

# FINANCING INNOVATION IN ROMANIA

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## Abstract:

*This article based on an examination of empirical literature, analyses the financing of innovative enterprises in Romania and presents the characteristics of Romanian policies in this regard. It sets forth an estimation of the number of innovative enterprises in Romania based on figures from different sources. Assessing the role of financial restrictions on innovation reveals that a firm is facing obstacles to finance its innovative activities but also other difficulties to innovate which appears to be enhanced. This article also puts forward the role of different financing actors and instruments at different stages of the firm's life cycle and emphasizes the function of proximity capital in filling the gap between supply and demand of financing. Finally a framework for policy is recommended.*

**Keywords:** Cluster, Incubator, Innovation, Private Equity, Venture capital

**Jel Classification:** E 22, G 24, O 38

## 1. Introduction

The theoretical literature widely stresses that innovative projects are more likely to encounter financial constraints. Indeed, for such projects finding external financing is difficult and costly to SMEs due to the strong asymmetry relevant with such innovative investments (Hall, 2002) and the problems banks face in defining appropriate models to evaluate risk. However, empirical evidence about the impact of these constraints on innovation is dissipated and not as unquestionable as one might expect. Some authors even consider that instead of being constrained, firms mostly face an excess supply that leads them to undertake unnecessary or too risky investments (De Meza and Webb, 1987).

Romania is no exception from this situation. One strand in the empirical literature concludes that there is a single financing model, the model currently used by firms being largely determined by institutional and macro considerations, whereas another concludes that there is a particular financing process for innovative SMEs.

This article looks at financing the innovative SMEs in Romania, examining the existing empirical literature and numerous reports and studies concluded in this area. No specific survey has been conducted because the data available is already abundant. Therefore the report attempts to present the conventionalised facts, some stable patterns that emerge from different sources of empirical data, and proposes a framework to better understand the structural characteristics of

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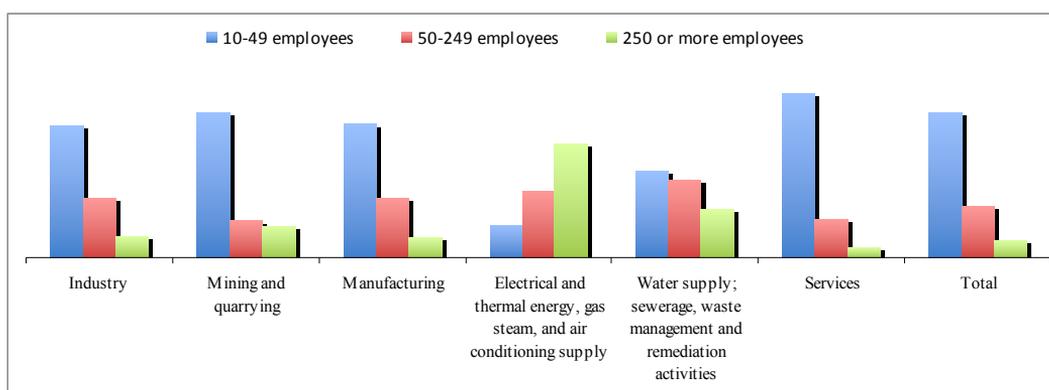
Romanian policies addressing these SMEs. It starts by identifying the subset of firms concerned by innovation, which is important for determining the scope of policies to implement. The study then presents an assessment of the financial constraints those firms are facing and explains how complementarities among financial actors intervene in order to decompress the constraints felt by some companies. The study continues by pointing to proximity as an additional element to improve relations between borrowers on one hand and investors on the other. The financial commitment of the state then is illustrated. It concludes by proposing a structural framework, to capture the policy changes that could arise from the firms behaviour to promote a collective dynamic and changes in the coordination process.

## 2. How many enterprises are innovative?

Based on the findings of the 2008 Community Innovation Survey (CIS 2008, 2006-2008), in Romania nearly 20% of companies were active in technological innovation from 2006 to 2008 compared to nearly 40% in the EU-27. This innovation activity may have led to a new product (or service), or a new process, although not necessarily during the observation period.

Under a wider definition that includes organisational and marketing innovation, more than 33% of the enterprises in Romania report innovation. Organisational innovation is the most widespread form of innovation activity with almost 69% of total innovation activities, irrespective of the enterprise business sector or size. Process innovation is generally more common than product innovation, having respectively percentages of 20% and 7%. Small enterprises are more innovation-active than large ones in all the activities except electrical and thermal energy, gas steam, and air conditioning supply as we can see in the Figure 1 hereafter. In these last industries very few SMEs can be found, therefore the innovative configuration is affected.

**Figure 1. Percentage of enterprises active in PPAOM<sup>2</sup> innovation by activity and size, Romania**



Source: INS National Institute for Statistics of Romania, Community Innovation Survey 2008

## 3. An assessment of the financial constraint of SMEs – the financing gap

It is generally admitted that SMEs have more difficulty surviving, are less profitable and default more frequently than large firms due to lack of economies of scale advantages. Helping them

<sup>2</sup> PPAOM: products processes, innovation activities, organisation, marketing

to counterbalance this weakness is, then, a structural characteristic of Romanian innovative financing.

### 3.1. Factors hampering innovation

Cost factors (lack of financial resources, too-high innovation costs) are the main explanation given by the majority of innovation-active enterprises in the Community Innovation Survey 2006, the last available survey which analysed the factors hampering the innovation activities. Romania is one of the most affected countries in the EU by the financial constraints, 31% of the innovative enterprises complaining about the lack of funding within the enterprise or the group. Furthermore, 31% of the innovative enterprises complain about the lack of finance from sources outside the enterprise and 29 % about the cost of the innovation as illustrated in the Table 1 hereafter.

**Table 1 - Main barriers to innovation, Romania**  
(Percentages of innovative enterprises in 2004 and 2006)

| Related factors           |   | 2004-2006 | 2002-2004 |
|---------------------------|---|-----------|-----------|
| Cost-related factors      | Lack of funds within your enterprise or group             | 30.6      | 8         |
|                           | Lack of finance from sources outside your enterprise      | 31.0      | 30.3      |
|                           | Innovation costs too high                                 | 28.6      | 29.9      |
| Knowledge-related factors | Lack of qualified personnel                               | 13.5      | 14.2      |
|                           | Lack of information on technologies                       | 5.5       | 7.3       |
|                           | Lack of information on markets                            | 5.3       | 0         |
|                           | Difficulty in finding cooperation partners for innovation | 14.4      | 15.9      |
| Market factors            | Uncertain demand for innovative goods or services         | 13.3      | 21.2      |
|                           | Markets dominated by established enterprises              | 18.9      | 16.1      |
| Reasons not to innovate   | No need to innovate because no demand for innovations     | 2.1       | 5.4       |
|                           | No need to innovate due to prior innovations              | 2.9       | 4.2       |

Source: Community Innovation Survey 2006 and 2004

Experts and politicians often mention finance as a strong constraint to innovation. Numerous surveys carried out, particularly by World Bank, highlight that the access to finance is often mentioned by the SMEs as one of the most important barriers for their "doing business". According to the World Economic Forum, in 2010 the most problematic factor for doing business in Romania is the access to financing for more than 16% of Romanian survey participating enterprises.

Furthermore, Romania is among the last countries where innovative companies received public funding: 11% in 2008 and 12% in 2006 (out of total innovative enterprises) compared to 39 % in Italy or 37 % in Netherlands both in 2008.

Therefore, it is impossible to ignore the potentially negative effect that insufficient financing has on innovation. It has been shown (Rivaud-Danset, 2001) that when an innovative project encounters financial constraints the average number of obstacles nearly doubles, whatever other difficulties the project is facing.

### *3.2. The credit rationing and the financing gap*

A better understanding of the so-called financing gap is nevertheless required, which led many authors to study more carefully the sources of disappointment mentioned by entrepreneurs in surveys on bank-firm relationships. In doing so they refer to credit market literature in order to propose econometric models that make it possible to measure the different sorts of credit rationing.

The literature distinguishes three types of credit rationing: the well-known weak<sup>3</sup> and strong<sup>4</sup> credit rationing and a self constraint bound to the discouragement of entrepreneurs on the credit market. Many French studies (SESSI 2002; Bonnet, Cieply and Dejardin, 2004; Savignac, 2007) show that a large part of new firms are not credit constrained. According to Bonnet, Cieply and Dejardin (2004) the strong credit-rationing hypothesis only concerns 3.26% of the firms created in 1994 and 5.3% of the subsample of the innovative ones. Credit rationing, according to Stiglitz and Weiss (1981), also pertains to a very small proportion of new firms in France during mid-nineties. Weak rationing concerns 14.76% of the sample and only 8.21% of the subsample of the most innovative firms. It finally appears, that self-constraint is the most important financial impediment new firms have to suffer. Empirical studies carried out by OSEO<sup>5</sup> offer strong evidence favouring this assertion.

The main conclusions drawn from these studies are as follows:

The results obtained in all literature concerning the effectiveness of credit rationing to small innovative firms in France support all academic assumptions based on entrepreneurs' expectations of

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<sup>3</sup> "Weak credit rationing" (or type I) corresponds to the situation where a borrower  $x$  does not succeed in getting sufficient credit at the moment  $t$  (Keaton, 1979). This borrower is granted access to credit, but for a level of debt that is inferior to the level (s)he desires. This rationing occurs when some applicants receive, at the current interest rate, smaller loans that they desire.

<sup>4</sup> "Strong credit rationing" (or type II) occurs when some borrowers' demands are turned down by banks although these borrowers are ready to pay all prices and non-price elements of the loan contract, while apparently identical demands are accepted by banks. In this situation, a customer  $x$  does not receive at moment  $t$  any sort of credit, although a customer  $y$  who does not apparently differ from  $x$  gets it. This situation was first described by Stiglitz and Weiss (1981).

<sup>5</sup> OSEO was created in 2005 by merging ANVAR (the French innovation agency) and BDPME (the SME development bank), with a mission of general interest to support the regional and national policies. Its mission is to provide assistance and financial support to French SMEs in funding innovation and investment.

investors' future decisions. The new theory of credit rationing based on discouragement of entrepreneurs seems sound and promising;

Despite the existence of financial constraints, when new firms want access to bank loans, banks remain their main provider of external finance (87% of Romanian SMEs according to the Flash Eurobarometer study of the European Commission 2009b, p. 42). The current financial crisis has resulted in a significant reduction in the availability of bank loans to the SMEs (Roman and Rusu, 2011);

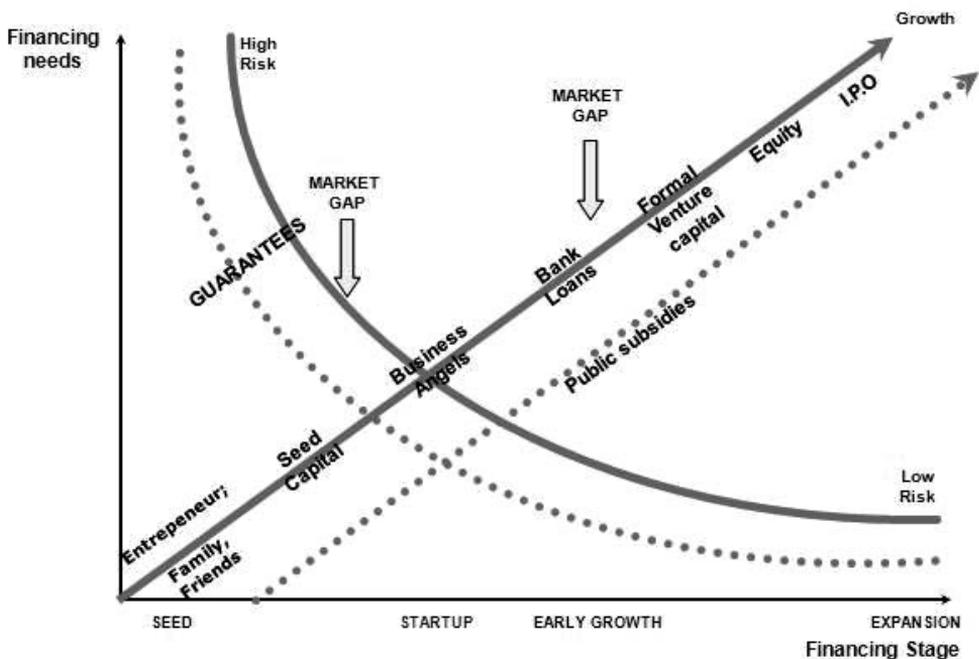
Inter-firm and external finance are unimportant when it comes to newly created and innovative firms. When only innovative sectors are concerned, the frequency of highly intensive relationships between new firms and these two kinds of investors tends to increase but remain at a very low level.

The banks have an important role in the financing of new firms in Romania and self-constraint appears as a major phenomenon almost impossible to explain by any standard theory of financing. Other means of financing such as venture capital, business angels and trade credit have played a minor role in financing of Romanian innovative firms. These findings detract from the assumption of a new firm credit gap, but they may equally support the general direction of public aid in Romania, which favours guaranteeing funding granted by banks to finance the riskiest firms - and in particular the innovative enterprises.

**4. A general architecture to bridge the gap**

European literature agrees on a general financing stages model for innovative SMEs as presented in the Figure 2.

**Figure 2. Financing stages for innovating SMEs**



Splitting the financing path into three main stages offers a view of the general architecture: there is the start-up phase, the first financial rounds that correspond to the take-off of the firm, and the subsequent financial rounds that are activated whenever a firm aims at entering new markets, tries to develop new products or attempts to manage some turmoil. Several financing solutions correspond to each of the stages, as shown in Table 2.

**Table 2. Three stages of financing**

| Start-up phase   | First financial round   | Subsequent financial round   |
|--|---|--|
| Seed capital fund<br>Loans without interest and/or guarantee<br>University and research centres<br>spin-off funds<br>Micro credit<br>Public or para-public funds for creation of innovation<br>Public grants<br>Reimbursable loans | Business angels<br>Seed capital fund<br>Banks loans/overdraft<br>Guarantee funds<br>Public or para-public investment funds<br>Regional public venture capital<br>Public grants<br>Corporate venturing | Private venture<br>Bank loans<br>Share subscription bonus<br>Mezzanine |
| Indirect support: Pre-incubation, incubation, nurseries and easy-in/easy-out workshops, tutorship (coaching, mentoring, hands-on management), legislative work (financial services, capital adequacy, etc.).                       |   |  |
| Integrated actions: Financial value chain, intermediation  |   |  |

## 5. Innovative SMEs and their financing vehicles

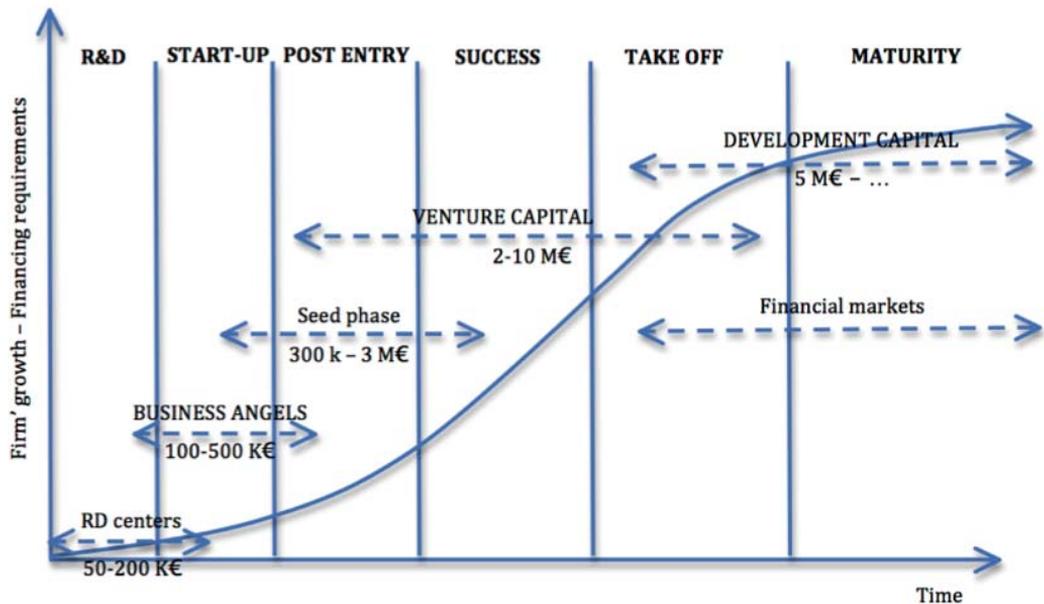
Innovative SMEs may be important in strengthening economic growth and employment, but they still face particular problems when attempting to access financing as they represent a higher risk than households, traditional SMEs or large firms. Therefore, they are not good candidates for traditional bank loans as seen above, but are used to rely on themselves or on love money gotten from friends and family to finance their riskiest projects. Instead of a financial gap, it is more accurate to speak of a mismatch of the expectations of borrowers and lenders. This results in a market failure strengthened by exogenous elements (the burst of the “dot.com” bubble after the steep rise of Internet in the late 1990s, the subprime crisis) that pushes banks to announce a credit shortage due to a more strict selection process.

Because of the supposed reluctance of banks to commit themselves to a credit relationship with innovative SMEs, these firms often tend to expect much from investors who will provide risk capital, generally in return for a share in the company. The risks for the investor are high, but so are the potential rewards if he or she is backing a winner.

Financing for innovative SMEs is complicated by the fact that these firms are likely to require a range of financing vehicles at different stages of their development. The “seed” money to start up the company generally comes from friends, professional contacts and family.

A simplified presentation of the venture capital industry in connection with the life cycle of the firm is presented below.

**Figure 3. Innovation firms' lifecycle and the venture capital market**



Source: CDC Entreprises, "PME innovantes et Capital risque", Novembre 2005

In European developed countries, where venture capital and private equity are more developed, "business angels" are seen as a key link in the financing chain at the early stage of business development, as they bring business experience to the table as well as their own capital in a context of proximity and coaching for the new entrepreneur. In Romania Associations of "business angels" should be stimulated by the public authorities via tax advantages for investing in start-ups and innovative SMEs.

## 6. Equity capital financing and proximity

Most SMEs are not connected to the financial places and only have access to financial markets. The inability to produce standardised information and to provide extensive administrative follow-up are the first barriers to entry on the stock exchange. All the impediments have been studied extensively in the literature. Furthermore admission to the stock market is not worthwhile for most SMEs, either because they run a family business or because their capital is so concentrated that the number of transactions remains extremely low. The result shows that it is not easy to estimate the price of a share. Most studies, thus, confirm the survey conducted by Belletante and Desroches in the 90s (1993); they concluded that when entering the secondary market, SMEs are not looking to raise funds but rather to play with announcement and reputational effects that will permit them to get a better interest rate from the banks. Even so, that behaviour does not say anything about the way SMEs self finance equity capital.

The notion of proximity capital that expanded over the past twenty years opened the path, in France as in other countries, to providing a suitable financial instrument for innovative SMEs.

Proximity capital refers to funds that are invested in a company in the form of equity capital or quasi-equity capital; these derive from persons, companies or institutions that maintain – either directly or, more rarely, indirectly – sustained relationships with the receiving company or with persons inside that company. Those relationships do not relate solely to financial aspects.

Therefore, the salient point of this definition is the relationship between the company and the investors that provide the equity finance. Instead of mainly resting upon financial criteria such as EBITDA<sup>6</sup> or P/E Ratio<sup>7</sup>, the relationships between partners become the central element of the financial commitment. Rivaud-Danset (1996) referred to these as financial relationships “à l'engagement” – implying a long-lasting commitment. In this case, proximity capital, even if it mimics the functioning of a stock exchange, mainly rests on the “personalisation” of the relationship. This feature strengthens the role of individuals in the SME. In those firms, there is a close relationship between the holding of shares on the one hand and decision-making power in the firm on the other. That confusion between ownership and control tends to exclude SMEs from ordinary financial markets. It makes it difficult to attract new investors, who are reluctant to take part in a project whose profitability is questionable without having any say in the strategy of the firm since the owner-manager is reluctant to share its power with anyone else.

How can proximity solve some of these problems? Assuming that any innovation or expansion project requires equity capital, the entrepreneur has to find funds from those around him – from members of the family, former work colleagues, various public economic promotion agencies, persons or firms whose participation the entrepreneur has succeeded in securing. Apart from their skills as a technician or a manager, the entrepreneur's personality and ability to mobilise their social relations are a determining factor. That type of relation frequently depends on geographic proximity, and policy actions should aim at creating proximity investment funds to provide SMEs with the equity they need to strengthen their position and to permit them to diversify the origin of financial resources received. However, while geographical proximity is presumed to play a key role, the social and institutional relations of a territory will also come into play (Dei Ottati, 1994).

SMEs should have at their disposal other instruments such as the French FIP<sup>8</sup> (“Fonds d'investissement de proximité”) which leverages private financing through equity investment. Furthermore the so-called French FCPI<sup>9</sup> (“Fonds communs de placement dans l'innovation”) aim at

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<sup>6</sup> EBITDA is the acronym for Earnings before Interest, Taxes, Depreciation, and Amortization. It purports to measure cash earnings without accrual accounting, cancelling tax jurisdiction effects, and cancelling the effects of different capital structures.

<sup>7</sup> The P/E Ratio is a measure of the price paid for a share relative to the annual net income or profit earned by the firm per share. It is a financial ratio used for valuation: a higher P/E ratio means that investors are paying more for each unit of net income, so the stock is more expensive compared to one with lower P/E ratio.

<sup>8</sup> Local investment funds (FIP in French) are the result of the law on economic initiative dated 1st August 2003 (articles 26 and 27), which deregulated the Private Equity business. It is a savings scheme open to the general public, approved by the Autorité des Marchés Financiers (the French financial markets regulator or ombudsman), which authorises investments in the equity of SMEs in up to three regions and for no more than 3 years. They are mainly aimed at private investors and the funds are invested in areas not currently targeted by private equity schemes. So they are essentially small schemes and do not have to have a technological focus (unlike the French FCPIs: Innovation investment funds)

<sup>9</sup> This finance vehicle gathers individuals willing to invest, in innovative, early stage and private companies (venture capital), at least 60% of the money collected. SMEs listed on French Financial Markets (Alternext and “Marché Libre”) are considered to belong to the private company pool within a FCPI portfolio. Also, up to 20% of the

investing 60% of the money collected in non-listed innovative SMEs employing less than 200 people. A tax rebate is proposed by the public administration to investors. These models of proximity capital financing should be available for Romanian SMEs in order to strengthen their innovation financing.

## 7. Entrepreneurship and SME policy

SMEs are prevailing in the Romanian economy and represent over 99 % of all enterprises. In recent years, the SME sector has consolidated its role in the economy in terms of the number of employees and the average turnover per enterprise although the crisis has left its marks. The recession has resulted in higher restrictive credit terms for SMEs and larger enterprises. Although the steady decline in private credit growth appears to have bottomed out, SMEs in particular suffer from insufficient access to bank financing as the latter appears to be crowded out by the financing needs of the public sector. The financing problems of SMEs are further compounded by excessive delays of VAT refunds and other payments to companies by state-owned enterprises and the government. All these have contributed to the number of SME bankruptcies, which increased in 2009 and 2010. Being aware of these problems and in order to reduce payment arrears, the government has recently adopted a number of measures in order to address these issues. In this respect, good progress has been made by reducing the payment arrears by two thirds since 2009 to present.

In the wake of the crisis, Romania had taken a small number of stimulus measures regarding business support and helps to weather the crisis. Some of the measures announced in early 2009 have been adopted very late (e.g. the temporary tax exemption for reinvested profits), thus considerably delaying the expected effects while some have not been adopted at all. Financial support to SMEs is primarily being provided via multi-annual national programmes and guarantee instruments. The National Credit Guarantee Fund for SMEs was capitalised and improved its guarantee activity, also as a result of the establishment of the Counter Guarantee Fund of Loans to SMEs in 2009. In addition, legislative measures were taken in 2009 to ensure the implementation of the JEREMIE initiative.

The JEREMIE initiative developed in cooperation with the European Commission, offers EU Member States, through their national or regional Managing Authorities, the opportunity to use part of their EU Structural Funds to finance small and medium-sized enterprises (SMEs) by means of equity, loans or guarantees, through a revolving Holding Fund acting as an umbrella fund. The JEREMIE Holding Fund can provide to selected financial intermediaries SME-focused financial instruments including guarantees, co-guarantees and counter-guarantees, equity guarantees, (micro) loans, export credit insurance, securitisation, venture capital, Business Angel Matching Funds and investments in Technology Transfer funds.

Starting with February 2011 the guarantee facility under this initiative has become operational while the risk facility should be operational in 2012. According to the European Investment Fund the main advantages of JEREMIE are:

Flexibility: Contributions from the Operational Programmes to the JEREMIE Holding Fund will be eligible for interim up-front payments by EU Structural Funds, giving Managing Authorities

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funds may be invested in listed companies (except Alternext and "Marché Libre"). FCPI funds could be invested everywhere in EU (27 countries) and their duration is usually of 8 years. Today, the maximum investment per FCPI fund is 2.5M€, per year, therefore venture capital firm may use several FCPI funds under their management to make larger ticket. Most FCPI funds have been managed within venture capital firms.

more flexibility in allocating these resources. Structural Fund contributions to the Holding Funds must be invested in SMEs by 2015.

**Benefits of a portfolio approach:** The Holding Fund will be able to re-allocate the resources to one or more financial products in a flexible way, depending on the actual demand over time. The umbrella fund approach will allow a diversification of risks and expected returns due to financial products having different default rates, as well as active cash flow management to allow for a swift response to changing market requirements.

**Recycling of funds:** The Holding Fund is of a revolving nature, receiving repayments from the financial intermediaries for further investments in the SME sector. This makes SME support via EU Structural Funds sustainable, unlike the pure grant approach.

**Leverage:** A significant implied advantage of JEREMIE is its potential ability to engage the financial sector either at the Holding Fund level, with additional capital from financial institutions, or at the level of financial instruments, through co-financing, e.g. in both cases potentially in cooperation with the EIB.

Moreover, there are several actions, financed by the OP Increase of Economic Competitiveness, which provide support for new investments, for the internationalisation of SMEs, for the implementation of international standards, and for advisory services. In addition, support for investment projects of micro-enterprises as well as for developing the regional business infrastructure is provided through the OP Regional Operational Programme. Finally, the projects financed through the OP Administrative Capacity Development aiming at implementing a coherent plan for improving the business environment, implementing at national level the Small Business Act, and developing an operational one-stop-shop pilot model were completed.

Romania's efforts to help SMEs to survive the economic crisis were hindered by the need for fiscal consolidation, which left little room for manoeuvre to launch costly recovery measures. Mitigating further high financing costs, overcoming the scarcity of credit and reducing the lack of working capital are therefore the main challenge in the short term. Related to these, Romania needs to increase support to enterprises, particularly SMEs, in accessing EU funds, as well as to reduce effectively payment arrears. Moreover, facilitating the access of Romanian companies to markets could help to offset the decline in domestic demand. In this respect, using public procurement in a more proactive manner and further supporting the internationalisation of SMEs could be important steps.

## **8. Romanian policy mix towards increased private RDI investment**

### ***8.1. Main public funding instruments***

The main RDI public funding instruments consist of a set of programmes that address a broad target of R&D performers both in the public and the private sector (national R&D institutes, public R&D organisations, academic research centres, business firms with R&D activities, etc. The main public funding instruments are:

**2007-2013 National Plan for R&D and Innovation.** Launched in 2007, this is the most important funding instrument of NASR, both policy- and budget-wise, and has the largest budget of all current national programmes (multi-annual budget of about €4,700m). It is organised in six programmes, similarly to the EU FP7: (1) Human Resources, (2) Capacities, (3) Ideas, (4) Partnerships in priority domains, (5) Innovation and (6) Sustaining the institutional performance (not active yet, to be launched in 2011). Participation in all these programmes is competition-based.

Two complementary funding instruments to the RDI National Plan were launched in 2003 and have been continued to present:

**The Core R&D Programmes** are initiated and developed by the national RDI institutes on an annual or multi-annual basis in accordance to the National RDI Strategy priorities. They provide institutional funding to support institutes' own medium-to long-term R&D strategies (in addition to the funding gained through competition-based programmes). The Core R&D Programmes are validated by the line ministries of the respective institutes, and are approved and financed by NASR. In 2009 NASR supported 46 core R&D programmes, with a total budget of approx. €83m, which was about 30% higher than in 2008, in view of helping them maintain the R&D personnel, especially the young researchers trained abroad. In 2010, NASR funded 47 Core R&D Programmes (NASR, 2010).

Some national R&D institutes proposed the **Sectorial R&D Plans** for the technological development of the respective sectors.

Structural Funds (SF) for RDI activities

Sectorial Operational Programme 'Increasing Economic Competitiveness' (SOP IEC) aims to increase the competitiveness of Romanian enterprises and reduce the productivity gaps between Romania and the EU, with the specific target that Romania should reach 55% of the European average productivity by 2015. SOP IEC is also the only SOP which mainly targets the private sector, and as such is much more demand-driven and dependent on its attractiveness to potential beneficiaries than other SOPs that are mainly or completely focused on the public sector. Relevant for RDI objectives are Priority Axes 1: An innovative and eco-efficient productive system and 2: Research, Technological Development and Innovation for competitiveness. SOP IEC's Management Authority is the Ministry of Economy, Trade and Business Environment, while the Priority Axis 2 is managed by NASR as Intermediate Body.

**SOP Regional Development (ROP)** is the main instrument for regional development policies. It is managed by the Ministry of Regional Development and Tourism (MRDT) and covers all development regions, without any particular regional focus. Relevant for innovation objectives is Priority Axis 4 'Strengthening regional and local business environment' which supports regional and local business support structures (e.g. industrial, business parks, business incubators etc.), especially in the less developed and declining areas, regional and local entrepreneurial initiatives in order to attract investors, job creation and sustainable economic growth, technology transfer to microenterprises, in line with the Regional Innovation Strategies. This Priority Axis aims to narrow the large disparities between regions in terms of entrepreneurial and industrial development that have widened in recent years.

**SOP Human Resources Development (SOP-HRD)** supports the development of human capital and the increase of competitiveness by linking education, lifelong learning and labour market and providing enhanced opportunities for future participation in the labour market. Relevant for RDI objectives are Priority Axis 1: Education and training in support for growth and development of knowledge-based society, which promotes doctoral and post-doctoral programmes in support of research, and Priority Axis 3: Increasing adaptability of workers and enterprises supports the development of entrepreneurial skills and training in new technologies). SOP-HRD is managed by the Ministry of Labour, Family and Social Protection.

## ***8.2. The national policy mix towards stimulating private RDI***

The policy mix aiming to stimulate private RDI (Research, Development and Innovation) investment comprises:

### **8.2.1. Programmes of the 2007-2013 National RDI Plan**

Romanian BERD relative to the GDP over the last 5 years was relatively stable in the period 2005-2007, at approx. 0.22% of the GDP, but dropped to 0.17% in 2008 and further to 0.15% in

2009, as a consequence of the economic crisis (EUROSTAT). The same trend was observed in the evolution of the Romanian BERD relative to the EU27 average: from approximately 0.18% of the EU27 average in 2005-2007, to 14% in 2008 and further to 11.7% in 2009, increasing even more the existing gap to the EU27 (EUROSTAT).

The main programmes of the 2007-2013 National RDI Plan are: Capacities, Partnerships in priority RDI domains and Innovation with two main focus:

Partnerships in priority domains (1 354 projects funded in 2009 and 1 347 projects in 2010). Most coordinating units were R&D institutions of national interest, especially universities, followed by national R&D institutes, and to a smaller extent firms, NGOs and SMEs<sup>10</sup>.

Innovation (285 projects in 2009, 263 in 2010, all coordinated by firms that contributed with approx 43.6% of the budget in 2009, especially SMEs in 2010). The programme is characterised by a very high share of high-tech projects (97%) (NASR 2009). Commercialisation of results was under the expected level, because of results freezing in the experimental development stage generated by the contraction of public funding by 26.1% to the value agreed upon at the contracting stage (NASR 2009, 2010).

### **8.2.2. National technological platforms**

There were 39 national technological platforms in 2009 and 32 in 2010 in several industries: alternative energy sources, genomics and plant biotechnologies, water management and quality control, manufacturing technologies, nano-electronics, nano-medicine, innovative medicine, sustainable chemistry, maritime transport, aeronautics (NASR 2009, 2010). Romania is also involved in several European Technology Platforms.

### **8.2.3. Joint Technology Initiatives (JTI)**

Romania currently participates in 32 active *ERA-NETs*, and has also been part of other 16 *ERA-NET* that are now finished (inactive). By domain, the participation was highest in: Environment (8 active, 3 inactive), Food, agriculture and fisheries (5 active, 1 inactive), ICT (5 active, 1 inactive), Nano-science and nanotechnologies (5 active), Energy (4 active), Transport (3 active, 2 inactive). The lowest participation was in: Health (2 active), Government and social relations (2 active), space (1 active), Services (1 active). *ERA-NETS* are currently under the coordination of the Executive Unit for Funding Higher Education, Scientific Research, Development and Innovation (UEFISCDI), which has taken over this coordination task from the National Centre for Programme Management.

*Participation in initiatives undertaken under Art. 185 of the Treaty of Lisbon (EUROSTARS)* - In the 2nd call of the EUROSTARS programme (launched in 2008, results announced in 2009) Romania had 13 eligible proposals, of which 1 was accepted for funding following the international evaluation. In the 3rd call (September 2009), Romania had 11 eligible proposals, of which 4 have been accepted for funding as coordinator (E!5112 RELIS, E!5119 EUGEN).

*Participation in European public-private partnerships - Joint Technology Initiatives (JTI) and European Technology Platforms* - In 2007-2008, Romania registered as member to four of the approved six Joint Technology Initiatives: ARTEMIS (integrated information systems), ENIAC (nanotechnologies), IMI (innovative medicines) and CLEAN SKY (aeronautics). Romania is a founding member of CLEAN SKY, in which it participates through a consortium of two research institutes and two plane manufacturers. Romania is also a founding member of IMI, through the

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<sup>10</sup> Source: NASR National Authority for Science and Research 2009, 2010

Romanian Association of International Medicines Manufacturers. In November 2009 Romania became full member of ENIAC Joint Undertaking JU15.

### 8.2.4 Tax incentives for R&D

In general, tax incentives are poorly represented at present, as only a few remained active after the revision of the Fiscal Code in 2007 and the cancellation of many measures in 2009, as part of the austerity measures adopted by the government to limit the effects of the crisis. In this context, the adoption of new tax incentives, although promoted in most of the recent policy documents, has faced a lot of obstacles in 2009 and 2010. Specific measures for RDI in the Fiscal Code include: VAT exemption for RDI activities performed under the National RDI Plan or financed in international, regional and bilateral partnership. The tax regime for micro-enterprises that was in force in 2009 stipulated a reduced tax of 3% of the turnover, but the provision was modified in 2010 with the option to pay a 16% flat tax or a tax on profits, depending on the company turnover<sup>11</sup>. In 2011, the 3% tax for micro-enterprises was reintroduced, as it was considered to be more favourable to firms and less problematic for the tax collection system than the previous dual provision.

An income tax exemption for IT specialist programmers (software engineers, system designers, system engineers or analysts) has been in force in 2009-2010 (introduced in 2001 and also continued in 2011, due to its positive economic effects on economic growth and considerable improvement of the IT sector contribution to GDP)<sup>12</sup>. There are also tax incentives for the establishment and development of an industrial park, in terms of a more favourable regime of local taxes. In June 2010, a project law granting tax facilities to young entrepreneurs (up to 35-years old) setting up their first enterprise was approved by the Parliament<sup>13</sup>. Other deductible costs under the Fiscal Code are related to the management of information systems and quality management systems; marketing, market study, promotion of existing or new markets; participation in trade fairs and exhibitions; environmental protection and conservation. The Fiscal Code also introduced flexible options for the depreciation of some categories of expenditure<sup>14</sup>. In 2010, the Ministry of Finance approved NASR's initiative to support the private sector by increasing the deductibility of R&D expenditure<sup>15</sup> from 100% to 120% for units whose R&D activities account for at least 15% of their total yearly expenditure.

### 8.2.5. "Increasing economic competitiveness" through SOP and ROP

These Sectorial and Regional Operational Programmes (SOP and ROP) are referring mainly to SOP (Priority Axes 1 and 2), ROP (Priority Axis 4) and SOP-HRD) (Priority Axis 1 and Priority Axis 3).

<sup>11</sup> If the turnover is below €100,000 the company can pay a tax of 3% of the turnover in the next fiscal year. If the turnover exceeds €100,000 then the company must pay the tax on profit.

<sup>12</sup> Continuing this measure in 2011 was appreciated by some as the only effective anti-crisis initiative of the government, as "it brings a €450m annual contribution to the state budget, which represents the annual gross salary of 83,500 public sector employees or the annual pension of 235,000 pensioners" (<http://www.ziare.com/articole/eliminare+scutire+impozit+programatori>)

<sup>13</sup> The law stipulates that young entrepreneurs (up to 35 years old) can set up their first enterprise with a capital of min. 10 RON (€2.5) and benefit of salary and profit tax exemption for 3 years.

<sup>14</sup> Purchase of patents, copyrights, licenses, trademarks or trade; manufacturing and other similar development expenses (purchase of technological equipment, machinery, tools, computers and peripherals); non-taxable revenues of patent owners for 5 years from the first application.

<sup>15</sup> Law n°. 2086/4504/2010

The dynamics of operations implemented under these SOPs shows several key features of the public and private RDI institutions:

high interest of the scientific community in public research infrastructure and a lower interest in administrative and project management projects;

high interest of the scientific community for complex RDI projects involving foreign specialists, and relatively low interest of enterprises in RDI projects in partnerships with universities and research institutes. This low interest can be attributed to some extent to the effects of the economic downturn, which obliged many enterprises to adopt a survival rather than a collaboration strategy, but a more likely explanation is their limited internal R&D capacity, especially in large enterprises. The difficulty of providing co-financing (up to 75%, apart from non-eligible expenses) and some restrictions on eligible expenses also contributed to the low response rate from enterprises.

strong investment need of SMEs in order to carry on existing operations and survive on the market, reflected in the high level of investment financing they requested, exceeding by far the budget allocated, while consultancy financing remained well under the budget allocated.

poor innovative capacity of Romanian enterprises and difficulty to access Structural Funds for RDI without a means of facilitating access to capital to cover co-financing.

low level of public-private partnerships and lack of motivation of local public authorities participating in local and regional development projects in preparing and submitting project proposals. This, in turn, is determined by the state aid restrictions applicable to business support, the high co-financing share of the projects (up to 50% of eligible expenses), unclear ownership provisions in respect of land and building(s), and lack of clear regulations on public-private partnerships. The Law 178/2010 on public-private partnerships clarifies these aspects.

large number of cancellations of signed contracts (50 by end 2009). Some were caused by the failure to provide co-financing in the context of the economic crisis, while others were caused by irregularities.

As a conclusion, the success of the current policy mix in increasing private R&D investment is very modest taking into account the declining public RDI spending levels since 2007, and was further reduced by the financial limitations induced by the economic crisis. Several key initiatives to stimulate private RDI investment were expected to start in 2011 (e.g. the elaboration of a National Innovation Strategy and four foresight studies in nanotechnologies, services, green energy and cell therapy to assess Romania's potential to participate in EU and other international programmes in these fields).

## **9. Risks and opportunities for attaining the objectives of 2007-2013 National RDI Strategy**

### ***9.1. Framework for private investment in R&D - Venture capital and private equity***

The Romanian venture capital market is at an early stage, because of the unfavourable tax regime for private equity investments and underdeveloped domestic fund structure for private equity and venture capital. The tax regime is one of the most burdensome in the world, with companies paying 113 taxes per year, accounting for nearly 45% of the firm profit and spending 222 hours per year on tax payments (World Bank, 2011). A recent study conducted by the European Private Equity and Venture Capital Association and KPMG ranked Romania 24th out of 27 countries surveyed in terms of tax regime for private equity investments (Vrinceanu, 2009), pointing out the great potential for private equity investments in Romania, especially in infrastructure development projects.

The survey shows that in spite of some slight improvements, the Romanian risk capital market continues to be affected by unfavourable regulations for pension funds, a difficult fiscal

environment and the lack of references to private and risk capital in the legislation. The survey also pointed out that Romania does not provide any incentive or tax reduction to encourage private and risk capital investments and the fiscal system is rudimentary and ineffective, being used only for tax collection. Because of these weaknesses, the fiscal system contributes only 32% to the GDP and encourages tax evasion in some sectors, like agriculture and construction. Financial instruments are also poorly developed, contributing about 30% to the GDP, in contrast to some 120% in other European countries. Although the creation of risk capital funds for innovation was foreseen in several policy documents (e.g. the 2007-10 National Strategy on RDI, the 2007-10 National Reform Plan, etc.), such funds are in progress to be created and the JEREMIE Fund for Romania just became functional.

### *9.2. The effects of the financial crisis on the Romanian economy*

Romania's economic performance declined significantly in 2009 compared to 2008 after having been hit hard by the global economic downturn that became more visible from the second half of 2008. Among the most important crisis effects were falling exports due to declining external demand, reduced access to credit as international financial markets froze, declining internal demand caused by rapid and massively dropping exchange rate, declining foreign capital inflows and high bank interests. Consequently, the GDP slowed down and the unemployment rate went up, especially for private firms in construction, road transport and chemical industries, extraction of crude oil and natural gas. Large firms have been hit, but even more dramatically so, the SMEs. SMEs bankruptcies doubled in the first half of 2009 compared to the same period of 2008, particularly in trade, construction and real estate, and start-ups followed a similar trend (Mediafax, 2009).

The rising unemployment rate created labour market imbalances, aggravated by labour shortages and large migratory outflows, skill obsolescence, low adult participation in education and training, lack of basic skills amongst young people, resulting primarily from weaknesses in the education system and inefficient active labour market policies. Both anti-crisis plans proposed by the government (in January<sup>16</sup> and May 2009<sup>17</sup>) have failed, the public deficit continued to grow and Romania applied for a €20b financial loan from IMF (including a share from the EU, the World Bank and the EBRD). The money is channelled over 2010-2011 and will be repaid by 2015, at a 3.5% annual interest rate (Interpress Service, 2009).

### *9.3. The weak R&D capacity in the business sector*

The R&D capacity of Romanian domestic firms is weak, since most of the R&D potential is concentrated in the national R&D institutes, while private firms are only marginally involved in R&D and innovation. The innovative capacity is low, both in SMEs and in large firms (see the chapter 2. How many SMEs are innovative?). Only 21% of the innovative enterprises were successful innovators in 2004-06 (National Institute of Statistics, 2010a) and only 15% were both product and process innovators. SMEs accounted for the largest part of innovative companies (nearly

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<sup>16</sup> The first anti-crisis plan comprised a package of 74 measures (investments in roads, highways, rehabilitation of residential buildings, health and education infrastructure, agriculture, environment, tourism, etc.) but no explicit RDI measures, which reflects the low visibility and importance of these fields in the country. The plan was widely contested on various grounds, such as addressing the effects and not the causes of the crisis, providing state aid for unprofitable industry sectors, etc. and had significant implementation flaws, which considerably delayed the expected effects, while some measures have not been adopted at all.

<sup>17</sup> The second anti-crisis plan included state aid schemes for firms in strategic sectors (agriculture, constructions, infrastructure, tourism, environment and health), guarantees for the credits contracted by youth for the first home purchase, support to agricultural production and simplification of tax and tariffs.

90%). A 2008 study of the National Institute of Statistics shows that SMEs have a higher share of innovation expenditure on machinery, equipment and software, and a higher R&D expenditure compared to large firms (about 30% in SMEs, 15% in large firms). Moreover, SMEs place a higher focus than large firms on the development of own R&D capacity rather than on acquisition of external knowledge, while large firms spend more on acquisition of external knowledge.

According to Erawatch 2010 for Romania the low levels of business R&D, lower in large firms than in SMEs, are rooted in several structural and managerial deficiencies, including:

- poor competitive environment;
- firms' reluctance or inability to take on financial and commercial risks arising from R&D; and
- absence of financial services and instruments to mitigate the risk.

The European Innovation Scoreboard (EIS) 2009 indicators also reflect this poor innovation performance. Romania is one of the growth leaders among the Catching-up countries, with an innovation performance well below the EU27 average (SII in 2009 = 0.294, in slight progression from 0.278 in 2008), but a rate of improvement that is one of the highest of all countries. Relative strengths, compared to the country's average performance, are in Innovators and Economic effects, and relative weaknesses are in Finance and support and Throughputs. Over the past 5 years, Finance and support and Throughputs have been the main drivers of the improvement in innovation performance, in particular as a result from strong growth in Public R&D expenditures (18.0%), Private credit (25.8%), Broadband access by firms (46.7%), Community trademarks (34.5%) and Community designs (37.3%). Performance in Firm investments, Linkages & entrepreneurship, Innovators and Economic effects has increased at a slower pace.

#### ***9.4. Industry structure and FDI<sup>18</sup> distribution***

The capacity of industry revival based on innovation is low. The country does not have an innovation-based development strategy and innovation has a low-profile among government priorities, although it is formally recognised as a priority of the 2009-2012 Governing Programme. Nearly 90% of innovative enterprises were SMEs in 2004-06 (National Institute of Statistics, 2010a), but SMEs are also those that have been hit the hardest by the economic crisis and their innovation activities have been sharply reduced. Also, the largest concentration of innovative firms, mostly in traditional processing industry, rather than in emerging R&D intensive industries, points to a low capacity for innovation-based revival. Fuelled by the large privatisation programmes of the 1990s, FDI was encouraged by the low labour cost, proximity to the euro-zone, successful disinflation, high economic growth rate and increasing domestic market potential. The record FDI inflows that Romania benefited of over 2004-2008, thanks to macroeconomic stabilisation, strong GDP growth, large scale privatisations and the prospect of EU membership, have dropped by more than 50% in 2009 (National Bank of Romania, 2009). In addition, successive wage negotiations have driven up unit labour cost, affecting Romania's international competitiveness, especially in light industry, in favour of low-cost Asian countries. Faced with slowing FDI inflows and with an erosion of the low-cost advantage in certain sectors due to skill shortages, partly due to large outward migration, Romania needs to step up efforts to attract investment in higher value-added sectors, which are less dependent on low wages, by further improving the business climate, upgrading infrastructure and developing labour skills (Pauwels and Ionita, 2008).

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<sup>18</sup> FDI: Foreign Direct Investment

### 9.5. National RDI strategy – what should be improved?

Given the reduction of public R&D and innovation spending in 2009 (50 % less than foreseen in the multiannual planning and 25 % less than in 2008) and with no significant changes thereafter, there are concerns about how to ensure adequate funding for ongoing research programmes and projects. In light of this, the Romanian government adopted in May 2010, in line with the conditionalities attached to the Memorandum of Understanding (MoU) of the EU financial assistance to Romania concluded in June 2009 in the framework of the EU-IMF adjustment programme, a plan setting out a number of measures with a view to improve the efficiency and effectiveness of R&D and innovation. These measures aim at facilitating the adjustment to more limited financial resources, ensuring the consistency of R&D and innovation policies and programmes, stimulating private sector activities, as well as establishing and implementing uniform procedures for monitoring and evaluation of R&D and innovation activities.

The challenge remains to increase the innovative potential of enterprises, particularly SMEs. Another major challenge is to improve technology transfer and the business support infrastructure (business incubators, technology transfer offices, science and technology parks and clusters) which is still underdeveloped and poorly functional, in spite of recent significant improvements. In this respect, there are bottlenecks in the absorption of foreign technology as well as challenges to reduce high innovation costs, particularly for SMEs, which could be addressed through appropriate assistance programmes, the availability of information regarding technology, and facilitating access to financing instruments.

Moreover, partnerships among industry, university and R&D institutions could be improved and public funding could be used more to leverage private sector investments, strengthen links between business and research institutes and better adjust research to market needs.

An overview of the key barriers to increasing private R&D investment and opportunities generated by the policy mix is presented in the Table 3, hereafter.

**Table 3. Barriers and opportunities of the policy mix**

| Barriers to RDI investment  | Opportunities generated by the policy mix  |
|---|--|
| Low innovative capacity of industry, low innovation culture, predominance of technological renewal based on imported technologies, products and services rather than on domestic ones | Stimulate regional innovation capacity through regional innovation strategies correlated with the National RDI strategy and other strategies of the country (education, employment, IT and communication, health, energy, environment).  |
| Weak science-industry linkages  | Stimulate the third mission of universities through higher support for R&D in universities, strengthening of entrepreneurial education in universities, introducing measures to stimulate academic entrepreneurship and technology transfer from university to industry (e.g. creation of spin-off firms <sup>19</sup> , mobility between university and industry) |

<sup>19</sup> The support systems to facilitate knowledge transfer from universities to the economy are in an early stage. Consequently, spin-off creation based on recent research results, patents or licenses is a slow process, which has been further hindered by the lack of capital and difficult access to bank financing determined by the economic

|  |   |
|--|---|
| Economic structure of industry mostly based on traditional manufacturing industries, with little capacity for new technologies with high knowledge and R&D content                                     | Increase the funding for knowledge-intensive industries, improve business infrastructure, provision of entrepreneurship and innovation incentives |
| Virtual absence of venture capital for RDI, unfavourable tax regime, dysfunctionality in the market competition and public procurement system, high systemic corruption and weak public administration | Introduction of venture capital for RDI schemes, use of FDI for RDI activities. Using of JEREMIE support to leverage private financing            |

### 10. A structural framework: From individual support to a collective dynamic

Romania has no longer advantages of lower work cost attractiveness in order to rely on FDI for catching-up with the economic development of the other European countries. Financial crisis came to early after the accession of Romania to the EU and Romanian SMEs, which represents 99 % of all national enterprises, even with a consolidated role in the economy, are confronted with financing obstacles for their development.

Insufficient financing has negative effects on innovation and represents one of the most important factors that hamper Romanian innovation. Financial constraints have been identified as having mainly two natures: a financial gap and credit rationing.

The financial gap should be covered by the business angels and venture capital. In Romania, these structures should be reinforced. Furthermore, policy should aim at creating proximity investment funds (like French FCPI and FIP) to provide SMEs with the equity they need to strengthen their position and to permit them to diversify the origin of financial resources received.

The credit rationing is adjusted through public reinforcement of guarantees for the banks to finance the riskiest enterprises – and in particular the innovative firms. The existing National Credit Guarantee Fund for SMEs together with the Counter Guarantee fund of Loans to SMEs should be strengthened by the recent funds brought by the European Investment Fund through JEREMIE Holding Fund. This fund should bring flexibility regarding co-participation financing in EU financed grants, the benefits of a portfolio approach, the recycling of funds and the leverage of private financing.

In addition, a set of public funding instruments is aiming to finance RDI both in public and private sector. Given the reduction of public RDI spending from 2009, the main challenge remains to increase the innovative potential of SMEs. It can be done through adapting the pure grant approach for financing innovation and using of revolving funds which leverage private financing being managed on a portfolio basis, which should be efficiently with the support of JEREMIE. A set of risks and opportunities have been identified as to support future key initiatives to stimulate private RDI that should be soon taken.

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crisis. SOP Increasing Economic Competitiveness, Priority Axis 2, Operation 2.3.1 – Support for innovative start-ups and spin-offs, which was launched in 2008 with a

total budget of €18.5m, provides funding for the creation of spinoffs implementing recent results resulted from research projects, doctoral theses of researchers employed in public R&D institutes or academics from public universities. This operation also supports innovative start-ups (implementing research results or a patent or other IP right) which are micro-enterprises or small firms with maximum 20 employees and no older than 3 years.

SMEs are generally too small to undertake an innovative project by themselves and should be supported in collective projects to which universities, research centres, large firms and other actors commit as well. The shift from policies concentrated on individual actions to systemic policies involving interaction and synergies characterises the changes in Romania over the past years.

As far as SMEs are concerned, Romanian industrial policies are characterised by a major evolution: the importance of SMEs as a target for policies has grown over time. Originally addressed in measures concerning the productive system as a whole, SMEs are increasingly identified as the sole recipient of aid. Devoted to what is often improperly considered a homogeneous class, the measures implemented aim at strengthening SMEs' place in the national productive system, helping them to circumvent the impairment that leads to high insolvency rates and limited growth.

In this perspective, three intermediate goals for industrial policies that aim at promoting innovation, competitiveness, and macroeconomic growth are identified:

Small firms have to grow, so that they can reach a minimum efficient<sup>20</sup> scale that permits them to increase their probability of survival and, better for long-term expectations, to undertake bigger projects.

Production cost kept high by the low scale of production has to be artificially decreased.

Public policy must widen the access to new resources or new markets for innovative SMEs.

Over the past few years these goals have remained the same, giving rise to many lines of action undertaken by some institutions acting at a national or local level. Three main dimensions should be emphasised: the content of policy (employment, R&D, etc.), the administrative level, and the medium of action (subsidies or tax rebates). These three dimensions are reminders of the distinction between state grants to individual firms and domestic subsidies to collective operations implemented at industry level introduced in the typology proposed by the European Union. Whereas the former is decreasing, collective actions are expanding – mainly because they permit market failures to be solved without introducing any bias into the competition among economic actors.

Public measures that aim at strengthening SMEs belong to the second group. This is also the case for R&D and innovation, environmental industries, energy saving development of capabilities, and local development.

In order to present these policies in a systemic fashion, a framework used by Favereau and Quiers-Valette (1998) to illustrate the diversity of economic policies can be transposed to innovative SMEs.

A first level distinguishes the policies according to their goals. On one hand, they can aim at changing the behaviour of economic agents to improve their performance realising already known productive processes. On the other hand, these policies can promote the adoption of new behaviours to replace obsolete ones or to introduce a radical change in the routines of the firms. A second level differentiates the kinds of support: public procurement, grants conditioned by successful co-operative actions, etc. Four families of policies represented on Table 4 can thus be identified.

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<sup>20</sup> Minimum efficient scale (MES) is a term used in industrial organisation theory to denote the smallest output that a plant (or firm) can produce such that its long-run average costs are minimised. This concept is useful in determining the likely structure of a market. For instance, if the minimum efficient scale is small relative to the overall size of the market (demand for the good), there will be a large number of firms. The firms in this market will likely behave in a perfectly competitive manner due to the large number of competitors.

Table 4. A general typology of SME policies

|       |   | Goals   |  |
|-------|---|---|--|
|       |   | Change in the existing behaviour  | Adoption of a new behaviour  |
| Means | Incentives through changes in costs of production           | <b>TYPE 1</b> <ul style="list-style-type: none"> <li>• Investment subsidies</li> <li>• Reduced labour cost</li> <li>• Access to the public procurement</li> </ul> | <b>TYPE 2</b> <ul style="list-style-type: none"> <li>• Policies directed at lowering the cost of business support services</li> <li>• Subsidies for innovative firm creation</li> <li>• Innovation/R&amp;D policies</li> </ul> |
|       | Incentives conditional to inclusion in a collective process | <b>TYPE 3</b> <ul style="list-style-type: none"> <li>• Collective or systemic projects</li> <li>• Cost sharing</li> </ul>   | <b>TYPE 4</b> <ul style="list-style-type: none"> <li>Grants for collective research conducted in competitive clusters</li> </ul>   |

- **Type 1** groups together policies involving price distortions, subsidies, tax burden decreases, that aim at creating jobs and promoting investment. Pushing down the prices of production factors aspire to lessen the drawbacks of small-scale production. Investment subsidies and rebates on payroll taxes (or social contributions) constitute the backbone of these sorts of policies. They were first introduced in France in the seventies and were usually applied to any SME employing unqualified workers. They have now been strengthened to promote the employment of highly qualified workers (researchers, engineers, etc) in small firms.

- **Type 2** also aims at reducing costs of production, but their ultimate goal is completely different. Instead of providing better access to resources already used in the production process, these measures are targeted to change the recipient's behaviour. The so-called "business support grant" is given to any SME having recourse to external services, in order to improve its managerial know-how. Promotion of RDI is the scope of the Inno-voucher, for example, which has been launched in Romania in October 2011 with a budget of 2 millions euro, under the management of NASR. What is expected from these means is not better price competitiveness, but a higher level of efficiency thanks to an increase in productivity, better organisation and deeper involvement in structural change.

Transition from Types 1 and 2 to Types 3 and 4 rests upon the idea that improvement of the internal organisation of firms is not enough to ensure their competitiveness. Instead of helping them strengthen their internal capacities through individual and specific grants, policy makers consider that an additional element should also be taken into account: the fact that firms and other institutions work together.

- **Type 3** groups together measures that promote collective projects shared by several economic actors but led by an external leader (venture capital, business angel, syndicates, associations etc...). Even these actions can result in a decrease of production costs for SMEs that belong to the group; the main goal is to initiate a common strategy shared by many SMEs. "Technology diffusion networks", "clubs of innovative firms" and "local innovative clusters" are some (of the many) examples of such policies.

- **Type 4** is the most recent strand of policy initiated by the states in Europe. Competitiveness clusters resulting from the "local productive systems" implement a common economic development strategy that is consistent with the area's overall development strategy; create extensive partnerships

among players for specific projects; and focus on technologies for markets with high growth potential. By building a network of players at the forefront of innovation, the ultimate goals of the new policy are the creation of new wealth and jobs in local areas. At an analytical level, these policies focus mainly and sometimes even only on the necessary adoption of co-operative behaviour by firms, research institutions, universities, etc. in order to promote innovation.

What distinguishes the 3rd and 4th types of policies lies in what is expected from the firms themselves. Instead of reacting to external incentives and being consumers of grants and subsidies, firms are supposed to be proactive in a co-operative process built in order to produce innovations that will foster the future competitiveness of the industry, the area and the domestic economy.

Tax exemptions at an individual level remain favourite tools because of their neutral effect on public expenses in the short term<sup>21</sup> there has been a definite structural change in the policy-making process over the past years. Instead of being oriented mainly towards the firm as an independent actor, new policies accord priority to collective processes in which a large number of firms and other institutions take part. This is especially clear in the case of the competitiveness cluster, for which the mix of different organisations is a key condition to obtain finance.

Therefore, instead of focusing on the innovative SMEs at an individual level, their role and their place in the financial system must be conceived in accordance with their involvement in networks and other clusters in order to be more effective than individual strategies when it comes to launching a domestic growth process.

## References

- Bonnet, J., S. Cieply and M. Dejardin, "Contraintes de financement, institutions financières et créations d'entreprises: la recherche des disparités régionales" 40th Colloquium of French speaking Regional Science Association, Brussels, September 2004.
- Business Magazine: "Romania nu stie sa atraga investitiile de private equity si venture capital", 5 February 2009.
- Carré, D. and N. Levratto, "Politique industrielle et PME: Nouvelle politique et nouveaux outils?", Revue d'Economie Industrielle, n° 126 (2009), 9-30.
- Chioncel, M.: ERAWATCH Country Report 2009. Analysis of policy mixes to foster R&D investment and to contribute to the ERA. Romania, (2009).
- De Meza, D.E. and D.C. Webb, "Too Much Investment: A Problem of Asymmetric Information", Quarterly Journal of Economics, 102 (1987), 281-292.
- Dietsch, M. "Atouts et handicaps du crédit client face au crédit bancaire"(Pro and cons of trade credit compared to bank credit), Revue d'Economie Financière, n°46 (1998), 175-193.
- European Commission, "Member states competitiveness performance and policies 2011 Edition", 172-178.
- European Commission, "Eurostat: Science, Technology and Innovation in Europe", 2008 Edition, 103-137
- European Commission, "Eurostat: Science, Technology and Innovation in Europe", 2010 Edition, 121-178
- European Commission, "Eurostat: Science, Technology and Innovation in Europe", 2011 Edition, 79-95
- Favereau, O. and S. Quiers-Valette, "Tous les problèmes d'incitation sont des problèmes d'interdépendance des niveaux de decision?", Décisions économiques, Economica, Paris, (1998).
- Gomes, J., "Financing Investment", American Economic Review, Vol. 91, No. 5 (2001), 1263-1285.

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<sup>21</sup> Specialists in public economics increasingly tend to consider that even if the influence of these tax cuts on the public budget is null, from the point of view of expenses they are in large part responsible for the deficit, since they result in a decrease in receipts. Further, it seems their positive effect on growth is far from being demonstrated. A recent report published by the French "Cour des Comptes" (Court of Accounts) illustrates that mistrust on the part of the public administration. The report follows the assessment of state and regional aids realised in 2006 and 2007.

- Government of Romania: National Research, Development and Innovation Strategy 2007-2013, (2006).
- Government of Romania: Sectoral Operational Programme “Increase of Economic Competitiveness”, (2007)
- Government of Romania: National Strategic Report 2009 on the implementation of the Structural and Cohesion Funds, (2010)
- Hall, B.H., “The Financing of Research and Development”, Oxford Review of Economic Policy, Vol. 18, No. 1 (2002), 35-51.
- Innova Europe: Management of public R&D institutions in Romania, Final Report, (2010).
- Levratto N., "Financing growth and innovation in France", High-Growth Enterprises: What Governments can do to make a difference?, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, (2010), 179-202
- NASR: Government policies for R&D and innovation in Romania, 2009 Report
- NASR: Government policies for R&D and innovation in Romania, 2010 Report
- National Bank of Romania and National Institute of Statistics (2008): Foreign Direct Investment (FDI) in Romania as of 31 December 2008.
- National Institute of Statistics: Innovation in industry and services in the period 2004-2006, (2008).
- National Institute of Statistics: Tempo Online time series, (2011).
- National Institute of Statistics (2009a): Statistical Yearbook 2007.
- National Institute of Statistics (2010a): Statistical Yearbook of Romania 2008, Chapter 13: RDI.
- OECD Science Technology and Industry Scoreboard 2011, OECD Publishing (2011), 152-153
- Pauwels, S. and L. Ionita: FDI in Romania: from low-wage competition to higher value-added sectors, Economic analysis from the European Commission’s Directorate-General for Economic and Financial Affairs ECFIN Country Focus, Volume 5 (2008), Issue 3
- Ranga, M.: ERAWATCH Country Report 2010, (2010), 21-39.
- Rivaud-Danset, D., “Les contrats de crédit dans une relation de long terme: De la main invisible à la poignée de main”, Revue économique, Vol. 47 (1996), pp. 937-962
- Schroth, E. and D. Szalay, “Cash Breeds Success: The Role of Financing Constraints in Patent Races”, Cahiers de Recherches Economiques du Département d’Econométrie et d’Economie politique (DEEP) 05.11, Université de Lausanne, Faculté des HEC, DEEP (2005).
- Sipos, G., "The Romanian innovation performance in the European context", Scientific Anals of the University Al. I. Cuza, Iasi, (2009), 502-512
- Stiglitz, J. and A. Weiss, “Credit Rationing in Markets with Imperfect Information”, American Economic Review, Vol. 71, No. 3 (1981), 393-410.
- Vrinceanu, C.: ‘KPMG: Romania lags far behind European states in terms of tax regime for private equity investments’, Wall-Street, 6 February 2009.
- World Economic Forum, "The global competitiveness report 2010-2011", (2010), 284-285