THE EUROPEAN POLITICS IN THE FILED OF RESEARCH, DEVELOPMENT, INNOVATION. COMPARATIVE STUDY.

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Abstract

We will make a comparative study on the policies from the member states of the European Union in this field, ending with a conclusion on the Romanian case in the field of research, development, innovation. The starting point of the relation regarding the progresses of the innovative politics for 2009 is the crisis that Romania goes through. In Romania the research-development sector is favored to the detriment of the one of innovation. The ecology, the efficiency and e-government (the increase of efficiency in the public administration) are the directions that have to be followed by the innovational policy from our country. The solutions that have been identified to help Romania enter the research-development-innovation Euromarket are: the development of the educational system, the emphasis of the importance of superior education, of the doctoral schools, the substantial financing of the research-development-innovation sector, the establishment of a network of efficient public institutions that would deal with the coordination of research and offer specialized counseling to the companies that perform research activities, the singing of partnerships with European and international networks of scientific and technologic research, a relaxed fiscal policy regarding the taxes in this sector, the allocation of a percent close to 3% from GDP, the increase of the number of researchers, the concentration on the development of entrepreneurial universities or of the university-industry consortia, the promotion of the economy ecologization, the insurance of the transparency and objectivity of the administrative system, as well as its simplification, which means that a single public authority should ensure the coordination of the policy in this field.

Keywords:

research, innovation, educational system, coordination, europeam policy

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The Euromarket of research, development, innovation is rather fragmentary nowadays. In order to have a functional Euromarket in the field of research, development, innovation, first of all, the gaps between the member states of the European Union must be reduced *a fortiori* before trying to catch up with The United States of America, Japan or China. From this point of view, we can notice the difference between the European politics of research, development, innovation and the other community politics. As an example, we can take the agricultural common politics, the industrial politics which pursue a certain approach between the member states of the European Union, avoiding making efforts for the reduction of the gap between the European Union and the other three world competitors. Moreover, one main goal that is pursued on the basis of the comparative advantages of each member state, is their specialization. Instead, within the common European politics of research, development, innovation the starting point is represented by the competitive advantages of the member states in general, by the human capital in particular. Therefore, no one can refer to a specialization of a member state in this field, because that would mean trespassing one of the principles on which the European Union was founded – the non-discrimination principle, the way it is defined in art.18 from the Treaty that founded the European Union.

We will make a comparative study on the policies from the member states of the European Union in this field, ending with a conclusion on the Romanian case in the field of research, development, innovation.

The Austrian case[1]. The Austrians allocate 2.66% from GDP (Gross Domestic Product) for the politics of research, development, innovation, with an ascending trend in the need to attain one of the goals established in Lisbon, namely 3% from GDP, from which 1% represent public sector finance and 2% private sector finance. Therefore, Austria is part of the category of the states which allocate a high percent from GDP for this field. The challenges that Austria faces are: the need to increase the number of researchers, the deficiency of the educational system which affects the entrepreneurial mindset. In order to beat the present economic recession, it is very important to encourage the small and middle innovative enterprises, by granting credit to them and ecologizing the economy, which means in fact to invest in innovations in this direction. There are many projects in course of implementation that use European finance (Jitu, Comet, etc).

The case of Belgium[2]. 1.87% from GDP is allocated for the politics in this field. The biggest investments come from the private business sector, which

[1]Innovation Policy Progress Report, Austria, 2009, http://proinno.intrasoft.be/extranet/upload/countryreports/Country_Report_Austria_2009.pdf (accessed by 27 july 2010)

[2]Innovation Policy Progress Report, Belgium, 2009, available at http://proinno.intrasoft.be/extranet/upload/countryreports/Country_Report_Belgium_2009.pdf (accessed by 27 july2010)

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greatly advances the public sector financing. The goals of the policy in this sector are regionally established – for each of the three regions, pursuing the particularities of each region. The "green" economy and the entrepreneurial activities are the key elements of this politics. For example, the Wallonia region implements a new multiannual development program called the Marshal Plan 2 Green, whose aims are: development, research, innovation, education and training. One of the achievement tools is the simplification of the administrative formalities to a minimum. The Brussels region tends to become one of the 10 most innovative Euroregions, as the central authorities have agreed that the increase of the expenses in the field of research, development, innovation is part of the envisioned future economic development.

The case of Bulgaria[1]. 0.5% from GDP is allocated for the policies in this field. In relation to the private sector, the public sector finances the research, innovation with a ration of 2:1, namely opposite to the objectives of the Lisbon strategy.

The case of Cyprus[2]. A state oriented mostly towards tourism, the Cyprus did not turn the innovation, research into an integrating part of its economic development politics. The structure of the work market is not very favourable to innovation. The policy in the field of innovation is practically applied without governmental directives. A small part of the GDP is destined to this sector; therefore, an objective of 1% from GNP attained until the end of 2010 is unfeasible. All these facts determine us to affirm that the present economic crisis has no effect on the innovative politics in this state.

The case of the Czech Republic[3]. 1% from GDP is allocated for the politics in this field. A member state of the European Union ever since 2004, the Czech Republic moves from an economy based on efficiency to one based on innovation. The basis is a consistent one considering its tradition in the field of mechanic and technical engineering. Both the public sector and the private companies invest in innovation. The rejuvenation of the researchers remains one of the issues that need to be solved in short order.

The case of Denmark[4]. The Danish politics in this field is "active, dynamic and flexible, including measures which involve the public sector

[1]Innovation Policy Progress Report, Bulgaria, 2009, available at http://proinno.intrasoft.be/extranet/upload/countryreports/Country_Report_Bulgaria_2009.pdf (accessed by 28 july 2010)

[2]Innovation Policy Progress Report, Cyprus, 2009, available at http://proinno.intrasoft.be/extranet/upload/countryreports/Country_Report_Cyprus_2009.pdf (accessed by 27 iulie 2010)

[3] Innovation Policy Progress Report, Czech Republic, 2009, available at http://proinno.intrasoft.be/extranet/upload/countryreports/Country_Report_Czech_Republic2009.pdf (accessed by 28 july 2010)

[4] Innovation Policy Progress Report, Denmark, 2009, available at http://proinno.intrasoft.be/extranet/upload/countryreports/Country_Report_Denmark_2009.pdf (accessed by 28 july 2010)

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support, coherent and ambitious measures". A single ministry governs the politics in the field of innovation and research, namely the Ministry of Science, Technology and Innovation. As a consequence of this fact, the governmental Danish system is characterized by a politic and administrative coordination as well. The extremely reduced level of corruption lends support to this system.

The case of Estonia[1]. Strongly affected by the present economic crisis, the reduction of finances affected the research-innovation field as well. The reduced degree of industrial productivity, the reduced number of researchers and engineers, as well as the lack of coordination between the business sector and the academic sector characterizes this state as well. The promotion of vouchers for innovation is an extremely important measure in supporting this field.

The case of Finland[2]. Ever since 1990 the innovative performances and the politics in this field have been greatly valued. Thus, from the 27 member states of the European Union, Finland is second best in this field. The recommendation for a more thorough improvement of this field rests in the development of new strategies that would take into account the changes within the enterprises, the orienting towards the consumer and ecosystem respectively.

The case of France[3]. This country is part of the "adepts of innovation" group, namely it excels the average of the member states of the European Union. 2.08% from GDP is destined to the research-innovation sector. France prefers to finance the innovation by dispensing companies from paying taxes. The most active sectors in research-innovation have been affected by the economic crisis (the car industry, the pharmaceutical industry, communications and air-spatial industry). The Recovery Plan launched at the beginning of 2009 seeking to boost the worrying economic situation caused by the economic crisis includes the research-innovation sector as well. The main investments will be made in the extended infrastructure of research as well as in the development of buildings.

Also, there is a series of legislative initiatives destined to improve competitiveness. For example: the economy modernization law, which pursues the facilitation of the business course, respectively of the establishment of the commercial companies, the development of competitiveness, the reinforcement of the territorial activity, the improvement of the economy financing. The same

[1] Innovation Policy Progress Report, Estonia, 2009, available at http://proinno.intrasoft.be/extranet/upload/countryreports/Country_Report_Estonia_2009.pdf (accessed by 28 july 2010)
[2] Innovation Policy Progress Report, Finland, 2009, available at http://proinno.intrasoft.be/extranet/upload/countryreports/Country_Report_Finland_2009.pdf (accessed by 28 july 2010)
[3] Innovation Policy Progress Report, France, 2009, available at http://proinno.intrasoft.be/extranet/upload/countryreports/Country_Report_France_2009.pdf (accessed by 28 july 2010)

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legislative framework offers tax exemption for the establishment of companies, creating an environment similar to that which exists in the U.S.A. The promotion of a program of national reform aims at investing more in the public sector research, to ensure the transfer of know-how from the public sector towards the business community sector, to develop a digital economy, to ensure the excellence of superior education, to ensure top training for everyone.

The case of Germany[1]. The main comparative advantage of the German economy is represented by the specialization in the high technology combined with efficient production and with the innovative products and services. Germany has a solid and diversified basis of know-how, being one of the most active nations in the research-innovation sector. Therefore, Germany is one of the leaders of innovation. The technological transfer between the organizations which deal with research and industry is well-conceived.

The case of Greece[2]. It is part of the moderate innovators group. The present situation of this member state of the European Union determined the reduction of the entrepreneurial activity in this sector, as the "ageing" process of the technologies, the politics in this field were often subject to failure.

The case of Hungary[3]. The level of innovations went low. Only one of five companies from this member state of the EU is innovative, the level of cooperation in this field is extremely low and they do not have qualified work force either. 0.9% from GDP is allocated for this sector.

The case of Ireland[4].1.4% from GDP is destined for this sector. The improvement will be achieved on the basis of a plan elaborated in this respect which lays stress on the intensification of the direct foreign investments, on the development of the autochthon enterprises sector, on the support of the intensive campaigns for innovation, on the development and support of intellectual property, on the encouragement of the entrepreneurial mindset, of creativity and of the innovations in economy and society viewed as a whole.

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[1] Innovation Policy Progress Report, Germany, 2009, available at http://proinno.intrasoft.be/extranet/upload/countryreports/Country_Report_Germany_2009.pdf (accessed by 29 july 2010)

[2] Innovation Policy Progress Report, Greece, 2009, available at http://proinno.intrasoft.be/extranet/upload/countryreports/Country_Report_Greece_2009.pdf (accessed by 30 july 2010)

[3] Policy Progress Report, Hungary, 2009, available at http://proinno.intrasoft.be/extranet/upload/countryreports/Country_Report_Hungary_2009.pdf (accessed by 30 july 2010)

[4][Innovation Innovation Policy Progress Report, Irleand, 2009, available at http://proinno.intrasoft.be/extranet/upload/countryreports/Country_Report_Ireland_2009.pdf (accessed by 30 july 2010).

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The case of Italy[1]. The metal-mechanical and fabric industrial sectors – the most important ones in the economy of Italy – have been affected by the economic crisis, a situation that caused for the trust and investments in innovations to suffer. Italy is part of the category of "moderate innovators", suggesting a diminished progress and an annual increase rate under the average. Also, the fact that they have too many decisive factors at the central level in respect to this sector is not in their favour; this is the main reason for the lack of order and coordination in this sector. 1% from GDP is destined for this sector.

The case of Latvia[2]. Although the official position of Latvia is that all the programs which pursue innovation, as well as the well as the accomplishment of the established aim to reach the level of 1.5% from GDP for the research-development sector until 2015, the actions performed by the Government prove the contrary: cuts of 40% from the budget for this sector, the increase of taxes and the indecision of the governments to introduce structural reforms. The number of active enterprises from an innovative point of view has increased lately from 17.5% to 16.2%.

The case of Lithuania[3]. Situated at the bottom of the list of the European Union member states as far as innovation is concerned, having a reduced capacity to absorb PhD's. Only a small number of economic sectors have this kind of capacity: car and equipment industry, optic and medical services, pharmaceutical and computer industry. Here we can also add the reduced number of European trademarks of 2.7 to a million of inhabitants.

The case of Luxemburg[4]. 1.62% from GDP is destined for this sector. Having one of the most powerful economies from the European Union, it is characterized by a high level of work productivity, by a great number of employed people and a positive public balance. However, in spite of the economic crisis, they do not expect a reduction of the public expenses in the research-development sector, since one of the governmental priorities is the accomplishment of the objective set in Lisbon. The new law regarding the research, development, innovation sector is the key-instrument for the improvement of the situation in this sector: the public system of research offering support to the PhDs, the increase of the number of students, offering

[1] Innovation Policy Progress Report, Italy, 2009, available at http://proinno.intrasoft.be/extranet/upload/countryreports/Country_Report_Italy_2009.pdf (accessed by 30 july 2010)
[2] Innovation Policy Progress Report, Latvia, 2009, available at http://proinno.intrasoft.be/extranet/upload/countryreports/Country_Report_Latvia_2009.pdf (accessed by 30 july 2010)
[3] Innovation Policy Progress Report, Lithuania, 2009, available at http://proinno.intrasoft.be/extranet/upload/countryreports/Country_Report_Lithuania_2009.pdf (accessed by 30 july 2010)
[4] Innovation Policy Progress Report, Luxemburg, 2009, available at http://proinno.intrasoft.be/extranet/upload/countryreports/Country_Report_Luxemburg_2009.pdf (accessed by 30 july 2010)

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support to the innovative enterprises, encouraging the non-innovative enterprises to adopt an approach oriented towards innovation, the strengthening of the partnerships between public research and enterprises. Here we can add the implementation of the performance contracts which establish objectives of innovative performance for the public institutions also aiming to measure the obtained performances.

The case of Malta[1]. Being part of the group of the economies that have to close the gap in relation to the EU average, they allocated 0.6% from GDP for this sector. Malta has to stimulate its financial and human resources, the research and innovation from enterprises as well as the promotion of the entrepreneurial mindset. The dichotomy from the Maltese industrial sector, which is proved by the existence of enterprises with a poor technological level as well as of those with a high technological level, required a personalized innovative politics. The adopted measures refer to a simplified procedure for the establishment of commercial societies, along with the fiscal consolidation and the macroeconomic stability, necessary and adequate at the same time, for achieving direct foreign investments.

The case of Holland[2]. As a consequence of the economic crisis, the research-development system fell into decline: the researchers could lose their jobs, while the innovation ecosystems (for example the clusters also fell into decline). However, the present crisis allows for the possibility to test "a creative destruction", a dynamism of the business scene and of a sustainable development and eco innovations. Holland is part of the category of the EU member states which support innovation. A novelty in the Dutch governing system destined to promote research, innovation is the establishment of a distinct department: Know-how and Innovation within whose boundaries they set the bases of an inter-ministerial partnership regarding the innovation issues.

The case of Poland[3]. Being part of the group of innovators that have gained ground lately, Poland has an innovative performance under the EU average. The most notable inventions have been recorded in the industrial sector (car engines, food industry, gas, metal, chemical products). The establishment of new governmental organisms having the role to control the research-innovation sector is one of the solutions that have been identified for the improvement of this sector. Poland is characterized by a great number of

[1] Innovation Policy Progress Report, Malta, 2009, available at http://proinno.intrasoft.be/extranet/upload/countryreports/Country_Report_Malta_2009.pdf (accessed by 31 july 2010)
[2] Innovation Policy Progress Report, Netherland, 2009, available at http://proinno.intrasoft.be/extranet/upload/countryreports/Country_Report_Netherlands_2009.pdf (accessed by 31 july 2010)
[3] Innovation Policy Progress Report, Poland, 2009, available at http://proinno.intrasoft.be/extranet/upload/countryreports/Country_Report_Poland_2009.pdf (accessed by 31 july 2010)

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documents of innovative politics with numerous objectives stipulated in this respect, determined by the massive investments set up by means of the structural funds.

The case of Portugal[1]. The national innovative system hasn't changed for a long time, being characterized by the multitude of actors due to the development of the scientific and technological organizations. The actors in this sector are extremely varied, from universities and public labs, to associations of labs and technologic and scientific parks, technological centres. The most recent actor is the International Iberian Nanotechnology Laboratory established in partnership with Spain. But the relations between these two actors are not very solid. The great number of small and middle enterprises explains their involvement in the research-innovation sector and the important investments in this sector. A cluster policy, required in this field, represents the objective of the strategy established for the period between 2007 and 2013. At present, Portugal is part of the category of the moderate innovators, after the leap from 2007.

The case of Great Britain[2]. Great Britain's success in this sector is way beyond the average of the European Union, being characterized by a great number of PhDs (it is the second state regarding the number of PhDs after the "international", after U.S.A), and powerful international relations and it is first as far as the percent of foreign investments in research, innovation is concerned.

The case of Slovakia[3]. This member state of the European Union is confronted with a lowered level of the volume and quality of the research-development activities, with an extremely reduced participation of the Slovakian companies in this sector and with a diminished partnership between universities and companies; the country has a fragmentary national system of innovation and a reduced number of instruments in the innovative politics, a reduced number of innovative enterprises. The solutions that have been identified pursue the simplification of the national procedures regarding the presentation, evaluation and implementation of the projects financed from structural funds.

The case of Slovenia[4]. Slovenia, part of the moderate innovators group, announced that they would postpone the realization of the Lisbon

[1] Innovation Policy Progress Report, Portugal, 2009, available at http://proinno.intrasoft.be/extranet/upload/countryreports/Country_Report_Portugal_2009.pdf (accessed by 31 july 2010)
[2] Innovation Policy Progress Report, United Kingdom, 2009, availableathttp://www.proinnoeurope.eu/trendchart/extranet/upload/countryreports/Country_Report_United_Kingdom_2009.pdf (accessed by 1 november 2010)
[3] Innovation Policy Progress Report, Slovakia, 2009, available at http://proinno.intrasoft.be/extranet/upload/countryreports/Country_Report_Slovakia_2009.pdf (accessed by 1 november 2010)
[4] Innovation Policy Progress Report, Slovenia, 2009, available at http://proinno.intrasoft.be/extranet/upload/countryreports/Country_Report_Slovenia_2009.pdf (accessed by 1 november 2010)

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objective, according to which they would have to allocate 3% from GDP for the research-innovation sector, until 2013.

The case of Spain[1]. Being part of the moderate inventors, Spain is 16th in the European Union as far as the research, innovation sector is concerned. A series of changes have happened lately in respect to this sector, changes which regarded the reorganization of the competencies of the Ministry of Science and Innovations, the reformation of the university system. Despite the economic crisis, the Spanish government launched a new program in this sector known under the name of "Plan E", by means of which they allocated 480 million Euro for this sector, having the purpose to create 22.000 jobs in research, innovation by creating new innovative enterprises.

The case of Sweden[2]. This member state of the European Union is one of the leaders of innovation, being a state which depends on the export trade. The investments in this sector are concentrated around twenty big companies which operate on the world market. The main towers of the Swedish innovational politics are university research and the establishment of a general setting favourable for the business activity which has to be interconnected.

The difference between the member states of the European Union from this perspective assumes as a possible solution the approach at an European level of a convergence politics in the research and innovation sector, and as far as Romania is concerned they have to leave behind the passive attitude and adopt active attitudes that would determine an economic growth.

The starting point of the relation regarding the progresses of the innovative politics for 2009 is the crisis that Romania goes through; none of the governmental programs of economic revival does not lay stress on the importance of the role of the innovation politics for the national economic growth, following instead the Keynesian strategy, namely big investments in infrastructure. The necessity of a politics to be pursued in order to overcome the present economic recession, laying stress on innovation, research, development, has to start from the present facts that require progressive improvement. The comparative analysis of the data provided by the National Institute of Statistics shows a continuous and constant regression of our country in this field: the number of the employed researchers went down from 39.582 in 1993 to 13.754 in 2007, the sector of enterprises being way ahead the governmental sector, the superior education sector and the non-profit private sector.

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[1] Innovation Policy Progress Report, Spain, 2009, available at http://proinno.intrasoft.be/extranet/upload/countryreports/Country_Report_Spain_2009.pdf (accessed by 1 november 2010)

[2] Innovation Policy Progress Report, Sweden, 2009, available at http://www.proinnoeurope.eu/trendchart/extranet/upload/countryreports/Country_Report_Sweden_2009.pdf (accessed by 2 november 2010)

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The improvement of the performance in the research, development, innovation sector is measured through criteria such as: the increase of the number of articles in publications labeled as ISI, the increase of the number of European trademarks until 2013, and also the increase of the number of applications at the State Office for Inventions and Trademarks, the increase of the number of innovative enterprises.

In Romania the research-development sector is favored to the detriment of the one of innovation. The governmental support is directed towards the development of the public institutions of research, towards the increase of the number of specialists involved in the research-development activity and less towards innovation. The reduction of the expenses in relation to GDP starting from 2009 was a blow both to the research-development sector and to innovation. We can also add the lack of incentives for innovation in the research-development sector, the reduced capacity to elaborate projects and draw funds and to implement European projects, the misinformation regarding the delimitation of the responsibilities between the National Authority for Scientific Research and the Ministry of the Small and Middle Enterprises, the inexistence of supply and demand as far as innovations are concerned, the poor absorption of innovations by industry, meaning that more money is spent on machine, tools, extern equipment purchase and less for the development of the enterprise intern capacities.

In 2005, a study performed in Romania on 170 enterprises[1] showed the percent of the research-development expenses, observing that it depended on the geographical location of the state, on the specific characteristics of the local market. The existence of the specific departments of research is essential; these determine the introduction of new products, of new technological processes, of new production methods. The development of the research sector pursues the increase of expenses, as well as the increase of the number of employees dedicated to this activity. What is interesting is the great number of the small enterprises that invest in this sector. This could be due to the great number of the enterprises that work in the software industry.

The involvement of the Romanian state in supporting the expenses of the enterprises in this respect is extremely reduced. Thus, only 2.4% from the companies are supported by the state, while only 2 from 170 enterprises included in the study we mentioned above have tried to obtain European funds. Four out of five Euro invested in this sector come from personal funds, while the credits in this sector are in small number.

Also, very few Romanians are involved in long-life learning programs – only 1.3%, while 40% from the companies that were considered by the study

[1] Voinea L., Simionescu L. (2005), *Survey report on research, delopment, innovation and competitiveness in the Romanian Industry,* available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=668882 (accessed by 20 july 2010)

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did not invest anything in the training of their own staff. The lack of long-life learning programs makes the adaptation to the structural pressure more difficult, considering the compatibility between the national industry and the world one.

The intern and international competition are essential for the development of this sector.

The ecology, the efficiency and e-government (the increase of efficiency in the public administration) are the directions that have to be followed by the innovational policy from our country.

The strategy of economic growth in Romania, the way it was elaborated after the downfall of the communist regime was based on encouraging the consumers to spend money, on direct foreign investments and on capital flows. Unfortunately, they didn't consider a coherent policy based on innovations. The specialists believe that this is one of the reasons why Romania was and is strongly affected by the economic crisis.

Thus, in 2009, because of the economic crisis they cut down the funds for the research-innovation sector, getting to 0.18% from GDP in January 2009, subsequently increased to 0.27% from GDP, which is still not good enough. Thus, we can say that Romania is one of the last states of the European Union as far as the rate of innovation is concerned. Also, we have to say that we will not refer only to the negative "reminiscences" from this field which existed before 1989, and that we will observe the positive parts from the same perspective and weather they were turned to advantage or not. As an example, we will mention the number of researchers, the research centres from that time, as well as their evolution until now.

The drastic cut down of the research-innovation finances was reflected in the main financial instruments controlled by the National Authority of Scientific Research, as well as in the programs of the National Plan for Research-Development-Innovation, corresponding to the period of time between 2007 and 2013. The consequences of these financial cuts are both complex and negative at the same time, neutralizing the encouraging signs from the past few years regarding the revival of this sector, the attraction of human capital in this sector, as well as the partnerships between the public sector and the private sector.

Except some debates in this respect, the authorities didn't take a strong official stand regarding the effect of the economic crisis on the research-development-innovation sector, as well as the measures that have to be adopted to counter-balance the negative effects.

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Conclusions

The solutions that have been identified to help Romania enter the research-development-innovation Euromarket are: the development of the educational system, the emphasis of the importance of superior education, of the doctoral schools, the substantial financing of the research-development-innovation sector, the establishment of a network of efficient public institutions that would deal with the coordination of research and offer specialized counseling to the companies that perform research activities, the singing of partnerships with European and international networks of scientific and technologic research, a relaxed fiscal policy regarding the taxes in this sector, the allocation of a percent close to 3% from GDP, the increase of the number of researchers, the concentration on the development of entrepreneurial universities or of the university-industry consortia, the promotion of the economy ecologization, the insurance of the transparency and objectivity of the administrative system, as well as its simplification, which means that a single public authority should ensure the coordination of the policy in this field.

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