PUBLIC FUNDING IN R&D PROJECTS: OPPORTUNITIES FOR COMPANIES

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Abstract

The IDEA project (InterDisciplinary Education Agenda, an essential driver for innovation) emerges, handling the Knowledge Triangle: Education-Research-Innovation and promoting the development of industry-academia partnerships. This aim of this paper is to describe one of the aspects tackled in the project, the opportunities in public Funding in R&D projects for the companies. The proposed regulatory framework for Horizon 2020 allows far reaching types of engagement between the Union and the private sector, including Joint Technology Initiatives. These must address the objectives of Horizon 2020, including the integration of research and innovation activities.

Keywords: innovation, public funding, horizon 2020, technology transfer.

1 INTRODUCTION

IDEA project address Israeli's National Priorities for 2012. In the light of this, the main activities to cover are [1]:

(i) Identifying the needs and gaps between industry and academy,

(ii) Introducing best practices from EU HEIs,

(iii) Supporting for an interdisciplinary innovation culture in the Israeli HEIs and

(iv) Creating a sustainable knowledge transfer between industry and academy enhancing research and innovation.

According to this, the UPV, part of HEI instructors, contributes to the knowledge exchange as regards its experience in R&D projects involving the public and private sectors in Spain.

Innovation is becoming a requirement for competitive advantage in organisations. Therefore, it is an increasingly demanding and important aspect. Promoting the acquisition of innovation competence is one of the aspects to be solved [2].

Research and innovation help deliver jobs, prosperity, quality of life and global public goods. They generate the scientific and technological breakthroughs needed to tackle the urgent challenges society faces. Investment in this area also leads to businesses opportunities by creating innovative products and services [3].

The proposed regulatory framework for Horizon 2020 allows far reaching types of engagement between the Union and the private sector, including Joint Technology Initiatives. These must address the objectives of Horizon 2020, including the integration of research and innovation activities.

A key element of Horizon 2020 is the proposal to join forces with the private sector and with Member States, to achieve results that one country or company is less likely to achieve alone. European Commission proposal for a research and innovation funding programme (2014-2020), with an envelope of 70,2 bn €. One umbrella programme regrouping both research-focused programmes (former FP7, EIT) and innovation-focused ones (former CIP) [4, 5]

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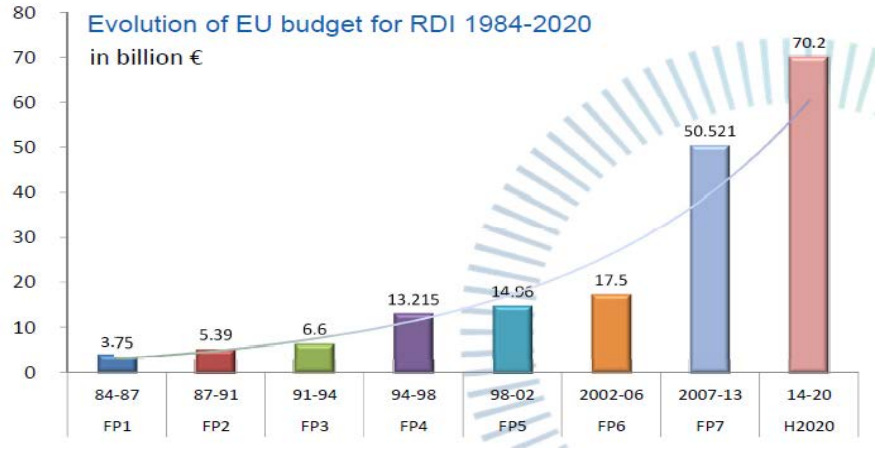

Figure 1: Evolution of EU budget [4, 5]

2 IS HORIZON 2020 FOR YOU?

You should consider paying attention to Horizon 2020 if: you are involved in RDI projects and look for ways to finance them (from 50% to 100%), you want to develop your know-how and network with key players in the EU, you are thinking in the long term, you find competition stimulating.

Two strategies: 1) If the objective is to increase your market share, for example, development of new products/ process, it implies positioning as project coordinator. 2) If the objective is to gain new knowledge / skills / technologies, i.e. benefit from the sharing of know-how, technology transfer, finding a solution to a common problem in the industry, it implies positioning as a partner in a project initiated by other(s).

2.1 Strategy 1: Coordination

a) Project calibration: Estimated budget - internal resources (available to be mobilised); Completion time. Application for public financing or cash flow.

b) Self-assessment of you internal capacity : Experience of previous R&D project(s); Internal R&D staff; Prior experience in applying for funding. Search European or national funding

2.2 Strategy 2: Partner

a) Development of internal “European engineering” skills: Training on the nature and operation of programmes, study of the thematic Work Programmes: materials, ICT, environment, transport, identify subjects that are close to the business activity, study of the potential contribution of the company to the subject.

b) Search for potential coordinators for the identified topics: dissemination of partner search (e.g. via EEN or NCP networks), discussion with local research organisations, participation in information days held by the EC and / or brokerage events organised by networks (NCP, EEN, …)

3 STRENGTHENING THE PARTICIPATION OF SMES

Horizon 2020 takes an integrated approach to SMEs. Through this approach, it is expected that around 15% of the total combined budget for all societal challenges and the enabling and industrial technologies will go to SMEs.

A number of novelties under Horizon 2020 will encourage the participation of SMEs [3].

- A new SME instrument, building on the SBIR (Small Business Innovation Research) will allow SMEs to put forward their most innovative ideas for addressing Union-level challenges
  - Only SMEs will be allowed to apply for funding
  - Support will be provided in different phases

- A dedicated activity for research-intensive SMEs is included
- For the Debt facility, the SME focus will be strengthened by working with financial intermediaries at national and regional levels
- The Equity facility and the SME-related component of the Debt facility will be implemented as part of two EU Financial Instruments that provide equity and debt to support SMEs' R&I and growth, in conjunction with the equity and debt facilities under the Programme for the Competitiveness of Enterprises and SMEs.

4 THE IMPACT OF PUBLIC FUNDING ON PRIVATE R&D INVESTMENT

The main channels of public support for individual firms are:

- tax incentives,
- direct government funding,
- co-operation arrangements between firms,
- research institutes and universities,
- and loan guarantees.

4.1 H2020 funding opportunities for industrial partners

Public-private partnerships in research and innovation provide powerful and much needed tools to deliver on the objectives of Horizon 2020 for a number of reasons [4]:

- They enable a long-term, strategic approach to research and innovation and reduce uncertainties by allowing for long-term commitments
- They provide a legal structure to pool resources and to gather critical mass, which enables a scale of effort that individual firms would not be able to achieve
- They make research and innovation funding across the EU more efficient by sharing financial, human and infrastructure resources, thereby reducing the risk of fragmentation, and leading to economies of scale and reduced costs for all partners involved;
- They can better address complex challenges as they help develop interdisciplinary approaches and allow for a more efficient sharing of knowledge and expertise;
- Public-private partnerships in research and innovation provide powerful and much needed tools to deliver on the objectives of Horizon 2020 for a number of reasons:
- They facilitate the creation of an internal market for innovative products and services, by advancing jointly on critical issues such as access to finance, standardisation and norm setting;
- They enable innovative technologies to get faster to the market, including by allowing companies to collaborate and share information, thereby accelerating the learning process*;*
- They can provide the right framework for international companies to anchor their research and innovation investments in Europe and benefit from European strengths such as a well trained workforce, diversity in approaches and sectorial creativity; and
- They enable the scale of research and innovation effort needed to address critical societal challenges and major EU policy objectives under the Europe 2020 strategy

4.2 More benefits

According to Finance et al. [6] Firms also benefit from a leveraging of resources through an outsourcing of R&D projects which can be either complementary or undertaken at a lower cost in public research organizations [6, 7].

Clearly, firms also gain by absorbing the latest results from public research and can upgrade their internal capabilities by tapping into the more established knowledge base in public research organizations [8].

This learning by interacting is an essential channel through which public research feeds into industrial innovation [9].

4.3 The Impact of Public Funding on Private R&D investment

There is overwhelming evidence that firms do not randomly participate in governmental R&D support programs [10]. Many studies have concluded that, to a large extent, public R&D policy attempts to pick the winners in programs such as such as ATP, SEMATECH and SBIR

Do Small firms participate less frequently than larger firms? Some results are even conflicting, for example regarding a characteristic of firms as important as their size:

[11, 12] find that a firm‘s size has no influence on its propensity to form R&D collaborations with public labs; while

[13, 14, 15] find that larger firms tend to collaborate more with public research labs.

4.3.1 The Impact of Public Funding on Private R&D investment. HOW TO MEASURE?

Does public funding decision represent an endorsement of a project as being of high quality?

According to [16] firms funded by the government are liable to be those with the best ideas. This implies that these firms have more incentive to spend their own resources and are more likely to receive support from third parties

According to [6] the evaluation of public policy instruments for R&D and innovation, i.e. the assessment of their efficiency, is not a straightforward job. For example, the outputs of R&D activities tend to be various and difficult to quantify; the counterfactual is difficult to define (what would have happened without the aid?)

The assessment of various governmental grant programmes is afflicted with fundamental measurement problems such as [10]:

(i) how to measure research output of supported research entities,

(ii) how to measure the spill-over benefits of funded research enjoyed by entities other than those that are directly supported, and

(iii) how to measure transformational impacts, whereby public support changes the nature of the research infrastructure, with possible long-lasting effects.

[10] investigate whether firms that received public funds, have on the average, a higher R&D intensity compared to those that did not receive any public support.

They initially estimate a firm’s probability of receiving public funds given a number of observable characteristics

The data used in this study is obtained from the Community Innovation Survey (CIS) III for Sweden.

- The survey was collected in 2001 and it covers the period 1998 to 2000.
- The focus is on both the manufacturing sector and business services.
- The sample is restricted to only firms that reported a positive R&D and other innovation expenditure.
- The final sample consists of 770 firms of which 160 (20.8%) firms participated in public R&D schemes.
- The CIS data was merged with register data containing complete information on the firms’ annual accounts.

4.3.2 Studies on the impact of R&D subsidies

The heterogeneous results from different assessment studies, shown in Table 1, confirm previous findings in the literature. Reviewing the body of available econometric evidence accumulated over the past 35 years, [17] conclude that conflicting answers are given as to whether public R&D spending increases or replaces private R&D expenditure. The authors suggest that a possible explanation to this ambivalent finding in the existing literature would be different and sometimes inadequate research methodologies applied to the data.

Table 1: Recent studies on the impact of R&D subsidies [10]

Year	Data and period	Author(s)	Methods	Results
1998	Finnish data 1985-93	Toivanen and Niininen	Regression with controls	R&D subsidies have no effect of private R&D for large firms but increase private funding by 5% for small firms.
1999	Spanish data 1998	Busom	Regression with controls	For two firms out of three the subsidies increase private funding of R&D by 20%. For the remaining third of firms, there would be a complete crowding out.
2000	U.S. SBIR data 1990-92	Wallsten	Instrumental variables approach	The R&D investment would have been made even without subsidies because governmental agencies tend to favor projects with the highest private return.
2000	Israeli data 1990-95	Lach	Matched samples and Regression with controls	Using matching methods and a subsidy dummy variable suggest that subsidies add to private funding of R&D. Regression methods suggest that one additional dollar in R&D subsidy would increase private R&D by 41 cents.
2001	German data 1994-98	Czarnitzki and Fier	Regression with controls	On the average one Euro of subsidy would increase private R&D by 1.3 to 1.4 Euros.
2002	German data from 1995, 1997 and 1999	Almus and Czarnitzki	Matched samples	Firms in Eastern Germany that participated in governmental R&D schemes increased the private R&D-investments with an amount corresponding to 4% of their turnover.
2003	French data 1985-97	Duguet	Matched samples	R&D subsidies add to the private R&D.

5 RESEARCH FINDINGS

First, The t-test reveals that the average funded firm is significantly more R&D-intensive than the average non-funded firm.

Second, funded firms have considerably larger gross investment per employee compared to the non-funded firms.

Third, the average funded firm has a large amount of equity capital, per employee, compared to its non-funded counterpart.

Fourth, a funded firm is on the average somewhat larger than the non-funded counterpart. The funded firm also has a relatively high degree of indebtedness per employee.

Their interpretation is that funded firms belong to a select group of firms with more ideas than non-funded firms.

The following determinants are found to have significant influence on the firms' receipt of public R&D funds. The probability of receiving public funds decreases with the firms' size. It is likely that firms reporting lack of appropriate sources of finance as a hampering factor for innovation activities, more often receive subsidies than other firms. Membership of a group of firms has a negative influence on public R&D support. Since debt is a positive function of profitability, this estimate indicates that successful firms with access to both internal and external financial resources have a greater probability of receiving public financial support. Possession of patents, as a proxy for recurrent R&D activities, and a firms current R&D-stock, have a positive impact on the receipt of R&D support at the 10% level of significance.

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