Funding of R&D Activities in the Czech Republic – Experience of Selected Countries

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ABSTRACT: *A purpose of the paper is to provide basic information about Czech research and development (R&D) activities for the sake of highlighting of opportunities and ways how to get to the level of developed countries. Therefore, the paper also adopts elements of a comparative approach and compares funding sources of research activities in the Czech Republic and in other countries - in particular countries of European Union - Austria, Hungary, Greece and Netherlands and in the U.S. The countries were chosen because of similar geographical and economic indicators. Also various lengths of their EU membership will be considered to find out whether and how the accession of the Czech Republic to the EU may influence further development of R&D activities in the CR.*

1   INTRODUCTION

R&D activities and an intellectual potential of the R&D staff as a manifest of educational and cultural level and international reputation of each country determine general human cognition and generate conditions for economic growth. Some countries perform better on certain aspects of R&D activities and some perform worse. In developed countries, there are R&D activities very preferred and stable area of interest. The differences in performance can often be explained by several reasons. This paper compares R&D activities in the Czech Republic to those in Austria, Hungary, Greece, Netherlands and the United States in order to reveal some of the possible reasons. The countries were chosen because of similar geographical and economic indicators and because they are in a different phase of accession to EU (or its previous coalitions) as shown in the table 1.

2   DEVELOPMENT OF R&D FUNDING IN THE CZECH REPUBLIC

The decline of expenditure that began in 1989 in then Czechoslovakia (defunct since 1993) continued also in the period of the Czech Republic. In 1994, Czech Republic, as a potential new member of EU, made a commitment to EU (in the form of resolution 282/1994 by Czech government) that Czech public support of R&D would reach a value of 0,7% GDP in the next years. In 1995, the public support devoted to R&D started to rise from the very low 0,36 % GDP but still not in the needed speed and in 1999, it reached 0,52% GDP only. Therefore, strengthening the original intension to reach the 0,7% GDP, Czech government adopted another resolution (No.249/1999) in which it pledged to public R&D expenditure in 2000 - 0,6% GDP, in 2001 - 0,65% GDP and in 2002 - 0,7%. Nevertheless, in the year 2000 the indicator has declined again and until 2003 when the indicator reached 0,58% GDP, the commitment has not been fulfilled yet. (See the Chart 1)

Total R&D expenditure has undergone similar development as the public one. Between 1989 and 1995, the decline was even steeper. Since then, the total R&D expenditure started to rise, although very slowly. In 2003, it reached the level of the year 1993 - 1,3 % GDP, corresponding to only 67% of the average of EU countries. Czech Republic has partially been cooperating with EU already from the beginning of the nineties and since 1997, by full participation in the framework R&D programmes. R&D, in fact, has become the first area of a real EU expansion. In the 6th framework programme, the CR has already become an equal member to other EU countries with the same obligations and rights.
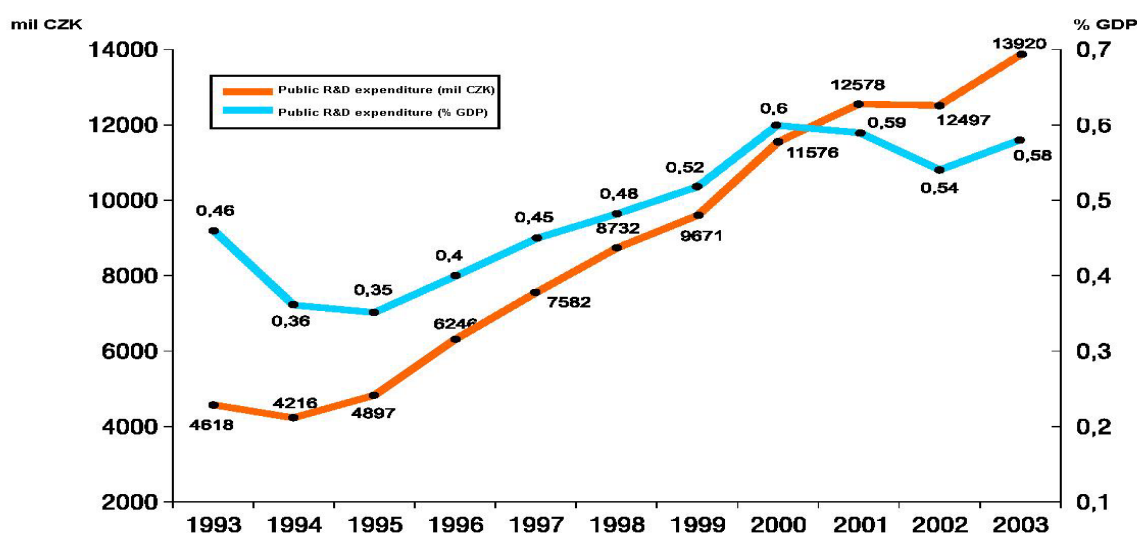
Chart 1 – Development of Public R&D Expenditure in the Czech Republic, 1993-2003

3 HOW DOES THE CZECH REPUBLIC SCORE?

Czech Republic (CR) is far behind developed countries in many R&D indicators and as already mentioned, the gap has grown in the last few years due to stagnation of both public as well as business expenditure in this area. Some indicators of the selected countries are shown in the table 1.

Table 1

Index	Austria	Czech Republic	Greece	Hungary	Netherlands	EU	USA
Area/square km*	83 858	78 886	131 940	93 030	41 526	-	-
Population (2002)*	8 188 207	10 249 216	10 665 989	10 045 407	16 150 511	-	-
Year of accession to EU	1995	2004	1981	2004	1957	-	-
GDP/capita ($, 2001)	28 224	15 149	16 275	13 432	29 248	25 481	35 179
A) Total R&D expenditure (%GDP, 2000)	1,84	1,33	0,67	0,8	1,94	1,89	2,72
Public R&D expenditure (% GDP, 2000)	0,73	0,59	0,33	0,4	0,7	0,65	0,71
Public R&D expenditure (% total A, 2000) – B	39,9	44,5	48,7	49,5	35,9	34,5	26
Business R&D expenditure (% total A, 2000) – B	40,2	51,2	24,2	37,8	50,1	56,2	69,3
Foreign R&D expenditure (% total A, 2000) – B	19,6	3,1	27 (1999)	10,6	11,4	7,1	0,7
University R&D expenditure (% total B, 2000) – C	35,8 (1999)	14,2	49,5	24	29,2	21,2	13,9
Business R&D expenditure (% total B, 2000) – C	63,5 (1999)	60	28,5	44,3	57,1	64,5	75,3

Source: OECD (MSTI 1/2003), *   Source: http://www.cia.gov/cia/publications/factbook/
Commentary:
   A) Total R&D expenditure – here defined as the percentage of R&D expenditure of Gross Domestic Product (GDP)
   B) Total R&D expenditure by **sources of funding** into 3 sectors: public, business, foreign and other (the rest to 100%)
   C) Public R&D expenditure by **sectors of performance**: business, universities and government (the rest to 100%)

The table shows also values of R&D intensity for the U.S., because they are (just like Japan) in this area much ahead EU. Therefore, EU develops activities to increase an average total R&D expenditure in member countries to 3% of GDP by the year 2010. (2% by business (private) sector and 1% by public funds). It means an increase of the expenditure by 50% (and even more considering the fact that new member countries (2004) will even lower the average in the EU) within this decade. Also Czech Republic has reacted to the appeal of European Commission and joined the activity called: "On the way to 3% GDP – more research for Europe ". Although the Czech Republic spends almost the biggest money on R&D among the new member countries, still it is only on the level of two thirds of the EU average.
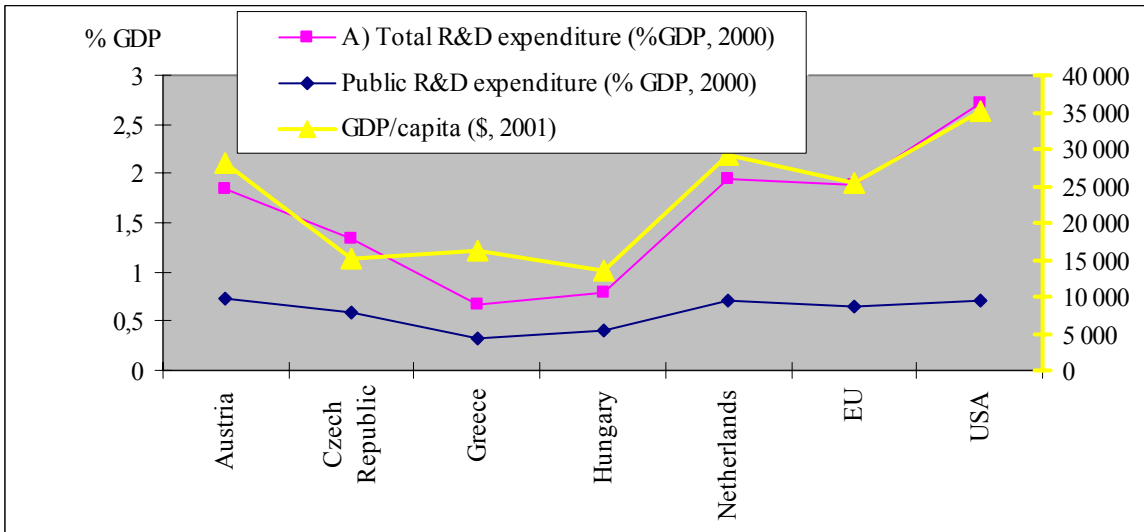

Chart 2 - R&D Expenditure (2000)

The chart 2 shows that there is a strong relation between the level of GDP/capita (as the most used indicator of a country development) and R&D expenditure in both relative and absolute expressions. The relation confirms that developed countries realize the importance of research activities for their further development in the present-day competitive world economy and create appropriate conditions (financial and legislative) motivating all actors of R&D sphere. The strategy of European dynamic countries such as Ireland, Finland and in some respect Austria may serve as a good sample. The countries have been pursuing restructuring of their economies parallel to escalation of their expenses on R&D. In contrast to the Czech Republic, indirect support extended to R&D (tax and customs relieves, application of risk capital etc.) plays an important role in EU (as well as other developed countries) and especially the level of tax relieves motivates private companies to spend more money on R&D a lot.
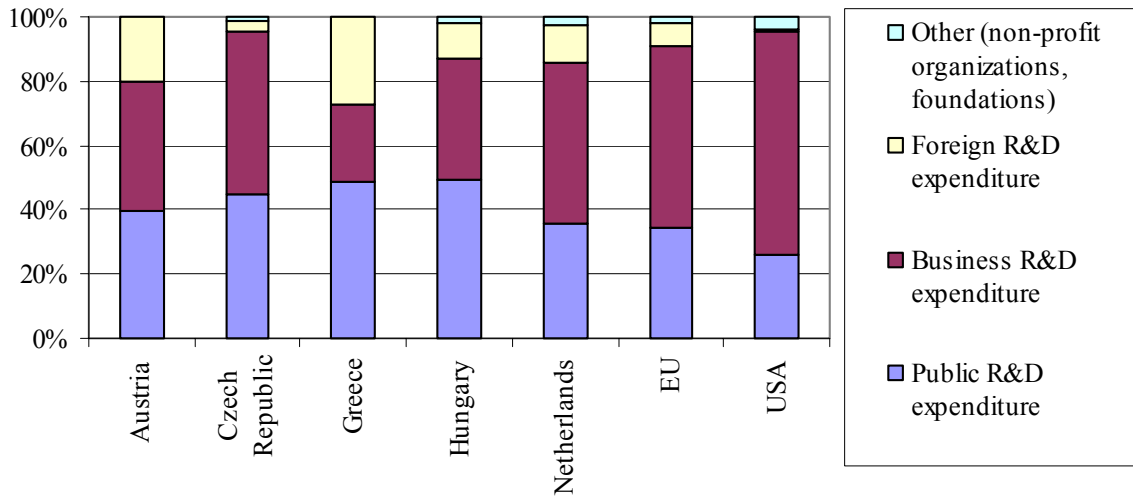

Chart 3 -Total R&D Expenditure by Source of Funds (% of Total, 2000)

Austria and Netherlands come to almost double level of GDP/capita and their total R&D expenditure is higher by 50 percent than in Czech Republic and Hungary. The average of other EU countries is also much higher and it is because of the EU has been paying strong attention to R&D activities in all member countries for many years. Therefore, also new member countries inclusive of CR and Hungary may hope in „betterment" of their situation and getting to "values" of long term member countries within next few years. But here comes the question: „Why is Greece so much below the average of other EU countries despite its more than 20-year membership and the huge financial support it has been receiving from the richer EU countries for many years?" Compared to for example Ireland, which was in similar situation some decades ago and has got about the same money from the EU and now belongs among the countries with fastest economy development, there is only one explanation - Greece has missed the same chance by its own fault. Greek research institutions as well as private companies did not use the opportunities of EU membership regarding especially funding and cooperation and „let the money leaked out of their fingers" without an expected return. Czech Republic cannot afford to do the same mistake and must use as much advantages of its membership as possible.

The American structure of the total expenditure depicted in the chart 3 may signify that the best way how to increase the total R&D expenditure is to increase expenditure of private sector. Public expenditure should be supporting projects of basic research that usually do not bring an instant, concrete and „lucrative" outputs and such these are not interesting for private investments. On the other hand, applied research projects which solve more concrete problems and react to real and up-to-date needs of practice should be mainly funded by private companies. Direct public support in the form of grants is limited by public budgets and so policymakers use the already mentioned indirect support for stimulation of private R&D expenditure.

4 CONCLUSION

Czech Republic has just become a member of European Union and this historical moment opens new opportunities also for our research and development activities. New member countries are approximately on the two third level of EU average total R&D expenditure which additionally lags behind the U.S. and Japan from the same "distance". It means that Czech Republic not only has to get to the current level in EU but must be twice as faster as other EU countries to reach the border of 3 percent of GDP by 2010. The fastest possible increase of the total expenditure can be reached first of all by a significant rise in private expenditure through an indirect support. On the other hand, seen on the sample of Greece, a parallel increase of public R&D expenditure must be followed by a deeper stress on its effective allocation.