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**Emigration
of highly skilled
workforce from Romania.**
A Review of the Research &
Development, Medical and
Information Technology
& Communication
Fields

**Research
report**

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The Research and
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"Emigration of highly skilled workforce from Romania. A Review of Research & Development, Medical and Information Technology & Communication Fields" - Research Report

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List of Abbreviations

AIC - Anaesthesia and Intensive Care

Bundesärztekammer - German Medical Association

CM – College of Physicians (Colegiul Medicilor)

CMR – Romanian College of Physicians (Colegiul Medicilor din România)

GMC – General Medical Council (professional association of physicians in the United Kingdom)

ICT - Information and Communications Technology

INS - National Institute for Statistics (Institutul Național de Statistică)

MEN – Ministry of National Education (Ministerul Educației Naționale)

MS – Ministry of Health (Ministerul Sănătății)

OECD - Organisation for Economic Cooperation and Development

UEFISCDI – Executive Unit for Funding Higher Education, Research, Development and Innovation
(Unitatea Executivă pentru Finanțarea Învățământului Superior, a Cercetării, Dezvoltării și Inovării)

WHO - World Health Organisation

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Introduction

Following Romania's EU accession, it was noticed that highly skilled workers who choose to emigrate work mainly in a few major activity fields (very little studied). Two of these are medicine and information technology. In addition many Romanian students in foreign universities do not return, they remain in the country where they studied or in other European countries with better offers in terms of revenue and living standard, in order to build their careers in research-development-innovation or to find private or public jobs.

In this report we attempt a brief review of the effects of highly skilled emigration upon the following fields: research - academic, medicine and information and communication technology.

The first chapter gives a general description of brain drain as part of current international migration and of complementary concepts. It also introduces the three specific areas of review.

The second chapter presents highly skilled emigration in research and development and the academic field. The author looks at highly skilled emigration in the context of the global competition for talents and the policies to stimulate researchers' international mobility. The report highlights aspects related to the dramatic drop in the number of researchers in the national research and development system and presents policies and strategies to reintegrate Romanian researchers who work abroad and to stimulate cooperation with the scientific diaspora.

The third chapter looks at the Romanian physicians' emigration, its progression and the destination countries from the brain drain perspective. The emigrant physician's profile is outlined, as well as their reasons to emigrate, based on the answers to the online questionnaires. The report finally formulates some recommendations for measures and policies to encourage temporary migration, circular migration and return migration of Romanian physicians who left the country.

The last chapter looks at highly skilled migration in the ICT field, correlated to the development of this economic sector. The review covers the relation between the emigration and return of Romanian ICT specialists and the current development level of this sector in Romania, the sources and estimated number of ICT specialists, their alternatives for economic activation, the possible grounds and effects of ICT specialists' emigration, as well as some public policy recommendations.

Concepts and definitions

An important step for delimiting the study is to define the concepts and categories we are going to use. The most important are: emigrant (and the specific categories who are target groups for specific measures), highly skilled workforce, impact assessment areas etc.

We looked at the impact of highly skilled emigration in the economic, social and political fields.

Emigrant = for the purposes of our study, the Romanian citizen who left Romania to settle in another country for a period of at least 6 months.

Qualification = the official recognition of the value of individual learning results for the labour market, as well as for vocational education and training, by means of an education document (diploma, certificate, credential) which grants the legal right to practice a certain profession/occupation.

Highly skilled workforce = persons with adequate specific skills required for occupying a highly qualified position, demonstrated by superior professional qualifications, that is, post-secondary qualifications or higher education diplomas (see Directive 2009/50/CE on the conditions of entry and residence of third-country nationals for the purposes of highly qualified employment), corresponding to the minimum 6 reference level of the **European Qualifications Framework**. It should be mentioned that the definition in Directive 2009/50/CE, applicable to third country nationals, is the only one available at European level. We have therefore chosen to apply it both to Romanian citizens who emigrated to EU countries and to those who emigrated to third countries.

Highly skilled worker = a person who graduated a form of tertiary education and holds an appropriate position for their education.¹

Highly skilled job = "the job of a person who:

- is protected as a worker in that member state according to national employment legislation and/or national practices, regardless of the legal relationship, in order for them to perform a real and effective paid activity, for the benefit or under the coordination of another person;
- is paid;
- has the adequate and specific skills required, demonstrated by superior professional qualifications;"

Current professional certificate = medical certificate of good standing

Higher professional qualifications = "skills certified by higher education qualifications" (with a minimum 3-year duration) "or, by exception, if thus provided by national legislation, certified by at least 5 years' professional experience with a level of knowledge comparable to higher education

¹ Highly skilled workers are defined in relation with their education level, occupation and/or revenues (OECD, 2009, IZA). For simplification and in accordance to Directive 2009/50/CE, we chose to define highly skilled workers in relation with the first two criteria.

qualifications and relevant for the occupation or field specified in the labour contract or in the firm employment offer;²

Research and development (R&D) = the systematic and creative activity meant to increase the volume of knowledge and its use for new applications, undertaken in specialised entities or departments, in research stations and institutes, higher education institutions, university clinics and NGOs that perform research and development activities. R&D staff include persons involved in developing research topics or who provide related services, in their capacity of researchers, technicians and other assimilated categories.

Diaspora = ethnic group located outside the country of origin, who can be defined from a political, economic, religious, sociological, historical etc. perspective; Scientific diaspora = self-organized epistemic communities consisting of scientists, researchers and engineers who activate outside their country of origin and who interact with it for creating certain benefits - particularly in science, technology, education.

Remittances; remittances from workers abroad = cash and in-kind transfers made by emigrant workers who reside abroad to households in the country of origin, plus the compensations of cross-border workers or short-term employees in an economy of which they are not residents; the funds for purchasing real estate assets or investments are not registered as remittances but as direct foreign investments (Source: BNR (National Bank of Romania) - Balance of Payments and International Investment Position Manual BPM6)

ICT industry = software and IT services (NACE codes 582, 620, 631, 951), Telecommunications (NACE 61) and Hardware (NACE 261-264).

Brain drain = a negative process which involves the departure of highly skilled workers from their country of origin. The use of the word "brain" applies to any ability/skill or any quality considered a potential advantage. "Drain" (literally meaning "to draw off gradually, by filtration") refers to a larger number of persons leaving the country than envisaged or desired. Linking the two, *brain drain*, implies the departure from the country at an appreciable rate of the most talented (Bushnell and Choy, 2001 in Irina Boncea, 2015, p. 110).

Brain gain = the accumulation of highly qualified capital in the destination countries and its capitalisation in accordance with the level of education and qualification held (Diana Cheianu Andrei, 2012, p. 9). Brain drain involves an inverse technology transfer (Boussaid 1998), which entails the loss of human capital (brain drain) for the country of origin and the gain of human capital (brain gain) for the destination country (Hunger 2003 in Boncea, 2015 p. 10). The departure of highly qualified workers is considered costly for the country of origin, given the loss of investments in education, the high taxation costs and the distorted labour market. Brain gain may also have reverse effects by "brain return", "brain networks", remittances (Docquier and Rappoport, 2011, in Boncea, 2015, p. 110).

² Directive 2009/50/CE on the conditions of entry and residence of third-country nationals for the purposes of highly qualified employment, art. 2, (b), (g), (h).

Brain waste, also used in Romanian literature as "brain neutralisation" (S. Stanica, 2011) or "brain loss" (Diana Cheianu Andrei, 2012, p. 9) = the case of highly qualified workers who accept, in the country of origin or in the destination country, to perform work activities which are not adequate to their education and experience level (Salt, 1997:5 in Irina Boncea, 2015, p. 110). Moreover, they "perform unskilled work for which they are overqualified" (Diana Cheianu Andrei, 2012, p.9).

Methodology

Introduction

Although highly skilled emigration has become a topic of interest in public discourse in Romania, particularly in health and information technology, few practical efforts were made to estimate the scale of this migration and of its economic, social, demographic and political impact on the medium and long term.

We focused in our study on the analysis of highly skilled emigration, on its effects upon the labour market structure and particularly in those sectors that seem to be most affected by the shortage of highly qualified work force (research and development, health, ICT). We have also tried to identify public policies which attempt, even indirectly, to influence emigration (including programmes to encourage return migration) and/or to promote compensation measures. We are aware that no such impact assessment was undertaken at the beginning of our reference period (Romania's EU accession) on previous existing emigration, although this process started immediately after the revolution, which makes our task more difficult. We used in our endeavour data provided by competent national institutions (ministries, agencies etc.) and by their subordinated structures. Based on our previous experience in research projects, these data raise suspicions with respect to the data collection methods and the accuracy of records. In addition to the lack of data on highly skilled emigration collected by Romanian authorities (perhaps except for professional associations), confusions occur with respect to terms and migration types (e.g. circular, temporary) and there is also a risk of multiple reporting.

We included in our endeavour:

- a legislation and literature review on highly skilled emigration/ brain drain;
- a questionnaire-based survey applied by e-mail to subjects in the target group (highly qualified Romanians with at least 6 months' migration experience for other purposes than secondment, who work or worked abroad);
- interviews with decision makers and employees of public institutions, NGOs and private companies in areas of interest for research;
- focus groups and discussions with relevant players for highly skilled emigration from Romania, in order to define the most efficient policy recommendations for the research report and for advocacy.

The research aims to assess the impact of highly skilled emigration between 1996-2016 upon Romanian society, in three economic sectors which face a workforce shortage, as well as the measures that could compensate such shortage; existing policies and programmes for encouraging return migration and recommendations of measures to reduce this phenomenon. We also aimed to explore the opinion of highly skilled emigrants about the structural and value barriers that determined them to leave, and the medium and long term solutions they envisage for the problems identified.

Literature review/Desk research

The overall framework consists of a review of Romanian legislation and European directives and international literature on the impact of brain drain and emigration policies upon the countries of origin. As the USA and Canada are also destination countries for ICT and R&D professionals, the review is not limited to the European framework. The specific reference framework consists of the policies and programmes adopted by Romania, targeting diaspora, return migration, foreign investments, but we also looked at mass policies with an indirect impact upon highly qualified emigration.

Secondary data sources included, without limitation: academic literature, reports of public institutions, international organisations, non-governmental organisations, professional associations and trade unions; grey literature (PhD theses etc.); research reports, position documents, public policy documents, national and international legislation, emigration statistics etc.

Qualitative research

The qualitative research includes semi-structured interviews with representatives of authorities, diaspora and NGOs working in the field of programmes for diaspora members. Interviews were held face to face or by skype, to gather opinions on highly skilled emigration and its social and economic effects, to evaluate existing policies and programmes and to propose solutions for diminishing the phenomenon. Discussions were also organised with players in the emigration field in order to select the most appropriate policy recommendations for the research report. Interviews were held between March - June 2017.

Quantitative data

The quantitative data used were obtained by the questionnaire applied online and by information requests addressed to the relevant public institutions, as per Law 544/2001 on the free access to public interest information. The information requested referred to: statistics on the number of Romanians abroad in the three main areas of assessment, status of occupied jobs, remittances, entrepreneurship, number of highly qualified Romanian emigrants who returned to the country etc. The online questionnaires targeted respondent categories who:

- had, during the last 20 years, at least 6 months' work experience abroad, on highly qualified positions in their fields of study (not seconded by a Romanian company)
- have or had Romanian citizenship
- are in the 18 - 64 years age group
- are highly qualified, that is, they hold a qualification level of minimum 6, according to the European Qualification Framework, or they are students
- they are abroad, or they returned to Romania

We looked at:

- the grounds for leaving the country
- the type of migration (singular, family, temporary, definitive, circular etc.)
- professional networks
- relations with diaspora
- remittances/ investments
- opinion on the current situation, policies and programmes
- solution proposals

The study limitations refer mainly to the data collected from various public institutions. Some are estimates, given the lack of records on the departure of persons (there is no obligation to announce the departure from the country) and the time intervals between successive records (e.g. the case of changing domicile recorded by INS during the census). Then the availability for interviews varies, some persons were quite reserved in providing honest answers, given their position/function in a public institution. The answers given by decision makers and public authorities were generally in line with the institution's communication policy, rather than being an honest assessment of the existing situation and of the measures/policies adopted and/or implemented. In addition participation in the discussions was generally below the minimum level recommended for organising focus groups. Then the number and profile of respondents to the online questionnaire could not be controlled and representation was different for the fields we target in our research - medicine, IT and research-development-academic. One last limitation we should mention is the team members' subjectivity, which influenced the selection of study materials, the choice of categories etc. and which may also have influenced the results and selection of recommendations.

Result validation

The information obtained was validated by comparison with the results of previous studies and by discussions with experts and relevant players (local/central authorities' employees, members of non-governmental organisations, Romanians living abroad etc.).

The interview guidelines, the focus group and the questionnaire are included in annexes to the report.

Summary

This chapter covers the brain drain phenomenon as part of contemporary international migration. Brain drain refers to the emigration of individuals with higher education, which has major implications upon the country of origin if these emigrated individuals are not replaced by other highly qualified persons, either by immigration or by return policies. This chapter also describes the complementary concepts derived from brain drain, as follows: brain gain, brain waste, brain circulation, professional networks, return migration and the reasons why highly qualified individuals, particularly from Romania, choose to emigrate. The chapter then looks at the brain drain from Romania with a focus on three fields considered to be deficient: the research-development and academic field, the medical field and information and communications technology (ICT).

Introduction

The development of knowledge-based economy, where knowledge is a production factor, determined world states to attract highly qualified labour (Lowell 2006 cited in Prelipceanu, 2008). After 1990 the economic and political changes and the emerging global market entailed the migration of highly qualified workers from developing to developed countries. They wanted better living and work conditions (Rudolph, Hillman 1997 cited in Stănică 2011).

Definitions and complementary concepts

Contemporary international migration is not seen as an isolated process but rather as a process that generates changes in the host and destination societies. The mobility of goods and capital permanently entail human migration (Castles and Miller, 2003). Emigration involves the movement of persons who leave a certain place with the declared intention to settle in another place for a relatively long period of time. Immigration is this movement seen from the place of arrival, while emigration is seen from the place of origin. The specific groups of this migration phenomenon are either separate individuals or larger social groups united by certain religious or ethnic characteristics, as well as specific groups, usually professionally qualified (Enciclopedia Filosofie și Științe Umane, 2004). This article examines emigration and the effects of emigration from Romania to other countries of the world, for three specific highly qualified professional groups.

Brain drain

Brain drain is perceived as a negative phenomenon related to international migration and is defined from the point of view of the place/country of origin. Brain drain consists of the departure of highly qualified human resources from the country of origin, and in this line brain drain shows the perspective of the country of origin. The use of the word "brain" applies to any ability/skill/quality considered to be a potential advantage. "Drain" (literally meaning "to draw off

gradually, by filtration", "depletion") refers to a larger number of persons leaving the country than envisaged or desired. Linking the two, *brain drain*, implies *the departure from the country at an appreciable rate of the most talented* (Bushnell and Choy 2001 cited in Boncea, 2015, p. 110). The concept of *drain*, or *drawing out*, *depletion*, has a negative meaning resulting from the implicit geography of the concept. Brain drain is the *exploitation* of less developed countries' resources in order to enrich developed countries. Brain drain thus involves an *inverse technology transfer* (Boussaid 1998, p 65-71, cited in Stănică 2011:351) which entails the loss of human capital (brain drain) for the country of origin and the gain of human capital (brain gain) for the destination country (Hunger 2003 cited in Boncea, 2015). If the emigration of these highly qualified individuals is permanent and this loss is not compensated by an inflow of immigrants or by other methods, then we have a brain drain process (Mahroum, 2000).

Researchers differentiate between mobility (defined as movements of an individual or a group within or outside the country of origin) and the various associated costs incurred by migrants. Schaeffer (2009) argues that any type of migration entails economic costs, but there are also other costs which vary with the profession, job, age, type of ownership and family status. Thus, "someone who has a property, a farm etc. risks to lose these goods once they migrate. On the other hand, highly qualified workers, athletes, artists can take with them their most valuable possessions, their human capital" (p. 9).

The meaning of the *brain drain* concept should be understood from the point of view of the complementary nature of several aspects covered by this concept: emigration of persons with higher education; the large number of highly qualified emigrants; emigration from developing or underdeveloped countries to developed countries; the effects of such migration on the country of origin and the destination country; positive effects of return migration (investments, trade, technology, human capital); low level of remittances³; direct impact upon the country of origin (particularly in the case of professions with a high social impact: physicians, professors, researchers etc.). Brain drain can be seen as a forced migration but not for recouping basic needs - psychological needs, security or emotional needs (as in the case of migration from a conflict area). In the case of highly qualified workers the needs sought for by migration are those at the top of Maslow's pyramid, *namely the need for self-accomplishment or the desire to capitalise on their full potential*⁴. Highly qualified workers have thus certain characteristics (are specialised in areas with a social, economic impact etc.) and a particular set of reasons for emigrating. Their specific characteristics and the resources they hold ensure their access to the *higher labour market* (Petroff, 2016).

³ The study of remittances indicated that migrants with higher education send less money home (Anghel, Botezat, Coşciug, Manafi, Roman, 2016; Boncea, 2013). Studies found that physicians originate from families with higher incomes who do not rely on remittances, and also that physicians emigrate with the intention to make their migration permanent. Irina Boncea's research actually indicates that in the case of highly skilled migration there is no link between the level of remittances and the trend/desire to return, as opposed to Dumitru Sandu's theory who correlated the level of remittances with the trend to return, in the case of Romanian worker communities in Spain (Dumitru Sandu, *Comunități românești în Spania*, 2009:135).

⁴ The hierarchy of needs of Abraham Maslow in the Dictionary of Sociology, Oxford 2003

Brain gain

In the 1990s the study of brain drain took a different turn and shifted from a review of emigration grounds for highly qualified workers (push factors) to the review of attraction grounds (pull factors) based on the demand and the policies specially designed by destination countries for the profile of highly qualified workers from developing countries. Countries such as the US, Canada, Australia have developed educational programmes to attract (pull) highly qualified persons from other countries and to offer substantial benefits on the labour market. In Europe, Sweden, Norway, the United Kingdom, the Netherlands, Germany and more recently Belgium and France are the main countries with aggressive policies to attract labour force mainly from Eastern Europe (Lowell 2006 cited in Prelipceanu 2008).

However current studies highlight that **brain drain** is balanced by a different type of gain for the country of origin. While traditional literature saw brain drain as a *curse* for developing countries, post-modern literature considers it a *benefit* which entails gains (Stănică, 2011, p. 353). Several aspects are considered, such as the fact that citizen mobility beyond national borders should not be seen as a threat for the countries of origin and that migrants may be a source of social, financial, cultural and political capital; migration, for instance of Romanians, seen as a bottom-up transformation process (imposed by the migrants, their families and friends); the convergence to a system of values promoted by European countries, rather than imposed by the Romanian state (Dufoix and Diminescu 2006 cited in Prelipceanu, 2008); the reverse positive effects such as *trade networks* (Gould 1994; Rauch and Trindade 2002 cited in Ferro, 2004); as well as *professional networks* created by specialists (physicians, researchers, IT specialists etc.) or *scientific networks* (Boncea, 2013), also called **brain networking**⁵, which involve remote professional collaboration and are thus another positive aspect of brain drain.

In these circumstances it can be noticed that a **brain gain** occurs both for the country of origin and for the destination country. Thus the brain drain concept should no longer be seen in absolute terms. Considering that the migration behaviour of highly qualified workers enables them to choose their destination countries, the easy communication with professional network members enables the transfer of capital and information, communication with family and friends enables the transfer of customs, practices, new information from the destination country to the country of origin, thus generating a process of learning and socialising with the destination country (Prelipceanu, 2008), brain drain can no longer be analyzed as an absolute process in which one country loses and the other wins. It should also be mentioned that emigration is a result of economic development, not of the lack of such development: "Immigrants do not originate from poor, isolated places, disconnected from world markets, but rather from regions and nations which undergo changes and fast development following their integration in global trade, information and production networks" (Massey et. al., 1998. p. 277 cited in Ferro, 2004). Moreover, Western Europe and thus the entire European Union permanently gain from the emigration of highly qualified workers from countries in Central, Eastern and South-Eastern Europe, therefore the "highly qualified emigration is seen as a success indicator for the entire European project where

⁵ Term used by Irina Boncea in 2013

free movement is a pre-requisite for economic integration and hence for increasing revenues for European citizens" (IMF, 2016, p. 6).

Return migration

Nevertheless **return migration** is the ideal for the countries of origin. This migration is defined as *brain circulation* and it consists of acquiring education/knowledge abroad and then finding a job in the country of origin (Mahroum, 2000).

The gain would consist of the use/application/transfer of experience, educational, professional, human and also economic capital of highly qualified workers, acquired in another country, to the country of origin (Domingues Dos Santos and Postel-Vinay 2003 cited in Ferro, 2004). However, in order for return migration to occur, emigrants who come back need to find real opportunities to achieve a better social status and better career opportunities: "If such opportunities arise in their country of origin, the trend is to return, otherwise they choose another destination" (Prelipceanu, 2008, p. 83). At the same time research shows that return migration depends on the "technological progress in the country of origin which enables them to apply their knowledge in an adequate infrastructure"; it also shows that professional networks and remote collaboration are preferred to return migration in the absence of adequate work conditions, facilities and if the living standard is less than desired in the country of origin.⁶

Studies showed that in the case of highly qualified workers, family connections outside the country of origin do not have a major influence on finding a job in the relevant field. Their importance is quite low, as compared to economic migration where migrants follow the beaten paths (Stahl, 1993, cited in Castles and Miller, 2003) made by their family in the destination country. Thus two types of ties/networks were identified in the migration chain of any migrant: strong ties and weak ties (Petroff, 2016). Family and friends are the strong ties, whereas the weak ties are their associates, work colleagues, acquaintances in the field. In the case of highly qualified workers, strong ties are used very seldom or not at all. On the other hand weak ties are often vital in the professional path of highly qualified workers.

Brain Drain in Romania

After 1990 Romania became both an emigration and an immigration country. However it is emigration that escalated and started to be regarded as an issue of the Romanian state, which failed to provide its own citizens with the possibility to lead a satisfactory life.

Migration researchers underline that the group of Romanian highly qualified migrants is invisible within academic research, and they explain this by the fact that studies focused on Romanian migrants in areas not requiring tertiary education (Petroff, 2016). Thus emigration research in Romania was limited to the study of emigration mainly in relation with remittances, social, demographic and economic effects upon Romania on the short and long term (the phenomenon of children left at home, migration of agricultural labour force, abandoned lands and households in rural areas, the ageing of villages, migrants' social capital, youth emigration etc.). The brain

⁶ Boncea, about Romanians' return migration 2013:81

drain from Romania to the West is "too volatile to be assessed in figures" (Ferro, 2004, p.383), and research on highly qualified emigration "is too rare and irrelevant" (Boncea, 2013, p.81).

Although little studied, migration researchers maintain that the emigration of highly qualified Romanians is not new in Romania. They speak about the ethnic migration in the 1980s from Romania to Israel, Hungary and Germany as highly qualified (Prelipceanu, 2008), being however a forced rather than voluntary migration. Although ethnic migration continued after 1990, the migration of highly qualified workers takes a new form and is identified as brain drain. After 1990 Romania has faced a brain drain based on voluntary initiatives, that is, a voluntary migration, as opposed to the forced migration before 1990.

After 1990 Romania faced a massive exodus of the intellectual elite (Horvath 2004 cited in Petroff, 2016). The East-West migration after 1990 is considered by the IMF unprecedented in terms of speed, scale and persistence, by the reintegration of former communist states in the global economy. This migration is unique by: the geographic proximity between East and West; the rapid integration in the European single market and the European Union; emigrants' young age and high education level; population ageing in many European countries and this migration becoming permanent (IMF, 2016:6), as well as the "ethnic and cultural similarity" between West and East (Favell, 2008:704).

According to the database developed by Docquier, Marfouk and Lowell (2007, cited in Prelipceanu 2008), in the 2000s, before Romania's accession to the European Union, Romanian citizens were in top ten highly qualified nations in the European Union, with a large number of them living in Belgium, Germany, the Czech Republic, Spain, Greece, Ireland, Italy, Luxembourg, Slovakia and Sweden, as well as Hungary and Austria. All these countries developed programmes for attracting highly qualified workers from the EU acceding countries and third countries. Thus in the 2000s Romania was in top 30 of countries with the highest emigration of highly qualified persons, with 54.3% living in the USA and Canada, 29.3% in European Union countries and 12.3% in other European countries.

The latest study on emigration⁷ from Romania shows that the US and Canada selected a very high number of Romanians based on their qualifications and education level. Until 2000, 140,000 left for the United States, of which 35.9% had tertiary education, and this migration tends to be permanent. Then the migration of persons with tertiary education, the *brain drain* to Western Europe, consisted of students, IT specialists and physicians (Anghel, Botezat, Coşciug, Manafi, Roman, 2016). Migrants' reorientation to Europe was based on Romania's EU accession, as well as on the geographic proximity as compared to the US and Canada. The reason for choosing European countries is the permanent connection to Romania and the predictability of return migration, in addition to the easy transport and communication.

Following Romania's EU accession we can notice several major emigration areas of Romanian highly qualified workers. The few research studies in this field and national analyses speak about the massive emigration of physicians and IT specialists and engineers and about the students in

⁷ International migration, return migration and their effects: a comprehensive review on the Romanian case, Remus Gabriel Anghel, Alina Botezat, Anatolie Coşciug, Ioana Manafi, Monica Roman, IZA Institute of Labor Economics, December 2016

Western universities who no longer return to Romania; they remain abroad to build their research & development career there or to find jobs in the public or private areas in the country where they complete their studies or in other European countries where they find better offers in their areas of specialisation.

Emigration grounds

The migration of highly skilled individuals is influenced by their different specialisations, which entail various pull factors or push factors. For instance the emigration grounds of a researcher may be their personal aspirations and scientific curiosity; for a manager the grounds could be an employer's priorities; for academics and students the emigration grounds could be their attraction to countries where national innovation systems/ universities are very well developed⁸ and where "scientific openness" is a priority; while for scientists and engineers the attraction factors could be countries/ companies with a reputation for providing jobs in the field of innovation and new technologies (Mahroum, 2000). Moreover, in the case of all highly qualified workers, the pull factors outrank the push factors.

In 1999 Mahroum performed a classification of highly qualified mobility by correlation with push and pull factors and with immigration policies.

Group	Type of pull factors and push factors	Type of policies
Managers and executives	Benefits and salary	Business oriented
Engineers and technicians	Economic factors (demand and supply mechanisms)	Immigration legislation Taxes on revenue
Academics and scientists	Bottom-up development of science Work type and conditions Institutional prestige	Inter-institutional and inter-governmental policies
Entrepreneurs	Governmental policies (visas, taxes, protection) Financial/tax facilities	Governmental and regional policies Immigration legislation
Students	Bureaucratic efficiency Recognition of a global job Accessibility issues in the country of origin Intercultural experience	Inter-institutional and inter-governmental policies Immigration legislation

This model can be completed and adapted to highly qualified emigration. Therefore, the reasons of highly qualified Romanian emigrants also vary with their specialisation/field/education

⁸ Mahroum, 2000 gives the example of the USA where excellence centres such as MIT or Stanford University attract thousands of academics and students in the field of research, development, innovation every year.

background, with the push and pull factors and the immigration policies in the chosen destination country.

Brain waste

Research on students, academics and scientists highlighted emigration grounds/push factors such as: the lack of financial resources to do research at international level in Romania; very low investments in research-development-innovation, both in state and private sectors; as well as the feeling of brain waste experienced when remaining or returning to the country (Prelipceanu, 2006). **Brain waste** is translated in Romanian as "**risipa creierelor**" and is also used in Romanian literature as "**neutralizarea creierelor**" ("**brain neutralisation**")⁹ (Stănică 2011:345), "**irosirea de creiere**" ("**brain squandering**") (Diana Cheianu Andrei, 2012:9). The concept describes the case of highly qualified workers who accept jobs below their level of education and experience, either in the country of origin or in the destination country (Salt 1997:5 cited in Boncea, 2015). Moreover, they "perform unqualified jobs, for which they are over-qualified" (Cheianu-Andrei, 2012:9); Petroff (2016) calls the highly qualified workers caught in this process *migrants in the middle*, and this is one of the major reasons that lead them to the decision to emigrate.

As regards pull factors, research shows that the main grounds for emigration in the case of students, academics and scientists are: continuation of studies with international recognition; higher opportunities on the labour market; the desire to attain a better social status; dissatisfaction with the Romanian society; freedom; experiencing a new culture. The survey done by the League of Romanian Students Abroad (2014) indicated as main pull factors: the technical facilities in the host universities, the quality of professors, social and cultural life, the applicability of knowledge acquired, the quality of courses, professional opportunities upon graduation, the knowledge assessment system.

As regards physicians, research showed that emigration grounds are directly related to the low salaries as compared to the desired life standard; work conditions (number of hours per week, high level of stress, lack of healthy professional relations, lack of a competition based on excellence and merit, lack of integrity, of transparency, the presence of nepotism and corruption in the medical system); the lack of medical equipment which obstructs the application of knowledge and professional development; the lack of educational and career development opportunities; the lack of prestige for the medical profession (Boncea, 2013).

Studies from 2004 and from 2014 and 2015 indicate that the first reasons for not returning to Romania are corruption in the state, the poor economic development of the country, the small foreign investments and the lack of return policies for Romanian emigrants (highly qualified or not).

⁹ *The intellectuals' emigration from Nazi Germany to the USA* was the first brain waste episode, considering that the language shock they suffered in the US made their economic and professional integration impossible (in Stănică, 2011:345)

Emigration of Research & Development staff and students

Relevant literature has shown over time that students' emigration goals are to continue their studies abroad and thus acquire an international career (Ferro, 2004). However, although many Romanians went to study in France, studies are only seen as a stage for accessing the labour force in the destination country. Thus continuing their studies abroad is a seeming reason, but not the *real* one. The real reason is the desire to gain conditions and means for a better living standard and satisfying jobs (Ferro, 2004), as well as to acquire foreign cultural capital to facilitate youth integration in various cultural economies (ONG, 1999 in Petroff, 2016). Studying abroad will not direct students only to the academic field, to research-development-innovation and research institutes. Many of the students will be assimilated by the local/national industries/companies.

Meyer and Hernandez (2004, cited in Prelipceanu, 2008) certify in their studies that two-thirds of R&D experts worldwide came to the destination country as students. Moreover, the experience of being a foreign student significantly increases chances to later become a highly qualified migrant (Steven Vertovec, 2002 cited in Prelipceanu, 2008). Networks developed by students will also provide many opportunities to future students in the countries of origin. It should be considered however that scientists have always maintained their international contacts, as part of normal scientific life and as an old standard of scientists (Mahroum, 2000).

The choice of the destination country depends on several aspects. One of them is the mobility *geography*, such as bilateral agreement programmes of destination and origin countries. In 2004 the estimated number of Romanian students in French universities was about 5000. The choice of certain countries is determined by *soft power*, a concept encountered in the emigration of students or other highly qualified persons. In the case of Romanian students in France, the soft power concept refers to the influence of French language and culture upon Romanian society. As early as the 18th c. noble families used to send their children to study in France. It appears that at the beginning of the 19th c. Romania and Russia were the first two source countries with the highest numbers of students in France (Pastre 2003 cited in Prelipceanu, 2008). Another element influencing the destination country is the existence of informal networks of friends and acquaintances. One third of those interviewed by Prelipceanu (2006) stated the importance of such networks.

Physicians' emigration from Romania

Research and information on the effects of medical migration upon the country of origin are almost nonexistent (Anghel, Botezat, Coşciug, Manafi, Roman, 2016). The impact of medical doctors' emigration is usually analysed from the point of view of costs for the country of origin and benefits for the destination country. The financial cost consists of the loss of investments in the medical education of those who emigrate after graduation (Rutten, 2009 cited in Boncea, 2015). And the medical and social cost consists of the medical, public health effects of physicians' emigration. Studies show that physicians' emigration from under-developed or developing countries has been directly correlated to child mortality and adult mortality. On the contrary, lower emigration was correlated to increased child vaccination and hence reduced mortality (Bhargava et al 2011 cited in Anghel, Botezat, Coşciug, Manafi, Roman, 2016). In Romania the limited access or lack of

access to medical care in cities with no medical university centres, in towns with high unemployment and aged population, in villages and communes has direct effects upon the degrading health of inhabitants and hence of their life quality.

Whereas before 1990 the preferred destinations of Romanian physicians were the US and Canada, following Romania's EU accession Romanian doctors massively emigrated to EU countries (geographic proximity, transferability of studies). In France in 2010 Romanian doctors were the majority national group among foreign physicians, while in 2012 one third of foreign physicians registered in France were Romanians, with Belgium reporting a similar situation (Sechet and Vasilcu, 2015 cited in Anghel, Botezat, Coşciug, Manafi, Roman, 2016). Wismar et al (2011, cited in Anghel, Botezat, Coşciug, Manafi, Roman, 2016) consider that the exodus of doctors from Romania has the highest weight as compared to other Eastern European countries. In 2007, 4,990 Romanian physicians, that is, more than 10% of the number of active physicians, expressed their intention to leave, and in 2010 the College of Physicians in Romania issued an average of 300 professional certificates per month. This number is considered by migration specialists to be very high, considering that highly skilled migration seldom exceeded 3% of the workforce in the EU. Eurostat (2013) indicates that Romania is the country with the smallest number of physicians per 1,000 inhabitants. In this line, "the physicians' exodus should be seen as an issue of national interest", says Professor Vasile Astărăstoae, former president of the College of Physicians in Romania (cited in Anghel, Botezat, Coşciug, Manafi, Roman, 2016, p. 20).

Emigration of highly skilled workers from Information and Communications Technology (ICT)

IT work in Romania is versatile. It represents both the retention of IT specialists in Romania (Ferro, 2004), and a source of ready trained specialists who can work abroad. The retention is related to the high benefits in this field as compared to local labour standards in Romania. An IT specialist in Romania has extremely high economic benefits as compared to the minimum/average wage in Romania. Large corporations delocalize IT segments usually in developing countries where qualified work is paid cheaper than in developed countries, which generated the concept of *brains without bodies* (Ferro, 2004). Such delocalization entails cost savings for large corporations and at the same time salaries far above the average wage in Romania.

The IT worker profile is created by multinational companies where highly qualified workers' mobility among countries is implicated. In these companies IT specialists are part of a privileged environment, a mobile group of elite professionals (*the best and the brightest*) who develop their careers in a cosmopolitan milieu (*Cosmopolitan workers*, Tung, 1998 cited in Petroff, 2016). Belonging to this elitist group gives Romanian IT specialists enough safety to choose to be seconded in the same company but in different countries (in addition to their own reasons for dissatisfaction with the economic and political situation in Romania). It is a safe, familiar environment where workers develop a *transnational intimacy* (King 2002 cited in Petroff, 2016), which makes their integration in the host country society much easier, without any migration cultural shock. Petroff (2016) defines very well the highly skilled migration within multinationals as a parallel movement in the same field, with a delicate transition which continues along their professional and personal path. Migration of science and technology specialists is described by

OECD (in Mahroum, 2000) as the internal mobility of staff within the same company (changing departments, locations etc.)

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Emigration of highly qualified personnel in research and development and the academic field

Cristina Maria Șerbănică

The chapter "Emigration of highly qualified personnel from research & development and the academic field" presents highly skilled migration in the context of the global competition for talents and the policies to stimulate researchers' international mobility. The chapter highlights the dramatic drop in the number of researchers in the national R&D system and the intrinsic and extrinsic factors leading to emigration decisions, as indicated by specialised literature and research undertaken within this project. The conclusions and recommendations at the end of the chapter refer to policies and strategies for reintegrating Romanian researchers living abroad and for stimulating cooperation with the scientific diaspora; however their efficiency will significantly depend on creating a performance climate for the R&D system as a whole.

Introduction

The migration of researchers and academics is a complex process, and global evolutions should be considered in order to understand it. The shift to knowledge-based society, the liberalization of exchanges and the increased direct foreign investments entailed the internationalising of research and development and a more intense mobility of human resources in science and technology. The global competition for talents became a strategic topic for advanced economies, which benefited from the scientific contribution of highly qualified international R&D staff and thus consolidated their innovation capacity and capitalized on the transfer of knowledge. For the countries of origin, researchers' migration entails losses of added value, but specialised literature also indicates benefits related to money remittances from abroad or the added value they create if they maintain scientific connections with the country of origin or decide to return¹⁰.

At European level, stimulating researchers' mobility is a core objective of the agenda for establishing the European Research Area, ERA, which aims to encourage exchange and transfer of knowledge and to create an open labour market in this field. Many EU initiatives support researchers' mobility nowadays, such as the Euraxess network which provides access to research vacancies and funding opportunities in each country; Directive 2005/71/CE defines a special procedure for accepting third-country nationals to perform scientific research; Marie Skłodowska-Curie actions finance global and cross-sectoral mobility of all researchers; there is a Human Resource Strategy for Researchers, which encourages research institutions to adopt the European Charter and Code for Researchers and to eliminate administrative obstacles to the geographical and cross-sectoral mobility of researchers etc. The latest ERA progress report shows that researchers' recruitment processes are now more open, more transparent and performance-based, but it also highlights that these developments have led to asymmetrical flows of researchers from East and South to the North-West and have encouraged the brain drain

¹⁰ OECD (2008), The Global Competition for Talent Mobility of the Highly Skilled, OECD Publishing. Available at: http://www.oecd-ilibrary.org/employment/the-global-competition-for-talent_9789264047754-en

process in the Central and Eastern Europe countries.¹¹ The migration flow from Eastern to Western Europe after the fall of the communist block is considered to be unique and unprecedented in terms of size, speed and persistence; most emigrants were young and highly qualified, and this "brain drain" process had negative impacts in the countries of origin, leading to population ageing, reduced productivity and rising tax pressure. For countries such as Romania and Croatia – with a low share of persons with higher education in the total population - the impact was even more dramatic, leading to a shortage of highly qualified workforce and imbalances on the labour market¹². Recent studies in the EU highlight the mobility and emigration patterns of researchers from Central and Eastern Europe and draw the following conclusions: the preferred destination countries are EU countries - France, Germany and the United Kingdom, and most researchers choose mobility during their doctoral studies¹³.

Emigration of research and development specialists from Romania

As regards researchers' emigration from Romania, although there are no statistic data available to show the scale of the process, there is an official recognition of the need to limit the negative impacts at scientific, economic and social level. A functional review of the research-development-innovation (RDI) system in Romania shows that the scientific diaspora consists of more than 15,000 Romanian researchers active abroad, for whom Romania failed to build efficient programmes to attract them back, to reintegrate them or involve them in partnerships with researchers in the country¹⁴. The results of this massive emigration together with the structural changes of the education, research and development system entailed a significant drop in the number of researchers in Romania over the last two decades. Data shown in Figure 1 indicate a staff reduction of about 30% in R&D between 1995 – 2015, together with a change in the share of researchers in the total number of staff in research & development.

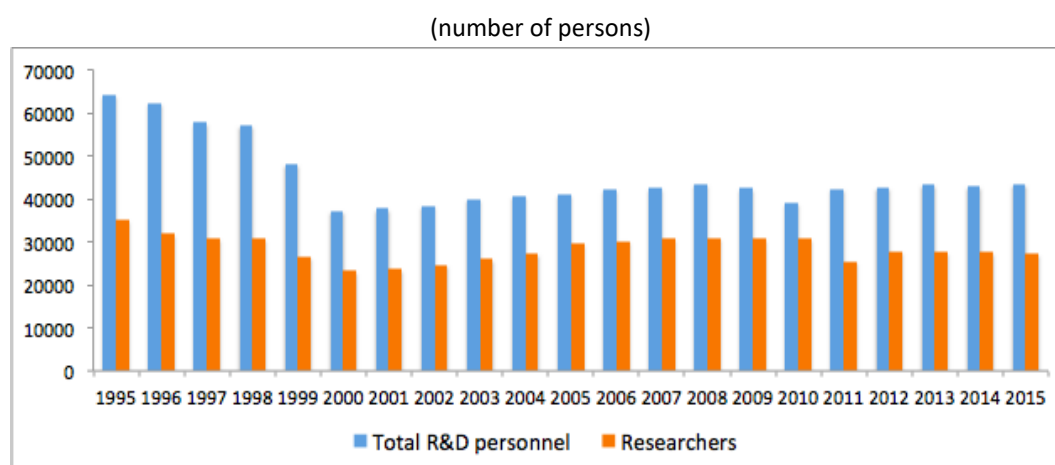
¹¹ European Commission (2016), ERA Progress Report 2016 – Technical Report, p. 68. Available at: https://ec.europa.eu/research/era/pdf/era_progress_report2016/era_progress_report_2016_technical_report.pdf

¹² Atoyán R., Christiansen L., Dizioli A., Ebeke C., Ilahi N., Ilyina A., Mehrez G., Qu H., Raei F., Rhee A., and Zakharova D. (2016). *Emigration and Its Economic Impact on Eastern Europe*, IMF Staff Discussion Note, July 2016. Available at: <https://www.imf.org/external/pubs/ft/sdn/2016/sdn1607.pdf>

¹³ ***More 2 (2013), *Support for continued data collection and analysis concerning mobility patterns and career paths of researchers*. Deliverable 8 – Final Report. Prepared for: European Commission, Research Directorate-General, Directorate C – European Research Area. Available at: https://cdn4.euraxess.org/sites/default/files/policy_library/final_report_0.pdf

¹⁴ The World Bank (2011), *Romania Functional Review: Research, development and innovation sector*, Final Report, May 31, 2011. Available at: <http://documents.worldbank.org/curated/en/810741468294621571/pdf/NonAsciiFileName0.pdf>

Figure 1 Evolution of staff numbers¹⁵ in research & development



Source: National Institute for Statistics, Research - Development and Innovation: *Research & Development personnel*. Available at: <http://statistici.insse.ro/shop/?page=tempo2&lang=ro&context=37>

As regards the evolution of the number of researchers per scientific fields, the most significant loss - about 10,000 researchers - was recorded in Engineering Sciences and Technology; it should be noted that the sudden drop was recorded before Romania's EU accession in 2007, a period which saw the restructuring of the industrial system in Romania (Table 1).

Table 1 Researchers in R&D per scientific fields

Classification criterion	1995	2007	2015
SCIENTIFIC FIELD	Measurement unit: number of persons		
Natural sciences and mathematical sciences	5180	5439	5259
Engineering sciences and technological sciences	22024	13386	12053
Medical sciences	2770	2911	2656
Agricultural sciences	2339	1907	2396
Social sciences	904	3948	3500
Humanities	1877	3149	1389

Source: National Institute for Statistics, Research - Development and Innovation: *Research & Development personnel*. Available at: <http://statistici.insse.ro/shop/?page=tempo2&lang=ro&context=37>

The dramatic drop in the number of researchers in *Engineering and Technological Sciences* may be associated with the significant drop in the number of researchers in the business environment, which in 2015 employed only about one quarter of the number of researchers active twenty years ago. A significant raise in the number of researchers can be noticed in the academic field, considering that the universities' R&D mission has been constantly strengthened by the amendments to the Education Law.

¹⁵ According to the National Institute for Statistics, R&D staff at a given time stand for the total number of staff who participate directly or indirectly in solving the issues covered by the activity object of that institution, for the following activity categories: researchers, production staff - technicians and similar staff - and auxiliary staff.

Table 2 Researchers in R&D per performance sectors

Classification criterion	1995	2007	2015
PERFORMANCE SECTOR Measurement unit: full-time equivalent ¹⁶			
Business environment	22545	7754	4234
Governmental sector	8431	5818	6659
Academic sector	1804	5104	6480
Not-for-profit private sector	:	132	86

Source: National Institute for Statistics, Research - Development and Innovation: *Research & Development personnel*. Available at: <http://statistici.insse.ro/shop/?page=tempo2&lang=ro&context=37>

Researchers' migration from Romania continues to have premises to grow. According to existing data, more than 4,500 high school graduates leave the country each year to study abroad and 90% of them choose European universities, mainly from the UK, the Netherlands, Denmark and Germany. In 2017, it is estimated that 36,000 Romanian students study abroad and only 500 of them are expected to return in the country¹⁷. This is all the more alarming as student numbers have been constantly reducing since 2009 (in the academic year 2009/2010 there were 775,319 students registered in Romania, while in the academic year 2015/2016 there were only 410,697¹⁸); this also reduces the basis for new generations of researchers to emerge and the prospects of revitalizing the Romanian RDI system. Understanding the grounds of researchers' emigration may provide the basis for identifying ways to reintegrate them into the Romanian research, development and innovation system.

Reasons for researchers' emigration

Relevant literature mentions a variety of reasons underlying researchers' decision to emigrate. These include *intrinsic factors*, that is, career advancement opportunities, access to high performance research facilities and infrastructure and to the expertise of prestigious researchers, as well as the opportunities to become autonomous - these are considered the primary reasons, particularly for researchers at the beginning of their career. At the same time, *extrinsic factors*,

¹⁶ The full-time equivalent is a conventional measurement unit calculated by transforming the number of part-time workers into equivalent full-time workers, based on the work time allocated to research & development.

¹⁷ *** *More than 36,000 Romanians study abroad. How many of them come back?* 20.03.2017. Available at: <http://www.digi24.ro/stiri/actualitate/educatie/peste-36-000-de-romani-invata-in-strainatate-cati-mai-revin-in-tara-691185>

¹⁸ Ministry of National Education (2016), Report on the higher education state in Romania. Available at: https://www.edu.ro/sites/default/files/_fi%C8%99iere/Minister/2017/transparenta/Stare_sup%20%202016.pdf

such as the availability of financial resources for research, the salary level, work conditions and the social security system are crucial for the mobility decisions of mid-career researchers¹⁹.

For Romania, the major reasons for researchers' emigration are the under-financing of the R&D sector and the systemic problems of this field. According to Eurostat, Romania ranks last in the European classification in terms of R&D expenses, as GDP percentage (0.49% of the GDP in Romania vs. 2.03% of GDP in the European Union in 2015), despite commitments to allocate 2% of the GDP to this sector until 2020; more precisely, R&D expenses amount to 39.4 Euro per inhabitant in Romania, as compared to the European average of 587.7 Euro per inhabitant (2015)²⁰. The critical condition of the R&D sector, reflected in low salaries and non-competitive material basis for research, are considered "the witnesses of a haemorrhage of talents from the public sector"²¹. Additional reasons are related to the quality of life, bureaucracy, lack of professional perspectives, the difficulty to become independent as a young graduate, personal reasons and so on²². Last but not least, Romanian researchers in the diaspora claim the gap between the discourse on innovation and the actual innovation activity or the fact that "the feeling of diaspora and alienation is experienced, paradoxically, upon the return to Romania, because of the institutional obstacles"²³.

Qualitative research results

The results of qualitative and quantitative research undertaken within this project add new value to the above-mentioned conclusions.

According to the in-depth interview respondents (i.e. academics), the research & development system in Romania faces major issues related to under-financing, reducing number of national competitions, reduced budgets for ongoing competitions; things are all the more serious as most researchers in universities are financed exclusively from research project budgets. This entails low performance in terms of visibility of results and technological transfer, while industrial research "moves very, very slowly" (interview - Prorector in charge with scientific research and computerization). Multinational companies keep their R&D and innovation activity in their countries of origin and bring only the manufacturing production here; at the same time, local companies have no financial resources to invest in R&D and are quite reserved to the existing types of funding. In addition we have the unpredictability of the research & development system, the continuously changing and asynchronous legislation and the existing conflict of roles in the Romanian academic system: *"Speaking about Romanian universities, the research &*

¹⁹ ***More 2 (2013), *op. cit.*

²⁰ Eurostat (2015), R&D Expenditure. Available at: http://ec.europa.eu/eurostat/statistics-explained/index.php/R_%26_D_expenditure#R_.26_D_expenditure_by_sector_of_performance

²¹ ***Partnership Agreement Romania (2014) RO16M8PA001.1.2. Available at: http://www.fonduri-ue.ro/files/documente-relevante/acord/Acord_de_Parteneriat_2014-2020_RO.pdf

²² CNCIS & UEFISCSU (2008, 2009), Povestea revenirii mele ("My Return Story"), I, II. Available at: <http://old.uefiscsi.ro/Upload/51c9596c-cf34-4bff-a6bb-38009ea7549a.pdf>

²³ ****Românii în diaspora și diaspora în România* ("Romanians in Diaspora and Diaspora in Romania")(2016). Ateliere exploratorii: Ideologia cercetării și politica cercetării ("Exploratory Workshops: Research Ideology and Policy") organised within the Scientific Diaspora Conference, Timișoara, 25 April 2016. Available at: http://www.diaspora-stiintifica.ro/wp-content/uploads/2016/01/Concluzii_WE_NEC.pdf

development specialist also has to hold a teaching position, that is, they have to be full professor and full researcher and in many cases also full-time administrator" (Interview – Director International Relations, University).

In these circumstances, the first emigration trends occur among high-school graduates, those with a very high capacity and potential, who head to the European Union for their university studies, which is a massive loss for Romania. Then university graduates look to master's degree programmes at foreign universities and in most cases they do not return. Their parents support them in this initiative because it offers them *"more opportunities, more openness, a more stable life style, a better quality of life... It is a loss of resources, a loss of potential"* (Interview – Prorector in charge with scientific research and computerization). Decision makers are also aware about this, and they highlight the short and medium term effect: *"Starting even with high-school graduates, young people are encouraged to leave the country for various universities that offer financial facilities, either grants or loans on a very long time, as well as offers to participate in research programmes. This of course entails the obvious risk of (mainly) young proficient people leaving the country permanently, which in the short term generates the risk of significant reduction and hence ageing of research personnel. The long term effects of the continuing drop in the number of researchers are extremely serious. These raise a serious question as to the possibility to reach the critical mass of researchers necessary both in public institutions and in private companies, in order to develop and implement innovative technologies on a large scale and to ensure a really sustainable and competitive progress in all economic and social sectors".* (Response to the request for information of public interest - Ministry of Research and Innovation).

From the respondents' point of view, most young Romanian researchers abroad work in developed countries in the Western European Union, in the northern geographic area, in the United Kingdom, Canada and the United States of America. It is believed that few of them consider the option to return to Romania, for objective reasons: *"...you don't feel like coming back, after you worked in Germany or Sweden or Canada or wherever you worked, you know a certain system... When you come back to Romania you have the impression of being several hundred years back. So the system is not attractive for those youth."* (Interview – Prorector in charge with scientific research and computerization). A decision to return to the country is also inhibited by the fact that *"these young people accepted a personal challenge - to have access to other worlds and to a better organised society which they don't find in Romania; not to mention salaries, which are much more interesting in Western European countries and not only"* (Interview – Director International Relations, University).

The National Strategy for Research-Development and Innovation 2014-2020 identifies intelligent areas of specialisation: *bioeconomy; information and communication technologies; space and security; energy, environment and climate change; eco-nanotechnologies and advanced materials* - where research may have a major impact to yield results with economic impact. From the perspective of the Ministry of Research and Innovation, these are the priority fields *"for which objectives were set, including the objective to reach the critical mass level in terms of R&D human resources"*. Such an approach to support the researchers' increased mobility may be encouraging for involving Romanian researchers from the diaspora.

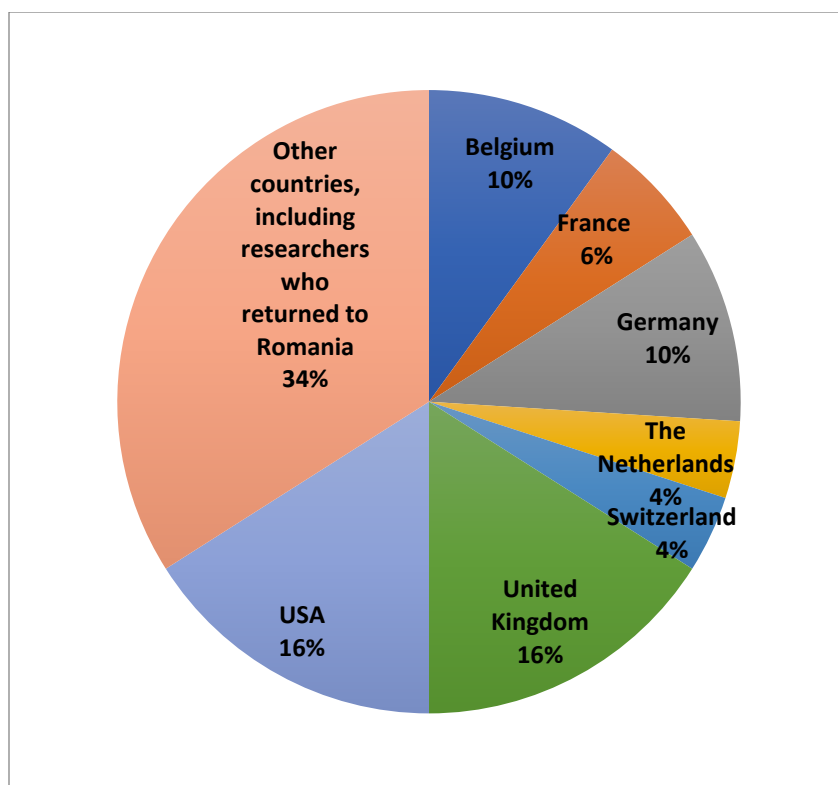
Quantitative research results

The survey undertaken within this study based on the on-line questionnaire aimed to identify the grounds of highly-skilled emigration and the perceptions about employment opportunities, quality of life and factors that could influence the return to the country. Out of the total 152 respondents whose answers were validated, 32% work in research & development and in the academic field; this sub-chapter considers exclusively these persons' responses.

The social-demographic data of respondents in the academic/R&D field enable us to create a profile largely corresponding to that suggested by relevant literature. Thus the group of emigrants in this field is gender-balanced (51% women and 49% men), whereas the age distribution shows a high share of persons aged above 35, who represent 78% of total respondents (25-23 years: 22%; 35-44 years: 41%; 45 years and above: 37%). About one quarter of respondents are specialised in natural sciences (24%), with high shares also for social sciences (16%), engineering (12%), IT (8%); the shares of the other specialisations identified - political sciences, law, communication, business administration, economy, philology, other fields - are below 10%. As regards the employing organisation, 80% of respondents work in universities and research centres and only 20% are employed in public institutions or private companies.

The respondents' distribution per countries indicates a high presence of Romanian researchers in academic/research institutes in the USA (16%), United Kingdom (16%), Belgium (10%) and Germany (10%); France, the Netherlands and Switzerland are destination countries for 14% of respondents, with other researchers present in Canada, Denmark, New Zealand, Norway, Poland, Singapore and Sweden. Last but not least, Romanian researchers who worked on highly-qualified positions abroad and who returned to Romania represent 18% of respondents from the academic/R&D field (see Figure 2). Thus this study also confirms the statement that most Romanian researches emigrated to Western European countries and the United States of America.

Figure 2 Distribution per country of respondents in the academic/research & development field



Source: our own research based on an on-line questionnaire

Asked about the most important aspects of everyday life, respondents consider as *very important* family (88%), education (82%) and career (61%), whereas relationships with friends are considered *important* by 59% of participants in the study. 82% of respondents declare that "corruption" is crucial for the decision to emigrate; at the same time the "political environment" and the "lack of career opportunities" are considered *very important* factors by 61% of researchers, as well as the "lack of research infrastructure" (55% of respondents consider this aspect to be *very important* for emigration). These results corroborated with the answers to the question, "To what extent have the following reasons determined you to leave Romania?" can help build a hierarchy of factors which have influenced *to a large extent and to a very large extent* the emigration decisions of the participants in this study: (1) "corruption"; (2) "the lack of professional development opportunities", and (3) "career advancement not based on professional merit", (4) "bureaucracy in public institutions" and (5) "lack of infrastructure/ technical equipment". Surprisingly, "insufficient revenues" have a medium influence on the decision to emigrate: for about one third of respondents they only contributed *to a small extent* to the decision to emigrate. These aspects have important consequences in terms of public policies, as they differ significantly from the results of studies on the total population of Romanian emigrants (not only highly qualified persons), which indicated "money" as the main reason for emigration - because "here (n.b. in Romania) one cannot earn decent money" and "one cannot build a future"²⁴.

²⁴ Stanculescu M.S. and Stoiciu V. (2012), Impactul crizei economice asupra migratiei fortei de munca din România. ("The impact of the economic crisis upon workforce migration from Romania"). Paideia Publishing House, Bucharest

Only 45% of respondents in the academic/research field are currently connected to persons, institutions, companies and organisations in Romania, while 67% of the researchers who returned to the country maintain contacts with entities abroad. This suggests there is still plenty of room for strengthening relations with diaspora, all the more so as respondents believe that the main way how they can contribute to the country is by "creating connections and professional networks with specialists abroad" and "creating networks between diaspora and the country". On the other hand, the answers suggest that money remittances from abroad and investments in Romania are not among the impact factors considered by researchers to be of major importance.

As regards the types of measures that could contribute to reducing highly skilled migration, respondents in the academic/research field indicated *to a large extent* and *to a very large extent* the following: (1) approaches to encourage performance-based activity evaluation (91%), (2) policies to combat corruption and criminality (87%), (3) optimum funding of research (86%), (4) simplifying bureaucratic procedures (85%) and (5) defining transparent employment procedures.

Policies to attract and reintegrate researchers. Best practices

In the context of the global competition for talents, creating policies to enlarge the researcher basis and to eliminate the negative effects of brain drain are strategic options for the countries that are strongly committed to capitalise on research, development and innovation. Specialised literature identifies two main directions - with multiple options - to stimulate scientific excellence in the country of origin and to capitalise on the scientific diaspora's potential²⁵. Overall policies to attract and retain highly qualified personnel include efforts to create a more attractive environment in the country of origin, to support an increasing efficiency of institutions and the modernisation of education systems to create a critical mass of highly qualified workers²⁶; identifying clear objectives for mobility strategies, considering the positive effects of the transfer of knowledge; eliminating information disparities and legal and administrative obstacles for integrating scientific personnel²⁷.

Relevant studies suggest various specific policies to attract the scientific diaspora and to reintegrate researchers who work abroad. Some initiatives of international organisations include programmes such as "Return-to-Talent", implemented by the International Labour Organization for over 50 years in Latin America and for more than 30 years in Africa and Asia, or TOKTEN - "Transfer of Knowledge through Expatriate Nationals" of the United Nations Development Programme, active mainly in the Western Balkans and Gaza²⁸. At national level three non-exclusive options to attract and reintegrate researchers have been identified: (1) creating scientific diaspora networks, (2) offering financial incentives to return to the country and initiating

²⁵ Davenport, S. (2004). Panic and panacea: brain drain and science and technology human capital policy. *Research Policy* 33(4): 617-630.

²⁶ Atoyán R., Christiansen L., Dizioli A., Ebeke C., Ilahi N., Ilyina A., Mehrez G., Qu H., Raei F., Rhee A., and Zakharova D. (2016), *op. cit.*

²⁷ OECD (2008), *op. cit.*

²⁸ Agunias D.R. and Newland D. (2012). Developing a Road Map for Engaging Diasporas in Development A Handbook for Policymakers and Practitioners in Home and Host Countries. International Organization for Migration (IOM) and Migration Policy Institute (MPI). Available at:

https://publications.iom.int/system/files/pdf/diaspora_handbook_en_for_web_28may2013.pdf

collaborations with domestic researchers and (3) creating opportunities for entrepreneurial development in science and technology for researchers abroad²⁹.

Creating scientific diaspora networks is now a common practice for many countries in the world. In this line the most relevant are the scientific diaspora networks of India, China, Singapore and South Korea. These countries have strongly developed science and technology and have created favourable conditions for the return of highly qualified personnel in these fields³⁰. Many other states also offer financial and non-financial incentives to researchers abroad to reintegrate them in the research-development and innovation systems in the countries of origin. Chile offers researchers who work abroad positions in higher education and the public sector, thus facilitating their reintegration in the research-development systems³¹. Similar examples can also be found in Europe, for instance in Hungary where the programme "Momentum" (Lendület) of the Hungarian Academy of Sciences supports researchers' reintegration by offering financial incentives for research programmes developed in Hungary, provided they also attract other national and international funding sources; Croatia implements the programme "Return of Croatian scientists", for which it provides more than 7 million Euro as funding for researchers who decide to return to the country of origin³². Poland implemented a system of cards (Karta Polska) offered to citizens living abroad who are somehow connected to Polish culture and who are allowed to access studies, jobs and activities in R&D in Poland³³.

Other best practices include the support to diaspora members for opening businesses or integrating in the private environment, in specific research and innovation activities; in this line the Consulate of Israel in the United States of America (USA) disseminates Israeli companies' offers in science and technology to researchers in the US through professional networks and, moreover, plays a mediator role by organising recruitment events in the Embassy of Israel in the US³⁴. In the same field, the Taiwan government created the Scientific and Industrial Park in Hsinchu, in an attempt to replicate the US Silicon Valley model, offering risk capital for Taiwanese entrepreneurs in high-tech companies in diaspora; they managed thus to attract more than 500 researchers from diaspora, all with doctoral studies. Last but not least, the members of GlobalScot – Scotland's scientific and business diaspora network - make available their time, expertise, contacts, knowledge and abilities to support the business environment, universities and start-ups in the country of origin³⁵, thus providing the most articulate example of supporting their country from abroad.

²⁹ The World Bank (2011), *op. cit.*

³⁰ Meyer, J.B. and Brown, M. (1999) *Scientific Diasporas: A New Approach to the Brain Drain*, UNESCO-ICSU, Budapest. Available at: <http://www.unesco.org/most/meyer.htm>.

³¹ The World Bank (2011), *op. cit.*

³² European Commission (2014). *Researchers' report 2014. Final report*. DG Research & Innovation and Deloitte Consulting. Available at:

https://cdn5.euraxess.org/sites/default/files/policy_library/researchers_report_2014_final_report.pdf

³³ Agunias D.R. and Newland D. (2012). *op. cit.*

³⁴ The World Bank (2011), *op. cit.*

³⁵ MacRae M. and Wight M. (2006) *A Model Diaspora Network: The Origin and Evolution of GlobalScot*. In Kuznetsov Yevgeny (Eds.) *Diaspora Networks and the International Migration of Skills. How Countries Can Draw on Their Talent Abroad*, pp. 201 - 220, The World Bank. Washington, DC

Romania: initiatives for the scientific diaspora

In Romania the initiatives to involve the scientific diaspora were based on a series of governmental programmes, as well as on actions of the scientific environment and non-governmental organisations, as follows:

- ✓ **The Conference "Diaspora in Scientific Research and Higher Education in Romania"** comprises a series of meetings of the scientific community in the country and abroad, in order to create collaboration mechanisms between Romanian researchers, regardless of the country they live in, and to lay the groundwork for partnerships between them. Four editions of this event have been organized so far (in 2008, 2010, 2012, 2016), which managed to attract an impressive number of participants - more than 800 at the 2016 edition organized at Universitatea de Vest in Timișoara.
- ✓ Between 2007 – 2013 funding was available in Romania for **"Research Projects for stimulating researchers' return - RP type"**, aiming to ensure adequate conditions for Romanian researchers abroad with international experience and significant results, who chose to return to research institutions in Romania. Three such contests were organized in 2007, 2008 and 2009, with 37 projects funded during the project time frame³⁶. These researchers' experiences are described in two volumes – **"Povestea revenirii mele"** ("My Return Story") (volumes I and II), which provide useful recommendations for developing such programmes and reintegrating diaspora researchers by: offering a salary support aligned to EU salaries; supporting researchers to obtain positions in universities or research institutes in the country comparable to the positions they hold abroad; changing funding conditions - for instance, granting a higher advance payment, simplifying project tenders, increasing the flexibility of project expenses etc.; introducing pre-contracting training programmes for helping researchers adapt to the Romanian legal context etc.³⁷;
- ✓ For 2014 – 2020, the National Strategy for Research, Development and Innovation aims to encourage researchers' mobility and to support a wider openness of the public research environment to researchers from the private environment and from abroad³⁸. In this line the National Plan for Research, Development and Innovation (PN III) includes two financing lines, for **"Mobility projects for experienced researchers in diaspora"**, and **"Mobility projects for young researchers in diaspora"**, in order to capitalize on the expertise accumulated by prestigious Romanian researchers in diaspora and to create an adequate environment for experience exchanges; funding is provided for participating in scientific events in the country and in 30-day stages in universities and research institutes in Romania. Researchers living abroad can also participate in the contest **"Research projects for stimulating young independent teams"** or in projects developed under

³⁶ UEFISCDI - Proiecte de cercetare pentru stimularea revenirii în țară a cercetătorilor. (Research projects to stimulate researchers' return to Romania). Available at: <http://old.uefiscdi.ro/articole/1613/Proiecte-de-cercetare-pentru-stimularea-revenirii-in-tara-a-cercetatorilor--tip-RP.html>

³⁷ CNCIS & UEFISCSU (2008, 2009), *op. cit.*

³⁸ ***National Strategy for Research, Development and Innovation 2014 – 2020. April 2014. Available at: https://www.edu.ro/sites/default/files/fi%C8%99iere/Minister/2016/strategii/strategia-cdi-2020_-proiect-hg.pdf

Programme 3 – "**European and international cooperation**", which facilitate researchers' mobility, circulation of ideas and knowledge, access to transnational collaboration networks³⁹. Other cooperation opportunities exist within the projects funded from the structural and investment funds associated to the "**Competitiveness Operational Programme 2014 – 2020**"⁴⁰, for instance within actions to attract highly skilled personnel from abroad for consolidating the research & development capacity.

- ✓ Although not directly aimed at highly qualified persons and at the R&D field, the "**Diaspora Start-up**" programme funded from the "**Human Capital Operational Programme 2014 - 2020**" should be mentioned here; its objective is to encourage entrepreneurship and self-employment by supporting the establishment of non-agricultural companies in urban areas by Romanian citizens from diaspora⁴¹.
- ✓ The latest initiative of the Romanian Ministry of Research and Innovation is the "**Grant for young researchers King Carol I**", a programme aiming to reduce brain-drain. This programme, approved by Decision no. 403/31.05.2017, offers annual scholarships up to 3,500 Euro to young Romanians who were awarded prizes at national and international Olympiads if they decide to study at a university in the country and to work afterwards in the Romanian R&D system for minimum four years after graduating the master's degree studies⁴². According to representatives of the Ministry of Research and Innovation, this programme is just a first part of a wider programme, "**Brain Return**", envisaged to be implemented in Romania.
- ✓ Last but not least, a number of remarkable initiatives of the not-for-profit sector should also be mentioned in this context. Ad Astra Association – the worldwide association of Romanian scientists - aims to promote and facilitate scientific cooperation between Romanian communities; currently more than 3,800 Romanian researchers are registered in the database operated by the Association. The Association's activities include the *Ad Astra Awards for Excellence in Research* and *Excellence in Research for PhD students*, starting 2014, and their positions regarding public policies in the research & development and innovation sector in Romania⁴³. C.A.E.S.A.R Foundation – Centrul de Acces la Expertiza Studenților și Absolvenților Români (Centre for Accessing the Expertise of Romanian Students and Graduates) – aims to become a framework for young researchers in the country and abroad, with high level academic education and outstanding results in

³⁹ PNCDI III programmes coordinated by the Executive Unit for Funding Higher Education and Scientific Research. Available at: <https://uefiscdi.ro/programe-pncdi-iii-coordonate-de-uefiscdi>

⁴⁰ *** Structural and investment funds 2014 – 2020. **Competitiveness** Operational Programme 2014 – 2020. Available at: <http://www.poc.research.gov.ro/actiuni-1-1-4>

⁴¹ Structural and investment funds 2014 – 2020. Human Capital Operational Programme. Applicant's Guidelines - "Diaspora Start-up". Available at: <http://www.fonduri-ue.ro/pocu-2014#implementare-program>

⁴² Government of Romania (2017). Research grants for young high-school graduates who were awarded prizes at national and international Olympiads. Available at: <http://gov.ro/ro/guvernul/sedinte-guvern/granturi-de-cercetare-pentru-tinerii-absolventi-de-liceu-care-au-obtinut-premii-la-olimpiadele-nationale-i-internationale>

⁴³ Ad Astra Association – Asociația Cercetătorilor Români: <http://ad-astra.ro/>

their activity field, to express their potential⁴⁴. C.A.E.S.A.R. Foundation and the League of Romanian Students Abroad – a non-governmental organisation with over 12,000 members from more than 50 countries, proposed the "Multidimensional Strategy to Attract Youth from Diaspora - SMART Diaspora"⁴⁵, which includes sets of measures to promote Romania as a career destination, to facilitate the return to Romania, to support integration in the public sector and the private environment in Romania and to consolidate connections with diaspora and external partners.

Conclusions and recommendations

This study reviewed a number of recent developments in the research - development and the academic field in Romania, highlighting the factors influencing the highly qualified persons' decisions to emigrate or to return to the country. A first conclusion of the study is that researchers' emigration should be analysed in its context, considering the "global competition for talents" and the European Union's efforts to make researchers' mobility a foundation of the European Research Area, an objective which Romania also committed to at the time of its EU accession. In order to avoid massive losses of highly qualified human capital, an adequate response to global developments should be found, so as to turn Romania into an attractive destination country for worldwide researchers.

Although no statistical data were available to determine the real scale of researchers' emigration, estimations indicate that Romania's scientific diaspora comprises more than 15,000 persons, in the context of the total number of research & development staff in the country dropping by 30% during the last twenty years - with the most significant losses in the business sector. Things are somehow similar in the case of higher education graduates, with the students population in the country registering losses of more than 300,000 students over the last decade, with thousands of Romanian students studying now abroad. This suggests a second important conclusion of the study, that the decreasing number of researchers and the shrinking recruitment pool for future researchers are real threats for Romania, which translate into competitiveness losses and labour market imbalances.

⁴⁴ C.A.E.S.A.R Foundation – Centrul de Acces la Expertiza Studenților și Absolvenților Români: <http://www.fundatiacaesar.ro/>

⁴⁵ Liga Studenților Români din Străinătate (League of Romanian Students Abroad) (2013). Strategia Multidimensională de Atragere a Tinerilor din Diaspora - SMART Diaspora. Available at: <http://gala.lsr.ro/files/2013/01/SMART-Diaspora.pdf>

There is a variety of grounds for the above mentioned situation, fuelled by the chronic under-financing of the Romanian research - development and innovation system, with allocated funds below 0.5% of the GDP, whereas the European average is about 2%. The results of qualitative and quantitative research undertaken within this project highlight major dysfunctions related to the lack of predictability, legislative inconsistency, the reluctance of the private environment to get involved in research - development or the overload of researchers with teaching and administrative tasks. In addition to organisational aspects of the research & development system, this study also highlights a number of more sensitive and thorough elements looking at the quality of institutions and the overall quality of life in Romania. "Corruption", "the lack of professional development opportunities", "career advancement not based on professional merit" and "bureaucracy" are the major reasons for researchers' emigration, perceived as more important than "insufficient revenues". These conclusions have important consequences in terms of public policies, as suggested by the recommendations below.

Recommendations

- Increasing funding for research-development and the academic environment in Romania, according to commitments undertaken at European level. This could have a crucial contribution to maintaining the current pool of researchers, by ensuring decent work and salary conditions and increasing the attractiveness of careers in scientific research and the academic field. This idea is supported by one of the respondents in the qualitative study, who states that: *"The Romanian state should establish a very clear policy for those who are still in the country, to dissuade them from leaving. That is, some reform of the academic system, although it may sound a little unrealistic. I think we should reconfigure the importance of research - development - innovation in the country, so as to be able to create a development framework for this field here."* (Interview – Director for International Relations - University).
- Continuing direct funding as an incentive for researchers to return from abroad. Although some people maintain that funding research projects is not an optimum long term solution for attracting researchers to the country, best practices show, for instance, that programmes to encourage researchers to create start-ups in science and technology in the country of origin have a long-lasting effect⁴⁶. The *"Smart Diaspora" Strategy* proposes a similar direction, highlighting the need to integrate researchers with a long experience abroad in Romanian poles of excellence or in public-private centres for industrial research and innovation⁴⁷.
- A better dissemination of existing national research funding programmes among the scientific diaspora. According to a respondent to the qualitative study, *"the funding sources of Romanian research start to become attractive at European level. Researchers live from projects, people start to become receptive and quite open to funding sources from South-Eastern Europe, not just from Western and Central Europe"* (Interview Prorector research - University). In such a context, where Romania benefits, for a fixed time period, from European funds for increasing competitiveness in research & development and stimulating

⁴⁶ The World Bank (2011), *op. cit.*

⁴⁷ Liga Studenților Români din Străinătate (League of Romanian Students Abroad) (2013). *op. cit.*

entrepreneurship, particularly in smart fields of specialisation, involving diaspora may bring a high added value for reaching the targets proposed.

- Creating an articulate strategy to develop cooperation with the scientific diaspora. According to Romanian Academy recommendations, more efforts should be made to know the emigration phenomenon better and to develop the diaspora policy segment in order to draw benefits from diaspora's activity *during migration*⁴⁸, which requires the creation of networks and cooperation mechanisms with Romanian researchers abroad.
- Increasing transparency and stimulating competitiveness and competition in the Romanian research & development system and in the academic field. On the medium and long term, researchers' return will only be possible in case of reducing the influence of factors currently determining highly skilled emigration: "corruption", "bureaucracy", "career advancement not based on professional merit", "the lack of professional development opportunities". We therefore reassert the need for systemic actions to support transparency and competitiveness in the Romanian research & development and academic system, in line with internationally defined quality standards.

⁴⁸ Academia Română (Romanian Academy)(2016), Strategia de dezvoltare a României în următorii 20 de ani (Romania's development strategy for the next 20 years). Volume III, part 2. Romanian Academy Publishing House. Available at: <http://www.acad.ro/strategiaAR/strategiaAR.htm>

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Emigration of Physicians from Romania

Luciana Elena Lăzărescu

Introduction

The first part of the chapter shows a general picture of physicians' emigration from Romania. Then we look at Romanian physicians' emigration, its evolution and the destination countries from the brain drain perspective. The emigrant physician's profile is also outlined, as well as their reasons to emigrate, based on the answers to the online questionnaire. Some recommendations are formulated in the end, for measures and policies to encourage temporary migration, circular migration and return migration of Romanian physicians who left the country.

Between 1990 – 2010 highly qualified emigration from Romania increased by 428%, with the emigration rate around 30% in 2010 (Kerr, Kerr, Ozden and Parsons, 2016:6). Highly qualified physicians and nurses are among the professionals with the highest emigration rate, estimated based on data provided by professional associations (the college of physicians and the college of nurses) and the relevant ministries in destination countries.

Romania has faced the emigration of highly qualified medical staff since as early as 1990. The trend deepened after Romania's EU accession in 2007 and once again in 2010 - when the Government adopted the austerity measures (25% salary reduction for state employees, also applicable to medical staff; freezing vacancies in the health system). There are no country-wide statistics on Romanian physicians' emigration. A relative approximation is given by the number of medical certificates of good standing issued by the College of Physicians in Romania; however those figures should be taken with some reserve, as these certificates of good standing are only valid for 3 months and some physicians applied for them several times during one year or consecutive years. Moreover, certificates of good standing are only an indicator of the intention to emigrate and are only issued for members of the College of Physicians in Romania.

The European Commission's country report of 2016 states that the personnel shortage in the health sector in Romania persists, despite investments in training. In December 2016 the Ministry of Health said that 26.7% of the positions in the health system were vacant, because they were poorly paid and unattractive for medical staff⁴⁹. In 2014 Romania had one of the lowest number of physicians for 1,000 inhabitants in the EU – 2.7, estimated to have dropped to 2.5 (according to the Ministry of Health), while health expenses per capita were 816 Euro, the lowest in the EU (OECD/EU, 2016). This happens while, again in 2016, 14,596 resident physicians were under residency programmes, mainly in Bucharest (29%), Iași (15%) and Cluj (14%). The shortage of medical staff reflects in the population's limited access to health services and in health indicators, according to which Romania ranks among the last positions in Europe. A cost-benefit analysis is not possible, given the lack of data on the number of emigrant physicians, their distribution per destination country, the country where they completed their studies, the duration of stay etc.; however, according to a 2013 estimate, Romania loses on average 50,000 USD for each highly qualified emigrant, that is, the equivalent of 20 years of tuition (Cotârlea and Dragolea, 2013:35). In 2014 WHO estimated the number of physicians who left Romania at about 14,000, and their

⁴⁹ <http://www.ms.ro/wp-content/uploads/2016/10/3.Not%C4%83-fundamentare.pdf>

emigration entailed losses of more than 3.5 billion Euro between 2007 – 2014. Another WHO study of 2016 estimated that the university education of a physician in Romania costs on average 81,000 lei⁵⁰ (approx. 20,250 €), not including the residency period. Based on these figures and the number of conformity certificates issued for having the studies recognised in the EU, the Ministry of Health evaluated the Romanian state's losses from medical staff emigration between 2007-2016 at about 3.5 billion lei.

Medical staff emigration gave rise to contradictory statements among the main players with responsibilities related to human resources in the medical system (the Ministry of Health and the College of Physicians in Romania). The Ministry of Health publicly admitted a shortage of physicians, estimated at about 14,000 (a number which remained constant in official statements from various ministries ever since 2013), based on the personnel standards approved by Order of the Ministry of Health OMS 1224/2010⁵¹ (which does not include the number of jobs in private medical units). At the end of 2016, the ratio of vacancies in the system was as high as 26.7% (for overall medical staff). As opposed to the Ministry, the College of Physicians believes this shortage should be taken with some reserve; they consider it represents rather an unbalance of physicians' distribution throughout the country, with an urban concentration (particularly in university centres) disproportionate to smaller cities, and with an acute shortage in the rural environment. CMR also highlighted that Romania continues to produce more physicians than the system can absorb, and the faulty management of many health units in Romania, which are inefficient from a medical point of view, is a reason for the waste of resources and the unbalanced distribution of medical staff. In the next section we will present an analysis of the data we could obtain from multiple sources, in order to illustrate highly qualified medical emigration from Romania and to be able to argue to what extent we can speak about a shortage of highly qualified medical staff and to what extent about a faulty management and an unequal distribution among regions.

Emigration of physicians from Romania and the brain drain concept

Looking at the positive aspects of physicians' migration upon their countries of origin, some authors indicate that remittances sent by highly qualified staff are smaller than those sent by low- and medium-qualified migrants. One reason for this is that most highly qualified migrants originate from wealthier families, with access to higher education, and another reason is the trend of these migrants to bring their families with them in their destination countries (Niiemi, 2010 in Boncea, 2015). There are however certain countries (e.g. Cuba, the Philippines) where the revenues from remittances sent by medical staff exceeded the expenses with their education, and those countries chose to train a surplus of physicians in relation with the needs in their medical system, in order to maximise the contribution of emigrant medical staff to economic development (Rutten, 2009 in Boncea, 2015).

Although in the European Economic Area the migration of highly qualified medical staff appears to be characterised by circularity and mobility (e.g. most physicians in Switzerland originate from Germany, Ireland is an exporter of physicians for the United Kingdom), some countries are more

⁵⁰ <http://www.ms.ro/2016/12/05/ministerul-sanatatii-a-elaborat-planul-multianual-pentru-dezvoltarea-strategica-a-resurselor-umane-din-sanatate-2017-2020/>

⁵¹ Data provided by the Ministry of Health.

affected than others. This is mostly the case of Central and Eastern European countries. Contrary to the case of the United Kingdom, Germany and France who, although exporting physicians to other developed countries in North America or Europe, compensate their shortage of doctors from Europe and former colonies, in Estonia, Hungary, Lithuania, Bulgaria and Romania the net migration of medical staff has significant negative values.

In Romania the doctors' migration commenced after the fall of the communist regime. The elimination of visas for the Schengen area (2002) enhanced emigration. Another peak was registered after Romania's EU accession and the removal of transitory measures by some member states (2011), when free movement within EU borders entailed a growth in the number of physicians who chose to leave. The peak registered between 2010-2011 was largely due to the economic crisis and the effects of austerity measures upon salaries and vacancies in the public system. In a 2011 study Ulrich and collaborators call the period after 2007 the brain drain period, because starting that year highly-skilled emigration exceeded low- and medium-skilled emigration in terms of numbers. In 10 years Romania became Europe's largest exporter of physicians (Boncea, 2015:69). The underlying grounds of physicians' emigration were the worsening work conditions, decaying equipment and obsolete infrastructure, the lack of specialisation and career advancement perspectives (Boncea 2015:6), as well as corruption and appointment on political criteria. There were also structural reasons, such as the decentralisation of medical services in 2010, which entailed a shift of responsibility to local authorities for administrative costs, for 373 hospitals out of 435; then the underfinancing of the health system (in 2012 it received only 5.4% of the GDP) and the low salaries in the medical system, as compared to other public sectors (Chiscop, 2013:42).

According to a representative of the College of Physicians, people do not leave because of the lack of money, one can also earn money in Romania by working at several hospitals (public and private practice), plus the informal earnings. The problem is that career advancement is not based on competence, and obedience to the superior also requires actions which have nothing to do with professional tasks or skills.

"The system is complicated, complex and rotten."

(Interview with a CM representative)

The fact that it is not so much salaries but rather career development opportunities that attract physicians to practice in other countries was confirmed by a more recent study on the Romanian doctors' intention to emigrate (Boboc, Boncea and Manea, 2015).

"Because you do not have access to a correct system for the fair assessment of professionalism, you have to go somewhere else where you can be correctly assessed", declared Dr. Dan Ulmeanu in an article published by Ziarul Financiar⁵². That is, in private practice or abroad.

Brain drain involves the migration of highly qualified staff beyond a limit where losses surpass gains for the country of origin. Unfortunately in the case of physicians, the lack of trustworthy data on the number of emigrated doctors and on the type of migration (temporary or permanent), the

⁵² <http://www.zf.ro/companii/fara-solutii-pentru-a-opri-exodul-medicalor-pest-2-000-de-medici-cer-anual-avize-pentru-a-pleca-din-tara-noi-investim-in-pregatirea-doctorilor-pentru-a-i-trimite-in-tari-mai-bogate-16010218>

lack of information on Romanian physicians' behaviour with respect to remittances and their involvement in projects in the country (scientific or investment projects) make such estimation impossible. Brain drain is generally associated with permanent migration (Bhagwati, 1983 in Boncea, 2015), but long term migration can have somehow similar effects from the point of view of human capital loss (considering that it is generally young physicians who emigrate).

Causes of brain drain

Specialised literature identified several reasons for brain drain in the medical field. Low tuition costs, with studies being subsidised by the state, together with the relatively high number of medicine graduates, the long term or permanent migration trend among physicians and a behaviour which does not entail financial remittances and/or investments in the country of origin, all these are causes for the brain drain.

Low tuition costs

In Romania tuition costs at state universities are largely subsidised. Considering that the education of a physician lasts between 6-12 years, depending on the specialty, the individual loss is not significant but the unrecovered state investments are important. The longer the necessary duration for a specialty, the higher the losses.

Number of graduates

There are 12 state medicine universities accredited in Romania (Bucharest, Timișoara, Craiova, Iași, Cluj Napoca, Constanța, Arad, Galați, Târgu Mureș, Brașov) and a private university (Titu Maiorescu, Bucharest). In 2014 the number of graduates of medicine universities was 17.6 per 100,000 inhabitants, one of the highest in the EU (OECD/EU, 2016). The Ministry of Health stated in a press release that the number of persons registered in residency programmes in 2016 was 14,596. However according to CMR, the number of incoming persons in the system was 3,000 in 2015, as compared to the number of outgoing persons, as a result of retirement, decease and emigration, which was 3,500 (Boncea, 2015). If we look at the number of physicians with a right to practice, we notice that it reduced, despite the number of graduates. In August 2016 INS reported a number of 56,000 physicians employed in the Romanian health system, most of whom worked in Bucharest⁵³. For the same period (2016) the College of Physicians in Romania gave a figure of 51,422 physicians registered with CMR⁵⁴, with a right to practice, 8.35% (4.688) less than in 2015.

As this difference can only be partly assigned to the change of activity field, retirement and decease, physicians' emigration is probably higher than estimated.

A study performed during 3 years (2013, 2014 and 2015) on 957 graduates of the Iuliu Hațieganu Medicine and Pharmacy University in Cluj Napoca regarding the new graduates' intention to emigrate, discovered that 84.7% of them planned to look for a job abroad. The main reasons were the better salaries, the work conditions and their dissatisfaction with the health system. 61.3% of

⁵³ INS – Cercetare statistică privind activitatea unităților sanitare 2016 (Statistic research on the activity of health units 2016) (also includes physicians who may hold administrative positions) <http://statistici.insse.ro>.

⁵⁴ CMR response to our request for research information of 17.05.2017.

them wanted to leave temporary, while 23.41% definitively (Suciu, Popescu, Ciumăgeanu, Buzoianu, 2017).

Destination countries

Worldwide the main destination countries for physicians' migration are: the United Kingdom, the United States, Canada and Australia. The WHO estimations show the following picture: in 2011 in the UK there were 91,000 physicians trained abroad (37% of the physicians with a right to practice), in 2009, in Australia there were 18,000 (26% of the total), in the USA in 2007 there were 243,000 (26%), and in Canada in 2012 there were 18,000 physicians who graduated abroad (24% of the total number of physicians) (OMS 2014:100). According to Bhargava and collaborators (2011), in 1991 the number of Romanian physicians working in OECD countries was 1,660. Until 2004 this figure raised to 3,914 (9.53% of Romanian physicians). More than 60% of these were in the USA and 36% in Europe. Although in the 1990s the US were the main attraction pole for Romanian doctors, there are no records or estimates of the number of physicians who leave to non-EU countries each year. We will therefore look at EU destination countries for Romanian doctors. Out of those working in Europe, 80% were in Germany, United Kingdom, France, Belgium and Sweden (Boncea, 2015). According to an article in Ziarul Financiar (2016) quoting CMR, the main EU destination countries preferred by Romanian physicians are Germany (4,062 Romanian physicians), followed by France (over 4,000 physicians) and the United Kingdom (more than 2,463 Romanian physicians). Data were provided by professional associations in those countries.

These countries provide good work conditions and high-performance technology, and career advancement is meritocratic. Important criteria when choosing the destination country are language knowledge, personal connections, previous experience in that country and bilateral agreements between universities (e.g. students in Bucharest prefer the United Kingdom, while those in Cluj prefer Germany) (Boncea, 2015:48, Suciu, Popescu, Ciumăgeanu, Buzoianu, 2017).

Studies demonstrated that the physicians' preference for certain destination countries has a positive correlation with the migrant population in the destination country and with policies to attract qualified workforce. In addition investments in the education of medical doctors and the increasing number of places in specialised universities also influence the demand for labour force from abroad. The case of the United Kingdom, who progressively increased the number of places for medicine students so as to cover its deficit from domestic sources, is relevant in this line and led to a gradual and significant reduction of the input of foreign physicians.

The United Kingdom was actually the first country to face the emigration of highly qualified medical staff to the US. Although both were developed countries, in the 1960s this was an advantageous exchange for the United Kingdom, who benefited from this emigration in terms of technology and knowledge transfer. In the 1970s the United Kingdom had to compensate losses in the health system with qualified workforce from the former colonies. This was the origin of the idea to invest in universities in the main countries of origin of medical staff, in order to benefit later from the education of potential new-comers in the health system. The case of the United Kingdom is not singular but it is very relevant for the way how destination countries for highly qualified medical staff adopted selective-permissive emigration policies in order to cover the gaps in certain sectors

of the domestic labour market. Such policies acted as pull factors (beside infrastructure, salaries and work conditions) for highly qualified staff and encouraged emigration from developing to developed countries.

Irina Boncea (2015) presents the progression of the number of Romanian physicians who emigrated between 2008-2012 to Germany, the United Kingdom, France, Belgium and Sweden, based on data obtained from the Colleges of Physicians and from the relevant ministries in the destination countries. Five years after Romania's EU accession, the number of Romanian physicians registered in these countries has tripled.

Table 3 Progression of the number of Romanian physicians registered in the main European destination countries, 2008 – 2016

Year	Germany	United Kingdom	France	Belgium	Sweden	Total
2008	927	749	444	215	239	2,574
2009	1,112	972	842	352	255	3,533
2010	1,495	1,603	1,034	489	290	4,911
2011	2,105	1,931	1,378	651	336	6,401
2012	2,910	2,002	2,114	753	343	8,122
2016	4,285	2,675	4,000	-	-	-

Sources: Boncea (2015:73), completed with data from <http://www.zf.ro/companii/fara-solutii-pentru-a-opri-exodul-medicalor-pestre-2-000-de-medici-cer-anual-avize-pentru-a-pleca-din-tara-noi-investim-in-pregatirea-doctorilor-pentru-a-i-trimite-in-tari-mai-bogate-16010218> (France, 2016), Bundesärztekammer/ German Medical Association (Germany, 2016), General Medical College (United Kingdom, 2016)

Notes: France does not register resident physicians, the United Kingdom registers physicians who completed their studies in Romania, regardless of citizenship.

Germany

Figures recently published by Ziarul Romanesc (<http://ziarulromanesc.de>), taken over from Tagesspiel⁵⁵ show that in 2016 the number of Romanian physicians in Germany reached 4,285, with Romanians being the largest community of foreign physicians in this country. We can notice that the number of Romanian physicians in Germany grew by approx. 47% between 2012 – 2016. Out of the 4,285 Romanian physicians registered in Germany on 31.12.2016, only 3,960 were active⁵⁶.

United Kingdom

On 31 December 2016, the General Medical Council in the United Kingdom reported 2,675 physicians who graduated in Romania on the List of Registered Medical Practitioners - LRMP),

⁵⁵ <http://ziarulromanesc.de/sanatate/cei-mai-multi-medici-straini-din-germania-sunt-romani-cifre-socante-ale-exodului-alb/>

⁵⁶ Figures provided by Bundesärztekammer (German Medical Association) on 17.05.2017.

that is, more than 0.9% of the total number of physicians (280.809). This number also includes foreign citizens who completed their medical studies in Romania. LRMP includes both general practitioners and specialised doctors with a license to practice, as well as physicians registered in the UK but who cannot practice. In the UK the number of doctors from the EEA dropped by about 1000 in 2015 and 2016, as compared to 2014. A potential explanation is the new requirement for language knowledge evidence, introduced by the General Medical Council in 2014.

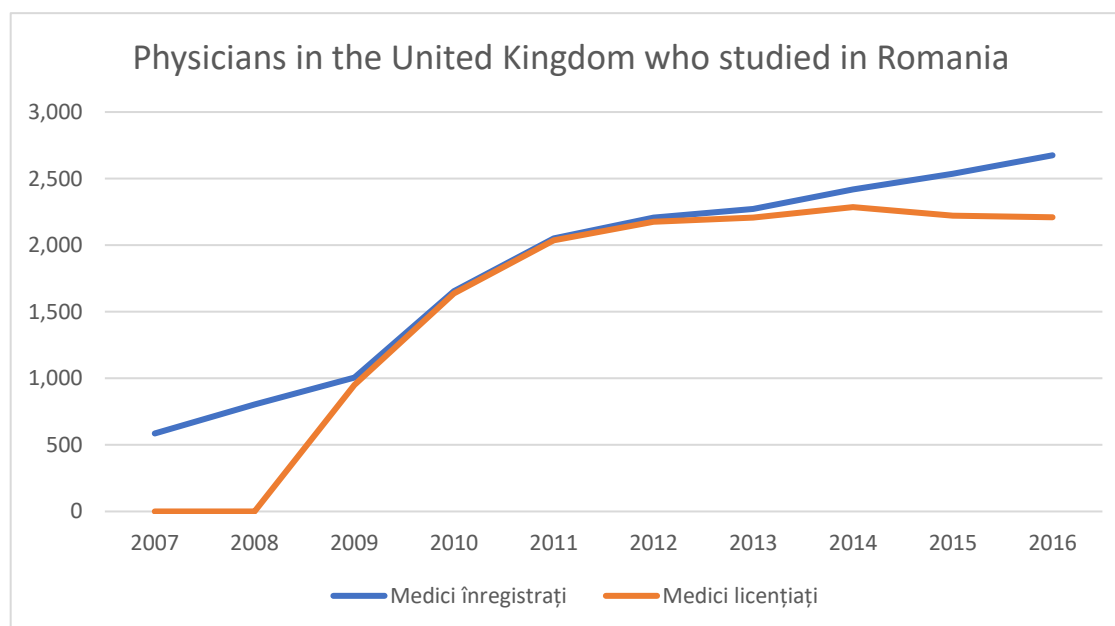
Table 4 Number of doctors who studied in Romania, registered with the GMC and licensed, per years.

Year	Number of registered doctors	Number of licensed doctors
2007	586	0
2008	804	0
2009	1,006	951
2010	1,654	1,637
2011	2,052	2,036
2012	2,208	2,177
2013	2,272	2,207
2014	2,419	2,286
2015	2,536	2,221
2016	2,675	2,209
2017*	2,621	-

*as of 16.05.2017

Source: General Medical College, UK, data provided on 16.05.2017. Licensing was introduced in 2009. Data include Romanian and foreign physicians who studied in Romania.

Figure 3 Progression of the number of physicians registered and licensed in the United Kingdom



Source: General Medical College, United Kingdom

A study published in 2017 by Conseil National de l'Ordre des Medecins⁵⁷ estimated that the number of doctors born in Romania and registered in the Order of Physicians in France represents 8.1% of the total number of physicians born abroad (58,441), on the third position in terms of shares of physicians born abroad, after Algeria and Morocco. This number includes the doctors who were granted French citizenship, as well as those of different nationalities born in Romania. The average age of doctors born in Romania, registered with the Order of Physicians in France, is 46. As regards specialities, most of them are general practitioners, psychiatrists and specialists in medical imagery. Most of the doctors who obtained their diploma in Romania graduated in Bucharest (1399), Cluj (901) and Timișoara (406). In 2007 the number of physicians born in Romania registered with the Order was around 400, whereas on 1 January 2017 this number reached approx. 4,000.

Certificates of good standing and conformity certificates

Starting 2007, according to Directive 2005/36/EC on the recognition of professional qualifications, studies completed in Romania were recognized by EEA countries. Two documents are required in order to practice medicine abroad: the current certificate of good standing, valid for 3 months, issued by the College of Physicians, and the conformity certificate, issued by the Ministry of Health and the county Public Health Directions, with unlimited validity. Both documents are indicators for the intention to emigrate rather than for actual emigration.

The current good standing certificates are valid for 3 months and are renewed if the applicant does not leave the country within that time frame, so the number of applications for current certificates of good standing issued by county and Bucharest colleges of physicians is higher than the number of doctors who actually emigrated. Unfortunately CMR does not keep records of the number of certificates issued but only of the applications filed, which, according to CMR, include applications both for certificates of good standing and for certificates for non-members⁵⁸. Certificates of good standing are only issued for the physicians registered with the College. In France however resident physicians do not need to register with the College, they are not requested to provide the current good standing certificate from the College of Physicians in Romania and are excluded from official statistics on physicians.

The other document requested for the recognition of studies in other EU states - the conformity certificate - is issued only once, both for physicians and for stomatologists and pharmacists, by the same institution (the Ministry of Health/ Public Health Directions), with no separate records kept. Therefore, considering the available data, the best indicator of the Romanian doctors' intention to emigrate is the current certificate of good standing.

⁵⁷ Etudes longitudinales des medecins nes hors de France et des medecins diplomes hors de France
[https://www.conseil-](https://www.conseil-national.medecin.fr/sites/default/files/perspectives_flux_migratoires_et_trajecitoires_2017.pdf)

[national.medecin.fr/sites/default/files/perspectives_flux_migratoires_et_trajecitoires_2017.pdf](https://www.conseil-national.medecin.fr/sites/default/files/perspectives_flux_migratoires_et_trajecitoires_2017.pdf)
⁵⁸ <http://www.zf.ro/companii/fara-solutii-pentru-a-opri-exodul-medicilor-pest-2-000-de-medici-cer-anual-avize-pentru-a-pleca-din-tara-noi-investim-in-pregatirea-doctorilor-pentru-a-i-trimite-in-tari-mai-bogate-16010218>

Table 5 The number of applications for current certificates of good standing filed with the College of Physicians in Romania between January 2008 – September 2016

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016*	Total
Total	1,155	1,401	2,879	2,982	2,460	2,195	1,924	2,269	1,434	18,699

Source: Boncea, 2015:48 (for 2008 – 2012 statistics), CMR cited in <http://www.zf.ro/companii/fara-solutii-pentru-a-opri-exodul-medicilor-pest-2-000-de-medici-cer-anual-avize-pentru-a-pleca-din-tara-noi-investim-in-pregatirea-doctorilor-pentru-a-i-trimite-in-tari-mai-bogate-16010218> for 2013 – 2016; *until the end of September 2016.

Note: the numbers include applications both for certificates of good standing for physicians who are CMR members, and for certificates for non-members.

Out of the 13,072 applications filed by CMR between 2008 – 2013, approx. 80% were for the United Kingdom, Germany, France, Belgium and Sweden (Boncea, 2015).

If we look at the intention to emigrate of all highly skilled professionals in the health system (doctors, stomatologists and pharmacists), then the best indicator is the number of applications for conformity certificates. Between 2007 – 2016 the Ministry of Health reported a total number of 44,700 applications, including for conformity certificates for physicians, stomatologists and pharmacists, as well as other applications for various certificates, and renewals.

Table 6 Number of applications for conformity certificates filed with the Ministry of Health/ County Public Health Directions between 2007 – 2012

Year	2007	2008	2009	2010	2011	2012	Total
Total	3,585	2,766	3,197	7,830	5,676	3,863	26,917

Source: <http://www.emedic.ro/Articole2/187.htm>

Note: The figures include physicians, stomatologists and pharmacists.

The time progression of the number of both certificates of good standing and conformity certificates confirms a significant growth in 2010 and 2011 as compared to previous years. It was probably the economic crisis and the subsequent austerity measures that entailed such a significant growth in the intention to emigrate of Romanian physicians as well as stomatologists and pharmacists.

Besides the number of certificates of good standing, we can also look at the fluctuation of the number of physicians registered with CMR. While in 1990 the College of Physicians in Romania registered 55,000 physicians with a right to practice in Romania, in 2013 the number reached a minimum of 39,813, whereas in 2015 it grew again to about 56,110 (Boncea, 2015). In 2016 the number of physicians registered with CMR was 51,422⁵⁹, 8.35% (4.688) less than in 2015. The number of outgoing physicians exceeds by far CMR estimations in 2015 (approx. 3,500 outgoing physicians as a result of emigration, retirement and decease) - a spectacular increase which can

⁵⁹ <http://www.zf.ro/companii/fara-solutii-pentru-a-opri-exodul-medicilor-pest-2-000-de-medici-cer-anual-avize-pentru-a-pleca-din-tara-noi-investim-in-pregatirea-doctorilor-pentru-a-i-trimite-in-tari-mai-bogate-16010218>

only be due to emigration (the retirement and decease rates among physicians remained relatively constant during the last years).

An estimate of the number of physicians who emigrated between 2007 - 2012

Considering that about 80% of the applications filed by Romanian physicians registered with CMR for current certificates of good standing between 2008 – 2012 were for Germany, United Kingdom, France, Belgium and Sweden, Boncea (2015:77) estimated that the number of doctors working abroad grew relatively constantly between 2008 (3,217 doctors) and 2012 (10,152 doctors). For 2016 we have data only for Germany, France and the United Kingdom. When calculating the share of Belgium and Sweden in previous years in the total number of physicians who practice in the first 5 European destination countries, we can see that this share was around 17% in the first 3 years and then it dropped to 15% and 13% in 2011 and 2012 respectively. We will approximate the share of the total number of physicians in these two countries for 2016 at the lowest value (13%). The estimated number of physicians who practice abroad would be in this case around 15,700, according to the formula used by Irina Boncea (2015:77): $ET = 1.25 \cdot \Sigma (EG + EMB + EF + EB + ES)$, where ET is total emigrants, EG is the number of Romanian physicians in Germany, EMB is the number of Romanian physicians in the United Kingdom, EF is the number of Romanian physicians in France, EB is the number of Romanian physicians in Belgium and ES is the number of Romanian physicians in Sweden.

The profile of emigrant physicians

Most physicians who emigrated in the first 5 years following the EU accession were specialists. This conclusion is based on CMR data that indicated, based on certificates of good standing, that between 2008 – 2013 the specialties of physicians who intended to leave the country were: surgery, AIC, obstetrics-gynaecology, paediatrics, radiology, orthopaedics (Boncea, 2015:49). The prevailing emigration of specialist physicians increased costs for the Romanian state. The tuition duration for a general practitioner is 6 years, for a family doctor about 9 years, while for a specialist in other medical fields it can reach 10-12 years. According to a recent⁶⁰ CMR statement for Ziarul Financiar, between 2010 – 2015 most doctors who applied for certificates of good standing were general practitioners, family doctors and specialists in general surgery, which was also confirmed by the data from professional associations in the main destination countries. According to data from the Ministry of Health, the main medical specialties for which conformity certificates were requested between 2007–2016 were: family medicine, AIC, paediatrics, general surgery⁶¹. The emigration trend of specialist physicians may have been exceeded by the emigration of family doctors over the last years, but as long as we do not have annual records of the specialties of doctors who applied for certificates of good standing or conformity certificates, we cannot determine any trend in this line. As mentioned above, the emigration of specialists and the detailed annual records are important from the point of view of the higher costs for the Romanian state than in the case of general practitioners and family doctors. Another important information related to the profile of physicians who relocated abroad, supplied by INS, is that most physicians who emigrated permanently were in the 25 – 44 age group (Boncea, 2015). Therefore

⁶⁰ November 2016

⁶¹ Source: Ministry of Health, response to the request for public information of 20.04.2017

Romanian physicians who emigrated in the first 5 years after accession were young, specialised, and a relatively low number changed their domicile abroad (1,589 between 2008 – 2012, with an average of 290 physicians annually). We could hence deduce that doctors tend to migrate temporarily, which compensates the losses from the emigration of specialised physicians and from the young age of emigrating doctors, entailing the ageing of highly qualified work force in Romania and outdated skills. However, given the different legislation in member states on the minimum duration of stay for changing residence, we cannot be certain about Romanian physicians' migration being temporary. Other studies show that the migration of physicians from low-income countries tends to be permanent (Hawthorne, 2014) and is strongly influenced by the legislative context (migration policies) and by the specific context related to studies recognition in the destination countries, whereas the migration of physicians from medium/high income countries tends to be temporary. Romania is on the list of medium-income countries, but in the absence of studies on this topic and data on return migration of physicians, we are not able to draw any conclusions in this line.

Quantitative research results

This study also includes an online questionnaire-based survey, whereby we tried to evaluate the determinants of the decision to emigrate for highly skilled persons, the destination countries, their activity fields, their employers abroad and the changes that would motivate them to return. The questionnaire targeted highly skilled persons (with completed studies), maximum 64 years old, who had a work experience abroad on a highly skilled position, for at least 6 months, between 1996 – 2016. The questionnaire analysis results are included in an annex to the research report. In this section we will only refer to responses from persons who work on highly qualified positions in the health field (12% of respondents - 19 persons, 14 women and 5 men from the total of 154 respondents with valid answers). They stand for only 77% of those specialised in medical sciences, with 16% working in the research - academic field and 6% in the administrative area. Therefore data analysis for respondents in the medical field excluded academics and researchers.

Given the small number of responses, the interpretation of results only has an exploratory value, the conclusions can by no means be generalised for all highly skilled Romanian emigrants who work in the health field, or extrapolated to all physicians. However, considering that they confirm the results of previous studies on emigration factors and the Romanian physicians' intention to return, we believe it would be relevant to briefly present here the similar aspects.

Respondents who work in the medical field are mostly in the 25 – 44 age group (90%). 42% are aged 25 to 34, while 38% are aged 35 to 44. This result coincides with Irina Boncea's conclusions on the emigrant physicians' profile and with the data provided by INS on the definitive migration of physicians (with a change of domicile), according to which emigrant physicians are young, under 44.

The main destination countries of respondents are: France (23%), United Kingdom (19%), USA (15%), Austria (12%), Germany and Canada (8%). The distribution of emigrant Romanian physicians per EU destination countries, according to available data, is as follows: Germany (4,285), France (approximately 4,000), United Kingdom (2,621). We have no data on the Romanian physicians in the US and Canada, but their number could be significant, according to

studies at the beginning of the years 2000. Considering that estimates of physicians' emigration are based on data from CMR, who counts the applications for certificates of good standing, valid only for EU countries, as well as on reports from professional organisations in destination countries (in the case of US and Canada, separate organisations for each state), it is impossible to estimate the number of doctors in the US and Canada, in the absence of targeted studies in these countries on foreign physicians/physicians who studied abroad.

Women prevail in the administrative, financial, legal, management, health, retail fields and in EU institutions, while men are found mostly in constructions, engineering and IT.

When asked about the type of employing organisation, most respondents in the medical field said they worked in hospitals or clinics (69%), in private companies (15%), universities (12%) and research centres (4%).

Those who work in the medical field value family the most (family is very important for 85% of respondents), then education (which is very important for 69% of them) and career and relationships with friends (both of them very important for 54% of respondents).

The main factors influencing the highly qualified persons' decision to emigrate from Romania are, in the opinion of those working in the medical field, corruption in the public health system (very important for 81%), low salaries (58%) and the lack of career advancement opportunities and the political environment (54% each).

The factors that determined respondents in the medical field to emigrate coincide with those that influence the decision to emigrate in the previous paragraph: corruption (81% to a very large extent), the lack of professional development opportunities (46% to a very large extent), bureaucracy in public institutions (42% to a very large extent). The results confirm conclusions of previous studies on Romanian physicians. The opportunity to live together with their families determined only to a small extent the immigration of respondents in the medical field. This, corroborated with the fact that highly skilled workers in the medical field value family the most (as confirmed by studies on foreign physicians in the United Kingdom), but not remittances (see below), it can be deduced that the respondents, who were young, either had no families when they emigrated, or they emigrated precisely for being able to bring their families later on.

As regards their connections with the country of origin, only 20% of respondents working in the medical field abroad collaborate with entities (persons, organisations) in Romania, as compared to respondents in IT (26%) and in the research-academic field (45%).

Asked how highly skilled emigrants can contribute to the country's development, medical staff responded: by promoting the country's image (54% to a large extent), by creating networks between diaspora and people living in the country (50% to a very large extent), by creating professional networks with specialists in other countries (46% to a very large extent). Respondents working in the medical field are among those who do not agree to remittances as ways to develop the country, just as those working in research-academic field and in IT, but to a smaller extent than the latter.

According to those working in the medical field, the changes that could contribute to a drop in highly skilled emigration could be: transparent employment mechanisms (77% to a very large

extent), policies against corruption and criminality (73% to a very large extent), employee activity assessment (69% to a very large extent). Thus in addition to the corruption in the health system, which emerges again in almost all research studies on emigrant doctors/ on the Romanian doctors' intention to emigrate, the next factor mentioned by those working in the health system is the recruitment, assessment and promotion system of human resources in the health system; this is also confirmed by the results of previous studies.

The assessment of survey results for persons working in the medical field confirm some conclusions of previous research: the main reason for physicians' emigration is not the salary but the corruption in the system, which blocks career development opportunities and hence professional development, that is, education; emigrating medical staff (mainly doctors) are young, aged 25-44 and less willing to send remittances to their families; medical staff are not very eager to return to the country.

Analysis and discussions

There is no shortage of physicians, in the opinion of the CMR representatives. This opinion is shared by a CMR representative in the country. *“Look at statistics in Europe (...) we are the second country with the highest number of beds. Why do we have so many beds? There are hospitals that stay empty...”* We have many hospitals and an excess of doctors, it is just that *“we do not have medical staff where they are needed.”* And in Romania there are inefficient health units, which lack specialist physicians and doctors on duty, and for this reason patients end up in county hospitals or university centres, which are anyway very crowded. There are hospitals that should not exist, but which actually support an army of ancillary staff, while lacking the essential medical staff (e.g. surgeon, anaesthetist etc.). This is the case of some of the hospitals in the provinces. Then there is the issue of the relation with the Health Insurance House, where many of the staff members are non-medical. It happens that a treatment prescribed by a doctor is checked by employees who are not doctors and hence have no competence in this line. It is known that work conditions in hospitals in the provinces and in rural medical units are extremely precarious, and doctors flee to cities.

“Here the region has depopulated. Who should do vaccines in the countryside? Problems are not honestly discussed.”

(Interview with a CM representative).

However the interviewed representative of the College of Physicians admits there are certain specialities facing a shortage of doctors, in addition to their inadequate distribution throughout the country. Doctors are concentrated around university centres and in Transylvanian cities. In areas such as Slatina, Giurgiu, Teleorman and some counties in Moldova there is no medical staff, with less than 1 doctor per 1,000 inhabitants. In these circumstances Romania still lacks a human resource strategy in health, so as to balance both the deficient distribution of physicians in the country and the demand and offer of specialist doctors. In addition the number of doctors who were practising abroad in 2016, estimated at more than 15,700, is not negligible and shows a shortage of physicians, although the National Association for Family Medicine estimates the shortage of family doctors at only 600. A study undertaken through the County Public Health Directions in 2017 indicates a shortage of specialist physicians (as reported by only 24 counties)

of about 4,700⁶². The endeavours over the last period were aimed at legislative changes on the international recruitment of third country doctors who hold a Blue Card, which are not applicable today, because in order to get a Blue Card one needs a certificate of good standing, and in order to register with the CMR and obtain the certificate of good standing one needs a Blue Card. To encourage doctors' retention, the scholarships for residents were increased and then a salary law was adopted which deepened inequalities in the system; then its effect was anyway overruled by the 25% drop in salaries and the freezing of job vacancies, following the economic crisis. The President has recently promulgated the new salary law, which also affects medical staff. It remains to be seen how it is going to be applied.

While doctors' emigration is triggered, among others, by differences in earnings, work conditions and living standards, studies showed that their return is generally motivated by emotional factors, related to family (Money and Kuo Liu, 2014). Moreover, if we take into account that doctors tend to bring their families to the destination countries (Kangasniemi, Winters and Commander, 2004), then we come to believe that doctors' migration tends to be, if not permanent, at least on the long term. In addition, as demonstrated by several studies, the longer the time spent in the destination country (so the better integrated they are), the lower the probability for them to return to the country of origin (most highly skilled persons return in the first 5 years after their departure). However the reverse does not appear to be that, failing to integrate, doctors return to the country of origin; they rather tend to migrate further to other countries (Money and Kuo Liu, 2014) that offer them better employment or licensing opportunities or that have more flexible migration policies with respect to highly qualified staff. Beyond these considerations, for a country like Romania, where the main reasons for doctors' emigration are known, but we lack data on their numbers and the impact upon the system (with the exception of health indicators, which are very poor in Romania), it is worthwhile acting upon the determining factors of medical staff emigration; and this should be done not necessarily for stimulating return, but rather because health is a fundamental right and the state should ensure people's access to medical services.

In our opinion, no measures have been taken so far to really target the return migration of doctors and medical staff. In order to stimulate the return of doctors, a salary raise should be followed by policies and measures on governance, the management of health units, the selection, recruitment and promotion of medical staff and a correlation between available places at universities and residency programmes with population needs and deficient specialities. In addition Romania should do something to report trustworthy data on the work force dynamics in the health system. In the absence of such data, measures are taken just from the office and have no connection to reality. In this line, the Multiyear Plan for the Strategic Development of Human Resources in Health for 2017 - 2020⁶³, not applied so far, contains a set of measures in several connected

⁶² In 2017 ARPS requested from the public health directions throughout the country data on the number of vacant doctor positions in the health system in each county. Responses were received from 28 directions, and the cumulated number of vacant positions was 4,693. This number represents only part of the shortage of doctors at country level (14 counties did not respond to our information requests or had no data). This number does not include family doctors, which are included in private practice.

⁶³ <http://www.ms.ro/wp-content/uploads/2016/10/5.HOT%C4%82R%C3%82RE-pentru-modificarea-%C5%9Fi-completarea-Hot%C4%83r%C3%A2rii-Guvernului-nr.-1028-2014-.pdf>

areas (data collection, training/education, governance etc.) aiming to improve both the retention of medical staff and circular migration, and, in time, to encourage return migration.

What can be done?

"In order for return to become an option for the doctors who left, it is necessary to change the system and the relation between chiefs and subordinates, to increase salaries and to provide work conditions similar to those abroad, including team work."

(Interview with a CM representative)

We should not forget that Romanian physicians did not invoke salaries as their main reason to emigrate, but the corruption in the system and career advancement opportunities. Changing both these aspects requires a dedicated management for reforms in the health system. While improving work conditions and equipment is possible, eliminating corruption is a long term endeavour. There are however some measures of utmost importance that can be taken on the short term: the need to realistically plan the workforce in the health system, to correlate the number of places with the existing needs in the system, to correlate residency programmes with deficient medical specialities and with population needs, so as to improve the quality of medical services for people and to mitigate the unbalanced allocation of staff between urban and rural areas and between university centres and other cities.

Another solution would be to encourage internships abroad (experience exchanges and various specialisations), as well as international projects which encourage circular migration.

The Multiyear Plan for the Development of Human Resources in Health 2017 - 2020⁶⁴ provides concerted measures to reduce medical staff migration, such as: improving recruitment mechanisms, developing associated competences for medical staff by revising training and residency programmes, developing the concept of rural health, stimulating mobility in professional and academic practice and in research, a salary policy based on results and the development of an unique national data base and a common system of indicators to be collected for monitoring the dynamics of human resources in the health system⁶⁵. This plan has not been applied until present, although it contains a number of useful measures, adopted on the basis of consultations with most stakeholders.

The truth is that, despite the salary raise provided by the law on state budget salaries, the wage differences between Romania and most emigration countries preferred by Romanian doctors will not disappear. However on the medium and long term such differences may gradually attenuate and may turn into an incentive for return migration of highly skilled medical staff. The condition however is that such measures should be applied not only to physicians but to the overall medical staff, otherwise they would entail even higher inequalities in the system.

⁶⁴ <http://www.ms.ro/2016/12/05/ministerul-sanatatii-a-elaborat-planul-multianual-pentru-dezvoltarea-strategica-a-resurselor-umane-din-sanatate-2017-2020/>

⁶⁵ DECISION for amending and completing Governmental Decision no. 1028/2014 approving the National Health Strategy 2014 - 2020 and the Action Plan for 2014 - 2020 for implementing the National Strategy
<http://www.ms.ro/wp-content/uploads/2016/10/5.HOT%C4%82R%C3%82RE-pentru-modificarea-%C5%9Fi-completarea-Hot%C4%83r%C3%A2rii-Guvernului-nr.-1028-2014-.pdf>

Best practices

Cuba

Cuba, a country fighting poverty and domestic problems, led by a socialist government, has one of the most effective public health systems in the world. Its quality and outcomes reflect in health indicators, which are surprising for a country with a GDP below 48 billion USD/year (Keck and Reed, 2012). The Cuban health system is based on people's education, prevention and community aid, and only in absolutely necessary cases do they resort to hospitalisation and emergency aid. Cuban physicians and nurses are among the most well-trained in the world and among the most demanded for the health services they provide. Cuba truly exports health services to other countries against a payment, and gains from this 8 billion USD/year. In 2015 about 37,000 Cuban health professionals were working in 77 countries.

For instance in 2013 Cuba concluded an agreement with the Brazilian government for seconding 4,000 physicians in poor regions in Brasil. This agreement brought 270 million USD/year to the Castro government. At the end of 2014 there were already 11,429 Cuban doctors working in Brasil. However Cuban medical professionals also work pro-bono in the poorest and most exposed areas, being the most useful diplomacy instrument used by the government. Despite the low salaries and the fact that they have to find a second job to live, Cuban doctors and nurses are committed to their profession and patients⁶⁶.

Another example is the agreement with Venezuela, whereby Cuba received oil in exchange for the doctors sent to work in isolated unsafe regions. Despite opposition from Venezuelan doctors, who saw their positions threatened, it turned out that Cuban medical staff were working in areas where the Venezuelan would have not gone. The agreement was a profitable deal for Cuba, who saved billions of dollars from the oil subsidised by the Venezuelan government. It was also the Venezuelan government who funded teams of ophthalmology surgeons who operated more than 1.6 million patients in 8 countries, starting 2005⁶⁷. In order to spread the Cuban health system model, the Latin American School of Medicine (ELAM) in Cuba prepares thousands of foreign students each year to work in accordance with the preventive community care model.

Malaysia

Until about 10 years ago Malaysia was a country who imported doctors. In the meantime however, 30 private medicine schools and 10 public universities were established. These schools started to produce an excess of graduates, plus Malaysian doctors who studied abroad and now return to the country. In this context the Malaysian government plans to encourage medical tourism, so as to use the human capital generated by medicine schools and to get a profit from this. In 2007 a number of 341,288 patients (medical tourists) were treated in Malaysia and this number probably grew in the following years (Hawthorne, 2014:2).

⁶⁶ <https://www.forbes.com/sites/billfrist/2015/06/08/cubas-most-valuable-export-its-healthcare-expertise/#782fe6bc195e>

⁶⁷ <https://yaleglobalhealthreview.com/2014/04/30/cuba-medicine-and-medical-internationalism/>

Conclusions and recommendations

Literature on brain drain usually underlines the negative effects of this phenomenon on the countries of origin and the measures to combat these effects, such as various policies to increase the benefits for the countries of origin: taxing revenues obtained by highly skilled migrants abroad or reimbursing education costs subsidised by the state, in case the graduate leaves the country before a certain "depreciation" period (an idea also proposed in Romania for doctors, after Hungary's model).

Nevertheless the same literature also admits some benefits for the countries of origin, if emigrants became part of some professional networks, if they sent money and technology and if they returned with new knowledge and skills.

Leaving aside such hypothetical gains for Romania, which are almost impossible to demonstrate with available data, the obvious and immediate cost of doctors' and medical staff emigration is the loss of the best educated human resources in the medical field. Physicians who emigrate permanently are young, under 44, aware of their own value. Although, according to WHO sources, about 60,000 people die annually in Romania as a result of the failures of the public health system (which are actually also the reasons for doctors' emigration), the government does not appear to be willing to explore and, most important, to solve this problem. Policies to reduce brain drain are however absolutely necessary, including by introducing temporary or circular migration programmes (Schiff, 2006). The measures taken so far refer to the salary increases for medical staff (the recent salary law), and the governance programme of PSD estimates, for 1 January 2018, ambitious salary raises, up to the following gross amounts: resident physician year I - 1200 Euro, specialist physician gr. V (5th degree), clinical, 2650 Euro, primary care physician gr. V, clinical, 3377 Euro, primary care physician gr. V AIC/emergency – 3600 Euro and 0% tax on revenue for physicians. In addition the same programme also provides building 8 regional hospitals and a national hospital and improving infrastructure and equipment in the existing health units. In addition to the inflow of jobs in the health system expected to be created in the following years, it is important that, in the absence of a strategy, the Multiyear Plan for the Development of Human Resources in Health 2017-2020 contains necessary and realistic measures for compensating the effects of medical staff emigration from Romania. We therefore believe that the following measures are necessary and urgent: enforcing the above mentioned Plan and adopting a human resources strategy - a centralised system of work force and vacancies in the health system, to correlate population's needs with the number of medicine graduates (which is currently influenced only by the absorption capacity of universities), reconsidering financial allocations in the health system and privatising and outsourcing medical services and programmes according to quality and real competition criteria.

Recommendations:

At national level - policies and measures:

1. Preparing a realistic strategy for human resources in the health system and a centralised system to enable recording and monitoring work force dynamics (emigration, return, changes of activity field etc.), by a collaboration between all institutions involved (MEN, universities, MS, CMR etc.).
2. Opening the vacancies in the system for national contests, ensuring transparency and equity in medical staff recruitment and selection.
3. Legislative amendments of Law 95/2006 on the health reform, to enable the right to practice for all third party physicians who graduated in Romania and for physicians who are under a form of protection, at least for specialities facing a shortage; correcting certain inapplicable provisions of Law 95/2006 on the international recruitment of physicians holding a Blue Card, as an option for the shortage of physicians, particularly in the rural environment.
4. Increasing the financial allocation for health, as a GDP percentage.
5. Privatising and outsourcing some medical services and national health programmes (Boncea, 2005).
6. Short term focus on the non-financial retention strategies for highly skilled medical staff, such as improving work conditions, training and research opportunities and the gradual correlation of salary levels with physicians' performance.
7. Offering incentives to doctors who return (e.g. tax facilities, preferential loans for purchasing a house/car etc.).
8. Diversifying the skills of medical staff (nurses, family doctors) so that they can develop additional community medicine competences. Such competences, recognised only in the country, will not represent an advantage for emigration, but they can improve the quality of medical services for population (particularly for rural inhabitants), by focusing on prevention.
9. Preparing educational programmes for exporting doctors and nurses, by a partnership between the Ministry of Education, the Ministry of Health and medicine universities; the countries willing to recruit graduates can either pay a fee for each doctor/nurse employed, or they can directly participate in these programmes by investments, supplying equipment, expertise and knowledge.
10. Concluding bilateral agreements between Romania and the main destination countries for Romanian doctors, for establishing compensation mechanisms for the loss of human capital and skills, by using the open coordination method, as per the recommendations of the Global Code of Practice on the International Recruitment of Health Personnel (WHO) (Suciu, Popescu, Ciumăgeanu, Buzoianu, 2017).

At the level of universities, research centres and health units:

11. Encouraging circular migration by participating in events abroad, scholarships and exchange programmes between universities, hospitals and health units in Romania and similar institutions abroad.

12. Investments in common projects with the associations of Romanian physicians in the main destination countries, with hospitals abroad where Romanian doctors work and investments in medicine research projects.

At the level of Romanian doctors abroad:

13. Creating/ developing associations of Romanian physicians abroad and affiliating to umbrella organisations/coalitions which might help influence changes in Romania (e.g. standards and legislation promoted by CMR and MS).
14. Involvement in projects and collaborations with physicians and research units in Romania.

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Professional associations:

European Union of General Practitioners/Family Physicians - <http://www.uemo.eu/2016/02/10/romania/>

European Union of Medical Specialists (UEMS) - <https://www.uems.eu/about-us/membership/national-associations>

European Society of General Practice/Family Medicine (WONCA Europe) - <http://www.woncaeurope.org/>

Permanent Working Group of European junior Doctors (PWG) - <http://www.juniordoctors.eu/>

Emigration of highly skilled workers in Information and Communications Technology (ICT)

Mihaela Roxana Prisacariu

The chapter looks at highly skilled migration in the ICT field, correlated to the development of this economic sector. The review covers the relation between the emigration and return of Romanian ICT specialists and the current development stage of this sector in Romania, the sources and estimated number of ICT specialists, their alternatives for economic activation, the possible grounds and effects of ICT specialists' emigration, as well as some public policy recommendations.

Romania is among the countries that export highly skilled staff, including in the ICT field. The Romanian ICT specialists' emigration appears to have today a different trend from the overall trend of the Romanian highly skilled emigration. This could be explained by the development of the ICT sector in Romania and the possibility to work remotely. There is a certain concern and national or local public policies to attract ICT specialists in the country. We believe their efficiency could increase by collecting statistical data on Romanians abroad, continuing and extending programmes to support entrepreneurial initiatives, informing Romanian highly-skilled diaspora on ways to invest in Romania, increasing the adaptability and prediction ability of the Romanian higher education system, increasing the training capacity of higher education personnel in the specialities required on the labour market, including in ICT, and developing universities' research capabilities.

Introduction

Romania is among the countries that export highly skilled staff⁶⁸. These specialists work mainly in medicine, research and information technology. Romania needs these specialists, in whose education it has invested, but it cannot stop them because free movement and the possibility to achieve a better living standard attract highly skilled human resources to more advanced countries, which offer proper salary rewards for their qualification level and individual development opportunities. Moreover, perhaps it would not even be useful to stop them - existing research shows that: "a higher migration freedom would increase salaries and the education level of Romanian population by stimulating education and the salary-productivity reward"⁶⁹.

⁶⁸ OECD (2012), Connecting with Emigrants A Global Profile of Diasporas, http://www.keepeek.com/Digital-Asset-Management/oecd/social-issues-migration-health/connecting-with-emigrants_9789264177949-en#.WW8U1eLfDc p.250-251. OECD (2015), Connecting with Emigrants A Global Profile of Diasporas 2015 http://www.keepeek.com/Digital-Asset-Management/oecd/social-issues-migration-health/connecting-with-emigrants_9789264239845-en#.WW9Zx-lLfDc p.27.

⁶⁹ J. William Ambrosini, Karin Mayr, Giovanni Peri, Dragoş Radu, *The Selection of Migrants and Returnees in Romania: Evidence and Long-Run Implications*, IZA Discussion paper No. 6664/2012, p.27, <http://ftp.iza.org/dp6664.pdf>.

Can we identify specific trends in the Romanian ICT specialists' emigration, as compared to other categories of highly qualified Romanians who leave the country? How could we explain them? What observations could be useful to public policies?

In the medical and research areas, emigration appears to be determined now by the comparison between revenues and professional promotion opportunities in the country and abroad. Conversely, research in ICT show a remarkable development of this sector in Romania during the last years, which may explain, together with the possibility to work remotely, why the Romanian ICT specialists' emigration appears to have currently a different trend from the general trend of Romanian highly qualified emigration, mainly in the other two fields we analysed: research and medicine.

In the following sections, after identifying the underlying sources used for this analysis, we will describe the current development status of this field in Romania, the sources and estimative number of ICT specialists, their opportunities for economic activation, the reasons and effects of ICT specialists' emigration, as well as potential answers.

Available data

Romanian diaspora and ICT development were assumed relatively recently as topics of concern for public authorities. The public perspective on these two topics is subject to the 2016 document of the former Department for Romanians Abroad within the Romanian Ministry of Foreign Affairs, "Diaspora, partener pentru dezvoltarea României" ("Diaspora, a partner for Romania's development")⁷⁰ and of the National Strategy on the Digital Agenda for Romania 2020, adopted in 2015 by Governmental Decision⁷¹. We were not able to identify any legal acts on diaspora and even less so on the IT/ICT diaspora.

Our conclusions on the effects of ICT specialists' emigration from Romania are based on the review of existing research on labour migration and on the ICT economic sector in the country. In addition we also used data produced within our research: questionnaires, interviews, focus groups, discussions with experts.

Previous research in labour migration shows that personal choices on migration are a response to economic stimuli and that migration is often temporary rather than permanent. As regards migrants who return, they obtain revenues that reward their work experience abroad and they are an important source of entrepreneurship - the likelihood for them to undertake entrepreneurial activities is higher than in the case of persons without a migration experience. Returned migrants become successful entrepreneurs or bring back abilities and skills, with positive consequences

⁷⁰ "Diaspora, partener pentru dezvoltarea României", <http://www.dprp.gov.ro/wp-content/uploads/2016/11/viziune-29.11.2016-.pdf>

⁷¹ The strategy is an annex to HG 245 of 7 April 2015 approving the National Strategy on the Digital Agenda for Romania 2020, MO (Official Journal) no. 340 bis. A version of Nov. 2014 is available at <https://www.juridice.ro/wp-content/uploads/2014/12/Strategia-Nationala-AD.pdf>

for their country of origin. As regards Romanians who return, they are selected positively based on the reward for their qualification upon their return to the country⁷².

As shown in previous chapters, research on Romanian highly-skilled emigration is at the beginning. Only very little is known about the migration behaviour of ICT specialists. ICT specialists trained in Romania appear to work mostly in EU countries such as the United Kingdom, Ireland, Belgium, as well as the USA and Canada⁷³.

The conclusions of previous research show that, as mentioned before, the differences between the revenue-qualification rewards in the country of origin and the destination country play a decisive role in the personal or family decisions to emigrate or to return. The smaller this difference, the less probable is the emigration, and the more probable the return. In economic sectors subject to free competition, such as ICT, the raise in revenues is directly proportional to the increased work productivity and hence to the sector development. Therefore, the factors that support or hinder the development of the ICT sector will also influence accordingly the migration of highly qualified specialists in this field.

Research on the ICT economic sector⁷⁴ shows a remarkable development in Romania over the last years, which reflects into a significant contribution of companies in this field to the Romanian gross domestic product, a workforce demand exceeding the offer and an increase of ICT specialists' salaries as compared to average wages in Romanian economy, as we will see.

The questionnaire review showed that IT is the third most frequent activity field of persons with a migration history. 22 persons answered, that is, 14% of the total respondents (158 persons). 57% of IT respondents are aged between 25 and 34, and 67% of them are male. 57% of them are specialised in IT. As regards respondents specialised in IT, this is the second most frequent specialisation of the persons questioned, after medicine; 20 respondents stated they had an IT specialisation, that is, 13% of the total respondents. 55% of respondents specialised in IT are aged between 25 and 34, and 80% of them are male. 60% of respondents specialised in IT also work in IT.

The documentation stage showed that the lack of data and transparent data collection procedures for Romanians living abroad, particularly with respect to education, occupation, professional connections with Romania, appear to be among the main obstacles to the thorough study of the impacts of emigration and return migration of highly qualified staff, including ICT specialists, upon the development of Romania and the potential ways to influence this process.

⁷² J. William Ambrosini, Karin Mayr, Giovanni Peri, Dragoş Radu, The Selection of Migrants and Returnees in Romania: Evidence and Long-Run Implications, IZA Discussion paper No. 6664/2012, p.2-4, <http://ftp.iza.org/dp6664.pdf>.

⁷³ Mihaela Nedelcu, *Internet Diaspora: how Romanian scholars abroad connect home*, http://www.ssoar.info/ssoar/bitstream/handle/document/2727/ssoar-2008-nedelcu-internet_diaspora_how_romanian_scholars.pdf?sequence=1 p.2, OECD (2012), Connecting with Emigrants A Global Profile of Diasporas, http://www.keepeek.com/Digital-Asset-Management/oecd/social-issues-migration-health/connecting-with-emigrants_9789264177949-en#WW8U1eLfDc p.250-251;

⁷⁴ Associations such as ANIS and Cluj IT fund and undertake their own market research and their own promotional campaigns, being actually among the most accessible information sources on the progression of this field. A fuller image can be obtained by corroborating information from these sources with data on the perspectives of IT employees and of education providers in this field.

Analysis and discussions

ICT, IT, outsourcing

According to the International Standard Classification of Education ISCED-F 2013⁷⁵, Information and Communication Technologies, hereinafter "ICT", have become a separate education field split from the wider "sciences" field (where they belonged in previous versions of ISCED – 1997 and 2011), also separate from the other interfering field, "engineering". The ISCED –F 2013 classification has an advisory nature in relation with the current organisation of higher education in Romania and other countries, in the sense that some specialities covered by ICT are still classified under engineering or mathematics, as we will see.

In specialised literature, ICT industry is also seen as a distinct aggregate of Software and IT services sectors (CAEN 582, 620, 631, 951), Telecommunications (CAEN 61) and Hardware (CAEN 261-264).⁷⁶

Thus both education and industry perspectives support the use of this terminology: Information and Communications Technologies. It is more comprehensive than the other usual term, IT, but narrower than "ICT industry and outsourcing", which started to be used. ICT is different from outsourcing by its limited specialisation, as we have seen, to software, information services, telecommunications and hardware, whereas outsourcing involves subcontracting much more diverse processes within a company, including, in addition to IT technical support, call-centre, advertising and public relations, payrolls and accounting, security, recruiting, catering, inventory and supply⁷⁷.

We will use the ICT or IT acronyms, depending on the field to which available data refer.

Development of the ICT economic field in Romania

According to a study by the FRD (Factor Regional Development) Center on the ICT market in Romania⁷⁸, in 2015 there were more than 4,000 companies in the ICT field operating in Romania, which made this sector one of the most dynamic in the country's economy. Quoting INS data, FRD Center states that in 2014 the ICT sector contributed 6% to Romania's Gross Domestic Product.

In 2014 about 120,000 IT specialists were working in this field, with the demand expected to grow to 300,000 until 2020, according to data published by the Employer's Association of the Software

⁷⁵ <http://www.uis.unesco.org/Education/Documents/isced-fields-of-education-training-2013.pdf> p.

⁷⁶ Mircea Vuici, *Industria TI&C 2009-2010. Bilanțul anilor de criză* ("ICT Industry 2009-2010. An account of crisis years"), ITC - Institutul pentru Tehnică de Calcul (Institute for Computers), May 2011, <http://www.itc.ro/files/ITC-IndIT&C2009-2010.pdf> p.3

⁷⁷ <http://romania.cgsinc.com/despre-noi/#>

⁷⁸ FRD Center, *IT&C Market in Romania 2015*, <http://www.frdcenter.ro/assets/FRD-Center-IT&C-market-Romania-2015.pdf> p. 3

and IT Services Industry (ANIS)⁷⁹. The average net wage in this field was 5,811 lei in January 2017 (according to INS), as compared to 2,300 average salary per economy⁸⁰.

A review of data from the same sources suggests that we are now at a stage where companies in this field join their forces to help transform Romania from a provider of qualified and cheap human resources into a provider of innovative software projects which keeps the intellectual property of the product⁸¹.

The quoted TPS study considers that for the time being the Romanian IT industry is rather a support industry, for which the internal demand is limited, taking into account that the national industry was ruined after 1989⁸². In these circumstances the qualified human resources, also limited, are used in projects for which the intellectual property belongs to foreign beneficiaries. This trend is supported by the ICT specialists' preference for working in large companies that provide stability and by the lack of entrepreneurial skills/expertise⁸³.

The fact that qualified IT human resources are used in projects for foreign beneficiaries is also supported by the results of questionnaires applied within our research. Out of the (Romanian) respondents who now work in IT abroad, only 26% collaborate with persons/ institutions/ companies/ organisations in Romania, whereas 100% of those who returned collaborate with such institutions abroad.

Research on companies and associations in this field indicated the direct relation between specialised university centres and the development of IT companies. Data published in the "Transfer Pricing Services" report in 2015, on software and outsourcing, *Romanian Software Market & Its Position on the Global Map*, indicate that 80% of companies with the main activity in ICT and with annual revenues above 150,000 Euro are established in 6 cities: Bucharest, Cluj, Sibiu, Iași, Timiș and Brașov, the country's most important university centres. The same source indicates four local BPO (Business Process Outsourcing) development poles: Bucharest, Timișoara, Cluj-Napoca and Iași⁸⁴.

For instance the development of the ICT field in Iași is supported by the collaboration between universities, ICT industry and authorities. In Iași, in addition to direct collaborations between specialised universities and IT companies⁸⁵, the Municipality established a group, the Local Work Group for Information Technology⁸⁶, which facilitates communication between professionals in these fields and collects information, twice a year, on the needs of ICT staff. In 2017 an Office for

⁷⁹ <https://www.agerpres.ro/sci-tech/2014/11/10/anis-romania-are-nevoie-de-300-000-de-specialisti-it-pana-in-anul-2020-in-crestere-cu-150-fata-de-nivel-actual-15-49-02>

⁸⁰ <http://www.zf.ro/business-hi-tech/salariul-mediu-in-it-a-crescut-cu-14-in-ianuarie-ajungand-la-5-811-lei-16209094>, <http://www.zf.ro/business-hi-tech/salariul-mediu-in-it-a-depasit-6-000-de-lei-net-in-decembrie-16166375>

⁸¹ Roxana Georgescu, Romania's Software Market & Its Position on the Global Map, Transfer Pricing Services, July 2015, http://www.transferpricing.ro/analize%20TPS/Romania%27s%20software%20market%20and%20it%27s%20positi on%20on%20the%20global%20map_TPS%20report.pdf, p.15

⁸² Roxana Georgescu, op.cit., p.14

⁸³ Roxana Georgescu, op.cit., p.15

⁸⁴ Roxana Georgescu, op.cit., p.18

⁸⁵ <https://profs.info.uaic.ro/~itc2fii/collaborations.php>

⁸⁶ <http://www.primaria-iasi.ro/portaI-iasi/anunturi-pmi/eveniment-intalnirea-anis-de-la-iasi/4015/anunturi>

Diaspora was also established in the Municipality, within the Department for Public Relations and Transparent Decision Making⁸⁷, which aims to consolidate relations with Romanians who emigrated. Deputy Varujan Pambuccian, member of the Commission for Information and Communications Technology in the Chamber of Deputies, considers that "Iași is now the new major pole of technological growth in Romania. It registered a spectacular growth in IT industry, it is a prestigious university centre and it hosts very powerful research centres. However, to ensure a sustainable growth, Iași should become a regional centre for the entire Moldova, Bucovina, including for Ukraine and the Republic of Moldova. It is very important for universities in Iași to shift from a condition of suppliers of specialists to the status of partners in research and development".⁸⁸

Who creates ICT specialists in Romania and how many are they?

Most ICT specialists are trained in the formal university education system, particularly in the state higher education institutions. Then there are also those who completed their formal education with knowledge acquired by self-training or by specialised courses or other similar training programmes.

The Romanian education system is able to train maximum 14,000 graduates each year⁸⁹. This capacity depends not only on existing space and technical facilities in the faculties and universities, but mostly on the teaching human resources and the number of places approved by the competent ministry.

As regards the availability of human resources, this appears to depend on the comparative attractiveness of higher education institutions as ICT employers, as compared to private job offers, as suggested by the interview responses. The lower salaries as compared to private businesses make it more difficult to keep a sufficient number of stable personnel in the specialised faculties, where the number of external collaborators (substitute teachers) appears to have increased at the expense of teaching staff working full-time in universities, as suggested by interviews.

As regards the number of university places, this also depends both on the universities' capacity and on the adapting and prognosis ability of the Romanian university system, in terms of response time to stimuli in the economy⁹⁰, and this aspect appears to be related to human resources planning. According to the Romanian higher education system organisation, out of the 401 study

⁸⁷ <http://www.primaria-iasi.ro/portal-iasi/pmi/informatii-de-interes-public/95/informatii-servicii>

⁸⁸ <http://www.ziaruldeiasi.ro/stiri/piata-it-din-iasi-s-a-dublat-in-numai-2-ani-iata-care-este-viitorul-iasului-dlor-politicieni--137358.html>

⁸⁹ Data were obtained from correlating public information on the annual number of university places for the relevant specialisations for this field.

⁹⁰ See <http://www.digi24.ro/emisiuni/jurnalul-de-seara/jurnalul-de-seara-24-mai-20-00-2-730808> min.: 1:41:30 – 1:44:20.

programmes existing in 2015⁹¹, 43 issue qualifications in relevant specialisations for ICT⁹². The first two of the six major areas of higher education, Mathematics and natural sciences and Engineering sciences, respectively, include 26 specialisations relevant for the ICT field. Two specialisations are organised within the bachelor's degree field "Computer Sciences" within the major area Mathematics and natural sciences, while 24 specialisations are organised within the second major area, Engineering sciences. The latter are divided into the following bachelor's degree fields: Electronic engineering and telecommunications - 9 specialisations; Biotechnologies - 4 specialisations; Computers and information technology - 6 specialisations; System engineering - 3 specialisations; Mechatronics and robotics - 2 specialisations.

Out of the total of 215,477 - the maximum number of students who can be admitted in the first university year, in various fields, in the 2014-2015 year (i.e. the sum of the number of places approved by MECTS for each study programme), 41,469 is the maximum number of students who can be admitted in the first university year, in various fields, in the 2014-2015 year at all the 43 specialisations relevant for ICT, which means 19.4%. Out of these 43 specialisations that prepare specialists in various fields, such as economy, physics, chemistry, defence but which also include specific ICT education, 27 comprise prevailing ICT education. These comprise a total number of 14,474 university places – the maximum number of students who can be admitted in the first university year, in various fields, in the 2014-2015 year, which represents 6.7% of the total number of places available. Out of this number 93.5% consists of students in state universities and only 6.5% in private universities. Considering the relevant stability of the number of available university places, particularly in public higher education, we can assume that the maximum number of graduates specialised in ICT-relevant fields is about 14,000 every year.

According to available data⁹³, in 2013 there were 80,000 programmers/software engineers in Romania. These generated 1 billion Euro revenues, which, according to the same sources, would only represent about 10% of the revenues which the same number of specialists would generate in the environment currently considered the most favourable: probably Silicon Valley.

Where do ICT specialists educated in Romania work?

Some research studies suggest that highly qualified Romanians are attracted, in relatively small but constant numbers, to immigration countries such as the US, Canada, Australia and that between 2001-2003 Romanian emigrants with higher education returned to the country in a higher percentage (about 60%) than the other Romanian emigrants.

⁹¹ *ARACIS Barometrul calității 2015* ("Quality barometer 2015"), Volume 6, Annex I. 2 of the "Nomenclatorul domeniilor și al specializărilor/ programelor de studii universitare" ("Catalogue of university studies fields and specialisations/programmes"), p. 337-340, <http://www.aracis.ro/publicatii/publicatii-aracis/>

⁹² Some of these study programmes run within other bachelor's degree fields than those specific to ICT. This is the case of Accounting and bookkeeping information systems, Economic information systems or Information Systems within the major field of Social sciences, or of some specialisations in Natural Sciences, in the major area of Mathematics and Natural Sciences.

⁹³ Roxana Georgescu, op.cit., p.15

Other research studies show that ICT specialists trained in Romania work mostly in EU countries such as the United Kingdom, Ireland, Belgium, as well as the USA and Canada⁹⁴.

The questionnaire review showed that IT is the third most frequent activity field of persons with a migration history. 22 persons answered, that is, 14% of the total respondents⁹⁵ (158 persons). 19% of those who work in IT work in Belgium and the same percentage in the United Kingdom. 14% in Ireland, 10% work in Romania and the same percentage in Canada and the Czech Republic, and 5% in each of the following countries: Austria, Malta, Norway and Sweden.

95% of respondents working in IT work in private companies⁹⁶. Out of the respondents specialised in IT, 75% are employed in private companies.

After graduation IT specialists can either follow an entrepreneurial career⁹⁷, or get employed. When they are employed in accordance with their education, as highly qualified staff, they may be employed in public or private institutions, in research, education, in the ICT industry or in other industries, where ICT activities have a technical support role.

The COR (Classification of Occupations in Romania) lists the positions on which ICT specialists may be employed. These positions are included in the major group 2, Specialists in various fields of specialisation, major subgroups 21 - Specialists in science and technology and 25 - Specialists in information and communications technology.

The institution in charge with centralising the labour demand and making it more transparent and with identifying deficient occupations is the National Agency for Employment (Agenția Națională pentru Ocuparea Forței de Muncă). However the data supplied by this agency do not include highly qualified vacancies. This also applies to highly qualified vacancies in ICT. Data on vacancies in this field are not centralised. Based on experience and on their own research, recruitment companies, higher education institutions and employing companies have some data available, but there is no unitary system for collecting and analysing such data. For this reason we will also have to be satisfied with the analysis of data from the questionnaires and interviews undertaken within this project; however we stress again the need to collect data to support evidence-based public policies.

⁹⁴ Mihaela Nedelcu, *Internet Diaspora: how Romanian scholars abroad connect home*, <http://www.ssoar.info/ssoar/bitstream/handle/document/2727/ssoar-2008-nedelcu-internet-diaspora-how-romanian-scholars.pdf?sequence=1> p.2, OECD (2012), *Connecting with Emigrants A Global Profile of Diasporas*, http://www.keepeek.com/Digital-Asset-Management/oecd/social-issues-migration-health/connecting-with-emigrants_9789264177949-en#.WW8U1eIfDc, p. 250-251;

⁹⁵ If we add those who said they were researchers or engineers in IT, the number of respondents working in IT grows to 32.

⁹⁶ The percentage does not include those who declared they work as researchers and IT engineers.

⁹⁷ Entrepreneurship = the process of identifying and capitalising on a business idea; entrepreneurs are the persons who work on their own, who establish a business from the position of owners or associates or perform highly autonomous activities.

Why do Romanians in IT work abroad?

Previous research showed that migration decisions are a response to economic stimuli. Workers with specific skill sets (defined by education, age or gender) migrate in a higher proportion to countries that pay higher salary rewards for those skill sets⁹⁸.

The respondents to our questionnaire, highly qualified Romanians with their own migration history and who work in IT, stated that, in their opinion, the highly qualified personnel's decision to emigrate from Romania is influenced to a large and very large extent by factors such as: the living standard (100%), corruption in the political system (100%), the low salaries (95%), the political environment (90%), the lack of career opportunities (86%), the lack of technological infrastructure (86%), the lack of economic growth perspectives (77%), the low quality of the education system (66%), bureaucratic workplace procedures (62%). IT specialists interviewed in Romania indicate the higher salaries and the level of civilisation as main reasons to emigrate, although "IT salaries are quite competitive in Romania". The same entrepreneur:

"I think they leave for projects. When you work long enough for large companies, you are attracted to go there, to work with them. They invest a lot in research and it is tempting to know that you can make a change in the world".

(Excerpt of a discussion with a group of IT specialists).

According to another opinion, Romanians generally leave because of

„the social protection system, bureaucracy, the lack of perspectives for children, the political system, the fact that everything changes, everything is very difficult to solve, it is very stressful"

(Interview with an IT employee in Romania).

As regards their personal cases, respondents to the online questionnaire said their own reasons to leave Romania were, to a large and to a very large extent, the following: corruption (81%), bureaucracy in public institutions (77%), career advancement not based on professional merits (71%), insufficient revenues (71%), the lack of professional development opportunities (67%), the lack of technological equipment/infrastructure (48%), the difficulty in finding a job according to their qualification (43%), the poor quality of the educational system (29%), the lack of professional networks (29%), the possibility to be with their families (14%).

What are the effects of ICT specialists' emigration? What can be done?

According to estimates, between 3.5 and 4 million Romanians settled abroad. Of these, more than 2.8 million live in another EU member state. This Romanian population spread on all continents shares, to a large extent, an interest in Romania's evolution and the desire to stay in

⁹⁸ J. William Ambrosini, Karin Mayr, Giovanni Peri, Dragoş Radu, *The Selection of Migrants and Returnees in Romania: Evidence and Long-Run Implications*, IZA Discussion paper No. 6664/2012, p.3, <http://ftp.iza.org/dp6664.pdf>

touch. According to their statements, most Romanians in the diaspora would like to return home some day, but only a very low percentage, 3-5%, have the firm intention to return.⁹⁹

As shown in previous chapters, emigration is positively correlated to the education level. Highly skilled emigration has been traditionally viewed as detrimental to poor countries¹⁰⁰. Further research has shown however that highly skilled migration also induced stimuli for education in the native population and may improve the human capital in the countries of origin on the long run¹⁰¹.

As regards migrants who return to their country of origin, research showed that they obtain revenues that reward their work experience abroad, they are an important source of entrepreneurship, and that the likelihood for them to undertake entrepreneurial activities is higher than for persons without a migration experience¹⁰². Returned migrants become successful entrepreneurs or bring back abilities and skills, with positive consequences for their country of origin. As regards Romanians who return, they are selected positively based on the reward for their qualification upon their return to the country¹⁰³.

"Our greatest threat is that the best people go abroad. About 30% leave the country in the first 3 years after graduation. Google, Facebook, Bloomberg, Mozilla are massive recruiters"¹⁰⁴. This opinion published in 2015 appears to be no longer topical. The interviews held in 2017 with IT specialists suggest their opinion that

"I don't think this phenomenon (emigration – n.n.) has escalated. Most Romanian students stay to work at reputed companies who opened development centres in Iasi and other university centres. (...) The problem is not emigration, but the incapacity to train enough IT staff to cover the current demand from industry."

The impact of IT specialists' emigration is *"negligible, as long as we manage to create an IT school able to produce well trained graduates. Big companies (Amazon, Continental etc.) prefer to come to Romania and employ IT specialists here, rather than determine them to emigrate."*

(interview with a university teaching staff).

An entrepreneur in this field notes:

⁹⁹ *Diaspora, partener pentru dezvoltarea României* ("Diaspora, partner for Romania's development"), <http://www.dprp.gov.ro/wp-content/uploads/2016/11/viziune-29.11.2016-.pdf> , p.1-3

¹⁰⁰ J. Bhagwati, and C. Rodriguez (1975) *Welfare-theoretical Analyses of the Brain-Drain*, Journal of Development Economics 2 (3), 195-222.

¹⁰¹ M. Beine, F. Docquier and H. Rapoport (2001), *Brain Drain and Human Capital Formation in Developing Countries: Winners and Losers*, Economic Journal 118 (4), 631-652.

¹⁰² T. Kilic, C. Carletto, B. Davis and A. Zezza (2009): *Investing back home: Return migration and business ownership in Albania*, Economics of Transition 17(3): 587—623.

¹⁰³ J. William Ambrosini, Karin Mayr, Giovanni Peri, Dragoş Radu, *The Selection of Migrants and Returnees in Romania: Evidence and Long-Run Implications*, IZA Discussion paper No. 6664/2012, p.2-4, <http://ftp.iza.org/dp6664.pdf> .

¹⁰⁴ Personal interviews, cf. Roxana Georgescu, op.cit., p.25

"IT has a big advantage, the fact that one can work remotely. I even worked for clients in Australia. All you need is internet access and a computer which should be more or less ok. And in Romania internet connection speed is very high."

(Excerpt from a discussion with a group of IT specialists).

On the other hand, the specialists interviewed believe that Romania "certainly loses. The quality of services, of programmers diminishes. And education loses from this, too. At the university where I graduated, programming professors were very old. The young generation does not want this (to work in the academic field), even if they completed the pedagogy module. There are financial losses, because you no longer collect taxes on salaries, and then moral losses, because we lose well-trained staff. People who return from abroad return without a vision. They could take over ideas from abroad and apply them here."

(Excerpt of a discussion with a group of IT specialists).

Two of the ICT specialists interviewed mentioned potential investments in Romania as a gain for the country from the ICT specialists' emigration.

As regards public policies,

"efforts are being made to attract good students from Moldova, Ukraine and Asian countries to study at the Computer Science Faculty in Iași. Unfortunately the lack of staff and the precarious material conditions in the university do not make it possible to increase the number of students as necessary."

(Interview with a university teaching staff).

IT emigration may be seen not just as *brain drain*, but also as circular mobility with a *brain gain* effect. This idea is supported by questionnaire and interview results. Questionnaires showed that 10% of IT respondents with a migration history currently work in the country, and 100% of them maintain their professional relations with their colleagues abroad. Interviews showed actual examples of entrepreneurs in IT who benefited from training in IT business management in Western accelerators and then opened IT companies in Romania, thus creating here opportunities and highly qualified jobs both for themselves and for others: "We can also create business incubators, accelerators, mentoring programmes, similar to the one we attended in the Netherlands. I have also seen some national IT clusters. I don't know how this works, I've just heard about it." (A)

The TPS research on the software market (CAEN 582, 620, 631) shows that the development of original software products, with Romanian property, requires a more effective legal protection of intellectual property, a national strategy on the software sector and structured information accessible to foreign investors. The opinion that intellectual property protection may help reduce highly skilled migration is also shared by 53% of respondents in IT.

The questionnaire respondents working in IT believe that highly skilled migration could be diminished to a large and to a very large extent by policies to combat corruption and criminality (95%), transparent employment mechanisms (95%), performance-based staff assessment (90%), simplifying bureaucratic procedures (including the recognition and equivalence of diplomas

obtained in other countries) (86%), investments in equipment and technology (81%), funding for research (72%), protecting intellectual property (53%).

As mentioned before, Romanian diaspora and ICT development have already been assumed as topics of concern for public authorities.

The need for concerted programmes to attract Romanian diaspora to Romania, either physically or virtually, either definitively or temporarily, has already been recognised in the 2016 document of the former Department for Romanians Abroad within the Ministry of Foreign Affairs, "Diaspora, partner for Romania's development". Similarly, the need to support entrepreneurship in general and IT jobs in particular. Several governmental programmes are in place to support entrepreneurship: Romania Start-up Plus, Diaspora Start-up¹⁰⁵, Start-Up Nation¹⁰⁶, Competitive Romania¹⁰⁷, while the IT sector is supported by the exemption from the tax on salary revenues¹⁰⁸. These ideas are worthwhile taking further and improved¹⁰⁹. Tax incentives, permissive legislation, the stable economic environment are identified as solutions for the return of highly qualified staff to the country or for accepting the status quo and maximizing the benefits of their emigration for Romania.

"The most important investment should be done in the education system: the most valuable graduates should wish to remain in the academic system. We could thus create a computer science school able to provide sufficient qualified staff to the Romanian IT industry and even to "export" such specialists, without worrying about this."

(Interview with a university teaching staff).

Respondents to the questionnaire believe, to a large and very large extent, that highly skilled emigrants can contribute to Romania's development by creating networks between diaspora and the country (67%), creating connections and professional networks with specialists abroad (67%), investing in Romania (67%), promoting Romania's image (48%) or sending money to their families (33%). Nevertheless, only 26% of respondents currently working abroad in IT collaborate with persons/institutions/companies/organisations in Romania.

"Many of those who emigrate start to establish their own companies there and because they are from Romania, they hire staff from Romania or open their own branches. Not only foreigners come to Romania with their corporations, Romanians also do so."

¹⁰⁵ <http://www.fonduri-ue.ro/presa/comunicate/2252-76-milioane-euro-pentru-romanii-din-diaspora-care-vor-sa-si-deschida-o-afacere>

¹⁰⁶ <https://planul-de-afaceri.ro/plan-de-afacere-finantare-stat/romania-start-up-nation/>

¹⁰⁷ "Competitive Romania" project: Programs supporting entrepreneurship in Romania for Romanians living abroad, <http://zagreb.mae.ro/en/romania-news/6923#null>, Romania Country Report for 2017, <http://eur-lex.europa.eu/legal-content/RO/TXT/PDF/?uri=CELEX:52017SC0088&from=EN>, p.21.

¹⁰⁸ OMFP no. 703/2017 published in the Official Journal (M.O.) of 22.06.2017. See also http://economie.hotnews.ro/stiri-finante_banci-21835511-pestesaptamana-intra-vigoare-noile-conditii-acordare-scutirii-venitului-din-salariile-programatorilor-vezi-text-conditiile-care-acorda-scutirea.htm

¹⁰⁹ Criticism to what has been done so far, for reasons such as inefficiency, failure to adapt to needs, lack of transparency, useless complexity etc., while failing to identify and acknowledge the merits of previous actions, might prove inefficient itself in that, rather than adding bricks to an older edifice, would build from zero a new foundation which the next generation would again find inefficient, not adapted to needs, not transparent, unnecessarily complex.

(Excerpt of a group discussion with IT specialists).

The difference between those who believe they can contribute to Romania's development by creating professional connections and networks with foreign specialists and those who actually have such collaborations represents a potential for future policies and programmes targeting the ICT diaspora.

The alternative of maintaining professional relations with Romania¹¹⁰, including by investments, appears to have wider support than the actual return to Romania¹¹¹.

Conclusions

Research in ICT indicate a particular development of this sector in Romania during the last years, which may explain, together with the possibility to work remotely, why the Romanian ICT specialists' emigration appears to have currently a different trend from the general trend of Romanian highly qualified emigration, mainly in the other two fields we analysed: research and medicine.

The role and potential of highly skilled ICT diaspora to significantly contribute to Romania's development, at least locally, are currently acknowledged. However more attention and recognition appear to be required for the role of the context for the success of any individual measures.

Reducing brain drain in this field and Romania's force of attraction for return appear to depend on the development of ICT industry in the country, so as to be able to provide real integration opportunities to graduates or specialists who return, with work conditions comparable to those abroad. At the same time, the two also depend on the wider socio-political context and on the country's overall development and democratisation.

As regards the ICT industry, its development pace is influenced firstly by the duration of education in this field, which is minimum three of four years. This industry's reliance on the state universities' capacity to train specialists, although not absolute, is however significant. This actually explains, to a large extent, the ICT development in the country's large university cities. Indeed the ICT industry's reliance on specialised universities is not absolute. In addition to the maximum 14,000 graduates whom these universities may produce, other universities have developed tuition programmes in ICT fields, although partial, for other maximum 27,000 graduates every year. On top of these there are also postgraduate vocational training and professional reorientation programmes or specialised courses organised by private training institutions.

¹¹⁰Mihaela Nedelcu, *Internet Diaspora: how Romanian scholars abroad connect home*, http://www.ssoar.info/ssoar/bitstream/handle/document/2727/ssoar-2008-nedelcu-internet_diaspora_how_romanian_scholars.pdf?sequence=1, Simona Stănică, *Diaspora și fenomenul de brain drain* ("Diaspora and brain drain"), *Revista Română de Sociologie* (Romanian Sociology Journal). 2013, Vol. 24 Issue 5/6, p387-401. 15p.

¹¹¹ <https://www.agerpres.ro/politica/2017/06/20/dean-thompson-ambasada-sua-romania-trebuie-sa-creeze-un-mediu-care-sa-incurajeze-dispora-sa-investeasca-acasa-14-43-38>

Secondly, ICT industry development depends on factors that influence other economic fields, such as economic and social predictability and taxation.

Thirdly, the shift from outsourcing to the development of original software products, with the associated intellectual property rights, appears to require a more effective legal protection of intellectual property, a national strategy on the software sector and structured information accessible to foreign investors. The development of entrepreneurial spirit among ICT specialists would also be required.

Fourthly, the development of ICT as an economic field has an attraction force even to existing or potential academic staff. Thus the uncontrolled development of this field in the short run may deplete its own source of growth in the long run.

Recommendations:

1. **Collecting official statistical data** on Romanians abroad, including the following aspects: education level, occupation, professional relations with Romania.
2. **Supporting entrepreneurial initiatives** in ICT, by integrated training programmes such as business incubators or accelerators, which focus on innovation and are based on the assumption that successful businesses cannot be replicated, but they can instead be benchmarks for new ones. This kind of training combines the transfer of information in the fields of **entrepreneurship and intellectual property rights**: business management, accounting, copyright on software products etc., with the transfer of experience by methods such as "learning by doing" and with mentoring at the beginning of the operation.
3. **Continuing, improving and extending existing credit programmes** and tax incentives, such as Start-up Nation or the exemption from salary taxes, continuously assessing these programmes and increasing their effectiveness, according to the principles of predictability and transparency in public administration.
4. **Informing highly skilled Romanian diaspora** on the investment opportunities in Romania and on existing programmes to support entrepreneurial initiatives.
5. **Enhancing the adaptability and predicting ability of the Romanian academic system** by reducing response times to economic stimuli and by the quantitative and qualitative improvement of its capacity to train higher education personnel in fields required on the labour market, including in ICT (Human resources planning).
6. **Increasing the research capacity of universities and their ability to get involved** as partners in common projects with ICT companies, thus creating new funding sources for academic staff in this field.

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Conclusions. How to turn losses into gains?

This study has reviewed the recent progressions in the main areas of highly skilled emigration from Romania - research & development and the academic field, medicine and ICT - and it highlighted the factors influencing the decision to emigrate and the decision to return among these specialists.

According to estimates, Romania's scientific diaspora counts more than 15,000 persons, while staff numbers in the R&D sector dropped by 30% over the last 20 years, with the business environment being most affected. At the same time more than 300,000 students chose to undertake their studies abroad during the last 10 years. Some of them remained abroad to work, for a certain period of time or definitively. The decreasing number of researchers and the shrinking recruitment pool for future researchers are real threats for Romania, which translate into competitiveness losses and labour market imbalances. The root causes of this situation are complex. The under-financing of research and development and innovation, unpredictability and corruption, bureaucracy, legislative inconsistency are among the operational deficiencies of the R&D system. Other aspects are related to Human resources management, such as researchers' overloading with teaching and administrative activities, the "lack of professional development opportunities" and "career advancement not based on professional merits". These aspects determine researchers' emigration and are sometimes perceived as more important than the "insufficient revenues".

The solutions proposed are manifold. Firstly, adopting a coherent strategy for cooperating with the scientific diaspora. Then, increasing funds allocated to research and development and the academic environment in Romania, which would generate decent work and salary conditions and would enhance the attractiveness of careers in scientific research and the academic environment. Continuing to grant direct funding for start-ups in science and technology and funding some industrial research centres under public-private partnerships and promoting such programmes in the scientific diaspora. Finally, transparency and stimulating competitiveness in the Romanian research and development system and in the academic environment, as per international quality standards.

In the case of physicians, the shortage of family doctors and specialists is still a matter of debate. Professional associations (the College of Physicians in Romania and the National Association of Family Medicine) have somehow similar opinions, in that Romania faces a deficient distribution of physicians, that is, they are concentrated in cities and university centres, at the expense of smaller towns in the provinces and rural areas. The rural environment becomes less and less attractive for doctors and no incentives are provided for correcting this trend. Moreover, family doctors have private practices and are most affected by the worsening economic conditions, the under-financing of the system and the administrative tasks on top of professional duties. Nevertheless, SNMF figures indicate a negligible deficit of 600 family doctors. The total number of vacancies per medical specialisations is not public, but we know it is at least 4,700 (according to data provided by 24 of the 41 county public health directions in the country and in Bucharest) and we also know, from our estimates based on data provided by medical professional associations in the main European destination countries, that more than 15,000 doctors were

registered and/or were practising within the colleges of physicians in other European countries in 2016. Then there are also other aspects, reported in several studies but ignored by policies to reduce doctors' emigration: corruption in the system, career advancement based on personal connections rather than on merits, the lack of professional development opportunities and the lack of adequate equipment for the proper performance of medical acts. What is even more serious is that mostly young physicians leave the country, and they tend to emigrate on the long term or definitively. These cumulated factors resulted in an alarming number of deceases generated by the deficiencies in the public health system - about 60,000 annually, according to WHO.

While improving work conditions and equipment is possible on the medium term, eliminating corruption is a long term endeavour. In the mean time, we believe it is necessary to apply the measures provided in the Multiyear Plan for the Development of Human Resources in Health 2017 - 2020¹¹², such as: improving recruitment mechanisms, developing associated competences for medical staff by revising training and residency programmes, developing the concept of rural health, stimulating mobility in professional and academic practice and in research, a salary policy based on results and the development of an unique national data base and a common system of indicators to be collected for monitoring the dynamic of human resources in the health system. In addition it is also necessary to revise and increase the funds allocated to certain medical sectors, as well as to privatize/outsource some services and medical programmes, based on quality criteria.

The ICT sector in Romania has seen an unprecedented growth over the last years, which resulted, as shown by FRD Center, in a 6% contribution to the GDP in 2014. In 2014 about 120,000 IT specialists were working in this field, with the demand expected to grow to 300,000 until 2020, according to data published by the Employer's Association of the Software and IT Services Industry. In January 2017 the net average salary in the field was 5,811 lei, more than double the net average salary per economy.

The IT industry in Romania has now rather a support role, and the development of original software products, with Romanian property rights, requires a more effective legal protection of intellectual property, a national strategy on the software sector and structured information accessible to foreign investors. Similarly to specialists in other fields, ICT specialists blame corruption, the lack of transparency for employment, the lack of performance-based promotion, the need to simplify bureaucratic procedures and the need for investments in equipment and technology, as more important than revenues. The great advantage, particularly for IT specialists, is the possibility to work remotely for foreign employers.

Reducing brain drain in this field depends on the development of ICT industry in the country, so as to provide real integration opportunities to graduates or specialists who return, with work conditions comparable to those abroad. At the same time it also depends on the wider socio-political context.

As regards the ICT industry, its development pace is influenced firstly by the duration of education in this field (3-4 years). This industry's reliance on the public universities' capacity to train

specialists explains the development of ICT in the large university centres of the country. Secondly, ICT industry development depends on factors that influence other economic fields, such as the economic and social environment and taxation. Thirdly, the shift from outsourcing to the development of software products should be supported by the legal protection of intellectual property, a national strategy on the software sector and structured information accessible to foreign investors, by reduced taxation and stimulating entrepreneurship among ICT specialists. Finally, the development of ICT as an economic sector should consider incentives and stimuli for professors in this field.

The highly skilled emigration to Europe should be analysed in its context, considering the "global competition for talents" and the European Union's efforts to turn the mobility of member state citizens into the basis of the economic competitiveness of the European free market. Nevertheless Romania suffers from highly skilled emigration and a political and economic climate which affects its economic development and the people's quality of life. In such circumstances, the shortage of highly skilled personnel, particularly in fields with a social impact (health) or economic impact (innovation, research and development) should be approached responsibly and strategically by decision makers. We hope that at least some of these recommendations will be assessed, developed and implemented in future projects.

Annexes

Annex 1 Interview Guidelines for the medical field

Intro: Hello, thank you for finding time for this discussion. My name is X, I work for the Romanian Association for Health Promotion/CCCI in a research project on the impact of highly skilled emigration on the Romanian labour market. The study is funded from the project "Development of a network of active organisations in the field of migration - EMINET", with support from the Swiss Contribution to the extended European Union.

The interview today will last about 1 hour. The questions refer to your opinion on the root causes and consequences of medical staff emigration, as well as to the measures that could be adopted to mitigate the negative effects of this emigration.

I ask for your permission to record the interview. We assure you that neither your name nor any other personal data will be shown in the research report. The recording will help us reproduce correctly and completely what you tell us. If any questions are unclear, please tell me and I will reformulate them.

Before starting, please tell me whether you have any questions on the interview or the research study. If not, I will start recording (only if you have the permission to do so).

QUESTIONS

1. How long have you worked in this field? What has been your professional path, briefly?

Warm up

2. What do you think are the main problems faced by the medical system in Romania?

We explore whether doctors' migration is among the problems identified and how important it is considered

3. In your opinion, is there any shortage of physicians/nurses in the Romanian health system?
What are the grounds for your opinion?

Personal opinion and reasoning about the shortage of physicians

4. If yes, what are the medical specialisations where you think Romania faces a shortage?

Exploring the deficient medical specialisations

5. Which is the year when you noticed the emigration/departure of physicians from the Romanian system? How do you think this has evolved?

Identifying the perception of the beginning of this phenomenon and its progression

6. What do you think are the reasons why doctors leave the country?

Perception of the determinants of migration

7. Have you got any evidence of the number of current certificates of good standing issued for practising outside Romania (for CMR members)?

The intention to emigrate

8. Are there any records of physicians who left the country? How are such records kept? Which are the data sources? How does CMR record the physicians who emigrate?

Recording withdrawals/entries in the system.

9. What is the number of Romanian physicians who went to practice abroad between 2007-2016?

Statistics

10. Which are the main destination countries for Romanian doctors?

11. Which are the main specialisations of emigrating doctors?

Correlation with question 4, deficient specialisations

12. Which do you think is the impact of Romanian physicians' emigration on the short, medium and long run?

From a social, human, medical, demographic, rural environment, economic, educational etc. point of view.

13. What is the impact of doctors' emigration on the health system in Romania?

The quality of services for patients, human capital ageing etc.

14. Are you aware of any programmes to attract/keep Romanian doctors in the national health system? Which are these? What else do you think should be done to motivate Romanian emigrant doctors to return to the country?

Incentive/retention measures for medical staff, measures to stimulate return migration.

15. Do you believe that the programmes and policies aimed at attracting back Romanian doctors are efficient? Please give your reasons.
16. What is the number of Romanian doctors who return to the health system in Romania? What are the specialities of these doctors? How are returns to the system recorded?

Return migration.

17. If we were to draw a line after all that we've said, what would be the conclusion?

Annex 2 Interview Guidelines for the research and development and academic field

Intro: Hello, thank you for finding time for this discussion. My name is X, I work for the Romanian Association for Health Promotion/CCCI in a research project on the impact of highly skilled emigration on the Romanian labour market. The study is funded from the project "Development of a network of active organisations in the field of migration - EMINET", with support from the Swiss Contribution to the extended European Union.

The interview today will last about 1 hour. The questions refer to your opinion on the root causes and consequences of the emigration of researchers and academic staff, as well as to the measures that could be adopted to mitigate the negative effects of this emigration.

I ask for your permission to record the interview. We assure you that neither the name of the institution where you work, nor your name or any other personal data will be shown in the research report. The recording will help us reproduce correctly and completely what you tell us. If any questions are unclear, please tell me and I will reformulate them.

Before starting, please tell me whether you have any questions on the interview or the research study. If not, I will start recording (only if you have the permission to do so).

QUESTIONS

1. How long have you worked in this field? What has been your professional path, briefly?

Warm up

2. What do you think are the main problems faced by the RDA system in Romania?
3. Have you noticed any emigration trend of CDA specialists? If yes, since when? Which are the RDA fields affected by this phenomenon?
4. What do you think are the reasons why researchers leave the country?
5. What do you think is the impact of RDA specialists' emigration on the short and long run?

Social, human, demographic, economic, educational, labour market impacts etc.

6. What programmes for attracting Romanian researchers abroad are ongoing in Romania now?

Policies for the return migration of RDA specialists and policies for retaining/motivating staff

7. Have you heard about any programmes developed by Romania for attracting foreign researchers? Which are these?
8. What are the existing incentives to encourage cooperation between Romanian and foreign researchers?

9. Are there certain countries targeted by such policies? If yes, which countries?
10. What are the main research & development needs/specialisations in Romania now, on the medium and long term?
11. What policies do you think the Romanian state should adopt now to attract RDA specialists to practice in Romania?
12. What policies do you think the Romanian state should adopt to increase the national research and scientific production capital?
13. Let's imagine you are the law maker. You should make changes and adopt policies so that Romanian RDA specialists would return/remain in Romania and practice here. What would you propose?
14. What do you think should be done to mitigate the negative effects for the country, in case researchers do not wish to return?
15. If we were to draw a line after all that we've said, what would be the conclusion?

Annex 3 ICT Interview Guidelines

Intro: Hello, thank you for finding time for this discussion. My name is X, I work for the Romanian Association for Health Promotion/CCCI in a research project on the impact of highly skilled emigration on the Romanian labour market. The study is funded from the project "Development of a network of active organisations in the field of migration - EMINET", with support from the Swiss Contribution to the extended European Union.

The interview today will last about 1 hour. The questions refer to your opinion on the root causes and consequences of ICT emigration, as well as to the measures that could be adopted to mitigate the negative effects of this emigration.

I ask for your permission to record the interview. We assure you that neither the name of the institution where you work, nor your name or any other personal data will be shown in the research report. The recording will help us reproduce correctly and completely what you tell us. If any questions are unclear, please tell me and I will reformulate them.

Before starting, please tell me whether you have any questions on the interview or the research study. If not, I will start recording (only if you have the permission to do so).

QUESTIONS

1. How long have you worked in this field? What has been your professional path, briefly?

Warm up

2. What do you think are the main problems faced by the IT field in Romania?
3. According to your observations, which IT sub-sectors face the highest work force demand?

Question for entrepreneurs:

4. Which are the fields facing a shortage of ICT specialists in Romania?
5. When do you think the IT personnel emigration started and when has it escalated?
6. What do you think are the reasons why IT specialists leave the country?
7. What is the impact of IT specialists' emigration upon this field?

Question for employers and IT employees in Romania

8. Are there any records of IT specialists who left the country? Who keeps such records? Who should, in your opinion, record withdrawals from the system?

9. Which are the main destination countries for Romanian IT specialists?

10. Which are the fields facing a shortage of ICT specialists in Romania?

Question for entrepreneurs

11. Which are the main fields in which ICT specialists work abroad?

12. What do you think is the impact of IT specialists' emigration on the short and long run?

Social, human, demographic, economic, educational impacts, impact upon the labour market structure etc.

13. Are you aware of any policies developed by Romania to attract ICT specialists? If yes, what are these? Do you think such policies work? Please give your reasons.

14. What measures would you recommend to attract IT specialists back home?

15. What would you recommend in case they do not wish to return?

16. Do you know any IT specialists who returned? If yes, why did they do so? Can you estimate their number?

17. If we were to draw a line after all that we've said, what would be the conclusion?

Annex 4 Focus Group Guidelines

Intro: Hello, my name is X and during the next one hour and a half I will moderate discussions in this group. The meeting is part of a research on the impact of highly skilled emigration from Romania. The study is funded through the Romanian-Swiss cooperation mechanism, from the Swiss contribution to the extended European Union, within the project "Development of a network of active organisations in the field of migration - EMINET". Today we will attempt to find out your opinion about a number of recommendations stemming from previous research stages, and to identify the most important ones, from your point of view. I ask for your permission to record the discussions. We guarantee the confidentiality of your data and I invite you to address your discussion colleagues by their given names, as shown on the card placed in front of each person. There is no list of attendance and no reference shall be made to the institution or organisation where you work. During the course of discussions there will be persons who express their opinions more easily. It is important to give all participants the opportunity to speak, so I might interrupt you at times or I will encourage you to say what you think. I will ask you to speak one at a time. We are not testing any knowledge here, so we are not discussing about good or bad opinions. Everything you say is important for us, because it reflects your opinion rather than formal rules, or at least this is what we envisage. Should there be any questions during the discussions, please write them down and, as far as possible, keep them for the end.

Warm up

1. Think about an experience of going abroad. How did you feel upon your return?
2. You saw things differently, at least shortly after returning. What bothered you when coming back to Romania?

Topic: Emigration

3. Why do you think highly qualified Romanians (with higher education) leave the country?
4. Have you heard about any cases of highly qualified Romanians who returned? Why did they do that?
5. What do you think are the effects of these persons' departure from Romania?

Topic: Doctors' emigration

6. What do you think about the emigration of doctors from Romania?
7. What do you think are the effects of their emigration in society (the quality of medical services, coverage, morbidity, mortality etc.)?
8. What do you think are the main reasons why doctors decide to leave the country?
9. What do you think would make them return?
10. How do you think the state could contribute to the doctors' return from other countries (programmes related to salaries, housing, tax incentives etc.)?
11. If Romanian doctors do not wish to return to Romania, how do you think their absence could be compensated (immigration, additional specialisation of existing physicians, allocating additional responsibilities to other medical staff/ family doctors, granting the right to practice to all foreign physicians with a legal right to stay in Romania etc.)?

Topic: Emigration of IT personnel (including engineers)

12. IT personnel have a special status, in that many programmers may work from home, being employed in another country. Nevertheless, IT specialists leave the country. What are their main reasons to leave?
13. What do you think are the effects of their emigration on society (innovation, performance, entrepreneurship etc.)?
14. Do you think IT specialists are more useful for Romania's economic growth from the country or from abroad (investments, professional networks, technology import etc.)? Why?

15. How do you think they could be determined to return to the country (policies, measures to facilitate entrepreneurship and flexible work patterns, taxation system, access to information and technology etc.)?
16. What should the Romanian state do to maximise the benefits from the (emigration of) IT personnel trained in Romania?

Topic: Emigration of research & development and academic staff

17. Researchers and academics have a high mobility. Some of those who intend to build an academic or research career either go abroad for studies, or they leave the country after completing their studies, but most of those who leave settle abroad. What do you think are their reasons to leave the country? What are their reasons to stay abroad?
18. What are the social effects of researchers' emigration (reduced quality of higher education, reduced innovation capacity, highly skilled personnel poorly qualified for the labour market etc.)?
19. Do you think Romanian researchers and Romanians who teach in universities abroad are more useful for Romania from where they are? Why?
20. What do you think would make them return (policies and measures for funding research, investments in technology, creating professional networks, promotion on performance-based criteria, access to information etc.)?
21. What should the Romanian state do to maximise the benefits from the (emigration of) Romanian researchers?

Topic: Summary/Conclusions

22. Briefly, summarizing what has been said before, does Romania have losses or gains from the emigration of doctors, IT specialists and researchers?
23. What would be the main loss aspects?
24. What would be the main gain aspects?
25. What are the type of policies and measures on which you believe efforts should be focused: the return of highly skilled personnel to Romania or acceptance of the status quo and maximizing Romania's benefits from their emigration (encouraging diaspora's investments by tax facilities, creating social and professional networks, funding common research programmes, scholarships etc.)? Please give your reasons.
26. Which are the most important solutions you envisage?

Thank you for your participation!

Annex 5 Questionnaire.

Impactul emigrației înalt calificate asupra pieței muncii din România

I. Date generale

Acest chestionar se adresează persoanelor cu studii superioare, în vârstă de maxim 64 ani, care au sau au avut cetățenie română, și care au avut, în ultimii 20 de ani, o experiență de cel puțin 6 luni de lucru în altă țară, pe un post înalt calificat, conform pregătirii profesionale/studiilor absolvite.

Vă rugăm să transmiteți chestionarul și altor persoane pe care le cunoașteți având caracteristicile de mai sus. Vă mulțumim pentru sprijin!

* 1. Țara actuală de reședință:

* 2. Țara (țările) în care ați lucrat pe posturi înalt calificate (cu excepția României):

* 3. Perioada petrecută în afara României

Ani

Luni

* 4. Perioada lucrată în afara României

Ani

Luni

* 5. Domeniul de activitate:

* 6. Tipul organizației angajatoare:

- ☐ Universitate
- ☐ Centru de cercetare
- ☐ Spital/ Clinică
- ☐ Companie privată
- ☐ Instituție publică
- ☐ ONG
- ☐ Altele (vă rugăm specificați)

* 7. Ultima formă de învățământ absolvită (vă rugăm bifați):

- ☐ Licență
- ☐ Master
- ☐ Doctorat
- ☐ Studii post-doctorale

* 8. Specializarea:

* 9. Profesia:

* 10. Locul absolvirii studiilor de licență/ master/ doctorat/ post-doctorat (vă rugăm bifați):

- ☐ România
- ☐ Altă țară (vă rugăm specificați)

* 11. Vârsta (în ani împliniți):

* 12. Gen:

- ☐ Masculin
- ☐ Feminin

Impactul emigrației înalt calificate asupra pieței muncii din România

II. Percepții privind oportunitățile de angajare, investiții și calitatea vieții din România

* 13. În ce direcție credeți că evoluează România?

- ☐ În direcția greșită
- ☐ Oarecum în direcția greșită
- ☐ Oarecum în direcția bună
- ☐ În direcția bună
- ☐ Nu știu

Vă rugăm argumentați pe scurt răspunsul

* 14. Gândindu-vă la viața dumneavoastră de zi cu zi, care sunt cele mai importante aspecte pentru dvs.?

	Neimportant	Puțin important	Important	Foarte important	Nu știu
Educație	☐	☐	☐	☐	☐
Carieră	☐	☐	☐	☐	☐
Familie	☐	☐	☐	☐	☐
Relații cu prietenii	☐	☐	☐	☐	☐

Altele (specificați)

* 15. În ce măsură credeți că pentru România sunt adevărate următoarele afirmații:

	Deloc	În mică măsură	În mare măsură	În foarte mare măsură	Nu știu
România este un mediu propice pentru întreprinzători	☐	☐	☐	☐	☐
În România există oportunități de angajare în profesia dvs.	☐	☐	☐	☐	☐
În România există posibilitatea de a face carieră în profesia dvs.	☐	☐	☐	☐	☐

* 16. În ce măsură credeți că factorii de mai jos influențează decizia persoanelor înalt calificate de a emigra din România?

	Neimportant	Puțin important	Important	Foarte important	Nu știu
Nivelul de trai	☐	☐	☐	☐	☐
Lipsa oportunităților în carieră	☐	☐	☐	☐	☐
Procedurile birocratice la locul de muncă	☐	☐	☐	☐	☐
Salariile mici	☐	☐	☐	☐	☐
Lipsa perspectivelor de creștere economică	☐	☐	☐	☐	☐
Mediul politic	☐	☐	☐	☐	☐
Calitatea scăzută din învățământ	☐	☐	☐	☐	☐
Corupția din sistemul public	☐	☐	☐	☐	☐
Lipsa infrastructurii tehnologice	☐	☐	☐	☐	☐

Altele (specificați)

Impactul emigrației înalt calificate asupra pieței muncii din România

III. Decizia de a pleca

* 17. În ce măsură următoarele motive v-au determinat să plecați din România?

	Deloc	În mică măsură	În mare măsură	În foarte mare măsură	Nu știu
Calitatea slabă a sistemului educațional	☐	☐	☐	☐	☐
Dificultatea de a găsi un loc de muncă conform pregătirii	☐	☐	☐	☐	☐
Avansare în carieră nebazată pe merite profesionale	☐	☐	☐	☐	☐
Lipsa oportunităților de dezvoltare profesională	☐	☐	☐	☐	☐
Lipsa echipamentelor/infrastructurii tehnologice	☐	☐	☐	☐	☐
Veniturile insuficiente	☐	☐	☐	☐	☐
Corupția	☐	☐	☐	☐	☐
Birocrația din instituțiile publice	☐	☐	☐	☐	☐
Lipsa rețelelor profesionale	☐	☐	☐	☐	☐
Posibilitatea de a fi împreună cu familia	☐	☐	☐	☐	☐

Altele (specificați)

* 18. Ce anume a fost determinant în alegerea țării în care ați lucrat/ lucrați în prezent?

* 19. (Numai pentru cei care sunt în străinătate) Dacă vi s-ar oferi ocazia, ce ați alege:

- ☐ Să rămân definitiv în țara în care sunt acum
- ☐ Să mă întorc definitiv în România
- ☐ Să mă întorc temporar în România
- ☐ Să merg în altă țară
- ☐ Nu știu

20. (Numai pentru cei care sunt în străinătate) Care ar fi motivele care v-ar determina să alegeți acest lucru?

21. (Numai pentru cei care sunt în străinătate) În prezent colaborați cu persoane/ instituții/ companii/ organizații din România?

- ☐ Da
☐ Nu
☐ Nu știu

22. (Numai pentru cei care sunt în străinătate) Dacă da, în ce constă colaborarea?

23. (Numai pentru cei care s-au întors în România) Care sunt motivele care v-au determinat să vă întoarceți?

24. (Numai pentru cei care s-au întors în România) În prezent colaborați cu persoane/ instituții/ companii/ organizații din străinătate?

- ☐ Da
☐ Nu
☐ Nu știu

25. (Numai pentru cei care s-au întors în România) Dacă da, în ce constă colaborarea?

* 26. În ce măsură factorii de mai jos v-ar influența/ v-a influențat decizia de a vă întoarce în România?

	Deloc	În mică măsură	În mare măsură	În foarte mare măsură	Nu știu
Possibilitatea de a desfășura activități în țara de origine și în străinătate	☐	☐	☐	☐	☐
Oportunități de carieră bazate pe performanță	☐	☐	☐	☐	☐
Oportunități de dezvoltare profesională	☐	☐	☐	☐	☐
Dotarea cu echipamente moderne	☐	☐	☐	☐	☐
Venituri similare cu cele obținute în străinătate	☐	☐	☐	☐	☐
Possibilitatea de a cumpăra o locuință	☐	☐	☐	☐	☐
Existența serviciilor de sprijin pentru familie	☐	☐	☐	☐	☐
Lipsa corupției în sistemul public	☐	☐	☐	☐	☐

Altele (specificați)

Impactul emigrației înalt calificate asupra pieței muncii din România

IV. Percepții privind impactul emigrației persoanelor înalt calificate

* 27. Ce impact credeți că are emigrația lucrătorilor înalt calificați asupra României?

	Deloc	Mic	Mare	Foarte mare	Nu știu
Scăderea calității serviciilor către populație	☐	☐	☐	☐	☐
Îmbătrânirea populației	☐	☐	☐	☐	☐
Pierderea capacității de inovare	☐	☐	☐	☐	☐
Performanță redusă în știință	☐	☐	☐	☐	☐
Pierderi fiscale	☐	☐	☐	☐	☐
Reducerea șomajului	☐	☐	☐	☐	☐

Altele (specificați)

* 28. Cum credeți că pot contribui în continuare persoanele înalt calificate care au emigrat din România la dezvoltarea țării?

	Deloc	În mică măsură	În mare măsură	În foarte mare măsură	Nu știu
Creând rețele între diasporă și cei din țară	☐	☐	☐	☐	☐
Promovând imaginea țării	☐	☐	☐	☐	☐
Investind în România	☐	☐	☐	☐	☐
Creând conexiuni și rețele profesionale cu specialiști din alte țări	☐	☐	☐	☐	☐
Trimițând bani familiei	☐	☐	☐	☐	☐

Altele (specificați)

* 29. În ce măsură credeți că următoarele schimbări pot contribui la diminuarea emigrației forței de muncă înalt calificate?

	Deloc	În mică măsură	În mare măsură	În foarte mare măsură	Nu știu
Finanțarea cercetării	☐	☐	☐	☐	☐
Evaluarea activității angajaților pe baza performanței	☐	☐	☐	☐	☐
Protecția proprietății intelectuale	☐	☐	☐	☐	☐
Politici de combatere a corupției și criminalității	☐	☐	☐	☐	☐
Simplificarea procedurilor birocratice (inclusiv recunoașterea și echivalarea diplomelor obținute în alte state)	☐	☐	☐	☐	☐
Mecanisme transparente la angajare (inclusiv în posturi publice)	☐	☐	☐	☐	☐
Investițiile în echipamente și tehnologie	☐	☐	☐	☐	☐

Altele (specificați)

Vă mulțumim pentru participare!

În acest instrument am adaptat și dezvoltat întrebări din chestionare folosite în sondaje anterioare pe tema emigrației forței de muncă în general și a personalului înalt calificat în special.

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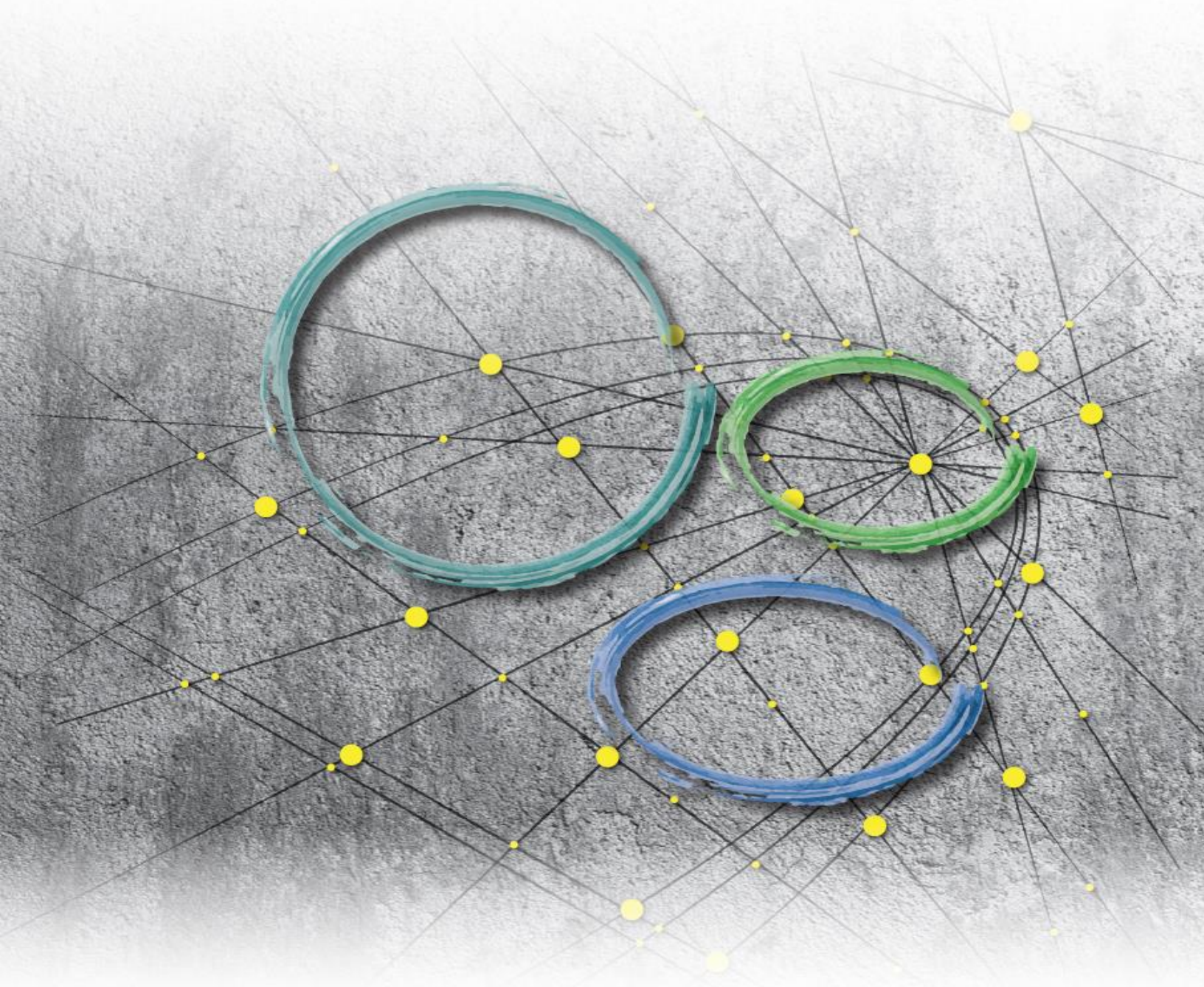
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