definition of ITC sector at the end of Statistical Annex.
Source: 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	1528.6	1568.9	1703.9	1809.9	1804.2	1763.5	2051.5	2193.8	2416.0
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	1117.9	1192.6	1249.1	1357.3	1434.0	1562.3	1634.2	1824.3
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

*Prior to 1994 the data are not methodologically comparable to the 1994-2002 series.
Source: Bank of Slovenia

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**	**1183.6**	**1269.4**	**1438.7**	**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	3666.4
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**	**1010.8**	**1190.9**	**1580.0**	**1625.2**	**1844.3**	**264.1**
ICT, without TS*	**446.8**	**500.5**	**680.5**	**771.0**	**982.7**	**939.7**	**1096.9**	**245.5**

* TS - telecommunication services
Legend: See Definition of ITC sector at the end of Statistical Annex.
Source: Own calculations on the basis of Agency for Payments data on balance sheets of commercial companies.

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

Source: 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 sale
Total	**93**	**3489**	**100.0**	**418524**	**100.0**	**194085**	**100.0**	**46.4**
ICT Manufacturing	**26**	**2684**	**76.9**	**242079**	**57.8**	**170984**	**88.1**	**70.6**
3002	3	61	1.7	10683	2.6	9145	4.7	85.6
3210	11	1161	33.3	57796	13.8	54389	28.0	94.1
3220	1	1091	31.3	132590	31.7	74875	38.6	56.5
3230	2	144	4.1	10233	2.4	7408	3.8	72.4
3320	5	62	1.8	4895	1.2	3369	1.7	68.8
3330	4	165	4.7	25881	6.2	21798	11.2	84.2
ICT Services	**67**	**805**	**23.1**	**176445**	**42.2**	**23101**	**11.9**	**13.1**
5143	11	203	5.8	70854	16.9	2522	1.3	3.6
5164	10	60	1.7	11827	2.8	662	0.3	5.6
5165	17	36	1.0	7139	1.7	808	0.4	11.3
6420	9	211	6.0	47469	11.3	2271	1.2	4.8
7210	3	170	4.9	18930	4.5	9074	4.7	47.9
7220	14	115	3.3	15273	3.6	7763	4.0	50.8
7230	1	1	0.0	9	0.0	0	0.0	0.0
7250	1	9	0.3	4944	1.2	0	0.0	0.0
7260	1	0	0.0	0	0.0	0	0.0	0.0

Legend: See Definition of ITC sector at the end of Statistical Annex.
Source: Own calculations on the basis of Agency for Payments data on balance sheets of commercial companies.

Table D1.: **ICT investment by NACE activities, EUR million, 1996-1999**

NACE	1996				1997				1998				1999			
	Total	Comp.	SW	IT	Total	Comp.	SW	IT	Total	Comp.	SW	IT	Total	Comp.	SW	IT
Total	2208.42	167.33	15.27	182.60	2469.37	177.82	20.26	198.07	2844.13	193.23	32.39	225.63	3430.31	257.55	54.44	311.99
A Agriculture	24.16	1.71	0.10	1.81	28.70	1.62	0.25	1.87	34.87	1.47	0.45	1.93	39.41	1.64	0.31	1.95
B Fishing	0.27	0.03	0.00	0.03	0.43	0.02	0.00	0.02	0.10	0.01	0.00	0.01	0.39	0.03	0.00	0.03
C Mining and quarrying	30.10	0.20	0.03	0.23	27.65	0.20	0.03	0.23	28.85	0.84	0.05	0.88	32.79	0.77	0.05	0.82
D Manufacturing	535.19	32.14	4.05	36.19	682.47	39.33	4.79	44.12	752.88	38.64	8.19	46.83	834.89	49.85	11.18	61.03
E Electricity, gas and water	198.62	5.08	0.58	5.66	208.65	3.61	0.66	4.27	227.90	4.41	1.06	5.47	347.89	4.61	7.30	11.91
F Construction	49.96	2.08	0.16	2.24	56.19	2.56	0.30	2.85	90.83	4.56	0.62	5.19	121.45	4.55	1.06	5.60
G Wholesale, retail, repair	240.67	21.50	1.98	23.48	292.88	21.38	2.70	24.07	348.96	30.34	3.83	34.17	386.48	35.56	5.60	41.16
H Hotels and restaurants	43.77	0.98	0.12	1.10	43.38	0.85	0.15	1.00	51.22	1.43	0.15	1.58	83.27	5.28	0.51	5.79
I Transport, communications	279.13	18.48	1.77	20.25	311.80	19.56	0.66	20.22	450.98	19.88	3.00	22.88	489.76	27.72	8.04	35.76
J Financial intermediation	138.77	29.66	1.40	31.06	88.06	29.46	5.70	35.16	120.60	33.26	8.15	41.41	145.45	35.16	11.29	46.45
K Real estate, rent, bussines services	317.71	14.91	1.14	16.05	93.00	17.08	1.61	18.69	95.06	15.04	2.57	17.60	128.38	24.69	3.78	28.47
L Public administration	149.33	16.36	2.27	18.62	425.22	21.84	1.76	23.61	363.53	15.07	2.25	17.32	510.42	37.56	2.25	39.81
M Education	61.58	13.47	0.54	14.01	59.54	11.02	0.30	11.32	79.93	12.59	0.40	13.00	86.38	11.83	0.59	12.42
N Health and social work	79.67	4.89	0.56	5.45	85.38	5.55	0.71	6.26	95.52	7.77	0.73	8.49	105.89	10.00	1.18	11.18
O Other community activities	59.50	5.83	0.57	6.40	66.01	3.75	0.64	4.40	102.89	7.92	0.94	8.86	117.45	8.32	1.30	9.62

Comp. - Computer, SW - Software
Source: Statistical Office of the Republic of Slovenia.

Table D1 continued.: **ICT investment by NACE activities, EUR million, 2000-2001**

NACE	2000				2001				2001		IT	IT	ICT
											% of total investment		
	Total	Comput.	Soft-ware	IT	Total	Comput.	Soft-ware	IT	Telecom	ICT	1996	2001	2001
Total	3745.87	226.13	55.96	282.09	3673.64	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	1058.60	42.69	20.39	63.09	4.92	68.01	6.76	5.96	6.42
E Electricity, gas and water	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

Source: 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	18.6
Total	173.7	214.1	245.9	217.2	229.0	257.8	285.0	299.6
As % of GDP	1.61	1.77	1.71	1.44	1.42	1.48	1.51	1.52

*In 1995, the figures for R&D expenditures were overvalued due to a statistical error made in higher education.
Source: SORS, Rapid Reports on R&D for consecutive years.

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

Source: 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**	**6624**
MANUFACTURING	**76.61**	**129 279**
Food, Beverages and Tobacco	1.82	3072
Textiles, Fur & Leather	3.51	5926
Wood, Paper, Printing and Publishing	0.34	579
Coke, Petroleum, Chemicals	30.26	51068
Pharmaceuticals	25.71	43386
Non-Metalic Mineral Products	1.40	2364
Basic Metals	2.48	4182
Fabricated Metal Products	2.36	3988
Machinery Equip., Instruments & Transport Equip.	33.94	57277
Machinery	7.42	12518
Electrical machinery	5.85	9865
Electro. equipment	14.83	25033
Electronic components	1.29	2176
TV, Radio & Communications Equipm.	13.54	22857
Instruments	5.13	8651
Motor vehicles	0.66	1107
Other transport equip.	0.06	103
Furniture	0.49	824
SERVICES	**19.34**	**32643**
Wholesale, Ret. Mot.Veh.Repair, etc.	0.39	651
Realestate, Renting & Business Activities	18.63	31440
Computer & related activties	0.26	445
Software Consultancy	0.04	66
Other Computer Services	0.22	379
Research and Development	15.21	25671
Other Business Activities	3.15	5323
Community, social, personal and other services	0.33	552
TOTAL	**100.00**	**168750**

Source: Statistical Office of the Republic of Slovenia.

Table D5.: **Innovation activity in ICT related sectors, 2000**

	All enterprises	Innov. enterprises	% of innov. enterprises	No. of enter. with R&D	% of enter. with R&D
D Manufacturing	**1536**	**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	**1257**	**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

Source: 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	10954.6	16306.8	17202.5	5521.1	6756.4	7124.1	9864.7
Electronic equipment	...	...	16176.0	18126.4	18395.8	21092.8	25033.0
Electronic components	1659.1	2388.1	1929.1	809.3	1387.5	3054.5	2176.2
TV, Radio & Communications Equipm.	962.9	11905.0	14246.9	17317.1	17008.3	18038.2	22856.8
Instruments	2669.9	3127.8	3521.9	7666.3	7463.7	7546.8	8651.5
Office, accounting & computing machinery*	1740.5	1937.6	2159.2	...	...	...	...
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	**90614.6**	**114577.6**	**110011.2**	**121513.3**	**134156.5**	**156693.0**	**168751.4**

* 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.
Source: SORS, Rapid Reports on R&D for consecutive years.

Table D7.: **Innovation intensity of ICT related sectors, in %, 2000**

	Innovation intensity %
D Manufacturing	3.39
DL Mfr.of electric.machinery	5.5
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

Source: Statistical Office of the Republic of Slovenia.

Table E1.: **Basic indicators of the Information Society, 1990, 1995-2002**

	1990	1995	1996	1997	1998	1999	2000	2001	2002
Number of fixed telephone subscribers per 100 inhabitants	21	31	33	36	39	40	41	47	50
Number of PCs per 100 inhabitants	…	…	…	…	21	25	28	28	30
Number of Internet hosts per 100 000 inhabitants*	…	168	506	877	1029	1159	1089	1436	1679
Number of Internet users per 100 inhabitants**	1	3	6	9	11	14	19	23	29
Use of e-banking (share of Internet users, %)***	…	…	…	…	…	7	15	...	18
Use of e-shopping (share of Internet users, %)****	…	…	…	…	…	…	16	12	21
Number of mobile subscriptions***** per 100 inhabitants**	...	1.4	2.1	4.6	9.9	32.6	57.2	75.8	87.8

* 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.
Source: SYRS, 2003.

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

Source: SYRS, 2003.

Table E3.: **Telecommunication network penetration, 1990, 1995-2002**

	Telefax subscribers	Fixed telephony		Mobile telephony			
		telephone subscribers	number of applications for subscriber's connection*	subscriber lines			users of prepaid package
				total	analogue - NMT	digital - GSM	
1990	3925	421803	...	...	...	...	...
1995	15541	614796	58438	27301	27301	...	...
1996	17727	661902	48701	41205	36977	4228	...
1997	19464	710044	25041	93611	42430	51181	...
1998	20754	771310	10051	166506	42741	123765	29005
1999	18290	786229	5719	325048	42396	282652	323360
2000	19739	808012	1183	468351	41145	427206	669484
2001	11072	945295	1026	662619	40913	621706	848914
2002	8850	998414	611	847759	40733	807026	901757

* First application.
Source: SYRS, 2003.

Table E4.: **Indicators of the 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

*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 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.
Source: SYRS, 2003.

Table E5.: **Indicators of the 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
Secondary schools	…	43.0	…	67.9	83.6	39.5

* 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 could be slightly overestimated.
Source: SYRS, 2003.

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

*adult upper secondary programme
Source: SYRS, selected years.

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

* University of Ljubljana
** University of Maribor
*** Independent tertiary education institutions
Source: University of Ljubljana enrolment office, 2002/2003.

Table G3.: **Number of graduating students from tertiary education, 1990-2001**

Year	Total	Non uni*	Uni.**
1990	5951	3421	2530
1992	5711	3104	2607
1993	5943	2991	2952
1994	5812	2668	3144
1995	6419	2746	3673
1996	7724	3217	4507
1997	8011	3099	4912
1998	8612	2809	5803
1999	9345	2355	6990
2000	10232	1674	8558
2001	10375	1041	9334

* 2-year higher education programmes
** University degree
Source: SYRS, selected years.

Table G4.: **Enrolment in upper secondary schools: electronics and computer science, 1994/95-1999/00**

School year	Pupils	Adults
1994/95	8116	607
1995/96	8163	569
1996/97	8194	620
1997/98	7926	640
1998/99	7592	818
1999/2000	7359	914

Source: SYRS, selected years.

Table G5.: **ICT related education (enrolment and graduating students), 1997/98-2001/02**

Student enrolment	FEE*	FCSI**	FEECSI***	Total
1997/98	**1197**	**700**	**1253**	**3150**
1998/99	1706	1049	1426	4181
1999/00	1852	1168	1572	4592
2000/2001	2113	1402	1879	5394
2001/2002	2187	1300	1907	5394
Graduating students				
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

* 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
Source: SYRS, selected years.

Table H1.: **Population dynamics, including mortality, birth rates and life expectancy, 1980-2001**

Year	Population (end year)	Population growth rate, %	Fertility rate %	Deaths per 1000 inhabitants	Life expectancy	
					Men	Women
1980	1909566			9.90		
1981	1924690	0.79	2.11	9.77	67.23	75.14
1982	1929292	0.24	2.08	10.21	66.23	75.12
1983	1937588	0.43	1.96	10.71	66.99	75.04
1984	1948577	0.57	1.79	10.40	67.38	75.52
1985	1975273	1.37	1.72	10.06	67.85	75.89
1986	1985486	0.52	1.69	9.84	68.14	76.10
1987	1994066	0.43	1.70	9.97	68.26	76.26
1988	1996325	0.11	1.66	9.56	68.86	76.72
1989	1996377	0.00	1.52	9.34	69.38	77.19
1990	1999945	0.18	1.46	9.29	69.54	77.38
1991	1998912	-0.05	1.42	9.65	69.45	77.25
1992	1994084	-0.24	1.34	9.69	69.40	77.29
1993	1989408	-0.23	1.34	10.05	69.58	77.38
1994	1989477	0.00	1.32	9.73	70.27	77.76
1995	1990266	0.04	1.29	9.54	70.14	77.96
1996	1986989	-0.16	1.28	9.35	70.37	78.15
1997	1984923	-0.10	1.25	9.53	70.61	78.35
1998	1978334	-0.33	1.21	9.60	70.84	78.54
1999	1987755	0.48	1.21	9.50	71.40	78.80
2000	1990094	0.12	1.26	9.30	71.90	79.10
2001	1994026	0.20	1.21	9.30	72.10	79.60

Source: 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

* IMAD calculation.
** UNDP calculation.
Source: Human Development Report - Slovenia, 1999, Human Development Report - Slovenia, 2001. (1999 -2002) Human Development Report, UNDP.

Table H3.: **Age distribution, 1981-2001**

Year	Age distibution			Age distribution, in %		
	0 - 14	15 - 64	65 -	0 - 14	15 - 64	65 -
1981	440799	1265093	211577	23.0	66.0	11.0
1982	439163	1279753	205961	22.8	66.5	10.7
1983	438139	1294861	200103	22.7	67.0	10.4
1984	437113	1308710	196979	22.5	67.4	10.1
1985	437548	1336935	198667	22.2	67.8	10.1
1986	432482	1348528	199708	21.8	68.1	10.1
1987	429766	1357083	202613	21.6	68.2	10.2
1988	427434	1365921	206633	21.4	68.3	10.3
1989	421199	1367050	211155	21.1	68.4	10.6
1990	414678	1369555	213857	20.8	68.5	10.7
1991	406575	1376266	218927	20.3	68.8	10.9
1992	394969	1376646	224217	19.8	69.0	11.2
1993	384520	1375911	230192	19.3	69.1	11.6
1994	373626	1378568	236656	18.8	69.3	11.9
1995	365572	1377166	244767	18.4	69.3	12.3
1996	354553	1383945	252671	17.8	69.5	12.7
1997	342715	1385322	258811	17.2	69.7	13.0
1998	333034	1383982	265587	16.8	69.8	13.4
1999	320374	1391981	275400	16.1	70.0	13.9
2000	313406	1395282	281406	15.7	70.1	14.1
2001	306721	1398757	288473	15.4	70.1	14.5

Source: 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
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

*Age dependancy ratio = population older than 65 / population (0 - 14).
Source: Pečar, 2001.

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

Source: Stropnik, Stanovnik, 2002.

Table I2.: **Migration - internal and international, 1991-2001**

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Internal migration	35965	42741	34997	31420	25736	28655	29313	30110	30509	29781	30967
Between municipalities					16099	17687	18029	18727	20176	19674	20450
Between settlements					9637	10968	11284	11383	10333	10107	10517
International migration											
Immigrants	5989	3461	2745	1919	5879	9495	7889	4603	4941	6185	7803
Citizens of the Republic of Slovenia					2191	1500	1093	857	1362	935	1030
Foreigners					3688	7995	6796	3746	3579	5250	6773
Emigrants	9060	3848	1390	983	3372	2985	5447	6708	2606	3570	4811
Citizens of the Republic of Slovenia					**776**	**803**	**807**	**705**	**963**	**1559**	**1442**
Foreigners					2596	2182	4640	6003	1643	2011	3369
Net migration	-3073	-387	1355	936	2507	6510	2442	-2105	2335	2615	2992
Citizens of the Republic of Slovenia					**1415**	**697**	**286**	**152**	**399**	**-624**	**-412**
Foreigners					1092	5813	2156	-2257	1936	3239	3404

Source: 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
Coomunications	**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

* Survey on household consumption has been carried out only since 1997.
Source: Statistical Office of the Republic of Slovenia.

DEFINITION OF ICT SECTOR

ICT manufacturing industry:

3001 Manufacture of office machinery
3002 Manufacture of computers and other information processing equipment
3130 Manufacture of insulated wire and cable
3210 Manufacture of electronic valves and tubes and other electronic components
3220 Manufacture of television and radio transmitters and apparatus for line telephony and line telegraphy
3230 Manufacture of television and radio receivers, sound or video recording or reproducing apparatus and associated goods
3320 Manufacture of instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process control equipment
3330 Manufacture of industrial process control equipment

ICT services:

Wholesale
5143 Wholesale of electrical household appliances and radio and television goods
5164 Wholesale of office machinery and equipment
5165 Wholesale of other machinery for use in industry, trade and navigation

Telecommunications
6420 Telecommunications

Consultancy services
7133 Renting of office machinery and equipment, including computers
7210 Hardware consultancy
7220 Software consultancy and supply
7230 Data processing
7240 Database activities
7250 Maintenance and repair of office, accounting and computing machinery
7260 Other computer related activities

Definition of ICT sector is based on NACE, rev.1 nomenclature, Statistics on the Information Society in Europe, European Communities, 2003.