THE DEVELOPMENT OF THE INFORMATION SOCIETY IN NEW ENTRANT COUNTRIES

REPORT ON THE CZECH REPUBLIC

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Czech Republic

Picture: Location of the Czech Republic in Central Europe.

Country profile

Table: General country data.

Geographical Location	
Location	Central Europe (at the latitude of 48° 33' - 51° 03' parallel north and longitude 12° 05' - 18° 51' east of Greenwich)
Area	78 866 km^2
Political regime	Republic since 1918. Parliamentary democracy.
Administrative organisation	
Capital	Prague
Development Regions	8 NUTS2
Population and labour force	
Total population	10 220 577 persons, from which: - Main nationality: Czech 90,4% (2001)
Population density	129 inh./sq.km (2004)
Life expectancy (years)	72,0 males, 78,5 females (2003)
Urban population (over 2 thous. inh.)	73,6% of total population (2004)
Iliteracy rate (as of population 15+)	< 0,5%
Labour market participation rate	60% (of population over 15 years), 2001
Unemployment rate (ILO)	8,3% (2004)
Macroeconomic data	
GDP / capita (PPS)	50% of EU-25
Inflation rate	2,8% (2004)
Net lending of the general government	-21,6% of GDP (i.e. net borrowing)
Current account deficit	-5,2% of GDP (2004)
Openness of the economy	(Exports+imports)/GDP = 1,43
European integration process	
Year of signing the Association Agreement	1991 (signed by Czechoslovakia), 1993 (signed by the Czech Republic), 1995 (effective)
Year of starting accession negotiations	1998
Year of EU accession	2004
Membership of international organisations	WTO (1995), OECD (1995), CEFTA (1992), ILO, NATO (1999), EAP (2002)
Information Society Indicators	
Internet penetration rate	25 per 100 inhabitants (2002)
PC penetration rate	25 per 100 inhabitants (2002)
Color TV	47,4 per 100 inhabitants (2002)
Fixed telephone	34 per 100 inhabitants (2004)
Mobile telephone	105 per 100 inhabitants (2004)
PCs/100 (2001)	32,6 per 100 inhabitants (2003)

Regional division of the Czech Republic

The Czech Republic is the western part of former Czechoslovakia. It is divided into 13 geographical regions + the capital of Prague (NUTS 3). These regions do not form NUTS 2 allowing for sourcing finance from the EU structural funds, therefore also eight artificial NUTS 2 were set up. The Czech Republic as a whole forms one NUTS 1.
Statistical observation and research is performed on the level of NUTS 3, in each regional capital a subsidiary of the Czech Statistical Office is located. For EU funding purposes the data are recalculated also to NUTS 2 figures, but their explanatory power is derived from inferior regional division (no NUTS 2 statistical offices exist).

Picture: Regional division of the Czech Republic in 2005, regions (NUTS3) and districts (NUTS4).

National and regional economy

Economic growth and its pattern

The statistical office data report that PPS-adjusted gross domestic product of the Czech Republic per capita reached USD 15 708 in 2004. This corresponds to some **50 per cent of EU-25 economic levels**. GDP per capita in the Czech Republic is above average of new entrant countries – Slovenia, Cyprus and Malta are ahead, but the others have lower economic performance than the CR. In comparison with original EU15 states the nearest countries in terms of economic performance, Portugal and Greece have price adjusted GDP per capita greater by some 30%.

Supply side of growth: contribution

After the increase in industry production in 2000 there were two years of rather moderate growth and in 2003 stagnation followed (-1%). However, due to the accession to the European Union the exporting industries reported particularly rapid growth, which resulted to the y-o-y growth of exports of 19.5% in 2004. Exports grew not only to developed markets of the EU25, but also to other developed countries and to transition countries

Positive influence arises from increased productivity of companies controlled by foreign investors and their investment activities. On the other hand the development in industry was negatively influenced by **scarcity of financial sources** for enterprise operations stemming from banks' reluctance to grant credits and in case of newly privatized companies also **ambiguous ownership structures**.

Services, the proportion of which on total GDP is greatest of all sectors, exhibited since 2001 impressive growth as well with average annual growth rate of 9%. However, agriculture and fishing is on decline with 2004's growth rate of -10%.

Table: Real GDP - supply side.

Real GDP - supply side

Year	Real GDP	Net taxes on GDP	Gross value added						
			TOTAL	*Agriculture, fishing*		*Industry and Construction*		*Services*	
	EUR mil.	EUR mil.	**EUR mil.**	EUR mil.	% of VA	EUR mil.	% of VA	EUR mil.	% of VA
1995	40 257	4 586	**35 671**	1 764	4,9%	15 766	44,2%	18 141	50,9%
1996	42 357	5 043	**37 314**	1 901	5,1%	17 352	46,5%	18 061	48,4%
1997	39 924	4 740	**35 184**	1 760	5,0%	16 245	46,2%	17 179	48,8%
1998	39 111	4 768	**34 343**	1 922	5,6%	14 434	42,0%	17 987	52,4%
1999	38 529	4 717	**33 812**	2 174	6,4%	13 865	41,0%	17 774	52,6%
2000	41 204	4 983	**36 221**	2 219	6,1%	15 405	42,5%	18 597	51,3%
2001	44 381	5 368	**39 013**	2 299	5,9%	15 967	40,9%	20 747	53,2%
2002	50 053	5 989	**44 064**	2 654	6,0%	17 446	39,6%	23 963	54,4%
2003	49 842	6 115	**43 728**	2 536	5,8%	17 263	39,5%	23 928	54,7%
2004	55 531	6 305	**49 324**	2 277	4,6%	20 635	41,8%	26 413	53,5%

Source: Czech Statistical Office, National Accounts (ESA 1995).

Notes: GDP measured in fixed prices of 1995.
Exchange rate CZK/EUR used as yearly averages.

Demand side of growth: contribution

Expenditures on governmental consumption represent the most dynamic component of economic growth (2004 growth rate 27%). They are interrelated with steady increase of tax base and constant tax rates, but also result in growing public indebtedness. Fast growth of expenditures of government sector results from compensation of transformation institutions' cost and growth of mandatory expenditures, which is still showing high dynamics. The **budget deficit** reached EUR 2.93 bn or **3.4% of GDP** in 2004. General government deficit has impact also on growth of **public debt** amounting **21.6% of GDP in 2004** and growing in year-on-year terms by 2.3 percentage points.

Dynamic growth of wages with low inflation and low interest rates also allow for growth in private consumption of households. Part of consumption is realized at the expense of savings by utilization of various forms of consumer credits. Rate of growth of household consumption was 3.5% in 2003 and 4.9% in 2004.

After years with extremely rapid growth in private investment (2000-2002 average growth rate of 12.4%) investment activities of non-financial sector stagnated in 2003. The 2003 growth of investment amounted to 0.8% and was pulled mainly by household sector (construction of dwellings). In 2004 growth tendencies recovered with 7% increase. Growth of fixed capital formation will depend, to a large extent, on intensity of inflow of foreign direct investment and will be generated to large extent by foreign-controlled firms. New investments should be mostly export-oriented, strengthening the economy's supply side, productivity and competitiveness. At the same time, they will lead to growth of prices reached on external markets and thus to improvement of terms of trade.

Table: Real GDP - demand side.

Real GDP - demand side

Year	**Real GDP**	C - private consumption		G - governmental		I - gross domestic		NX - net export	
	EUR mil.	EUR mil.	% of GDP	EUR mil.	% of GDP	EUR mil.	% of GDP	EUR mil.	% of GDP
1995	**40 257**	20 175	50,1%	8 296	20,6%	13 701	34,0%	-1 915	-4,8%
1996	**42 357**	21 969	51,9%	8 678	20,5%	15 014	35,4%	-3 304	-7,8%
1997	**39 924**	21 367	53,5%	7 903	19,8%	13 805	34,6%	-3 150	-7,9%
1998	**39 111**	20 773	53,1%	7 526	19,2%	13 311	34,0%	-2 499	-6,4%
1999	**38 529**	20 759	53,9%	7 503	19,5%	12 673	32,9%	-2 406	-6,2%
2000	**41 204**	22 001	53,4%	7 737	18,8%	14 356	34,8%	-2 890	-7,0%
2001	**44 381**	23 854	53,7%	8 480	19,1%	16 073	36,2%	-4 027	-9,1%
2002	**50 053**	27 428	54,8%	9 919	19,8%	18 010	36,0%	-5 305	-10,6%
2003	**49 842**	28 385	56,9%	9 220	18,5%	18 146	36,4%	-5 909	-11,9%
2004	**55 531**	29 788	53,6%	11 749	21,2%	19 423	35,0%	-7 449	-13,4%

Source: Czech Statistical Office, National Accounts (ESA 1995).

Notes: GDP measured in fixed prices of 1995.
Exchange rate CZK/EUR used as yearly averages.

Major structural changes

Employment by sectors

Trend of decreasing share of employment in primary and secondary sector and increasing employment in tertiary sector continues. The share of employment in the tertiary sector currently exceeds 56%.

Table: Employee shares according to sectors.

Employee shares according to sectors

	year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Agriculture and fishery	thousand	375	338	326	305	284	267	247	241	225	228	213	202
	%	7,7%	6,9%	6,6%	6,1%	5,8%	5,5%	5,2%	5,1%	4,8%	4,8%	4,5%	4,3%
Industry and construction	thousand	2 093	2 078	2 076	2 065	2 031	1 992	1 912	1 868	1 893	1 888	1 863	1 845
	%	42,9%	42,2%	41,8%	41,5%	41,1%	40,9%	40,1%	39,5%	40,0%	39,6%	39,4%	39,2%
Private services	thousand	1 335	1 432	1 491	1 534	1 555	1 541	1 524	1 508	1 484	1 522	1 539	1 545
	%	27,4%	29,1%	30,0%	30,9%	31,5%	31,7%	32,0%	31,9%	31,4%	31,9%	32,5%	32,8%
Public services	thousand	1 071	1 077	1 067	1 065	1 064	1 065	1 079	1 112	1 124	1 123	1 117	1 114
	%	22,0%	21,9%	21,5%	21,4%	21,5%	21,9%	22,7%	23,5%	23,8%	23,6%	23,6%	23,7%
TOTAL		**4 874**	**4 927**	**4 963**	**4 972**	**4 937**	**4 866**	**4 764**	**4 732**	**4 728**	**4 765**	**4 733**	**4 707**

Source: Czech Statistical Office.

Despite the above-mentioned development the share of tertiary sector in the CR lags behind the developed countries (the EU countries reach on average almost 66 %). This sector is perspective in absorption of labor force in so-called quarter sector (strategic services, IT technologies, e-business) and rise of its share in employment is expected in the nearest future.

Development of industries

Processing industry (D) belongs in developed economies to decisive sources of GDP creation. In the Czech Republic it accounted to 27% of GDP in 2004 (year-on-year growth by 0.3 percentage points). Processing industry has also predominant share on the sector performance in terms of revenues – in 2004 it grew to 90.2% (in 2003 it was 89.7% for firms with 20 and more employees), whereas production and distribution of electricity, gas and water accounted for 7.2% and remaining 2.6% could be attributed to exploitation of raw materials.

Favorable trend from previous years continued also in 2004: in connection with acceleration of investment activity the development has been achieved particularly in processing branches and fields producing greater added value (e.g. means of transport production, or manufacture of electric machines and apparatuses). On contrary industries demanding large usage of labor force (e.g. fabric and textile products, clothing and shoemaking industries) stagnated. Thanks to these trends Czech processing industry gradually keeps the pace with the structure of sector in developed European and overseas economies. Revenues from sale of own product and services (in constant prices) marked also impressive recovery: the year-on-year growth 2004/2003 amounted to 10.7%, which is almost double of the growth rate 2003/2002 (+5.6%). Processing industry realized also highly dynamic development in terms of added value (2004/2003 in constant prices +8.4%), which was 5.3% in 2003/2002 only.

Concerning international trade, the processing industry achieved also impressive performance. Turnover grew year-on-year by 23.2% (previous yearly change was 9% only) and amounted to CZK 3 260 bn (EUR 102 bn); export grew faster (+25.1%) than import (+21.3%). International trade ended the year 2004 with surplus CZK 60.4 bn (EUR 1.9bn) and according to the recent study of the bank Lehmann Brothers the growth of Czech export was the most rapid of all European economies (growth in export performance in 2004 by +7.1%). Greater dynamic was only reported by China (+8.6%) and South Korea (+8.6%).

Foreign direct investment is one of the most important stimuli for development of the processing industry. The reported inflow in 2004 was almost double of the previous period (CZK 114.7 bn, i.e. EUR 3.6 bn). These inflows are not only due to the system of investment

incentives, but also qualified labor force, low rate of inflation, relatively well developed infrastructure and favorable geographic location.

Foreign direct investment

The financial account of the Czech Republic has almost always recorded high positive values of capital inflows with prevalence of **foreign direct investment**. Since every country now competes for foreign investment, it is partially also success of the Czech agency CzechInvest promoting FDI.

In 1993-2002 Czech Republic received ca EUR 35.1 bn of FDI out of which almost one third originated in Germany (31.6%), the Netherlands at the second place with 16.5%, followed by Austria with 10.2%, France with 7.9% and USA with 7%. In sector division, ca 60% of FDI was directed to services, industry participated on total FDI inflow with 37.4%.

The processing industry gained between 1993 and 2002 ca EUR 10.9 bn. of FDI and participated on total inflow with ca 37%. In this aggregate of industry the major part of FDI flow was directed to vehicles manufacturing, electricity and optical appliances construction, machine and equipment construction, metal and metal goods, food and tobacco and to production of glass, ceramic, porcelain and construction materials.

Changes in employment

The Czech labor market is characterized by high rigidity of supply side reflected in high and till 2004 growing level of registered unemployment in spite of relatively dynamic economic growth. Major factors contributing to inflexible market are **low regional mobility** (approximately 60% of Czech citizens live in the place where they were born), **low professional mobility** (unwillingness to change profession), **difficulties in starting and closing a business** and also **high labor-law protection of employees**.

According to LFS data the **general rate of unemployment** (ILO methodology) amounted in Q3 2005 to 7.8%, i.e. 0.5 percentage point decrease from 2004. Not only the recovery of the general economy helps with absorption of labor force; probably also labor offices work more efficiently. In previous years the rate of unemployment was also influenced by activities of some unemployed in the shadow economy; this is gradually being eliminated.

Despite it, unemployment turns to be a chronic phenomenon with very negative social and economic consequences. Key issue for high levels of unemployment in the Czech Republic is the **social security system,** which in its current fashion has unfavorable impacts on the labor market.

The risk of long-term unemployment increases in case of higher age cohorts and in case of disabled people. The structure of unemployment shows specific alarming elements: the unemployment increases in the category of young people, especially graduates, people with low education, women with children and people belonging to Roma minority and disabled people. Long-term unemployment reached 3.8 % (EU15 = 3.3 %) in 2002.

Labor supply (participation rate) remains steady. In recent years it fluctuates between 60% and 61%. The participation rates of men and women are very different, in the case of men it is slightly below 70% and in the case of women slightly above 50%. The reasons are apparent: longer life prospects together with lower pensioning age (still dependent on number of children), higher participation at education, longer maternity leave, housewives.

Labor productivity has been rising continuously in the last decade, except for the year 1996. The excess growth of real wages in comparison to labor productivity was prevailing in the first part of the last decade, which was a consequence of unsuccessful privatization, immaturity of social partners and government passivity. The development of real wages in comparison to the labor productivity was more favorable in the last 7 years.

Major sectors of innovation activity

Application of knowledge-based technologies (predominantly by foreign capital) has resulted in re-shaping of organizational structures, outsourcing of peripheral activities, improvement of marketing, and a steep increase of the share of high-skilled jobs in total employment. The impact on corporate governance and corporate culture is important as well. The macroeconomic indicators reflect these effects; the share of exports of high-value-added goods has increased, and now represents 57 % of Czech exports towards the OECD area (in 1993, this share was below 40 %).

According to the **questionnaire survey** on innovation activity (with 3 600 participants) carried out by the Czech Statistical Office, following facts have been gathered: The survey dealt with four types of innovations – **technical innovations, new product innovation, innovation of product and innovation of process.** The survey showed that there were 29 % innovating companies in 1999 – 2001 (that is **29 % of companies in the Czech Republic introduced some of four mentioned innovations**). 30 % of them belonged to the processing industry, 26 % to the sector of services. To summarize, in the Czech Republic **the percentage of innovating companies (29%) remained far below average of the EU countries**. The highest part of innovations belonged to **chemical industry**, the lowest part belonged to **textile and leather industry**. As for the services, the leader was R&D sector, transport and telecommunication sector had the lowest number of innovations. **Bigger companies innovated more**.

Total costs spent on innovations in 2001 achieved CZK 48 bn. (EUR 1.5 bn); 45 % of these costs were spent on acquisition of machinery, expenditures on intra-company R&D assumed the second place. Among the most important sources of innovation companies identified the incentives coming from customers (46 %) and company's internal sources (44 %). Universities or scientific institutions achieved only 7%, which indicated separation of science and work practice. Among the most important limiting factors belong high innovation costs and lack of financial sources with excessive economic risks.

R&D expenditure

Total expenditures on R&D increased by 9% in 2003 (**private R&D expenditures** by 4.5%, **governmental** by 8.4% and other by 74%). This trend was not usual in the past years, when the representation of the government on total R&D expenditures steadily grew. In 1995 private R&D expenditures amounted to 68% of total R&D (i.e. public sources to 32%) and in 2001 private sector share shrunk to 51% (public sources to 42% and other sources 7%). The average annual growth rate of R&D expenditures between 1995 and 2003 amounted to 10.3% (private R&D 5.5% and public R&D 18.8%).

We may conclude that the **government and its agencies have been showing greater activity** tending towards improvement in the situation in research and development, than the R&D entities themselves, particularly in the private enterprise sector.

R&D expenditures by field of science

The most R&D expenditures demanding industry was **engineering** with overall R&D expenditure in 2001 reaching almost EUR 0.5 bn. The second most expensive field were **natural sciences** with total investment less than EUR 200 mil. However, the **representation of the government** on total expenditure was different in each field of science: in the field of humanities the government share exceeded 93%, in social sciences 88%, but governmental promotion of engineering was much weaker (only 23% representation).

These figures confirm that the government invests its sources in the fields of science, where the return of invested finances is less probable (humanities or social sciences…). The government is much less willing to promote profit seeking R&D like that in engineering.

Concerning the relation of operational expenditures and capital expenditures, the most capital intensive R&D was performed in natural sciences (15%), the least capital intensive R&D in humanities (less than 7%).

The ICT demand and supply

Specific sectors' market size and value (ICT industry)

The Czech Republic remains the most dynamic ICT market in Central and Eastern Europe, with the highest ratio of IT spending to GDP (4.6 % for ICT equipment and software) in the region: a figure that is comparable to many Western European countries. In 2003, total ICT expenditure (including all telecom services) rose to EUR 7.9 billion, up by 5.0 % year on year (previous year growth 1.7%). Market growth is being driven in part by higher spending on communications technology. While the growth was primarily due to increased spending on software and services, a moderate recovery is now taking place in the country's hardware market. Due to the increasing convergence between the telecommunications and IT markets, it is no longer possible to accurately distinguish between the two, notably in the equipment market.

In the software market, domestic enterprise application suite (EAS) vendors are slowly being squeezed out of the market, with only one local firm among the top ten players. In the past year, the discrete[1] and process manufacturing industries have been the number one and two sources of ERP (Enterprise Resource Planning software) spending in the Czech Republic. Accounting remained the most popular functional area of EAS software, followed by industry-specific modules.

Czech ICT Market, 2000-2004 (€ million)

	2000	2001	2002	2003	*2004 e*
ICT Equipment					
Office equipment	71	75	78	83	*88*
Computer hardware	712	823	889	908	*960*
Datacom and network equipment	967	1 012	1 002	998	*1 025*
LAN hardware	132	148	157	165	*172*
PBX and key systems	166	152	145	143	*139*
Packet switching/routing	74	71	72	75	*79*
Cellular mobile radio infrastructure	513	549	521	497	*504*
Other datacoms & network equipment	82	93	107	119	*130*
End-user communications equipment	362	353	171	150	*150*
Mobile telephone sets	307	297	114	91	*91*
Other terminal equipment	56	56	57	59	*59*
Total ICT equipment	**3 442**	**3 629**	**3 313**	**3 288**	***3 397***
Software Products	**354**	**409**	**468**	**534**	***607***
ICT Services					
IT services	**707**	**772**	**884**	**1 000**	***1 118***
Telephone services	1 029	976	947	973	*983*
Mobile telephone services	1 140	1 492	1 770	1 928	*2 089*
Switched data and leased-line services*	126	110	126	145	*166*
Cable TV	68	79	88	101	*114*
Total carrier services	**2 363**	**2 657**	**2 931**	**3 147**	***3 352***
Total ICT services	**3 070**	**3 429**	**3 815**	**4 147**	***4 470***
TOTAL ICT	**6 866**	**7 467**	**7 596**	**7 969**	***8 474***

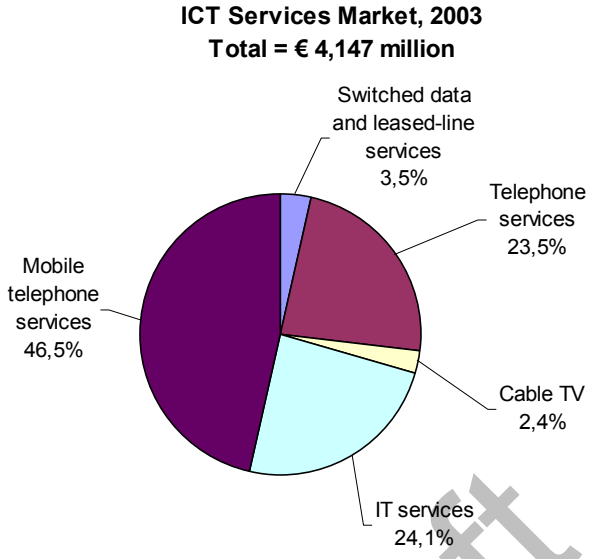
* includes Internet and online services

Source: derived from EITO 2003 data

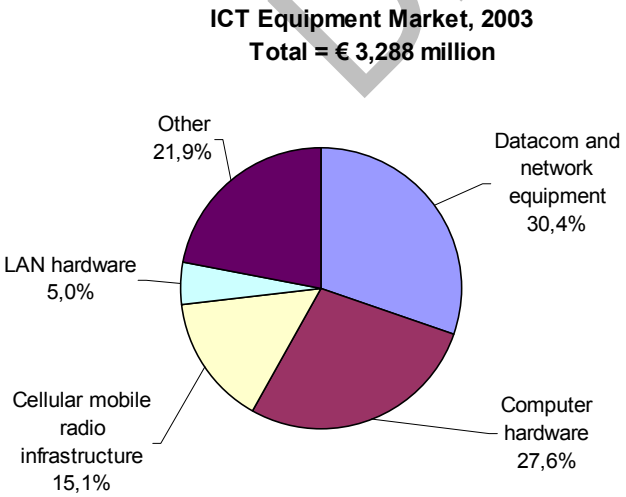
Note: figures may not match those provided by EITO exactly due to rounding.

[1] Discrete manufacturing includes industries that transform semi-finished products into final products.

Growth in the ICT market as a whole in 2003 was led by growth in mobile telephone services (8.9%) and software (14%). According to EITO figures the overall services market grew by 8.7% in 2003 and reached €4 147 million, and expected further growth by 7.7% in 2004, to €4 470 million. The Czech telecom market was opened to liberalization at the beginning of 2001. The growth in mobile services over the last few years is set to continue moderately over the next several years, but the expansion in fixed-line penetration has all but stopped. The Czech Republic leads the CEE region in terms of mobile penetration, exceeding 105 % in 2004.



The Czech market for ICT equipment did not keep up with growth in the ICT sector as a whole in 2003 (a fall of 1%). The decline was particularly due to end-user communications equipment (-12%) and mobile telephone sets (-20%).



Position in international comparison

Manufacture of office machines and computers: Development of exports of computer technology products (NACE 30) and share of the Czech Republic on deliveries of CEFTA to the EU countries in 1997-2001 is shown in the table.

Table: Share of the CR on deliveries of CEFTA to the EU countries.

EUR th.	1 997	1998	1999	2000
From CEFTA	877 001	1 520 551	2 305 673	2 541 454
Year-on-year index	x	173.4	151.6	110.2
Of which CR	90 979	201 287	188 541	248 489
Year-on-year index	x	221.2	93.7	131.8

Source: Panorama of the Czech industry Eurostat

Competitiveness of the production as per NACE 30 in 1997-2001 can be quantified in comparison with the position of transitive countries (CEFTA) on EU markets.

According to the indications of Eurostat **the overall exports of computer technology** products were at the amount of 9.8% of exports of the commodity as per NACE 30 of CEFTA countries. Indicator 00/99 documents the growth of exports of computer technology products at the rate of 31.8%.

Manufacture of electrical machinery, apparatuses and electrical equipment demonstrates a permanent growth and development. Production assortment comprises products, equipment and parts, electro-assembling and reparation works. The majority of the branch's production is directed into fixed capital as machinery. Most enterprises of the branch have been already privatized, prevailingly by foreign capital.

Position and development of this branch can be well compared with other new EU entrants. In 1994 the Czech share in exports of CEFTA countries into the EU countries oscillated around average 25%. In 1999 this share rose to 29.3% and in 2000 to nearly 29.7%. Only Hungary reached a greater share of exports from CEFTA countries into the EU (30.2 % in 1999).

In Manufacturing of radio, television and communication equipment data from Eurostat show that in 2000 export of the branch 32 production from the Czech Republic to the EU countries made 18% of exports of CEFTA countries. Index 00/99 documents an impressive growth of exports of the branch 32 production from the CR by 76%. Share of export of electronic components from the CR to the EU countries in 2000 made 61.5% of exports of the branch 32 production.

The domestic market for **measuring instruments, process control, medical and optical instruments, watches and clocks** is fully comparable with foreign markets. In the majority of product ranges supply exceeds demand. With strong international competition such as Siemens, Philips, Schneider Electric, Asea Brown Boveri and others, domestic producers are competitive only in manufacturing of selected assortment of regulation technology, instruments and components and in final production of sterilizers, dental X-ray apparatuses, furniture and surgical instruments and optical elements with higher share of mechanical work.

As compared with CEFTA countries the total share of the branch in exports into EU has increased by more than 39% as compared with 1997 with 8% advance in 2000 as compared with 1999.

IST in telecommunications

Table: Telecommunications penetration rates.

	1995	1996	1997	1998	1999	2000	2001	2002	2003
Fixed line penetration - households (%)	40,3	49,0	60,0	69,7	72,5	71,9	68,6	66,8	65,9
Fixed line penetration - inhabitants (%)	23,7	27,3	31,8	36,3	37,5	37,7	37,5	35,9	35,4
Share of fixed network digitalization (%)	17,9	32,8	50,0	64,0	76,7	85,7	93,9	100,0	100,0
Number of payphones per 1000 inabitants	2,0	2,6	2,8	2,9	2,9	2,9	2,8	2,8	2,7
Total number of ISDN subscribers (th.)						122	261	389	477
Mobile phones penetration (%)	0,5	1,9	5,1	9,4	18,9	42,3	68,2	84,0	96,0
CATV penetration - households (%)						13,4	12,0	16,4	18,0
Color TV set per 100 households	95,8		104,9	109,0	112,3	115,8			
Number of PCs per 100 inhabitants				9,7	10,7	12,1	13,6	18,0	
Number of PCs at home (% of households)					14,2	17,8		28,0	
Number of PCs with internet per 100 inh.					6,8	9,7	12,2	16,0	21,0
Number of internet hosts (th.)	21,9	40,8	56,9	86,5	122,3	160,0	215,5	228,4	

Source: Czech Statistical Office, Ministry of Transport and Telecommunications

Fixed Lines

The market for fixed lines has been fully liberalized since 2003 including number portability and carrier pre-selection feature. However, almost 100% of last miles belong to the incumbent Český Telecom. The total number of telephone stations decreased from 3 585 mil. to 3 368 in 2004 mil., out of which 492 thous. were ISDN lines.

Other fixed lines operators (relying on carrier pre-selection or call-by-call carrier selection) are Tele2 , Contactel, GTS Novera, Czech On Line and UPC. The industry is in dynamic evolution with no clear market shares.

Mobile Phones

The number of mobile subscribers in the Czech Republic increased by 8% in 2004, to reach 10.5 million at year end, compared to 9.7 million at the end of 2003. Eurotel Praha and T-Mobile (formerly RadioMobil) dominate the market. RadioMobil entered the market in 1996, with both operators receiving digital (GSM 900) licenses in March that year. However, Eurotel was the first on the market, opening its digital service in July that year, while RadioMobil, which introduced its service in late-September 1996, has always fallen behind its rival in terms of subscriber numbers. Oskar Vodafone, till 2004 majority-owned by Canada's Telesystem International Wireless, was licensed to provide dual-band GSM 900/1800 services in September 1999 and launched its Oskar service in March 2000. The existing operators were barred from participating in the GSM 900/1800 tender, although they were awarded 1800MHz frequencies in July 2000.

Czech mobile GSM operators state the coverage of inhabitants to range between 98% (Oskar Vodafone) to 99.5% (Eurotel). In the case of out-of-date system NMT the coverage approaches almost 100% of inhabitants (of course less if territorial coverage is in question). Remote and less populated areas are still sometimes covered only by some of the three operators.

Internet Penetration

Some 3.1 million people **got connected** to internet in the Czech Republic in 2003. In January 2003 a total of 35% of people aged over 15 living in the Czech Republic were connected to the internet; the increase in penetration is therefore very dynamic since as of December 2001 it amounted to 13.6% only. About 80% of young people between 15 and 18 years of age use the internet in the Czech Republic. In the age group 19 - 23 years there is 74% internet users and in the age group 24 - 30 internet penetration is 68%.

Major telecommunication operators

Aliatel

Aliatel was established in May 1996 as an equally-owned joint venture between the Czech Republic's eight regional power distributors. In April 1998, RWE Telliance of Germany (now known as RWE COM) took a 40% stake.
During the nine months ended September 30th, 2003, Aliatel had revenues of CZK 1 889 mil., 41.6% higher than the same period the year before, and a net loss of CZK 320 mil. for the period. For the nine months ended September 30th, 2003, Aliatel made investments of CZK 194 mil., and stated that it had completed the majority of its network rollout, with any further network rollout being customer driven. As of December 2002, Aliatel had 360 employees.

Oskar Vodafone

Oskar Vodafone received its GSM 900/1800 license in October 1999 and launched commercial services in March 2000, at which time its network covered 50% of the population. As of December 2003, Oskar Vodafone had 1 547 000 subscribers, representing a 16.4% market share.
In December 2001, two 3G licenses were awarded to Eurotel and T-Mobile - Oskar Vodafone did not bid, stating the CZK 3 500 mil. asked by the government was too high. However, in subsequent tender in 2004 it managed to get a UMTS license for just CZK 2 bn.

České Radiokomunikace

CRa was originally a provider and operator of transmission systems for national radio and TV services. The company has since been permitted to expand its existing national digital radio relay network to provide leased-line services and data communications facilities, in addition to providing nationwide broadcasting services. CRa leases capacity on its microwave radio relay network to carry telecommunications traffic for third parties, including Český Telecom, T-Mobile and Oskar Vodafone.
CRa had revenues of CZK 2 234 mil. in 2003, down 11.2% on 2002. Revenues from telecommunications sales fell 10.5% in 2003, to CZK 964 mil. CRa said in early-2003, that the recent completion of its fiber-optic backbone network meant that the volume of its investments decreased by 64.3% in 2002, to CZK 629.9 mil. CRa planned to make investments of CZK 464.3 mil. in 2003, with CZK 278.4 mil. targeted at the company's telecommunications activities. Cra employed approximately 800 people as of December 2003.

Český Telecom

By December 2003, Český Telecom was operating 3 586 000 telephone lines and 477 000 ISDN lines. Between January and the end of September 2003, Český Telecom's capital expenditure was CZK 4 235 mil., 36% less than the same period the year before. In June 2002, Český Telecom's last analogue exchange was closed and its network became 100% digital.
In February 2004, Český Telecom reported its first annual loss (for 2003) in nearly a decade, as it wrote down the value of its assets and increased competition forced the company to reduce its prices. Český Telecom, which was told by auditors to reduce the accounting value of its network by CZK 9.9 bn due to a fall in traffic, reported a consolidated net loss of CZK 1.8 bn. (approx. US$68.99 million) in 2003. Earnings before interest, tax, depreciation, and amortization (EBITDA) were CZK 23.8 billion.
In 2005 Český Telecom was privatized – new majority owner is Spanish Telefonica.

Eurotel Praha

Eurotel Praha spol sro was established in November 1990 as a joint venture between Český Telecom and Atlantic West BV (jointly owned by Verizon Communications and AT&T Wireless), with ownership divided 51% and 49%, respectively. In June 2003, Český Telecom

announced the signing of an agreement with Atlantic West for the acquisition of its 49% stake for over US$ 1 000 million and the transaction was completed in early-2004.
Eurotel Praha's total cellular subscriber base stood at 4 215 000 at December 2003, representing a 44.6% market share. In 2003, Eurotel had revenues of CZK 29 078 mil. and net income of CZK 7 250 mil.
In December 2001, Eurotel was awarded one of two 3G licenses (T-Mobile was awarded the other) at a cost of CZK 3 535 mil. (approximately US$ 96 mil.). Both companies are required to launch 3G services in Prague by January 2007 and can share infrastructure costs, which are estimated at up to CZK 20 000 mil. (approximately US$540 million) each over the next five to eight years.

Nextra

Nextra Czech Republic is part of Telenor's Nextra Internet business. Nextra inherited the Internet network of PVT and the company employees rose from 50 to 160. From January 2003, Nextra Czech Republic and Nextra Slovakia were merged into one organization.
In 2002, Nextra had revenues of CZK 444.7 mil., up 12.7% on 2001. The company made a net loss of Kc630.4 million in 2002. The company made investments of Kc80.6 million in 2002, down 23.8% on 2001. As of December 2002, Nextra had 116 employees.

T-Mobile Czech Republic

In March 1996, the CMobil consortium won the tender for an international partner for České Radiokomunikace as and later that month a GSM license was awarded. The CMobil consortium was owned by: T-Mobile Global Holding Nr 2 GmbH (92.1%); TIM International NV (7.2%); and, PVT as (0.7%). RadioMobil was created in June 1996 and started operating its Pægas network in September 1996.
RadioMobil is now owned by CMobil (60.8%) and České Radiokomunikace (39.2%). RadioMobil Pægas service was rebranded T-Mobile in 2002 and RadioMobil changed its name to T-Mobile Czech Republic in 2003. T-Mobile Czech Republic's subscriber base reached 3 947 145 at the end of 2003, representing a 39.0% market share.
In December 2001, T-Mobile Czech Republic was awarded one of two 3G licenses (Eurotel was awarded the other) at a cost of CZK 3 861 million (approximately US$104 million).

UPC Czech Republic

UPC Czech Republic, wholly owned by Netherlands-based United Pan-Europe Communications (UPC), is the dominant cable TV operator in the Czech Republic. As of September 2003, UPC Czech Republic's operating areas included 913 000 homes, of which 681 400 were passed, including 243 100 with two-way capability. At that time, the company had 295 600 basic cable TV subscribers, 60 700 direct-to-home (DTH) cable TV subscribers, 3 000 telephony subscribers (17 700 serviceable homes), and 21 500 Internet/data subscribers

IST in financial services

All major Czech banks offer direct banking services such as internet banking or mobile phone access (the first and largest **exclusively online bank** was **eBanka**, which launched its services in 1998 and had nearly 257 000 clients at end-June 2002). Since then, the number of direct banking transaction is increasing rapidly.

IST in public administration

Taxes

Since March 2003 **value added taxpayers** can submit their tax returns via the internet using electronic signature. VAT returns are submitted on a monthly basis, therefore the

electronisation of the process brings about greater relief in comparison with income tax, where returns are submitted once a year.

Electronic Markets

The Office for Public Information Systems (ÚVIS) has granted licenses to 3 companies to run electronic marketplaces for public administration subjects, among them Economy.cz with the AllyGeM market, PragoData with Český Trh market, and RIDEA Distribution.

IST in health services

IZIP Project

The objective of the IZIP (Internet Access to Patient's Medical Information) Project is to place the medical database of the patient-insuree upon his wish into the public information network - the internet. The database consists of selected parts of medical documentation written into IZIP by the attending physician. Only the patient has access to data for reading in IZIP. By April 22nd, 2003, 67 323 users registered themselves with IZIP.

Smart Cards

The card is used as the insured person's health insurance identification card. Ambulances, hospitals, some physicians as well as pharmacies were equipped with card readers. At this stage approximately 10 000 smart cards have been issued to Litoměřice residents. The Ministry of Labor and Social Affairs has joined the campaign with a separate Phare project entitled "The Use of Smart Cards in Welfare Services." The Social Security Administration data are stored on the otherwise unused part of the smart card from the Mácha project. Measures have been taken to ensure that Social Security Administration employees are able to read and utilize only the part that belongs to the host application.

IST in educational services

Internet for schools

This project was approved by the government in 2000 with the aim of providing internet connection to all school in the Czech Republic. The initial plan assumed that the project would cost the state around EUR 234 mil. in the first four years. Teacher training would cost EUR 63 mil., and EUR 25 mil. was earmarked for an educational portal from which all schools could download educational programs for free.

In 2002 each of the roughly 6 500 elementary and secondary schools in the Czech Republic was supposed to have at least one computer with internet access. At present, internet is accessible at only half of them (3 620 schools).

IST in households

Only 17% (i.e. ca 540 000) of the Czech population has internet access at home (28% have a PC at home). The largest share of households with internet access currently uses dial-up connection, which means an analogue modem or an ISDN modem. According to the press survey, the use of broadband connection was very rare (25 000 through CATV – i.e. 4.6% and 7 800 through ADSL – 1.5%). Representation of other technologies like frame relay or wireless access has so far been negligible. The remaining households (93.9%) are restricted to dialup access. Some 40% of households connected via dialup spend more than CZK 500 (ca EUR 16) a month for internet access.

The main reason for rather low internet household penetration is relatively high cost of internet connection. Further introduction of ADSL and other high-speed data technologies are making internet connection much more affordable for households.

Institutional setting and polices relevant to the IS

These governmental departments are of key importance for IST development:

- Ministry of Informatics (established 2002),
- Ministry of Transport and Telecommunications,
- Ministry of Industry and Trade.

Outside the government there are other state authorities relevant for IST:

- Czech Telecommunication Office,
- The Office for Protection of Economic Competition ("Anti-monopoly office").

The **general information policy** was adopted in May 31st, 1999 under the title "The State Information Policy - The Road Towards an Information Society." The information policies in other sectors are based on it and follow to the general policy into particular details. On April 25th, 2001 the Czech Republic approached also the **action program e-Europe** particularly promoted by Romano Prodi. The state **information policy in education** has been set as its conception on April 10th, 2000, which is subdivided into two stages. The **Action Plan for the State Information Policy** approved on May 31st, 2000 contains concrete measures necessary for building up the Information Society. The **National Telecommunication Policy** was announced on 26th April 1999 to open up the telecommunications sector to the free market.

Other state policies have obviously also impact on development of Information Society, but they cannot be called as purely IS policies. Among them belong conception of **regional policy** in the Czech Republic till 2010 supporting also informatization of regions and national S&T and R&D policy approved on 6th January 2000.

General policy

The **national IS Policy** has been adopted by the government of the Czech Republic as a resolution No. 525 of May 31st, 1999. It contains all important measures concerning the support of the Information society and its subtitle is "The State Information Policy - The Road Towards an Information Society."

The government's strategic document specified the **following eight basic priorities**:

1. To achieve **information literacy** by all citizens,
2. To put into practice the citizen's right of **direct access to information,**
3. **Improve the public administration services** through IST**,**
4. A **communication infrastructure** as a pre-requisite for an Information Society,
5. **Trustworthiness, security and order** in the Information Society, and personal data protection,
6. Development of **e-commerce**,
7. **Transparent business environment**,
8. **Stability and security** in the Information Society.

E-Europe initiative

The Czech Republic has reflected the initiative e-Europe. According to the resolution of the government No. 405 of April 25th, 2001 the Czech Republic approached the action program e-Europe. The goals domestic administration adopted are as follows:

1. European Youth into the Digital Age,
2. Cheaper Internet Access,
3. Accelerating E-Commerce,
4. Fast Internet for Researchers and Students,
5. Smart cards for Secure Electronic Access,
6. Risk capital for high-tech SMEs,

7. Participation of the Disabled,
8. Healthcare online,
9. Intelligent transport,
10. Government Online.

Education

The state information policy in education has been set by the **Conception of the state information policy in education**, which the government of the Czech Republic adopted as a resolution No. 351 on April 10th, 2000. This resolution assigns the Ministry of Education to elaborate and annually update the schedule of realization of the Conception detailed into individual programs of support of education for information literacy.
The Conception lays down the objectives in the field of the information literacy of teachers, students, citizens, public administration and state employees and health care and library employees. The fulfilling of objectives and tasks of the Conception is within competence of individual ministries.

Telecommunication Policy

A **National Telecommunication Policy** (NTP) was announced on 26th April 1999 to open up the telecommunications sector to the free market. The objective of NTP was to provide good quality, reliable telecommunications services comparable to those existing in the developed EU countries, and to integrate the Czech Republic into the 21st century global information society. The NTP is based on European regulatory telecommunication sector reforms.
The Czech Republic ratified the Agreement on Basic Telecommunication Services to implement liberal telecommunications principles and open all its telecommunications markets by 1st January 1998, except voice telephony (by 1st January 2001). Individual licenses are required for public infrastructure provision, broadcasting, transport services and public voice telephony. All other services are required to meet the provisions of the commercial licensing law and general licenses issued by the regulator.
The key features of the policy are:

- **To accomplish liberalization of the telecommunications market.**

All the telecommunication markets have been liberalized since 1st January 1998 with the exception of the voice telephony. The progress in the field of liberalization of the voice telephony has been made with the introduction of the carrier selection facility in July 2002.

- **To provide universal service**

The universal service is defined in the Telecommunication Act as the right of connection to the public telephone network at fixed location, provision of information services on subscriber numbers, payphone services and special measures for disabled.

- **To establish an autonomous national telecommunications regulatory authority**

The Czech Telecommunication Office has been set up on the basis of the Telecommunication Act No. 151/2000 Col., on July 1st, 2000 as an independent state administration office.

- **To open network provision, to facilitate entry of new businesses into the market and thus expose the incumbent Český Telecom under competition pressure**

The country socio-cultural characteristics

Educational sector

Due to **shrinking of child population** the numbers of freshmen at specific education levels reduce. It is expected, that the number of pupils at Elementary Schools will fall from 1 028 thousands in 2001 to 890 thousands in 2005 and about 760 thousands in 2010.
The demographic situation was **destabilized by the pro-natality measures of the 70s**. The crest of the natality wave launched in the 70s attained secondary schools in 1989. At present this age group is graduating from higher education institutions. The age groups corresponding to secondary schools started dropping steeply in 1993.
The expected length of schooling increased by 1.2 years during the 90s, reaching the level of 15.1 in 1999, which means, that the **Czech Republic lagged behind the average of the EU countries by 2.2 years**. Thanks to the demographic trends and some measures of the Czech government at the end of the 90s, the expected length rose by further 1.3 years to 16.4 in 2002.

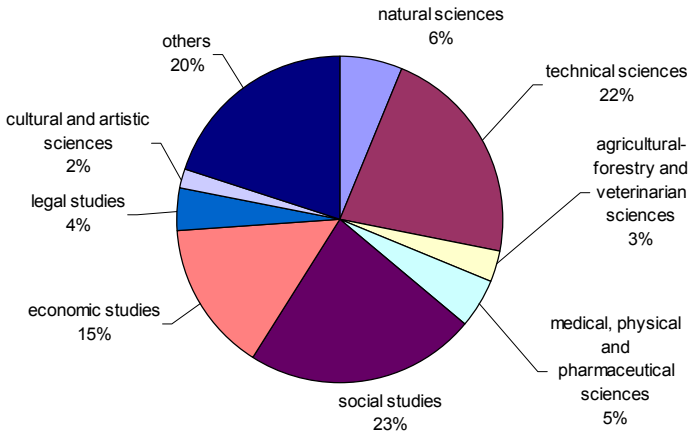
Secondary education

The branch structure of the Czech education system had been **planned for prevalence of engineering branches**. In the 90s **the numbers of students in engineering branches fell considerably** and the numbers of students in **economic and service branches increased**. For instance, the numbers of students enrolled in mechanical engineering branches of vocational schools dropped to about one third in the course of 7 years, those enrolled in building branches to one half, etc. On the other hand about 40% of all young people was enrolled in economic and service branches of technical schools. The drop of interest in industrial and handicraft vocations has resulted in the fact that particularly **the capacities of vocational schools are not exploited sufficiently**.

Tertiary education

Total numbers of regular students of tertiary (or post-secondary) level between 1989/90–2000/01 was growing steadily and almost doubled. The **proportion of university students is 88%**, the rest are students attending non-university institutions.
Some branch changes mentioned in the section dealing with secondary schools can be observed also in the **demand for tertiary education**. They include e.g. a **drop of interest in technical (engineering)** education and an enormous **rise of interest in economics and legal studies**.

Chart: Structure of students in tertiary education, by area of training (2001).



The **participation rate of the 19 to 24 year olds in** the Czech **tertiary education** has been growing and in 2001/02 accounted for **29.8%.** In spite of the described growth, the **differences between the Czech participation data and analogous EU or OECD data in the 19–24 age group are even greater than in the lower age groups**.

Adult education

The share of labor force without any education is negligible and 85% of it is employed. The **illiteracy rate** of the Czech population over 15 years is **below 0.5%.** For this reason this category is not considered the essential group on which the endeavor to improve lifelong learning should concentrate.

Even though real literacy is not an issue, there is certainly other threat to unemployed – **IT illiteracy**. Therefore the Ministry of Informatics started a **national IT education program** with subsidized courses in computer literacy. The aim of the project is to enable all those who are interested to learn the **basics of using a computer, and basic orientation on internet**.

IT related education

The **education of information technologies** has at the level of the tertiary education very strong fundaments. More than 11.7% of total university students (25 209) studied in 2000/2001 IT related fields. The most represented branch is **electronics and informatics**, especially at technical universities. These fields of study clearly **follow to technical schools of electrical engineering** rather than to grammar schools (gymnasia).

Informatics (3 071 students) is especially taught at **non-technical universities** (faculties of mathematics or universities of economics). The fact, that only 92 students studied **education of informatics** (at faculties of pedagogy) is alarming; probably education of IT subjects at elementary and secondary schools might also be secured by persons without necessary qualification.

Table: IT related university students in 2000/2001.

Field of study	total		study level		
	number	%	bachelor	master	doctoral
Total university students	**215 207**	**100.00%**	**40 186**	**157 302**	**17 719**
Total IT related students	**25 209**	**11.71%**	**2 829**	**19 542**	**2 838**
Electrotechnics and informatics	12 756	5.93%	652	10 791	1 313
Informatics	3 071	1.43%	650	2 203	218
System engineering and informatics	1 944	0.90%	364	1 517	63
Mathematics	1 616	0.75%	136	1 170	310
Applied informatics	1 613	0.75%	595	947	71
Physics	1 584	0.74%	119	968	497
Military electrical technologies	743	0.35%	10	650	83
Informatic engineering	578	0.27%	18	480	80
Applied sciences and informatics	573	0.27%	35	450	88
Applied mathematics	527	0.24%	198	274	55
Education of Informatics	92	0.04%	0	92	0
Cybernetics and controlling technics	60	0.03%	0	0	60
Applied physics	52	0.02%	52	0	0

Source: The Office for Information in Education.

Rate of unemployment according to the field (tertiary education)

Despite the lowest overall rate of unemployment for university graduates there are still some discrepancies at the labor market. More than 10% rate of unemployment was registered for **wood processing, mining, transport and environmental protection**, **agriculture** follows with 9.9%. On the other side of the table there are **information technologies** or **pharmaceuticals** with almost zero unemployment. As could be expected, information technologies absorb all graduates.

Table: Unemployment of university graduates.

	Graduates 1998-9	Unemployed graduates	Rate of unemployment (%)
Total	**46 424**	**2 525**	**5.44**
Information technologies	365	-	**0.00**
Economics	12 412	532	**4.29**
Mathematics	621	37	**5.96**
Electrical engineering, ICT	2 723	178	**6.54**
Mechanical engineering	2 560	203	**7.93**

Source: The Office for Information in Education.

Foreign languages

Compulsory English (or German) education begins in the **fourth class** of the elementary school (at the age of approximately 10 years) and in the first two years should comprise three lessons a week. In the remaining years of the elementary school, the distribution of lessons depends on the director of the school, as well as the eventuality of adding another foreign language (which is typical for specialized schools with extended foreign languages education).

In the **secondary schools**, studying of one foreign language (mostly English) is a must. Vast majority of secondary schools educate two languages, this is always the case of grammar schools (gymnasia).

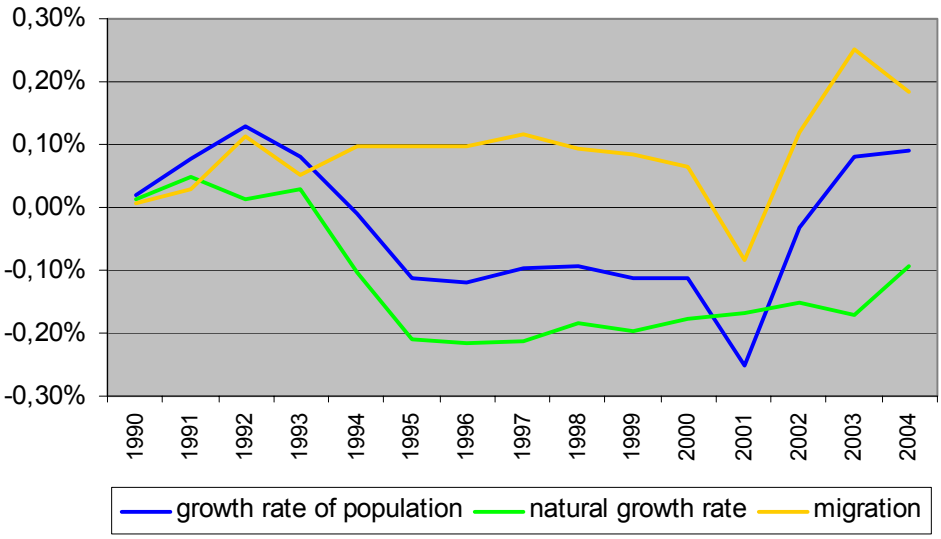
On the level of **higher education**, the attitudes are diverse. Except for the studies concentrated on the language education, there are usually **2-4 semesters obligatory** (the vocabulary in the given area of studies being stressed).

Demographic and social structure

Since 1994 till 2001, the population of the Czech Republic was falling. It has now about 10.3 million inhabitants, but the estimate for year 2015 is 10 million or even slightly less. The natural increment in the population has been lowering since 1980s mainly due to fall in birth rate. In the 1990s the decline in the birth rate has sped up even more. The total fertility lowered from 1.92 in 1985 to 1.14 in 2000. The chart depicts the following trends in the population:

- The **natural rate of population** (with some exceptions) was falling since 1991 to 1996. Since then there is a slight upward trend, and since 2002 the situation improves due to postponed maternity of women born in 70s.
- The **migration rate** was in observed years strictly **positive** (even more than 0.1%). The trend changed in 2001 after approving stricter legislation. In 2003-2004 economic recovery and EU accession attracted many immigrants.
- **Overall growth** rate is the sum of the above rates. Until 2000 migration partially counterbalanced natural fall, in 2001-2002 both rates were negative and underlined negative overall growth rate. Now it is slightly positive.

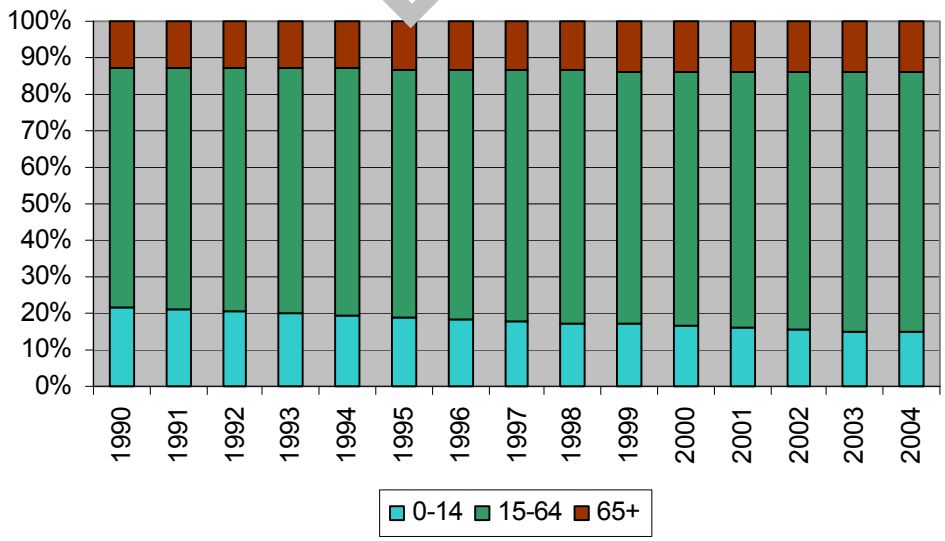
Chart: Growth rate of population 1990 - 2004.



Source: Czech Statistical Office.

The proportion of the population in productive age is now relatively high because it contains two sizeable generations – people aged between 40 – 54 and between 20 – 25. As the first of these generations passes into the post-productive age and the size of young population shrinks, the main change to the age structure will be an increase in number of people in post-productive age with its consequences of **growing fiscal burden, declining number of workers, changing consumption patterns and demand, increasing health costs, necessity of extending capacity of health care institutions etc.** This development must be reflected in **increased demand on the pension system and the social security system, placing greater burden on the productive population.**

Chart: Age distribution (1990-2004).



Migration

External migration

Due to its position, the Czech Republic became very attractive as a transit country and as a destination for immigrants as well. That is why it experienced positive rate of external migration as the only one from the East European countries. Now the foreigners make up for 2 % of the population if the Czech Republic.

In the course of the period of 1990 - 1999 in total about 124 thousand people immigrated to the Czech Republic and 42 thousand people emigrated. The growth gained by the external migration amounted to approximately 82 thousand people. The biggest movements across the state borders occurred in the years 1990-1992 when the split of federal Czechoslovakia was anticipated. The **net migration** was strongest in the last federal year 1992 with significant inflow of Slovaks to the Czech Republic. However, moving between both countries was very intensive also in previous years with flows roughly counterbalancing one another.

Internal migration

Internal migration in the Czech Republic is very low. Its scope has been slightly falling since 1980s and in 1990s it has continued to decrease much more sharply. The number of people that have moved house in the last ten years has not exceeded 2.6 % of the population per year. This means that on average people move once per 40 or 50 years.

Before 1990, the population grew mainly in towns with large stock of housing. Since 1990, the trend has taken opposite direction mainly because of the changes in affordability of housing. Smaller municipalities in the vicinity of large towns thus now record flux of inhabitants. Negative consequences of the low territorial mobility could be seen most evidently in the labor market. The most frequent reasons for moving “following a family member” or “housing reasons” only confirm this fact.

Diagnosis Report

Macroeconomic position

The Czech economy has reached quite a **balanced macroeconomic position**, which was preceded by **high fluctuations in** the transformation of **the nineties**. GDP per capita in purchasing power parity fluctuates around 50% of the EU25 average.

The Czech economic growth is highly **dependent on the performance of countries of Western Europe**; their stagnation in 2001-2003 and slight recovery in 2004 has influenced many export industries. Close future development will be mostly influenced by the **economic cycle in Germany** and other surrounding countries. The GDP growth rate in 2004 amounted to 4% and therefore the convergence with EU economies is slow.

There are very **strong regional disparities** as to economic development; the capital of Prague GDP per capita (according to PPP) amounted in 2001 almost EUR 31 thousand, whereas GDP per capita in the most lagging behind region of Olomouc is below EUR 11 thousand. The capital of Prague will thus be exempted from most programs granting access to **EU structural funds**.

Some structural and **unsolved issues** remain, e.g. **pension and tax system**, **slow judicature** and **weak law-enforcement**. High fiscal deficits of both central and local budgets do not allow for quick adoption of EUR due to non-fulfillment of the Maastricht criteria. The expected term for EMU accession is 2010. Public debt is so far not an alarming issue, but cumulation of deficits pushes it up. The **fiscal reform negatively influences the development of information society** since VAT on information and telecommunication services was raised from 5% to 19% since 2004; education and research budgets are also affected. Proposed **pension reform** intends to establish compulsory pension saving and extension of the pensioning age.

The country average of unemployment rate is currently **slightly below 10%** with enormous **regional differences**, in the capital of Prague it is roughly 3%, but in regions with concentration of traditional industries (mining, heavy engineering, agriculture, textile industry…) it approaches 20%. The absorption of unemployed from old industries is difficult.

FDI has shaped the performance of economy in recent years. **FDI is largely aimed at manufacturing, telecommunications and transport.** Most important foreign investors are from Germany (natural gas industry, automotive industry), Spain (telecommunications) and Netherlands (banking, retailing).

The governmental **ICT policies influence the condition of the economy** and its performance; e.g. implementation of ICT in education boosted **demand for ICT products and services** by some EUR 200 mil. in 2001-2003. The **supply side of the economy** benefits from decreased transaction costs and improved transparency.

Structural changes in the economy

The Czech economy has been **traditionally based on the prevalence of industry** over agriculture and services since the times of the Austrian-Hungarian monarchy. Its **structure partially changed in 90s**, in 2004 the **weight of industry** with respect to gross value added amounted to 41.8% and the weight of services was 53.5%. The importance of agriculture and fishery was negligible with 4.6%.

Heavy industry like steel works, machinery, weapons production has strong roots and hundreds years lasting tradition; the position in the field of ICT was much weaker. **After the decline of communism the Czech ICT companies mostly failed to accommodate to changed demand pattern and soon went bankrupt**. Major part of the Czech economy changed substantially and switched from extensive to intensive industry and to services. Due

to engineering tradition machinery and metal processing remain the most important industries. As to regional structure of industrial production the **main regions are Central Bohemia, Moravia-Silesia and Prague**. Central Bohemia is specialized in car manufacturing and automotive parts production. Moravia-Silesia is strong in metallurgy and heavy engineering and in Prague and surroundings companies focusing on knowledge-based ICT are located.
FDI flows contribute to modern and ICT industry development only to certain extent: foreign investors prefer well-educated and experienced labor force in engineering instead of changing and modernizing the structure of the economy. This attracts **car making industry** and **car component industry** investors. Already two major car producers have its production lines in the Czech Republic (**Škoda - Volkswagen** in Mladá Boleslav producing around 500 000 cars a year and **Toyota - Peugeot – Citroen** in Kolín wishing to produce ca 300 000 cars a year after launching the production in 2005). Existence of two final products manufacturers also attracted many **car component and car accessory producers**.
Although car making is the Czech key industry, FDI also flows to the ICT sector as electrical components and apparatus manufacturing directly. This sector is quite significant in comparison with new EU entrants average (the CR accounts for ca 10% of supplies of NACE 30 to the EU market). Almost the entire sector is in the hands of multinationals.
FDI is generously promoted by the state agency Czechinvest. All greenfield investors are granted 5 - 10 years corporate income tax vacations, duty free import of technology and in structurally affected regions also contribution for re-skilling of prospective employees.

IS policies

The **Czech Republic** had **lagged behind** several other CEE countries with respect to the existence of information and telecommunication policies until recently. The **first general information policy** had not been **adopted** until **1999**. The government's strategic document specified as basic priorities **information literacy**, promotion of **e-government**, development of **e-commerce** and **communication infrastructure**.
For implementation of these objectives the **Ministry of Informatics** was established in 2002. The ministry is well visible, but its resources, powers and responsibilities are limited since its existence **was not expected by the legislation.** So far the existence of the MI has seemed to be useful, but the key issue is that **new legislation shall support its legitimacy**.
Electronic communication belongs to the fields regulated by the MI. Among its achievements in this field belong approved law on **e-signature** and law on **information systems of the state administration**. The act on e-signature made obligatory for the state authorities to be able to communicate through secured e-mails. Despite it the **public awareness of existence of** e-communication **is limited** and citizens prefer traditional methods.
Concerning the **information systems of public administration**, the MI failed to unify various information systems used by different state authorities so far. Their incompatibility and simultaneous growing amount of information stored in these systems threatens fulfillment of this task later. Provided this task is successfully mastered one might avoid feeding different state authorities with the same data again.
The **National Telecommunication Policy** was approved in 1999 and its main objectives are to provide good quality, reliable telecommunication services and to integrate the Czech Republic into the 21st century **global information society**. The NTP is based on the European regulatory telecommunications sector reforms. They key features specified in the policy are liberalization of the telecommunication market, provision of the universal service, establishment of the regulator and exposition of the incumbent Český Telecom under competition pressure. The policy's key elements are being passed through the amendments to the **Telecommunication Act**. It is also linked with general policy, especially in the objective

of cheaper internet access. The **telecommunication market is now fully liberalized**. However, the liberalization was late and several times postponed, reportedly due to technical problems on the Český Telecom's side.

The relevant regulatory authority is the **Czech Telecommunication Office,** which overtook powers and responsibilities from the **Ministry of Transport and Telecommunications** and the **Ministry of Industry and Trade.** The office shall only follow the telecommunication policy, no state interests except of well-functioning telecommunication market, transparency and protection of its customers are to be reflected in its decisions. It is difficult to judge whether the state threatens its independence, at least no convincing evidence of it exists. Some consider this office too weak and in the hands of lobbying pressures, but generally no accusation of biased decisions has already proved. Reportedly after the privatization of Český Telecom to Spanish Telefonica its independence is better secured; one month after the deal signature all the price decrees on regulation of fixed services were revised.

The **IT policy in education** was approved as a document **Conception of the state information policy in education** in 2000. It specifies objectives in the field of the information literacy of teachers, students, citizens, public administration and state employees and health care and library employees. The plan of the realization is divided into two stages: the first one deals with the issue of **information technology literacy at schools** and the second one with further education of the public, life-long education and **improvement of IT literacy among general public** so as to **minimize the digital divide.**

The key program of the IT policy in education was called **"Internet for Schools**"; it intended to equip 6 500 elementary and secondary schools with computers and internet connection. The objectives in the first phase also focused on improvement of **IT literacy of teachers** – each teacher will be in the future required to hold **ECDL Start** ("European computer driving license").

Within the objective of the second stage **life-long education** a program of 2-hour courses for achievement of basic IT literacy was launched. In several libraries internet **public access points** were established.

All objectives of ICT policies **refer to the e-Europe initiative**. The policies of different state authorities related to information technologies often proclaim e-Europe conformity; sometimes it seems that such proclamations are just labels on "old" policies rather than e-Europe initiative being a think tank for feeding and inspiring them. The **commitment of relevant state authorities does not seem to be credible enough.**

Development in the information society

The **penetration rates** related to the development of information society are in most cases among the highest ones in the EU new entrants.

The **fixed lines penetration reaches 65.9% of households** and is declining since the voice transmission business rather switches to mobile phone usage. Almost **all last miles loops belong to the incumbent operator Český Telecom**. Other operators have to use it through call-by-call carrier selection (since July 2002) or carrier pre-selection facility (since January 2003). The competition is also promoted by the number portability feature (since January 2003). Even though Český Telecom was in first half of 2005 privatized, it still keeps monopolistic behavioral patterns.

Fixed lines are more used for **data transmission instead of voice**. Two types of data transmission over phone lines are possible: traditional dialup connection and ADSL. The cost of dialup connection in the peak hours is higher than in most developed countries whereas connection in off-peak is generally cheaper. Introduction of flat fixed rate for internet access is being delayed for three years; with better availability of ADSL it is less pronounced now.

ADSL is accessible to 90% of Český Telecom subscribers connected to 1 094 switching centers equipped with DSLAMs. The availability of internet over cable TV is more limited.
PC penetration fluctuates around internet penetration (some people use internet from the employer's computer). Existence of **digital divide**, especially between educated ones and not educated ones and between rich ones and poor ones hinders extension of e-services.
Mobile penetration rate is very high; in September 2004 it reached 100%, it is estimated that 10-15% users have more SIM cards, for example for data services. There are three operators on the market and the competition is very fierce, particularly after the launch of the third one, Český Mobil, in 2000. UMTS licenses have been allocated in 2001 to two largest operators for ca EUR 110 mil. each; Český Mobil, the third done, bought it cheaper (for EUR 63 mil.) in 2004. The largest mobile operator Eurotel Praha is 100% subsidiary of the fixed incumbent Český Telecom.
IST in financial services is well developed, and banks are further promoting it with their fee policy. Direct banking (i.e. phone, GSM and internet) was used in 2003 by almost 2 million financial services users; the most frequent method is phone banking. At the same date more than 5 million payment cards were in circulation.
Industrial corporations are frequent ICT users, actual ICT investment depends on the specificity of each industry, its financial position and influence of potential **foreign ownership**. Most frequent ICT applications are electronic administration and management information systems (i.e. system integration), telecommunications, design of new products and contact with prospective customers. Almost **90% of companies are connected to internet**, in the case of the largest ones this figure reaches 100%.
As already mentioned, the key industry as ICT user is the **automotive sector**. ICT manufacturing industry is also very important, where the ICT usage is partially based on tradition of its (foreign) owners. Concerning use of e-commerce systems, **B2B is well developed**, especially in foreign controlled companies, but **B2C still lacks credibility and confidence** of general public.
Large ICT companies provide significant **discount on software to the public sector**. The policy of huge discounts is also applied for **university students**, which helps to fight the software piracy (being the lowest in Central and Eastern Europe).
IST in education is quite well developed, especially at the secondary and higher education level. The equipment of schools with ICT is comparable to their Western European counterparts, partially also thank to program "**Internet for Schools**". The average number of pupils per PC is falling, the problem is that the teachers are sometimes only **partially IS literate**. The courses on improvement of IT knowledge of teachers might solve it (also with ECDL requirement).
ICT specialized education at the secondary level is provided at **secondary technical schools** with focus on ICT manufacturing and development; their share amounts to approximately 12% of total students at secondary technical schools. At universities specialized branches of study exist with focus on **electrical and ICT engineering and informatics**; these fields of study are attended by approximately 12% of total university students. The Czech Republic is connected with the neighboring countries by high-speed TEN networks, all universities are connected by the CESNET network, and Prague based universities by the PASNET network.
The **education level** of the Czech population is continually **improving**; this is especially the case of tertiary educated women. The employability of graduates from IT fields is excellent, current numbers on recent graduates **do not support idea** of mismatch of labor supply and demand with **excess of economics graduates**. The **knowledge of foreign languages** is still insufficient; English is mastered by ca 30% of population with high differences between age groups.

There are held subsidized **IT courses for unemployed** and sometimes they improve employability, but their track record is not long enough for assessment. **Life-long education misses adequate tradition**.

The **cultural and consumption habits** of the Czech population support **massive use of ICT** at home, since the population spends much of its leisure time watching TV or staying at home. What already happened with high mobile phones penetration and enormous use of SMS might also appear in the case of internet. According to recent surveys **people are wishing to use ICT**, like PCs or internet, but large portion of them **does not have sufficient financial resources**.

The **living expectancy** of the inhabitants in the Czech Republic is getting longer and therefore **the population is ageing**. Due to low birth and death rates the population is stagnating with prospective decline within a medium time range. The birth rate might to some extent recover since strong age cohorts born in 1970s are planning family right now. The **government does not support marriages and having children** and the **housing crisis** makes having a family to be an expensive project. Positive immigration in recent years counteracted against negative natural rate, this has changed in 2001 with both natural rate and migration rate negative.

The **pensioning age** is also being increased, to 63 for both sexes. There is also problem with employability of older generation. This is potential source for long run unemployment, social exclusion and digital divide of elderly people.

There are no important reasons for emigration and therefore external **brain drain is negligible**. Even if some do emigrate, their future return might help with transfer of knowledge back to the Czech Republic. The Czech government is implementing measure to **promote immigration of experts** and other highly skilled people from less developed countries. So far the results of the program are invisible.

The **internal migration is still low** due to traditional habits in population (Czechs have adverse attitude towards moving their residence) and housing crisis. **First signs of increased mobility** appear with highly skilled people moving towards Prague or Central Bohemia. Concentration of graduates is in Prague four times higher than in some other regions; this fact might also raise question of **regional brain drain**.