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**Article**

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## THE RELATIONSHIP BETWEEN UNIVERSITY RESEARCH AND THE MARKETABILITY OF UNIVERSITIES

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### Abstract

As universities are presently involved in a world-wide competition for students, and, implicitly, for markets in which to sell their services, the issue of the advantages research brings, transformed in market share increase, becomes an issue for university management. The paper examines, comparatively, the profitability of basic and applied research in terms of strengthening the market position of a university actively involved in one type of research or in both at a time. Well developed indicators to measure the relationship between research activity and prestige, on the one hand, social capital, on the other, and we will correlate these two research outcomes with the university market share and competitive advantage. The interest a university has to invest in its research activities has a market feedback, which provides a sense of involvement for practical reasons, and that goes beyond the bare purpose of reporting results .

**Keywords:** entrepreneurial university, performance ratios, basic and applied research

**JEL Classification:** I23, C22, M14

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### Introduction

Nowadays, globalization has touched the academic world, as well. One of its major effects, as Mellow and Woolis (2010) state, is the shift from traditional, research university types, which aim to advance the frontiers of knowledge, to profit, market-oriented institutions. A while ago, universities were preoccupied by their own specializations, and programmes. Students were attracted without any complex incentives, and financing of universities was taken for granted. However, today, universities are influenced by the elimination of the economic cultural and political barriers, by the free movement of persons and capital, by the costs increase, by the standardization of students' behaviour, by the international competition for finance. In the same time, the university has to deal with cultural and communication differences, with the migration of the students (e.g. Common market of the E.U.). Universities must adopt a market-oriented behaviour, a proactive management which focuses its marketing strategies on potential and actual students and promotes social

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responsibility (Miron et al, 2011; Burcea and Marinescu, 2011). Students are customers with needs and demands, and multiple offers. The so-called “third mission” of the university and, moreover, its impact on the traditional missions of teaching and research (Nelles and Vorley, 2010) is definitely linked to the entrepreneurial endeavour of the university, to its capacity to transfer and make functional the knowledge it produces.

### **1. The Entrepreneurial University**

In the last years, the academic environment experiences a transition from traditional universities, built on rigid organizational structures, to universities which approach education and its services in an interactive manner, replacing control by cooperation. While traditional universities relied more on the unidirectional transfer of knowledge than on shaping the competencies that would assure a proper professional integration, the emerging patterns of universities, the entrepreneurial, and the free-market university are interested in a sustained and efficient dialogue with the business environment. It is the business environment that takes over the university's products. Changing university is an essential element to understand modern higher education (Bratianu, 2011).

In order to make this dialogue more efficient, they employ all the available techniques, including marketing (Vasilache and Prejmerean, 2006). Classical models of the triple-helix, including Stanford and MIT, usually propose university-pushed collaboration, while some alternative models, as the one analyzed by Zhou (2010) in China, are also government-pulled. Our approach will take the traditional perspective, the one placing the university in focus, as a major actor of the tripartite knowledge transfer.

A recent study by Bicknell, Francis-Smythe, and Arthur (2010) de-constructs the motivations of the university-pulled model. This model refers to the motivations which drive academics to transfer university-originated knowledge towards industry. If universities are regarded as products, before promoting them on the market, their role has to be clearly defined, in terms of what a university is a place where the most talented students are polarized, or an instance which commercializes the outcomes of research projects, or he institution guaranteeing that the graduates will be integrated in the labour force. (Bliemel and Fassott, 2001). In fact, each university should define a profile of its own, other than the one implied by the specialization it provides. The existence of a mission statement, communicating the university's goals and objectives, is more stringent than ever. Identification, survival and functional elements may be grouped in a profile reflecting the university's strengths and distinctive features (Bratianu and Lefter, 2003).

In a market economy enterprises are used to be compared with their main competitors. So, given the new environment, we may also speak about comparisons between universities, competitive advantages, market shares, target groups a.s.o.

Generally, universities are classified by a number of factors, which are weighted more or less in the same way. The most important factors are quality of education translated in the number of graduates who receive Nobel prizes or other important awards (10% of importance), quality of the faculty (20%), research output (40%), academic performance compared with the size of institution (e.g. average number of articles for each faculty).

Is this approach correct? Does the potential student orientate by these rankings? We may consider that the most visible elements of a university are the faculty and research output communicated in media.

Different qualitative studies (Nicolescu and Păun, 2009; Nicolescu and Dima, 2010), focusing on the criteria that potential students use in their decision making say that for the majority of the Romanian students are important: the prestige of the university, the employment chances after the graduation, the fees and taxes, the infrastructure (campus, library etc.). This means that a university which uses in public relations campaigns strong elements as international relations, research activity, and link with the business environment has a better quotation in the options of the candidates.

In this context, the university has to choose between fundamental, basic research, which is long term orientated and applied research, short term orientated, which responds at the demand of a dynamic and active business environment. On the other hand, we cannot forget the idea that the research output is a public good, and is shared with the public in articles, conferences, studies etc., it is not transferred only for profit, but also for shaping the society.

## **2. European Universities Confronting Market Forces**

Petruzzellis and Romanazzi (2010) explore the reasons why students choose a particular university, in terms of educational value. They conclude that social value is particularly important, that is, how the university helps the customer accomplish his needs, proving that it is, indeed, that “first class ticket for life” (Russell, 2005).

While Europe is experiencing radical changes, the societal role of its universities is at stake. Facing the new and the unexpected at various levels, they undergo an identity and a performance crisis, especially as a response to the dynamic market challenges (Bratianu and Murakawa, 2004). The first one appears because “the idea of university” is no longer as clear as it used to be. Traditionally, universities were seen either as communities (Friedenberg, 1970) or institutions (Readings, 1996). This meant that they were designated to set up (*instituere*), in a collegial manner, the culture of a nation, and to enlighten its citizens by educating them in an ethos. It was the Humboldtian model of the “University of Culture”, regarded as “a society’s central referential institution” (Neave, 2002), which signed, with the XIX century’s nation-state, a social contract: the state granted its autonomy, while the university should shape that type of civil servant its society, at that moment, needed.

Why did the social contract expire, and should be renegotiated? Firstly, it became outdated because the paradigm of the nation-state was ruled out by globalization. Governments still have regulatory influence on universities, but there is a power shift towards European institutions, on the one hand, and corporations, on the other, known as the passage from governing to governance, or the emergence of global governance (Woods, 1999). Now, unlike following the rules of the social imperatives, universities act according to “globally institutionalized scripts of what a university ought to be” (Krücken, 2006). Secondly, because universities, from institutions and communities became organizations having stakeholders (Neave, 2002), meaning that they still are autonomous, but only on the

condition they are countable (Löscher, 2004). The university's identity depends on its capacity to *perform*.

Here comes the second crisis, the one of the performance. The post-industrial "University of Excellence" (Readings, 1996) is of a corporate type (Aronowitz, 2000), a market-driven skills factory. In order to "sell", and to increase its market share, it has to document results. That's why universities, which were used to performing for art's sake, having ambitious goals and vague outcomes (Baldrige, 2000), feel it challenging and position-menacing when it comes to providing clearly measurable indicators of their activity.

### **3. Research methodology**

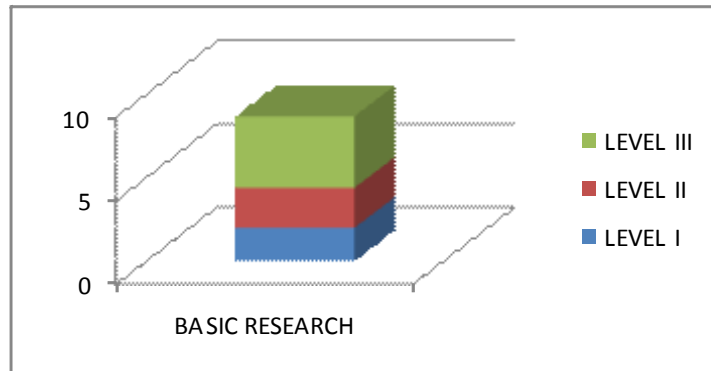
Our assumption, regarding these two crises, is that the essence of the social contract, in fact, didn't change, just that social values are different. Once, universities were demanded to provide a: once forever, same for all and state-serving education. Now, they are challenged to switch to modular, continuous, customized and market-serving training. The difference between education and this recent form of hybridization which has to shape the softly-skilled, "flexible professional" (The REFLEX Project), which includes the researcher and the future university professor who will, presumably, take the "Europe of Knowledge" into the arena of scientific excellence, according to the Lisbon priorities (Lisbon Council, 2003), must be looked for in the SWOT analysis and portfolio analysis of the reformed/reforming universities.

How do lifestyles influence university choice, and university markets, how are the differences between societies being overcome, in higher education, while differences between the offers of the universities belonging to the same national system become obvious, and which is the dynamics of the labour force in Europe and how can universities adapt to it can be investigated on longitudinal data collected from the member states of the European Union. These findings can turn into "lessons learned" for recent adhered states, especially those belonging to Central and Eastern Europe, where the communist system modified the normal evolution of higher education by means of interventionist policies, which led to anomalies which will also be addressed to in our study.

We took into account, in this study, the two broad categories of research: basic, and applied research. Basic research regards the development of science, as such, in the lack of immediate real-life effects, while applied research provides solutions to social and economic problems.

We advance, next, two generic models of basic and, respectively, applied research, useful in our methodological attempt to identify quantifiable indicators of their presence, in universities.

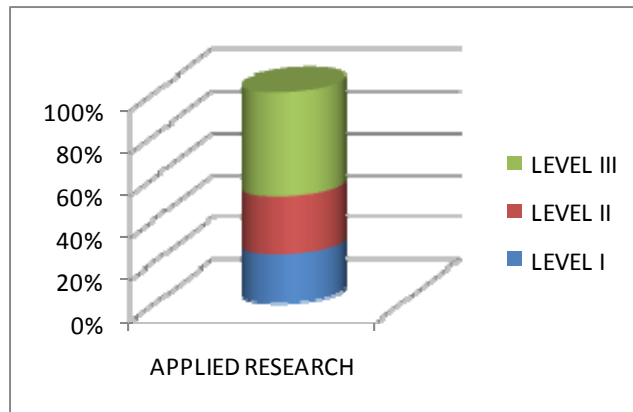
The components of basic research are presented in Figure no. 1 below:



**Figure no. 1: Basic research structure**

When we refer to basic research in a university, we divide it in 3 levels with a different wage. Mainly the first level, of basic research, is represented by internal projects, department or university working papers, textbooks and student research guidelines. The second level refers mainly to speciality books in nationally acknowledged publishing houses, articles in nationally recognized journals (in Romania the recognition is awarded by CNCISIS). The third level should be the most important for the university, because through international projects and partnerships, international conferences and books published at international publishing houses and articles in international databases the university gains awareness and an increased value on the market.

The components of applied research are presented in Figure no. 2 below:



**Figure no. 2: Applied research structure**

As we mentioned before the applied research links the university with the business environment and its demands so the beginning will be in the first level by inviting business persons at university events, by organizing internships in companies, and common communications campaigns, e.g. sponsoring research events. The second level becomes

more important and means that faculties work together with companies in consultancy and business projects for common objectives. The useful research area where the acknowledgements come from and is represented by university shares in companies and the corporate social responsibility of the university.

#### 4. Indicators of research performance

Considering the two perspectives that of applied and basic research, and the fact that they should be comprised in the same organizational frame, the system of indicators we propose has two compartments: absolute indicators, and relational indicators. Absolute indicators are to be found in rankings and internal reports, referring either to basic and applied research, while relational indicators are less conceptualized, and refer to the juncture of the two. By absolute indicators we understand those indicators which are normally used in quantifying university research, while relational indicators are introduced in this article with the view of assessing how correlated basic and applied research are, in universities. Our assumption is that their correlation is rather weak.

The absolute indicators we have used in the present research are, as presented in Table no. 1:

**Table no. 1: Absolute indicators of basic and applied research**

| <b>Basic research</b>                              | <b>Applied research</b>                                   |
|--|---|
| B1: number of research centres                     | A1: number of university research firms                   |
| B2: number of research projects                    | A2: number of university-business partnerships            |
| B3: number of organized conferences                | A3: number of university consultants                      |
| B4: number of PhD domains                          | A4: number of MBAs and executive MBAs                     |
| B5: drop-out rate in PhD programs                  | A5: rate of success of university inventions              |
| B6: funds from basic research<br>(% in the budget) | A6: contracts with business partners<br>(% in the budget) |

For these indicators, we constructed a five-point scale, which was used for appreciating their evolution, over the post-adhesion period (2007-2010), in the Academy of Economic Studies:

1 = decrease; 2 = slight decrease (less than 20%); 3 = unchanged; 4 = slight increase (more than 20%); 5 = increase.

The statistical analysis, with SPSS, proved that there are significant variations in means for the indicators used for basic research, as shown in Table no. 2:

**Table no. 2: One sample t-test (basic research)**

|    | t      | df | Sig.<br>(2-tailed) | Mean<br>difference | 95% Confidence Interval of the<br>Difference |       |
|----|--------|----|--------------------|--------------------|--|-------|
|    |        |    |                    |                    | Lower  | Upper |
| B1 | 9.798  | 4  | .001               | 2.40               | 1.72   | 3.08  |
| B2 | 14.697 | 4  | .000               | 3.60               | 2.92   | 4.28  |
| B3 | 9.798  | 4  | .001               | 2.40               | 1.72   | 3.08  |
| B4 | 10.614 | 4  | .000               | 2.60               | 1.92   | 3.28  |
| B5 | 9.798  | 4  | .001               | 2.40               | 1.72   | 3.08  |

It can be noticed that a slight increase occurs in the case of the number of research projects, mainly because they are acknowledged in the promotion criteria, and are an important source of funds from basic research. The other parameters considered are constant over the period (we didn't include in the statistical analysis the funds from basic research). The indicators for applied research are presented in Table no. 3 below:

**Table no. 3: One sample t-test (applied research)**

|    | t      | df | Sig. (2-tailed) | Mean difference | 95% Confidence Interval of the Difference |       |
|----|--------|----|-----------------|-----------------|---|-------|
|    |        |    |                 |                 | Lower                                     | Upper |
| A1 | 9.487  | 4  | .001            | 3.00            | 2.12                                      | 3.88  |
| A2 | 9.798  | 4  | .001            | 2.40            | 1.72                                      | 3.08  |
| A3 | 8.500  | 4  | .001            | 3.40            | 2.29                                      | 4.51  |
| A4 | 14.697 | 4  | .000            | 3.60            | 2.92                                      | 4.28  |
| A5 | 14.000 | 4  | .000            | 2.80            | 2.24                                      | 3.36  |

In the case of applied research (the funds are not included in the statistical analysis), slight to significant increases are noticed for the number of university consultants, and for the number of MBA and Executive MBA programs, which suggests that university applied research is still more focused on teaching matters, than on R&D as such. Nevertheless, this contributes to attracting students in lifelong learning and post-graduate study programs, which may prove beneficial for the university, even if this is not exactly the purpose of applied research.

Relational indicators are not as quantifiable as absolute indicators, and are usually thought to influence the later from behind. We propose a typology of relational indicators, for the case of a Romanian university:

Direct indicators residing with the personnel are personal relationships, visiting professorships and business experience. Direct indicators residing with the university are intellectual property rights, open access and quotations in research reports.

The indirect indicators residing with the personnel are the experts, members of editorial boards and retired executives. And the indirect indicators residing with the university are the university market share, participation university associations and the quotations in national and European reports.

In order to build a metric for these indicators, each of them has to be evaluated on scale from 1 – unimportant, to 4 – very important, as follows: 1 – unimportant, 2 – slightly important, 3 – important, 4 – very important. The means for the four categories, for the Academy of Economic Studies, for the period 2007-2010, are presented in Table no. 4.

It can be seen that the best represented indicators are those related directly with the university, as a result, mainly of the open access enlarged during the considered years. Direct indicators residing with the personnel, due to personal relationships, are also well represented. The indirect indicators residing with the university occupy the last position, as there aren't clear estimations of the market share, and the number of international quotations, and the participation in international associations are still insignificant.



**Table no. 4: T-test for relational indicators**

|    | t      | df | Sig.<br>(2- tailed) | Mean<br>difference | 95% Confidence Interval of<br>the Difference |       |
|----|--------|----|---------------------|--------------------|--|-------|
|    |        |    |                     |                    | Lower  | Upper |
| DP | 9.062  | 17 | .000                | 2.72               | 2.09   | 3.36  |
| DU | 8.244  | 18 | .000                | 2.79               | 2.08   | 3.50  |
| IP | 13.250 | 18 | .000                | 2.79               | 2.35   | 3.23  |
| IU | 7.466  | 18 | .000                | 2.37               | 1.70   | 3.03  |

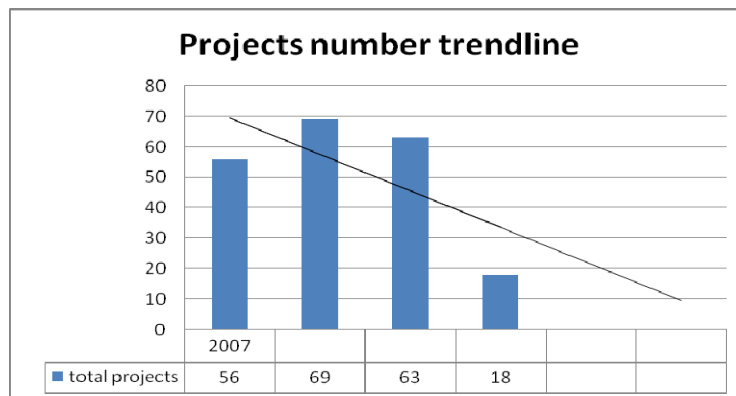
As far as the evolution of university-business partnerships, the situation for the last four years is summarized in Table no. 5 below:

**Table no. 5: University business partnerships, 2007-2010**

| Year | Number of projects | Total value of projects | Average project value |
|------|--------------------|-------------------------|-----------------------|
| 2007 | 56                 | 929.193                 | 16592,73              |
| 2008 | 69                 | 925.224                 | 13409,04              |
| 2009 | 63                 | 1.315.226               | 20876,6               |
| 2010 | 18                 | 564.978                 | 31387,6               |

It can be seen that, while the number of the projects is decreasing, their value is increasing (with approximately 55%, from 2008 to 2009, and with approximately 50% from 2009 to 2010), partly due to the value requirements which were set by the university, in order for the projects to be registered as research activity – 10.000 euro per project.

The evolution of the number of projects and of the average value is presented in Figures no. 3 and no. 4 below:



**Figure no. 3: The evolution of the number of projects, 2007-2012**

According to the trendline (linear forecast), the number of projects will continue to decrease, as their required value is increasing. In our opinion, this limitation harms the university-business cooperation, as more projects, even with a smaller value, may signal a more intense relationship and may trigger, in a natural and unforced manner, more important partnerships, the financial side included. The evolution of the average value is shown below:

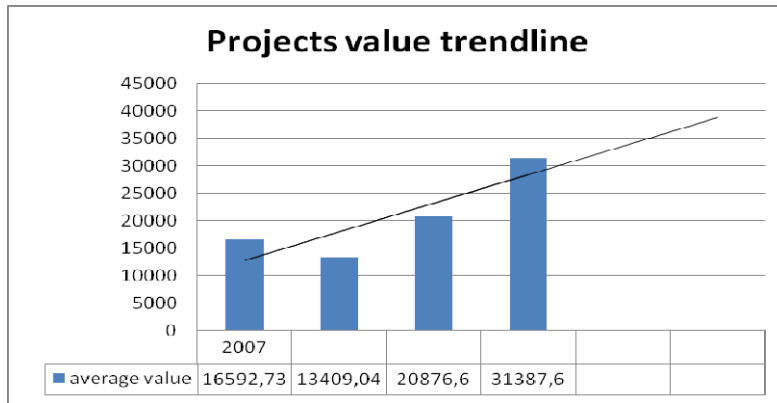


Figure no. 4: The evolution of the projects value, 2007-2012

It can be seen that the value of the projects is expected to increase, moving the focus to more serious partnerships, with larger companies, or with consortia.

**Conclusions**

Based on our calculations and results we may observe that there aren't any clear metrics for the majority of indicators, which is, indeed, a major limitation of the study. The impact on the visibility of the university, which counts the most is very small so we need a better correlation between the basic and applied research, where each indicator has its identity, and may be more accurately measured.

The absorption of structural funds, which is, lately, an emergent trend in universities, further complicates the model as, on the one side, it creates premises for fundamental research and, on the other side, it is more similar to applied research, and business-oriented thinking in the academia.

Larger sets of indicators, tested on a wider sample of universities, on a longer period of time, may provide us with a more complex and reliable image of the dynamics taking place between basic and applied research, and of the outcomes for university visibility and eligibility, considering the European market.

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