# The Doctorate and the Organization of Doctoral Schools

## Diagnosis of Status and Prospects for a Possible Future

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# 1 Abstract

The Doctoral system in Romania is currently facing an acute need for reconfiguration. According to national estimates, in the European context of the Lisbon Agenda we must train about 15,000 doctoral graduates by the middle of the next decade under the increased international visibility of the national scientific production and we should enhance the research to develop a new knowledge based economy. Better connected to the thematic and competitive streams of the European research, our doctoral graduates are expected to produce and reproduce the human resources for research and to generate knowledge for the competitive market of the new economy.

After a period of over a century since the first doctorate was awarded in a Romanian university, the system has undergone more or less radical changes. More recently, following the implementation of the principles and objectives of the Bologna Process, measures were taken towards the organization of doctoral schools, changes occurred in the flows of PhD candidates by day courses and distance learning, and in the public and private funding of doctorates and PhD candidates. We have now entered into a new reconfiguration stage, which is conducted within a project funded by the Government and the European Social Fund, the POS DRU[1]. In this project, the doctoral system makes the object of a diagnosis analysis that should lead to the development of a new concept and promote a set of systemic and institutional policies for the organization and operation of the doctoral studies. These will then be subject to institutional testing in order to identify the best options and openings, in order to design a competitive European and global doctorate, well-adapted to the market requirements on national higher education.

This analysis of the status of doctoral studies is monitored under the *Diagnosis*. Thus, we use a traditional term applied to medicine. The problem here is not of mere symptomatology, but also of extensive documentation to bring to the fore, records and evidence to identify the causes and generators, processes and dynamics, and comes in the end to proposing treatments or corrections. There are, however, other subjects and applied areas in which the term diagnosis is used. In social sciences, for example, an analysis of organizational development is often required to diagnose a condition or a suite of conditions in the evolution of an organization and to identify ways to optimize the processes in order to enhance, among others, the outputs and the productivity, the human staff satisfaction and the working climate.

Our intention in what follows is to propose a diagnosis of the status of the doctoral studies that is based on a *contextual* analysis and takes into account data and information as varied as possible and intersected following the *triangulation* model. The analysis is contextual in a double sense: historical, insofar as the present

[1] Project „Doctoral studies in Romania – Organization of Doctoral Schools", Sectoral Operational Programme Human Resources Development 2007 – 2013

is seen as dependent on previous conditions and processes, and *cultural*, to the extent that the inherent university ethos, rules and practices are envisaged to assess any successes or shortcomings. Then we take into account the complementary data and information, which check and complement each other: some are a quantitative, others qualitative; some are the result of systematic reflections of some representatives of the subject areas, while others are Sectoral (university, academic or specialized research institutes). Finally, the diagnosis is made based on information about the near or not so near past, with prospects of alternative and potential futures. Implicit or explicit values are associated with the idea of research performance, of production of competitive knowledge at the university or global level, and cognitive and/or technological innovations economically competitive in what is universally considered to be in Europe and beyond the "new economy" or knowledge society.

This diagnosis is based on:
- sectorial analyses of doctoral studies in universities, research institutes of the Romanian Academy and national research institutes;
- analyses focused on subject areas (e.g. engineering sciences, medicine, etc.);
- analyses of the views and perceptions of the representative actors within the system;
- comparative analyses of doctoral systems of the European countries.

The diagnosis presents the facts, identifies the achievements to be perpetuated, the critical components to correct and the initiatives to be discussed and implemented. The importance of the proposed diagnosis lies in the preparation of the next stage, which will formulate options for a reconfigured doctoral system.

As presented now in what follows, the diagnosis is still provisional. It makes the object of a wide public debate among academics and researchers, master and doctoral students, representatives of public authorities, and of the private sector. It is only in the end, after exhausting the public debate, that we hope to reach a form that will facilitate the construction of a new concept of the Romanian doctorate and institutional design policies that would be tested during the period January 2010 - September 2011.

The text below is structured in four parts. The first part is an ***Introduction*** which sets the framework of the diagnosis. The second part identifies the ***Catalysts*** which fuel the "transformation generators" in the doctoral studies. In Part Three, we present details about the ***Setup*** of the different activities associated with doctoral studies. Based on these analyses we present in the end a set of recommendations for the PhD candidates and their supervisors, but especially for the institutions responsible for the policies aimed at improving the PhD studies as third cycle of university studies, as seen in the Bologna Process. The recommendations are particularly important as they will set the bases for the formulation of the options and of the policies that should be designed to reinforce successes and to eliminate

shortcomings. We say so in a sense that we want to highlight: we put in brackets, in fact we wanted to suspend any possible prejudices. We propose a construction resulted from the available data and information, and from the comparison of their correlation at the national level but also, if possible, at the European and global levels, and we expect that in going through the text the lecturer will do, if possible, the same.

# 2 Introduction

After the medieval European universities invented the doctorate, which certifies the right of teaching at the university, and after the apparition of the modern PhD studies in Germany following the nineteenth century's concept of Wilhelm von Humboldt regarding the University, the recent years, since 2000, showed the European doctorate was a field of prospect and change. We are thus in the third round of re-configuration of the European PhD studies. This time, through the Bergen Communiqué (May 2005) of the Ministers responsible for higher education in the member countries of the Bologna Process, the doctorate is established as a university cycle to be achieved by learning through research, after the master cycle.

The reconfiguration area is indeed European, since one can say that in the today's Europe, there is not even a single nation in which the doctorates are not considered an area of most important transformations of academic structures, operation, and research. Romania is not an exception. Since 2005, with the adoption of the objectives and principles of the "Bologna Process" in our university system, several changes were initiated and implemented, including in the filed of PhD studies. For example, "doctoral schools" were organized, to provide *inter alia* a better framework for structured training and research than there was in the traditional form of the diadic relationship between the doctoral candidates and supervisors.

The current transformations in the doctoral system have endogenous and exogenous origins as regards the university and research systems. Endogenously, with the reorganization of university cycles of study and the increase in student flows at the BA and master levels, and also under the spectrum of interuniversity competitions increasingly enhanced to achieve high performances of quality teaching and institutional research, the reconfiguration pressures for the PhD studies have become increasingly clear and distinct. Exogenously, in the field of university education, because of the obvious social developments towards an economy based on cognitive transfers and technological innovations, appeared the need to increase the number of innovators and "knowledge managers", meaning, in classic academic terms, doctors in sciences. To meet this need, a European Humboldtian doctorate did not appear as appropriate anymore. Therefore projects were conceived to reconfigure the organization of the doctoral studies at the national and European levels, to guide the selection, and train more and more young researchers and developers or to develop as close and harmonious as possible relationships between learning, research and social, technological or cognitive innovation. The new academic and research policies have come to consider the doctorates as a reference essential to increasing the competitiveness of research and its impact on the economic and cultural development.

There were, however, important controversies regarding almost every traditional component of the doctorate. On the one hand, following the traditional consecration, the title of *doctor of science* is the highest academic qualification which

a university can confer; the *doctorate* is considered in the European terminology of the "Bologna Process" the third and last cycle of university studies; and *doctoral supervisor* is the highest academic position to be wished for by an academic or scientific researcher. To many, the doctorate and the stakeholders involved – PhD candidates and supervisors – as well as the related activities, represent the "zenith of learning", the „peak of university studies", the „highest university studies career", and a „consecration of creative talents". It also constitutes a confrontation of the newest scientific hypotheses and a consecration of the creative youth. Such distinguished rhetoric is everywhere associated with ancient academic rituals resilient to change. On the other hand, the performance in PhD studies is increasingly challenged. The origins of these challenges belong either to the internal perspective of the university system, considering the BA-master-doctorate sequence (BMD) and the activities and levels of performance and skills associated with them, or from the perspective of the social, economic or cultural expectations of a society in which the development is deeply dependent on the availability, the circulation and the applicability of information and knowledge, and also on an increasing number of researchers.

The foreseen or even applied changes and the controversies associated with them are normal signs for a period of innovation in the system. The doctorate in the Romanian university system is currently undergoing a period of innovation: prospection, analysis and potential controversies, and more rigorous assessment based on multiple data and information. This prospection period started at the beginning of 2009, with a systematic analysis and shaping of new policies for the organization and operation of the doctoral studies in the Romanian universities. To inform and structure the public debate on this problem, we propose here below a *diagnosis of status of doctoral studies in Romania*.

The ***diagnosis*** aims at being:

(a) an analysis of the recent developments in doctorates in Romania, but in implicit and explicit comparative European contexts; and

(b) an initiation of comprehensive debates, including controversies between academics, researchers, PhD candidates, employers, innovators, in fact, among all those interested in the scientific and artistic creativity of young people and professionals.

The proposed analysis is based on a large and varied documentary material (see appendix) and moves towards identifying contexts and configurations generators or catalysts of transformation, to reach a final set of recommendations for smaller or larger re-configurations. However, the authors wish the *Diagnosis* to be only a systematic beginning of the considerations and actions that will be carried on over two and a half more years. It is only then that the current considerations may also constitute a time for converging actions and re-configuration at the system level in the European context. We are only at a stage of initiation of a potentially

constructive reflexivity and, possibly, of convergences and divergences, for which the debate will be eminently academic, meaning of rigorous demonstration.

The proposed ***Diagnosis*** is divided into four parts:

The **Context** is the first part of the report and is intended to show the relevance of a diagnosis of the status of doctorates in the Romanian universities and formulate topics of interest for further analysis. References are made to:

- the development of the doctoral studies as a final cycle of university studies, completed with the highest academic qualifications based on learning through research;
- the sources of risk and uncertainty with regard to the completion of the doctorates' mission in the Romanian current university contexts;
- the alternative prospects for analysis and evaluation of doctorates and of their successes or failures;
- the approaches of doctoral programs in other European and North American systems.

The **Catalysts** refer to the main facilitators, but also to some significant generators of transformations in the doctoral field. Here we will mention the major internal and external factors that would influence the present structure and functioning of the doctoral programs. Three "catalysts" of transformation are considered: (i) the recent dynamics of the university and research system; (ii) the employability of young PhD holders; (iii) university globalization and internationalization of PhD studies. References to such catalysts or "transformation generators" are made to facilitate an explanation of the manner in which the PhD studies became the segment of higher education and research with the most important changes and expectations of revival of cognitive research/innovation and technology, in order to meet the requirements of a specific cognitive-intensive economy. In this part are considered issues relating to:

- *the needs of the university and research system*: train young researchers and academics for the university and research systems, and the response of the doctoral system to the heavy demand for PhD studies from inside and outside the academic and research system;
- *the employability of young PhD holders*, doctoral training according to the labor market demands, including the academic and research market, in terms of skills and creative abilities, communication and management;
- *the internationalization of doctoral studies*, the development of interdisciplinary and inter-institutional partnerships, the mobility of PhD candidates, the European and global competition for young talents in research.

The **Configuration** is that part of the report which shows in detail the ways in which the doctoral programs were recently implemented in our universities and

research institutes, and the extent to which the current doctorates respond to the requirements of the "transformation generators". The main themes explored here are:

- the organization the doctoral system in Romania;
- the status of doctoral candidates and supervisors;
- the academic quality of doctoral studies;
- evaluation and quality assurance;
- opening of doctoral studies.

The ***Recommendations*** section is where the lines and options are drawn for re-configuring the organization and operation system of PhD studies in the Romanian universities. The recommendations are organized following the same five categories as in the configurations section.

The proposed Recommendations have three sources: (i) the data and information which formed the basis of the ***Diagnosis;*** (ii) the innovative practices in various European and North American countries; (iii) the explicit or implicit comparison with other universities and doctoral research programs systems. The Recommendations are made with a view to open and structure future public debates. They are proposed considering both a conscience of diversity, and the need to encourage the institutional variability.

We admit that the institutional, cultural, economic, and even political prospects may be different, that priorities may vary from one participant to another, and that other alternative approaches that can be imagined and even achieved. But we also admit as a prerequisite and undisputable essential reference for future public debate on the Romanian doctoral system, the idea that without a re-configuration of the doctoral studies in the European and global contexts, it would be impossible to increase the competitive performance of the doctoral programs. In such context, if we considered such premises, ***the reflection and construction periods may converge***.

# 3 Context

The title of Doctor of Science (hereinafter called Doctor) is the highest academic qualification that can be conferred on a student who successfully completed the BA and master's programs, enrolled in a doctoral program of learning and research of accredited universities in this regard, has passed all the prescribed examinations, and in the end has successfully presented a dissertation containing original ideas and bringing advanced knowledge in a specialized discipline, or who proposes a technological innovation recognized as such in the production market, or an artistic product beset with creativity. This is the general academic meaning of the doctorate, in Romania and in all university systems of the world. It is worth mentioning it and admitting it as undisputable reference, initial and final in all that follows.

## *3.1 The Doctorate's Exclusivity*

The consequences of this option are not minor. They will appear one after the other in this text. However, a special consequence should be pointed out from the start: *a doctoral qualification is as high, as exclusive*. Not every higher education institution can organize programs for doctoral studies, but only the accredited universities in this respect, with acknowledged performances in the field of research (the organization of doctoral studies is now a mark of distinction for an academic institution of higher education). A Doctorate can not be obtained in any specific academic discipline, but only in those with a history of consecration and with large scientific communities, prestigious magazines and monographic volumes and Heuristic practices, laboratories and research techniques well consolidated. Not every student can enroll in a doctoral program, but only those with proven higher and creative performances in pre-university studies and/or in activities in industry and services. More than merely and primarily reproductive learning is expected to achieved through a doctoral program. Capabilities to design, achieve and complete original research, possibly acknowledged through publication (i.e. learning through research) and innovations recognized in the economic practices are especially required. Not every academic or researcher can assume the position of doctoral supervisor, but only those who can prove strong research skills and experience by publications and/or innovations recognized in the field and internationally.

The exclusivity of PhD studies is associated with higher institutional expectations and personal aspirations, including claims for special privileges and recognition. However, careful analyses or controversies still exist regarding the perpetuation and defense of such exclusivity. Especially that now there are more and more universities and researchers who find that the number of doctoral programs or higher education institutions offering doctoral programs is higher than the ones which may prove within these programs higher comparative results in research. Also, between the number of young PhD holders and the publicly recognized scientific

and innovation production there is no proportionality ratio. One may even speak of a *paradox of the current doctoral studies*, which would be an indication of the erosion of the classic academic exclusivity: the number of PhD candidates and young PhD holders is increasing, the disciplinary and interdisciplinary PhD programs, the accredited universities offering doctoral programs and the types of doctorates are multiplying, but this multiplication is also increasing the number of controversies, ambiguities and uncertainties about the specific organization, objectives and achievements of PhD studies.

The present key question is: how to associate the multiplication that appear to be inherent in the contemporary doctoral requirements with a preservation of the classic requirements and standards? By keeping the classic standards, multiplication seems to be inevitably stopped as it would be impossible even in a university consistently focused on learning through research. *Vice versa*, by admitting multiplication, the classical standards should be changed, but in doing so, the doctorate would no longer be what the academic world consecrated at the dawn of scientific modernity. The options as to our future represent an imperative that can be adversatively formulated: either choose to multiply the doctoral programs by cutting down the requirements criteria (*laissez-faire*), or choose to increase the requirements and decrease the number of doctoral programs (*exigency*), leaving, however, the doors opened to those who made sufficient progress in research to open doctoral programs. A combination of the above types appears to be excluded.

### *History and Modernity*

History and modernity in doctoral studies meet, but not in harmony. On the one hand, the dependence of history urges us to go back to the origins of the doctoral studies and hear again the message of the initiator of the modern European university and doctoral studies, Wilhelm von Humboldt: "A special feature of the higher scientific establishments that they treated science as a problem which is never completely solved and therefore engaged in constant research" [2]. And "engaging in research" implies, as they say, "to treat science as a problem" and not simply as a solution. Reasons for this option are clear: the identified solutions diminish alternative search, at least for a period, while science as "problem" urges perpetual search and even the transformation of solutions into new problems for prospecting. As such, the dependence on history places the doctorate in direct relationship with the demand of knowledge growth and diversification in general, and of science in particular.

On the other hand, our contemporary world is different in requirements and expectations. The knowledge modes have diversified, the applications of science have multiplied, the social risks, including the environmental ones, have become so

[2] Humboldt, Wilhelm von. 1903–36. *Gesammelte Schriften: Ausgabe Der Preussischen Akademie Der Wissenschaften.* Bd. I—XVII, Berlin, p. 251. Apud: Gerd Hohendorf, **Wilhelm von Humboldt (1767-1835), i**n: *Prospects: the quarterly review of comparative education,* Paris, UNESCO: International Bureau of Education, vol. XXIII, no. 3/4, 1993, p. 613–23.

omnipresent that U. Beck[3] could say that "the industrial or post-industrial society" created through science and technology have turned into a "risk society". So that we get again to ask how to re-organize and extend the doctoral studies without sacrificing the academic standards necessarily involved, and without depriving the contemporary society of the most urgent problems and solutions. It is the question that will be carried forward in this report and in future debates, looking for answers that would correspond to the current options.

Before we progress in our searches, a clarification is needed: the universities confer the qualifications of doctor of science and honorary doctorates. Their value is eminently symbolic. They are signs of recognition of academic honors for a person's professional work (such as non-academic) and are identified by expressions of Latin origin, former *lingua franca* of the medieval universities. The most famous honorary doctorate is *Doctor Honoris Causa* (DhC), although some university honor the successes their alumni in their post-graduate careers with doctorates of sciences (DSC) or of letters (DLitt), which only have symbolic value in recognition of outstanding successes, without any consequences regarding the academic career of a person thus honored. In what follows we will not be considering the honorary doctorates. It suffices to mention that an abuse of institutional honors is likely to eventually … dishonor.

The history of doctoral studies in sciences largely coincides with the history of university. The forms varied from time to time, although some of the initial characteristics of doctoral studies remained.

In the European medieval universities the title was first granted in philosophy as a recognition of the right to be a „Professor of Philosophy". The Latin original name was "*Philosophiae Doctor*", abbreviated PhD. This name was subsequently adopted, especially in Anglo-Saxon countries, even after doctorates could be obtained in other disciplines than philosophy. A person who had been conferred the title of doctor acquired his Doctorate of ... at the end was mentioned the academic discipline in which he/she became *Philosophiae Doctor*, for example PhD in electronic engineering. It is important to note that the title of doctor, which originally was limited to philosophy, was intended to authorize a person as a member of a community and a university research community, thus entitled by law to teach students and be a researcher and professor of the university, for recognized research skills. Such meaning remained, and today the doctorates constitute an *apprenticeship* of the PhD students in research (*Esquire* as the English say) to eventually become a researcher and academic (meaning an ennoblement with the academic title of doctor). As such, the medieval doctorate was:

- a form of *apprenticeship* practiced in direct, diadic relationship between a recognized academic and a novice aspiring to become an academic;
- the path to institutional authorization of an academic and researcher;

[3] Beck, Ulrich, **Risk Society. Towards a New Modernity,** London, SAGE Publications, 2005.

- the reproduction of a university model and academic practice.

What was left, over time, of such options? Let us not hurry in formulating a response, because in the meantime the options of PhD studies have crystallized to match the modernity, starting with the processes of its initial configuration.

The modern doctorate appeared in the first half of the Nineteenth Century in Germany, with the Humboldtian model of university. Three principles are of reference for the Humboldtian idea university and, implicitly, of doctorate:

- unity of research and teaching (in fact to educate students as independent persons);
- Academic freedom in research and teaching;
- Academic self-governance or, as we say today, university autonomy and collegiality based on peer-review.

All these principles relied on the modern university and doctoral studies. However, among these, the focus on the combination of training (meaning instruction and education) and research was essential to the university model that Wilhelm von Humboldt then proposed. The research was fundamental to the construction and the activity of a Humboldtian university, and the doctoral studies were exclusively dedicated to learning *of* and *through* research under the guidance of an already recognized teacher performing research. The doctorate was thus meant to ensure through the young PhD candidates the reproduction of the university as an institution of learning and research.

The Humboldtian doctoral model after 1860 was taken over and developed in universities in the U.S., first in the Johns Hopkins University in 1876, and then in other American research oriented universities. Unlike the German Humboldtian model, from which it was largely inspired, the American Ph.D. was and still is so organized that the first phase involves a participation in teaching, and the second phase involves independent research carried out by the PhD candidates, under the joint guidance of several academics specialized in various branches of science. Learning and research are closely combined, and the diadic relationship of the German model is transformed into a multiple relationship, extending the access of the PhD students to multiple sources of learning, consultation, guidance and evaluation. The American doctoral model is different from the Humboldtian one by several options which proved to be very important: (i) the reproductive learning, based on teaching courses, precedes the learning achieved in the process of research, the research itself; (ii) the guidance of the doctoral supervisor is not provided by a single person, but by several persons, even if one has the main coordinator' role.

The modern Humboldtian type doctorate was adopted by the German universities and then expanded, by the end of the Nineteenth Century and early Twentieth Century, not only to the North American countries, but to almost all

European universities, and became then eminently European. For example, the first modern doctorate was introduced in Britain in 1917 by the University of Oxford. The first doctorate in Romania is granted in June 1905 to Ion Petrovici from the University of Bucharest on the subject "Psycho-physical Parallelism". The Bucharest University conferred him the title of Doctor of Philosophy, based on which he became senior lecturer at the University of Iasi.

The Humboldtian doctoral studies in European universities have clear and distinct forms:

- the doctorate specific relationship was diadic, Professor - PhD student, in the sense of master-apprentice, and was designed to build a future independence, after passing the doctoral thesis, in research and especially in higher education;
- learning was achieved through the research process;
- the independence of research was associated with the academic freedom of theoretic “objective” construction meaning "value neutral", and with publication;
- the evaluation of the research results and of the doctoral thesis was collegial, based on peer-review.

How many of these options have propagate to our time? The short answer is: all. However, evaluations and re-evaluations of PhD studies have recently appeared, and with them the uncertainties regarding the new options have multiplied.

## 3.2 Current Uncertainties: Options for Change and Dilemmas

One thing is certain in the history of modern PhD studies: the doctoral model in the Twentieth Century’ European universities was the German one, of Humboldtian origin. This adoption and its subsequent developments can not continue, however, without the risk of shortcomings that can no longer be ignored. Especially when it comes to some requirements of the "new knowledge based economy" which correspond to the transition from the industrial to the post-industrial economy and society: the number of PhD candidates and young researchers needs to increase, the research products have to increase and their applicability to expand. The extra-university research centers are becoming more numerous and the economic effectiveness and efficiency, competitiveness and productivity directly depend on the productivity and competitiveness of the research, regardless of where it is carried on.

If this is the case, then the doctorate’s issue has ceased to be eminently academic. It became an economic and social issue. Therefore, this approach has implications for problems too numerous to be limited to the traditional academic

universe. However, it would be appropriate to start here and innovate. We are thus in a situation where the PhD has become the object of new approaches in order to meet new requirements which are to be achieved through alternative policies.

The premises of the new approaches can be identified in the critical assessment of some of the consequences of the European PhD studies of Humboldtian type:

- the autism of the PhD student - lonely pilgrim seeking and displaying originality;
- the risks of the diadic relationship saturated with meanings of "feudal" asymmetry between PhD students and their supervisors;
- the formalism of the thesis cut apart from the mundane realities and the innovative economy, limited to a (sub)discipline too specialized and too little correlated with other types of knowledge which keep multiplying.

Such criticism and others alike occurred precisely during a period in which the doctorate should have become for the European Union member states engaged in fulfilling the objectives of the Lisbon Agenda, the most important topic of the academic policies and achievements. The goals are indeed very ambitious: training about 700,000 young PhD holders (of which about 15,000 in Romania), and especially affirm the European economy as one of the most dynamic, attractive and developed economy based on knowledge in the world of 2010.

The context created by the "Bologna Process", after the Bologna Declaration assumed by the ministers responsible for higher education in several European countries in July 1999, has generated the premises for new approaches especially after 2005, when the Bergen Communiqué of the European Ministers of Education has stipulated:

“To achieve these objectives, doctoral level qualifications need to be fully aligned with the EHEA overarching framework for qualifications using the outcomes-based approach. The core component of doctoral training is the advancement of knowledge through original research. Considering the need for structured doctoral programs and the need for transparent supervision and assessment, we note that the normal workload of the third cycle in most countries would correspond to 3-4 years full time. We urge universities to ensure that their doctoral programs promote interdisciplinary training and the development of transferable skills, thus meeting the needs of the wider employment market. We need to achieve an overall increase in

the numbers of doctoral candidates taking up research careers within the EHEA. We consider participants in third cycle programs both as students and as early stage researchers."[4]

The options of the "Bologna Process" for the new political developments of the PhD studies in Europe have been repeatedly mentioned in national policy documents and especially in the documents adopted by the European higher education institutions under the most representative organization supporting them - the European Universities Association (EUA)[5]. The options are the following:

- the need to include and define the doctoral qualifications within the National Qualifications Framework, as already included in the European Qualification Framework. This option has repercussions in differentiating the PhD studies in terms of skills, learning and research results from bachelor (European bachelor degree in general terms) and master studies. It also shows the relevance of this qualification on the broader labor market, not just on the university and research markets;

- Admitting the importance of learning and original research, it is proposed to go from "structured doctoral programs," which actually mean overcoming the traditional formula of the diadic relationship doctoral professor - student or master - apprentice by creating doctoral schools or research schools (which would include, as in the U.S., research oriented doctoral and master's programs);

- The duration of doctoral studies is recommended to be 3-4 years, although recently some systems have opted for 3 years and others for 4 years;

- Open the doctoral programs and PhD candidates to the labor market by including, *inter alia*, interdisciplinary activities and developing "skills transfer", such as management or communication of scientific results to a wider audience;

- Increase the number of candidates to the title of doctor of science, by including people who would choose a research career;

- Considering the PhD candidates not as students, but as "junior researchers" would allow them to receive specific social benefits as employees.

[4] **The European Higher Education Area - Achieving the Goals,** Communiqué of the Conference of European Ministers Responsible for Higher Education, Bergen, 19-20 May 2005.
[5] **Doctoral Programmes in Europe's Universities: Achievements and Challenges**. Report prepared for European Universities and Ministers of Higher Education, EUA, 2007. Bologna Seminar on **"Doctoral Programmes for the European Knowledge Society",** (Salzburg, 3-5 February 2005): **Conclusions and recommendations** ("the ten Salzburg principles for the doctoral education in Europe").

The most important aspect arising from the "Salzburg Principles" regarding the European Doctorate, or from the Bergen Communiqué or the EUA documents, which lead to the establishment of a continental Council for Doctoral Education[6], is the initiation of a broad reform of the doctoral systems.

When considering such documents, when options and achievements are compared, or upon reflecting on their implications, we note on the one hand historical influences, mostly national, and also rather uncontrollable multiplication inducing ambiguities and uncertainties. Let's give an example which seems to be eloquent. An analyst of PhD studies in the UK, Chris Park, launched in 2007 a pamphlet called "Redefining the Doctorate" under the auspices of the famous Higher Education Academy, believes without hesitation that "given this persistent uncertainty and enduring lack of consensus over the purpose of doctorate and over the benefits a doctoral education offers, this appears to be a particularly appropriate time to take stock on what the doctorate is in the UK" [7]. On the other hand, contradictory forces, pressures originating in different contexts, and interests which are far from converging can be distinguished.

Just like societies and economies are changing, the universities and their doctoral activities go through searches, try to escape long established traditions, but without ever completely abandoning them, being still conservative as they have always been. Some[8] believe that since the academic research has substantially changed, the doctorate is also in a position to change, "to be redefined" as C. Park says. Furthermore, such redefinition of PhD studies would involve achieving ample transitions:

- from national to international and global;
- from predominantly disciplinary orientation generated mainly by an epistemic curiosity to interdisciplinary research and result-oriented practice;
- from small laboratories or individual offices to teamwork and institutes or centers of excellence;
- from academic to professional orientation;
- from research without limits to program oriented research and well-structured projects, with achievements expected by the actual beneficiaries;
- from public or academic funding to multiple sources, including private.

But such transitions are carried out in the existing academic contexts, with their institutional and human capital, in which the perspectives and expectations towards the doctorate and its results are neither homogeneous nor converging. The

[6] *EUA Council for Doctoral Education (EUA-CDE):* ***The mission of the EUA Council for Doctoral Education (EUA-CDE), an integral part of EUA, is to contribute to the development, advancement and improvement of doctoral education and research training in Europe.***
[7] Chris Park, **Redefining the Doctorate,** London, The Higher Education Academy, January 2007, p6.
[8] B. M. Kehm, **Doctoral education in Europe and North America: a comparative analysis,** Wenner Gren International Series, 2006, Portlandpress. com.

interpretative codes of doctorates are sometimes so different that they seem difficult to reconcile. For example, let's consider the expectations of various interest groups:

| **PhD candidates** | **Doctoral supervisors** |
|---|---|
| - Obtain a certificate of their personal creative skills | - Reproduce and develop their creations |
| - Obtain recognition as researcher/academic | - Obtain new academic recognition |
| - Work in a research group/laboratory | - Being assisted by young talents |
| **Fund providers** | **Academics and research institutes** |
| - Non-academic employees | - University and research institutes |
| - Value for the invested funds | - University reproduction and development |
| - Develop the intellectual capital | - Enhance academic status |
| - Economic growth | - Expand knowledge |

How homogeneous and converging are these players when confronted? Even if sometimes they may appear with converging options, the meanings and details get in the end to separate them. Thus the Doctorate became a place of differences and dilemmas. In a way, any player, taken separately, does not hold the monopoly of defining the doctorate, its mission, implementation and completion. However, the academic and research institutions design doctoral programs, select and train PhD candidates, issue degrees certifying skills and are the major beneficiaries, as they hire most of the PhD holders. Also, in accordance with the Humboldtian tradition, they are autonomous and are considered to be the only responsible holding if not the whole power of decision, at least the most significant one. Only in this respect the academic and research institutions are not converging. The research institutes of the Romanian Academy and the Romanian universities follow completely different systems of organization of doctoral programs, apply different legal rules, courses and examination. They exchange external examiners, but the inter-institutional mobility of PhD candidates is almost inexistent. Some academics belong to some universities, but work in partnership with other faculties or universities or even research institutes. The researchers from research institutes also work in universities, and some supervise doctorates. However, the researchers mentioned in the first case appear with the status of "associates" and the students working as researchers in research institutes in universities appear as PhD candidates by distance learning who pay fees to the universities in which their doctoral supervisors are "associates". As a result, we have a nationally fragmented doctoral system far from being uniform and unable yet to mobilize all institutional, logistic and human resources which are potentially available. This system compared to other national

more efficient ones in human and scientific production, is less scientifically productive, but more productive in terms of number of doctors.

Compared with the current development of science and in the relation between science and economy, our doctoral system needs an ample reassessment. Some lessons are to be learned from the experiences of those who already reflected in a systematic way on a re-configuration of the doctoral studies, and have reached conclusions based on which the current doctorate should:

- be based on new adaptable concepts regarding knowledge and expertise;
- consider the new relationship between the academic research and the requirements of an economy of information, knowledge and innovation;
- facilitate the development of analyses and inter- and multidisciplinary research;
- state when appropriate and stimulate if not, the entrepreneurial potential of the doctoral supervisors, which should go beyond enrolling more PhD candidates and bring more fees, to harnessing knowledge and expertise through cognitive and technologic transfer;
- facilitate the detachment of PhD candidates from academic autism through the assimilation of managerial and communication skills and their orientation towards the real economy.

Other possibilities for change can be identified following the results of the diagnosis to be analyzed and publicly debated. One option, however, is still essential at this stage: the past experience cannot be ignored or idealized. As a result, incremental changes are preferred to transformation through radical reform. Such approach is intended:

- to seize what deserves to be perpetuated;
- to correct or eliminate what deserves such treatment and also identify new catalysts and generators of change;
- to better configure the current situation in ways that stimulate reflection;
- to propose recommendations to be considered in setting a new doctoral system in Romania, member of the European Union and of the global community.

In the following section we will identify and specify key generators and catalysts of change.

# 4 Catalysts

The changes in our doctoral system can be the following: (a) corrective changes designed to improve conditions and processes which had delayed performance as compared to the rates and new developments; or (b) transformative changes, i.e. systemic and strategic adjustments and reconstruction. Following an incremental approach, the two types of changes would be complementary as they are generated by common factors and aim towards a convergent reconfiguration of change.

To identify these factors let's prospect the history and the current situation of doctoral studies. Historically, the doctorate has emerged from the need of universities to reproduce their academic staff. How to select and how to authorize a future member of academic staff have been questions to which the doctorate as institution has provided answers. The changes in universities were inevitably followed by changes in the structure and operation of PhD studies. For example, in the modern industrial society, the changes in universities required the doctorates to provide new ***institutional bases for reproduction of the academic staff***. Only in more recent times, with the extension of research in institutes and specialized public or private companies, the universities have ceased to be the only and main beneficiaries of the qualified personnel at the doctoral level. The employers of doctors in sciences are more diverse. Moreover, they have their own expectations regarding the doctoral qualifications, demanding changes in their profile to increase the chances of ***employability*** on the labor market of young PhD holders. Finally, such developments are far from being limited to the national university systems. The globalization of university is associated to a ***globalization of doctorate*** expressed in terms of competition for young talents and their creativity. Under these findings, we recognize that the major current factors, which catalyze the occurrence of corrective and transformative changes in doctorates, are the following three:

- a reproduction of institutional and academic research;
- an extension of employability of PhD holders on the labor market (diversify employers, changes of skills and expectations for PhD candidates);
- an increased globalization of PhD studies (competition for young PhDs, etc.)..

Next will be considered the modes of action of these factors and the changes they may induce in the PhD studies.

## *4.1 Ensuring Academic Institutional Reproduction*

The doctorate is the place of perpetuation and development of academic institutions and research. The modes of ensuring through doctorates this academic

institutional reproduction are not uniform in different periods of time. At first, to meet the present requirements, the doctorate should go through periodic *corrective* changes. However, when taking into account the current increasing demand for young researchers and academics, it is expected that the *proportional changes* would induce systemic changes. What would be the generating mechanisms of these changes of proportion?

An academic or research institution exists through its staff. The institutional prestige depends on the prestige of the academic staff. The interest of students with specific skills is driven by the same prestige, built mostly on the basis of performance in research. As a result, the doctoral selection and training leads to the production and reproduction of the academic staff and research. According to the Romanian legislation, no one can stay on the long term in the system and/or can aspire to occupy higher positions on the scale of academic titles and research in the absence of a doctorate. Until recently, recruitment in universities and research was rapidly followed by the enrollment to doctoral studies, so the beginnings of an academic career would coincide with the end of the doctoral studies. The doctoral thesis would appear as an evidence of dedication for individual academic talents. In addition to such practice and dedication, there still is a mechanism which makes the doctorate a basic institution of the academic world: the quality of doctoral students and of the doctoral theses was and still is evidence of the strength of a research topic. The affirmation of the disciplines created by an academic division of knowledge is reinforced by the potential of the young PhD candidates and PhD holders. In other words, the doctorate contributes to the emergence of new academic disciplines and helps strengthening the existing ones. Hence the assertion that the doctorate is an area of intense scientific controversy and battle for academic consecration.

The maintenance of these practices is indisputable. The doctorate has ceased to be just a reproductive system of a relatively small sized university and research system. The massification of higher education, the multiplication of the number of higher education institutions and research institutes, the continuous emergence of new disciplines, new academic programs, and research studies have generated high pressure on the doctoral system. Moreover, the demand for individual doctoral studies tends to partially separate from the academic system, either for reasons of individual prestige and affirmation (i.e. the doctorate as a dimension of a prestigious social status), or as a preparation for highly qualified employment (e.g. managerial positions). Consequently, due to the increasing individual demand for doctoral education, and due to the increasing number of PhD candidates and doctors in sciences, the doctorate was transformed from a limited system to a large one. An illustration of this trend, to which we referred earlier is the following: the Lisbon Agenda for the European Union estimated that at the beginning of this century about 700,000 young researchers (PhD candidates and doctors) would be needed, beside those who would replace the retiring ones. Therefore Romania got committed, through strategic documents within the framework of the Treaty of Accession to the European Union, to prepare about 15,000 new researchers by 2010.

Considering such requirements and trends, our doctoral system is facing now and in the immediate future an increase of proportions: more PhD candidates and doctors in an expanding university and academic world. Let's assume, however, that such growth can not be achieved in the traditional framework of PhD studies. It requires corrective changes, and even changes associated with the modes of *recruitment* of the PhD candidates, with the institutional *status* of PhD candidates and the assignment of *preferences* regarding the areas of research, as well as the *funding* of doctoral and PhD studies.

## *Selection of PhD Candidates*

After 1990 there were two practices for the selection of the PhD candidates, generated by the structure of higher education. The traditional practice was to select the graduates of 4-6 years of education (bachelor's degree). After the introduction in 1995 of post-graduated or master studies, and especially after the exclusive establishment of master studies in 2004, the established practice for the selection of doctoral candidates was among the master or post-graduated studies graduates. These two practices still coexist as the former graduates aspire to attend doctoral studies by distance learning.

The selection of PhD candidates is typically made of an examination for admission with two components: a past performance analysis and evaluation of academic knowledge associated to the research project proposed by the candidate. This is at the formal level as the doctoral selection is almost exclusively the result of relations already established during the BA or master studies or other non-academic circumstances, between leaders and doctoral candidate. On average over two thirds of the PhD candidates enrolled in doctoral programs of studies are former graduates of the university where the doctorate is carried out. Accordingly, the doctorate is the main way of institutional reproduction of an academic discipline, and also of the university or faculty. Along with this institutional reproduction, the doctorate also led to a phenomenon of reproduction of the academic clientelism of some doctoral supervisors. The decision-making power of the doctoral supervisor is so discretionary that each individual supervisor, with the support of others with convergent interests may select his or her own PhD candidates following a sort of clientelism. This is why the more indulgent doctoral supervisors get more "popular" and have over 30, sometimes over 50, PhD students, most of them by distance learning. The reproduction of the clientele of a doctoral supervisor may even replace the institutional reproduction and erode its quality. The social and professional credit of PhD studies is likely to be blown away.

In the period before 1990, the number of foreign PhD students enrolled in the Romanian universities was competitive at the European level and globally. The situation is radically different now (see Table 1).

**Table 1. The share of foreign doctoral students among all doctoral students in 2008**

| | Total | Technical | Architecture | Agronomic | Sciences | Human Social | Medicine | Economic | Arts, Sports |
|---|---|---|---|---|---|---|---|---|---|
| Total Doctorate | 32542 | 8663 | 332 | 1817 | 3585 | 6870 | 6973 | 2998 | 1304 |
| Day Courses Doctorate | 7857 | 2191 | 77 | 446 | 1274 | 1904 | 1139 | 532 | 294 |
| Supported under budget | 6959 | 2164 | 69 | 438 | 1078 | 1461 | 1093 | 399 | 257 |
| With tuition fee | 898 | 27 | 8 | 8 | 196 | 443 | 46 | 133 | 37 |
| Distance learning Doctorate | 24685 | 6472 | 255 | 1371 | 2311 | 4966 | 5834 | 2466 | 1010 |
| Supported under budget | 14059 | 4425 | 163 | 706 | 1708 | 2691 | 2763 | 1110 | 493 |
| With tuition fee | 10626 | 2047 | 92 | 665 | 603 | 2275 | 3071 | 1356 | 517 |
| | | | | | | | | | Foreigners |
| Total Doctorate | 901 | 159 | 19 | 32 | 34 | 215 | 333 | 77 | 32 |
| Day Courses Doctorate | 384 | 69 | 8 | 17 | 18 | 128 | 97 | 30 | 17 |
| Supported under budget | 318 | 56 | 6 | 14 | 12 | 119 | 70 | 25 | 16 |
| With tuition fee | 66 | 13 | 2 | 3 | 6 | 9 | 27 | 5 | 1 |
| Distance learning Doctorate | 517 | 90 | 11 | 15 | 16 | 87 | 236 | 47 | 15 |
| Supported under budget | 58 | 20 | 1 | 1 | 1 | 14 | 11 | 6 | 4 |
| With tuition fee | 459 | 70 | 10 | 14 | 15 | 73 | 225 | 41 | 11 |
| | | | | | | | | | Weights |
| Total Doctorate | 2. 77% | 1. 84% | 5. 72% | 1. 76% | 0. 95% | 3. 13% | 4. 78% | 2. 57% | 2. 45% |
| Day Courses Doctorate | 4. 89% | 3. 15% | 10. 39% | 3. 81% | 1. 41% | 6. 72% | 8. 52% | 5. 64% | 5. 78% |
| Supported under budget | 4. 57% | 2. 59% | 8. 70% | 3. 20% | 1. 11% | 8. 15% | 6. 40% | 6. 27% | 6. 23% |
| With tuition fee | 7. 35% | 48. 15% | 25. 00% | 37. 50% | 3. 06% | 2. 03% | 58. 70% | 3. 76% | 2. 70% |
| Distance learning | 2. 09% | 1. 39% | 4. 31% | 1. 09% | 0. 69% | 1. 75% | 4. 05% | 1. 91% | 1. |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Doctorate | | | | | | | | | 49% |
| Supported under budget | 0. 41% | 0. 45% | 0. 61% | 0. 14% | 0. 06% | 0. 52% | 0. 40% | 0. 54% | 0. 81% |
| With tuition fee | 4. 32% | 3. 42% | 10. 87% | 2. 11% | 2. 49% | 3. 21% | 7. 33% | 3. 02% | 2. 13% |

Only 2.77% of all registered doctoral candidates enrolled in the Romanian universities come from other countries. This shows that the recruitment of PhD students in our universities is viewed almost exclusively as a mechanism of academic institutional reproduction, except for the mere reproduction of the doctoral supervisors clientele.

The recruitment of the PhD students tends to become one of the most significant problems of the doctoral study programs. In Europe and globally it is a matter of academic and economic competitiveness: how to recruit creative talent? And how can they be convinced to remain after they complete their PhDs? A long time after 1990, the best graduates of our universities have been encouraged to study abroad, especially in foreign universities in Europe and the USA. Their return or reintegration from abroad have now become extremely problematic. The institutional or interpersonal barriers are fabricated or real, the lack of predictability of the local research environment is well known but, most of all, the local institutional reproduction has become so autarchic that it tends to make impossible the return of the national talents who studied abroad. The most appropriate forms of cooperation with the Romanians scientists living abroad have not even been identified yet, despite some efforts made by CNCSIS or ANSTI.

The recruitment in doctoral programs by day courses or distance learning varies depending on the academic disciplines. As the demand for graduates on the labor market grows, it becomes more difficult to attract PhD candidates. An illustration of this is in informatics and in other fields in the vanguard of the current scientific development.

About the recruitment and selection of the doctoral candidates:

The recruitment and selection of doctoral candidates are key areas of the academic reproduction at the institutional and discipline's levels, as they influence the role of research as a crucial factor in increasing the economic competitiveness of a nation.

Currently, the selection and recruitment of the PhD students is limited to ensuring the reproduction of the academic institutions, and it is sometimes extended to a clientele reproduction of the powerful doctoral supervisors.

There are academic disciplines at the top of the research dynamics, but deficient in the selection of their PhD candidates because of the attractiveness of the labor market, which brings the risk of blocking the academic reproduction.

To the migration trend in doctoral studies should be opposed the international and inter-institutional cooperation. The PhD holders from prestigious universities abroad should have real employment opportunities in the research and higher education institutions in Romania, and predictable legal and financial environment.

Attracting talents from abroad tends to become a mandatory requirement, especially after the creation by the European Parliament of the famous Blue Card for labor mobility, in particular for the highly-qualified.

*Flows of doctoral students and public funding of PhD studies*

Perhaps the factor that has influenced and still influences the strong demand for doctoral studies is the twenty year old expansion of the Romanian academic system. Indeed, after 1990, the flow of students and the number of higher education institutions have increased almost exponentially. In 1990 there were 48 public universities and 192,810 students; in 2004 the number of higher education institutions reached 122 (both accredited and non-accredited, public and private institutions) and the number of students grew to 725,522[9]. In 2008, were enrolled only in the public universities 650,248 students, which took the total number of students close to one million. With such numerical increases, the demand for qualified academic staff has been huge. In the early stages, this demand was met by multiple hiring of the academic staff from the state institutions. Then followed a conversion to academia of some researchers, which went in the 1990s through a strong diminution, due to underfunding.

Gradually, however, new public or private universities, under the accreditation requirements' pressure, have recruited young staff who will need to obtain their PhD as to get appointed and promoted in their academic carrier. Thus, the pressure on the doctoral system has been constantly increasing during the 1990s. In just 10 years, the number of titles of doctor of science conferred every year increased from 287 in 1990 to 2 472 in 2000[10]. This increased demand is understandable considering the former communist regime's practice of locking PhD studies for a

[9] **"Tertiary education and innovation systems analysis – Romania**", Bucharest, Ed. Romanian Academy, 2005. Were called universities the public or private institutions organizing higher education study programs (higher education institutions).
[10] Jan Sadlak (Ed. ), **Doctoral Studies and Qualifications in Europe and the United States: Status and Prospects**, UNESCO-CEPES, Bucharest, 2004, p. 145)

period of almost 10 years (the 1980s). Many elder candidates wanted to obtain a doctorate, even if they did not intend to pursue an academic career. The doctorate was and still is regarded as a mark of intellectual distinction and an asset in extra-university careers.

As such, to understand the PhD studies in the period immediately following the change of political regime we have to refer to the changes since 1990 in the academic and research institutions, the impasse during the 1980s, but also to the social prestige associated with the title of doctor in the intellectual culture. Eventually, after the year 2000 and especially after 2005, a new and predominantly pragmatic culture emerged, that of academic and economic entrepreneurship, also based on the PhD structure. This new culture has been associated with the European one after Romania became member of the European Union (2008). The doctorates started to be placed in a different system, and the subsequent related policies have followed a different course. We are now at this stage and we build this analysis from this perspective.

Since 2004, the adoption of Law 288/2004 on the organization of study courses in the Bologna system led to major changes in the structure of student flows (see Figure 1 and Table 2) [11]. The share of students enrolled in master's programs increased. The number of PhD candidates in public universities increased from 29,391 in 2002 to 32,542 in 2008, but the share of PhD candidates by day courses and by distance learning changed (see Figure 2). The number of PhD candidates by day courses constantly decreased, especially since 2005, due to the implementation of the Government Decision no. 567/2005 (Art. 16, § 3), following which the doctoral studies were only organized by paying fees and the distance learning form funded by public money was abolished.

[11] The data in the tables and figures below are from the CNFIS report drafted for a diagnosis of the condition of the doctorate within this project.

**Figure 1. Evolution of the number of students in public higher education, in the period 2002-2008**

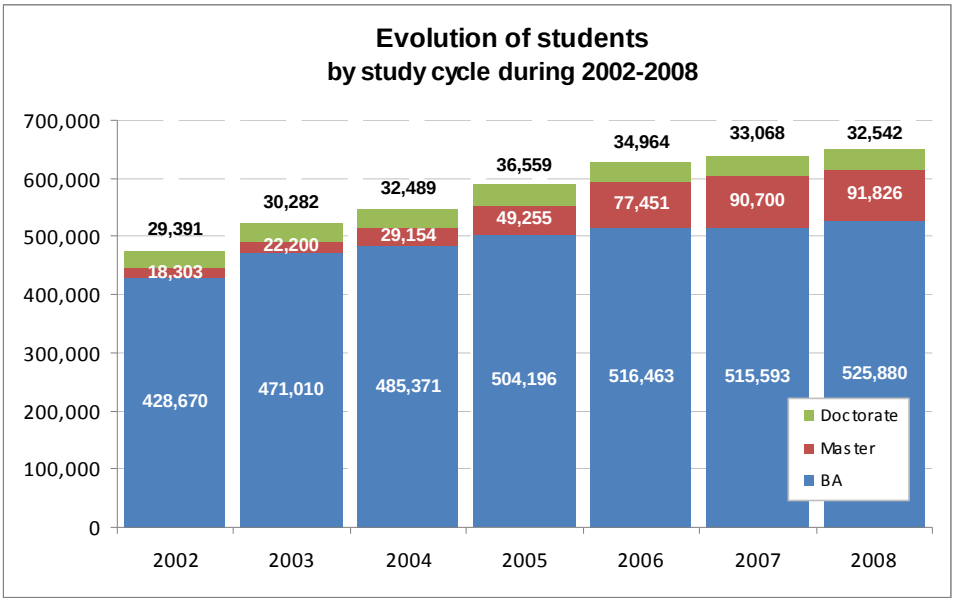



**Table 2. Yearly evolution of students in public higher education, by study cycles, during the period 2002-2008**

| | 2002 | 2003/2002 | 2004/2003 | 2005/2004 | 2006/2005 | 2007/2006 | 2008/2007 | 2008 |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Total students |
| Total | 476 364 | 9. 89% | 4. 49% | 7. 86% | 6. 59% | 1. 67% | 1. 70% | 650 248 |
| BA | 428 670 | 9. 88% | 3. 05% | 3. 88% | 2. 43% | -0. 17% | 2. 00% | 525 880 |
| Master | 18 303 | 21. 29% | 31. 32% | 68. 95% | 57. 24% | 17. 11% | 1. 24% | 91 826 |
| **Doctorate** | **29 391** | **3. 03%** | **7. 29%** | **12. 53%** | **-4. 36%** | **-5. 42%** | **-1. 59%** | **32 542** |
| Day courses | 2 198 | 43. 18% | 4. 13% | 29. 42% | 36. 15% | 19. 47% | 13. 90% | 7 857 |
| Distance learning | 27 193 | -0. 21% | 7. 65% | 10. 63% | -9. 68% | -10. 35% | -5. 67% | 24 685 |
| | | | | | | | | Students on state budget |
| Total | 293 563 | 3. 82% | -4. 05% | 1. 06% | -1. 46% | -0. 13% | -0. 59% | 289 132 |
| BA | 256 300 | 3. 48% | -5. 99% | -0. 56% | -0. 63% | -0. 35% | -1. 86% | 240 919 |
| Master | 9 134 | 20. 26% | 15. 05% | 10. 86% | 11. 49% | 29. 72% | 34. 21% | 27 195 |
| **Doctorate** | **28 129** | **1. 60%** | **6. 67%** | **10. 25%** | **-12. 98%** | **-14. 19%** | **-16. 25%** | **21 018** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Day courses | 2 164 | 39. 51% | 7. 32% | 29. 26% | 34. 15% | 11. 61% | 10. 99% | 6 959 |
| Distance learning | 25 965 | -1. 56% | 6. 59% | 7. 99% | -19. 69% | -20. 32% | -25. 33% | 14 059 |
| | | | | | | | | Students paying tuition fees |
| Total | 182 801 | 19. 64% | 16. 40% | 15. 67% | 14. 67% | 3. 22% | 3. 62% | 361 116 |
| BA | 172 370 | 19. 39% | 14. 70% | 8. 56% | 5. 40% | 0. 00% | 5. 50% | 284 961 |
| Master | 9 169 | 22. 31% | 47. 27% | 113. 40% | 75. 43% | 13. 92% | -8. 24% | 64 631 |
| **Doctorate** | **1 262** | **35. 02%** | **17. 66%** | **47. 13%** | **93. 83%** | **39. 40%** | **44. 57%** | **11 524** |
| Day courses | 34 | 276. 47% | -71. 09% | 43. 24% | 194. 34% | 302. 56% | 42. 99% | 898 |
| Distance learning | 1 228 | 28. 34% | 24. 87% | 47. 21% | 91. 99% | 32. 02% | 44. 71% | 10 626 |

After 2005, the quantitative relationship between the three cycles of university studies changed:

- the share of students registered in BA programs tends to decrease;

- the share of students registered in master programs increased from 3.84% in 2002 to 14.12% in 2008. According to many estimates taking into account the demographic changes, this share will continue to grow until 2011, and then will relatively decline;

- the share of PhD candidates has remained relatively constant, around 5%, although compared to 2002, when the share was 6.17%, it declined after 2005, mainly due to a diminution in the flows of PhD students by distance learning paying tuition fees.

**Figure 2. Structure of the doctoral system following the form of learning (day courses, distance learning)**

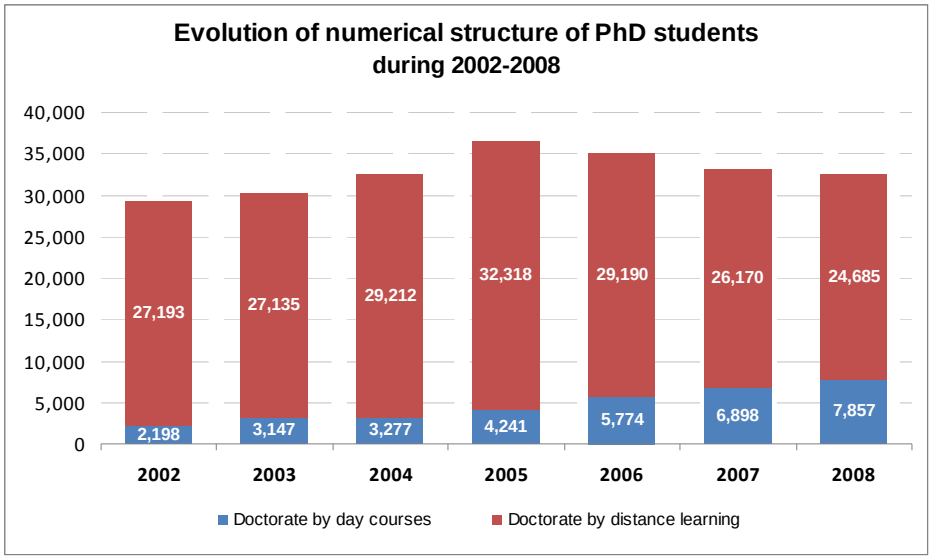
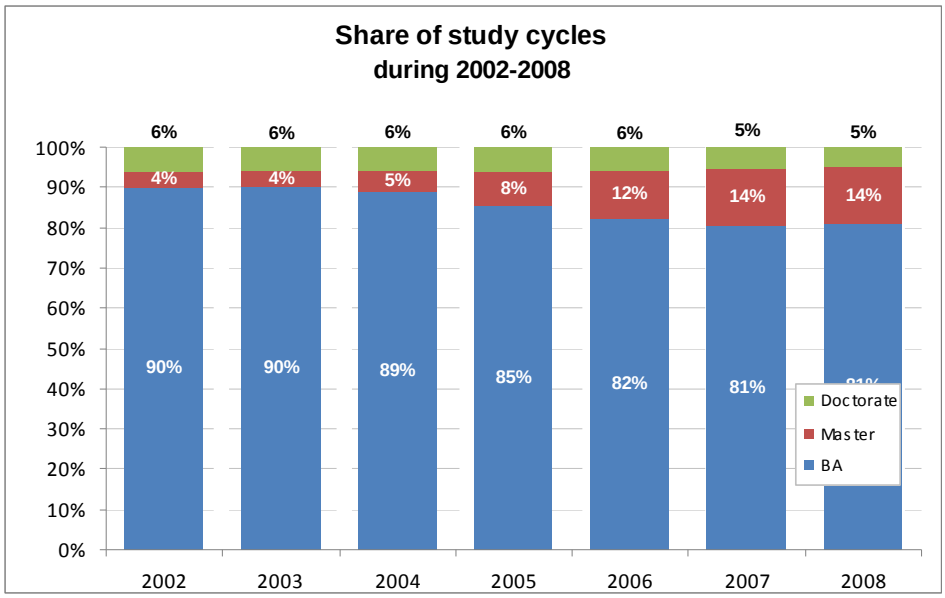



**Figure 3. Evolution of university study cycles among the total number of students, in the period 2002-2008**




The changes in student flows are associated with the changes in public funding of higher education. Figure 4 presents such changes. While in 2002 62% of the enrolled students in the public universities were subsidized from the public budget, in 2008 the share was 44%, so the majority (56%) were paying for their education. Following the application of Gov. Decision 567/2005, the share of PhD students paying for their education doubled, going from 8% in 2005, to 16% in 2006

(Figure 5). The most important trend, however, is the growth of the share of PhD students subsidized from the state budget from 4% in 2002 to 35% in 2008.

**Figure 4. Evolution of the share of students covered by public budget among the total number of students, in the period 2002-2008**

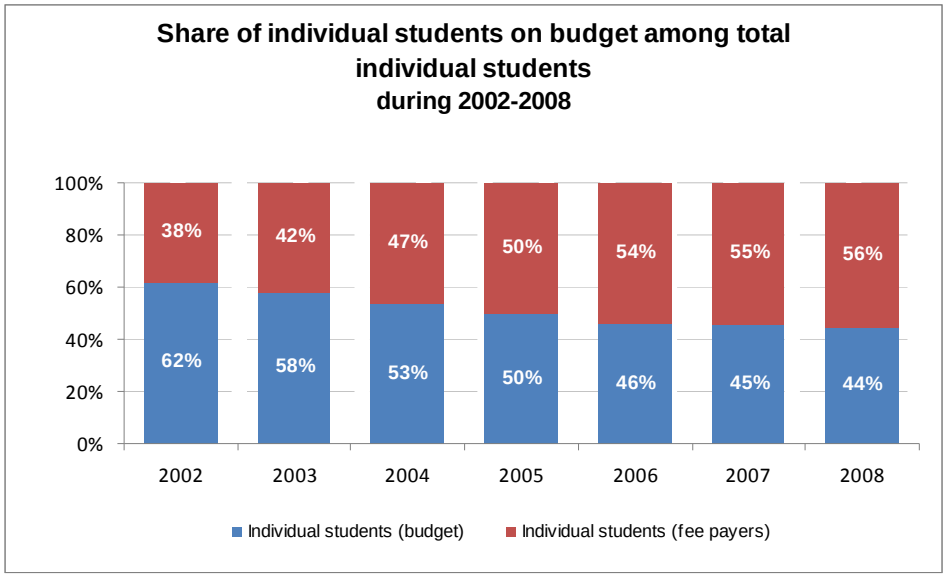
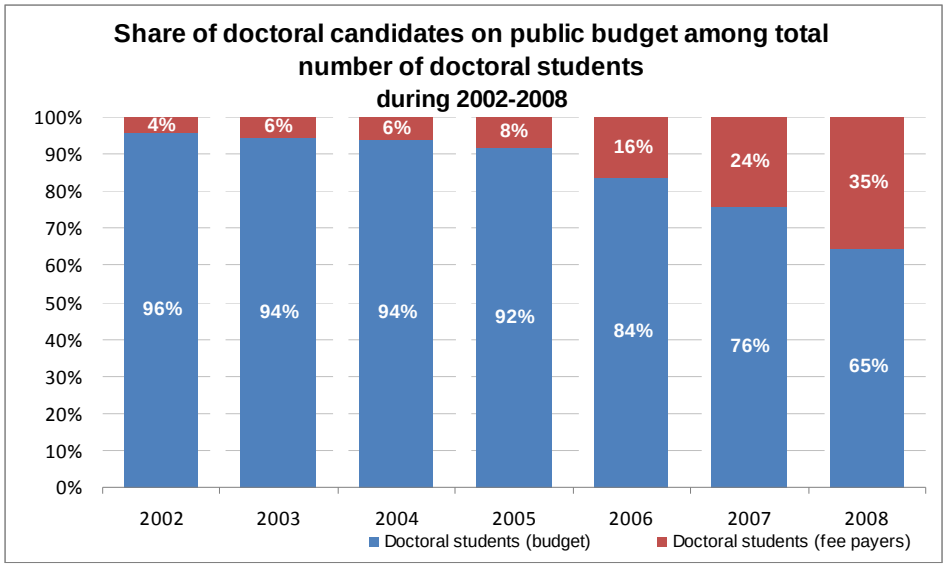



**Figure 5. Evolution of the share of doctoral candidates subsidized from the public budget among the total number of doctoral candidates**



When considering the share of PhD candidates financed from the public budget among the total number of students financed from the public budget, there is a steady decline, from 9.58% in 2002 to 7.27% in 2008.

**Table 3. Share of doctoral candidates on public budget among total number of students**

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|
| Total | 8. 35% | 9. 58% | 9. 38% | 10. 42% | 11. 37% | 10. 04% | 8. 63% | 7. 27% |
| Technical | 7. 13% | 7. 50% | 7. 12% | 8. 15% | 8. 61% | 7. 56% | 6. 77% | 5. 94% |
| Architecture | 4. 61% | 6. 33% | 8. 22% | 8. 08% | 7. 05% | 6. 29% | 6. 71% | 7. 76% |
| Agronomic | 17. 09% | 17. 13% | 15. 60% | 16. 59% | 17. 30% | 14. 92% | 13. 14% | 11. 27% |
| Sciences | 10. 00% | 11. 77% | 11. 13% | 11. 02% | 12. 68% | 11. 71% | 10. 65% | 9. 45% |
| Social Human | 7. 42% | 8. 51% | 8. 12% | 8. 90% | 10. 42% | 9. 27% | 8. 13% | 6. 78% |
| Medicine | 12. 45% | 16. 74% | 16. 55% | 19. 57% | 20. 74% | 19. 34% | 16. 08% | 13. 23% |
| Economics | 7. 74% | 8. 70% | 8. 79% | 9. 22% | 10. 62% | 8. 51% | 6. 36% | 4. 68% |
| Arts & Sports | 4. 25% | 5. 01% | 6. 39% | 7. 98% | 9. 02% | 7. 89% | 6. 75% | 5. 85% |

**Table 4. Share of doctoral candidates on public budget among total number of doctoral candidates, period 2002-2008**

| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|
| Total | 95. 71% | 94. 37% | 93. 83% | 91. 93% | 83. 65% | 75. 90% | 64. 59% |
| Technical | 97. 73% | 97. 16% | 97. 17% | 96. 33% | 89. 21% | 83. 55% | 76. 06% |
| Architecture | 100. 00% | 88. 33% | 98. 13% | 95. 81% | 87. 00% | 73. 78% | 69. 88% |
| Agronomic | 98. 55% | 97. 49% | 97. 35% | 94. 54% | 85. 28% | 74. 53% | 62. 96% |
| Sciences | 99. 03% | 98. 69% | 98. 07% | 97. 91% | 92. 93% | 87. 26% | 77. 71% |
| Social Human | 95. 23% | 93. 85% | 90. 72% | 90. 29% | 81. 68% | 70. 94% | 60. 44% |
| Medicine | 92. 21% | 90. 57% | 91. 47% | 89. 81% | 79. 77% | 72. 67% | 55. 30% |
| Economics | 94. 46% | 91. 54% | 90. 41% | 83. 00% | 72. 37% | 62. 89% | 50. 33% |
| Arts & Sports | 87. 04% | 87. 08% | 87. 64% | 86. 94% | 78. 51% | 68. 14% | 57. 52% |

In addition, in the academic year 2008-2009, scholarships were introduced for PhD candidates from EU Structural Funds with subsidies from the national budget for institutional expenditure on doctoral study programs. These funds were allocated only to public universities. The PhD candidates from national research institutes are usually enrolled in universities to which they pay a fee. The PhD candidates from the

Romanian Academy are subsidized from the latter's budget, which is, at least partially, from the state budget.

The PhD candidates financed from the state budget are mostly enrolled in the fields of agronomics and medicine. If we changed the CNFIS classification of the fields of study, we find that the technical field has a modest share, the sciences have an acceptable share, and the share of medical sciences, agronomics, architecture and socio-economic and human sciences is remarkably high. The data can be read in different ways when considering the share of doctoral students subsidized from the public budget in the total number of enrolled doctoral students (Table 4). In 2002, 95.71% of the PhD students were subsidized from the State' budget. After 2005, their share fell by about 10 percent annually and reached 64.59% in 2008. The fields of sciences, engineering and architecture are above this average, while others are below the national average. It appears that the share of applications for PhD education is higher in the fields of economy, social and human sciences, medicine, and arts/sports. The field of PhDs with interdisciplinary topics and/or which can be achieved through inter-institutional cooperation is totally ignored, although the actual production of knowledge is not only disciplinary or mono-institutional. The cooperation between the research institutes and universities is weak, much lower than the available potential. Within an institution, there is no framework of common themes to cross the boundaries between disciplines.

In the doctoral programs by distance learning, for the PhD candidates who are not working in academic or research institutions, the duration for completion of their PhD studies is higher, and so are the drop-out figures. The quality of their theses is also considered lower. Under such conditions, a potential conflict seems to exist between the advocates of exclusively PhD day courses in laboratories and research centers, especially in sciences and engineering, and the advocates of maintaining PhD studies both by day courses and distance learning in other disciplinary areas. The problem regards, however, not only the organization of doctoral studies, but also the identification of the profile and content of the doctoral theses, namely using the results of the doctoral research in publications and/or innovation. Thus comes the distinction already made in many doctoral systems between the doctorates in sciences (i.e. centered on the production of knowledge) and the professional doctorates (production of cognitive innovations or technological or artistic/sports performance).

Another implication, closely related to the previous one, is of financial nature. So far, we have witnessed a relative decline in the number of PhD students, especially as a result of a decrease of PhD students by distance learning, who are individual fee payers, and also an increase in the public budget allocated to doctoral studies. We still do not have private investments in doctorates. The doctorate is too much seen as a "glass bead game", to use the words of a famous German writer, fully associated with the production of knowledge used in scientific publishing. There are, however, companies interested in cooperating with the doctoral schools, who

seem to be prepared to invest in private doctorates focused on innovation and industrial applications. Or, the possibilities opened by the new university practices may be considered to develop, based on research results, spin-off centers or even start-up companies in science and technology parks. Some modest beginnings were made, but the economy demands more boldness. In any case, the doctorate is facing a new configuration to better match the current world.

About the flows of PhD candidates and the public funding of PhD studies:

The flows of PhD candidates by day courses and distance learning increased steadily until early 2000. Afterwards the number of PhD candidates by distance learning has decreased, while those by day courses, funded from the public budget, has increased. Since 2009, doctoral scholarships appeared in the public universities, which created a new system of doctoral study funding.

We seem to be now on the verge of a new period in the organization and operation of doctoral studies, based on: a growth of the number of PhD candidates by day courses with scholarships, involved in the research projects of their doctoral supervisors, and who are financed on competitive basis. On the other hand, the latter coexists with fee payers PhD candidates by distance learning, who also have to secure their own research funding or participate in funding competitions for doctoral candidates, created *ad hoc* by public sponsors of research. The issue here is: how predictable is a consolidation of the first variant, or how risky is a return to the previous stage of financial and structural imbalances in doctoral system?

The relations between the academic institutions organizing doctoral programs and the private sector in the real economy are almost inexistent. The doctoral studies are exclusively funded out of public funds, including European funds.

The interdisciplinary doctorates or the doctorates achievable through inter-university cooperation are also almost inexistent. The cooperation between academic and research institutions is minimal or deeply fragmented.

The share of public funding allocated to doctoral studies on disciplinary areas appears to be random, without any clearly defined strategic options. Therefore, a review of budgetary allocations for doctoral studies development in science and engineering, and especially in the areas associated with the real economy requirements could be considered in the near future.

## *Status of Doctoral Candidates*

A comparison between the traditional status of the doctoral candidates and its new status shows a source of change in the doctoral system. In our academic

tradition, a person first had to become a researcher or an academic, and was afterwards enrolled in a doctoral program. The reverse was an exception and not the rule. Accordingly, obtaining a doctorate and a better professional position almost coincided in time. The personal status was double – from a doctoral student by distance learning to a researcher hired on permanent basis. The purpose of PhD studies was to confirm and strengthen the existing position, and afterwards became a condition for professional promotion. The effect of this practice on the PhD studies was threefold:

- the doctoral studies did not have separate funding, as they were carried out by people already employed under the supervision of seniors from the same institution;

- the doctorate was formally by distance learning;

- the PhD candidate' status was formal and primarily academic or (often junior) researcher.

A PhD student had to deal at the same time with the job requirements and the demands of the doctorate, and the doctoral supervisor had the privilege to plan the workload of PhD studies. The first was in the process of apprenticeship, subject to multiple requirements, including administrative ones, and only had a reduced autonomy in achieving his or her doctoral research. Obtaining a doctorate was, however, the condition for survival and/or getting promoted in the system.

In the period after 1995 several important changes occurred. First appeared the baseline funding of higher education, including PhD studies, and the fee system in public universities. There was a twofold consequence. Firstly, some universities received funding for a number of doctoral study positions. The PhD candidates accepted on the positions supported out of the public budget did not pay any fee, but they also did not receive any scholarship, and had to live on their own expense with, for instance, the modest salaries received as university lecturers or junior researchers. The doctoral studies were carried out by day courses and distance learning. Also, a payable doctorate by distance learning was created. PhD candidates with different social and professional positions began their doctoral studies. In the doctoral study programs the doctoral status diversified: day courses PhD students, supported out of the public budget, working in academic institutions were paid salaries out of research funds; distance learning PhD students not paying fees, were employed on non-academic positions; distance learning PhD students worked as university lecturers or junior researchers. The majority were doctoral students by distance learning who were not involved in doctoral study programs, as they worked/carried out research on their own, under the occasional supervision of their doctoral supervisors.

The doctoral student's status was fragmented: PhD candidate after the working hours and employee during the day. As a result, the drop-out of PhD studies became a frequent phenomenon. A significant hiatus occurred between the number

of enrolled PhD students and the much lesser number of PhD holders. Also, the average duration of the doctoral studies was about 7-8 years and led to the development of a series of bureaucratic practices for extension or unexpected interruption of individual doctoral programs. The day courses doctorate became associated with a peculiar academic clientelism: some more "popular" doctoral supervisors came to supervise more than 50 candidates, and ignore the rule of law limiting their number to 15.

After 2008, with the possibility of using funds from the European Social Fund, doctoral scholarships were added to the system already in place. It created doctoral candidates by day courses with scholarships, who had a clear and specific academic status, but no definite social status. The desire to build a university or research carrier sometimes and somehow is what motivated them to apply for a PhD[12]. The questions related to the academic status of a PhD candidates abound: are PhD candidates students or junior researchers (trainees)? Are they receiving a scholarship or a salary? Where will they work after they get the title of doctor? How will PhD candidates by day courses build their future professional career? For now, such questions have no clear institutional responses.

In all cases, the status of PhD students by day courses or distance learning, receiving money from the public budget or paying their doctoral study, employed in academic or research institutions, or holding a doctoral scholarship is inconsistent. The PhD candidates' status is based on: an agglomeration of social non-convergent roles; a subordination of the doctoral role to others, often different from the doctoral profile; a non-recognition of social status and assimilation to the status of an elder student. Such condition is completely contrary to all European trends. In the Scandinavian countries[13], the PhD students by day courses receive now wages and are treated as mature individuals, employed as interns or junior researchers. The European Commission has defined a set of documents regarding the status of researchers, including PhD students, and has adopted a "Code of Conduct for the Recruitment of Researchers" [14]. The European Council for Doctoral Candidates and Young Researchers (EURODOC) is in favor of introducing stable employment contracts for the PhD students, and the definition of clear and distinct trajectories of future careers for junior researchers, such as the doctoral candidates.

Abandoning the present status of PhD students in our system involves first abandoning the traditional way we relate to the doctorate. The current doctoral programs are designed as study and research programs opened to elder individuals, to prepare them for academic or non-academic careers in a knowledge economy.

[12] For details, please see the section in the **Quantitative Report** regarding *"Incentives for doctoral candidates to carry out research work during their doctoral study and for their subsequent involvement in a research carrier",* pp121-124.
[13] Cf. : A. Steinwall, *Delivering high quality doctoral programmes – a Scandinavian perspective.* Presentation at UKCGE European Summer Conference on: "New Dimensions for Doctoral Programmes in Europe: Training, Employability and the European Knowledge Agenda", Florence (Italy), 2006. Apud: C. Park, **Op. Cit. ,** p. 16.
[14] European Commission, **The European Charter for Researchers,** and **The Code of Conduct for the Recruitment of Researchers (**see the corresponding website of the EC**)**

We must separate from the view in which the targeted population for doctoral programs concerned almost exclusively the lecturers from universities or research institutes. To be a doctoral candidate today means having a clear status of junior researcher, with a salary and the right to autonomously build a future professional career in a transparent and predictable environment. A PhD candidate by distance learning should also have adequate institutional facilities available for learning/research and building a future professional career. The *European Charter for Researchers* and the associated *Code* should become normative documents for reference and institutional practice.

About the Status of Doctoral Candidates:

One major contradiction of our doctoral system is between the traditional and the emerging status of the doctoral candidates. The first is still dominant, according to the law and the current institutional practices. The second type of status, the emergent one, is already generalized in many European systems. It is required by European Union regulations and recommendations of some European institutions. A change in the doctoral candidates' status in our system is to be expected.

The current status of the doctoral candidates is inconsistent, made of an incoherent agglomeration of roles which impact on the potential performance of the doctorate and of the doctoral candidate.

We have a variety of PhD candidates: by day courses or distance learning; supported out of the public budget or fee payers; already employed in academic/research institutions or with no connection whatsoever with research; with or without scholarships, etc. For all, regardless of their status, the requirements and diplomas are rhetorically presented as similar or equivalent, but the training and research experience, and mostly the performances vary significantly.

Most often, if not exclusively, in Romania employment in universities and research precedes the enrollment in doctoral programs and a PhD title. The natural order of things is thus reversed: the doctoral research training is preceded by the professional employment in research/universities. Hence many personal and institutional negative consequences.

The inconsistency of the doctoral status is associated with a high drop-out rate and/or a prolongation of the doctoral studies, which means institutional inefficiency, personal frustration, and multiplied bureaucratic practices or even arbitrary approaches.

Intermediate conclusion: ensuring the academic institutional reproduction

The doctorate was invented with the purpose to ensure the reproduction of academic and research higher education institutions, including of the disciplines created by the academic division of knowledge. Today, changes are occurring in the process of academic reproduction, which lead to changes in the institutional position of the doctorate. These changes concern:

- the order and weights of different types and forms of doctorate;
- the recruitment and selection of doctoral candidates;
- the organization of the institutional flows of doctoral candidates;
- the funding of doctorates and PhD students;
- the institutional status of doctoral candidates.

The institutional position of the doctoral candidates can no longer be seen with strict reference to an academic or research institution and without connection to the outer economic and social world. The master and doctoral programs can be so designed as to ensure interdisciplinary and inter-institutional cooperation, especially between the academic world and the real economy and society.

## 4.2 Employability of Doctoral Candidates and the Qualification Market

The doctorate has mostly been, and still is, associated with the academic institutional reproduction, despite some clear trends to absorb doctors in other non-academic sectors. According to some estimates[15], only one third of the graduates of doctoral programs in the UK engage in academic careers, while the remaining two thirds are employed in public or private corporations, or in the nonprofit sector. Therefore, we are currently witnessing changes in the structure of employers of doctors in sciences, in the profile of the doctoral qualifications, and also in the expectations of the doctoral candidates. These are all getting back to the organization and structure of doctoral programs by catalyzing the changes related to doctoral employability.

### *Multiplication of Employers and Expectations*

If all PhD candidates would only prepare themselves for academic or research careers, the classic doctorates would not need many adjustments to adapt to the

[15] UK GRAD, **What do PhDs do?,** Cambridge, 2004**.** And: **What do PhDs do? A regional Analysis,** Cambridge, 2006. And: **A survey into career motivations and expectations of doctoral researchers,** Cambridge, 2006.

present times. However, we are far from it. Nowadays the doctoral courses vary greatly. The doctoral programs are far from being uniform, varying from one university to another and inside the institutions organizing doctoral programs. The final destination of those who have obtained the title of doctor is also changing. The current status is very dynamic and diverse, especially considering the future careers of the doctoral candidates, their reasons and expectations. Let's explore some of the reasons for these changes.

First, the universities have changed. The most relevant aspect to be mentioned is the emergence of university and faculty' entrepreneurship. The participation in national and European competitions for research funds; obtaining additional income from technical advice; setting up and managing enterprises in the economic market; applying academic marketing strategies to attract students; and other similar practices are not isolated anymore. They entered the repertory of many academics and researchers, in many universities and colleges, and those who have not yet adopted them are in a precarious situation that will force them not only to adopt these practices, but also to improve them. The doctorate can no longer be viewed as isolated in relation to such developments. On the contrary, it tends to become an institutional forerunner as entrepreneurial doctorate.

Secondly, the number of employers multiply rapidly in an economy in which managers trained in production management, value adding, and knowledge application are increasingly sought after. In all developed countries the number of PhD holders in the non-academic sectors, has long exceeded the same in the academic sector.

Finally, the fluctuations in the labor market and the wages are associated with the professional mobility of the faculty. Instead of the traditional academic stability of academics and researchers, a professional mobility was established, where their academic employment could take in some extreme cases the lesser part of their workload compared to the multiple extra-academic activities they may undertake using their high expertise. There is also a reverse flow, from the economic to the academic: people with managerial experience and expertise in design and knowledge management head, after a while, towards the academic world to teach and conduct research. For now, this flow is completely ignored, although the ways to establish closer partnerships between the academic institutions and the economy are worth exploring.

When considering such trends, the doctoral programs are subject to pressures of change. For instance, in the U.S., the National Science Foundation[16] has developed a series of surveys focusing on the future careers of the doctoral candidates, and OECD insistently sought to develop comparative analyses of the future careers of the doctoral candidates, both trying to identify the best ways of establishing doctoral programs in the current world.

[16] National Science Foundation, Survey of Earned Doctorates, 2006, and Survey of Doctoral Recipients, 2006.

Our doctoral programs are not immune to such trends. Aren't our universities and academics entrepreneurial? Aren't our academics and researchers professionally mobile, in non-academic carriers? Aren't our doctoral students exploring various non-academic careers? These questions are obviously rhetorical. But the doctoral programs still seem to be largely designed and organized as if they still were in a classical universe. Even the new doctoral schools proposed specialized courses following the ex-department approaches and repeating too much of the knowledge assimilated through the master's programs. The communication or management experiences are little explored, and the emphasis is placed almost exclusively on the classical academic exercises. Between doctorates and masters appropriate relationships of continuity were not established.

But this state of things does not seem able to resist any longer the pressures of change. We could say that we have reached a time when synchronizing the design and operation of the doctoral studies with the trends of the real world and life has become a mandatory requirement. Especially considering that there is still no harmony between the expectations of the PhD holders, and those of the non-academic employers. The first emphasize their academic training in research, whereas the latter expect the PhD holders to be aware of the importance of the market, and of the need to combine specialized knowledge with a comprehensive cognitive universe or display their entrepreneurial skills.

For our present doctoral candidates, the orientation towards a future academic training and career is still dominant (see Table 5). According to the mentioned survey, the doctoral candidates under 30 who have 3 or more years as PhD students (who joined the doctoral programs in 2005 or earlier), have already published articles in Romania or abroad, and those who had research grants and did not pay tuition fees for the doctoral programs are more interested in academic careers. They are the majority. On the opposite side, we mention the authors of empirical investigations, doctoral candidates who believe there are benefices outside the academia. They are the doctoral candidates over 40 years old or those who were admitted to doctoral studies in 2008, who do not have published work, and have not participated in research grants. They pay fees for their doctoral studies, and are enrolled in distance learning programs. In other words, these doctoral candidates appear to form a group who joined the PhD studies later or who did not have access to scholarships and free education. They are the ones expecting from the doctoral programs a more obvious orientation to the practical aspects of the extra-academic world.

**Table 5. Agreement of doctoral candidates in various fields with a few statements concerning the practical purpose of doctoral studies**[17]

[17] This table shows the results of an online questionnaire of PhD students. For more details, see the analysis coordinated by Dr. Bogdan Voicu.

| | A doctorate is useful only to those wishing to pursue an academic career | The doctorate is practically useless for the career I plan to have | The **d**octorate is useful mainly for a wage increase | The doctoral training significantly helps the personal development of the doctoral candidates |
|---|---|---|---|---|
| Exact sciences | 58% | 7% | 27% | 83% |
| Social sciences, law, and security sciences | 44% | 9% | 16% | 84% |
| Humanities | 50% | 7% | 18% | 86% |
| Engineering | 52% | 11% | 23% | 88% |
| Agronomics and veterinary medicine | 49% | 8% | 30% | 90% |
| Medicine and Pharmacy | 44% | 7% | 17% | 78% |
| Economy | 46% | 9% | 16% | 85% |
| Arts, Architecture, Sports | 53% | 8% | 23% | 92% |
| Total | 50% | 8% | 21% | 85% |

* The figures represent the share of PhD candidates in each area who have expressed their agreement regarding the statement specified in the column. Ex: 58% of the PhD candidates in exact sciences think that "a doctorate is useful only to those wishing to pursue an academic career".

The bold figures, placed on blue background, indicate significant positive associations at the cell level, while those placed on red background indicate negative associations. (to be read: the PhD students in medicine considered a lot less than others that "the doctoral training helps the personal development of the doctoral candidates").

The diversity of the doctoral programs and doctoral candidates could be seen as a connected. However, this is not true. The diversification axes have other sources and create at present an overall picture of *laissez-faire & laissez-passer*. the main source appears to be the lack of a well structured institutional control. However, the catalysts of change are in action and new systems and configurations are to be expected in our doctoral programs.

About „ The employability of PhD holders and the qualifications' market":

The employability of the graduates of doctoral programs tends to be extended. The doctoral programs are diversifying. If, until recently, the doctorate was meant to ensure the institutional reproduction of the academic and research world, the doctoral graduates are now expected to take positions in the non-academic sectors. This trend has emerged and became a

significant catalyst of change in the doctoral systems and programs. Signs of these changes have already become visible:

The academics and the universities are more and more entrepreneurial, and so is the doctorate expected to become, through contents and results.

The number of employers of doctors in sciences grew, in addition to the classics employers, universities and research institutes.

The occupational mobility of professors and researchers has increased, away from the traditional formula of "life-long" stability in academic citadels. So do some employees, actually the best performing ones from non-academic organizations, who endeavor to return teaching and carrying out research in the academia.

For now, however, our doctoral programs and the dominant ethos of the PhD students are still mostly academia oriented.

There are tensions and gaps between the pressures induced by the catalysts of the new changes and the current configurations of the doctorate, and the ethos of the doctoral candidates. The look and content of the future doctoral programs depend on their solving.

### *Changes in the Doctoral Qualifications Profile*

The Bologna Process has not only changed the structures of the study cycles. One of the most important changes induced in higher education is the definition of university qualifications profiles within the European Qualification Framework, which is complementary to the National Qualifications Framework. Therefore, the qualifications obtained through a doctorate or the descriptors associated with this qualification have become a reference for any European doctoral program. These descriptors are organized in three categories of reference: specialized knowledge; skills and competencies associated with research, knowledge production, use and application of knowledge; „transversal" skills and competences, public communication of knowledge, and particularly management skills and competencies (applied to projects or organizations).

Achieving these generic skills and areas of specialty is not an optional matter. It is included in the European legislation and has implications related to the recognition of the title of doctor in the context of international mobility. Moreover, the doctoral programs are designed to eliminate any isolation of the doctoral candidate, and to open to him or her the real world of alternative professions.

The recent changes in the European doctoral qualifications profile have become sources of new crystallizations and dedication in our doctoral programs. The problem is that of their rapid and creative assimilation.

About "Changes in the profile of doctoral qualifications"

A new catalyst of change has recently started to show in the doctorate. After 2006, the European Union has established by law the "European Qualifications Framework". Each country participating in the Bologna Process has completed or is about to complete its „National Qualifications Framework". Romania is part of this process. The doctorate is the highest level of qualification in this framework. By profile and content, the doctoral qualifications, defined in broad terms, are to guide the construction of all doctoral programs.

## 4.3 Globalization of Doctorate

From the beginning, the university had the vocation of "universality". Then, during the period of initiation and strengthening of national States, the universities have become some of the most important symbols of the nations. Their areas of reference were limited as regards the functions they had to fulfill, but the knowledge produced, transmitted and enhanced has never ceased to be universal. In the late Twentieth Century as a result of the globalization wave, the universities have become pillars and universes of conscience and of globalization actions. The academic policies are now developed from global perspectives; academic performance' comparisons are made globally, either by ratings ("global league tables of universities"), or by information in publications in databases with universal vocation of the presentation and analysis, regarding both the moves of students and faculty. In this new framework, the doctorate is expected to naturally become the most comprehensive program of studies and research in universities. The increasing globalization in all societal sectors appears as a significant catalyst of the configuration of PhD studies.

The catalytic effects of globalization show in the field of doctoral studies in a diverse and progressive way.

### *Progressivity of Globalization and National Impact*

First, before going into a global space, we should consider the Europeanization of the doctoral studies, especially as the Bologna Process is already a state of fact, and our universities and faculty are already part of it. In this process, the most active European player proved to be the European University Association (EUA)[18]. The EUA projects have made progresses towards the identification of the descriptors of doctoral qualifications; schools and doctoral

[18] EUA, "*Doctoral Programmes for the European Knowledge Society. Report on the EUA Doctoral Programmes Project*", 2005-2006; "*Doctoral programmes for the European Knowledge Society*", *Salzburg, 3-5 February 2005. Conclusions and Recommendations; "Glasgow Declaration: Strong Universities for a Strong Europe, 2005.* For further details, see the EUA web-site.

research have been initiated in almost all European universities, including Romania; and a European inter-university cooperation in the field of doctoral studies was established (i.e. EUA Council on Doctoral Education) joined by some Romanian universities; and even a kind of "European Doctorate" was initiated based on inter-university cooperation. The most important initiative has been to set up a separate profile of European PhD studies in the global academic competition, following the well-known principle of "local" participation and affirmation in the global flows. Once the European doctorate would become globally competitive, its attraction for the creative talents from everywhere, and for the doctoral candidates and doctoral supervisors, would become increasingly large and intense.

Where do our doctorate stand considering these European developments in the global context? In formal and functional terms we are well synchronized with the European developments. We have multiple doctoral schools, predominantly organized by disciplines; we have rearranged the content of our doctoral programs, and have introduced advanced preparatory courses; we have multiplied the number of doctoral candidates by day courses, including the ones receiving doctoral scholarships in competitive amounts on the labor market.

The internationalization of the contents of the doctoral programs is, however, mostly deficient. The online survey on doctoral candidates and doctoral supervisors showed, for example, that the intention to attend international scientific conferences is highly valued by 74% of the doctoral supervisors and by 92% of the doctoral candidates. However, the average participation was minimum 0.3 and maximum 2.7 to such events. The gap between the desire to participate and the actual participation is huge, especially in social sciences, humanities, medicine and agronomics. The publications abroad follow, as we will see later on, the same trend. The relations between our doctoral schools and the ones abroad are, with some notable exceptions, quite little developed. The attractiveness for the doctoral students abroad is minor, but the migration rate of the best graduates of BA and master's study is still very high.

### *Various Implications of Globalization*

Disciplinary and sectorial differences are expected to show in our doctoral system, considering the effects of globalization. They show differently in engineering, exact sciences, and in humanities, social sciences or arts. The issue does not concern the degree of impact of the globalization, but the shape of this impact. This means that all disciplines must respond to the pressures of Europeanization and globalization, but in different forms to be identified.

About: globalization of doctoral studies

Progressivity of globalization:

The doctorate is the academic study cycle which changes the most under the impact of globalization. The academic mobility of the doctoral students and academic supervisors; the doctoral partnerships between the doctoral schools; the events and scientific publications are all forms of globalization. The Europeanization, as part of the globalization, is in the process of affirmation. Formally, the doctorates of the Romanian universities are plainly in the process of Europeanization, especially through the organization of doctoral schools. However, when we consider the operation and performance of the doctoral studies in universities, we face some gaps: reduced academic mobility, limited number of European and global partnerships, little participation in international conferences and not many works published in journals of high impact by the doctoral candidates and their supervisors.

Recuperating such gap under the progressive acceleration of globalization is a remarkable catalyst for changes in our doctoral system.

Miscellaneous developments:

The disciplinary and sectorial responses of the doctorate are mostly different, but not optional. Each discipline and sector has started building the most appropriate response to the globalization effects and to participating in the process.

# 5 Configurations

In this part we analyze the various components of the doctoral studies, based on reports and evaluations of the surveys on disciplinary and thematic areas. For systematic reasons, the text below is organized as follows:


Organisation of doctoral schools
Relationship between Universities and Research Institute
Study Duration
Day Courses and Distance Learning Doctorate
Scientific and Professional Doctorate
Administration of Doctoral Schools
Admission to Doctorate
Financing
Status of Doctoral Candidates and Supervisors
Status of Doctoral Candidates
Status of Doctoral Supervisor
Doctoral Candidate – Supervisor Relationship
Academic Quality in Doctoral Studies
Curriculum Quality
Research Performances
Evaluation of Doctoral Students' Activity
Quality Assessment
Institutional Procedures
Transparency
Opening of Doctoral Studies
Interdisciplinarity
Social and Economic Relevance
National and International Cooperation

## *5.1 Organization of Doctoral Studies in Romania*

The operation of the current national doctoral studies system is marked by the transition towards the Bologna system. This systemic change generates conflict zones between the institutionalized practices of the previous system, and the ones initiated under the current system. The field reports draw attention to such areas where the re-structuring is still diffuse, such as: the harmonization of PhD studies in universities and research institutes, the management of doctoral schools, the regulation of the duration of doctoral studies, and the forms of differentiation of doctoral studies.

The relative merits of the organization of Bologna doctoral studies compared with the traditional organization are controversial topics among the doctoral supervisors and students: the dominant opinions vary from one area to another and are characterized by significant minorities of the contrary opinion. For example, approximately 70% of the doctoral supervisors in the field of exact sciences believe that the traditional organization was better, compared to 38% in Medical Sciences. Except for the field of economics, where 70% of the doctoral supervisors find that the doctoral school has an appropriate form of organization, in the other fields the views are controversial, as they are only shared by 50-60% of the doctoral supervisors. The main controversial aspects of the current organization refer to the distinction between the training program and the scientific research program, and to limiting the doctoral studies to 3 years - topics explored in detail in the sections below.

**Table 6. Opinions of doctoral supervisors and students regarding the form of organization of doctorates by field of study**

| % agree with the statement… | The doctoral school is an appropriate form of organization | The Traditional organization was better | The credit system is pointless in the organization of doctoral studies | The distance learning doctorate is not different from the day courses doctorate | The distance learning form is not adequate for the doctorate |
|---|---|---|---|---|---|
| **Doctoral supervisors** | | | | | |
| Exact sciences | *49%* | **69%** | **67%** | 46% | 38% |
| Engineering | 60% | 59% | **65%** | *40%* | **44%** |
| Social Sciences, Law, and Security Sciences | 64% | 60% | 57% | 56% | 27% |
| Humanities | 62% | 65% | 56% | 55% | *26%* |
| Economy | **72%** | 55% | 48% | 57% | 28% |
| Medicine and Pharmacy | 60% | *38%* | *49%* | 55% | 30% |
| Agronomics and Veterinary | 62% | 59% | 53% | 51% | 35% |

| | | | | | |
|---|---|---|---|---|---|
| Medicine | | | | | |
| Arts, Architecture, Sports | 50% | 60% | 44% | 56% | 13% |
| Total respondents | 59% | 59% | 59% | 48% | 35% |
| **Doctoral candidates** | | | | | |
| Exact sciences | *41%* | **61%** | **64%** | 50% | 26% |
| Engineering | **56%** | 49% | **57%** | *39%* | **35%** |
| Social sciences, Law, and Security Sciences | 50% | 45% | 45% | **54%** | 26% |
| Humanities | *46%* | **52%** | *44%* | 50% | 28% |
| Economy | 50% | 44% | *40%* | **54%** | *21%* |
| Medicine and Pharmacy | **57%** | *32%* | *44%* | 50% | *24%* |
| Agronomics and Veterinary Medicine | 54% | 45% | 56% | *37%* | 32% |
| Arts, Architecture, Sports | 55% | 41% | 43% | 54% | 22% |
| Total respondents | 51% | 47% | 51% | 47% | 28% |

Source: Report of Quantitative Survey

The credit system is poorly institutionalized, and the doctoral candidates do not have the possibility to choose among many courses. A significant proportion of doctoral candidates and supervisors, over 40% in all fields, rather see it as a form without substance in operation.

In the absence of clear organization, the innovation and best practices are focused on repairing the deficiencies, and have a reduced visibility in the community. The need to organize more effectively the doctoral studies and clarify their logic is therefore evident.

### *Relationship between Universities and Research Institutes*

The current doctoral system in Romania is different on several general lines. The Bologna system doctorate, organized according to Law 288/2004 and the Government Decision no. 567/2005, coexist with the pre-Bologna doctorate, about to be abandoned. Then again, the Bologna doctorate co-exists with the doctoral studies organized by the research institutes of the Academy, currently following a classical training of 4 years by day courses and 7 years by distance learning. Agreements can

be entered between the Academy institutes and the university institutions organizing doctorates during the period of advanced training program[19].

Although the national research institutes cannot organize academic doctoral studies, in practice, many PhD students and supervisors carry their research activity in research institutes, without entering a formal partnership. The Government Decision no. 567/2005 states that "the Romanian Academy Institutes and other research institutes in Romania and abroad can participate in the cycle of university doctoral training through consortia with the university institutions organizing doctorates". The lack of such consortia have negative consequences on institutes and universities[20]:

- the doctoral students in institutes use the institutional resources to complete their doctoral theses, and the institutes do not receive any recognition for the support they provide in their training;

- there are difficulties in the information flow regarding the opportunities offered to the doctoral candidates on the websites of the university institutions organizing doctorates, such as the grants from Structural Funds;

- problems might occur regarding the intellectual property rights between the university institutions organizing doctorates, the institutes and the doctoral candidates;

- the doctoral candidates who not work in research institutes cannot use their research facilities, in the absence of a partnership between the university institutions organizing doctorates and the institutes.

### *Duration of Doctoral Studies*

Except for the medical field, the duration of the current PhD studies is considered too short, both by the doctoral candidates and by the doctoral supervisors. In some fields[21], the lack of correlation of this duration with the duration for conducting a typical research project is also mentioned. The duration of doctoral studies' issue is correlated with:

- the issue of separation between the preparation and the research stage: where the courses are seen as bearing little relevance to the doctoral training, they are perceived as a waste of time;

- the regulation stating that during the preparation period the doctoral candidates will not have a doctoral supervisor or carry out a research project, is often ignored in the practice of doctoral studies[22];

[19] Legislative report, Report of the Romanian Academy
[20] Report on Doctorates in Research Institutes
[21] Report on Agricultural and Forestry Sciences, Zootechnics and Veterinary Medicine, Report on Engineering
[22] Report on Exact Sciences

- the distinction between day courses and distance learning doctorates: the doctoral students by distance learning may have less time to develop their research projects and theses;

- a low correlation between the doctoral and master' studies: a continuation of the master's research projects is not encouraged during the doctoral studies, whereas this continuity would allow a generous period for projects to be carried out.

The duration of the doctoral studies fundamentally reflects the efforts of the doctoral candidates and supervisors to complete the theses. As discussed in the section on the status of the doctoral candidates, under the current system, the doctoral degree is often a secondary activity - even for the doctoral candidates by day courses. The effort to complete a doctoral thesis is often unsystematic, with chronic delays in meeting deadlines, which adversely affect the guidance process[23]. This lack of synchronization also reflects the supervisors' requirements, formed under the previous system in which the doctoral duration was four years and often more.

The sociological survey by questionnaire indicates that three quarters of the doctoral supervisors find that the current doctoral duration is too short. In exact sciences, engineering, agronomics, medicine and veterinary sciences, as well as in humanities the percentage is over 80%. The satisfaction regarding the current duration is considerably larger among the doctoral students in all fields.

**Table 7. Evaluation of current duration of doctoral studies by field of study**

| | Doctoral Supervisors | | | Doctoral Candidates | | |
|---|---|---|---|---|---|---|
| | Short duration | Adequate duration | Long duration | Short duration | Adequate duration | Long duration |
| Exact Sciences | **85%** | *15%* | 0% | **64%** | *35%* | 1% |
| Engineering | **83%** | *16%* | 0% | **61%** | *38%* | *1%* |
| Social sciences, Law and Security sciences | 70% | 30% | 0% | 50% | 47% | 3% |
| Humanities | **87%** | *13%* | 0% | **66%** | *34%* | *1%* |
| Economics | 65% | **35%** | 0% | *33%* | **65%** | 2% |
| Medicine and Pharmacy | *36%* | **63%** | 2% | *32%* | **61%** | **7%** |
| Agronomics and Veterinary Medicine | **86%** | *14%* | 0% | 54% | 44% | 2% |

[23] Report on Human and Social Sciences, Report on Arts, Architecture and Urbanism, Sports; Report of Medical Sciences

| | | | | | | |
|---|---|---|---|---|---|---|
| Arts, Architecture, Sports | 67% | 33% | 0% | 45% | 54% | 1% |
| Total respondents | 75% | 25% | 0% | 53% | 45% | 2% |

Source: Quantitative Survey Report

### *Day Courses and Distance Learning Doctorates*

The differentiation following the learning mode is another controversial aspect of the current organization of the doctoral studies. The two types of doctoral studies are covered by identical provisions on training, duration of study and degrees.

The evaluations of doctoral studies by distance learning compared to doctoral studies by day courses vary from one field to another, reflecting the disciplinary specific of the research. Doctoral studies by distance learning are the most appreciated in social sciences, economics, medicine and pharmacy, and the least appreciated in agronomics, veterinary medicine, exact sciences and engineering (see table below).

**Table 8. Opinions regarding the doctoral candidates paying for their PhD studies by field of study**

| | … are as good as the doctoral students supported out of state budget | |
|---|---|---|
| | Disagree | Agree |
| Doctoral supervisors | | |
| Exact sciences | 39% | 61% |
| Engineering | 38% | 62% |
| Social sciences, law and security sciences | 16% | 84% |
| Humanities | 33% | 67% |
| Economics | 21% | 79% |
| Medicine and pharmacy | 23% | 78% |
| Agronomics and veterinary medicine | 41% | 59% |
| Arts, architecture, sports | 13% | 87% |
| Total | 33% | 67% |

Source: Report of Quantitative Survey

The main risk of the distance learning organization form is its transformation in a parallel circuit, with lower performances and requirements[24], mainly supported by its financial value. For example, the social and human sciences report states that the doctorates by distance learning are „*merely a simplified form and easier practice (by reducing the students' participation in the academic activities) of the day courses form, an indulgent form of training, which is neither morally nor institutionally acceptable* "(p.5). The variability within this form of training is greater in the doctorate in engineering, where "*some PhD candidates by distance learning are already specialists in contact with the real economy, sometimes with support teams (if, for instance, managers) and can achieve scientific consistent theses. The doctoral candidates on scholarship are usually young graduates, less experienced, but with better scientific training. (...) In Engineering, we believe that the doctorate by distance learning is truly effective only if the doctoral candidates work with a company as regards their research activity*"(p.4). The report on medical sciences stresses that the day courses doctorate is necessary to accommodate the requirements of professionals already integrated into the medical practice, and it is not attractive for the young graduates.

## *The Scientific and Professional Doctorates*

According to the Government Decision no. 567/2005 the professional doctorates can be obtained in arts, physical culture and sports, consisting mainly in research projects based on reflection on the field performances. In practice, professional doctorates can conducted in music and visual arts, in which scientific doctorates can also be organized; the movies / theater, physical education and sports fields are only covered by scientific doctorates, partly in response to the requirement of a national level work of the candidates to the professional doctorate[25].

The professional doctorate is conceptualized not just through the difference between the research/systematic reflection on the performance, but also as a different combination of theoretical analysis and professional practice. Accordingly, „a professional doctorate emphasizes the practice without eluding speech about it, while the scientific doctorate emphasizes the theory, taking as indispensable support the artistic practice. In the weight of the professional doctorate in relation to the scientific doctorate, we must take into account the relationship between the disciplines and the theoretical practice in the education program of the I and II cycles"[26]; the professional doctorate could be modeled as 75% practice and 25% theory, while the scientific doctorate would consist of 75% theory and 25% practice. Basically, the meaning of the performance research/analysis is applicable only to the

[24] Report of the Social and Human Sciences, Report of the Agronomic and Forestry Sciences, Zootechnics and Veterinary Medicine
[25] Report of Arts, Architecture and Urbanism, Physical Education and Sports
[26] Idem, p. 4

professional doctorate which „consecrates" mature professionals with acknowledged careers. The young graduates are guided towards some themes, among which they choose one as subject of theoretical analysis and practice in the doctoral project[27].

An analysis of the status of doctoral studies following the disciplinary fields revealed that the professional doctorate could be extended to other areas - in priority to those with a strong applicative research, such as medical sciences, veterinary medicine and forestry[28]. Such redefinition of professional doctoral studies requires a number of clarifications:

1) set a diversity of professional training in the doctoral studies, such as: the basic scientific research (scientific doctorate); the scientific applicative research (professional doctorate in sciences); the research focused on individual performance analysis (doctorate of consecration); the research as support of individual performance (professional doctorate for young graduates); or the didactic doctorate focused on the development of innovative curriculum in a particular discipline (equivalent of Doctor of Arts - DA in the North-American system);

2) the option to recognize these paths either by a single degree of doctor (similar to the current master degrees awarded to the research or study master studies) or the alternative to recognize them by differentiated degrees and titles;

3) the option to specify similar or differentiated institutional trajectories (following models of international practice, summarized in Table 9): for instance, achieving scientific doctoral studies mostly by day courses, and professional doctoral studies mostly by distance learning; including co-mentors with professional expertise in the professional doctorates; different admission requirements, etc.

**Table 9. Differences in profile between scientific and professional doctorates in the international practice. Source: Report regarding the professional doctorate**

| Characteristics | Scientific Doctorate | Professional Doctorate |
|---|---|---|
| Definition | A research program that allows candidates to bring a significant and original contribution to the scientific knowledge | An advanced research and study program that allows candidates to make a significant contribution to the knowledge and practice in their professional context |
| Admission requirements | Master of Business, Master of Arts/Master of Science, Mres | Usually without a specific condition on the master's degree; flexible admission, based on explicit qualification |
| Learning form | Usually full–time | Usually part–time |
| Students/doctoral | Future researchers, most of | Professionals, most of them mature |

[27] Idem, p. 9
[28] Report of Medical Sciences, Report of Agronomic and Forestry Sciences, Zootechnics and Veterinary Medicine

| | | |
|---|---|---|
| candidates | them younger students | students |
| Title obtained | PhD (sometimes DPhil) | D + appellation of profession (DBA, EdD, MD etc.) |
| Professional experience required | No | Yes, in specific fields (usually 2 or more years) |
| Teaching | Usually not | Both professional disciplines, and research methods |
| Learning process | Mostly individual, emphasis on individual research skills | In groups, emphasis on individual and team, professional skills |
| Use of credits | In the SUA yes, in UK no | Yes |
| Thesis size | Not specified, but on average larger than for PD | Not specified, but on average smaller than for PhD |
| Evaluation | Thesis | Thesis + homework, activities in class, portfolio |
| Disciplines | Mostly of academic inspiration | Mostly of professional inspiration |
| Requirements to access professional paths | Yes, requirement to access academic positions | Only in some professions |
| Evaluation focus | Significant contributions in the research of the field of study | Significant contributions in the research of the field of study /professional field and/or significant contributions to the development of the professional practices. |
| Supervision | Academic expert in the field of study | Sometimes an additional supervision by a professional expert |

### *Administration of Doctoral Schools*

For the moment, one can say there is no clear distinction between the doctoral school as an *administrative* **or** *academic entity* within faculties and universities. For some, it is only a "school" with doctoral candidates and supervisors, a curriculum and teaching, learning, research and evaluation procedures. But the administrative and managerial aspect is marginalized or is included in the administration of the general student flows, ignoring, even relatively, that we deal with other types of learning/teaching/assessment and other "students". Consequently, the organizational structures of the doctoral schools are poorly defined and operate in parallel with the administrative structures of the bachelor's and master's studies. They are institutionally governed by University Charters and Rules of academic operation and organization of the doctoral studies, which make their actual organization variable. For example, the regulations do not explicitly specify, in sufficient detail, the tasks or powers of the doctoral school' director or

dean[29]; the doctoral schools do not always have individual functions. The doctoral schools can be organized within colleges or universities.

This lack of formal institutionalization has negative consequences on the status of the doctoral candidates and supervisors, and on the funding of doctoral studies from universities' budgets, as the doctoral schools do not have their own budget. Also, the institutionalization of inter-disciplinary and inter-institutional cooperation is hampered[30].

### *Correlation of Doctoral and Master' Studies*

The doctoral schools operate independently of the master's programs, while their correlation is left to the initiative of the institutions organizing the doctorates. There are initiatives to integrate them, but usually the institutional concern in this regard is lacking[31]. When such initiative is practiced in a non-systematic way, it can have desultory and unintended effects, disadvantaging the students who are not coming from the associated research masters – either due to a lower probability of being accepted on the budget supported places or to a disadvantaged start as compared with their peers[32].

The MA studies are currently designed as an extension of the BA studies, but not as pre-doctoral courses - although it is a necessary condition to enroll in a doctorate[33]. This lack of coordination has two negative consequences:

- the courses during the training period are sometimes redundant with the master's courses of the respective institution organizing doctoral studies[34];

- the research conducted in the doctoral programs does not continue the research in the masters' program.

There is a high risk of redundancy because the doctoral candidates have often graduated BA or master studies from the same institution organizing doctoral studies (see Table 11). We can see in Table 10 that 42% of the doctoral candidates who have completed master's programs in the same field and in the same university think the doctoral school training repeats their earlier training, compared to 31% of the doctoral candidates who have completed masters studies in the same field, but in another university. It follows that, in part, the degree of redundancy is influenced by the lack of differentiation of the courses by the teachers, which means that having the same teacher could increase the risk of overlapping. On the other hand, the redundancy is also due to the lack of differentiation, depending on the level and type

[29] Legislative Report
[30] Medical Sciences Report
[31] Report of Agronomic and Forestry Sciences, Zootechnics, and Veterinary Medicine
[32] Exact Sciences Report, pp. 9-10
[33] Report in the fields of Arts, Architecture and Urbanism, Physical Education and Sports, p. 10
[34] Report on Engineering, p. 3; Report on Social and Human Sciences, p. 4, p. 15; Report on Exact Sciences, p. 9

of qualifications, given that it is also experienced by a minority of the graduates of other universities.

**Table 10. Opinions of the doctoral candidates on the quality of their courses, by field and by the university where they graduated at the master' study level**

| | Where he or she obtained the master degree | | | | |
|---|---|---|---|---|---|
| | Same field, same faculty | Same field, other faculty | Other field, same university | Other field, other university | Total |
| The doctoral school's courses in the current format are useless (v32) | **34%** | 26% | 32% | 23% | 28% |
| The doctoral school's courses are about the same as the BA/master' courses (v33) | **42%** | 31% | 35% | 27% | 34% |
| The doctoral school's courses are purely theoretical (v34) | **56%** | 49% | 54% | 51% | 53% |
| The doctoral school's courses are more complex than the master's (v37) | **53%** | 60% | 57% | 57% | 56% |
| As regards the level of generality of the doctoral school courses, from your experience, you would say that all have a relatively large level of generality (v40) | **35%** | 25% | 29% | 30% | 31% |
| The doctoral curriculum at your faculty/institute includes new disciplines (as compared to those at the master studies level) (v41) | **53%** | 49% | 55% | 58% | 55% |

Source: Report of the quantitative survey

* The answer to each allegation has been recorded on the four points' scales: two indicated the agreement and two indicated the disagreement with that assertion. The figures in the tables indicate the percentages of those who expressed their agreement. The differences up to 100% represent those who disagree and those who did not answer the question. The latter were between 2 and 6% of the sample, depending on the question.

### *Admission to Doctorate*

The recruitment of the doctoral students is made in particular among the graduates of the same higher education institution. Indeed, the quantitative survey indicates that approximately 70% of the current doctoral students have graduated college in the same university where they are conducting their doctoral studies, and 45% of the PhD students have also graduated a master' course at the same university. This ratio is expected to increase as the pre-Bologna doctoral students are leaving the system, and the requirement to have graduated a master's program becomes mandatory.

**Table 11. Distribution of doctoral students in the doctoral study fields**

| Please provide us some details, useful for classifications, regarding the form of doctorate you are attending: *Tick all situations which fit your!* | | | |
|---|---|---|---|
| TOTAL SAMPLE | Yes | No | Total |
| You are attending day courses doctoral studies | 58% | 42% | 100% |
| You are paying fees for your doctoral studies | 32% | 68% | 100% |
| You have a scholarship | 33% | 67% | 100% |
| You have a PhD grant from Structural Funds (POS DRU) | 20% | 80% | 100% |
| You have graduated a faculty in the same field | 84% | 16% | 100% |
| You have graduated the same university where you are now PhD student | 69% | 31% | 100% |
| You completed master' studies in the same field | 52% | 48% | 100% |
| You completed master' studies at the same university where you are now PhD student | 45% | 55% | 100% |
| Have you completed/are you attending a doctoral school? | 62% | 38% | 100% |

Source: report of quantitative survey

The new system of doctoral studies has changed the system of admission by formalizing it and by the participation of several doctoral supervisors in the doctoral commission. The pre-Bologna system had institutionalized the practice of recruiting candidates among the collaborators of the doctoral supervisors, who expressed their interest in doctoral studies prior to admission. This selection type is based on a mutual acquaintance prior examination, and becomes incompatible with the new type of examination, especially when there are more candidates than the budget supported number, which gradually turns admission into a genuine contest[35]. But difficulties persist in making objective selection criteria, especially when the committee includes doctoral supervisors with different specializations. The Social and Human Sciences Report finds that "in many fields, the actual outward show of the candidate before the committee matters very much, as well as his or her performance portfolio up to that time (more than the research project, which often belongs to a narrow specialization or theme, and therefore cannot always be accurately evaluated by other doctoral supervisors members of the committee). the evaluation by all doctoral supervisors in an institution, regardless of their specialty, is also an admission flaw. However, a deeper problem exists: the habit to evaluate following the known status (very good student, known in previous years) and

[35] Exact Sciences Report, p. 6

following the quality of the project. There is often a competition between statuses, and not between projects"(p. 10).

Partly because of the custom of pre-selection of candidates by the doctoral supervisors, another difficulty is the relatively low competition because of the small number of candidates, generally close to the number of available positions (from 1/1 the majority, to 2/1)[36]. The recruitment processes are mostly based the coordinated efforts of the doctoral supervisors, rather than on institutional policies. Opening for doctoral candidates from abroad are also lacking. Under these circumstances, there are many critical assessments regarding the current admission practices:

- "This type of uncompetitive admission to doctorate, characterized by a large number of positions available and a certain degree of subjectivism, contributes to the low quality of the doctoral studies, as well as to a decrease in value of the title of doctor in the academic community" [37];

There are certainly some positive assessments - such as the ones in the Engineering Report, where the selection process is deemed objective.

### *Doctorate Funding*

The funding of doctoral studies has continuously increased in absolute value since 2001 (see Table 12) - following the general trend of baseline funding and gross domestic product.

**Table 12. Evolution of doctoral studies' funding in the period 2001-2008**

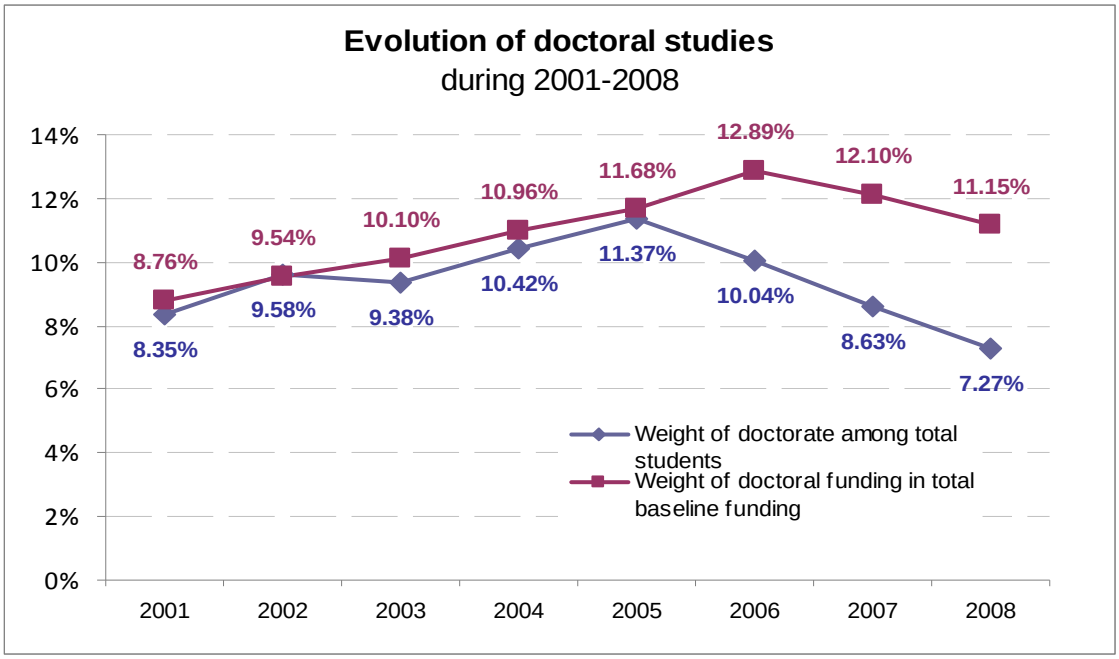
| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|
| GDP (mil. Lei) | 116 769 | 151 475 | 197 565 | 246 372 | 287 186 | 344 536 | 404 709 | 502 136 |
| BF (mil. Lei) | 380.00 | 477.49 | 633.15 | 847.26 | 1 041.24 | 1 086.55 | 1 680.73 | 1 947.30 |
| %BF/GDP | 0.33% | 0.32% | 0.32% | 0.34% | 0.36% | 0.32% | 0.42% | 0.39% |
| Doctorate (mil. Lei) | 33.28 | 45.53 | 63.97 | 92.85 | 121.66 | 151.53 | 203.36 | 217.12 |
| %Doctorate/ FB | 8.76% | 9.54% | 10.10% | 10.96% | 11.68% | 13.95% | 12.10% | 11.15% |
| %Doctorate/ GDP | 0.03% | 0.03% | 0.03% | 0.04% | 0.04% | 0.04% | 0.05% | 0.04% |

Source: Report on Doctoral Studies Funding

[36] Report regarding the doctorate in engineering, p. 5; Report on the Agronomic and Forestry Sciences, Zootechnics and Veterinary Medicine, p.5
[37] Report on Medical Sciences, p. 5

Moreover, the share of baseline funding allocated to the doctoral studies after 2005 remained higher than the total share of PhD students (see Figure 6). However, it is declining since 2006 as a result of the doctoral system restructuration.

**Figure 6. Evolution of the number of doctoral students and corresponding budget allocation in the period 2001-2008**




Source: Report on Doctoral Studies Funding

The 2005 change in the organization of doctoral studies is associated with changes in doctoral students funding. The number of doctoral students funded from the state budget decreased since the academic year 2005/2006, due to exclusive budgeting of paid spaces. This decrease is also responsible for a diminution of the overall number of doctoral candidates. On the other hand, the number of PhD students funded from the budget attending both day courses and distance learning doctorates is increasing (see Table 2).

The introduction of Structural Fund grants in the year 2008/2009, was another important change in the funding of doctoral students, as it made the status of doctoral student on scholarship become attractive.

The baseline funding does not include an explicit component for the research activities of the doctoral students. These are either funded by the supervisors of the

doctoral projects (see Figure 7), by individual projects such as TD/CNCSIS, or from the personal funds of the doctoral students.

The baseline funding is differentiated according to the forms of training through equivalence coefficients and, depending on the specialty areas, through cost coefficients[38]. In areas with high costs for experimental research, the amounts received through baseline funding are deemed as unsatisfactory[39].

At the institutional level, a possible obstacle to adequate funding of PhD studies is the weak administrative autonomy of the doctoral schools, and the fact that the baseline funding of PhD studies is not listed separately in the universities' budget[40]. However, this is just a point of view. An exploration of other mechanisms is absolutely necessary, given the need to preserve the unity of the institutional budget.

## *5.2 Status of Doctoral Candidates and Supervisors*

### *Status of Doctoral Candidates*

The PhD student has a status equivalent to that of a research assistant during the preparation program and to a researcher during the research program. However, because of unclear regulations, the previous years of service of the doctoral candidates are not considered as years of specialized service (in research) [41]. Also, the status of the doctoral students is uncertain in some special circumstances, such as when a doctoral candidate extends the deadline of the thesis beyond the three years set.

The doctoral candidate status implies roles such as:

- student – as the doctoral studies are university studies;
- junior researcher;
- member of the faculty, as the doctoral candidate is involved in didactic activities;
- member of the chair to which the doctoral supervisor belongs.

The Government Decision no. 1717/2008 clarified the status of the doctoral students, with implications on their access to the medical services in the public system. On the other hand, as the graduation age for doctoral studies is generally 27-28 years, the situation of the doctoral students on scholarship aged over 26 years remained unclear, as they are not included in the categories exempt of contributions.

[38] Report on Doctoral Studies Funding
[39] Report on Exact Sciences, Report on Medical Sciences, Report on Agronomics and Forestry Sciences, Zootechnics and Veterinary Medicine
[40] Report on Medical Sciences
[41] Legislative Report

The procedures for representation of the doctoral students interests in relation to the institutions organizing doctoral studies, and their representation in the Councils and in the university Senate are still unclear.

Most of the PhD students have other activities in order to earn some money during their doctoral studies - including a majority of the doctoral students who received grants from the structural funds (see Table 13). Basically, the doctoral studies are carried out part-time, in parallel with other occupations. The double workload is likely to influence the capacity of the doctoral students to develop their thesis on time, and to be a source of frustrations related to a reduction of the duration of the doctoral studies.

**Table 13. Relation between having a scholarship and having incomes from other sources**

| | Exact Sciences | Social Sciences, Law, and Security Sciences | Humanities | Engineering | Agronomics and Veterinary Medicine | Medicine and Pharmacy | Economics | Arts, Architecture, Sports | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Weight in total sample of those who …** | | | | | | | | | |
| Obtain incomes from other sources than the doctoral studies activity* | 75% | 81% | 81% | 64% | 53% | 89% | 81% | 91% | 75% |
| Obtain incomes from research grants | 41% | 18% | 10% | 36% | 27% | 20% | 18% | 16% | 26% |
| **Weight in total students with scholarships (other than POS DRU) of those who ….** | | | | | | | | | |
| Have a scholarship (other than POS DRU) and obtain incomes from other sources than the doctoral studies activity* | 38% | 54% | 60% | 44% | 15% | 35% | 66% | 86% | 46% |
| Have a scholarship (other than POS DRU) and obtain incomes from research grants | 49% | 27% | 16% | 44% | 48% | 19% | 38% | 15% | 37% |
| **Weight in total students with scholarships POS DRU of those who ….** | | | | | | | | | |
| Have a scholarship POS DRU and obtain incomes from other sources than the doctoral studies activity* | 52% | 71% | 61% | 48% | 34% | 80% | 60% | 100% | 53% |
| Have a scholarship POS DRU and obtain incomes from research grants | 23% | 11% | 7% | 17% | 10% | 14% | 12% | 40% | 14% |

Source: Report of quantitative survey

*I have included in the doctoral studies activity the research projects and the didactic activity.

*The obtained incomes refer to the last calendar year.*

As regards the continuity in the research carrier, the postdoctoral programs are in an early stage of development. In these circumstances, the doctoral candidates are willing to join the labor market before the end of their doctoral studies, often even after their BA degree, in order to avoid unemployment after graduation. In Table 14 we can see that a majority of the doctoral candidates in all fields, except engineering, have worked before their admission and are still working in the same place as PhD students. Generally about 15-20% of the doctoral candidates do not work in parallel with the PhD activity, except for those in agronomics and veterinary medicine (58%), engineering (53%) and exact sciences (27%).

**Table 14. Professional situation of doctoral candidates since the beginning of their doctoral studies to date by fields**

| | Was and still is working in the same place | Was working then and is working now in a different place | Was working then and is no longer working now | Was not working then and is not working now |
|---|---|---|---|---|
| Exact Sciences | **65%** | 8% | 6% | 21% |
| Engineering | *40%* | *7%* | **15%** | **38%** |
| Social Sciences, Law and Security Sciences | **71%** | 11% | 5% | *13%* |
| Humanities | **66%** | **12%** | 6% | *16%* |
| Economics | **70%** | 12% | *3%* | *15%* |
| Medicine and Pharmacy | **78%** | 11% | *1%* | *11%* |
| Agronomics and Veterinary Medicine | *36%* | *5%* | **15%** | **43%** |
| Arts, Architecture, Sports | **76%** | 11% | 4% | *10%* |
| Total Respondents | 59% | 9% | 8% | 24% |

Source: Report of Quantitative Survey

Note: (1) The data in the table indicate percentages in rows. Example of data reading: 65% of the doctoral candidates in exact sciences had a job at the beginning of their PhD studies, which they have kept. (2) The total on a row may differ from 100%, due to rough percentages. (3) The cells with blue background and bold fonts indicate significant positive associations in the cell. Example of reading: the doctoral candidates in exact sciences had a job they kept in a significantly higher proportion (65%) than the average (59%). (4) The cells with red background and italic fonts indicate significant negative associations in the cell. Example of reading: the doctoral candidates in engineering had a job they kept him in a significantly lower proportion (40%) than the average (59%).

## *Status of Doctoral Supervisors*

The faculty and 1st grade scientific researchers, holding the title of Doctor, affiliated to an institution organizing doctoral studies may become doctoral supervisors by order of the Minister of Education and Research, upon proposal of the institution organizing doctoral studies, following a proposal of the National Council for Attestation of University Titles, Diplomas and Certificates. An approval is granted based on an assessment of the teaching activity and research. A doctoral supervisor may only be affiliated to one institution organizing doctoral studies and will lose this quality when transferred to another institution.

The number of doctoral candidates guided by one doctoral supervisor is determined by the institution organizing doctoral studies, up to a maximum of 15 doctoral students. At the same time, the questionnaire based survey indicates that a significant proportion of doctoral supervisors do exceed this limit - about 20% in economics, arts, architecture, sports, medicine and pharmacy. Also, except for the exact sciences, 20 to 40% doctoral supervisors are guiding between 11 and 15 PhD students.

**Table 15. Number of doctoral students under one supervisor by field**

| | 5 or less | From 6 to 10 | From 11 to 15 | 16 or more | No-answer | Total |
|---|---|---|---|---|---|---|
| Exact Sciences | 56% | 31% | 10% | 3% | 1% | 100% |
| Social Sciences, Law and Security Sciences | 20% | 31% | 38% | 12% | 0% | 100% |
| Humanities | 18% | 34% | 37% | 11% | 0% | 100% |
| Engineering | 39% | 37% | 20% | 2% | 1% | 100% |
| Agronomics and Veterinary Medicine | 33% | 32% | 25% | 9% | 1% | 100% |
| Medicine and Pharmacy | 26% | 36% | 21% | 17% | 1% | 100% |
| Economics | 16% | 31% | 24% | 20% | 8% | 100% |
| Arts, Architecture, Sports | 13% | 26% | 37% | 24% | 0% | 100% |
| Total Respondents | 35% | 34% | 22% | 8% | 1% | 100% |

Source: Report of Quantitative Survey

The cells in grey background indicate a significant positive statistic association between the two variables

The responsibilities of the doctoral supervisors are set in doctoral studies contracts, as illustrated by the examples below.

UTCB Contract for doctoral studies[42]:

„The doctoral supervisor pledges to:

a) Draw up the curriculum for individualized elective disciplines;

b) Provide guidance in order to carry on under proper conditions university doctoral studies;

c) Coordinate and guide the research activity of the doctoral candidates, in accordance with the approved scientific research program."

UPT Contract for doctoral academic studies[43]:

„Obligations of the doctoral supervisor

a. Guide the doctoral candidates' work throughout the doctoral studies, and monitor it in accordance with Annexes 2, 3 and 4 of this contract.

b. Set the disciplines in the advanced academic training curriculum, and indicate the modalities of participation of the PhD students.

c. Choose with the doctoral candidates the complementary activities in the advanced university preparation and the scientific research program project, enter those in the Annexes 1 and 4 of the doctoral studies contract and organize their timely presentation.

d. Ensure through the management of the UPT Departments and Chairs, access to UPT laboratories in the doctoral program.

e. Examine the PhD theses, make an evaluation report and organize their presentations.

f. Assist and train the PhD candidates within UPT in actions which can bring additional resources to finance the studies.

g. Determine for the PhD candidates by day courses, the activities within UPT.

h. Be supportive in relation to UPT and to the doctoral candidates in matters related to doctoral studies covered by this contract."

[42] Available online on 5 June 2009 at URL: http://dsd.utcb.ro/pdf/contractdr.pdf
[43] Available online on 5 June 2009 at URL: http://www.upt.ro/pdf/doctorat/Contract_de_studii_universitare_doctorale.pdf

Although the doctoral studies are based on a requirement of close correspondence between the research projects of the PhD students and the specialization of the supervisor, there are some situations of considerable divergence - situations in which the guidance is general, rather than actual training[44].

### *Doctoral Candidate – Supervisor Relationship*

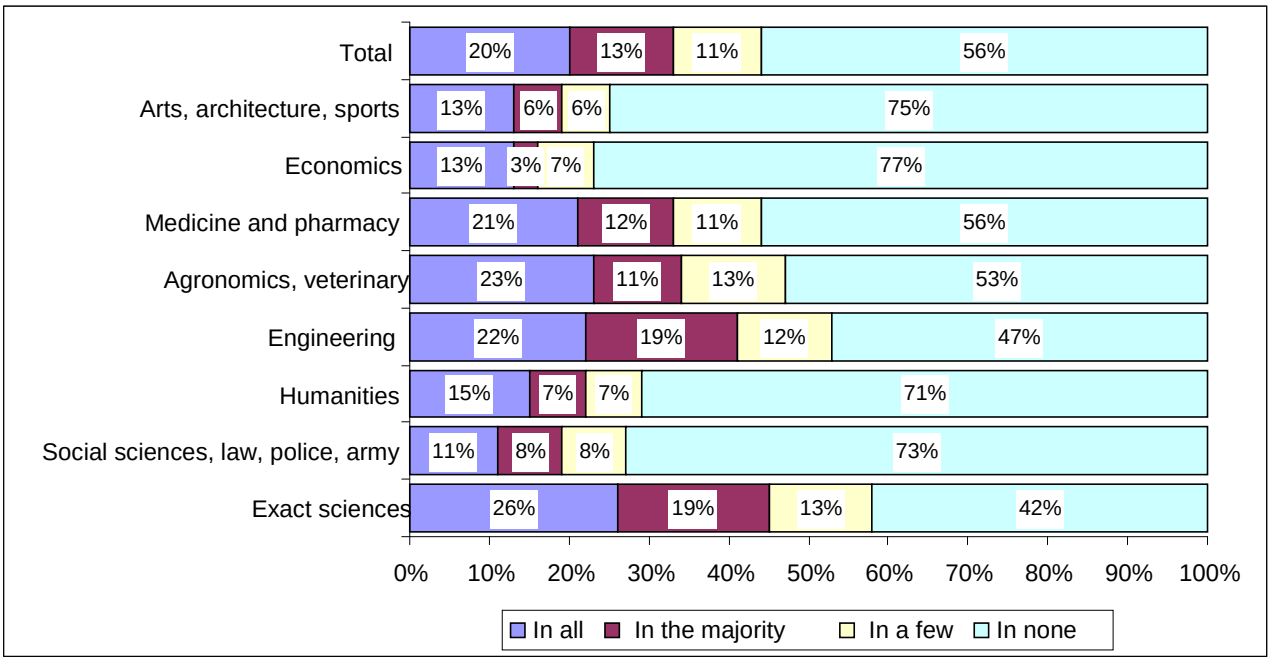
The relationship between a doctoral candidate – supervisor is the main engine of training throughout the doctoral research program. the relation is defined by contract, but the provisions are highly general. The main risk of the relationship is the dependency on the supervisor's style, which may vary widely, in the absence of formal or informal mechanisms to standardize the effort and the demands in a doctoral school.

The organization of doctoral studies in the doctoral school aims, *inter alia*, to make the PhD candidate relate in the course of his or her work with several doctoral supervisors, who participate in the evaluation committees. However, the involvement of other members of the Doctoral School, in addition to the direct PhD supervisor, is often very limited and even decreases during the research project. Effective guidance continues to be almost exclusively the responsibility of the doctoral supervisor, whose exigency is in many cases the only guarantee of the quality of the doctoral work[45].

The doctoral students' participation in their supervisors' research projects vary significantly, depending on the disciplines. Still, 40 to 80% of the PhD students did not participate in such projects (see Figure 7).

**Figure 7. Degree of involvement of doctoral students in the research projects/grants of their supervisors**

[44] Report Arts, Architecture, Sports, p. 7
[45] Report Arts, Architecture and Urbanism, Physical Education and Sports; Report of Medical Sciences; Report of Social and Human Sciences;




Source: Report of Quantitative Analysis

The central problem in this relationship is the quality of guidance. On the one hand, it is considered that a guidance relationship is natural, automatic, without requiring any special qualifications. In other words, being part of the faculty naturally means possessing abilities and skills as to guide a PhD student. On the other hand, the dependence of a PhD candidate on his or her doctoral supervisor is maximum. The dependency relationship appears, *horribile dictu*, as a traditional vassal relationship. Such aspects require fundamental correction. A doctoral supervisor must acquire the guidance skills and competencies, and the vassal relationship should be transformed into one in which the doctoral students can call for guidance to a larger group of supervisors, following their needs.

## *5.3 Academic Quality in Doctoral Studies*

The minimum standards of academic quality is established in the doctoral schools by the legislation in force, which is applied when the establishment of an institution organizing doctoral studies is approved. For instance, a greater number of doctoral supervisors would ensure the research topics diversity and avoid a feudalization of the doctoral candidate - supervisor relationship, by transforming the doctorate into a "school". There are, however, doctoral supervisors who believe that a direct relation doctoral candidate - supervisor, without a school and a curriculum as intermediaries, is more effective. Also, most doctoral candidates describe the first

year courses, if rigorously taught, as a serious opportunity for personal and professional development.

The doctoral candidates and supervisors remarked that in spite of some good forms of legislation aimed at ensuring the academic quality of the doctoral schools, the legislation is often applied on a distorted content. Thus, although there is a need for an admission exam, it is often formal, based on previous discussions between the potential doctoral candidate and the supervisor, the latter knowing before the admission exam who he or she wish to work with (the admission is often taken in "closed circuit").

Considering the university autonomy it is the choice of the institution organizing doctoral studies to establish additional standards of quality, according to international best practices. For example, in the exact sciences and natural sciences, there are frequent rules of the institutions organizing doctoral studies which do not allow presenting the thesis unless the doctoral candidate has published studies in top national and/or international magazines (with focus on the international ones). Other institutions organizing doctoral studies have set explicit performance criteria to ensure that academic distinctions are obtained in the PhD studies. For example, "*Very Good*", "*Cum Laude*", „*Magna Cum Laude*" and „*Summa Cum Laude*" are honors associated with a number of articles published in top publications abroad. This also happens, even if less frequently, to the best institution organizing doctoral studies in social and human sciences.

### *Curriculum Quality*

The concept of "Doctoral School" in Romania was designed following the U.S. model, and aimed at producing the same performance here. The "Doctoral School" concept refers to a community of professors and doctoral students involved in teaching and research activities in an area of interest –producing learning through research. This concept was introduced in Romania by the Government Decision no. 567 of 2005. Although the words "Doctoral School" do not explicitly appear in the Government Decision, the establishment of "*university studies curricula*" - the teaching part – and of "*research programs*" - the research part - within the institutions organizing doctoral studies, has set the organization terms for academic doctoral studies in Romania in "Doctoral Schools".

Unfortunately, the implementation of this Government Decision in the framework allowed by the academic and doctoral schools autonomy generated a system which did not perform to the expected standards. The reasons are multiple. The most important one is related to curriculum distortion. For example, instead of introducing in the first year curriculum a small number of advanced courses –for the doctoral candidate to choose among a greater number of proposals - declarative and procedural knowledge allowing an advanced integration of the doctoral candidate in science and applications in the socio-cultural environment, combined with developing leadership and communication skills, many schools have loaded the

doctoral curriculum with courses reproducing the classical themes discussed during BA and master studies. This has often led to irrelevant curricula for doctorates, seen by some doctoral candidates as a waste of their time and an obstacle to research, instead of being perceived as a preparation to advanced research for the coming years of doctoral studies, by interacting more with top academics/researchers from the doctoral school. Indeed, the spirit of the Government Decision can be deduced from provisions such as:

> Art. 2: „. . . The scientific doctorate is based on advanced creativity and scientific research, thus contributing to the development of knowledge, skills and cognitive capacities.
>
> **(2)** The knowledge, skills, general and specialized capacities confer to a scientific doctorate holder the capacity to:
>
> **a)** understand systematically and comprehensively the field of study, and use the research methods associated with this field;
>
> **b)** design and implement a research project and manage research in compliance with the professional ethics;
>
> **c)** contribute to the progress of knowledge through original research with national or international impact, demonstrated in scientific publications;
>
> **d)** critically analyze, evaluate and make synthesis of new and complex ideas;
>
> **e)** communicate with the professional community and the civil society in the specialized field of research;
>
> **f)** contribute to promoting technological, social and cultural development, in the context of a knowledge based society and economy. . . . ",

> Art. 10: „. . . The curriculum includes subjects of advanced knowledge in the field of doctoral studies, and training modules for a rapid integration of the PhD graduates in the labor market..."

Despite these provisions, the doctorate has been altered because of its content, often conceived to reflect the expertise of the existing faculty in a doctoral school, and not the one needed by the science and the socio-economic environment.

The curriculum quality is also limited by the heterogeneity of the participants. Where the doctoral students come from different domains, and there is no separation between them as regards their skills, there is a need to lower the teaching level to the lowest common denominator.

The separation between the preparation stage and the research stage is, at least for now, a constantly challenged rule both by the supervisors and the doctoral students. The separation is problematic due to a diminution of the time allocated to research – while the overall time for doctoral studies has also been reduced – and also because of disputes concerning the quality and relevance of the courses in the first stage.

**Table 16. Opinions of doctoral supervisors and candidates on splitting the doctorate in two stages, preparation and research, by fields of study**

| | Doctoral supervisors | | Doctoral candidates | |
|---|---|---|---|---|
| | Splitting useless | Splitting useful | Splitting useless | Splitting useful |
| Exact Sciences | **71%** | *29%* | **59%** | *41%* |
| Engineering | 57% | 43% | *40%* | **60%** |
| Social Sciences, Law and Security Sciences | 57% | 43% | 42% | 58% |
| Humanities | 62% | 38% | 48% | 52% |
| Economics | 58% | 42% | 43% | 57% |
| Medicine and Pharmacy | *47%* | **53%** | *33%* | **67%** |
| Agronomics and Veterinary Medicine | 59% | 41% | 43% | 57% |
| Arts, Architecture, Sports | 44% | 56% | 36% | 64% |
| Total respondents | 59% | 41% | 43% | 57% |

Source: Report of Quantitative Analysis

## *Research Performances in Doctoral Studies*

The advanced Research largely relies, anywhere in the world, on the skills and availability to work of the doctoral (and postdoctoral) students, guided by doctoral supervisors. International rankings show that Romania has a low performance in research. For example, there is no Romanian university listed among the first 500 universities of the world; and in Europe we are among the last positions in terms of publications in the main flow of knowledge and/or patents.

Our position in the international rankings suggests two things:

(1) either the quality of the doctoral candidates and doctoral supervisors, in other words, of the existing doctoral schools, is weak and uncompetitive internationally;

(2) or the doctoral candidates and supervisors do not know how to make visible their scientific production, which, if examined carefully, can be of quality.

Our analysis suggests that the answer is complex and mixed. In some cases, the Romanian doctoral schools are not competitive enough internationally. They address outdated issues, convert science in a "hobby", without paying attention to the relevance and impact of the research. Accordingly, they do not enter the international competition, and do not receive a "feedback" from the scientific community, which lowers their scientific production. In other cases, the doctoral schools are not visible enough. For instance, the socio-economic and human sciences research in some institution organizing doctoral studies are not visible internationally (e.g. in the Web of Science system) in the 90s; after entering the competition in the Web of Science, they have succeeded since the year 2000 to become visible in internationally indexed publications and/or journals.

It is worrying that in some areas, there is a large number of theses, while the scientific productivity is relatively low[46]. It seems to be the case, for example, for the medical sciences in Romania. In this area, the doctoral candidates who are studying various therapies often limit themselves to the currently available explorations or interventions – practiced in the unit where they work and covered by the health insurance companies. They carry their research mainly through statistical interpretation of topics already known worldwide. This drastically reduces the degree of innovation in medical research. Analyzing the latest trends in this area, we believe that the poor international visibility of the medical research in relation to the number of PhD produced - especially in biomedical sciences - is due to the fact that quality research in the field has not been displayed in worldwide visible journals.

The change of opinion of the doctoral schools regarding internationally relevant doctoral research must be implemented through "top down" institutional mechanisms. The doctoral candidates could also add some "bottom up" pressure in this respect, but they often adopt the professional culture of their doctoral supervisor. If the latter does not have a modern, internationally oriented professional culture he or she will perpetuate through the PhD candidates the same modest researches and publications, of local impact. The doctoral supervisors who do not have a professional culture of international performance, must acquire it or at least stimulate this change in the new generations of PhD students.

[46] Report regarding the Analysis of ISI publications of persons who have recently obtained the title of Doctor in Science in Romania.

### *Evaluation of Doctoral Students' Activity*

The on-going work of a doctoral candidate is assessed by the doctoral school commission, during the preparation stage and during the scientific research program.

Substantial assessment of the quality of the research activity of the doctoral candidates is mostly done, where appropriate[47], through team meetings in the research projects, and by presenting the theses to the chair or the doctoral school before sustaining them.

Overall, the evaluation process has certain vulnerabilities. The evaluation is hampered by the frequent practice of deferment in handing in essays and the thesis[48]. In some fields and institutions, the evaluation is often largely dependent on the activity of the doctoral supervisor[49], while other members of the doctoral school have a rather formal involvement. Often, the final presentation of the thesis and the report of the commission members drafted after the doctoral supervisor accepts a thesis as final, are more a formality, and lack an actual evaluation role: there is no significant percentage of rejected theses upon their presentation. Also, qualifications as means of encouraging the performance of a PhD student, are only practiced in some doctoral schools[50]. Moreover, in the absence of objective assessment criteria, this system may lead to a competition between the doctoral supervisors to obtain maximum distinctions for the doctoral students under their guidance[51].

Also, there is no comprehensive system for detection of intellectual fraud. This is generally left at the discretion of the doctoral supervisor. As there is a considerable supply of BA theses offered for sale, and works commissioned on given subjects[52], there is a risk that such works should be processed in the doctoral dissertations, in the absence of a careful monitoring of the doctoral supervisor. Also, there is a risk of low originality of the works using paraphrases and compilations[53] in excess. Such risks are amplified by the lack of guidance and standards regarding the formal aspect of writing the thesis in the doctoral school.

In order to supplement these deficiencies in some areas and doctoral schools, additional requirements have been imposed on the PhD students, such as the requirement of publication[54]. The performance measured by such indicators may be associated with the distinction conferred on the doctoral students. Such increased requirements also apply to doctoral students with grants from structural funds.

[47] Report of Research Institutes
[48] Report of Social and Human Sciences, Report of Medical Sciences
[49] See also the discussion in the Section „Doctoral Candidate – Supervisor Relationship".
[50] Report of Exact Sciences
[51] Report of Social and Human Sciences
[52] See websites such as: http://www.lucraridediploma.net/, http://www.licente.org/, http://www.consultantalicenta.com/, and hundred of websites with similar profile.
[53] Report of Social and Human Sciences
[54] Report of Exact Sciences

In some areas there is considerable support for strengthening the evaluation by inviting foreign experts, while in other fields the opinions are mostly unfavorable. In practice, however, external evaluation is limited to the presence of specialists from national universities and institutes – which also makes impossible a realistic evaluation based on experience of the cost/benefit analysis of such practices.

**Table 17. Opinions of doctoral supervisors and students regarding the usefulness of foreign experts in the evaluation commissions of the doctoral theses, by field of study**

| | Doctoral supervisors | | Doctoral candidates | |
|---|---|---|---|---|
| | Less useful | Useful indeed | Less useful | Useful indeed |
| Exact Sciences | *38%* | **62%** | 46% | 54% |
| Engineering | *40%* | **60%** | 45% | 55% |
| Social Sciences, Law and Security Sciences | 41% | 59% | 46% | 54% |
| Humanities | 45% | 55% | *38%* | **62%** |
| Economics | **60%** | *40%* | 50% | 50% |
| Medicine and Pharmacy | **64%** | *36%* | **59%** | *41%* |
| Agronomics and Veterinary Medicine | **67%** | *33%* | **56%** | *44%* |
| Arts, Architecture, Sports | 63% | 38% | 42% | 58% |
| Total | 47% | 53% | 48% | 52% |

Source: Report of Quantitative Analysis

## 5.4 Evaluation and Quality Assurance

### *Institutional Procedures of Quality Evaluation*

Periodic external evaluation of the institutions organizing doctoral studies and of the doctoral supervisors is set by the law. The doctoral supervisors must be evaluated every five years by committees of experts. The last such evaluation took place in 2007. This exercise was, however, largely a formality, due to the lack of a clear methodology[55]. The periodic evaluation of the institutions organizing doctoral studies in 2007 also did not take place due to the lack of evaluation methodologies[56].

The internal evaluation of the doctoral studies is also largely formal. The doctoral supervisors are evaluated within the general process of internal evaluation in the university department, without specific criteria regarding the doctoral

[55] Legislative Report
[56] Report in Arts, Architecture and Urbanism, Physical Education and Sports

supervision activity[57]. As a positive practice some institutions organizing doctoral studies have initiated internal evaluation systems also based on feedback from the doctoral students[58].

### *Transparency in the Organization of Doctoral Studies*

When we refer to the legislation on the doctoral studies we come to identify more weaknesses and risks: the lack of consistent legislation and poor enforcement of the laws. From this point of view, the academic and scientific community can play a major role in ensuring the quality of doctoral studies through an informal and complementary monitoring and evaluation of what is achieved through institutional procedures. The transparency of the doctoral studies and performances can enable a competitive production in the institutions organizing doctoral studies, the creation of an environment of peer evaluation, and also the dissemination of positive practices.

An empirical analysis of the information available on the websites of 52 doctoral schools of the University of Bucharest, UBB Cluj-Napoca, and UAIC Iasi shows that certain types of information, mainly those relating to the admission procedures and timetables, are easily accessible - although generally lacking information on the fees and the number of supported seats. Then again, information on the courses during the preparation stage, titles and summaries of dissertations, and information on the research activity of the doctoral supervisors are usually absent[59].

The current regulations (GD 567/2005) do not explicitly specify what should be published on the website of the institution. But there are also positive practices in some institutions organizing doctoral studies, which make available online the summaries of the doctoral dissertations[60].

## *5.5 Opening of Doctoral Studies*

### *Interdisciplinarity in Doctoral Studies*

The Romanian institutions organizing doctoral studies favor disciplinary doctorates with themes circumscribed to a field of science. Conversely, at the global level we are confronted with complex problems. To solve them we need trans- and inter-disciplinary research. Consequently, at this stage the Romanian doctorate is not yet well enough shaped to be a dynamic player and to ensure Romania a competitive advantage in addressing major problems facing humanity - from climate

[57] Report on Engineering, Report on Agronomics and Forestry Sciences, Zootechnics and Veterinary Medicine, Report on Exact Sciences
[58] Example of the „A. I. Cuza" University of Iaşi, mentioned in the Exact Sciences Report.
[59] Report on the transparency of the organization of doctoral studies
[60] For example, the "Carol Davila" University of Medicine and Pharmacy, the Academy of Economic Studies in Bucharest, or the "Ion Ionescu de la Brad" University of Agricultural Sciences and Veterinary Medicine.

change, to overcrowding. Consequently, the access to international funds dedicated to addressing these problems is insignificant.

Trans- and inter-disciplinary research are somewhat better represented in the research institutes of the Romanian Academy and in the national institutes, but they are often carried out in related fields (e.g. physics and chemistry, mathematics and physics, etc...). Therefore, trans- and inter-disciplinary research rarely appear between natural and exact sciences on the one hand, and social, human and economic sciences, on the other hand. This is a substantive issue because, as mentioned above, the major concerns of humanity, such as population aging and/or climate change, cause issues (e.g. migration) which must be resolved through cooperation between the social, human and economic sciences (e.g. psychology, sociology, geography, etc..) and the exact and natural sciences (e.g. physics, chemistry, environmental sciences, etc.). Romania is not yet prepared in this respect, and the doctorate, as school and launching path for new researchers, must be seriously oriented in this direction.

A hypothesis could be envisaged. It may be paradoxical that the trans- and inter-disciplinary research is not yet a dominant element in universities, where the diversity of fields in one research unit, is often quite high. Perhaps the disciplinary organization of universities in Romania at the BA level, does not favor this approach. The establishment of research schools with master and doctoral studies (equivalent to the "*graduate schools*") could boost the trans- and inter-disciplinary research, while the BA studies could maintain their disciplinary approach, necessary to the initial academic preparation. The research schools may address more flexibly and more efficiently the trans- and inter-disciplinary advanced research.

Even if disciplinary, the content of the doctoral dissertation is not always meant to focus on solving problems be they theoretical (e.g. in research/exploratory) and/or practical (e.g. applicative research, development and innovation), relevant and with national and/or international impact. Some carry out research as a "hobby" and work on what they like and/or on themes the supervisor is familiar with. They do not have in mind the relevance and expected impact of the chosen theme for the scientific community. This has adverse effects, leading to a fragmentation of the doctoral research and lower visibility, relevance and international, and often even national impact.

The choice of the research themes varies greatly. In the consensus between the supervisor and the doctoral candidate, sometimes the position of the supervisor and his or her doctoral projects dominates (e.g. in the national research institutes), and sometimes the interest of the doctoral candidate in a theme which does not overlap with the research plan of the PhD supervisor dominates (e.g. in the social and human sciences, in some institutes of the Romanian Academy).

### *Doctorate's Relevance to Current Society and Economy*

The doctorate in Romania has not been designed and organized to provide the advanced skills required on the labor market, especially in professions outside the academic area. Usually become PhD holders the persons aiming at teaching and/or research careers, or those who are already working and seek to gain prestige and/or promotions through a doctorate degree (e.g. some management positions require master and/or PhD studies), or a salary increase (e.g. 15% of their salary) and/or an extension of their activity (e.g. up to 70 years of service in the medical practice).

For example, in engineering, the number of PhD students is very low in areas with rapid insertion into the labor market and satisfactory salary income (e.g. computer science, informatics). Usually, the PhD candidates are those who have failed to find a well paid job, and this happens in areas where the labor market is not very stimulating (e.g. mechanical engineering); thus some are using the doctorate as a means of deferring entrance to the labor market to find a suitable position.

By often perpetuating an academic curriculum focused on a university professor (e.g. curriculum is often not designed in terms of needs, but to suit the academics available to teach it), the doctoral students are not well equipped to enter the labor market. The curriculum should be determined through dialogue among academics, doctoral candidates and representatives of the labor market so as to ensure the - declarative and procedural - skills as to facilitate a rapid assimilation of PhD holders in the social and economic environment.

### *National and International Cooperation*

The national cooperation and mobility in the PhD studies is low. This state of fact is even more clear when talking about national cooperation between different academic centers. Cooperation is often generated by legal requirements – the doctoral committees must have specialists from research units different than the one to which is affiliated the doctoral student – and not by the concern to solve problems through close cooperation between different institutions organizing doctoral studies, or to interact with top specialists. This is the reason why the national research at doctoral level may not always reach the maximum allowed by Romania's potential. In addition, the advanced research facilities in some existing centers are not properly used. The doctoral students feel this negative state of affairs and mention the dominant issue in the Romanian doctoral system which is that the PhD candidates are usually selected among the students of a doctoral supervisor.

Paradoxically, international mobility and cooperation in PhD studies appear to be more dynamic. Unfortunately, they often remain at the level of doctoral students and/or supervisors' mobility, during some short periods spent abroad. The funds for these trips come from grants, contracts and sponsorships (which can reach up to 23% in the medical field). In addition, they are often disciplinary, in the field of the

doctoral student and/or supervisor, while the trans- and inter-disciplinary cooperation is weak. Accordingly, the involvement of the Romanian institutions organizing doctoral studies in major international projects, through consortia addressing the problems mankind is facing (e.g. human genome project, climate change etc.) is still weak.

The doctorates under co-tutoring are also reduced, as the institutions organizing doctoral studies have under ten doctorates under co-tutoring. The co-tutoring is mostly international, while the national co-tutoring is even less frequent. In the research institutes, if achieved, the doctorates under co-tutoring exist especially in more general projects of international research. Understanding this situation is important and contradicts the opinions of the PhD students, who see the doctorates under co-tutoring in positive terms, as contributing to an increase of quality in research and doctoral theses. In this context it is worth mentioning that the national recognition of a doctorate obtained abroad is still cumbersome and time consuming, and involves complicated procedures.

The consequence is that the Romanian institutions organizing doctoral studies are not very attractive for foreign PhD students, and their number is low as compared to Romania's potential (e.g. number of institutions organizing doctoral studies). The solution proposed by the institutions organizing doctoral studies to increase the number of foreign PhD students is to involve them in research projects. Although it is a good strategy, it must be accompanied by some efforts to increase the international prestige of the institutions organizing doctoral studies, to make them interesting to students willing to pay their studies within an institution organizing doctoral studies of excellence and internationally competitive.

# 6 Recommendations

The current doctoral system in Romania is the result of reforms and developments which took place over more than a century in higher education and research. The success of our universities and research institutes historically also depends on how the doctoral system works. However, despite such dependency and the long history of PhD studies, to date no thorough and comprehensive analysis of the national doctorate system has been carried out. Over time, many references were made, government decisions or regulations were issued and implemented regarding the doctorate, but the distance between the strategic importance of PhD studies and analytical bases of the decisions related to it remained constant and large. Through this analysis and diagnosis we are now trying to eliminate such shortcomings, and we mainly aim at giving a new impetus to the achievements of the national doctoral system.

The context of this initiative is special. On the one hand, after 2005, in the process of implementing the principles and objectives of the Bologna Process, in order to achieve the national objectives of the Lisbon Agenda and especially with the increased academic and economic competitiveness in the European and global higher education and research area, the doctorate became a field of maximum interest in all European countries. On the other hand, at the national level several strategies were launched to assess the status of education and research, and legislative initiatives have been proposed in these areas, with among them the activities of the Presidential Commission for Education and Research, coordinated by Professor Mircea Miclea, which resulted, among other things, in a National Pact for Education and Research signed in 2008 by the leaders of the parliamentary parties and representatives of the civil society. In this context, our doctoral system is about to be reviewed and strengthened to improve the quality, develop the universities and research institutes, scientific disciplines and interdisciplinarity, train young academics, researchers and production managers, and to help apply the scientific knowledge. Follows a set of **recommendations for review and consolidation of the Romanian doctoral system**, as resulted from this diagnostic analysis.

## *6.1 Organization of the Doctoral System in Romania*

In our doctoral system no notable differences appear between the current doctorate as program of studies, and the title of doctor of science. Differences appear in the actual practices of doctoral training and in the institutional criteria for granting the title of doctor. After the creation of the professional doctorates in the vocational institutes of arts and sports, a new variety of titles appeared *de jure*, along with the previous one associated with the academic disciplines. But there is still confusion regarding the performance and comparability of the two doctoral paths.

The current doctoral system in Romania is divided into two sectors – that of the universities and the one of the research institutes of the Romanian Academy. In the two sectors, the doctorate is organized following disciplinary criteria, through an academic classic division of scientific knowledge. In each sector rather different legal rules apply: the Academy institutes apply traditional legal rules; the universities apply new rules, adopted in accordance with the principles of the Bologna Process.

The national research institutes can organize university doctoral studies. They contribute to the preparation of the PhD students working in an institute, and to the research activity of the doctoral directors of that institute. However, partnerships and consortia rigorously defined between the universities and the research institutes in the organization of doctoral studies are lacking.

PhD training is structured on several different axes, including day courses/distance learning, with or without scholarships, scientific/professional doctorates.

The relations between doctoral and master study programs are still precarious. The management and administration of doctoral schools are not enough organized institutionally in sufficiently distinct paths; the international relations of many doctoral schools are still at an early stage; the mechanisms of quality assurance of teaching and doctoral research are not rigorously designed; the publications of the doctoral students, and sometimes even of some doctoral supervisors are not oriented so as to generate a distinction of genuine "school".

The recruitment and selection of doctoral candidates are key areas of academic reproduction made at the institutional and discipline levels, thereby crucially influencing the role of research as a factor in increasing the economic competitiveness of a nation. For now, the selection and recruitment of PhD students is focused on academic institutional reproduction, and happen sometimes to be extended to a clientelar reproduction of the power position of the doctoral supervisors. There are academic disciplines at the top research dynamics, which are deficient in the selection of their PhD students because of the attractiveness of the labor market. This may cause blockages in the reproduction of academic performance.

The share of public funding allocated to PhD studies on disciplinary areas appears to be random, without clearly defined strategic options; a review in terms of increasing the budgetary allocations for development of PhD studies in science and engineering, and especially in areas associated with the applicative economy and the contemporary society could be taken into consideration in the near future.

The consequences of this state of facts are:

The doctorate in Romania is not institutionally and legally uniform.

Comprehensive partnerships between the universities and the research institutes - including those of the Romanian Academy are lacking; these partnerships should be regulating the contributions of the participants, intellectual property rights, access to doctoral research infrastructure etc.

Despite the establishment of formal doctoral training and the title of doctor, differentiation often appears in the criteria and practices related to the award of the title of doctor. For example, there are identical formal requirements and diplomas for the doctoral students by day courses and distance learning, while the two categories have different needs, and the requirements are often lower for the doctoral students by distance learning.

The opportunity of extending the professional doctorates to other fields is insufficiently explored.

There is common practice to exceed the time limits specified in the plan regarding the research and drafting the doctoral dissertation, resulting in guidance difficulties, a lower quality of the dissertation and a high drop out risk for the PhD candidates engaged in successive delays.

The doctoral schools lack clear individual management and administration: they are transversal structures, without distinctive roles; the roles of the director and of the doctoral school council are not clearly defined.

The doctoral schools are rarely integrated with the master programs. The institutional strategies for the recruitment of PhD students also lack, resulting in a relatively uncompetitive admission, closed to the candidates from abroad.

The basic funding for doctoral studies is insufficient in the absence of complementary resources from the state budget. In addition to the basic funding of the doctoral studies designed to contribute to the financing of the research activities of the students, it is necessary for the institutions to identify appropriate complementary sources (e.g. research grants, contracts with economic operators).

The doctoral school concept in Romania is, in principle, a concept that corresponds to the international models of performance, which has been implemented differently in the various universities, but which sometimes did not lead to the expected performance.

Based on this diagnosis, we recommend the following:

Recommendation 1. **Adopt uniform meanings associated with the title or degree of doctor and their consistent application**. Thus the following statement could be considered: *A doctoral degree is the highest academic qualification that can be conferred on a student who successfully completed the BA and master' programs, who was enrolled in a doctoral program of learning and research in a university (organized independently or in collaboration with research institutions accredited for this purpose), has passed all the prescribed examinations and in the end has successfully presented a dissertation which includes original ideas and enhances knowledge in a specialized discipline, recognized as such in the academic division of knowledge, or who proposes a technological innovation recognized as such by the economic production market, or a highly creative artistic product.*

Recommendation 2. **Review of the regulatory basis of the national doctoral system in the European context**, so as to harmonize its legal and financial terms, but keep it diverse, competitive and comparable in institutional terms.

Recommendation 3. Create facilities and establish incentives, including financial ones, for **multiplying the inter-institutional partnerships between universities, between the latter and research institutes**, and also involving companies in the organization of doctoral programs.

Recommendation 4. **Organize or re-organize doctoral schools, especially research schools in universities to include master, research, doctoral and post-doctoral studies** (Graduate Schools), in a form that would facilitate consistent involvement and adequate duration of studies of the best performing students in research, and which would ensure an appropriate completion of the research projects by PhD students/junior researchers. This re-organization would match the best international models, and would encourage greater collaboration between the PhD studies in the universities and other stakeholders (Romanian Academy and the national institutes for research and development). The establishment of research schools may also boost the trans-and inter-disciplinary research.

Recommendation 5. **Organize: (a) Doctoral Schools and/or (b) Research Schools (MA and PhD) of *intra-***

***institutional/interdisciplinary*** **type or** ***inter/mono-disciplinary*** to facilitate optimum use of resources and enhanced communication between doctoral students and supervisors. Promote, along with disciplinary themes, inter-doctoral and trans-disciplinary themes, to address complex problems, with international relevance and impact.

Recommendation 6. **Increase institutional differentiation between doctoral and research school in administrative and managerial terms within the existing universities and the extended inter-institutional partnerships.** Distinct institutional paths should be identified in the institutions organizing doctoral studies from faculties and departments to the central level, for the doctoral and/or research schools. They could focus on institutional policies related to: criteria for establishment and operation of doctoral schools; admission to doctorate; doctoral research and learning; progressive assessment in learning/research and achieved results; management of funds and research facilities.

Recommendation 7. **Integrate PhD students, especially those by day courses, in collective research projects** that would allow continuous monitoring of progress, and provide support and continuous feedback from the project team. It could even be decided that the enrollment of PhD students by day courses can only be possible when the doctoral/research school operates research programs with institutional funds or funds obtained in the form of competitive research grants.

Recommendation 8. **Extend the professional doctoral training based on applicative research** to other areas, in an institutional format based on: consortia including institutions organizing doctoral studies, businesses, public and private research institutes; the possibility for the experts in a specific professional field to co-participate in the doctoral tutoring; allow distance learning. The professional and scientific doctorates could be recognized either by the same type of diploma, or by different diplomas. One possibility would be to preserve both doctoral titles, academically equivalent, and develop the specific paths for the organization of the doctoral learning and research programs, meaning doctor of science (identified by the acronym PhD) and professional doctor (DProf). The first type of doctorate should be organized by day courses and mostly on themes of fundamental/exploratory research, especially to ensure the training of new researchers and academics, while the other

doctorate could be by day courses, but mostly by distance learning, predominantly on applicative themes (development and innovation) and artistic creation or sports performance. Therefore, if the first doctorate should form human resources for the academic and research sectors, in order to generate and maintain fundamental/exploratory research with a paradigmatic role in science, of which some may have applications in development and innovation, the professional doctorate may become the principal means by which science would directly contribute to the creation of an advanced Romanian economy and society based on knowledge.

Recommendation 9. Support through **scholarships the doctoral students by day courses**, from baseline funding and research grants obtained on competitive bases; **financial support** by access to equipment, laboratories, etc. **of the research activity** of doctoral students.

Recommendation 10. Develop at the level of the institutions organizing doctoral studies clear rules on the **intellectual property rights of the PhD students, on their division between the institution, the doctoral candidate and the supervisor**. In doctoral studies contracts concluded between the rector/director (possibly sponsor), the doctoral candidate and the supervisor should be clearly specified provisions on the allocation/sharing of the intellectual property rights.

Recommendation 11. **Enlarge access to post-doctoral research funding** from public and private funds, which would be annually distributed on competitive basis. Such fund would facilitate an autonomous construction of junior researchers careers.

**Recommendation 12. Encourage funding by private employers of doctoral studies, through tax incentives.**

**Recommendation 13. Finance doctoral studies**, mostly from public, but also from private, funds, which would be allocated at the institutional level in series of 3-4 years, and through individual study grants.

## *6.2 Status of Doctoral Candidates and Supervisors*

One of the major contradictions of our doctoral system is between the traditional and the new status of the PhD students. The first is still dominant, as required by the current law and institutional practices. The second type of status, the emerging one, is already generalized in many European systems and required by

the regulations of the European Union, or by recommendations of some European institutions. A change in the status of the Romanian doctoral students is therefore to be expected.

The number of PhD students by day courses and distance learning have steadily increased until early 2000; then the number of PhD students by distance learning has decreased, and the number of PhD students by day courses funded from the public budget has increased. Since 2009, a category of PhD students with doctoral scholarships appeared in the public universities, which led to a new system of doctoral studies financing. It seems that we are about to begin a new period of organization and operation of the PhD studies, based on: an increase in the number of PhD students by day courses, funded by scholarships and who are involved in research projects of their doctoral supervisors, financed on competitive bases; with them coexist the PhD students by distance learning who pay for their studies, and who must secure their own research funding or participate in funding competitions for PhD students through *ad hoc* programs established by the public financiers of research.

Consequences of the current status of the doctoral students:

The current status of the doctoral students is inconsistent, made of a variable agglomeration of roles which have a negative impact on the potential performance of the doctorate and the doctoral studies. The oscillating rules lead to uncertainties relating to: the recognition of seniority in employment and in the professional field (research), the possibility for the PhD students by day courses to have another job, the continuation of the professional trajectory after graduation.

The doctorate is most often undertaken as part-time occupation. Even for the PhD students by day courses, the doctoral studies are often conducted in parallel with another job. The lack of postdoctoral programs widely opened to the graduates is what determines the PhD students to look for a job.

We have a variety of PhD students: by day courses or distance learning; subsidized from the State budget or fee payers; already employed in academic/research institutions or with no connection to research; with or without scholarship, etc. For all of them, regardless of their status, the requirements are rhetorically presented as similar and the diplomas as equivalent, but their training and research experience, and especially their performances vary significantly.

Most often, if not exclusively, getting indefinite term employment in the Romanian universities and research precedes the enrollment in doctoral programs and the finalization of PhD studies.

The inconsistency of the PhD students' status is associated with the drop-out rate and/or a prolongation of the doctoral studies, which means institutional inefficiency, personal frustration and multiplied bureaucratic practices or even arbitrary approaches.

The position of doctoral supervisor is subjected to holding a title of university professor or 1st level researcher and to being affiliated with an institution organizing doctoral studies. There are no clear regulations for all doctoral schools activities, and the established maximum number of PhD students is often exceeded.

In general, the personal guidance model is kept, even inside the Doctoral Schools. There is a high asymmetry of mentor and PhD student relationship, as the doctoral supervisor is often the only person who knows the situation of the PhD student, who guides and evaluates him or her.

The doctoral studies contracts have general provisions, and they are affected by the legislative validity issues.

Considering the above situations, we recommend the following:

Recommendation 14. **Clarify the status of PhD students**, in relation to their real activities and responsibilities. The status of the PhD students by day courses as doctoral intensive studies should be strengthened by correlating the funding and research opportunities with the guidance requirements. A PhD students is a junior researcher or academic with clear and distinct status, and with social rights (length of service, access to health care, etc.) to be recognized accordingly.

Recommendation 15. For a period of at least six consecutive years, **maintain the current number of doctoral students by day courses with scholarships** and mostly distribute them to the priority areas of research at the national and European level on complex, trans- and inter-disciplinary projects.

Recommendation 16. **Recruitment in universities or research institutes** by indefinite term would be done through transparent public contest, only among the candidates who already hold a doctoral title or degree.

Recommendation 17. **Allow the tutoring of doctoral candidates to be performed by university lecturers and CS II researchers** who have proven high performance in research. PhD guidance could thus be provided by a doctoral supervisor, assisted by other

members of the Doctoral School (co-mentors), for example, lecturers or CS II who are managing projects and research grants.

Recommendation 18. **Increasing exigency in research by providing and maintaining the right to tutor PhD students**, including the existence of research grants obtained through competition.

Recommendation 19. **Preserve the right to guide PhD students if transferred to another institution organizing doctoral studies**, by regulating the options of the PhD students in such case.

Recommendation 20. **Train doctoral supervisors through specific activities**, to develop their guidance skills and competencies.

Recommendation 21. **Rigorous regulation of the guidance activities carried out by the doctoral supervisors**, considering the variety of associated activities and results obtained through their research, and that of the PhD students they are tutoring.

Recommendation 22. **Strict limitation of the number of PhD students to be guided by one doctoral supervisor** under the Bologna system, for example to a maximum of 10.

Recommendation 23. Clearly set the responsibilities of the participants to doctoral programs through **doctoral study contracts**.

Recommendation 24. **Increase the representation of the interests of the doctoral students in the institutions organizing doctoral studies.** It could be achieved by them creating PhD students' associations.

**Recommendation 25.** Encourage **doctoral students' representation in university senates and councils.**

## *6.3 Academic Quality of Doctoral Studies*

The doctoral school is a correct concept, which corresponds to the international performance patterns. However it was distortedly applied in Romania, constrained by the negative realities of Romanian PhD studies - described in this diagnosis - and by the pressures of the Bologna model to reduce the duration of doctoral study. Therefore there is a need to issue regulations and means of control on the implementation of the "doctoral schools" concept, with special emphasis on curriculum development, in order to (1) allow the initiation of research activities in

early years; ( 2) foster inter- and trans-disciplinary interactions; (3) include the doctoral student in research teams; (4) change the student-supervisor diadic doctoral relationship, which should be integrated into the concept of the research group, where the mentoring relationship is fundamental, and is not canceled but benefits from the contribution of a research group.

The consequences of the current configuration of the doctoral studies are:

Common situations of redundancy between the doctoral schools and the BA or master courses, and the lack of diversity of the courses among which a PhD student can choose according to his interests – are difficulties also exacerbated by the fact that only doctoral supervisors are allowed to teach doctoral courses in the Doctoral Schools.

The credit system works rather like a formality, without allowing individual options in the doctoral training.

Situations of curriculum exclusively focused „on the professor", depending on the availability and interests of the faculty, with a weak reference to the National Qualifications Framework.

The lack of a clear distribution system of the courses on general types of skills during the training, as required for doctoral graduates, including transversal skills.

The high heterogeneity of the PhD students in some fields makes difficult the design of relevant courses for all participants. In the absence of guidelines focused on interdisciplinary study, the PhD students in other areas are likely to achieve reduced performances.

In some areas there is a low level of integration of the scientific production in the international flows.

The lack of minimum objective criteria at the national level regarding the results of the PhD students' scientific activity, such as publications or participation in conferences.

The lack of clear and comprehensive checking procedures on the intellectual property on the work produced by the PhD students and all researchers in general.

A variable evaluation of the doctoral theses upon their submission to university chair or doctoral schools.

A high level of formalism in the evaluation of the theses by the doctoral commission.

Situations of quasi-total dependency on the doctoral supervisor's assessment for thesis evaluation and even for the doctoral activity.

Lack of foreign experts in the doctoral commission evaluating the doctoral theses.

Under the current socio-economic conditions, the performance of the Romanian doctoral schools is not one to be included in the "World-Class Research" type, because it does not lead to internationally relevant findings, which could generate new paradigms and/or technology/services to impress the international research.

Considering the above, we recommend the following:

Recommendation 26. Elaborate rules and means of control on how the doctoral school/research institution is implemented, with special emphasis on **curriculum development and implementation of research**, which would (1) allow initiation of research activities in early years; (2) allow inter- and trans-disciplinary interactions; (3) include the doctorate in research teams; (4) integrate the diadic relationship doctoral student–supervisor in the concept of the research group, where the mentoring relationship would benefit from contributions of the larger research group (i.e.: lecturers or CS II).

Recommendation 27. **Streamline the training programs in doctoral/research schools**, to be focused on: (i) learning through research, including systematic assimilation and practice of effective research techniques; (ii) advanced academic knowledge, based on the latest research in the disciplinary/interdisciplinary doctoral area of study; (iii) formation of transversal skills (communication, management, leadership, entrepreneurship).

Recommendation 28. **Introduce courses for doctoral students taught by specialists who do not have the didactic rank of professor or CS I**, but who have a proven experience in the field of research.

Recommendation 29. **Use the credits system** to allow the doctoral students a certain liberty of choice of their courses during the preparation period.

Recommendation 30. **The duration of doctoral studies should be more flexible and differentiated by day courses and distance learning**. To meet the demands for an extension of the period of preparation of the doctoral thesis for the day courses form of study, **associating doctoral studies with research master studies** might be considered. The doctoral students by

day courses would be mainly selected among the students who were enrolled in research masters. Such association between research masters and doctorates could facilitate to focus on actual research during the doctoral period, and on training courses during the master period. This would allow more time for the doctorate (2 years for research masters plus the 3 years for doctoral research). For doctoral studies by distance learning, the preparation period should be different for those who prepare their doctorate in their BA or master's field of study, as compared to those who change their field of study. The preparatory period would take more than 2 consecutive years and should focus on training in advanced research theory and methodology, and on assimilating transversal skills (e.g. communication and management). After this period, the PhD student would start preparing his or her doctoral thesis and could come any time in the doctoral school for a presentation and evaluation of the thesis. The period for institutional submission and evaluation of the thesis would be chosen by the PhD student in consultation with the doctoral supervisor and the Doctoral School Council, and have a maximum duration of one academic year. The fee for the doctoral studies by distance learning would be paid for the preparation period and for the period related to the achievement and evaluation of the thesis.

Recommendation 31. Reorientation of doctoral research to themes relevant to both national and international level, and implementation of **performance indicators** used in international competitions (e.g. ISI publications/books in international publishing houses, patents, proprietary innovative products, etc.)

Recommendation 32. **Provide continuous support and monitoring of the PhD student' activities** both by the doctoral supervisor and by a team of co-tutors in the doctoral or research school.

Recommendation 33. Consolidate specific tutoring paths for the **doctoral students with BA/MA diplomas in other fields**, based on introductory courses in the respective field and focus on interdisciplinary research and learning, using the basic training of the PhD students.

Recommendation 34. **Set minimum criteria for the research results for granting the title of doctor**, which may include: publication of a number of articles/studies in journals included in international anonymous reviewers databases (in the *double-blind*

*peer-review* system); participation in national and international conferences, patents, etc.

**Recommendation 35.** Introduce in the *Code* and in the *institutional practices* procedures of prevention and detection of **plagiarism and other intellectual fraud, as well as some rules on academic integrity.**

Recommendation 36. **Encourage the presence of foreign experts** in the theses evaluation commissions and in other commissions evaluating the work of the doctoral students, given the multiplication of the doctoral theses written in languages spoken internationally.

## 6.4 Quality Assessment and Assurance

The belief that the doctoral/research school should have a comprehensive academic freedom under the university autonomy is already established in our academic practice and ethos. The centralizing trends, of increased ruling and control of the ministerial or national agencies, appear to be in recession. However, the exchange of successful practices and experiences and an adequate convergence in this sense, can be better achieved following a common platform. The experiences from the Scandinavian countries are illustrative in this respect, as they have a regional platform (*Nordic Research Training: Common Objectives for International Quality*, Nordic University Association and the Nordic Academy of Advanced Studies, 2003), or from the UK, where the Quality Assurance Agency has promoted and implemented a *Code of Practice for Postgraduate Research Programs* (September 2004).

The consequences of the current configuration of the doctoral studies are the following:

Although there are formal mechanisms (laws) of quality assurance, their implementation in the existing doctoral schools is often deficient. The periodic external evaluations have been hampered by the lack of clear methodology, while the internal evaluations are often a formality.

There is a lack of systematic procedures for assessing the internal quality of doctoral studies, including, among others: evaluations by the doctoral candidates; monitoring research performance indicators for doctoral students and supervisors in doctoral schools.

Incomplete publication on the websites of the institutions organizing doctoral studies of relevant information on their functioning, performance, obtained results and opportunities offered to the doctoral candidates.

Considering the above, we recommend the following:

Recommendation 37. **Draft at the national level a *Code of Practice for Doctoral Research Programs*.** Such *Code* would be nationally relevant and would include references to: the establishment and operation of doctoral/research schools; the selection and admission of PhD students; the status of the PhD students; the status of the doctoral supervisors; coordination of doctoral theses elaboration; doctoral students' evaluations; quality assurance mechanisms; research organization and funding etc. The *Code* would have a double function: (i) convergence platform for the institutions organizing doctoral programs in order to achieve comparisons and exchange of national experiences and practices in a European context; (ii) reference document for audit, quality assessment and performance of the doctoral/research schools. The *Code* should be customized to each institution organizing doctoral studies.

Recommendation 38. The Code's implementation would be monitored through peer evaluation, preferably by remote (*online*) access to relevant information. For instance, a **Council of Doctoral Study Programs** could be established, affiliated to CNCSIS and ARACIS. The Council would be established through appropriate procedures by a **Doctoral Schools Association** established at national level and affiliated to the EUA Council on Doctoral Education.

Recommendation 39. **Publish on the doctoral schools' websites extended abstracts of the doctoral theses presented** in Romanian and English, and other relevant information such as: a list of doctoral supervisors and their resumes; current research projects; opportunities and mobility offered to the doctoral candidates.

Recommendation 40. The implementation of the *Code* would also be monitored by allowing **public access** to the relevant information posted on the doctoral and research schools' websites, and allowing to point out any irregularity to a control committee.

Recommendation 41. The explicit and specific **quality assurance implementation mechanisms** provided by the legislation, should become a major standard in the future accreditation of doctoral schools.

Recommendation 42. CNCSIS and ARACIS to perform during 2011-2013 **periodic evaluations of the research performance and of the accreditation of all institutions and doctoral schools organizing doctoral programs**, based on generic criteria such as: (i) existence of proper research facilities; research results proven by international publications and by innovation; patents; as well as institutional research programs funded on competitive bases; (ii) the existence of academic quality assurance mechanisms of doctoral learning and research, including transparent procedures of internal evaluation; (iii) an adequate system of organization, management and operation of the doctoral/research schools; (iv) involvement in networks of inter-institutional cooperation at national and international level.

Recommendation 43. **Quality assessment of doctoral studies by the PhD students**, as beneficiaries, through anonymous sociological surveys carried out periodically.

Recommendation 44. Introduction by the Council of Doctoral Study Programs of an **international *benchmarking*** system, which would allow comparative analyses of the institutional performances of doctoral studies in Romania at the European and global levels.

## 6.5 Opening of Doctoral Studies

The relations between the academic institutions organizing doctoral studies and the private sector organizations in the real economy are almost inexistent; PhD studies are financed exclusively from public funds, including European funds.

Also, the interdisciplinary doctorates or the doctorates carried out by inter-university cooperation are almost non-existent; the cooperation between academic and research institutions is scarce or very fragmented.

Attracting talented candidates from abroad tends to become a mandatory requirement, especially after the European Parliament launched the famous *Blue Card* for extra-European mobility of labor in general, and of the high-skilled in particular. To the migration trend in doctoral studies we must oppose the international and inter-institutional cooperation trend. The PhD holders from prestigious foreign universities must have access to real employment opportunities in the Romanian research establishments and universities, in a predictable legal and financial environment.

The consequences of the current configuration of the doctoral studies are:

The Romanian doctorate is academically oriented, not well integrated and coordinated with the labor market and the socio-economic needs; therefore, it is not an engine of a Romanian economy and society based on knowledge, as it should be in accordance with the Lisbon Agenda.

The themes for PhD studies are mostly disciplinary. Inter- and trans-disciplinary research, allowing to approach theoretical and practical relevant issues with international impact, are poorly represented. Even the disciplinary themes are not enough connected to the relevant international themes or to those required by the national social and economic environment.

The national mobility within PhD studies is reduced; the international mobility has increased but remained predominantly discipline oriented.

Considering the above, we recommend the following:

Recommendation 45. Rethink the curriculum and the doctoral research to **anchor it to the labor market in connection with the socio-economic needs,** in order for the doctorate to become an engine of a Romanian advanced economy and society, based on knowledge.

Recommendation 46. Promote, along with disciplinary themes, some **inter- and trans-disciplinary doctoral themes** to address complex problems, with international relevance and impact. This could be achieved especially in the context of the organization of research schools, by integrating master and doctoral programs.

Recommendation 47. Organize doctoral studies of excellence in **languages spoken internationally**.

Recommendation 48. Develop a **national strategy to attract national talents towards the doctoral programs and expand the recruitment of PhD students to developing or developed countries,** where Romania is internationally competitive.

Recommendation 49. Rethinking **cooperation and mobility** among the national doctoral schools, combined with an increased number of (national and/or international) doctorates under co-tutoring, in inter- and/or trans-disciplinary research.

## *6.6 Summative Table of the Diagnosis and the Recommendations*

| Configuration | Strengths | Weaknesses | Recommendations |
|---|---|---|---|
| **Organization of doctoral studies** | | | |
| Relations between the universities and the research institutes | The doctoral studies are organized by the Universities and the Institutes of the Romanian Academy.<br>The Government Decision 567/2005 states that "the Romanian Academy Institutes and other research institutes in the country and abroad can participate in the doctoral cycle of university studies by setting up consortia with the institutions organizing doctoral studies." | Lack of comprehensive partnerships of universities with research institutes - including those of the Romanian Academy<br><br>Lack of partnerships with other private or public organizations | **Stimulating development of effective and equitable partnerships** between the doctoral and research schools, the research institutes and other employers in the private or public sector |
| Intellectual property rights | | For the doctoral candidates who carry out their research work in a research institute, the requirement for universities to have intellectual property rights on the respective doctoral theses is in contradiction with the rights of the research institutes | **Elaborate clear rules at the level of the institutions organizing doctoral studies on intellectual property rights of the PhD students**, on how to divide them between institutions, doctoral supervisors and PhD students. The contracts concluded between rectors/directors (possibly sponsors), doctoral supervisors and PhD students should clearly state provisions on the allocation / sharing of intellectual property rights. |

| Configuration | Strengths | Weaknesses | Recommendations |
|---|---|---|---|
| Regulations on study duration | Integration in the Bologna Process<br><br>Flexibility for extension<br><br>Refining PhD studies as a stage of training and not a career option | Poor integration of doctoral studies with the master' programs<br><br>Difficulties in completing the theses within the three years deadline, in particular for:<br>- PhD students by distance learning<br>- PhD students in certain disciplinary areas, with specific experimental requirements<br><br>Common practice to exceed the deadlines specified in the research plan and for drafting the thesis, leading to difficulties in tutoring, a lower quality of the dissertations and a high risk of drop out | **Establish research schools** to integrate research masters and doctoral programs of study, to ensure continuity of studies<br><br>**Integrate PhD students in collective research projects** to enable continuous monitoring of progress, and provide support, and continuous feedback from the project team |
| Regulations for day courses versus distance learning doctoral studies | Access of broad categories of graduates to doctoral studies<br><br>Opportunities for lifelong learning<br><br>The possibility to use individual professional experience in doctoral studies | Formally identical requirements and qualifications for PhD students by day courses and distance learning, while currently the demands are lower for the PhD students by distance learning<br><br>Equal duration of doctoral studies, while the PhD students by distance learning have less time to spend on their doctoral thesis | **Distinction between the day courses doctorate focused on fundamental/exploratory research, and the professional doctorate especially organized by distance learning and focused on applied research with professional relevance.** |

| Configuration | Strengths | Weaknesses | Recommendations |
|---|---|---|---|
| Scientific doctorate vs. professional doctorate | Introducing PhD studies in the professional fields of arts and sports<br><br>Adequacy of the professional doctorate for:<br>- Applicative research<br>- PhD students who already have professional experience and do not desire a career in research or academia<br>- PhD students who wish to study by distance learning | Controversy concerning the opportunity to extend PhD studies to other professional fields<br><br>The lack of systematic collaboration between the institutions organizing doctoral studies and the economic players | **Expanding the professional doctoral training based on applicative research** to other areas, in an institutional format based on:<br>- Consortia including institutions organizing doctoral studies, economic players, public and private research institutes<br>- possibility for professional experts to co-participate in the tutoring<br>- possibility to study by distance learning<br><br>The professional and scientific doctorates can be recognized either by the same type of diploma, or by different diplomas.<br><br>**A possibility consists in keeping the two equivalent academic doctoral titles**, and developing specific paths to organize doctoral learning and research programs, e.g. doctor of science (identified by the acronym PhD) and professional doctor (DProf). The first type of doctorate would be organized by day courses and mainly on fundamental/exploratory research, mostly to provide human resource training of new researchers and academics. The other type would be organized in both forms but mostly by distance learning, on applicative themes (development and innovation)and artistic creation or sports performance. Thus, if the first type of doctorate |

| Configuration | Strengths | Weaknesses | Recommendations |
|---|---|---|---|
| | | | has the role to train HR and generate fundamental/exploratory research with paradigmatic role in science of which some may have applications in development and innovation, the professional doctorate may become the principal means by which science would directly contribute to the creation of a Romanian advanced society, based on knowledge. |
| Administration of doctoral schools | Observance of university autonomy | The doctoral schools in universities are transversal structures, without much independence; the roles of the Director and of the Board of the Doctoral School are not clearly specified | **Institutional strengthening of doctoral and research schools** through the establishment of administrative paths in the institutions organizing doctoral studies, at the faculty or department level, up to the central level. |
| Recruitment and admission of doctoral students | Harmonization of European doctoral programs through the Bologna Process<br><br>Introduction of Blue Card visa for qualified persons outside the European Union<br><br>Introduction of Europass system of CVs compatibility at the European level | Low proportion of foreign doctoral candidates.<br><br>High proportion of Romanian graduates choosing doctoral studies in other countries<br><br>Lack of recruitment strategies in the institutions organizing doctoral studies<br><br>A certain formalism of the admission procedures: admission is often limited to previous collaboration relations between doctoral supervisor and | **Develop a national strategy to attract** national talents to doctoral programs and expand the recruitment of PhD students to developing or developed countries where Romania is internationally competitive.<br><br>- Organize doctoral studies of excellence in **languages spoken internationally**.<br><br>Enhance specific guidance paths for **PhD students from other fields** based on:<br>- Introductory courses in the respective field |

| Configuration | Strengths | Weaknesses | Recommendations |
|---|---|---|---|
| | Admission to PhD in some fields and doctoral schools is opened to doctoral candidates from other fields, which facilitates interdisciplinary research<br><br>Formalizing the admission process and the presence of a commission for a rigorous selection | candidate<br><br>High heterogeneity of PhD students in some fields makes difficult to design courses relevant to all participants. In the absence of guidelines focused on interdisciplinary study, the doctoral students from other fields are likely to perform weakly | - Focus on interdisciplinary research, using the specific basic knowledge of the doctoral candidates |
| Doctorate funding | Availability of structural funds projects aimed at developing doctoral studies | The baseline funding for doctoral studies is not listed under a separate budget<br><br>Doctoral studies baseline funding do not include a component dedicated to student research activities | **Support through scholarships the doctoral students by day courses**, out of the baseline funding and from funds awarded on competitive basis<br><br>Financial support also by access to equipment, laboratories, etc. for the **research work of doctoral candidates**<br><br>**Encourage financing by private employers** of doctoral studies, through tax incentives |

| Configuration | Strengths | Weaknesses | Recommendations |
|---|---|---|---|
| **Status of Doctoral Candidates and Supervisors** | | | |
| Status of the doctoral candidates | Strengthen the status of the PhD students by day courses, through the introduction of structural funds grants and legislative clarifications | The status is not clearly defined, and includes the following roles:<br>- student<br>- assistant researcher or researcher<br>- member of the faculty<br>- member of the university chair<br><br>Contradictory regulations lead to uncertainties relating to:<br>- recognition of seniority in employment and seniority in the field (research)<br>- opportunity for PhD students by day courses to have another job<br>- continuing professional trajectory after study graduation<br><br>The oscillations in legislation - such as GD 1717/30.12.2008, lead to considerable difficulty for PhD students during the time needed to acknowledge their consequences<br><br>Even for the PhD students by day courses, the | **Clarify the status of PhD students**, in relation to their real activities and responsibilities. The PhD students are researchers or member of the faculty with clear and distinct statuses, and their social rights (seniority at work, health care, etc.) are to be recognized accordingly<br><br>For a period of at least six consecutive years, **maintaining the current number of doctoral students by day courses on scholarship** and allocating them on national and European priority research areas in complex, trans- and interdisciplinary projects<br><br>**Strengthen the status of doctoral student by day courses** as form of intensive doctoral study, by linking the funding and research opportunities with the guidance requirements |

| Configuration | Strengths | Weaknesses | Recommendations |
|---|---|---|---|
| | | doctoral studies are often conducted in parallel with another job | |
| Postdoctoral programs | Initiating some postdoctoral programs on competitive bases | Lack of postdoctoral programs widely opened to graduates | **Enlarge access to postdoctoral research funding** from public and private sources, annually distributed on competitive bases. Such funds would have the purpose to facilitate the autonomous construction of careers for young researchers<br><br>Designing postdoctoral programs that would offer support on competitive basis, to graduates of doctoral studies for a period not exceeding four years |
| Relevance of doctorate to academic/university careers | The doctorate is considered to be an essential step in building an academic career | Sometimes a job in universities or in research institutes for an indefinite period precedes the graduation of doctoral studies | **Recruitment in universities or research institutes for an indefinite period** will be done by public and transparent contest, only among the graduates who already have the title of Doctor |
| Status of doctoral supervisor | High level of autonomy in guiding doctoral students | Limit the status of doctoral supervisor to full university professors or 1st rank scientific researchers<br><br>Selection procedure rather redundant for obtaining the title of university professor | **Allow doctoral students to be tutored by academics** who have demonstrated high performance in research, without limitation to the didactic position of university professor<br><br>**Increase the demands regarding the research activity** in conferring the right to supervise PhD |

| Configuration | Strengths | Weaknesses | Recommendations |
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| | | Subject the right to guide doctoral students to a membership in a particular institution organizing doctoral studies, and lose this right in case of transfer to another institution organizing doctoral studies<br><br>Lack of financial reward and clear regulation of the doctoral schools' activities<br><br>A high ratio between doctoral students and supervisors | students<br><br>**Train PhD supervisors, through specific activities** in order to develop skills and competencies for doctoral mentoring<br><br>**Preserve the right to guide PhD students** in case of transfer to another institution organizing doctoral studies, and regulate the doctoral students' options in such case<br><br>**Strict limitation of the number of doctoral students** to be guided by one doctoral supervisor under the Bologna system to 10.<br><br>**Rigorous regulation** of the mentoring activities of the doctoral students by their supervisors, considering the variety of related activities and the research results of both parties. |
| Relationship between doctoral student – supervisor | The relationship is based on the fundamental principle of mentoring and mutual trust<br><br>Transition from purely individual guidance to individual guidance by co- | Maintaining the individual mentoring model within the doctoral schools<br><br>High asymmetry in the relationship PhD student - supervisor<br><br>Insufficient contractual specification of the responsibilities of PhD supervisors | **Increased representation of doctoral students' interest** in the institutions organizing doctoral studies through their participation in student organizations, possibly in doctoral students' associations<br><br>Encourage doctoral students' representation as students in university **councils and senates** |

| Configuration | Strengths | Weaknesses | Recommendations |
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| | tutors for the period of study; collaboration of doctoral supervisors within the doctoral school<br><br>Introduction of doctoral study contracts | Validity issues of contracts, due to the exclusion of the doctoral supervisor as signatory | **Clearly state responsibilities** of the participants to doctoral studies in doctoral studies contracts |
| **Academic Quality of Doctoral Studies** | | | |
| Curriculum | Diverse experiences of existing doctoral schools, including courses such as:<br>- transversal competences<br>- advanced field training<br>- lectures of personalities in the field | Situations of redundancy between doctoral Schools and BA or master' courses<br><br>Only doctoral supervisors can teach doctoral courses in doctoral schools<br><br>Cases of curriculum exclusively oriented "towards the teacher", according to the availability and interests of the faculty<br><br>Poor reporting to the National Qualifications Framework<br><br>Lack of clear distribution system of the training period of courses following the general types of skills required from graduates of doctoral studies, including transversal competencies | **Draft regulations and means of control** on how to implement the "Doctoral School" concept, with particular emphasis on developing curricula that would: (1) allow initiating research activities in the early years; (2) foster inter- and trans-disciplinary interactions; (3) include doctoral students in research teams; (4) incorporate the diadic relationship PhD student–supervisor in the research group concept, where the mentorship relation would receive the input of the research group<br><br>**Focus the training programs** in doctoral/research schools on:<br>(i) learning by research, including systematic assimilation and actual practice of research techniques;<br>(ii) advanced academic knowledge in the disciplinary / interdisciplinary field of the doctorate;<br>(iii) creating transversal skills (communication, |

| Configuration | Strengths | Weaknesses | Recommendations |
|---|---|---|---|
| | | The credit system works more as a formality, without allowing individual options in training doctoral students | management, leadership, entrepreneurship)<br><br>**Associate doctorates with research masters** would facilitate focusing on actual research during the doctoral period within a more generous time period (2 plus 3 years).<br><br>**Use the credit system** to allow doctoral students to have a certain degree of choice of their courses during the training period<br><br>Introducing **courses for doctoral students taught by specialists** who do not have the didactic rank of professor or CS I, but have proven experience in research. |
| Research performances | High-level consensus among doctoral supervisors and students, about the importance of participating in conferences and have work published during PhD training | In some areas there is a low level of integration of the scientific production in the international flows<br><br>Lack of minimum objective criteria on national scientific results of doctoral students<br><br>Lack of clear and comprehensive verification procedures of intellectual property regarding the work of PhD students and all researchers in general | Redesign doctoral research topics to follow **international relevant themes and implement performance indicators used in international competition** (e.g. ISI publications / books published by international publishing houses, patents, innovative proprietary products, etc.)<br><br>**Set minimum result criteria in research** to grant the title of doctor, and a number of publications in journals included in international databases with anonymous reviewers (following the double-blind peer-review system), attending national and |

| Configuration | Strengths | Weaknesses | Recommendations |
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| | | | international conferences, patents, etc.<br><br>Enhance specific guidance pathways for **doctoral students with bachelor's/master's degrees in other fields**, based on introductory courses in that area, and focus on **interdisciplinary** research, valuing the doctoral student's initial training<br><br>**Introduce plagiarism and other intellectual fraud prevention and detection procedures** |
| Evaluation of PhD students' activity | Evaluation of activity in multiple stages:<br>- continuous evaluation by doctoral supervisor;<br>- presentation of research project, essays and thesis in the university department or doctoral school;<br>- evaluation of thesis by the doctoral commission; -<br>public presentation of the doctoral thesis<br><br>The requirements of external reviewers in the doctoral commission<br><br>Institutional initiatives of | Variable demands in assessing the theses upon their presentation in the department or doctoral school.<br><br>High level of formalism in the evaluation of the theses by the doctoral commission<br><br>Quasi-total dependency on the doctoral supervisor' evaluation<br><br>Lack of foreign experts in the doctoral commission | **Continuous activity support and monitoring** of doctoral student **by** doctoral supervisor and a **team of co-tutors from the doctoral or research school.**<br><br>**Encourage the presence of foreign experts** in the doctoral commission before which the theses are presented and in other commissions assessing the work of the doctoral students, correlated with an increase in the number of theses written in foreign languages spoken internationally |

| Configuration | Strengths | Weaknesses | Recommendations |
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| | higher assessment requirements by introducing foreign experts | | |
| **Quality Assurance and Evaluation of Doctoral Studies** | | | |
| **Quality Assurance of Doctoral Studies** | Initiatives of the institutions organizing doctoral studies imposing additional quality requirements, such as:<br>- publication requirement;<br>- evaluation of graduates based on performance<br><br>The current legislation states that all doctoral supervisors are to be evaluated every 5 years by committees of experts approved by Order of the Minister of Education, Research and Innovation | The external periodic evaluations of the institutions organizing doctoral studies which, according to the Gov. Decision no. 567/2005, supplemented by OMEC no.4491/2005, should have been completed by May 1, 2007, did not occur because of the Ministry's inability to organize and develop the necessary methodology[61]<br><br>Formalism of internal evaluations of doctoral studies<br><br>Lack of systematic procedures for internal assessing of doctoral studies' quality, including, among others:<br>- Assessments by PhD students<br>- Monitoring of some research performance indicators of doctoral students and supervisors in doctoral schools | **Draft a Code of Practice** for Doctoral Research Programs<br>The code would include references to:<br>- the establishment and operation of doctoral/research schools;<br>- selection and admission of PhD students, status of doctoral supervisors, coordination of doctoral theses, evaluation of doctoral students,<br>- quality assurance mechanisms, organization and financing research, etc.<br><br>The Code would have a dual function:<br>(i) a convergence platform for institutions organizing doctoral programs to compare and exchange experiences and practices;<br>(ii) a reference document for audit, quality and performance assessment of doctoral/research schools |

[61] Report Arts, Architecture and urbanism, Physical Education and Sports

| Configuration | Strengths | Weaknesses | Recommendations |
|---|---|---|---|
| | | | The implementation of the Code should be monitored:<br>- through peer review, possibly remote (online). For example, a Council of Doctoral Studies Programs could be established, affiliated to CNCSIS and ARACIS. The Council could be established following appropriate procedures by the Association of Doctoral Schools, nationally established and linked to the EUA Council on Doctoral Education;<br>- through public access to relevant information posted on the websites of the doctoral and research schools, allowing referral of irregularities to a review body.<br><br>**Regular evaluation of performances** in research and accreditation of all institutions organizing doctoral schools and programs, by CNCSIS and ARACIS in the period 2011-2013, based on the following general criteria:<br>(i) existence of adequate research base, of results certified in research including international publications and innovation, patents, as well as of institutional research programs funded on competitive basis;<br>(ii) the existence of academic quality assurance mechanisms for doctoral learning and research, including effective procedures of internal evaluation; |

| Configuration | Strengths | Weaknesses | Recommendations |
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| | | | (iii) the existence of an adequate system of organization, management and operation of doctoral/research schools;<br>(iv) engaging in inter-institutional cooperation networks at national and international level.<br><br>Introduction by the Doctoral Studies Program Council, of an **international benchmarking** system for European and global comparability analysis of institutional performance of doctoral studies in Romania.<br><br>**Quality assessment of studies by doctoral students, as beneficiaries, through anonymous sociological surveys carried out periodically.** |
| Transparency of doctoral studies organization | According to the Decision no. 567/2005 the institution organizing doctoral studies have the responsibility to advertise useful information concerning the organization of doctoral schools. | Incomplete publication on the websites of the institutions organizing doctoral studies of relevant information on their operation, results and performances, and on the available opportunities for PhD students | **Publication on the doctoral schools' websites** of extended abstracts, in Romanian and English languages, of the doctoral theses presented and of other relevant information, such as:<br>- a list of doctoral supervisors and their resumes;<br>- current research projects;<br>- research opportunities and mobility offered to doctoral students |

| Configuration | Strengths | Weaknesses | Recommendations |
|---|---|---|---|
| **Opening of Doctoral Studies** | | | |
| Interdisciplinarity | Diversity of disciplinary fields in universities organizing doctoral schools<br><br>Existence of some interdisciplinary projects involving doctoral students and supervisors<br><br>Increasing co-authoring of ISI articles by several institutions organizing doctoral studies | Doctoral schools are formed following the conventional disciplinary fields<br><br>Interdisciplinarity is mostly informally promoted<br><br>Low level of interdisciplinary research<br><br>Interdisciplinarity limited to fields of related disciplines; lack of cooperation between exact and social and human sciences | Opening doctoral and research schools to advanced trans- and interdisciplinary research, in collaboration with other universities and/or research institutes.<br><br>Organize **interdisciplinary** doctoral and research schools through partnerships between universities, research institutions and other employers |
| Relationship between doctorate and economy | Intensify research in the private and public non-academic sectors<br><br>Research experiences in cooperation with economic operators through research programs<br><br>Allow doctoral studies by distance learning | Doctoral preparation is not focused on the advanced skills required by employers<br><br>In areas with high labor absorption the doctorate is significantly less attractive<br><br>The employers are not interested in the qualifications brought by doctoral studies<br><br>Lack of effective partnerships with businesses<br><br>Lack of adequate guidance and applied research paths for doctoral students with professional | Rethinking curriculum and doctoral research to **anchor them to the labor market** in connection with the social and economic needs, so as to allow the doctorate to become an engine of a Romanian advanced economy and society, based on knowledge. |

| Configuration | Strengths | Weaknesses | Recommendations |
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| | | interest; the basic research specific requirements can be burdensome to applied research, and they are eventually carried out only as a formality and with the consequence of reducing the performance of applied research itself | |
| inter-institutional collaboration and mobility | The existence of PhDs in co-tutoring<br><br>Harmonize university studies in Europe through the Bologna Process<br><br>Introduction of mobility for PhD students with ESF scholarships admitted in 2008/2009 | Small proportion of PhDs in co-tutoring<br>Reduced involvement of Romanian institutions organizing doctoral studies in international research projects | Redesign **cooperation and mobility between doctoral schools in Romania** in conjunction with the increased number of (national and/or international) doctorates in co-tutoring in inter and/or trans-disciplinary research |

# 7 Annexes

## *7.1 List of Field Reports*

## *7.2 Methodology of the Diagnosis*