CONNECTIONS BETWEEN FOREIGN DIRECT INVESTMENTS AND RESEARCH-DEVELOPMENT-INNOVATION ACTIVITY

Camelia MILEA, PhD[G]

Abstract

Foreign direct investments represent one of the ways of financing any economy. But as any funding source, it has advantages and disadvantages for the host country. In this article, I begin by clarifying the concepts of direct foreign investments and research, development and innovation. Then, I intend to present, based on the analysis and synthesis of the economic literature, the positive and negative effects of foreign direct investments on the activity of research - development - innovation, highlighting, based on interpretations, the correlations among them. The analysis shows that the relationship between foreign direct investments and the research - development - innovation activity is complex and bidirectional. Another ideas developed in the article consist in the assessment of Romania's position regarding the research - development – innovation activity and in the presentation of the measures taken in Romania in order to reach the targets of the Europe 2020 strategy. Noting modest results in terms of research intensity in Romania, I suggest some measures aimed at stimulating research, development and innovation in our country.

Keywords: foreign investors, technology, competitiveness, economic development, interdependences, effects

JEL Clasification: F21, F23, O31, O32

1. Introduction

In the countries undergoing transition to the market economy, in the developing countries in general, the domestic capitals are not enough to support the processes of modernization, technologization and re-technologization, necessary for a country to follow a trend of sustainable development, and to adapt the production and

[G] *Scientific Researcher, „Victor Slăvescu" Centre for Financial and Monetary Research, Romanian Academy*

technologies to the requirements of the participation to the international economic exchanges. One way of completing the internal sources of financing consist in using foreign direct investments. It is advisable, though, that the main source for investments in a economy to be domestic.

The article will clarify first the concepts of foreign direct investments, research, development, innovation. Starting from the economic literature, then the paper will show the positive and negative effects of foreign direct investments on the activity of research-development-innovation, as well as the interdependence between the foreign direct investments and the research-development-innovation activity. I shall use analytical methods, interpretations and correlations in order to draw conclusions on the research-development-innovation activity in Romania and I shall propose measures aiming to increase the level of the activity of research-development-innovation in Romania.

2. Conceptual clarifications regarding foreign direct investments and research, development and innovation

The research has as a starting point the definition of foreign direct investments given by the Balance of Payments Manual of the International Monetary Fund, the sixth edition (BPM6). According to it, ***foreign direct investments*** (FDI) represent a long-term investment relation between a resident of an economy and an enterprise resident in another economy. This relationship involves a high level of influence of the investor on the management of the enterprise in which it invests. In the category of foreign direct investments there are included the subscribed social capital and the reserves of a non-resident investor who owns more than 10% of the votes or of the subscribed social capital of a resident company, the credits between this investor or the group to which he belongs and the enterprise in which he has invested, as well as the reinvested profits. This definition shows the *essence of the foreign direct investments*, which presumes *that the investor has the power of decision and control on the investment objective*.

Research is an assembly of theoretical, methodic and systematic activities of obtaining, interpreting and processing controlled and verified scientific information (facts, events, behaviours or theories), of using it with the purpose of constructing comprehensive explanations regarding the essence of a particular domain of reality or of making practical applications using such facts, laws or theories.

The results of the research activity consist in new scientific or technological knowledge which can contribute to the economic development of the country, by improving the technological processes, the efficiency, quality and by diversifying the generated products and services, by increasing work productivity, etc.

The term of ***research-development*** (RD) covers three activities: fundamental research, applied research and experimental development.

The *fundamental research* consists of experimental and theoretical work done mainly in order to acquire new knowledge on the fundaments of the observable phenomena and facts without proposing a special application or utilization (Pisoschi A., Dobrescu E. M. (2006)).

The *applied research* targets a determined applied objective or purpose and consists of original work done in order to acquire new knowledge. This type of research allows transposing the ideas in an operational form (Pisoschi A., Dobrescu E. M. (2006)).

The *experimental development* consists in systematic work based on existing knowledge obtained through research and/or practical experience, with the purpose of launching the manufacturing of new materials, products or devices, of establishing new procedures, systems and services, or of improving considerably the existing ones (Pisoschi A., Dobrescu E. M. (2006)).

The research-development activity engenders both the transfer of technology created in another country (through foreign direct investments), and the development of in-house innovations.

The level of expenditure for research-development in a particular country is determined by the structure of its economy.

Innovation is an activity which starts from existing knowledge and which, on the basis of a creative process, improves or develops a product, a service, a technological process or the methods of company organization. In order to be considered innovation, the result must be significant in terms of the level of production, the quality of products or the costs of production and distribution.

Innovation brings added value to the initial element.

Innovation is one of the elements *sine qua non* for the economic growth and development, for the progress of a nation. Globally, knowledge is the decisive factor of the new knowledge-based economy – support for the increase of competitivity and for a sustainable economic development.

Innovation is one of the three vital factors of knowledge and competitiveness[1] (Iacovoiu, 2009), next to learning and partnership interactivity, because the endowment with (technical, scientific) knowledge is one of the determinant factors of the national competitive advantage in a particular economic activity (Iacovoiu, 2009).

The national scientific potential is important for the innovation process (Mowery, Rosenberg, 1979).

The capacity of the internal demand to express needs with anticipative character is a prerequisite of innovation.

3. Correlations between foreign direct investments and the research-development-innovation activity

Foreign direct investments are one of the ways of financing any economy. However, as any source of funding, it has both advantages and disadvantages for the host country. Starting from the observations according to which companies are those who make innovation and foreign direct investments are made also by companies, using data from the economic literature, the paper will present the positive and negative effects of foreign direct investments on the research-development-innovation activity and the connections between them.

The multinational companies must have a property advantage in order to go past the difficulties inherent to having activities in several countries. Innovation provides the technological knowledge that is the source of this property advantage. Since, in a way, innovation is a premise for foreign direct investments, innovation encourages foreign direct investments. However, it matters who produces the innovation. Thus, if a company benefits of intense processes of innovation, it will be stimulated to make more foreign direct investments. If innovation is also done by rival companies, then direct foreign investments can de deterred, because the innovation done by competitors implies the risk that the profit which pays for the innovation costs is reduced or even vanishes if the rivals have a successful innovation. In some industries, there is a company which benefits of significant advantages due to successful past innovations,

[1] *Thus, the index of competitiveness, according to the Lisbon strategy, is calculated in function of the data on the following pillars: basic requirements (institutions, infrastructure, macroeconomy, health care and educational services), factors for increasing the efficiency (higher education and human resources training, market efficiency, open-mindedness to the new technologies), factors of innovation (quality of the business environment and innovation).*

and it is very stimulated to continue its innovative processes. In other industries, there are more companies which innovate. Therefore, the relation between foreign direct investments and innovation depends on these aspects.

Starting from the premise of an existing property advantage for the multinational company, one may consider that the company making foreign direct investments is a big company. The big companies are much more innovative also because it is easier for them to get funds for investments in innovating activities. Griffith et al. (2006) show that the size of the company correlates positively with the innovation indicators of the company.

Terk et al. (2007) too, show that the big, foreign companies or the companies that are members of a large group have more innovating activities than other companies.

This idea is supported by Vahter (2010), who shows that there is a positive correlation between the inflows of foreign direct investments and the intensity of the technological transfer during the subsequent period, both from the company which makes the foreign direct investment, and from the suppliers. Also, the inflows of foreign direct investments decrease the probability that the transfer of technology is not used in the innovation process of the companies from the host country.

Lall (1983) shows that the transfer of new technologies, associated to foreign direct investments, may stimulate the research-development activity in the direction of implementing the new technologies and of adapting them to the local production processes.

On the other hand, benefiting of technology transfers from the mother company, the branches are no longer stimulated to do research-development activities.

The main channels through which foreign direct investments are linked to innovation are stimulants for research-development and resources availability.

Considering that competition is one of the most important determinants of innovation, we may say that foreign direct investment companies stimulate innovation, because their presence on a market enhances competition.

There are similarities between the effects of foreign direct investments and of innovation. Thus, both of them can generate the decrease of the costs (because of higher productivity of the production factors), the improvement of the quality of the products, the creation of jobs, the increase of the value of exports of goods and services, the penetration on new markets with the purpose to sell

goods and services, the change of the technical endowment, equipment and methods of work of the company. Innovation generates income from abroad through the sales of licences and patents, while foreign direct investments produce income in the host country as dividends and repatriated profit.

There are also more similarities between foreign direct investments and innovation. Thus, both have uncertain results, starting form significant initial costs. In the case of innovation, these costs refer to the efforts of developing different or higher quality products or to improve the production process or the organisation of the company. The initial costs of foreign direct investments involve the fixed costs of establishing new companies, the costs of adapting the technologies to the new economic environment, of finding local suppliers, of creating a distribution network, etc.

Both foreign direct investments and innovation must generate returns in terms of profits, which should cover the initial costs, otherwise the companies would not be stimulated to invest resources in these activities.

Both innovation and foreign direct investments are limited by the availability of the production factors, such as the skilled work force. The countries in which companies innovate should also have available resources for research-development and production.

The costs of innovation must be covered from the profits generated by the sales of products. Since foreign direct investments are made with the purpose to increase the profits, it seems that the opportunity to make foreign direct investments should accelerate the innovating process because of a higher return. However, the effects of the opportunities to make foreign direct investments on the innovating process are not significant when the new technologies are copied in the host country, because of the shorter period of time in which the foreign direct investment company benefits of higher profits due to its innovation.

It has been noticed that the opportunities to invest abroad (in response to the variations of the economic environment) stimulate innovation. For instance, when the offer of labour force increases in a particular country, foreign direct investments are made in that economy by transferring the production, and innovation increases, too (Glass and Saggi, 2002). Other changes, such as fewer difficulties in adapting the production technologies abroad, may support the increase of foreign direct investments and innovation.

When production moves abroad, generally, foreign direct investments generate spillover by demonstration, because the

process of production can be understood easier using locally a technology, than by the analysis of the end product. In the case of local production, the sources of information can be the workers of the foreign direct investment company who monitor directly the production process or who benefit of training (and who can either go to competitor companies or start their own companies), or the suppliers of the foreign direct investment company. These lead to imitations of the technology brought by the foreign direct investment company.

Vahter (2010) shows that the inflows of foreign direct investments produce, with some lag, positive spillovers on the process innovation in the host country. This is due both to the higher competition because of the inflows of foreign direct investments, and to the transfer of knowledge towards the host country. However, there is no significant positive correlation between the inflow of foreign direct investments, product innovation and organisational innovation.

A possible explanation of this different evolution might be that the knowledge which helps a company improve its production process may "spillover" from the foreign direct investment companies towards the resident companies easier than the knowledge on the product. The information which helps improving the production process can be used and combined with the local knowledge even in the companies which are very different from the foreign direct investment companies, obtaining different products.

The inflows of foreign direct investments don't stimulate cooperation between companies in order to obtain innovation in the transition countries, because multinational companies don't treat local companies as partners worthy of taking into consideration because of their lower experience and knowledge, and because they don't have intense innovation activities.

Acemoglu et al. (2006) and Aghion et al. (2009) show that an increase in the market share of the technologically advanced companies (multinationals) stimulates innovation of the companies from the host country if the resident companies are close enough to the technological frontier. There are positive effects on innovation of these companies with high productivity, because resident companies can avoid by innovation the adverse effects of competitors with better technologies.

However, if resident companies are far away from the technological frontier of that particular sector, the flow of foreign direct investments will reduce the stimuli for innovation of these companies,

because they have few chances to survive the tougher competition, which entails adverse effects on the increase of productivity.

Vahter (2010) shows that the effects of the inflows of foreign direct investments on the innovating activities of the residents don't depend on the distance at which the companies from the host country are from the technological frontier.

Bertschek (1995) and Blind and Jungmittag (2006) conclude that an increase in the market share of the foreign direct investment companies stimulates the tendency towards innovation of the companies from the same branch of activity.

On the other hand, Girma et al. (2009) have discovered a negative relationship between the presence of foreign direct investments in an industry and the innovation activities of the state companies in China.

There are studies which show that most companies prefer to do their research-development activities close to their headquarters (Howell 1984). This behaviour is explained by the long-term strategic importance of the research-development activities, and because the research-development activities are monitored by the company managers.

In the case of the companies overtaken by foreign investors and who don't have a continuous research-development activity, Stiebale and Reize (2008) sustain that foreign direct investment companies prefer to move the research-development activity of the overtaken company to their headquarters, or to reduce the research-development activity of the overtaken company. A decrease of the intensity of research-development activities[2], measured through the per capita research-development expenditure, has also been noticed.

Stiebale and Reize (2008) show that the foreign direct investment companies have a higher proportion of sales from innovations within the total volume of sales.

The same study has showen that both the inclination towards innovation, and the intensity of the research-development activity depend positively on the human capital, on the intensity of the physical capital and on the market power of the company. The companies which cooperate with public institutions or with other companies and the young companies are more innovative.

Foreign investors tend to invest in the companies with a high, unused potential for innovation.

[2] *The intensity of the research-development activity is calculated as the expenditure for research-development as a share of the GDP.*

The situation is different when companies with continuous research-development activity are taken over, in this case the intensity of the research-development activity remaining unchanged. Thus, foreign investors either move entirely these activities, or don't change them at all. This is because the continuous research generates a valuable stock of knowledge and a more efficient organization of the innovation process.

In the case of the new technologies, the companies prefer to make foreign direct investments to the detriment of granting licences, because of the high costs of transaction generated by the asymmetry of information. Thus, when a new technology is created, only the company which developed it knows all its features. The transfer of this technology to companies abroad by licence is difficult because the value of the technology is difficult to estimate.

Another reason why the companies which develop new technologies choose to make foreign direct investments to the detriment of granting new licences is of strategic nature. Thus, a company doesn't want to transfer its newest technologies to other companies which may become its competitors. A company which has received technology through licence, after it masters well the new technology, may close the licence contract and may start producing itself.

Another fear is that a company which uses a licence, uses that technology to invent another technology, which would make it an even more feared competitor.

Thus, both the perspective of the costs of transaction, and strategic considerations make companies transfer their newest technologies by foreign direct investments, and the older and less valuable technologies by granting licences (Glass and Saggi, 2002).

Competitiveness is strongly affected by the poor research-development capacity. Competitiveness is an essential condition in order to remain on a competitional market with both local and foreign partners.

Many times, foreign direct investments also entail specialised labour force. If these are researchers, innovative results are obtained. The foreign direct investment companies may bring in managerial knowledge, which may efficientize the management of the research-development-innovation (RDI) system, if the foreign direct investment companies are drawn into RDI partnerships.

All these show that the relationship between foreign direct investments and the activity of research-development-innovation is complex. The evidences showing that innovation boosts foreign direct

investments, while foreign direct investments stimulate innovations, do not always apply.

4. The activity of research-development-innovation in Romania

Research, development and innovation are key components of the European Union Strategy for economic growth, Europe 2020. Supporting the increase of work productivity, of the industrial competitiveness and of the efficiency of using the resources, and promoting new, innovative and green goods and services, this strategy supports smart and sustainable growth and responds to the challenges of the society.

According to Europe 2020 strategy, the research-development expenditures come from public or private funds. The public funds show the commitment of a government to promote directly and indirectly research-development-innovation (by effects on the private expenditure for research-development-innovation). The structural funds are an important source for public expenditure for research-development-innovation in many new European Union member states, among which Romania.

In the technologically advanced countries, the private financing of the research-development-innovation activity is the main component of the research-development-innovation expenditures and it is focused on several sectors (high tech, and high and medium technology processing, intensive cutting edge technology services). The proportion of the added value of these sectors within the total added value is an indicator of the research absorption capacity of an economy.

In 2012, Romania had the most catching up to do among all the European Union member states, in order to achieve the research-development intensity target[3] set for 2020. Romania has set a very ambitious target (2% of the GDP) for the intensity of research-development, if we consider both the present level and the previous evolution.

The evolutions observed in Romania regarding the accomplishment of the national Europe 2020 targets follow the general European Union trends. The investments in research-development-innovation have increased slightly and discontinuously, from 0.47% of the GDP in 2009, to 0.46% of the GDP in 2010, 0.50%

[3] *Intensity of the research-development refers to the proportion of research-development expenditures within the GDP.*

of the GDP in 2011 and to 0.49% of the GDP in 2012 (of which 0.30% of the GDP are public sources and 0.19% of the GDP are private sources)[4], however, below the average European Union rate of increase (about 0.05 p.p.). Romania is still far away from the national target for 2020, 2% of the GDP. The consolidation of the research, technological development and innovation is a priority of Romania for the 2014-2020 period, enabling it to achieve its national Europe 2020 target.

Three main types of indicators and eight dimensions of innovation are calculated for the European Union, amounting to a total of 25 different indicators gathered in the Scoreboard of Innovation Union (European Commission, Innovation Union Scoreboard (2014)).

The first type of indicators are the "favouring factors", which include the main vectors of performance in matters of innovation which are external to companies and cover 3 dimensions of innovation: "human resources", "opened, excellent and attractive research systems" and "financing and support" (European Commission, Innovation Union Scoreboard (2014)). These are the directions in which a country should act in order to enhance its innovation potential, since they form one of the pillars of innovation.

The second type of indicators, "activities of the companies", shows the efforts of innovation of the commercial companies, grouped in 3 dimensions of innovation: "investment of the companies", "entrepreneurial relations and spirit" and "Intellectual assets" (European Commission, Innovation Union Scoreboard (2014)).

The "achievements", the last type of indicators, include the effects of the innovation activities performed by the companies, being classified in two dimensions of innovation: "innovators" and "economic effects" (European Commission, Innovation Union Scoreboard (2014)).

The European Union member states are classified in four groups of performance on the basis of their average performance in matter of innovation. The first group includes the "leaders in innovation", whose innovating performances are much above the European Union average. The second group includes the "advocates of innovation", whose innovating performances are above or close to the European Union average. The following group consists of

[4] *Data from the National Program of Reform 2014, developed by the Government of Romania in April 2014, at Bucharest.*

"moderate innovators", whose innovating performances are below the European Union average, while the last group includes the "modest innovators", whose innovating performances are much below (less than 50% of) the European Union average. Romania belongs to this last group, being the most innovative among the countries of its group (50% of the European Union average in 2009 and 43% in 2013[5]).

The performance of Romania is much below the European Union average for almost all indicators. Ro has very poor performances for non-EU PhD students and research-development expenditure of the business sector.

Romania has similar performances with the European Union in terms of PhD graduates and exports of technology intensive services.

It can be seen that Romania classifies on a modest position in terms of innovation. This evolution is accounted for by several explanations[6]:

- Limited integration of the policies in the field on research, innovation and industry and insufficient cooperation between the institutions responsible with the development of policies and those responsible for their putting into practice.

- Poor quality of the scientific research and unclear and conflicting specifications regarding the intellectual property rights are deterring factors for the private investors.

- The low level and the diffuse character of the public financing, the lack of a multiannual framework of financing and the lack of coordination within the central administration undermine the efficacy of the public research system.

- There is no support for the newly established knowledge-based enterprises, for financing with the view to develop products or incentives for the cooperation between the big companies, innovating SMEs and universities.

In order to solve the flaws in the research-development-innovation activity and to connect Romania to the new European Union priorities of science and technology set by the Europe 2020 strategy, the Government of Romania has approved on 21 October 2014, the new National Strategy for Research, Development and Innovation, 2014-2020 (SN CDI 2020), developed by the Ministry of National Education. The document promotes the strategic role and

[5] *Data from EU Innovation Union Scoreboard, 2014*
[6] *Government of Romania (2014), National Program of Reform, 2014*

the priority position of the research as drive for the increase of the economic competitiveness,

This strategy is a *sine qua non* condition for obtaining European financing for the research-development-innovation activity in Romania. The strategy aims also to develop a favourable and attractive environment for the private investments in research, by financing applied research, and by public-private partnerships between research institutions, universities and economic entrepreneurs. In order to accomplish this objective, a change must take place in the structure and behaviour of the companies, so that they become true promoters of innovation on the basis of their own research-development efforts.

According to the delegate Ministry for Higher education, Scientific Research and Technological Development, Mihnea Costoiu "the National strategy for research-development-innovation 2014-2020 takes into account the results obtained during the past two decades of reform of the research and innovation, as well as the international trends which promote a science better interconnected and stronger oriented towards the applied impact of its outcome".

The National strategy for research-development-innovation 2014-2020 has identified the areas in which Romania can have significant contributions and by which it can benefit from the results of science and innovation to improve its competitiveness. The strategy aims the following three categories of priorities:

- *Priorities of intelligent specialization*, which presume the definition and consolidation of areas of high expertise in which there are real or potential competitive advantages, and which can contribute significantly to the increase of GDP. These areas can ensure, in their regional dimension too, competitiveness on the regional and/or global value added chains. The areas of intelligent specialization identified and promoted by SN CDI 2020 are the following: bioeconomy; information and communication technology; space and security; energy, environment and climate changes; eco-nano-technologies and advanced materials.

- *Priorities with public relevance*, which concern the investment of resources and creativity in areas in which research and development answer to special urgent and actual social needs. These priorities need the development of the capacity of the public sector to scan the space of new and emerging technologies and to ask innovative solutions from the public and private RDI operators. SN CDI 2020 supports the following priorities of public relevance: health, patrimony and cultural identity, new and emerging technologies.

- The *fundamental research* remains prioritary within the strategy launched by the Ministry of National Education. While the previous priority areas aim to acquire a higher relevance and impact of the research-development-innovation activities for the competitive development of the economic environment and to improve the quality of the social life, the fundamental research stimulates the investigation of frontier areas of the scientific knowledge. This includes both the basic sciences (mathematics, physics, chemistry, life, nature and engineering sciences), as well as humanistic and socio-economic disciplines, aiming to reach an international level of quality and visibility of the scientific production.

We can see that in the priority areas a particular importance is granted to innovation, this activity being the essential condition for the achievement of the proposed targets, because almost all the components of the National RDI strategy of Romania for the period 2014-2020 aim areas of high technological level that require a high level of innovation.

The strategy also supports the financing of the existing or developing clusters, particularly in the areas of intelligent specialization and of emerging technologies, with a major impact for the sustainable increase of the economic competitiveness.

The main directions of action in the field of research-development-innovation reflect the continuation of the objectives for the period 2007-2013 and aim, on the one hand, at strengthening the relationship between research and enterprises by the priority promotion of the RDI activities in the economic sectors with growth potential and public relevance (support for the development of RDI activities in the private sector; human resources development for RDI and training the researchers and engineers in matters of industrial rights and intellectual property) and, on the other hand, at improving the administrative capacity of the national RDI system to increase the efficiency of the investments in this field, encouraging the transfer of knowledge, technology and staff with advanced RDI competencies, with the view to innovate processes and products in the areas of intelligent specialization (Government of Romania, National Program of Reform, 2014). Furthermore, Romania supports the internationalization of the Romanian research and considers attracting staff with advanced competencies from abroad in order to consolidate the Romanian capacity for research and a better integration within the European Research Area.

Foreign direct investment companies can be attracted in order to support the research-development-innovation activities in

Romania, particularly in the areas of intelligent specialization (which have a fast potential for development) and in high-tech areas. Thus, their expertise and the technological transfer can be beneficial.

Below, we present the achievements in the field of RDI obtained so far in our country.

In order to stimulate the private investments in RDI and to consolidate the industrial basis, two capital investments (over 30%) have been done, within the JEREMIE initiative, in the development of two SMEs innovative in technology of information and communication as well as mobile phones. Also, 39 integrated innovative projects (out of which 14 are RDI) have been contracted, initiated by the managers of five poles of competitiveness, for the innovation of products and technologies in auto industry, robotics and furniture; for the development of value chains, the technical-financial evaluation of the innovative projects proposed by 27 clusters has been finalised.

Furthermore, by March 2014, in order to stimulate private investments in RDI, 141 innovative public-private partnership projects, start-ups and spinoffs have been finalized, whose purpose has been to apply innovative products, processes and technologies in enterprises; this resulted in 112 patent applications, 57 research-development results transferred and implemented in enterprises and 730 new jobs created. The volume of the private funds drawn in RDI amount to about 330 million Euro. Also, 141 projects have been contracted for the support of partnerships between universities-research institutes and enterprises and for the support of innovative enterprises; new calls for projects have been launched for the programs Partnerships and Innovation within PNCDI II (Government of Romania, National Program of Reform, 2014).

Some cooperation initiatives between the public and private sectors, associated to the development of clusters, managed to bring together the decision factors, the public research institutions, large companies and SMEs. The implementation of properly directed measures of assistance would have a decisive role in further supporting the development of these initiatives. The increase, in 2013, of the fiscal deductibility of the research-development investments from 20% to 50% and the draft of law regarding innovation of the employees, which has been sent to the Parliament, are welcomed efforts aiming to support the private investments in research and innovation in Romania.

The development of RDI activities within the enterprises had been supported through PNCDI II and FEDR, by financing over 1200 projects supporting the private RDI investments.

Of a particular interest for the business environment, for the improvement of RDI system performance and for the direction of the public funds towards performing scientific and technological areas, has been the process of evaluation, classification and certification of the 46 national research and development institutes.

The on-going evaluation of the research institutes has led to improvements of the medium-term institutional strategies, but there still lacks a comprehensive approach which should allow a concentration of the institutional resources.

Measures are implemented aiming to develop the human resources and the material basis for research, which contribute both to the improvement of the national RDI performance and to the accomplishment of the European Research Area by post-doc and exploratory research projects and by the establishment of young independent research teams and infrastructure projects.

Romania has done limited progress regarding the recommendation for a higher synergy between research, innovation and enterprises, particularly by giving higher priority to the research-development activities which have the potential to draw private investments.

Following, there are some measures aiming to support a higher level of research-development-innovation activities in Romania:

1. The implementation of a mix of policies and instruments which should correlate the research-development objectives with those of the industry, education, employment, fiscal and investment policies.

2. Granting fiscal stimulants to the private sector with the purpose to increase its contribution to research-development financing.

3. Establishment of public-private partnerships in industrial research.

4. Cooperation between research centres and industry.

Furthermore, it is necessary to focus on those research-development priority areas which can support the economic growth by financing the applied research projects; by improving the efficiency of RDI management and financing; by achieving the transfer of research-development outcomes into the applied, production sector.

5. Conclusions

The purpose of the research-development-innovation activity is to produce new scientific or technological knowledge which can

contribute to the economic development of the country, to the progress of a nation, by improving the technological processes and the efficiency, the quality and diversity of the products and services, by increasing work productivity, so that this activity supports the national interest.

The analysis shows that there is a complex, two-way relationship between foreign direct investments and the activity of research-development-innovation. Thus, there are situations when the activity of research-development-innovation supports the accomplishment of foreign direct investments, but this positive correlation depends on several premises. Foreign direct investments can stimulate the research-development-innovation activity in the host country, but they can also hinder it depending on the existing circumstances.

Considering that Romania has been classified among the modest innovators (EU scoring according to the results obtained by Romania in the research-development-innovation activity), the consolidation of research, technological development and innovation is a priority for Romania in the period 2014-2020, with the purpose to accomplish the national target by 2020. This direction of action is explained by the fact that the research-development-innovation activity is a drive for the increase of the economic competitiveness of Romania, being thus a factor which promotes the national interest.

Among the measures intended to support the increase of the intensity of the research-development-innovation activity in Romania, the implementation of a mix of policies and instruments which should correlate the research-development objectives with those of the industry, education, employment, fiscal and investment policies, the measures stimulating the involvement of the private sector in the research-development-innovation activity, as well as those concerning the dissemination of the results are of great importance.

It is in the national interest of Romania to have an *intelligent specialization* in areas of high competency where there are real or potential comparative advantages, and which can contribute significantly to the increase of the GDP, as stipulated in the National Strategy of Research, Development and Innovation, 2014-2020.

We have noticed that in the priority areas a great importance is attached to innovation, this activity being the essential condition for the accomplishment of the proposed targets, since almost all the components of the National Strategy of Research, Development and Innovation, 2014-2020 of Romania target high-tech areas which require a high level of innovation.

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