

The Romanian Researchers Profile and Career in the Knowledge Based Economy

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This study examines the international profile and career of 157 Romanian researchers. The majority considers the insufficient funding of research in Romania as playing a major role in their decision to work in the knowledge based economy. In addition, the survey reveals several other factors which motivate the emigration of Romanian scientists. While abroad, the majority kept in touch with their former university/research institute, colleagues and/or the Romanian scientific community, in general. More than half of the respondents prefer to work outside Romania, after completing their current professional projects.

Fields of research: Human Resources Management

1. Introduction

Recent economic and technological developments have led to a growing international demand for highly skilled human resources. The increased competition for human capital has determined numerous OECD countries to take special measures for attracting and retaining human capital in such fields as: information technology, biotechnology, nanotechnology, health care, etc. These measures have stimulated the emigration of highly skilled professionals, especially from less developed to more developed economies. In this international context, in the last decade, Romanian people with an academic background have had a significant propensity towards emigration. This phenomenon is not surprising if one considers the limited (although increasing) number of attractive career opportunities in this region. Consequently, numerous scientists and other highly skilled individuals from Eastern Europe have been attracted by the United States, Canada and other Western countries, which have facilitated the access of certain categories of qualified foreigners.

After the accession to the European Union, the number of Romanian and other Eastern European workers abroad is likely to increase. This can have negative consequences on the quantity, quality and structure of the workforce available in their home country. For instance, Romania's internal production could diminish by more than 3%, due to emigration (Van der Putten, 2002). In addition, since most people who choose to live and work abroad are young, this phenomenon may also

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enhance the social problems associated with the demographic ageing in the country of origin. This threat is particularly serious for Eastern Europe, which is experiencing low fertility and high emigration rates.

2. Methodology and Research Design

The invitation to participate in this study was sent to the Romanian researchers with international experience, Romanian PhD students, post-docs, professors and assistant professors residing abroad. The respondents were asked their opinion regarding the relative importance of eight possible incentives for stimulating the repatriation of Romanian researchers, which reside and work abroad. Their remarks form the basis of our hypothesis:

Hypothesis 1: *A major determinant of Romanian researchers' emigration is represented by the insufficient funding, technical and material resources allocation.*

The lack of adequate resources is not the only problem faced by the research sector in Romania. Therefore, other factors may have a considerable impact on Romanian researchers' decision to pursue career opportunities abroad. Indeed, an international career involves certain risks and sacrifices, which are usually accepted by ambitious individuals, highly motivated to further their development, to get an intercultural experience and/or a better salary and benefits. Hence, our second hypothesis is the following:

Hypothesis 2: *The type of work, getting better opportunities for professional development and advancement, a better compensation package and/or gaining international experience represent factors with a considerable impact in the decision to work abroad.*

Prior to this research, we have conducted several exploratory interviews, involving Romanian PhD students and post-docs at Leiden University and Technical University Delft (The Netherlands). These interviews revealed that, after leaving their country, Romanian PhD students and post-docs in the Netherlands had a limited relation or no relation with their former university and colleagues in Romania. On the other hand, the experts in expatriate management recommend keeping in touch with the migrant workers, in order to stimulate their return in the home country / organization. Hence, the third hypothesis states:

Hypothesis 3: *The relations between the Romanian researches working abroad, on the one hand, and universities, research institutes and scientific community in Romania, on the other hand, are limited.*

Based on the international studies in this field, the "migrant workers" integrate gradually in the host country's socio-professional environment; at the same time, their "links" to the country of origin diminish. This process is accompanied by increased legal rights in the host country (usually, after 5 or more years of continuous residence). Consequently, we assume the following:

Hypothesis 4: *The majority of Romanian researchers, particularly after a few years of work outside their home country, prefer to extend their stay abroad, usually in the same host country.*

Nevertheless, the scientists' emigration is not necessarily a (total) loss for the home country. The international experience proves that highly skilled migrants could contribute, in a way or another, to the socio-economic development of their country of origin. Usually this involves their return in the home country, for professional reasons, either on a permanent or a temporary basis.

3. Discussion of Findings

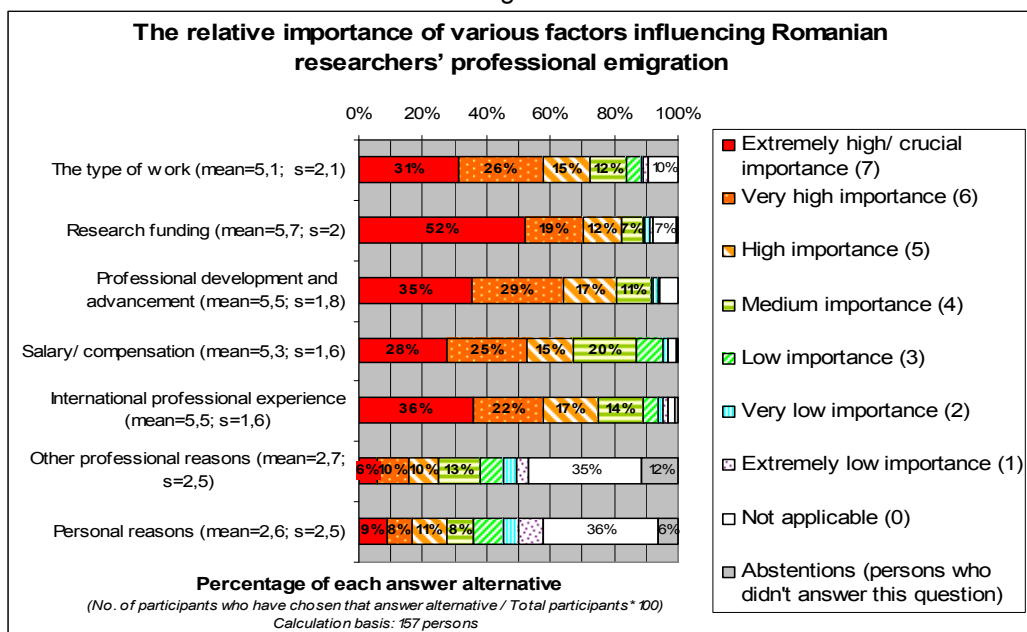
On November, 2008, we invited 270 Romanian researchers to participate in our study. 157 of them completed the questionnaire (58% response rate). More than three quarters of the respondents (120 out of 157 participants) specialize in: physics (18%); chemistry (14%); IT (10%); medicine or pharmacy (10%); engineering (10%); biology, bio-chemistry, genetics (9%); and mathematics (7%). Fewer respondents work in social sciences (3%) or geography, geology (3%). The respondents have a substantial international professional experience. By November 2008, three quarters of them had spent more than four years abroad, working or studying in the academic world. The majority of respondents, which returned to Romania (19 individuals), had spent at most five years abroad. More than half of them had studied and/or worked abroad between 3 and 5 years. In November 2008, the participants were residing in 20 countries, most of them being in North America (USA: 28%, Canada: 5%) and Europe (The Netherlands: 22%, Romania: 12%, France: 7%, Great Britain: 7%, Germany: 6%, the Scandinavian countries: 5%, other European countries: 6%). Only three respondents (about 2% of our sample) were in Australia, Japan and Kuwait.

3.1. The Relative Importance of Various Factors Influencing Romanian Researchers' Professional Career

Figure 1 summarizes the respondents' reasons for working abroad.

As anticipated (see [Hypothesis 1](#)), *the insufficient resources allocated to research in Romania ("research funding") represents the most important reason for researchers' emigration* (71% stating it was "crucial" or "very important" in their decision to work abroad).

Figure 1

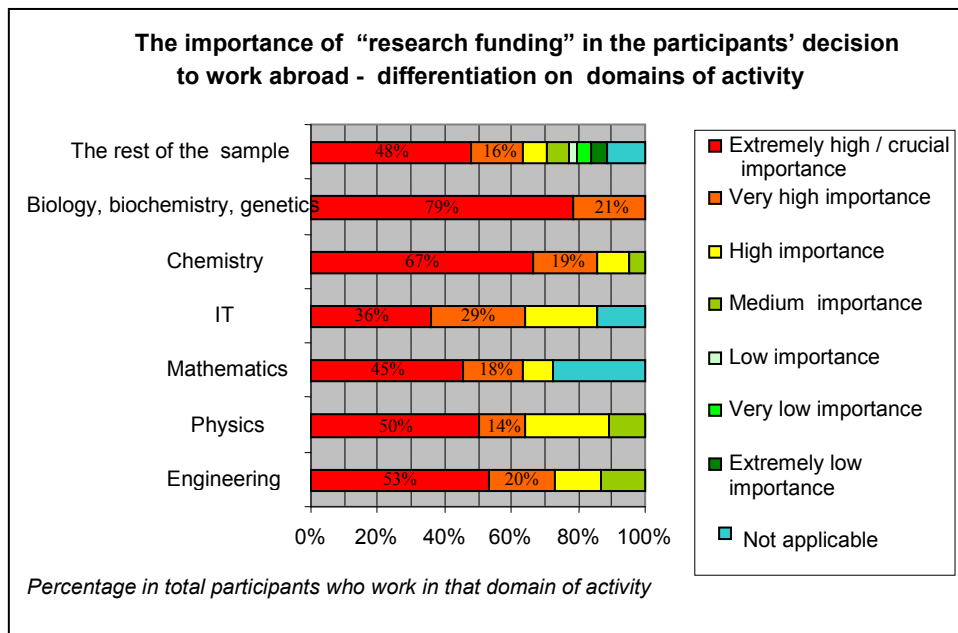


Remark: "s" represents "the standard deviation"

The relevance of "research funding" differs from one scientific domain to another. Thus, all respondents specialized in biology, bio-chemistry or genetics appreciated this factor as having an "extremely" or a "very" important role in their decision. This factor had a similar role for 86% of chemists (see Figure 2). Furthermore, the overwhelming majority of participants working in chemistry or biology (including bio-chemistry and genetics) considered "extremely" or "very" important to enhance "technical and material resources for research" and to increase "research project funding", in order to motivate scientists from abroad to return to Romania.

On the other hand, a considerable percentage of mathematicians (27%) and IT specialists (15%) were not influenced in their decision to emigrate by the limited research funds in Romania (see Figure 2). Since excellence in mathematics and IT does not require as many resources as research in chemistry, bio-chemistry, genetics and biology, in general, this finding is not surprising. Nevertheless, almost two thirds of the IT and mathematics specialists considered the "insufficient research funding" in Romania as playing a "very high" or even a "critical" role in their decision to work abroad. Moreover, virtually all of them think this factor needs to be ameliorated in order to stimulate Romanian scientists' repatriation.

Figure 2



According to our expectations (see [Hypothesis 2](#)), besides the insufficient funding of research in Romania, there are other reasons why Romanian researchers choose an international career, instead of working in their home country. For instance, getting “an international professional experience” seem to be “very” or “extremely” important for a considerable number of Romanian highly skilled migrants (58% of our sample). 64% declared that getting better “opportunities for professional development and advancement” had a “crucial” or a “very important” role in their decision to emigrate. Interestingly, our study reveals a statistically significant correlation between this factor and “promoting clear and objective assessment criteria in the Romanian research system”, as a way to attract Romanian scientists towards their home country ($\chi^2 = 111,9574$; $p = 0$; 42 degrees of freedom; critical value for $p=.01$ (1%): 0.0) – see [Table 1](#). Hence, the following conclusion: the ambitious researchers, which are keen to learn and grow professionally, are highly interested in the objectivity and transparency of the research evaluation.

Table 1

<i>Number participants who indicated the corresponding answer alternatives</i>		The importance of "promoting clear and objective assessment criteria in Romania's research system" for stimulating scientists' repatriation						
		Extremely low/ Not significant	Very low	Low	Medium	High	Very high	Extremely high/ crucial
The importance of "opportunities for professional development and advancement" in respondent decision to work abroad	Not applicable	1	0	0	0	2	1	4
	Extremely low	0	0	0	0	0	1	0
	Very low	0	0	0	0	1	1	0
	Low	0	0	1	0	0	0	0
	Medium	1	1	0	3	3	4	5
	High	0	1	0	1	1	8	15
	Very high	1	0	0	1	4	9	29
	Extremely high/crucial	2	0	1	2	4	9	36

Almost three quarters of participants gave a considerable importance to "the type of work". In other words, not having the opportunity to perform "a similar or an equally interesting work" in their home country, has substantially influenced many scientists' decision to emigrate. Finally, getting a better salary/"compensation package" is another important motivator for Romanian researchers' professional emigration. 68% of our sample indicated this factor had a "high", a "very high" or an "extremely high" importance in their personal decision to work abroad. In conclusions, the survey outcomes confirm the first two research hypotheses.

3.2. The Relations with the University/Research Institute, Former Colleagues and the Scientific Environment in Romania

After leaving Romania, two-thirds of participants kept in touch with their former university or research institute and their former colleagues. However, less than a quarter (23%) considered that relation "substantial and quite frequent". As expected (see [Hypothesis 3](#)), most participants had "limited relations" with their former university/research institute (44%), or kept in touch only with some of their former colleagues (25%). Other 8% did not maintained contact with their former university/institute or colleagues in Romania. While abroad, the relation with the former university/research institute and/or colleagues in Romania, consisted of: discussions regarding new developments in one's domain of activity (40% of respondents); discussions about socio-economical, political, and/or cultural developments in Romania (37%); consultation-collaboration on professional topics (35%); discussions/ information about career opportunities in Romania (27%); none of the issues mentioned above: it was simply a friendship or a "courtesy" relationship (20%). Three quarters of the respondents indicated only one or two of the answer alternatives mentioned above. However, 14% of the respondents mentioned also "other professional aspects". Most of these people declared they maintained a substantial relation with their former university/research institute in Romania.

The category "other professional aspects" include a variety of elements such as: making donations of scientific articles and books to former colleagues, to the

university or to a library in Romania; publishing scientific articles in collaboration with colleagues from Romania; intermediating professional visits for former colleagues/professors to their host university abroad; helping colleagues from Romania to find career opportunities abroad etc. While pursuing a career opportunity abroad, 25% of participants did not keep an active interest in the scientific developments in Romania. An analysis of the data indicates a significant correlation between: (the intensity of) the relation with one's former university/ research institute and colleagues, while pursuing a career opportunity abroad, and one's preference to work in Romania, upon completing his/her current projects in other countries (see *Table 2*).

Considering the entire sample (the respondents who answered both questions, irrespective of their country of residence – see the numbers in bold), the correlation between the two variables presented in *Table 1* is statistically significant (Total $\chi^2 = 17.32$; $p=0.044$; 9 degrees of freedom; critical value for $p=0.05$ [5%]: 16.919). Consequently, the scientists who intend to return to Romania have maintained stronger relationships with colleagues in Romania than those who do not intend to return. Indirectly, this finding leads us to the following conclusion: *the percentage of people who prefer (and tend to) remain abroad is likely to diminish, to the extent a relation is maintained between them and their former university/research institute and colleagues in the home country.*

Table 2

No. participants who answered both questions (out of which ... persons in Romania)		Upon completing my current professional projects, I prefer to work in Romania				Total
		Fully agree: My 1 st choice	Partially agree: My 2 nd choice	I do not agree	I don't know yet	
While abroad, have you kept in touch with your former university/ research institute and/ or with your former colleagues in Romania?	a) Yes, I have had substantial and quite frequent relations with my former university/ institute and colleagues	4 (1)	17 (4)	2	6 (2)	29 (7)
	b) Yes, I have kept in touch with my former university/ institute and colleagues, but to a limited extent	10 (5)	21 (2)	18	16	65 (7)
	c) I have NOT maintained a relation with my former university/ institute, but I kept in touch with my colleagues	2	9 (1)	6	16 (2)	33 (3)
	d) No, I have NOT kept in touch either with my colleagues or my former university/ institute	0	4	2	3 (1)	9 (1)
TOTAL		16 (6)	51 (7)	28	41 (5)	136 (18)

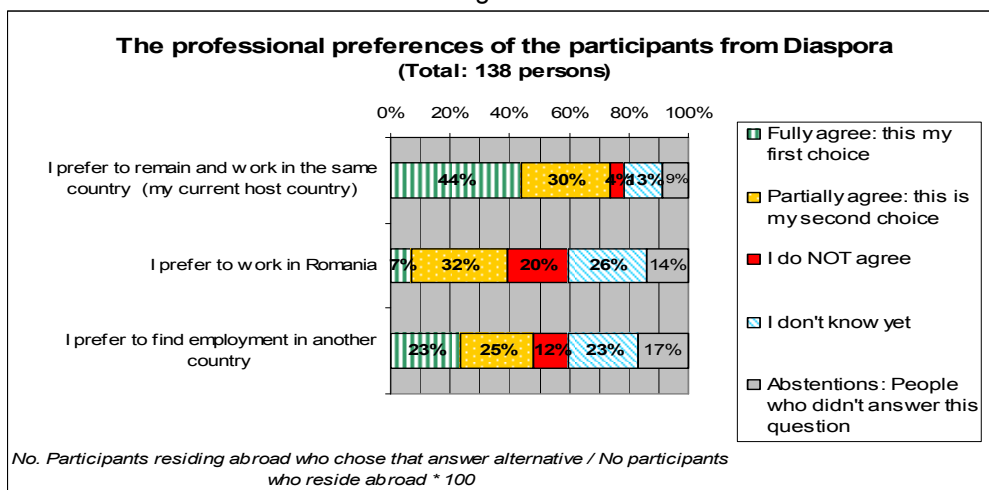
As anticipated in *Hypothesis 3*, *the participant preference for a career in Romania is weak*. Only one tenth indicated working in Romania as a first choice. The preference towards working in Romania is lower amongst the respondents who reside abroad. 24% of them declared they “did not agree” to return and work in Romania, upon completing their current projects. Two thirds of the respondents “partially agree” the idea of working in Romania or “did not make their minds up”.

Amongst the respondents residing in Romania (see the numbers written in parentheses in *Table 2*), one third would prefer a career abroad, as a first choice, but none of them excludes the option of remaining and working in their home country. While pursuing a career opportunity abroad, *more than three quarters of this group* kept in touch, to a more or less extent, with both their university/ research institute and colleagues in Romania. More than 50% of those participants, which kept in touch with Romania’s scientific environment, showed interest in working in Romania. Not surprisingly, in most cases, this option was a “second choice” for the people concerned. On the positive side, only 16% of this group disagreed with the idea of working in their country of origin, after completing their on-going projects. Also, the majority of the participants who returned to Romania (16 out of 19 individuals) kept in touch with the scientific developments in their home country, while working or studying abroad.

3.3. The Romanian Researchers Profile and Career Plans

Most researchers residing abroad prefer to remain and work outside Romania, in the same host country or in a third country (neither Romania, nor their current host country). Only 7% of respondents “fully agreed” to return and get employed in Romania, after completing their current projects abroad (see *Figure 3*).

Figure 3



As expected (see *Hypothesis 4*), the propensity towards remaining and working in the same host country increases with the period of time spent abroad. Thus, when dividing the participants residing abroad in three groups, based on the time spent outside Romania, one gets the following results regarding the statement “I prefer to remain and work in the same country” – option “Fully agree: this is my first choice” (see *Table 4*).

Table 3

Period of activity abroad (No. years)	Total respondents in each time interval	No. respondents who chose the option "Fully agree"	Average time spent abroad: no. years (X)	Respondents who chose "Fully agree" / Total group (Y)
Under 5 years	44	15	3.386	0.34
5 - 10 years	56	28	7.071	0.5
10-15 years	21	14	12.5	0.66

The correlation coefficient between the variables "X" and "Y" in *Table 2* is not only positive, but also very high ($r = 0.995$), allowing us to draw the following conclusion: *the more time spent abroad, the higher the percentage of people who prefer to remain in the host country in which they reside*. On the other hand, the percentage of participants, whose first preference is to work in a "third country" (neither Romania, nor their current host country), tends to decrease in time, reaching the lowest value in the "7-10 years" interval. Consequently, the percentage of survey participants, which prefer to continue working abroad, either in the same country or in a third country, does not differ substantially, based on the period of time spent abroad. *Irrespective of how long their international experience has been so far, more than half of the Romanian researchers from Diaspora prefer to remain and work abroad* (the average percentage for the entire sample is about 60%). As expected, the tendency to extend one's activity outside Romania is higher (71%) amongst the researchers with an extensive international experience (more than 10 years). However, one fact we did not anticipate (see Hypothesis 4) is the high percentage (73%) of people with little international experience (less than 3 years), which prefer to remain and work abroad, after completing their current professional projects.

4. Conclusion

The international work experience provides the scientists with the opportunity of expanding their know-how and know-who, which in turn could bring important benefits for their organization and country of origin. Such benefits may consist in enhancing research productivity and quality, better connecting the internal research activity to the international scientific circuit and, ultimately, stimulating the national economic development, in general. Considering the current problems in Romania's research system, any action plan directed towards scientists' repatriation may have limited impact. Therefore, ***in the short term***, we recommend to stimulate and facilitate temporary, short-term collaborations between researchers and academic personnel in the country and their peers abroad. This can be done by: creating part-time jobs in universities/ research laboratories for scientists residing abroad; organizing international conferences, symposia and workshops in the country concerned; inviting highly skilled migrants (and their foreign colleagues) to collaborate in projects in that country and so on.

In the medium to long term, a more radical approach should be adopted, for a better integration of the national academic and research system in the international scientific circuit. For a maximum efficacy, this approach should have both a financial dimension (adequate investment in research) and a "cultural" dimension (changes in mentalities, attitudes, criteria used for performance assessment, promotions,

compensation etc.). Based on the participants' input, this is extremely important for enhancing the research sector and attracting scientists (both national and foreign scientists) towards Romania (and other countries faced with similar challenges).

A complementary requirement refers to the implementation of special action plans for encouraging the repatriation of highly skilled migrants and facilitating their socio-cultural and professional reintegration in the country of origin. In the case of Romania, certain steps have been already taken into this direction. For instance, in December 1999, the International Research & Exchanges Board (IREX) Bucharest have launched the "Return to Romania" Program, meant to help Romanians returning from studies in the United States to find rewarding careers in their home country. Another notable example refers to the "Online Project for the Romanian Scientific Community", initiated by the "Ad-Astra" Association. However, much remains to be done. The actions taken at organization level (professional associations, institutes etc.) should be stimulated and complemented by government initiatives.

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