ASPECTS OF THE ECONOMICAL COMPETITIVENESS REGARDING THE INTERGATION IN THE EUROPEAN AREA OF THE RESEARCH AND INNOVATION

Professor PhD. **Margareta FLORESCU**
E-mail: icefaceus@yahoo.com
The Bucharest Academy of Economic Studies

ABSTRACT

A major policy option of Romania is the integration into the EU European Research Area of Research and Innovation – ERA – one of the objectives established in the Lisbon's strategy. Moreover, as Member State beginning with the 1st of January 2007, Romania has to respond successfully to the other Member States needs, requirements and expectations including those related to the development of the single market European research.

Sustainable economic growth and improvement of living standards of the population are triggered by the development of economic competitiveness in the world's challenging context such as globalization of economy, opening of international markets and rapid technological changes; these challenges have to be transformed by Romanian economy into opportunities. The analysis of competitiveness factors and the identification of problems Romania is facing, pursuing to find the best solutions, represent a must when it comes to the assessment of the country's future economic potential.

Over the last five years, Romania registered a ***macroeconomic stability*** *that is essential for the country's sustainable development, marked by a substantial GDP growth, based on investments, exports and less on consumption. In structure, the contribution of economic branches to gross domestic product indicates an improvement in terms of proportionality, but also an evolution towards modern structures, typical for developed economies. It is worth mentioning that, because of its structural reforms, Romanian economy is currently capable to meet market requirements, enhancing the international economic environment opportunities in real time. The sustained economic growth, with an annual average rate of 6.1%, in 2001-2004, was due to high annual increases in constructions (8.2%), industry (5.2%) and services (5.5%). In 2005 the increase of GDP was of only 4.1%, half of the 2004 level (+8.3%), mainly due to a decline in agriculture, a slower increase in industrial sectors, and significant increases in constructions (+9.9%) and services (+8.1%); the two latter sectors contributed for 54.8% to the GDP formation.*

As associated country, Romania participated to the 5th and the 6th European Union Framework Programs for Research Development and Demonstrative Actions as well as in other European cooperation frames such as EUREKA, COST.

One of the conclusions raised from at the end of the 6th Framework Program (in 2006), anticipated even in 2005, shown that in Romania is not yet reached the critical mass needed to achieve the level of compatibility and competitiveness required for a successful participation to the 7th Framework Program and a real integration into ERA within a satisfactory horizon of time.

The main causes identified are related to "the restrained access of the Romanian researchers to the European consortia and their reduced degree of adaptability to the requirements of a challenge of excellence at a European level".(Market watch IT&C, NO.83, March 2006)

Consequently, the National Authority for Scientific Research has taken a package of measures related to the development and the strengthening of the Romanian Research Area, focusing on the human resources development.

The Program Research of Excellence (CEEX) that has been launched in January 2005 and fully operational in May 2005 is sought to be a base for increasing the competitiveness of the Romanian Research system. The Program Research of Excellence has been designed as a pro- active measure supposed to facilitate the Romanian researchers access , at a high level, to the funds of the EU 7th Program. CEEX's thematic is in line with the European one and the components are meant to prepare the participation of the Romanian research to the 7th Program from four perspectives.

1. The module complex projects mean ambitious projects/themes, development of the human potential and of infrastructure, in partnership at different levels – national/European/international.
2. The module is dedicated to the human resources development and focus on the researchers' development and mobility and on the attraction of young researchers back in the country.
3. The module is dedicated to the promotion/increase of the Romanian research visibility and support for partnerships building for an efficient accession to the FP7.
4. The module is dedicated to the development of the infrastructure meaning apparatus, measurements instruments and devices for the conformity check, accreditation and certification of laboratories according to the European standards.

The expected result is a significant increase, quantitative and qualitative, of the Romanian participation to the FP7 and to other European cooperation frames and, consequently an increase of the capacity to absorb the European funds for research.

The Strategy of the National Plan for Research and Development and Innovation (PNCDI II) has been elaborated considering the priorities to the national level as well as those defined in ERA, and the structure of PNCDI II is similar to the FP7 one, covering all the thematic area defined within it.

The new National Plan for Research Development and Innovation will be launched by the middle of 2007 in order to ensure that the whole research community will concentrate the efforts for applications to the FP7 first calls for proposals.

The Sectorial Operational Programme "Increase of Economic Competitiveness" (SOP IEC) is one of the seven instruments (OPs) for achieving the priorities of the National Strategic Reference Framework (NSRF) and the National Development Plan 2007 – 2013 (NDP), which aim to strengthen the strategic focus of the Economic and Social Cohesion policies and Regional Policy across Romania and to make the correct and appropriate linkages to the European policies and the Lisbon Strategy, which focuses on policies for growth and job creation.

SOP IEC mainly focuses on the first priority of NDP "Increase of economic competitiveness and development of knowledge-based economy" and the second priority of NSRF i.e. "Increasing long-term economic competitiveness" and also contributes, to a different extent, to the implementation of all NSRF priorities.

The **general objective** of SOP is **the increase of Romanian companies' productivity by reducing the disparities compared to the average productivity of EU.** The target is an average annual growth of GDP per employed person by about 5.5%. This will allow Romania to reach approx. 55% of the EU average productivity by 2015.

THE 7TH FRAMEWORK PROGRAM

<table>
<tr><td rowspan="10">COOPERATION</td><td>Health</td><td>IDEAS</td><td>European Research Council</td></tr>
<tr><td rowspan="2">Food, agriculture and biotechnology</td><td rowspan="5">PEOPLE</td><td>Initial training</td></tr>
<tr><td>Life-long training</td></tr>
<tr><td rowspan="2">Information and communication technologies</td><td>Industry-academia</td></tr>
<tr><td>International dimension</td></tr>
<tr><td rowspan="2">Nanosciences, nanotechnologies, materials and new production technologies</td><td>Specific actions</td></tr>
<tr><td rowspan="5">CAPACITIES</td><td>Research infrastructures</td></tr>
<tr><td rowspan="2">Energy</td><td>Research for the benefit of SMEs</td></tr>
<tr><td>Regions of Knowledge</td></tr>
<tr><td rowspan="2">Environment (including climate change)</td><td>Research potential</td></tr>
<tr><td>Science in society</td></tr>
<tr><td rowspan="2">Transport (including aeronautics)</td><td rowspan="2">Coherent development of research policies</td></tr>
<tr><td>International co-operation</td></tr>
<tr><td>Socio-economic sciences and the humanities</td><td colspan="2">Non-nuclear actions by the Joint Research Centre</td></tr>
</table>

The specific objectives are:

- Consolidation and growth of the Romanian productive sector
- Establishment of a favourable environment for enterprises' development
- Increase of the R&D capacity and stimulation of the cooperation between RDI institutions and the productive sector
- Valorization of the ICT potential and its application to the public (administration) and private sector (enterprises, citizens)
- Increased energy efficiency and sustainable development of the energy system.
- Promotion of Romanian tourism potential

Taking into account both the identified possibilities for improvement of the competitive position of Romanian enterprises to cope with the challenge and to be able to use the opportunities arising from operating on the European Single Market and the areas eligible for the ERDF support, the following Priority axes, key areas of intervention and operations have been identified in the SOP IEC:

Priority Axis 1: An innovative productive system

Priority Axis 2: Research and Development for competitiveness

Priority Axis 3: IT&C for private and public sectors

Priority Axis 4: Increased energy efficiency and sustainable development of the energy system

Priority Axis 5: Romania, an attractive destination for tourism and businesses

Priority Axis 6: Technical Assistance

Technical Assistance (TA) will assist in the implementation and monitoring of the programme. TA is expected to contribute significantly to achieving the global and specific objectives.

The priority axes of Romania's competitiveness strategy are in full compliance with the lines of action of the Commission's proposal regarding the framework for Competitiveness and Innovation 2007-2013, and take into account the guidelines put forward by the European Commission for the cohesion policy for 2007-2013.

The ERDF contribution to SOP IEC budget for the 2007-2013 programming period is 2,240 million Euro, which represents 13.28 % of the Community contribution to the NSRF.

Sustainable economic growth and improvement of living standards of the population are triggered by the development of economic competitiveness in the world's challenging context such as globalization of economy, opening of international markets and rapid technological changes; these challenges have to be transformed by Romanian economy into opportunities. The analysis of competitiveness factors and the identification of problems Romania is facing, pursuing to find the best solutions, represent a must when it comes to the assessment of the country's future economic potential.

The study on the world states' competitiveness conducted by World Economic Forum (WEF), ranked Romania 67th out of 117 analyzed countries in 2005 (with a score of 3.67), lower compared to the previous year when it was 63rd out of 104 analyzed countries (with a score of 3.86), behind the new member states and also behind other candidate countries such as Bulgaria (ranked 58th) and Turkey (ranked 66th). World Economic Forum conducts the analysis of competitiveness based on three factors: technology, institutional frame and macroeconomic environment. The Report on Global Competitiveness – WORLD ECONOMIC FORUM, 2003 and 2004 (on which data is available) ranked Romania 55th - in terms of technology, 58th – in terms of macroeconomic environment, and 67th - in terms of public institutions, out of 80 analyzed countries, which demonstrates the need for major improvements in these areas.

Over the last five years, Romania registered a **macroeconomic stability** that is essential for the country's sustainable development, marked by a substantial GDP growth, based on investments, exports and less on consumption. In structure, the contribution of economic branches to gross domestic product indicates an improvement in terms of proportionality, but also an evolution towards modern structures, typical for developed economies. It is worth mentioning that, because of its structural reforms, Romanian economy is currently capable to meet market requirements, enhancing the international economic environment opportunities in real time. The sustained economic growth, with an annual average rate of 6.1%, in 2001-2004, was due to high annual increases in constructions (8.2%), industry (5.2%) and services (5.5%). In 2005 the increase of GDP

was of only 4.1%, half of the 2004 level (+8.3%), mainly due to a decline in agriculture, a slower increase in industrial sectors, and significant increases in constructions (+9.9%) and services (+8.1%); the two latter sectors contributed for 54.8% to the GDP formation.

A positive indicator of structural changes that occurred in Romania is the constant growth of private sector weight in GDP, which reached 70.8% in 2004 compared to 63.7% in 1999.

The increase of Romanian products competitiveness was reflected by changes in exports structure of products belonging to manufacturing industry (the analysis excepted the food industry). Thus, in the 1999-2004 period, the weight of resources exports decreased from 16.1% to 15.6%, as well as the low technology ones from 49.6% to 43.1%, whereas the weight of average technology products significantly increased from 16.1% to 22.3% and of high technology ones from 2.5% to approximately 5%. The export volume continuously increased in this period and almost doubled in 2005 compared to 2000 (from 11,273 mil. Euro in 2000, to 22,255.1 mil. Euro in 2005). As for imports, the weight of high and average technology products is approximately equal to that of low technology products. This demonstrates that technology is mainly imported in Romania, and only on a small scale is locally generated and, where available, local innovation is hard to be promoted and transferred to productive companies. It can be said that, to a great extent, Romanian products offered for export are competitive by costs and not by innovation.

The interest of foreign partners in Romania as destination for FDI is also reflected in the 54% growth of foreign-capital companies incorporated in 2004, compared to 2003, most of them in industry (58.7%). The foreign investors' orientation towards industry is specially due to the advantages Romania offers in this field (reduced price for land compared to other countries in the region, cheap labour force and qualified for the industrial field, production capacities, tradition).On the other hand, the FDI growth was highly affected by transport, communication and energy infrastructure development that do not reach European levels.

In Romania, **the research, development and innovation** activity is based on a valuable tradition currently covering over 50 specific scientific and technological fields and maintaining a relatively stable annual activity and results level. The research and development activities continue to be carried on mostly in the public sector (over 60%). One of the main problems is the insufficient financing (0.4% of GDP in 2004), of which only 10% of the innovating companies benefit. In 2004, the innovating companies have spent approximately 3% of the turnover, of which 24.5% on RD, 53.4% on purchasing equipment and only 6.6% on patents and licenses. The RD infrastructure is outdated and there is a 5 to 10 years gap between the existing equipment and the current standards. Another major problem is the weak connection between research and economy and the relatively low capacity of valorising research results (economic and commercial applicability). In creating the technological transfer and innovation infrastructure, the first steps have been made by establishing technological transfer centres, technological information centres, innovative business incubators, industry connection offices, scientific and technological parks as well as excellence centres, but the results are however not sufficient.

The priority axes of Romania's competitiveness strategy are in full concordance with the lines of action of the Commission's proposal regarding the framework for Competitiveness and Innovation 2007-20134, and take into account the guidelines put forward by the European Commission for the Cohesion Policy for 2007-20135. The above-depicted context of competitive development, based on the current situation and SWOT analyses, represents only the first pillar or the starting point of the programming exercise

and of the elaboration of the SOP IEC strategy. A second pillar consists in choosing the competitiveness model for Romania to follow in its convergence effort. After analysing the available theoretic and empirical models, the SOP IEC has been structured in order to follow both Porter's diamond model and the guidelines provided by the European Commission. Last but not least, a third methodological pillar was consolidated by calculating the competitiveness gaps between Romania and the EU25 average, based on a complex series of both quantitative and qualitative context indicators.

In the priorities setting process, similar competitiveness strategies from most of the EU countries have been reviewed, leading to the conclusion that there is no single unitary methodological approach. Under these circumstances, The European Commission Proposal regarding "The establishment of a Framework Programme for Competitiveness and Innovation 2007 – 2013" dating from 6th of April 2005 was used as main document. It was a natural choice: if EU is to assign funds depending on this framework programme, Romania must have comparable and compatible priorities in order to be able to access European funds. According to the abovementioned document, four crucial domains have been identified: enterprise competitiveness, especially SMEs; innovation; information society; energetic efficiency. In order to simplify, the four priorities have been reduced to three, by merging innovation and information society into a single one.

After obtaining the data for each indicator, both at Romania and EU level, the EU-25 average was calculated. Then, the same scale used for the soft indicators was applied to the hard indicators in order to compare them. The following formula was used for scaling:

Scaled indicator = 6*(original value – minimum)/(maximum – minimum) + 1

The minimum and maximum values included the data on Romania. The next step consisted of calculating the gap between the values characteristic to Romania and the EU-25 average. Finally, the indicators were arranged in accordance to the determined gaps.

In accordance with the methodological premises, all indicators have been equally weighted within each of the priorities. Regardless their hard or soft nature, all indicators were weighted with 1/n, where n is the total number of indicators. This method is the most statistically-neutral, in the absence of conclusive econometric tests (allowing the calculation of regression coefficients)

The prioritization is then resulting from the calculation of indicator-based gaps. As all indicators are financeable, the starting premise will be that the largest amount of funds will be allocated to measures covered by indicators with largest gaps. Moreover, as all indicators are equally weighted within each priority, a top of priorities may be established according to the weight of the aggregated priority gap in the total SOP gap.

In conjunction with the determining the relative lag on the basis of indicators, a more sophisticated, double weighting system was used:

- weighting according to the competitive development phase
- weighting according to the economic development priorities set by EU for itself (program convergence weighting)

The first weighting procedure takes into account the development stage of the Romanian economy. Each measure of the SOP is related to a certain factor endowment, which in turn corresponds to a specific development stage (according to the theoretic framework, based on Porter's competitive diamond, there are three stages: factor-based economy, investment-based economy and innovation-based economy). These development stages have a specific weight (set as part of the model used by Porter in the Global Competitiveness Report), in function of the current level of the analysed economy (the Romanian economy is currently in transition from a factor-based stage to an investment-based one. The weights vary between 50% for the investment related indicators and only

10% for innovation related indicators. The rationale is given by the difficulty of Romania to focus on innovation directly, without proper investments and a sound economic base. Burning stages is possible, but in terms of absorbing structural funds, it is by far more likely to absorb funds with investment-type measures, rather than with innovation-type measures.

The second weighting procedure provides the following procedure:

- more than par weight of 115% (coefficient of 1.15) for measures that coincide with current EU priorities (coordination of competitiveness policy, research and development, SMEs, information society)
- par weight of 100% (coefficient of 1) for measures that lead to convergence with existent EU policies (quality certification etc.)
- below par weighting of 85% (coefficient of 0.85) for measures which do not constitute EU priorities (e.g. tourism, energy – horizontal sectors where interventions are susceptible of damaging the competitive environment; private capital plays the main part here) Initially, the existing lags are captured by way of indicators. Subsequently, the double weighting system reconciles Romania's standpoint, as a candidate state in a different competitive phase than the Union, with that of the EU, which has in place a series of priorities set within the existing policies or the approved agenda, as part of the Revised Lisbon Strategy.

References

1. Rick Mitchell and Keith Goffin, *Innovation Management-Strategy and Implementation Using the Pentathlon Framework*, 2005
2. David Smith, *Exploring Innovation* , 2005
3. Mandy Van Der Velde, Paul Jansen, and Neil Anderson, *Guide to Management* Research Methods , 2003
4. Ministerul Educatiei si Cercetarii, HG pentru Planul National de Cercetare-Dezvoltare Inovare II pe anul 2007/2013.
5. Henry Chesbrough, Joel West, *Wim Vanhaverbeke Open Innovation* - Researching a New Paradi
6. OECD – *The knowledge - based economy* – OECD Working papers, 1996;
7. OECD – *Trade policy aspects of electronic commerce online product customization* – OECD, 1999