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The role of foreign scientific foundations' role in the cross-border mobility of Russian academics

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Abstract

Purpose – The purpose of this paper is to explain the current role of foreign foundations in the cross-border mobility of Russian elite scientists.

Design/methodology/approach – The methodology is based on a combination of a quantitative survey (December 2004-February 2005) of former Russian Humboldtians and qualitative research (expert interviews in 2005 and in 2012, respectively) of Russian alumni of the Alexander von Humboldt foundation (Germany).

Findings – For Russian elite researchers participating in academic mobility, in 2000s it is rather cross-border mobility' brain circulation' rather than "brain drain" a dominant form of academic mobility typical. Even in 2000s, western foundations still played a significant while twofold role – promoting emigration of for a small part of Russian elite researchers, on the one hand, while and getting access to top-level labs, etc. and to international academic chains of excellence for the majority of them, on the other. Coming back to the home country, affiliation with foreign foundations reduces the dependence of Russian elite researchers on hierarchical structures within the national state science system and promotes project teams and network forms of interaction their career. However, Russian scientists dependence on foreign funding affect both the scope of research and their academic status (mostly – second-level positions within research projects, etc.). Among the reasons to for leave leaving Russia it is primarily the desire to remain have closer access to their academic community and the equipment to do on the top level in research. The paper formulates some measures to foster incentives to stay in Russia and respectively to support re-emigration of elite researchers, in form of world class research labs and strengthening the motivation of senior researchers to work in the home country.

Research limitations/implications – Research limitations consist in using of only one of the alumni networks of several western foundations database.

Originality/value – The paper is unique as regards the empirical results; its value consists in their organizational, social and political implications.

Keywords Expatriates, Data analysis, Immigration, Eastern Europe

Paper type Research paper

1. Introduction

The cross-border mobility of academics, or academic mobility, is a normal process in a globalizing world where scientific cooperation across borders is growing steadily. It can take the form of a normal "brain circulation" which has become part of contemporary science where networks of excellence usually consist of researchers from different countries. However, under certain economic and political circumstances it may become part of migration forming a "brain drain," or even exodus of academic

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elites – for instance, in Russia and some other former Soviet republics after the decline of the USSR in early 1990s.

The collapse of the USSR and its scientific infrastructure played a significant role in changing of the structure of the brain drain, or “talent flow”: in 1975 talent flow from within the OECD area stood at two-thirds, declining to 50 percent by 2000, while the share from low-, lower-middle- and higher-middle-income countries has surged over the past decade (to 27 percent from China and India, 26 percent from Mexico, Northern Africa and Russia) (Sarfati, 2013, p. 441-442).

The literature on “brain drain” and its macroeconomic impact on both donors and beneficiaries (McCulloch and Yellen, 1975; Cheng and Yang, 1998; Caglar and Schiff, 2005; Beine *et al.*, 2001, 2008; Docquier *et al.*, 2007; Docquier and Rapoport, 2011; Grogger and Hanson, 2011) shows that highly skilled professionals – among them academics are much more responsive to economic push factors compared with other groups.

First, however, sociological-ethnographical observation of the driving motives, expectations and strategies of scientists moving away from their home country on the micro level are less well presented (Gaillard and Gaillard, 1997; Meyer, 2001; Laudel, 2005; Gerber and Ball, 2009).

Second, within the literature on academic mobility less attention is paid to the group of elite scientists. But precisely this small group is of core importance for creating new knowledge, know-how and sustainability of scientific institutions. As Laudel (2005) mentions, “little is known about the alleged causes of elite migration [...] Some studies have been able either to identify elites, or to track the mobility of scientists, but none has succeeded in doing both simultaneously” (p. 378).

The problem is twofold: on the one side, it is difficult to provide a definition of scientific elites (Crawford, 1971; Stephan and Levin, 2001) which would be practical for empirical research. The most practicable definition of Mulkay (1976) refers to four basic features of elite scientists: they are privileged with respect to awards and facilities, and are highly cited; they can, and usually do, control scarce resources; their social ties with each other are stronger than their ties with other scientists; they control or direct the activities of others; they considerably influence recruitment.

On the other side, as “elite scientists” do not form a part of any formal statistical observations – they are subsumed under academic mobility or even general migration contingents – special methods to collect data are needed. Usually, researchers try to use bibliometrical methods (Laudel, 2005) or special panels.

Within this context, the situation of academic mobility of the elite cohort of researchers in Russia after the beginning of systemic transition is unique: Russian academics are, within a historically short period of time (1990-2010), a large group of Russian high professionals engaged in brain drain or brain circulation process.

In Russian academic literature it is viewed mostly through the lens of brain drain (Kugel, 1993; Kitova *et al.*, 1995, Zayonchkovskaya, 1994; Ushkalov, 1996; Borisov, 2002; Yegerev, 2002), and mostly as a sign of general decline of the social status of science in Russia (Yurevich, 1998) within the context of the general socio-economic transformation of society (Yurevich and Tsapenko, 2001). Rather seldom one might find a neutral analysis of the academic cross-border mobility within the context of the change of the status and organizational framework of Russian science (Vasilyev and Kozlov, 1997; Vul, 1997) as well as of the whole system of reproduction of scientific elites under transition (Kugel, 2001).

Empirically based observations of academic mobility and its forms are rare and mostly rely on special statistical surveys on a number of Russian scientists who did not leave their institutions officially but stayed abroad over three months and their distribution according to the purpose of mobility, its duration, countries of destination, research fields, gender, age, professional status, scientific grade and degree (Gokhberg and Nekipelova, 2002). They showed that in 1996 ca. 4,000 researchers took part in brain circulation, in 2002 – ca. 3,000 (6.5 and 3.3 percent of the total number of Russian scientists, respectively) representing 280 and 324 academic institutions and universities, respectively.

However, due to the restriction of the survey methodic, personal motivation of academic mobility, its role in career, integration in international networks of excellence, etc. were not observed, and the group of academic elite was not been separated.

In the international literature, there are some reflexions of the problem of growing academic mobility after the beginning of the systemic change in CEE and CIS countries (de Tanguy and de Wenden, 1993; Aldhous, 1994a, b; Kneen, 1995; Freemantle, 1997).

The subjective dimensions of these institutional changes – how Russian scientists have responded to them – bear considerable theoretical and practical interest, yet they have received little attention (Gerber and Ball, 2009).

Even less researched is the mezzo-level – first of all, the role of structures and institutions playing an intermediary role in the process of academic mobility. Meanwhile they can contribute to the process of brain drain – making it safer and easier for elite researchers – or coordinate the process of academic mobility in the manner which supports rather brain circulation.

An important intermediary actor in this process are private, state and semi-state western scientific foundations. After the beginning of the systemic transition in Russia, as in some other CEE and CIS countries, they partly substituted scarce funding and the weak institutional pattern of the national scientific frameworks. Supporting researchers when solving different problems (personal and/or team fellowships, equipment funding, short or long-term internships, conference participation, etc.), they became new agencies in changing the scientific environments of transitional societies. According to a survey of researchers in Russian academic institutions conducted by Kitova *et al.* (1995, p. 425), more than half of the scientists were involved in work based on individual and group contracts and grants with foreign countries in the mid-1990s.

One of a few of western foundations working entirely with elite foreign researchers, is the German Alexander von Humboldt foundation, re-established in 1953 after the Second World War to help to overwhelm the international isolation of German scientists and to attract elite foreign researchers to cooperate with German colleagues. Since this time, the main fellowship program of this foundation was been primarily focused on representatives of scientific elites, i.e. researchers in middle age, having already remarkable achievements in the respective field of science, international contacts and a promising research agenda (Jansen, 2004). The foundation is well known for its fully fledged and very intensive “lifelong contact system” with former fellows – establishing the so called Humboldt families throughout the world. Embeddedness into this informal network helps to establish new collaborations, to promote PhD students, etc.

Thus, the fellowship of this foundation could be used as a soft indicator of a scientist’s qualification as an elite researcher, and the impact of this foundation on their careers, international cooperation, etc. could provide a unique insight into the influence of the policies of western foundations on the so called brain drain of elite academics.

Starting from a zero level in the mid 1980s, now Russia has become one of three or four most represented countries among Alexander von Humboldt fellows and award winners. Especially large were the numbers of those leaving for internships along the Foundation line in the early post-perestroika years (mid – second half of the 1990s). Some of the former Humboldtians stayed in Germany or moved to different other countries (USA, UK, France, Switzerland, Japan, etc.), but most of them came back to Russia after taking a fellowship, and are members of Humboldt clubs (Moscow, St Petersburg, Novosibirsk, Kazan) where they advise and support newcomers, share their experience, try to influence some institutional developments related to their research activity.

The present paper fills the gap in the empirical investigation of problems related to the role of foreign scientific foundations in shaping the institutional framework of the academic mobility of Russian elite scientists. We primarily focus on the impact of participation in the academic mobility programs of Alexander von Humboldt foundation in career prospects, integration into international academic chains, the change of the institutional arrangements of Russian science and, finally, on the decision to leave Russia (typical brain drain) or to come back – being more deeply engaged in international networks of excellence (brain circulation).

The next part of the paper describes the study design and methodology, Section 3 describes the data as well as the main findings of the field research, and finally, the paper ends with conclusions and practical implications.

2. Design and methodology

The present paper is based on the project “The sustainability of the academic elite in Russia: the contribution of foreign science foundations (The Alexander von Humboldt Foundation case)” supported by Moscow Scientific Foundation and Alexander von Humboldt Foundation in cooperation with HSE. The project was carried out in 2003-2005 with the aim to deliver an empirical study of the causes, mechanisms and effects of highly qualified researchers academic mobility from Russia to EU countries.

In 2012, a small-scale update was undertaken to ensure that the set of problems has not changed since the first half of the previous decade.

The methodology of the initial project was based on a combination of both quantitative and qualitative data. The most important part of the project was a standardized survey conducted in December 2004-February 2005 through parallel direct e-mail and mail, by using the address database of alumni provided by the Humboldt Foundation and Moscow Humboldt Club. The survey population was made up of Foundation alumni (663 persons residing at the time of the survey, at least nominally, in Russia). In total, 185 respondents (127 of them – from Moscow and St Petersburg) returned filled in questionnaires (28 percent response rate), representing 43 cities and a wide range of research areas.

The response rate could be even higher as most of the former Humboldtians are engaged in different forms of life long contacts with the foundation and other alumni and feel deep empathy with the foundation but up to one-third of e-mail addresses and 12 percent of mail addresses in the database were outdated, and phone calls those alumni (to those who did not respond who did not respond to e-mails or mails within one month) failed as the respondents seemed not to be available at the phone numbers listed in the database.

Refusals to respond were exceptional and mostly because the respondent was still participating in the fellowship program (16 percent of the general sample), so most of

the questions concerning the impact of the fellowship on his/her career, etc. could not be answered yet.

When analyzing the data representatives of engineering and medical sciences were excluded, as the number of such respondents was very small, representatives of social and humanitarian sciences were combined into the group of humanitarian sciences.

The questionnaire consisted of 40 questions, more than 250 variables.

The most important questions of the quantitative survey were:

- did the participation in a cross-border mobility influence the scientific career of the participant (at least in his/her own self-reflection, as we did not have a control group for comparisons)?
- does the participation in a cross-border mobility affect the international communication, integration of respondents into international research projects?
- what is, in the view of former Humboldt fellows, the role of western foundations in the changing of institutional frameworks within Russian science?
- what were the reasons to come back after being a research fellow in Germany, to stay there definitely, or were there any “intermediate” strategies?

With the support of the Humboldt Foundation, there were been some survey missions undertaken to conduct in-depth unstructured interviews of Russian scientists, de-jure or de-facto long working and living in Germany. Altogether, 21 persons were interviewed in Berlin – Potsdam, Rhine – Ruhr area and in a several cities in the north-western and central part of Germany. The interviews took between one and two hours each. The goal was to discover individual strategies of Russian scientists working for longer abroad and to make some typologies of the conversion of brain circulation into brain drain, and vice versa.

These data are unique when compared with similar attempts (Kitova *et al.*, 1995; Gerber and Ball, 2009) as they cover most Russian research centers and disciplines occupied by recognized Russian researchers.

In 2012, a series of 12 semi-formal interviews with Humboldt and DAAD (another German state foundation supporting academic mobility on a lower level – starting from students up to young post-docs) alumni having mid- or high-level administrative positions within their research or educational institutions in Russia. Mostly they were middle- and advanced age scientists (35-60), who had been involved with different fellowship and grant programs run by foreign foundations, among them fellowship programs or project activities abroad. Experts belonged to both natural and humanitarian sciences, and all of them remained in touch with the foundations as well as with other alumni both formally and informally.

The interviews lasted on average 30-50 minutes. Three experts refused to take part in the survey for some reasons (busy, lack of interest in the topic, etc.).

The survey was conducted to collect expert assessments concerning the most important changes in academic mobility since the beginning of the 2000s.

3. Data and main findings

Russian Humboldt alumni’s perspectives on academic mobility outcomes and consequences (quantitative survey 2004)

The collected data provide a deeper insight into the impact of elite researcher participation in the Humboldt foundation fellowship programs to personal career.

It seems to be evident that the Humboldt foundation fellowship increased the human and social capital of respondents (Table I). We assumed that when the e-access to current literature becomes less problematic in Russia, some reasons for humanitarian scientists (except maybe some special fields like archeology, etc.) to move for longer abroad would become less evident whilst the state of equipment for natural scientists, in spite its improvement in some Russian research centers, would remain a critical reason to use foreign fellowships. As is shown on the Table I, take-offs for representatives of natural sciences and humanities differ. For the former it is very important to use better research facilities than home and to attend scientific conferences, while for the latter – access to libraries and archives, general cultural impressions of Germany and Europe, as well as get acquainted with best practices of German colleagues.

As a consequence, the Humboldt fellowship played a significant role in the professional career of former Humboldtians (Table II). The majority of them become multipliers of Germany's "science envoys": over 80 percent of them introduce their undergraduate and post-graduate students to Humboldt and other foreign foundation programs. This constitutes an extra effect for Germany and German (and European in general) science of Russian scientist participation in the Foundation programs.

The participation at Humboldt foundation programs helped both to change the status of alumni, or at least to do some important steps toward such a change. Only 5 percent of alumni failed, upon their completion, to improve their scientific qualification, research or occupational status, in some or other way. The most common way of raising academic level is to publish articles in authoritative foreign journals. This opportunity was seized, somewhat more frequently than sample average, by St Petersburgers, and by representatives of middle age group.

Some other differences are to be mentioned: it seems that for representatives of the natural sciences the participation at the Humboldt foundation program is much more often combined with any award, whilst for representatives of humanitarian sciences – with monographs publication, etc. (different forms of scientific recognition); age cohorts reported, against initial hypotheses, quite similar forms of the benefits, except a small difference: the youngest are much more seldom promoted in academic rank and do not publish monographs as a result of their stay abroad than especially the older cohort of academics. Besides, Muscovites have raised their scientific status "in some other form" much more often than their colleagues in St Petersburg and other regions (it should be maybe viewed as a result of a much broader academic market in the capital than in all other cities where even people with significant performance and merits are prevented to move more dynamically over the academic ladder).

It is evident that the earlier the first stay abroad was the most impressive are professional outcomes. For instance, among representatives of middle and elder age cohorts who took fellowships in early 1990s the share of those who managed to write and/or defend a doctoral thesis upon completion of the Foundation programs is nearly twice as often as sample average.

Humboldt foundation fellowships provided much greater opportunities primarily for staging research at world level, for improving relevant skills and well-being of respondents. Quite impressive favorable balance was also noted relative to issues such as demand for research projects abroad, as well as opportunities for subsequent activities within the established scientific micro-community.

Opportunities for conducting world-level research increased in particular for representatives of regional research centers and higher schools (over 95 percent of

Table I.
Distribution of answers to the question: "which outcomes of internship along the line of Humboldt Foundation programs turned to be most beneficial for your further research activities? (select no more than three most important answers)"

	For entire sample	Natural sciences	Humanities	Younger than 35 years	36-50 years old	51-65 years old	Over 65 years old	Moscow	SPb	Other cities
1 – Using perfect research facilities	34	44	0	31	33	40	33	33	38	30
2 – Access to scientific literature and archives	47	35	85	48	51	46	24	43	55	48
3 – Get acquainted with best practices of foreign colleagues	25	24	33	28	25	25	20	23	15	37
4 – Contacts with foreign colleagues	75	72	80	70	78	61	86	74	83	70
5 – Adopting fundraising practices (search for funds for scientific research)	4	5	0	3	6	0	5	6	3	2
6 – Gaining experience in research product commercialization	1	1	0	0	1	0	0	1	0	0
7 – Opportunity for attending scientific conferences in Germany and Europe in the course of internship	28	32	15	21	30	21	33	30	28	26
8 – General cultural contacts and impressions	36	32	49	31	43	29	24	37	37	33
9 – Opportunity to set a fraction of scholarship apart	33	36	23	41	27	43	38	35	18	41
10 – Miscellaneous	7	7	5	3	5	11	10	6	7	4

Note: Number of respondents

Forms of scientific, professional, career advancement	For entire sample	Natural sciences	Humanities	Younger than 35 years	36-50 years old	51-65 years old	Over 65 years old	Moscow	SPb	Other cities
1 – Prepare/defend thesis	32	31	44	24	39	36	5	32	28	37
2 – Get promotion in academic rank (be elected as corresponding member, academician of RAS, RAMS, RAAS)	12	13	10	3	15	14	10	13	13	11
3 – Win promotion	27	25	31	24	32	25	10	28	28	24
4 – Win national or international prize	15	18	5	14	15	14	24	14	15	17
5 – Publish a monograph/monographs abroad	20	12	39	-	20	32	19	18	23	20
6 – Publish an article/articles in peer reviewed scientific journals	77	79	74	72	84	68	57	76	85	72
7 – Raise one's scientific status in some other form	14	15	15	10	13	25	14	20	5	9
8 – Nothing of the above occurred	5	5	5	3	4	7	14	6	3	7

Note: As percent of the number of respondents

Table II. Distribution of answers to the question: “do you think that the internship promoted (or provided opportunity for) the following? (select no more than three most important answers)”

respective groups mentioned that) and for 36-50 year olds. In this sense, the academic mobility brought an added value for Russian science as it helped scientists from periphery to establish and intensify contacts within relevant professional networks of excellence.

Participation of Russian elite scientists in fellowship programs of the Humboldt foundation is of benefit for them because helping to enhance personal physical and social resources. Due to their ability to efficiently use fundraising and professional reputation home and abroad, Humboldt foundation alumni are less dependent from hierarchical structures in Russian academy. As a result, Humboldt alumni have several possibilities to improve their professional status – without leaving the country definitively but rather participating at different models of brain circulation.

However, the impact of a Humboldt foundation fellowship differs for different age cohorts and settlement. Though the main forms of international cooperation for Humboldt alumni turned to be at conferences and individual participation in international research projects (Table III), the contractual output differs. Contracting out to Russia is more often a choice of the older cohorts (36-50 and 51-54 years old), Muscovites, while contractual employment abroad is more often to be found among the younger cohort and among non-Muscovites. Hence, research fellowship of the Humboldt foundation ensures especially younger scholars and provincials to seek for position abroad. It might become the first step toward a brain drain strategy.

In Russian discussion on the academic mobility, especially in the 1990s, the main idea was the idea of brain drain being initiated by western foundations support programs to Russian scientists (Migraciya [...], Ushkalov, Levitin, Nekipelova, Malakha, etc.). However, the best experts in this question are those with experience of participating in several such programs enabling a cross-border academic mobility.

Alumni themselves reflect the ambivalent role of western foundations through the lens of their own experience with Humboldt foundation fellowship (Table IV). The single group where the share of those who believe that western foundations stimulate rather brain drain than promoting Russian science is bigger than of those with contradicting meaning is the youngest group of respondents (below 35 years of age).

All in all, Russian elite scientists experienced in contacts with Humboldt foundation (and other western foundations, as many of them mentioned to have taken part at different grants' and fellowship programs of other foreign foundations) recognize a two-fold function of foundations themselves: they try to attract highly competent brains to own research and educational institutions, however, the art of academic mobility and its consequences is subject of individual strategy of alumni themselves. The variety of pulling and pushing factors encouraging them either to return back or to seek for leaving the home country was subject of a special set of questions.

To stay or to leave Russia: pushing and pulling factors. In Russian literature on the cross-border academic mobility, especially in the 1990s, the main reason of brain drain was the idea of economic problems, i.e. of low salaries of scientists and of decrease of the well-being and prestige of scholars in Russia (Ushkalov, Levitin, Malakha, etc.). However, according to our findings, first, financial difficulties, being important, are not the single motive of a possible brain drain, second, it is not the most often chosen strategy. Orientation at leaving Russia for a long time ranks rather low amid the motives of relationships with western partners; the main goal instead is temporary contractual work abroad on specific projects: in response to the question "What is mostly driving you in relations with Western partners/countries?" In all, 82 percent of

	Entire sample	Natural sciences	Humanities	Younger than 35 years	36-50 years old	51-65 years old	Over 65 years old	Moscow	SPb	Other cities
1 – Invitation to seminars, conferences, symposia	77	74	85	59	84	79	67	73	85	80
2 – Contracting out to Russia	15	14	18	3	18	18	5	19	13	7
3 – Contractual employment abroad	22	24	8	28	23	11	19	20	20	26
4 – Joint international research projects at individual level	69	74	59	62	73	75	52	67	70	74
5 – Joint international research projects of your research institute/higher educational institution and your foreign partners	26	30	13	17	24	32	38	31	25	15
6 – Visits of foreign colleagues to Russia for lecturing /work on joint projects initiated by you	35	31	41	17	33	46	57	27	38	50
7 – Drafting plans, jointly with foreign colleagues, for promoting their outputs, and commercialization, there of	10	10	8	3	9	14	24	14	8	4

Notes: Mark all suitable response options. As percentage of the number of respondents in each group. Some 5 percent mentioned other issues, and roughly the same number found it hard to answer

Table III.
Answer to the question: “please indicate what forms of international cooperation resulted from your internship along the Humboldt or other foreign foundation lines”

Table IV.

Distribution of answers to the question: "what in your opinion is the predominant effect of Russian scientist participation in the programs of foreign science foundations for reproduction of research personnel in Russia?"

	Entire sample	Natural sciences	Humanities	Younger than 35 years	36-50 years old	51-65 years old	Over 65 years old	Moscow	SPb	Other cities
Induces scientific brain drain from Russia	13	14	8	21	13	18	5	14	17	9
Provides for Russian scientific elite involvement in international scientific networks, thereby promoting its entrenchment in Russia	24	25	18	14	24	25	29	22	20	30
Both equally	55	53	67	52	56	46	62	56	52	54
Miscellaneous	5	4	5	10	4	7	-	5	5	4
Hard to answer	3	4	3	3	3	4	5	3	5	2

Note: As percent of the number of respondents in each group of respondents

respondents chose an option: "Occasional visits to the West for work on concrete projects with a view to advancing in my field of expertise," It is to point out that no one of the respondents confirmed to be ready to leave home country giving up research activity. It is a significant distinction of elite scientists that they use rather brain circulation, instead of brain drain (Saxenian, 2005).

However, in case of some dramatic changes of economic, political or professional character the situation may push them to immigration, only 14 percent would never leave Russia (Table V).

Most important reasons which could push elite scientists to emigration differ depending on family structure, age and place of residence of scientists on the date of survey. "Financial difficulties" would be the most important reason for mid-aged cohort (36-50), all who have at least one child, living outside of Moscow, natural scientists. "Lack of adequate working conditions in the home country" would be most important for the youngest cohort (up to 35), natural scientists, with three and more children, Muscovites. "Macroeconomic (political) situation in this country" could push to emigrate those already living abroad, humanitarian scientists, with no children. "No demand for science on the part of the state" would be the serious argument for scientists with one child, living in province, representing advanced-aged cohort (51-65). "Fear of losing opportunities for conducting world level research" as well as "Impossibility to realize one's ideas" are very important for scientists with more than three children. The single cohort where the dominant answer was "Under no circumstances shall I leave the country" (33 percent) was the cohort of seniors (older than 65 years) (Table VI).

According to these statements, if macroeconomic or political situation in Russia should get worsened, the country will first of all definitely lose those who already work abroad, humanitarian elite scientists (as they undoubtedly support pro-western trends and expect many troubles in case of a negative scenario in Russia) and scientists without children. In such a situation, assumingly, due to some pressure and "closing" from the outside world also even scientists with more than three children would be pushed to leave the home country forever.

In case of a less pessimistic scenario, when the general situation does not getting much worse but the funding of science diminish (hence, personal financial problems may occur or working conditions in the home country deteriorate), mid-aged cohort (36-50), all who have at least one child, living outside of Moscow, natural scientists as well as the youngest cohort (up to 35), with three and more children, and Muscovites will seriously consider the immigration to the West.

A serious "pushing" or "pulling" factor to decide on whether to stay in the home country or to go abroad definitely is a consideration about prospects for own children educational and career prospects. As it becomes evident from the data, up to 1/3 of respondents either were unaware or simply did not want to answer this question; 14 percent had not any children, so, only some more than a half of the sample gave any definitive answer. The second observation: among those who did respond the majority was sure that their children would stay to study and work in the home country. Taking into consideration the traditionally very tight and intimate connections between generations in Russian families, and a very strong concern of parents about good education and professional choice of children, it should be understood as an indirect indicator of the willingness of the parents themselves to reside in Russia, even when occasionally taking short-time or visiting positions abroad.

Table V.
Distribution of answers to the question: "what circumstances could enforce you to leave this country for permanent residence? (mark all suitable response options)", by family structure, age, place of residence and field of science

	In general	Natural sciences	Humanities	Number of children				Age			Place of residence				
				no	1	2	3 and more	Below 35	36-50	51-65	over 65	M	SPb	Other	Abroad
Financial difficulties	38	38	39	23	43	42	36	48	46	21	10	32	38	36	55
No adequate working conditions (required equipment, personnel)	35	38	31	33	34	39	36	59	38	25	10	34	31	26	55
Macroeconomic (political) situation in this country	35	32	44	41	36	35	29	48	41	25	10	29	41	21	69
No demand for science on the part of the state	34	37	26	28	42	28	29	41	33	36	29	29	37	36	38
Fear of losing opportunities for conducting world level research	27	30	18	28	25	26	36	35	27	21	19	22	25	26	41
Impossibility to realize one's ideas	26	26	21	23	26	23	36	41	24	14	24	22	22	21	41
No scientific product (idea) market	8	8	8	10	8	5	14	7	12	4	0	8	16	0	10
Under no circumstances shall I leave the country	14	17	8	13	10	19	21	7	13	11	33	19	19	15	0

	Entire sample	Natural sciences	Humanities	Younger than 35 years	36-50 years old	51-65 years old	Over 65 years old	Moscow	SPb	Other cities
Eager to support Russian science and education.	52	52	46	28	52	71	67	49	45	65
Promote development of science and education in their country	80	84	67	93	79	71	76	77	80	87
Elicit information on directions and level of research conducted by Russian researchers	22	18	33	21	21	21	24	23	22	17
Promote departure of professionals from Russia	5	6	5	10	5	7	-	6	7	2
Miscellaneous	5	4	8	3	7	4	5	7	5	2
Hard to say	4	2	10	3	6	-	-	5	5	-

Note: As percent of the number of respondents in each group

Table VI.
Distribution of answers to the question: “Why do you think foreign science foundations render assistance to Russian scientists? (choose no more than two options)”

The choice in favor of Russia get depending on family structure and age of respondents: the preference for Russia as a country of their children study and residence is increasing with the growing number of children in the family and age (Table VII). Less inclined to let children study and work in Russia are humanitarian scholars compared to their natural science counterparts (as the path dependence is still affecting the state of many socio-humanitarian disciplines in the home country) and scientists already working abroad on the date of the survey.

Russian scientists abroad: reasons to stay forever (qualitative survey 2004 and its results)
By 2004, over 250 of more than 800 Russian Humboldt fellows and award winners have been permanent employees of or on long-term contracts with research centers abroad, including nearly 100 persons working in Germany. The highest concentration areas are, in particular, Berlin and Potsdam agglomeration; Rhine – Ruhr area with universities and research centers in Bonn, Cologne, Dusseldorf, Dortmund, Essen, Bochum; Munich and research centers around. Some 40 of our compatriots, being former Humboldtians, are currently working in these three major German centers of science and higher education. On the other hand, quite many, over 40 people, are working at universities and research centers in cities located far from both centers of traditional deployment of first-class universities and the major industrial and financial centers of Germany.

The dominant strategy of their academic mobility was the “opportunistic” one, i.e. most of the people had no plans to stay in Germany from the very beginning when starting their Humboldt foundation fellowship, but upon evaluation of the current dynamics in Russian science and having seen a chance for further work in the selected scientific area abroad, based on rational measurement of costs and benefits, preferred to stay in Germany. Hence, participating in brain circulation actors may change their strategy to brain drain.

It is to note that most respondents retained Russian citizenship, though children of many of those who have already long lived in Germany, particularly sons who would have to serve in the Russian army, had become naturalized in Germany and do no more identify themselves with Russia.

The respondents can, in terms of their status, be classified into three groups:

- (1) those having tenure positions in Germany, who had surrendered Russian citizenship (or intending to change it);
- (2) those having long-term contracts in Germany and intending to extend them, but not ruling out a possibility of coming back to Russia - rather for a short period of time until an attractive position abroad is found (primarily in Germany); and
- (3) those being currently in Germany on contract but planning to come back to Russia as they still treat it as the primary place of employment.

Table VII.

Distribution of answers to the question: “where would you like your children study and reside?” depending on family structure, age, place of residence and field of science

	Field of science			Number of children			Age				Place of residence			
	In general	Natural sciences	Humanities	1	2	3 and more	Below 35	36-50	51-65	Over 65	M	SPb	Other	Abroad
In Russia	40	44	26	37	45	61	26	35	54	50	41	36	46	24
Abroad	17	14	21	21	14	8	11	20	8	10	16	8	18	17

Notes: As percent of the number of respondents. Without those who had not a definitive answer (29 percent of the sample) or do not have children (14 percent of the sample)

The decision to stay definitely or to come back to Russia depends heavily on the status of the interviewees: those already having tenure professor positions usually considered to stay in Germany forever, but those who had positions of lecturers and senior lecturers are forced to negotiate other possibilities upon contract expiration – among them, to come back to their old institutions IN Russia, at least temporary, while looking for a suitable project funding or vacancy abroad. Thanks to their experience and skills, many hope for a more or less smooth contract renegotiation, yet this segment of interviewees are still somewhat uncertain about the future. This bears on the people's plans: they try not to draft long-term plans relative to place of work and residence in Germany which has a particularly negative impact on the feeling of those Russian scientists whose families have secondary school age children. This latter group consists of researchers whose individual career strategy is still uncertain as they may choose both brain drain as well as brain circulation model.

The return to Russia is possible and even desirable for some segment of immigrant Russian scientists primarily for those who had left for Germany in ripe age, had no idea to stay abroad by all means and have no tenure positions there, given decent financial means and material conditions (including availability of facilities required for scientific activities) and possibly continued close contacts with western scientific community. Anyway, continued contacts to Russia are important for them. Many of them host young Russian PhD students or post-docs from their previous institutions, take part in summer schools, and otherwise cooperate with scientific and education institutions in Russia. Such respondents, though critical in general toward the state of Russian science, noticed positive dynamics in a number of areas, and availability of young talents at research institutes and higher educational institutions, etc.

At the same time, the “earnings” factor played a considerable role for potential re-emigrants: though they have built some financial reserve during the years of work abroad, it is usually insufficient for comfortable circumstances after got pensioned abroad, so some of them consider the possibility to come back to Russia. Their less secured future is one of the factors enforcing them to be sensible for Russian developments, situation within the Russia science and education, etc.

So, a comparison of costs and benefits of come-back to Russia respective to stay in Germany can lead them, given the respective prerequisites, to a decision on re-emigration. So, the brain drain strategy can be transformed into brain circulation, again.

Expert survey 2012: some changes in academic mobility structure and forms after a decade

As there were been less publications on the state of academic mobility of Russian scientists and related issues in 2000s than in the turbulent 1990s, it seemed to be important to check whether the situation did change. To collect some information about the trends in cross-border academic mobility, an expert survey among people being best informed on related issues was conducted in late 2012.

According to the experts, their personal contacts with international scientific community have largely intensified, the same – with a few exceptions – holds for their field of research on the whole. Nearly all the experts said that they advise their graduate students to participate in foreign foundation grant programs, including those assuming academic mobility.

First evidence from these interviews is that the elite brain drain from Russia has on the whole waned for the past ten years – and this for good reasons. First, because of the “age hole” formed in the 1990s when a normal distribution of age cohorts within

scientific organizations and universities in Russia changed toward a two-humped distribution as the cohort of medium-aged scientists either has leaved Russian or moved to commerce and politics it negatively affected the reproduction of elite scientists. In fact, as some experts stressed that Russian brain drain has become younger. While in the 1990s and before these were primarily mature scientists now this process generally starts at post-graduate level where talented youth is leaving for Master or PhD study abroad. Naturally, chances for getting employment abroad after being graduated there are higher. So, many of Russian young talents chose the brain drain strategy from the very beginning, before they really belong to the top-level group of scientists.

Experts referred the following shifts in the area of cross-border academic migration, compared to the situation in the first half of 2000s, described in this report, to the two-three most important ones: "Migration (children of the educated upper middle class) starts earlier, immediately after school or undergraduate program, deliberately aiming at integration abroad (it is not wherefrom they leave, but whereto). Will they manage to become part of the foreign academic class is a separate question" (expert interview 4). "Russian academic emigration has grown younger markedly. While in the 1990s and earlier these were largely mature researchers, then now the process generally starts at the level of master's program and post-graduate course abroad. Naturally, chances to get employment in specialty abroad increase" (expert interview 7).

Moreover, there are some institutional changes within the Russian science and educational system which encourage young researchers to seek for academic mobility chances as early as possible: "[...] the main trends are still there but emerging are some new factors associated with orientation at higher international ratings of Russia and introduction of the respective stimuli for publication in international journals. That said, the expanding contacts in the field of social sciences and the non-homogeneity of Russian post-graduate studentship demonstrate to young researchers that it is much better to graduate with PhD from western universities to be successful in competition in the international market. This does not always mean orientation at leaving this country but, on the whole, there are much more opportunities for integration with global academic networks, and the young people use them readily" (expert interview 2).

Second, academic mobility of Russian researchers is turning away from the US and western Europe. This is what one of the experts said (interview 3):

"During the 1990-ies and earlier Humboldt Foundation played a significant role, from Russian scientists standpoint, in shaping international cooperation, primarily with German scientists. This role has abated markedly by now due to a considerable expansion of scale of and opportunities for international cooperation, including that at the expense of involvement in that cooperation of Pacific Rim countries (China, South Korea, Taiwan, Japan, Australia, and Singapore). The policy of attracting foreign talent for work (as well as undergraduate and post-graduate studies) along with providing the respective lavish conditions and funding is brought to the level of national priorities in many countries."

Third, at present, according to the interviewed experts, the impact of foreign foundations fellowships' is below the outflow of young scientists into commercial enterprises and state corporations in Russia. For instance, as one of the experts mentioned, it became very uneasy to convince young colleagues even to apply for some programs of foreign foundations when studying – as they already are employed in big commerce or banking, with high salary and expected quick career development.

Experts believe that the biggest danger for Russian science is exactly the outflow of young researchers into business, not brain drain.

Fourth, given the foreseen significant increase of wages in science and education in the forthcoming years, the conditions offered by some foreign foundations will come to be less competitive. Hence the interest of potential applicants is waning.

Fifth, there are also some changes in socio-political system and moral environments in this country: “constituting a real danger is [...] deformity of the imposed [...] ‘vertical world’ depriving young people of academic interest in the problems, killing their financial interest in existence in science as such” (expert interview 8). Especially in humanitarian and social sciences it leads to some additional implications for academic mobility. As it was been mentioned in one interview, “I think, the following main changes have occurred in social sciences:

- (1) the number of researchers holding positions in parallel in Russia and abroad has reduced, for scientists leave for the West earlier, they have no positions in Russia, and they are in no way connected with Russian academic system more; and
- (2) [...] the number of researchers considering from the very beginning emigration as the main objective has significantly increased – in any case those leaving at the PhD stage rather strive precisely towards this. The number of opportunistic migrants is declining” (expert interview 11).

Thus, in summary, in view of the experts the main changes in academic cross-border mobility of Russian elite scientists compared with the beginning of the 2000s are:

- earlier mobility (PhD students and even undergraduate students move to the West before taking a degree);
- declining number of researchers working in parallel in Russia and on project basis abroad (“shuttling,” or steadily brain circulation, is becoming less important);
- other than USA and European countries attract more and more Russian scholars moving away (the Asian challenge); and
- not so much brain drain to foreign academic institutions abroad but outflow to business is damaging the sustainability of scientific elite in Russia (talents are moving not abroad, but into business and state administration).

Despite of a decade of fast improving economic state and funding of the science and research in Russia since the beginning of the 2000s, the prospects for an academic career in Russia are estimated as less favorable than in foreign countries and in the domestic business.

4. Conclusions and practical implications

The results of the survey of the alumni of one of the most renowned scientific foundations in Europe, the Humboldt foundation, show that for Russian elite researchers, rather the brain circulation than the brain drain strategy is typical. Among reasons to leave Russia it is primarily the desire to remain on the top-level in research. As Humboldt Foundation fellowship (and other international foundations’ programs) shape options for close academic contacts with foreign counterparts, they even enhance the retention of highly qualified personnel in this country, i.e. the reproduction of the academic elite of Russia.

Hence, fear of “exodus” of the national scientific elite has nothing in common with the realms. The significant impact of western foundations on the Russian science is not so much the enforcement of the brain drain but the strengthening of the human and social capital of alumni, reducing their dependence on hierarchical structures within the Russian Academy of Sciences (Gaponenko, Kneen, Kugel) and enabling them to get involved in project teams and networks of excellence.

In this regard, as Gerber and Ball (2009) stressed, “grant-based and market-based financing reward those who identify their comparative advantages by becoming familiar with work in their scientific area outside of Russia, exhibit the flexibility to tailor their work to the demands of the market, and form synergistic alliances, even if they are short-term, with other domestic and foreign researchers. Scientists who assume the state will support them regardless of the demand for or quality of their output will likely flounder. In sum, the new institutional context calls for competitive, entrepreneurial, commercial, and international orientations that cut against the grain of Soviet-era professional norms” (p. 535). This is an important organizational innovation which support activities of temporary research teams and networks, enhance competition component, selection of viable ideas, directions, creative collectivities, introduced largely thanks to foreign science foundations. In some sense, the engagement in such international chains enable outstanding scholars to be less affected by some peculiarities of the institutional traditions of the Russian academia.

The most evident and original empirical results are as follows:

- academic mobility of participants of the Alexander von Humboldt foundation programs among Russian elite scholars did influence their individual scientific career (at least in his/her own self-reflection, as we did not have any control group for comparisons): the overwhelming majority of them mentioned at least one significant improvement in their occupational status as the result of the Humboldt fellowship;
- cross-border mobility does positively affect the inclination to international communication, integration into networks of excellence, etc. outside of Russia;
- Russian Humboldtians believe that the activities of foreign scientific foundations are directed at fostering, first of all, the development of science and education in own countries, but an important spin-off is supporting of research activities in Russia, too. The idea of foreign foundations as merely institutions promoting brain drain outside of Russia received a very limited support from Russian elite scientists – contrary to the public discourse in the media;
- after having started to participate in academic mobility, the decision to choose between brain drain and brain circulation is made usually dependent on several circumstances – chances to get a secure position, estimations of comparative prospects of doing research in the home country and in country of current residence, estimations of general situation in the home country as well as familiar circumstances. Different combinations of these factors may affect different trajectories: from brain circulation to brain drain and vice versa. However, for the most of Russian elite scientists at the beginning of the 2000s it was the option of “shuttling” more comfortable, having stable positions home while continuously seeking for project work, etc. abroad; and
- the main changes between the beginning of the 2000s and the current situation consist in a shift toward an earlier academic mobility (students leave Russia already before taking a degree and seek for academic positions after graduation

in the West), as well as in declining number of researchers working in parallel in Russia and on project basis abroad (brain circulation model); more and more Russian scholars moving to other than USA and European countries destinations; strong competition between science and business instead of between doing research in Russian and abroad in the eyes of young talents of whom many escape to business.

However, when academic cross-border mobility become a common practice for the elite group of scientists, the state of national science gets increasingly dependent upon the level of international relations in humanitarian areas. To this extent, Russia is more than the EU interested in establishing really the common humanitarian space (solution of visa problem, in the first place): the more scientists are sure of the possibility to enter and come back without restrictions the fewer reasons they will have to leave Russia forever or for a long term.

The empirical data provide a possibility to estimate the frequency of a tacit form of brain circulation when academicians work on subcontract of a foreign institution in the home country, using resources, equipment and manpower they obtain. On the one hand, it is a temporary resolution of the most acute problems, but on the other it determines in the long term both the areas of research carried out by Russian scientists participating in such kind of cooperation and their academic status, many turn in fact into “highly qualified assistants” of their foreign partners (and factual employers). Thus the directions of research activities of elite scientists residing in Russia are highly dependent from the decision making from foreign academic centers of excellence.

Besides, it is to mention that many Humboldt alumni are engaging their younger colleagues, PhD students and post-docs in academic mobility to the former guest research centers, promoting in such a manner the “brain drain” of younger researchers who sometimes become more inclined to leave Russia definitely than their scientific supervisors.

How could Russia benefit from academic mobility, or even to convert the brain drain into brain gain (Boeri *et al.*, 2012)? First of all, the potential inclination of those who left Russia under turbulent times of the early – mid-1990s to come back should be supported by the Russian state using well known techniques adapted by some other countries (Romero, 2013), like China (Saxenian, 2005). The interviews with Humboldt alumni abroad confirmed that, given decent material conditions (including modern equipment needed for scientific activities) and opportunities for maintaining close ties with western scientific community, the come-back of some part of Russian researchers – primarily of those who entered Germany in mature age, did not plan to remain abroad by all means and have no tenure positions – seemed to be quite possible. Some initiatives of the Russian Ministry of Science and Education undertaken since 2010 – to establish world class international labs headed by recognized international researchers already helped to invite some of them to establish and head such labs in many field of research. Moreover, taking into consideration the current crisis of the world economy which led to a dramatically decreased funding of national science systems in most western countries, establishing of competitive conditions to attract younger researchers as well as retired world class scientists from the West to attend at the modernization of Russian higher education and science could become a feasible alternative – improving the research climate in Russia and establishing here some attractive centers of excellence to be visited by foreign colleagues. Partly, such kind of

activities become already a realm in so called national research universities in Russia (unfortunately, the famous Russian bureaucracy – problems with instruments import, huge amount of reports, statements, etc., to be filled in and directed to the Ministry, are worsening the effect of this initiative).

But certainly, to establish a sound balance of academic cross-border mobility of Russian scientists, and to turn around the conditions for academic elite reproduction in Russia, a more sustainable and efficient State approach of supporting the national innovative system is needed, including not only singled isles of spin-off-oriented research and high-tech ventures and financial institutions (Skolkovo) but systematic change of incentives for economic agents, “enforcing and convincing” them to support and apply R&D – due to technology corridors, supporting of high-technologies based clusters, etc. In the context of such multifaceted changes activities of foreign scientific foundations will become rather the supplement to national programs of modernizing of Russian science.

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