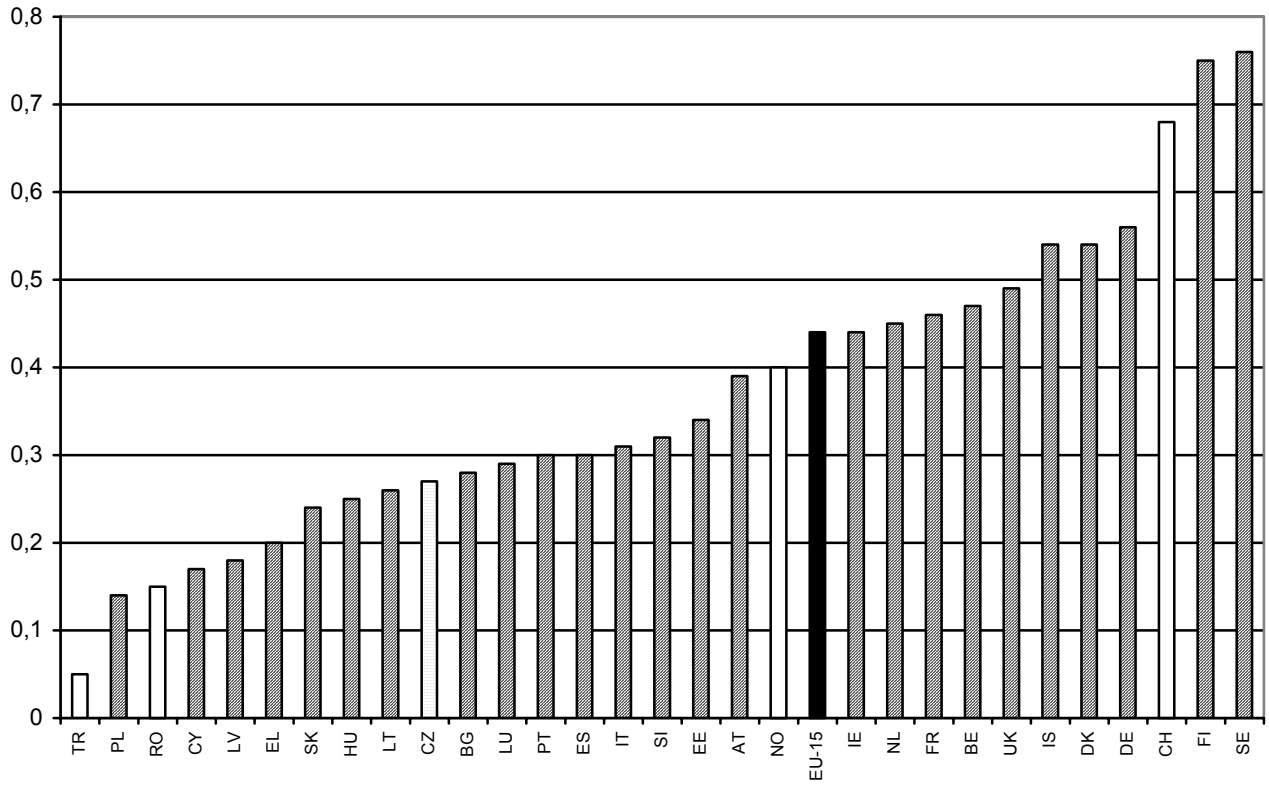
IV

ANNEXES TO

THE NATIONAL INNOVATION POLICY OF THE CZECH REPUBLIC FOR 2005 - 2010

Graph 1 Summary Innovation Index – SSI



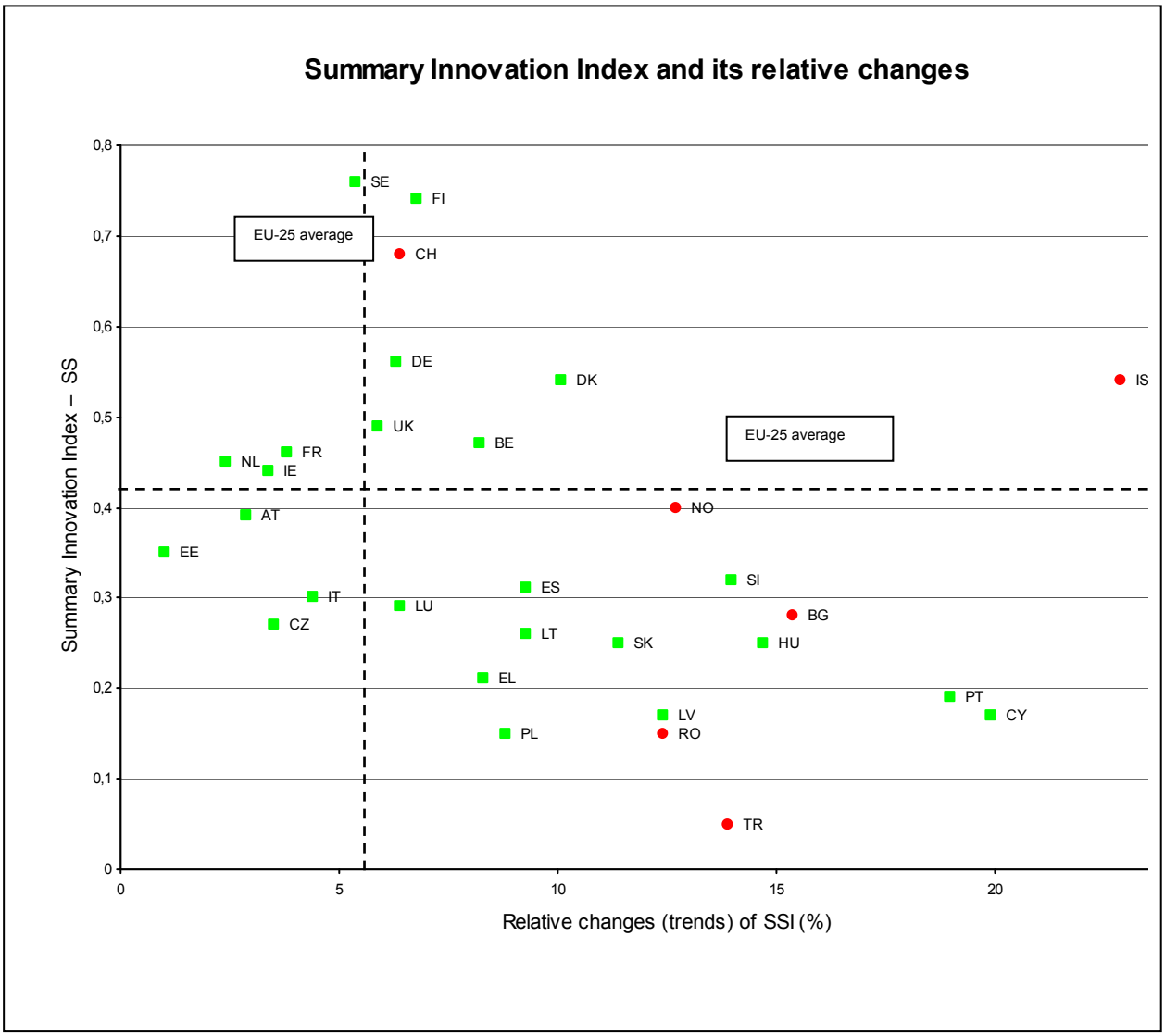
Source: European Innovation Scoreboard 2004, SEC (2004) 1475, 19. 11. 2004

Legend: AT-Austria, BE-Belgium, BG-Bulgaria, CY-Cyprus, CZ-Czech Republic, DE-Germany, DK-Denmark, EE-Estonia, EL-Greece, ES-Spain, FI-Finland, FR-France, HU-Hungary, CH-Switzerland, IE-Ireland, IT-Italy, IS-Island, LT-Latvia, LU-Luxembourg, LV-Lithuania, NL-the Netherlands, NO-Norway, PL-Poland, PT-Portugal, RO-Romania, SE-Sweden, SI-Slovenia, SK-Slovakia, TR-Turkey,
UK-United Kingdom

Shaded columns – EU countries, blank columns – countries outside EU, black columns – EU-15 average, dotted column – CR

The Summary Innovation Index is calculated using the set of indicators mentioned in Table 3 (Human resources – 5 indicators), Table 4 (Knowledge creation – 6 indicators), Table 5 (Transmission and application of knowledge – 6 indicators) and Table 6 (Innovations: finance, outputs, markets – 11 indicators). For more details, see the data source.

Graph 2 Summary Innovation Index – SSI and its relative changes



Source: European Innovation Scoreboard 2004, SEC (2004) 1475, 19. 11. 2004

Legend: AT-Austria, BE-Belgium, BG-Bulgaria, CY-Cyprus, CZ-Czech Republic, DE-Germany, DK-Denmark, EE-Estonia, EL-Greece, ES-Spain, FI-Finland, FR-France, HU-Hungary, CH-Switzerland, IE-Ireland, IT-Italy, IS-Island, LT-Latvia, LU-Luxembourg, LV-Lithuania, NL-the Netherlands, NO-Norway, PL-Poland, PT-Portugal, RO-Romania, SE-Sweden, SI-Slovenia, SK-Slovakia, TR-Turkey,
UK-United Kingdom

Bold dash lines – EU-25 average values

The Summary Innovation Index is calculated using the set of indicators mentioned in Table 3 (Human resources – 5 indicators), Table 4 (Knowledge creation – 6 indicators), Table 5 (Transmission and application of knowledge – 6 indicators) and Table 6 (Innovations: finance, outputs, markets – 11 indicators). For more details, see the data source.

Table 1 Total Growth Competitiveness Index – 2001 to 2003 (rankings in the list of 102 countries[1])

	2001	2002	2003
Finland	1	1	1
Denmark	14	4	4
France	20	28	26
Germany	17	14	13
the Netherlands	8	13	12
Austria	18	18	17
Greece	36	31	35
United Kingdom	12	11	15
Czech Republic	**37**	**36**	**39**
Hungary	28	29	33
Poland	41	50	45
Slovakia	40	46	43
Slovenia	31	26	31
USA	2	2	2
Japan	21	16	11

Source: Global Competitiveness Report 2004 – for the World Economic Forum

1) In 2001 and 2002 the number of evaluated countries was smaller.

Table 2 Total competitiveness (rankings in the group of 60 countries[1] and regions)

	2001	2002	2003	2004
Finland	5	3	3	8
Denmark	15	6	5	7
France	25	25	23	30
Germany	13	17	20	21
the Netherlands	6	4	13	15
Austria	14	15	14	13
Greece	31	36	42	44
United Kingdom	17	16	19	22
Czech Republic	**35**	**32**	**35**	**43**
Hungary	30	30	34	42
Poland	47	45	55	57
Slovakia	41	38	46	40
Slovenia	38	35	40	45
USA	1	1	1	1
Japan	23	27	25	23

Source: The World Competitiveness Yearbook 2004

1) 60 countries were evaluated only in 2004; in the previous years their number was smaller.

Table 3 Human Resources (measured according to the European Innovation Scoreboard)

	EU15	FI	DK	F	DE	NL	A	UK	CZ	HU	SK	SI	US
New Science&Engineering graduates (S&E)[1)]	11.3	**16.0**	11.1	**19.6**	*8.0*	*6.1*	*7.2*	**19.5**	*5.6*	*3.7*	*7.4*	*8.2*	10.2
Population with tertiary education[2)]	21.5	**32.4**	**27.4**	23.5	22.3	24.9	*16.9*	**29.4**	*11.8*	*14.1*	*10.8*	*14.8*	**37.3**
Life-long learning[3)]	8.4	**18.9**	**18.4**	*5.0*	*5.2*	**16.4**	7.5	**22.3**	*6.0*	*3.3*	9.0	*5.1*	-
Employment in medium-high and high-tech manufacturing[4)]	7.41	7.39	6.33	*5.35*	**11.4**	*4.49*	6.59	6.72	**8.94**	8.5	8.21	**9.28**	-
Employment in high-tech services[6)]	3.57	**4.74**	**4.74**	*2.50*	3.33	**4.40**	3.47	**4.47**	3.09	3.06	*2.83*	*2.35*	-

Source: European Innovation Scoreboard 2003

Bold letters: by more than 20 % better than the EU-15 average

Italics: by more than 20 % worse than the EU-15 average

Normal letters: in the EU-15 average zone, plus minus 20 %

1) Share of Science&Engineering graduates in the overall number of inhabitants of 20-29 years age class (in %)

2) Share of population with tertiary education in the overall number of inhabitants of 25–64 years age class (in %).

3) Share of employees taking part in any life-long learning activity in last four weeks preceding the survey in the overall number of employees of 25–64 years age class (in %).

4) Share in the overall employment in the manufacturing industry (in %).

5) Share in the overall employment in services (in %).

Table 4 Knowledge creation (measured according to the European Innovation Scoreboard)

	EU15	FI	DK	F	DE	NL	A	UK	CZ	HU	SK	SI	US	JP
Public R&D expenditures (% of GDP)	0.69	**1.02**	0.75	**0.83**	0.73	**0.83**	0.65	0.65	*0.52*	0.57	*0.22*	0.69	0.76	0.81
Business expenditure on R&D (% of GDP)	1.30	**2.47**	**1.65**	1.37	**1.76**	1.08	1.13	1.19	*0.78*	*0.38*	*0.45*	*0.94*	**2.04**	**2.28**
EPO high-tech patent applications	31.6	**136.1**	**42.1**	30.3	**48.8**	**68.8**	*18.8*	35.6	*0.7*	*4.3*	*1.1*	*8.6*	**57.0**	**44.9**
USPTO high-tech patent applications	12.4	**41.6**	**22.7**	14.0	**16.4**	**18.6**	*8.1*	**15.1**	*0.3*	*0.3*	*0.2*	*0.5*	**91.9**	**80.0**
EPO patent applications	161.1	**337.8**	**211.0**	145.3	**309.9**	**242.7**	174.2	133.5	*2.4*	*19.0*	*6.1*	*40.7*	169.8	147.7
USPTO patent applications	80.1	**156.1**	**106.0**	76.5	**147.4**	**98.5**	82.6	77.2	*1.4*	*7.3*	*0.7*	*13.1*	**322.5**	**265.2**

Source: European Innovation Scoreboard 2003

Bold letters: by more than 20 % better than the EU-15 average

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Normal letters: in the EU-15 average zone, plus minus 20 %

Note: Patent applications are given in numbers per one million inhabitants.

Table 5 Transmission and application of knowledge (measured according to the European Innovation Scoreboard)

	EU15	FI	DK	F	DE	NL	A	UK	CZ	SK	SI
SMEs innovating in-house (manufacturing)	37.4	40.9	*16.7*	33.5	**55.1**	42.5	35.5	*24.8*	*25.8*	*14.1*	*22.0*
SMEs innovating in-house (services)	28.0	**34.9**	*15.4*	23.9	**43.9**	28.1	**36.4**	*18.7*	22.7	*10.0*	*12.7*
SMEs involved in innovation co-operation (manufacturing)[1)]	9.4	**22.0**	**18.9**	**12.3**	10.9	11.1	*7.4*	9.6	*5.8*	*4.4*	8.4
SMEs involved in innovation co-operation (services) 1)	7.1	**18.3**	**12.7**	*5.4*	8.4	8.5	**10.1**	7.6	*5.2*	*1.6*	*4.4*
Innovation-related expenditures (manufacturing) 2)	3.45	3.91	*0.95*	3.08	**4.71**	3.07	2.83	2.96	*1.5*	**8.8**	**4.2**
Innovation-related expenditures (services) 2)	1.83	0.96	*0.36*	1.57	1.64	*0.79*	*0.92*	*1.39*	*0.7*	**7.5**	**2.6**

Source: European Innovation Scoreboard 2003

Bold letters: by more than 20 % better than the EU-15 average
Italics: by more than 20 % worse than the EU-15 average
Normal letters: in the EU-15 average zone, plus minus 20 %

Note: SMEs – small and medium-sized enterprises.

1) Shares of SMEs of a respective category in the overall number of SMEs in manufacturing (or services) (in %).

2) Innovation expenditures in % of all turnover in manufacturing, or services respectively.

Table 6 Innovations: finance, outputs, markets (measured according to the European Innovation Scoreboard)

	EU15	FI	DK	F	DE	NL	A	UK	CZ	HU	SK	SI	US
High-tech venture capital investment [1)]	45.4	**57.5**	*31.0*	**70.7**	-	*35.1*	**55.7**	*30.5*	-	*1.6*	-	-	-
New capital raised on stock markets (% of GDP)	0.037	**0.087**	**0.080**	0.035	0.042	0.044	*0.017*	**0.047**	*0.019*	*0.015*	*0.012*	-	**0.218**
Percentage of "new to market" product sales (manufacturing) [2)]	10.5	**27.2**	**14.3**	9.5	*7.1*	-	8.4	9.5	2.7	-	-	-	-
Percentage of "new to market" product sales (services) [3)]	7.5	**12.2**	7.5	*5.5*	*3.7*	-	*4.3*	-	3	-	-	-	-
Percentage of "new to firm" product sales (manufacturing)[4)]	28.6	31.1	24.2	*17.5*	**40.3**	23.8	23.1	-	3.5	-	-	-	-
Percentage of "new to firm" product sales (services) [5)]	18.8	18.8	18.4	17.1	16.4	*13.9*	12.8	-	4.1	-	-	-	-
Internet access and use [6)]	0.51	**0.76**	**0.93**	0.5	**0.66**	**0.74**	**0.68**	0.53	*0.13*	-	-	*0.33*	**0.73**
ICT expenditures (% of GDP)	7.0	6.8	7.4	7.4	6.9	8.3	*6.3*	**8.6**	**9.5**	**8.9**	7.5	*4.7*	8.2
Percent of manufacturing value-added from high technology [7)]	14.1	**24.9**	15.0	**18.3**	11.9	12.1	11.5	**18.8**	-	14.9	-	15.9	23.0
Increase in the number of SMEs (manufacturing)[8)]	12.7	12.5	12.7	-	-	12.8	-	**16.0**	-	-	-	-	-
Increase in the number of SMEs (services)[9)]	16.6	15.8	**20.4**	-	-	18.5	-	**20.2**	-	-	-	-	-

Source: European Innovation Scoreboard 2003

Bold letters: by more than 20 % better than the EU-15 average

Italics: by more than 20 % worse than the EU-15 average

Normal letters: in the EU-15 average zone, plus minus 20 %

1) Share in the overall venture capital investments (v %).

2) Share of the "new to market" product sales in the overall manufacturing turnover (in %).

3) the same in services (v %)

4) Share of the "new to firm" product sales in the overall manufacturing turnover (in %).

5) the same in services (v %)

6) Composite indicator: of share (%) of households connected to Internet in the overall number of households (accesses) and share (%) of SMEs with own web page in the overall number of SMEs (use).

7) Share in the overall manufacturing value added (in %). Economic Value Added (EVA) - indicator very frequently used in abroad for measuring the performance of enterprises. EVA is defined as a difference between operations profit/loss after taxation and cost of capital.

8) Increase in the number of SMEs in manufacturing (in % of the overall number of SMEs).

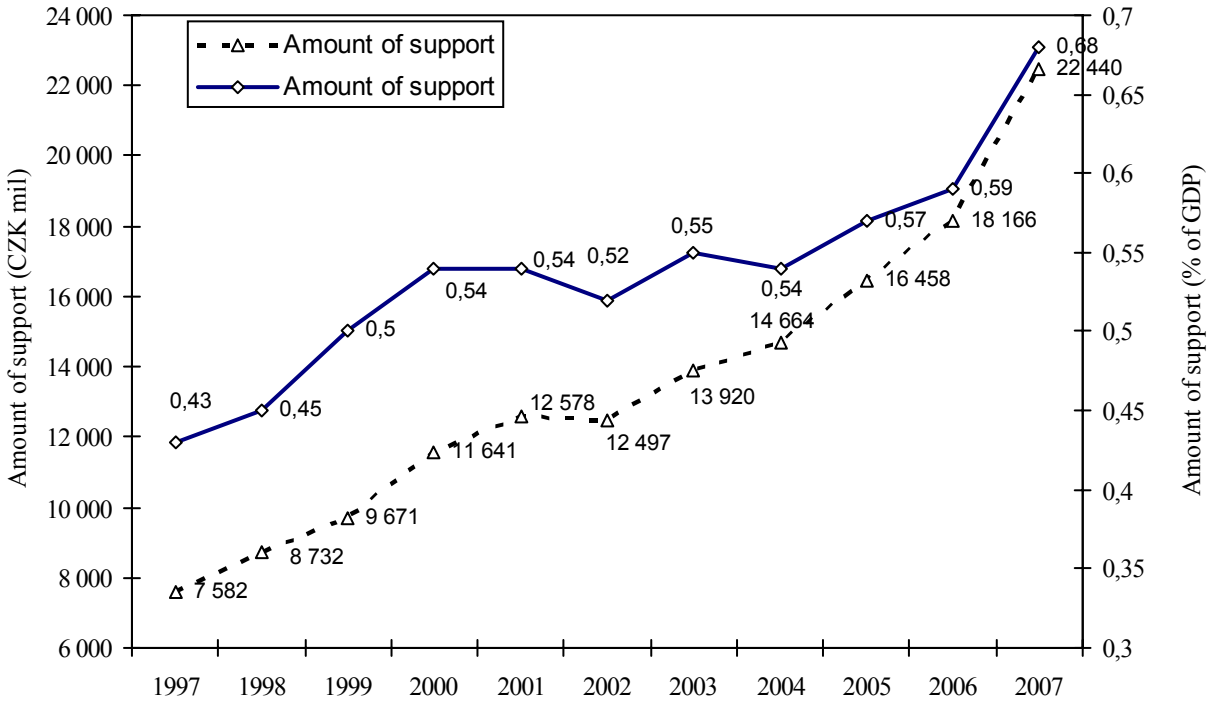
9) the same in services (in % of the overall number of SMEs).

Table 7 Comparison with the EU-15 average (measured according to the European Innovation Scoreboard)

	Number of measured indicators	Number of indicators better than EU-15 plus 20 %	Number of indicators in the zone EU-15 plus or minus 20 %	Number of indicators worse than EU-15 minus 20 %
Finland	28	19	8	1
Denmark	28	14	11	3
France	26	5	15	6
Germany	25	11	10	4
The Netherlands	26	8	13	5
Austria	26	4	13	9
Greece	25	3	4	18
United Kingdom	25	10	11	4
Czech Republic	24	2	2	20
Hungary	15	1	4	10
Slovakia	19	2	3	14
Slovenia	20	3	3	14
USA	12	8	4	-
Japan	10	8	2	-

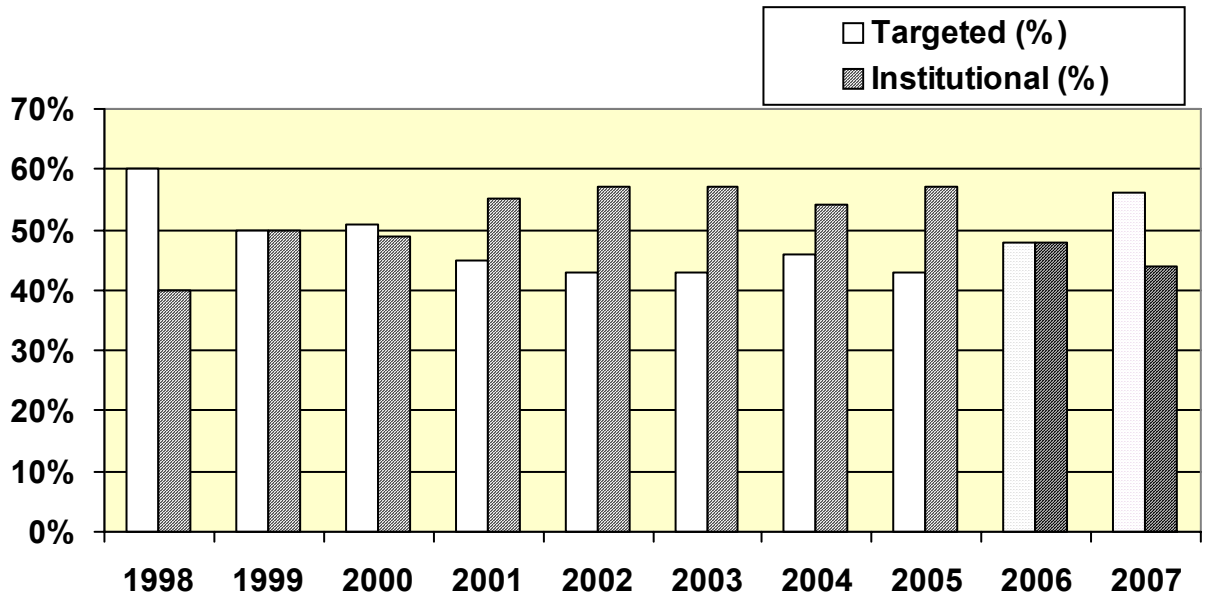
Source: European Innovation Scoreboard 2003

Graph 3 Trend of state R&D expenditures in CR by 2005 and outlook for 2007 (CZK mil and % of GDP)



Source: State budget of the Czech Republic, years 1997–2005; Budget outlook, years 2006 and 2007

Graph 4 R&D expenditures – share of targeted and institutional support extended to research and development in the total state R&D expenditures (%)



Source: Analysis of the existing state of research and development in the Czech Republic and a comparison with the situation abroad - 2004; State Budget R&D expenditures for 2005–2007

The results of innovation survey made by the Czech Bureau of Statistics

In April 2005, the Czech Bureau of Statistics published the report mapping the results of innovation survey made in 2003. The methodology of data collection and processing was based upon the Oslo Manual and was in full compliance with the EUROSTAT methodology and recommendations. The first survey of innovations was made by CBS in 2001; the next one will be undertaken in 2006.

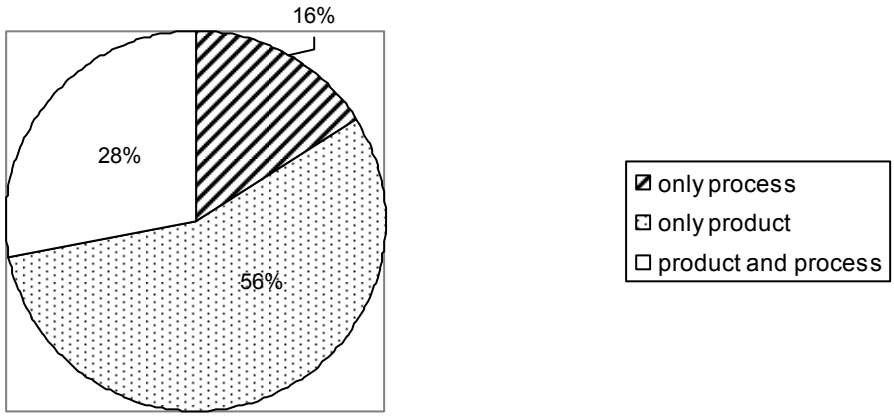
The survey addressed 4 678 reporting units from the business sector, of which nearly 3800 reporting units gave their responses.

In its report CBS states that there were **25.9 % of innovating enterprises** in the Czech Republic in the monitored period, i.e. enterprises that introduced a product or process innovation during 2002 -2003. **A product innovation was reported by 21.7 % and process innovation by 11.7 % respondents**. While 28.4 % of innovating subjects came from the manufacturing sphere, 22.8 % of innovating subjects came from services.

The percentage share of innovating enterprises in CR is considerably smaller than in the former EU-15 member countries. As regards the number of innovations, the Czech Republic finds itself below the EU-15 average. In the EU-15 countries the statistical innovation surveys (Community Innovation Survey - CIS) are carried out every four years. By reason of a different periodicity of the survey no actual data for other EU member countries are available for comparison so far.

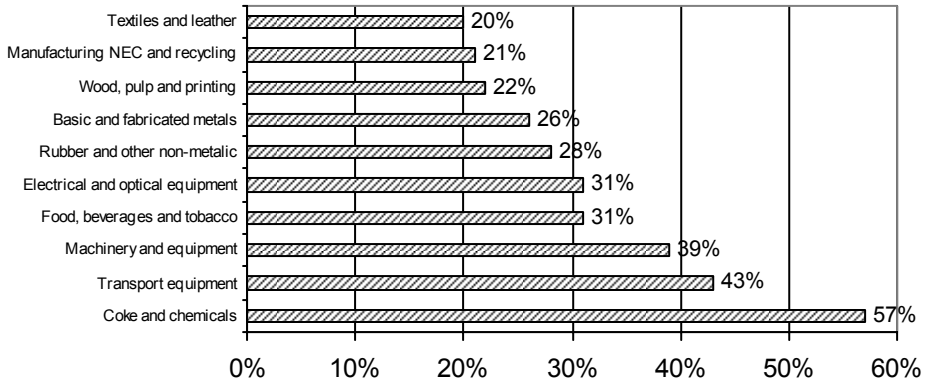
Shown below are selected diagrams and commentaries taken from the CBS report.

Graph 5 Structure of innovating subjecs in CR for 2002-2003 by type of innovation



Source: CBS; Innovation Survey, April 2005

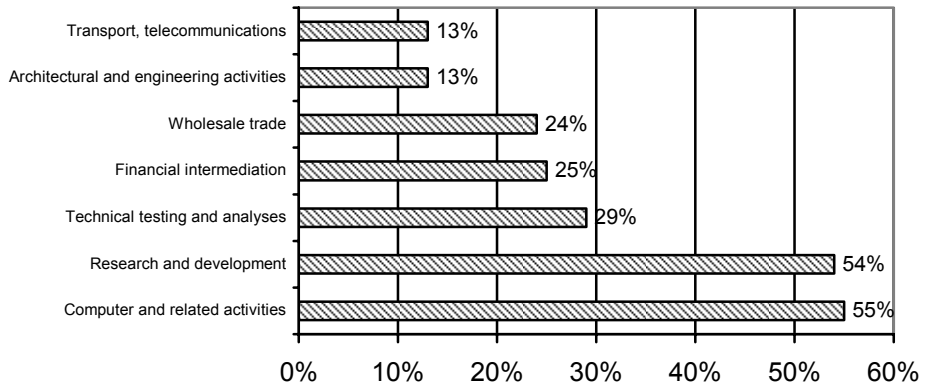
Graph 6 Share of enterprises with innovative activities in selected manufacturing sectors in the total number of enterprises of that particular sector



Source: CBS; Innovation Survey, April 2005

The highest share of innovators in manufacturing was reported in the sector of coke and chemicals (57 %), the smallest in the sector of textiles and leather.

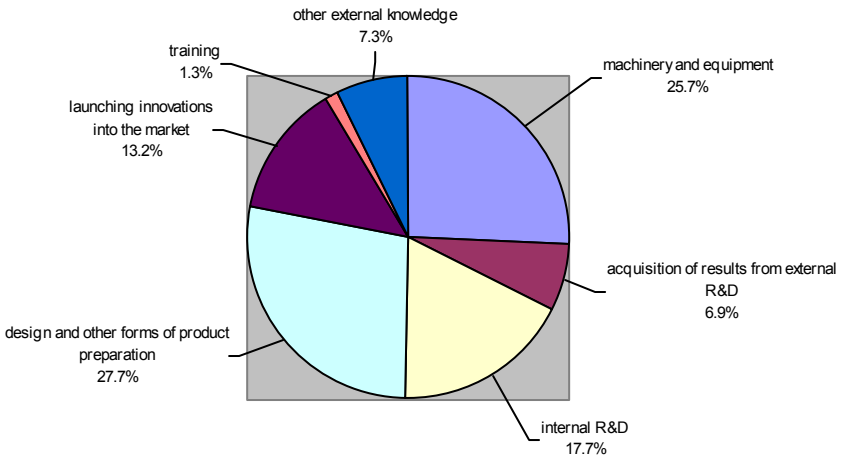
Graph 7 Share of enterprises with innovative activities in selected sectors of services in the total number of enterprises of that particular sector



Source: CBS; Innovation Survey, April 2005

In services the highest share of innovators is in the sector of computer and related activities (55 %); the smallest in transport and telecommunications (13 %). High share of enterprises with innovative activities was reported by the sector of research and development as well (54 %).

Graph 8 Structure of innovation-related expenditures in the Czech Republic in 2003

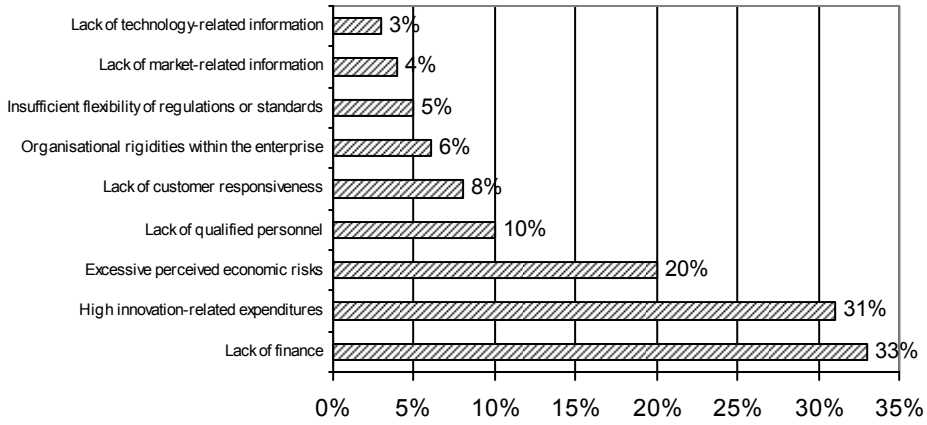


Source: CBS; Innovation Survey, April 2005

Total innovation-related expenditures amounted to more than CZK 46 billion in the Czech Republic in 2003, i.e. 1.6 % of total sales of innovators in that year. The highest share of expenditures - 34% - was spent on acquisition of machinery and equipment specially intended for introduction of innovated products and/or processes. An important item – more than 23 % - was the money spent on internal R&D, which means any creative activity performed with a view to acquire and use knowledge for development of innovations.

All respondents were also asked about limiting factors, if any, which they encountered in the area of innovations in 2002-2003. For the results, see Graph 8 on the next page. In particular, economic factors were regarded as highly limiting by most of the enterprises. Both enterprises with and without the innovative activity identified following factors as the biggest stumbling blocks: lack of finance (33 % of innovators and 38 % of non-innovators), high innovation-related expenditures (31%; 38%) and accompanying excessive economic risks (20%; 25%). So, the economic factors were predominantly those that the enterprises struggled with while introducing innovations; this in fact supported the trend being observed in the last survey. All enterprises see low knowledge of technologies and markets to be only the smallest handicap in this area.

Graph 9 Factors hampering the development of innovations at innovators in 2002–2003



Source: CBS; Innovation Survey, April 2005

CBS concludes its report with saying that data collected from responses of ca 3800 reporting units give a fair view of the innovation environment in the Czech Republic in the period before accessing the EU structures. The acquired data confirm the fact that Czech enterprises lag behind the EU countries in the rate of innovations; the main reason being the continuing bad economic situation of many enterprises and accompanying lack of finance necessary for launching innovative products into the market. On the other hand, without increase in the innovative potential it is not possible to raise the competitive ability of own products and services on both national and global markets, which in turn boosts the economic potential of the whole country.

Next innovation survey will be undertaken in 2006 according to the new Eurostat methodology.