

Young researchers in Romania – survival and hope

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Abstract

Romania's R&D manpower decreased from approximately 150.000 people in 1989 to 39.985 people in 2003. Less than 20% of them are young scientists. Can we speak about a scientific vocational crisis in our country? From one point of view, a scientific career in Romania is a matter of survival, from bad working conditions to poor infrastructure, subjective grant-funding criteria and inadequate professional autonomy. The decrease in relative income and in the social prestige of scientific and academic community adds to the reduction of the desire of youth for performances in sciences. Despite the difficulties there are good reasons for hope. First, over the past two years a slight growth in the interest of the responsible authorities concerning young scientists can be observed by introduction of special grants and scholarship programs. Second, new information and communications technologies are providing unprecedented access to existing knowledge. Third, the international scientific community is, by its nature, an open system characterized by a culture of free sharing of basic knowledge, and international mobility brings important advantages.

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1. Background

If in 1989 there were about 150.000 working in the R&D institutions in Romania, the official statistics registered only 39.985 in 2003¹. The number of researchers is currently slightly increasing, after a sharp decrease between the fall of the communist regime and 2000 (Chart 1). Less than 20% of the researchers working in Romania are young scientists.

The decrease in the number of researchers in Romania can be explained through their re-orientation to other sectors, the reduction of the desire of youth for performance in science and, above all, by the fact that many young researchers choose to continue their scientific career abroad. There are no official statistics available to determine levels of "brain drain" over the past several years, but an estimation can be made using the Ad Astra database. The Ad Astra association administrates a database in which the Romanian researchers can voluntarily register on-line.² Nowadays there are over 800 persons registered in this database and 222 of them have registered scientific publications with international relevance. The following information refers to this last category, that of Romanian scientists having international competitiveness.

Their distribution by country shows that 64% of Romanian researchers are working abroad, most of them in USA (29%), France (7%), Canada, Germany, United Kingdom (5% each) (Chart 2).

¹ Romanian Statistical Annuary

² <http://www.ad-astra.ro/whoswho/>

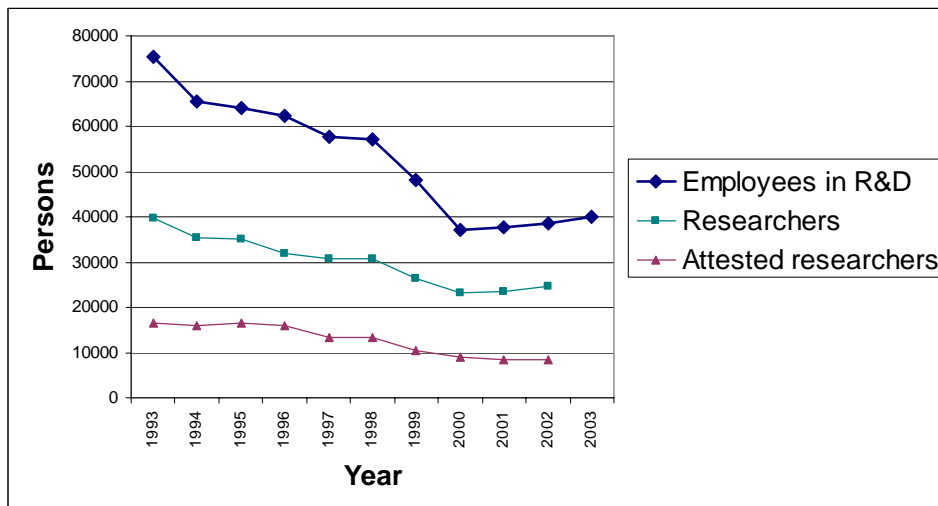


Chart 1. The evolution in time of the number of researchers in Romania, according to the official statistics.

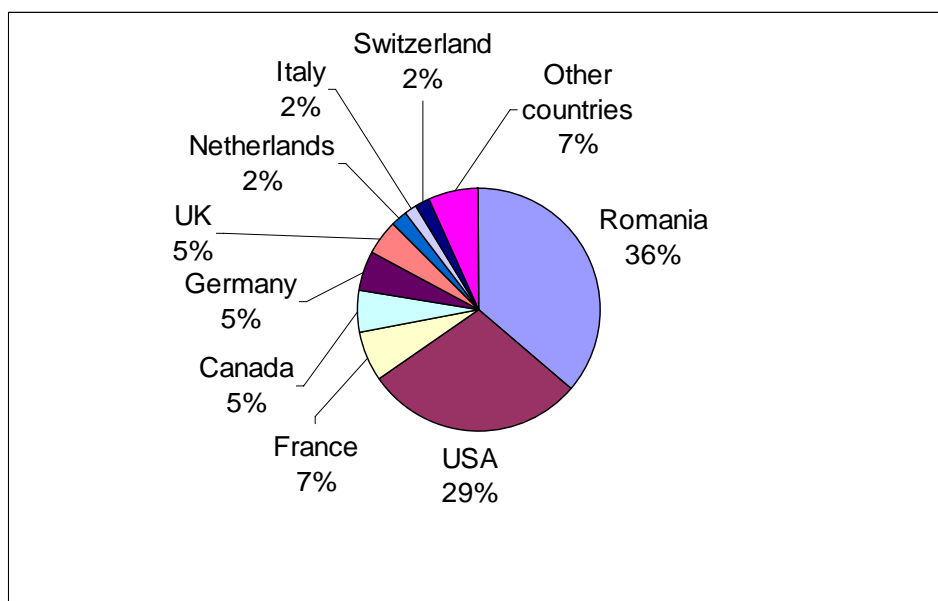


Chart 2. Distribution by country of the Romanian researchers (according to the Ad Astra database)

The Ad Astra database provides additional important information: the majority of Romanian researchers abroad are young, with the median age around 35 years, while the researchers who work in Romania have a uniform age distribution between 30 and 60 years (Chart 3). And the situation does not seem to improve since according to a 2002 survey on science and technology of the European Commission, 66% of the Romanian students would like to emigrate.

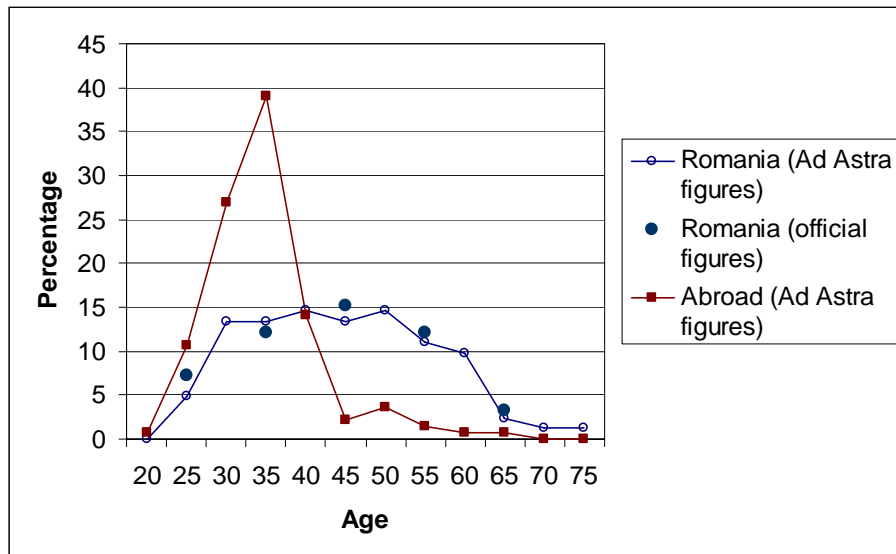


Chart 3. Age distribution of the Romanian researchers.

2. Possible causes for the dramatic decrease in R&D manpower in Romania

The migration of young researchers – so called “brain drain”– is an international issue; the salaries, infrastructure and prestige found in US R&D institutions make it difficult for any country, from Japan to Canada and EU, to retain their own skilled young people and research staff. There are currently 85.000 EU-born researchers working on R&D in the United States.³ But, beyond the global view, particular reasons apply to post-communist countries and the major concern is that a significant number from the *top*-graduates are leaving the country. Considering the severe problems of the Romanian research this was the solution chosen by many in order to be able to continue in their profession. Some of the causes that determined the present situation are discussed below.

2.1 Low funding of the R&D sector

R&D expenditures in 2003 and 2004 were only 0.21% of the Romanian GDP (Gross Domestic Product), the lowest figure among European countries – with a median R&D expenditure of 0.75%.⁴ This leads to inadequate work conditions (satisfaction of young researchers strongly depends on them): from the paucity of literature to old equipment and, to the decrease in relative incomes as well as of the social prestige of scientific, academic and engineering staff.

2.2 Bad management of the existing funds

The main problem affecting Romanian research is the subjectivism and lack of transparency in the evaluation process of the grant proposals, researchers and research institutions. The official criteria still give almost as much credit to publications in obscure local scientific journals as to those in top international journals,⁵ thus allowing for promotions and funding of people who have local influence, but not necessarily competitive results. There are a lot of negative consequences but none of the

³ <http://europa.eu.int/comm/publications/booklets/move/48/en.pdf>

⁴ European Commission, *Statistics on Science and Technology in Europe*, 2003. Available at <http://europa.eu.int/comm/eurostat/>

⁵ http://www.cncsis.ro/CENTRE_CERCETARE/STIINTIFICE/Formular_centre_cercetare_stiintifica_2004.rtf

young researchers that do top level science in institutes abroad will return to these conditions. Moreover, by promoting the non-values, this system continues to motivate other scientist to leave the country.

The absence of an organism for unbiased evaluation of research and a lack of R&D statistics should also be mentioned. Without rewarding the performance of internationally competitive research groups the limited funding available for research in Romania will inevitably be misused.

2.3 Mentality

“Who you know and not what you know” is a general issue all over the world, but the lack of objective criteria worsen the situation and, in many cases, personal connections matter more than scientific or educational skills. Quantitative criterion as promotion criterion favors graphomania, and there are many situations when the number of publications is more important than the content itself. On the other hand, many Romanian scientists and professors have traveled abroad and understand how quality science is done, but not all try to apply these lessons back in Romania.

While the lack of both results and motivation is understandable when the basic elements required for research are missing, and while it certainly cannot be said that Romanian researchers are lazy, unfortunately in some cases this apathy has been taken to extremes and becomes a self-defeating excuse to simply give up. The enthusiasm of any young person for research - with all the sleepless nights and its weekends lost in the lab - is ultimately related to the power of example.

3. Hopes

These problems have been presented to the European and Romanian authorities on different occasions in the past, but still major improvements have not to been seen. Still, the implementation of special aimed grants for young researchers by the CNCSIS (National University Research Council - the main institution from Romania that allocates funds for high quality research and postgraduate training in the Romanian universities) should be mentioned. It administrates only about 5% of the R&D expenditure.

1. The TD programme was initiated in Fall 2002 and finances full time PhD students, younger than 30 years old. The distribution per year is:
 - **2002** - 74 grants awarded, 360 euros per PhD student per year; 245 applications
 - **2003** – 57 grants awarded, 500 euros, 207 applications
 - **2004** – 169 grants awarded, 700-1,700 euros, 460 applications
 - **2005** – 124 grants awarded, 1,070-17,850 euros, 406 applications
2. The AT programme started in 2000; the project manager should be not older than 35 and be a PhD student or should have a PhD. The team can consist of 1-5 scientists per project and there is much freedom in the type of expenses that can be covered. The programme encourages young researchers and prepares them for open competition for grants.
 - **2001-2002**: 418 grants awarded (232 new, 186 continued; 895 applications); average grant: 1160 euros per project per year; 307-8,457 euros; total budget: 484,654 euros. Unfortunately funds were paid later than planned: call for proposals in November 2001; contracts signed in July (rather than April, as planned); 30% of funding paid in September 2002, the rest of 70% in December 2002. However, the results of the projects were due for evaluation in November 2002, i.e. before the grant was paid.
 - **2002-2003**: 218 new grants awarded (1,000-6,000 euros), 792 applications
 - **2003-2004**: 96 new grants awarded (880-13,600 euros), 195 applications
 - **2004-2005**: 63 new grants awarded (1,420-16,900 euros), 189 applications

However, lack of transparency in awarding CNCSIS money, lack of public accountability and lack of communication with the research community undermines CNCSIS activity.

There are situations when the interest in science and the good managerial skills of department heads from some Romanian research units or groups represent the decisive factors in pushing toward quality research. The same skills of these heads of laboratories lead to partnership in international fellowships (Tempus, Socrates, Marie Curie, other bilateral projects), which promote important collaborations between Romanian laboratories and prestigious laboratories abroad. These fellowships promote a lot of PhD students, and, *what is very important*, these PhD students find the possibility to keep their own research work back home. Also, these research units further benefit from international fellowships by bringing in know-how and high quality scientific work, thanks to the PhD students. The regular research stages abroad bring not only the important improvement of the scientific activity, but also the necessary allowance for living as researcher in Romania.

3. Concluding remarks

In order to counterbalance the migration of young researchers, by encouraging them to remain in Romania or by motivating the return of those already working abroad, the main causes – objectivity in evaluation and raising the R&D expenditure to the negotiated 1% of GDP⁶ must be implemented. Science in Romania, even within the context of the ERA enlargement, is possible only if a suitable R&D framework will be provided at the national level. The new leadership and a proper consideration of R&D work can be the way to accomplish that. The worst economic circumstances may not explain the disregard of R&D necessities, for real performance. The special facilities to encourage the return of scientists with fellowships or special grants cannot work in the actual framework.

The next step would be to invite qualified, well-known scientists, some among them expatriates, to teach and do research in Romania. When the performance in scientific activity will be properly recognized and decent living and working conditions will be provided, their return will be come naturally because many of them have affective bonds with Romania. As the country experiences brain-drain at increasing levels, returning to Romania to teach is, in itself, the best starting point for rebuilding Romania's human resources. This needs to be a large-scale solution, i.e. the government needs to sanction it.

There are no adequate conditions, but if we continue to wait for someone else to do something, we might wait a lifetime. It is up to us, those who believe in research, motivated scientists, both expatriates and working in Romania, to drive this change. Our only option, in principle, is to never give up - it sounds so easy, but in fact it is extremely hard, because we have to persevere and be patient in the same time.

Joint action ensures higher chances of success than individual ones and, besides research networks, we need interdisciplinary networks of researchers interested in identifying solutions and lobby for their implementation. Ad Astra⁷ is a project devoted to the Romanian scientific community, programmatically aimed at the young generation and, among others, at initiating and maintaining a flux of information that will facilitate scientific cooperation within the Romanian scientific communities, in order to encourage and advise young researchers in Romania, to provide an open

⁶ http://www.mie.ro/Negocieri/English/position_doc/CAP17-DP%20eng.doc

⁷ <http://www.ad-astra.ro/>

discussion forum on science and education policies, with the declared aim of presenting coherent reform proposals to the Romanian political establishment.