# Who is Happy in Doctoral Programs:

## The Connection between Employment and Learning Outcomes of PhD Students

**S. Bekova, Z. Dzhafarova**

Received in May 2018

**Saule Bekova**
Junior Research Fellow, Centre for Sociology of Higher Education, Institute of Education, National Research University Higher School of Economics. Address: 20 Myasnitskaya Str., 101000 Moscow, Russian Federation. E-mail: bekova.sk@gmail.com
**Zibeyda Dzhafarova**
Research Assistant, Centre for Sociology of Higher Education, Institute of Education, National Research University Higher School of Economics. Address: 20 Myasnitskaya Str., 101000 Moscow, Russian Federation. E-mail: ziba.jafarova@gmail.com

**Abstract.** Doctoral education in Russia has high dropout rates. Many experts have attributed this to the generally low amounts of financial aid afforded to PhD students, which prompts them to seek out employment while pursuing a doctorate. However, current discussion is largely anecdotal in nature as it is mostly based on expert conjectures that only reflect limited statistics or rather cursory evidence from individual cases. Drawing upon findings from a 2016 survey of PhD students at leading Russian universities, we assess the extent and types of employment of postgraduates, as well as the experiences of those PhD students who balance work and study and the main challenges that confront them. We explore how such factors as one's area of employment, the type of contract worked, and the nature of the job performed affect how PhD hopefuls conceive of the educational process alongside their specific learning outcomes and career prospects. We conclude that balancing work and study can benefit both the academic performance and professional experiences of PhD students, but only insofar as the topic of one's PhD thesis research is closely aligned with what they do in the workplace. The results of the study can be used when developing measures to reform doctoral education both at the institutional and nation-state levels.
**Keywords:** doctoral education in Russia, PhD students, employment, dropout rate, balancing work and study.

**DOI:** 10.17323/1814-9545-2019-1-87-108.

Doctoral education in Russia has high dropout rates: Only about 60% of PhD students complete their track and only 13% defend their thesis during the expected period of study[1]. These levels are compara-

*Translated from Russian by I. Zhuchkova.*

[1] Russia in numbers. Statistical bulletin, Rosstat, 2017. http://www.gks.ru/free_doc/doc_2017/rusfig/rus17.pdf

ble with data recorded in a number of other nations. For example, the dropout rate in certain PhD programs is between 70 and 90% in Spain [Castello et al. 2017], it is about 30% in Australia [Bourke et al. 2004], and about 50% in the USA [Ali, Kohun 2006]. However, what clearly sets these countries apart from Russia is that they have increasingly emphasized researching into the factors that influence attrition among PhD students. By contrast, to date there have been few studies on the subject in Russia, so that the conceptions and judgements developed about the efficiency and outcomes of postgraduate education in this country have this far basically resided on expert conjectures rather than hard fact.

It is frequently the case for the public discourse to point out the need to juggle work and study as a major factor that harms the completion rates in Russian doctoral training [Reznik 2015; Balabanov et al. 2003]. Certainly, it would not be all that difficult to understand this assumed correlation between a student's employment and whether they can ultimately make it to the PhD finish line. This is specifically true insofar as a success with a doctorate inevitably implies ploughing a good deal of time and effort to handle the coursework and defend a thesis to complete the degree, while how much public scholarship is paid to Russian PhD students is reported to never exceed the minimum subsistence level in the country[2]. Furthermore, we should factor in that the vast majority of doctoral programs in Russia are full-time. Accordingly, unless one is at an advantage of having extra sources of income and does not need to provide for themselves, a PhD student just cannot but seek out employment, and hence a conflict between work and study may arise.

However, although this proposed link between student employment and dropout rates in programs of doctoral education seems to be obvious enough to be taken for granted, it does not always hold up to what empirical scrutiny suggests. For example, Balabanov et al. [2003] have found PhD students who work 20 or more hours per week to be able to successfully handle their doctoral thesis research. This may be viewed as evidence to further attest to the Warren theory [2002], which proposes that the extent of one's engagement in labor becomes a factor material for the student's doctoral performance only insofar as it transpires in conjunction with one's general lack of interest in learning. Studies have reported divergent findings for the link between working while studying for a PhD degree and the outcomes of doctoral education. Bair and Haworth [2004] have shown that doctoral hopefuls who dropped out from the track would typically indicate combining work and study as a factor that precluded their academic success, whereas those informants who made it to graduation were likely to see employment as positively influencing

[2] http://government.ru/docs/25763/, http://government.ru/docs/30552/

their progress with the doctorate. The authors point out that it is fairly common for doctoral students in certain fields of training to work nine to five, which often provides them with important hands-on exposures to underpin the theoretical groundwork they build while doing the coursework and independent thesis research [Ibid.]. Yet, we should note that a comparison of systems of doctoral education in Russia and other countries is limited by how they differ in terms of the overall organization of training, available public scholarships and other financial incentives, etc.

From what Russia's rather scarce body of research on the subject has suggested so far, we can only identify financial pressures and the need to earn an independent living as a major reason why a significant proportion of PhD students choose to work while pursuing their degree [Balabanov et al. 2003; Reznik 2015]. To date, there have been no studies to thoroughly look into how the factors of where Russian doctoral students are employed, what exactly they do for a living and how much they blend work and study influence their doctoral experiences and learning outcomes. Exploring these correlations is specifically relevant given the changes that doctoral schools in Russia and elsewhere across the globe have seen in terms of how PhD programs are structured and delivered, where more emphasis is placed on both the quality of independent research and how well one is able to master individual assignments, modules and dimensions of the mandatory coursework as envisaged by a particular doctoral program [Kehm 2006; Bednyi 2017; Bao, Kehm, Ma 2018].

In this paper, we analyze findings from surveying a cohort of students enrolled in PhD programs at leading Russian universities to gauge the extent to which they combine work and study as well as how various parameters of labor, such as the field where they are employed, the job position held, etc., are related to different facets of their experience in a doctoral track.

## 1. Data sources

The study is based on the survey of PhD students at 14 Russian universities (twelve universities are participants of the "5–100" Russian Academic Excellence Project and two more are federal universities) that was conducted in 2016. A total of 2,020 postgraduates took part in the survey, which translates into about a quarter of all doctoral enrollees at these universities. The response rate varied from 8 to 53%. The main characteristics of the student sample are presented in Table 1.

## 2. Limitations

Before we proceed to discuss the results of our survey, we should first remark on the limitations of this study that must be considered while interpreting and further applying the reported findings.

Our survey was limited solely to the stated cohort of students who at the time of this survey were enrolled in PhD programs at leading

Table 1. **The main characteristics of the PhD student sample**

| Item | Sample split,% |
|---|---|
| Year of study | |
| First | 39 |
| Second | 32 |
| Third | 20 |
| Fourth | 9 |
| Major | |
| Mathematics and Science | 30 |
| Humanities | 9 |
| Engineering and Technology | 30 |
| Social Sciences | 26 |
| Education and Pedagogy | 4 |

| Item | Sample split,% |
|---|---|
| Gender | |
| Male | 55 |
| Female | 45 |
| Mode of study | |
| Full-time | 88 |
| Part-time | 12 |
| Mode of funding | |
| Public scholarship | 85 |
| Tuition-paying | 15 |

Russian universities, as detailed in Section One above. Postgraduates at any other higher education institutions were beyond the scope of our analysis. Accordingly, the obtained results are relevant exclusively with respect to the specified group of PhD students.

Our study was framed as a one-time survey among PhD students across certain leading Russian universities. The respondents were asked for their motives to enter a doctoral program, a posteriori, and how they conceived of their prospective PhD defense and employment plans, a priori. It should be noted that the sourced recollections and anticipations of life events are evaluative in nature and therefore provide less accurate grounds for inference than firm facts, which were impossible to be obtained given the design framework chosen for this study. Carrying out a longitudinal panel could provide more plausible and representative results.

However, despite the limitations imposed by how this study has been designed, we believe that the data we have obtained about students' plans for PhD defense are reliable and suitable for making reasoned conclusions. Since the survey was conducted back in 2016, some of the respondents who at the time of this study were in senior years of their doctoral training already completed their programs by the moment this paper was being drafted. Insofar as there were personal survey links available, this has allowed us to supplement the data sourced for PhD students at one of the participating universities by factual information about what academic outcomes they ultimately had. There were only administrative records on 92 enrollees

who completed their PhD program (3+1 years of study) available in the university database, which limits our ability to come up with fully justified judgement. Nevertheless, we have found this sample to exhibit a correlation between one's reported plans regarding PhD defense and whether they have actually made it to the PhD hooding: There were significantly more students who received their doctorate among those who previously indicated they were inclined to go for PhD defense within the regular term of study ($\chi^2 = 11.444$, $p < 0.003$). This enables us to assume that the data we have obtained on whether and when one is looking to defend their PhD thesis can be reasonably deemed as valid and suitable to plausibly judge about the outcomes of doctoral training.

## 3. Results

Our survey has found that the vast majority (90%) of Russian doctoral students are employed. The most common mode of employment (34% of the respondents) is full-time work outside the university (see Figure 1).

Those who are employed at the higher education institution (HEI) where they study are the most likely to pursue academic jobs (58% are engaged in various kinds of research and another 43%, in teaching) as well as administrative positions (about a quarter of the informants)[3]. We have found the nature of the work that one is into to exhibit a correlation with the field of their doctoral pursuit. There are more researchers among those who study for a PhD in Math and Engineering (75 and 62%, respectively), while the majority of doctoral candidates in Education (70%) are employed in teaching and instruction. A significant portion of those who pursued a doctorate in Social Sciences (35%) and Humanities (38%) have reported to hold various administrative positions.

Of the PhD students who are employed outside their university, the largest share hold non-academic positions with corporate entities (38%). Only 17% of the respondents indicated that they pursued research jobs outside the academia.

In the course of our study, we found the status/type of employment to be correlated with a number of socio-demographic attributes of the PhD students, as detailed in Table 2 below.

In what follows, we focus on how factors of employment of PhD students are related to their choices and experiences along the course of doctoral study, from the moment they enter a PhD program and through how they conceive of their prospects for thesis defense and future career.

[3] The total exceeds 100% reflecting the respondents who indicated they were doing more than one job as of the time of the survey.

Figure 1. **The PhD student sample broken down by type of employment** (%)

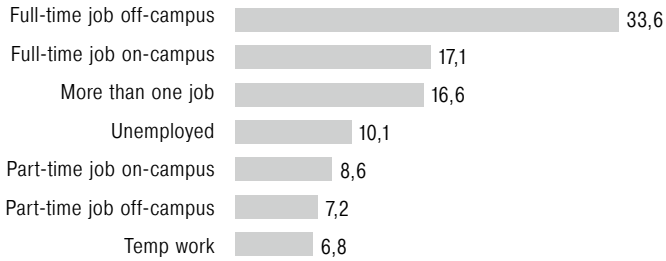



Table 2. **How socio-demographic features of the PhD student sample are related to the type of employment**

| | Full-time job on-campus | Full-time job off-campus | Part-time job on-campus | Temp work | More than one job | Unemployed |
|---|---|---|---|---|---|---|
| Major | 36% Engineering | 22% Math | 46% Math | 17% Engineering | 43% Engineering | 18% Engineering |
| | 22% Social | 36% Social | 24% Engineering | 32% Social | 15% Social | 17% Humanities |
| | | | 16% Social | | 4% Humanities | |
| Gender | 55% Female | | | | 68% Male | |
| Income level | | 30% Low | | 50% Low | | 47% Low |
| | | 70% high | | 50% High | | 53% High |
| Year of study | 33% First | | | 49% First | 34% First | 46% First |
| | | | | 3% Fourth | 24% Third | |
| Mode of study | | 21% Part-time | | | | |
| Mode of funding | 92% State-funded | 76% State-funded | 93% State-funded | 90% State-funded | | |

*Note:* The table provides only statistically significant correlations, where a positive correlation is shaded and a negative correlation is no shaded.

### 3.1. Entering a PhD program

Our survey has found that a major proportion of PhD students choose to stay at their alma mater as they decide to continue into doctoral education (82%). Russian universities have traditionally seen high rates of academic inbreeding, which is a practice whereby graduates are recruited to pursue advanced training for doctoral credentials or offered

employment at the university where they earned their undergraduate degree [Altbach, Yudkevich, Rumbley 2015; Bekova et al. 2017].

When we analyze how the rates of inbreeding are distributed across our sample of PhD students as related to their status/type of employment, the following patterns can be noted. There are significantly more inbred doctoral students among those who are employed at the university; only 11% of PhD pursuers working at the university have reported that they completed their previous degree at another HEI. Of those who at the time of the survey were solely into their doctoral studies and had no employment, the proportion of inbound students was more than twice (26%) the rate recorded among the sub-group of students working at the university. Finally, among those who indicated that they were employed outside the university, about slightly less than a quarter (21%) were doctoral students who previously graduated whom a different HEI. The correlation between the rates of inbred students among doctoral pursuers and their status/type of employment is likely to be shaped by various factors including, inter alia: whether there are any barriers confronting those non-alumni who seek out employment at the university where they are now enrolled in a doctoral program; how the labor orientations of PhD students differ depending on whether they have chosen to continue into doctoral training at their alma mater or have opted for a different HEI to pursue a PhD degree at; etc. For one thing, there is reason to expect doctoral inbreds to enjoy extensive social and professional contacts at their alma mater, so that they are arguably better informed about their academic environment, job opportunities, etc., which should all bolster their chance of securing employment as desired. Also, PhD students may prefer to continue in a job that they took up earlier while training for their Bachelor's or Master's degree. At the same time, a university's policies may clearly favor hiring among its own graduates as a vehicle whereby recruitment challenges and risks can be alleviated, which in turn restrains employment opportunities for inbound doctoral corps.

Apart from the said factor of roadblocks that curb the prospects of PhD students to land a position at the HEI they are enrolled in, doctoral pursuers may choose to take up a job outside the university as feeling more inclined for a non-academic career. We can obtain a glimpse of how students' professional aspirations are shaped by looking at their motives for entering a program of doctoral education. Figure 2 presents statistically significant correlations between why the students chose to go for a doctorate and their status/type of employment. As the analysis shows, of those who at the time of the survey were employed at the university, nearly two-thirds (68%) have indicated pursuing an academic career as the main reason why they chose to study for a Ph D. At that, among those who have reported that they view a doctoral degree mostly as an added asset to help leverage their career in a non-academic environment, there is a substantially greater proportion of PhD students working outside the university.

Figure 2. **How student motivations to pursue a doctorate are related to the type of employment** (%)


By way of a recap, we can point out the following main conclusions that resulted from analyzing what essentially propelled the students to pursue a doctoral degree and how these motivations are linked with their status/type of employment and conceptions about future career. The vast majority of Russian PhD students opt to study for doctoral credentials at the HEI where they completed their previous degree. There are significantly more inbred students among those who work and study at the same university, and these students report they are unlikely to change the employer after they complete their Ph D. How doctoral pursuers who are the university's alumni and those who hold their basic degrees from other HEIs differ in what instigated them to go for a doctorate and the type of employment they have may speak to various entry barriers facing inbound student corps, the overall low rates of mobility and a hierarchical nature of the Russian academic environment.

### 3.2. Studying for PhD degree

Russian doctoral schools have been actively transitioning to a model where much more weight is attached to how a candidate performs across various study modules and dimensions of the core coursework, whose mastering is mandatory to make it to the PhD finish line. Naturally enough, it takes doctoral pursuers greater involvement and diligence to handle the program as the role and scope of curriculum routines have substantially increased [Bednyi 2017]. Consequently, students often find themselves confronted with a more challenging PhD environment where one is required to successfully juggle more in-person course load as well as their commitments for independent thesis research, writing papers, presenting at conferences, etc. Let us now take a closer look at how students' experiences of progressing along the PhD course of study under these new and often more demanding academic conditions are linked with their employment.

According to our survey, the vast majority of PhD students (73%) find themselves having hard times balancing their work and study. We have identified the students who work nine to five outside the university to be the most likely to report that they have difficulties combining job and doctoral education (89%). There was a lower proportion of those who responded so (65%) among the students working full-time at the university where they pursue their doctorate ($\chi^2 = 132.713$, $p < 0.000$). About half of all the informants have indicated that they lacked time and capacity to effectively handle their doctoral curriculum, of whom those who were employed full-time outside the university were the most frequent to report so (65%, $\chi^2 = 161.089$, $p < 0.000$).

Whether PhD students will experience more difficulty in balancing work and doctoral pursuit exhibits a correlation with to what extent the area and exact topic of their thesis project are in sync with the nature of their job. We have found those students whose work is barely related in its nature to the subject of their PhD research to be more frequent to report they were literally struggling to co-handle their workplace duties and doing a doctorate. Of this cohort, the PhD students who at the time of the survey were employed outside the university were more likely to indicate having major difficulties progressing along the curriculum (63%, $\chi^2 = 69.494$, $p < 0.000$) than their counterparts who worked at the university (45%, $\chi^2 = 46.798$, $p < 0.000$).

Among the students who pursue jobs with the HEI at which they are enrolled in a PhD program, it was primarily the holders of positions in administrative support and instruction who reported they were sorely lacking time and personal resource to manage it through their doctoral coursework and research project. More than half of the PhD students employed in administrative roles (58%, $\chi^2 = 85.048$, $p < 0.000$) have noted only a scarce connection between what they do in the workplace and the topic they are researching into, while the proportion of those reporting so among their peers who are university instructors was 34% ($\chi^2 = 49.296$, $p < 0.000$). By contrast, more than half of the PhD hopefuls who serve in research positions at their university (55%) have indicated that the subject of their PhD thesis is directly related to the nature of their work. Of the cohort of PhD pursuers who work and study at the same university, the share of those who found themselves having hard times balancing their employment and studies was 29% ($\chi^2 = 30.999$, $p < 0.000$) among the PhD students who are holders of research positions, it was 39% ($\chi^2 = 23.650$, $p < 0.000$) among those into teaching jobs, and it was 40% ($\chi^2 = 13.324$, $p < 0.004$) among the students employed as administrative staff.

Our analysis has found that those PhD students who pursue employment outside the HEI where they study for a doctorate are likely to be confronted with even more acute challenges of successfully balancing their work and study. Of this cohort, nearly half (46%, $\chi^2 = 14.642$, $p < 0.001$) have indicated that the subject of their PhD project had almost nothing to do with their work. Those who are con-

tingent employees who mainly pursue gig jobs of fixed-term project nature or alike were the most inclined to report a very poor connection between what they were doing for a living and what they were researching into on the PhD track (63%, $\chi^2 = 30.944$, $p < 0.000$). Naturally enough, there was a significantly higher share of PhD students who found themselves into major problems co-handling their work and study among those who at the time of the survey were employed outside the university (57%) than among their counterparts who were the HEI employees (31%, $\chi^2 = 244.321$, $p < 0.000$). Thus, PhD hopefuls who are employed at their university — and specifically those who are holders of research-centric positions — are less vulnerable to pressures of combining work and academics than their peers who pursue careers outside their university.

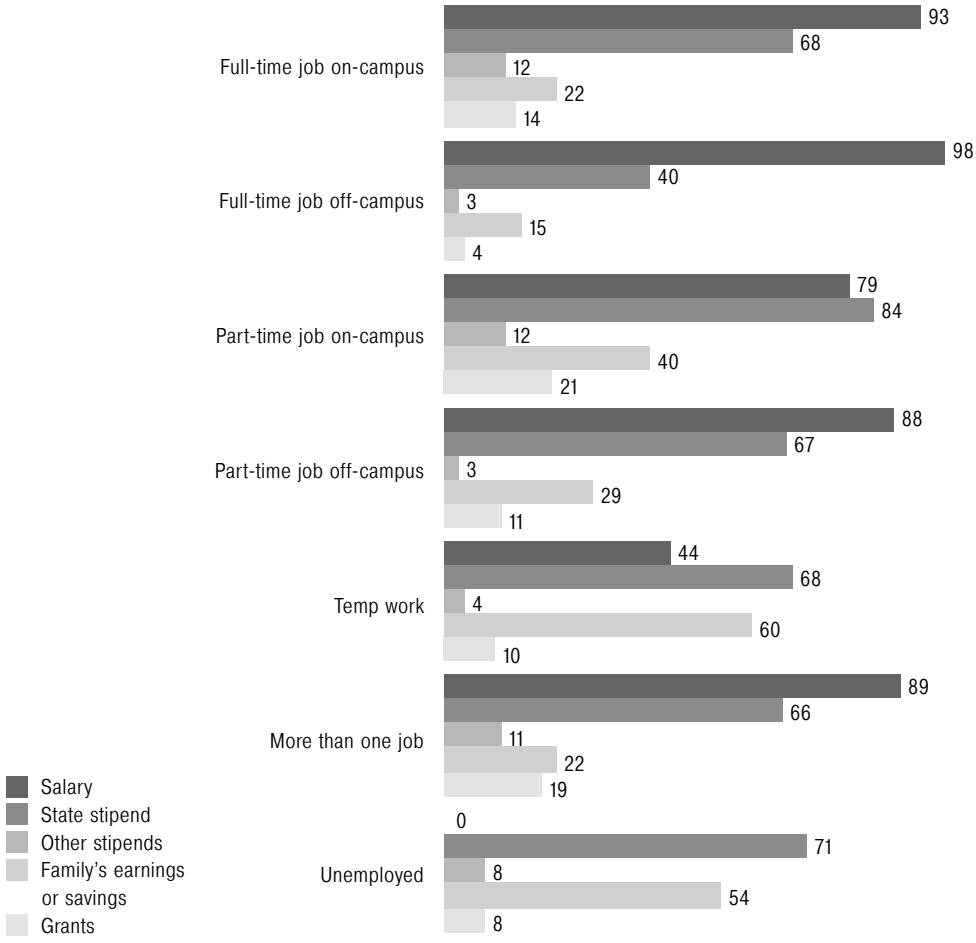
The respondents who study for a PhD and pursue a job at the same university are likely to report more positive experiences and assessments of their doctoral education. There was a greater proportion of doctoral students who were full-time university employees (57%) than of their counterparts working nine to five outside the HEI where they do a PhD degree (46%, $\chi^2 = 27.412$, $p < 0.007$) to evaluate their learning experience as of utility in their job.

Our survey has found the lack of finances to confront the vast majority of PhD students (73%). Those doctoral pursuers who at the time of the survey did not have permanent employment were the most likely to remark they were experiencing financial difficulties (81%), whereas their peers who worked full-time outside the university were the least inclined to report so (68%, $\chi^2 = 244.321$, $p < 0.000$). Of this latter sub-group, the majority have responded that the salary they received under their full-time contract accounted for the bulk in their total earnings, while the remainder of the sample would most typically report a more diversified structure of income sources (see Figure 3). At that, a significant proportion of those PhD students who indicated having more than one source of income would still note that they found themselves exposed to financial pressures.

To conclude, doctoral students who work nine to five outside the academia are likely to enjoy a more secure financial position, albeit often to the detriment of how well they are able to handle their PhD curriculum. Contrariwise, those students who work at the university or do temporary jobs will typically report more positive and fulfilling doctoral experiences, however they are likely to be facing more financial pressure.

How combining work and study may affect the capacity of a PhD student to interact with their supervisor is another important dimension in exploring the learning experiences and outcomes of doctoral pursuers. Despite the aforementioned departure of modern doctoral programs from the supervision-centric model, we can still hardly overestimate the role that the academic supervisor plays in steering a candidate toward a PhD degree. There have been multiple studies to sug-

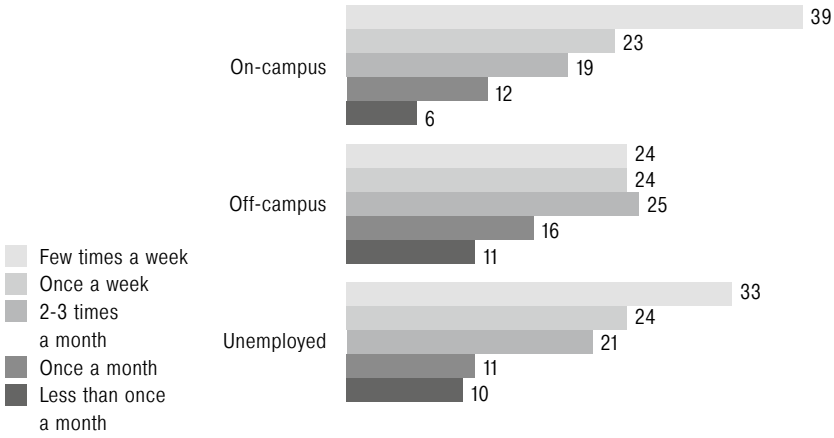
Figure 3. **Main sources of income by type of employment** (%)




gest that how frequently and effectively one is able to interact with their assigned academic lead is a major factor of doctoral success [Hockey 1991; Lipschutz 1993; Zhao, Golde, McCormick 2007; Balabanov, Bednyi, Mironos 2007; Mainhard et al. 2009; Erstein 2011]. It is not only that the PhD supervisor guides a hopeful along the research and thesis writing process, but he or she also plays a pivotal role in facilitating important networking conduits whereby the doctoral candidate gradually becomes an integral part of the HEI's academic environment and beyond [Girves, Wemmerus 1988].

Our survey has found 90% of the PhD students to hold consultations with the academic supervisor on topics pertinent to their thesis research at least once a month. Those who work and study for a doctorate at the same university have reported they typically had aca-

Figure 4. **How frequently PhD students with different types of employment are able to interact with their academic supervisor** (%)




demic consultations on a more frequent basis (see Figure 4). Furthermore, nine in every ten doctoral students who worked at the university (90%) have responded that they also interacted with their supervisors on topics other than those directly related to the PhD project, whereas the share of students who reported so among the sub-group of doctoral pursuers employed outside the university was only roughly half as large.

Provided that holding regular consultations with the academic supervisor is still very important for successfully making it to the PhD finish line, there is reason to assume that students who fall short of opportunity to interact with their PhD project lead may be exposed to greater risks of academic failure.

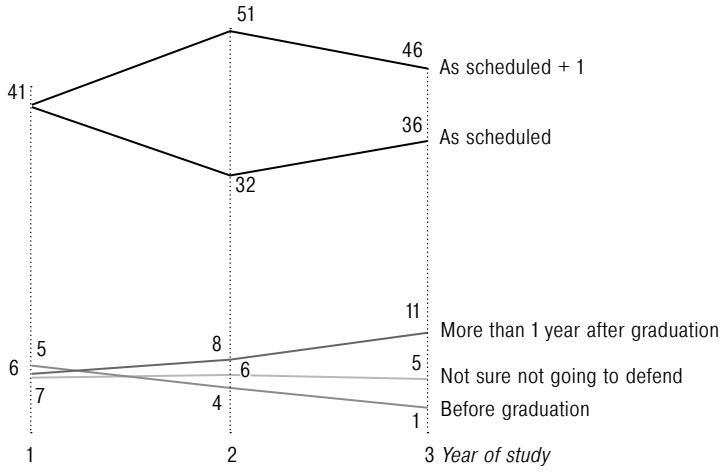
### 3.3. Outcomes of PhD education

Within the framework of this study, we have considered students' plans regarding PhD thesis defense and how they conceive of their career, including the desired field of employment, any inclination for academic work and any challenges likely to confront them in building a fulfilling career, as the main outcomes of their doctoral pursuit.

#### 3.3.1. Prospects for thesis defense

The overwhelming majority of PhD students (83%) have reported that they expected to defend their doctoral thesis within the policy term of study or within a timeframe of up to one year following the completion of their program. Yet, we should still point to a certain degree of variation in how students with different employment status conceive of the most likely timing of the upcoming doctoral defense. Namely, half of the students who at the time of the survey had no employment and were entirely focused on their PhD pursuit have indicated that they expected to proceed to their thesis defense within the regular term of

Figure 5. **When PhD students in different years of study expect to proceed to thesis defense**




study. Insofar as PhD freshmen account for as much as almost half (46%) of those who have reported they did not combine their study with any kind of employment, it is perhaps no surprise that more optimistic perceptions about the likely timing of their doctoral defense have been recorded in this very sub-group of PhD pursuers. Figure 5 gives a visual idea of when doctoral students in different years of study expect to take their PhD defense.

Those PhD hopefuls who at the time of the survey were employed at the university have indicated that they were going to take a doctoral defense a year after completion of study or later. This assessment of the likely timing of PhD defense may reflect how much students in this sub-group are involved in their academic environment.

Among all the students surveyed, there was only a small proportion of those to report that they were uncertain of whether they would be able to make it to the PhD defense or that they were not going to defend a thesis at all. At that, students who worked a full-time contract outside the university were by a wide margin the most likely to respond one such way (7%). Here we should note that once they are asked about the likely timing of their PhD defense, and specifically when confronted with the "I will not proceed to thesis defense" option on the survey questionnaire, students are willy-nilly exposed to significant emotional distress, which just cannot but affect to a certain degree the results that we are able to obtain. Since the student is in fact prompted to admit their academic failure when he or she chooses to tick out the "I will not proceed to thesis defense" option, there is reason to deem the resulting indication for how many students of the entire sample will ultimately fail to make it to the PhD defense to be bi-

ased downwards. These considerations also suggest that working a full-time contract outside the university while studying for a doctorate is a factor that can materially harm one's prospects for PhD success.

3.3.2. Career preferences

The career path that a student is looking to embark on after completing their PhD credentials is an important aspect of exploring the learning experiences and outcomes of doctoral students. When a PhD graduate is found to be disposed to continue into academic work, this may be viewed as testimony to the effectiveness of doctoral education insofar as one of its main institutional and economic goals, which consists in ensuring the reproduction of qualified academic staff, is fulfilled in this case [Bednyi 2017]. For all that, studying for a doctorate may be also considered as a period when one's professional conceptions and mindsets are being actively shaped. Accordingly, if we take this angle of view, we can note that the vast heterogeneity in prospective career choices of doctoral students may be an indication that the essential imperatives and the content of PhD education need to be revised in many cases.

Where PhD students work while studying for doctoral credentials is the most significant factor in determining one's longer-term career plans. Those students who at the time of the survey had full-time or part-time employment at the university have been found to be the most inclined for a future career in academia. Overall, among the entire student sample there was a significant proportion of those who have reported that they would like to continue into a university career after the PhD hooding, irrespective of their type/status of employment as of the moment of our survey (see Figure 6).

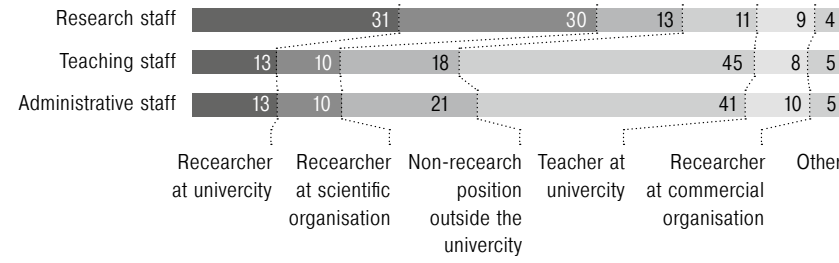
However, of the PhD students who combined their doctoral pursuit with employment outside the university, there was a much lower share of those to indicate intent for taking up an academic career. This observation only further confirms the preference pattern that was discovered when analyzing students' motivations for enrolling in a doctoral course: There was a substantially greater proportion of PhD pursuers employed outside academia than of their counterparts working at the university to report that they viewed a doctoral degree as primarily an added asset to bolster their prospects for a good job in a non-academic field. More than a third of PhD students who as of the moment of the survey were employed outside the university have indicated no plans of seeking out academic employment at any time in future. Of this sub-cohort, those who worked a full-time contract have been found to be the least inclined to pursue an academic career (63% of this group reported no such plans; see Figure 7).

What exactly a PhD student does for a living (i. e., the nature of the job that one performs while pursuing a doctorate) is yet another factor that plays a major part in shaping orientations for a future career. The vast bulk of PhD hopefuls who at the time of the survey worked at the HEI where they were studying for a doctorate have expressed no

Figure 6. **How students' career preferences are distributed depending on the type/status of employment**


Figure 7. **How students' career preferences are distributed depending on the type of employment and contract worked**

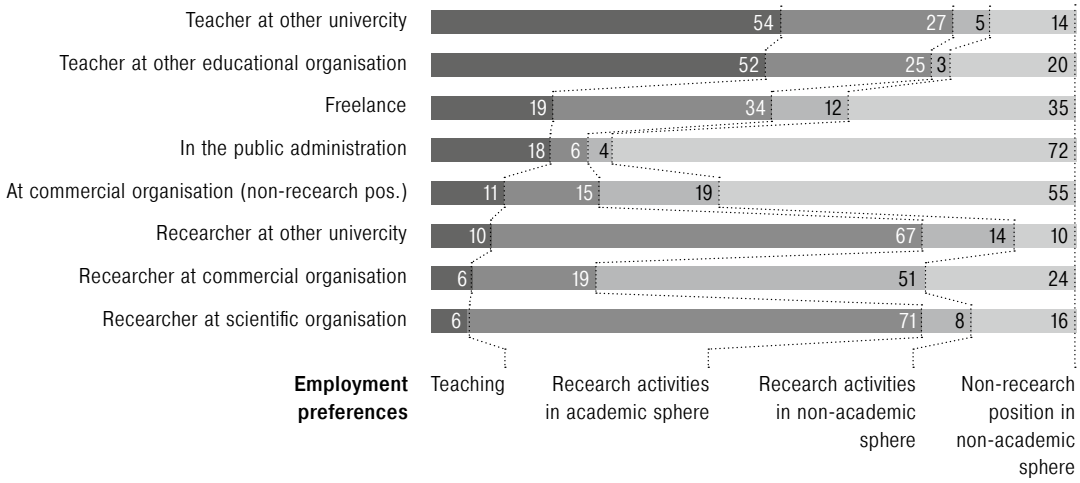

Figure **8. How career preferences of the students that are employed at the university are distributed depending on the nature of their job**




plans of changing their employer after they complete their program of study. Nevertheless, we should note that this proportion is slightly lower among students in research positions (80%) than among their peers who serve as instructors (87%) or hold auxiliary administrative roles (89%). This variation in how the likely career choices are distributed depending on the nature of the job one is into while studying for a PhD is arguably attributable to the fact that those students who are holders of research positions may opt to continue their career in R&D along a relatively wide spectrum of pathways with either another institution, a business organization, etc.

Nearly half (45%) of the PhD students who at the time of the survey were holders of instructional positions at the university have indi-

Figure 9. **How career preferences of the students working outside the university are distributed depending on the type of employment and the nature of the job performed**




cated that they were likely to stay in teaching upon completing their doctorate (see Figure 8). Among the respondents who were employed in various administrative roles, 41% have pointed out plans to move into teaching while another 13% have expressed their intent to take up a research career at the HEI where they were enrolled in a PhD program.

There was a greater percentage of PhD students among those into instruction or administrative support than among their peers who at the time of the survey were holders of research positions to indicate that they may be quitting the university following their PhD defense to enter a non-academic career (18% and 21%, respectively).

Thus, our analysis has revealed the following patterns in how the reported career preferences are distributed among the PhD students employed at the university depending on what kind of job they were into while pursuing a doctorate. For one thing, those working in research positions have exhibited strong determination to continue their career in R&D, albeit they may be considering finding employment outside the academia once they defend their doctorate. At that, PhD students who are instructors or administrative staff have been found to be generally inclined to continue working at the university, however many of them would like to change what exactly they do in the workplace.

Those PhD students who at the time of the survey were employed outside the university have mostly reported that they were unlikely to change their sector of employment or the nature of the work performed after completing their doctoral education (see Figure 9).

Finally, those PhD students who at the time of the survey were contingent employees doing casual jobs or had no employment have been identified to be the least certain about their professional future. More than a quarter of the respondents in these sub-groups (26 and 30%, respectively; $\chi^2 = 93.370$, $p < 0.000$) reported that they had not yet settled upon their career path, which, in their opinion, represented a serious challenge. For comparison, the PhD students who worked a full-time contract either at or outside the university were by a significant margin more likely to express well-defined professional plans: About half of them indicated that they had already decided upon their career. This may suggest that what the PhD students in this latter subgroup have opted to do for a living during the term of their doctoral pursuit can be viewed as a conscious choice that is largely in line with the professional conceptions and mindsets that they have developed.

Thus, we can conclude that those students who choose to work while being enrolled in a program of doctoral education are likely to exhibit much more clear-cut orientations for their future career. At that, the cohorts of PhD hopefuls who are employed at and outside the university tend to report starkly polarized career plans.

## 4. Discussion

The survey results have shown that the vast 90% of postgraduates combine study with work[4]. At the same time, the students' employment characteristics vary and relate differently to students' perceptions of the study process and their career plans.

The current place of employment has a significant correlation with postgraduates' career prospects. There are more PhD students pursuing an academic career among those who have a full or part time job at a university. These students' initial motivation for postgraduate studies is to build a career at university; they plan to work in academia and value the opportunities offered by their programmes. This might indicate the doctoral education in Russia at its current state better corresponds to the interest of academically oriented postgraduates, since the doctoral education is still perceived as a place to train professional academic staff [Bednyi 2017]. The rigidity of doctoral education and its focus on academically oriented postgraduates can be a significant limitation for its development. An increase in employment options for doctoral graduates is a worldwide trend [Nerad 2006; Mangematin 2000; Lee, Miozzo, Laredo 2010] determined by the limited academic labor market which should inevitably push out specialists with a PhD degree to other markets. Researches have shown that the distribution of postgraduates between academic and non-aca-

[4] At the same time, according to the Russian Monitoring of the Economic Situation and Public Health conducted by National Research University Higher School of Economics, the proportion of the unemployed within the youth cohort between ages 22 and 27 is much higher (42%).

demic professional spheres is not the same in different countries, but employment outside the university often prevails. To illustrate, among the French 1986–1994 doctoral graduates in Engineering there were half whose initial motivation for a postgraduate study was to work in a non-academic sphere upon graduation [Mangematin, 2000]. An academic career is not a priority for graduates with a doctorate in Engineering and exact sciences in the UK as well: less than 20% of graduates are employed in permanent positions in academia [Lee et al. 2010]. The situation is similar in other fields: Bednyi, Gurbatov and Ostapenko [2013] have found that the majority of the Humanities and Social Sciences doctoral graduates at one university are employed in the non-academic sphere.

On one hand, the predominant employment of postgraduates outside the academia may indicate a surplus of highly qualified academic staff. Researchers pose a question — is a PhD degree necessary to develop a non-academic career [Manathunga, Lant 2006; Gaeta et al. 2016]? On the other hand, such situation with the postgraduate employment challenges the value of doctoral education in its current state. Does the doctoral education really provide the unique skills necessary for research jobs outside the academic sphere or does the PhD degree rather have a symbolic value for its holders and represent a signal for employers? In any case, the orientation of postgraduate education towards careers in academia is reasonable only if it corresponds to the labor market demand. If there are more graduates with the PhD degree than academic institutions may offer, or if some of PhD students initially intend to pursue a non-academic career, it may be worth revising the postgraduate training system, taking into account the global trend of expanding career opportunities for PhD graduates.

The doctoral study is the most comfortable for full-time university employees. Regardless of their overall workload, they do not consider as a challenge neither the need to combine work and study, nor the study load, nor the forthcoming employment. This group of respondents continued to study at the same university where they obtained their previous level of education and they not consider other universities, which is typical for Russian postgraduates. However, according our research, the percentage of academic inbreds is higher among those employed at university and they do not intend to change the place of employment after graduation. The closed nature of doctoral education conditioned by the low academic mobility and hierarchical structure of academic society in Russia becomes apparent already during the study period. The consequences of inbreeding are controversial. While some researchers have not found any effect of academic inbreeding on scientific productivity, others have found that less mobile scientists are less effective in their research. They have fewer publications in general and specifically in international journals; they are more focused on communication within the university which

may limit their academic horizons [Yudkevich, Gorelova 2015]. The negative consequences go beyond personal and institutional losses and reach the national level. Of course, the presence of academically oriented postgraduates who successfully combine study with full-time employment and are satisfied with doctoral education organizational structure can be considered as strength of doctoral education, however, this group constitutes less than one fifth of all postgraduates.

The most common type of postgraduate's employment is full-time work outside the university. Usually there is little connection between such jobs and students' thesis topics which can negatively affect the doctoral education outcomes. This group of postgraduates report difficulties in combining work with study. After graduation, their plan is to pursue a non-academic career.

The vast majority of postgraduate students experience financial difficulties. Foreign studies have shown that the postgraduate's academic success (usually measured by the fact of thesis defense or time to degree) is correlated with the type of financial support: foreign postgraduates who receive full funding or are employed as research fellows generally complete doctoral programs more often. They also receive the degree faster in comparison to those who do not have such financial support and must provide for themselves [Abedi, Benkin 1987; Baird 1990; Ehrenberg, Mavros 1995; Lovitts 2001; Stock, Siegfried 2006; van der Haert et al. 2013; Spronken-Smith, Cameron, Quigg 2018]. In the Russian context, the most similar is the situation when a postgraduate works and studies at the same institution.

Foreign studies have also shown that PhD students with off-campus jobs are less involved in the life of their departments and are less likely to become a part of the research and teaching team as compared to research fellows, which ultimately affects their progress [Girves, Wemmerus 1988]. Our data have also shown that those who employed full time outside the university are the most at risk. Universities usually lose this group of students, as they are already less focused on studying than on theirs job, planning to work in a non-academic sphere, less involved in the education process, experiencing the most difficulties. There is also the highest rate of those who are not planning to defend their thesis among this group. Of course, the cross-sectional study design limits the use of the data, which could be solved by using long-term studies showing the connection of type of employment with various educational effectiveness indicators at the doctorate level. However, the clear distinction between postgraduates with different types of employment and their relation to the different financial support options can be already stated based on the existing data analysis.

Of course, the mode of funding is a complex characteristic that reflects not only the study conditions, but also a postgraduate's level of training or academic motivation. In any case, the absence or insufficient financial support of postgraduates is a risk factor for the doc-

toral education effectiveness, especially if a postgraduate works outside the university, when his or her work duties do not correspond to the thesis topic. The survey was conducted at the leading Russian universities whose financial capabilities are much higher than those of other universities. Therefore, if postgraduates face financial difficulties here, then the scale of this problem in other universities may be even greater.

## References

Abedi J., Benkin E. (1987) The Effects of Students' Academic, Financial, and Demographic Variables on Time to the Doctorate. *Research in Higher Education*, vol. 27, no 1, pp. 3–14.

Ali A., Kohun F. (2006) Dealing with Isolation Feelings in IS Doctoral Programs. *International Journal of Doctoral Studies*, vol. 1, no 1, pp. 21–33.

Altbach P. G., Yudkevich M., Rumbley L. E. (2015) Academic Inbreeding: Local Challenge, Global Problem. *Asia Pacific Education Review*, vol. 16, no 3, pp. 317–330.

Bair C. R., Haworth J. G. (2004) Doctoral Student Attrition and Persistence: A Meta-Synthesis of Research. *Higher Education: Handbook of Theory and Research* (ed. J. C. Smart), New York: Springer, vol. XIX, pp. 481–533. doi:10.1007/1–4020–2456–8_11

Baird L. L. (1990) Disciplines and Doctorates: The Relationships between Orogram Characteristics and the Duration of Doctoral Study. *Research in Higher Education*, vol. 31, no 4, pp. 369–385. doi:10.1007/bf00992273

Balabanov S., Bednyi B., Mironos A. (2007) Faktory ehffektivnosti i kachestva podgotovki nauchnykh kadrov v aspiranture (sotsiologicheskij analiz) [Effectiveness and Quality Factors of the Professional Teacher Training at Doctorate Level (Sociological Analysis)]. *Journal University Management: Practice and Analysis*, no 5, pp. 56–65.

Balabanov S., Bednyi B., Kozlov E., Maksimov G. (2003) Mnogomernaya tipologiya aspirantov [Multidimensional Typology of Postgraduates].*Sociological Journal,* no 3, pp. 71–85.

Bao Y., Kehm B. M., Ma Y. (2018) From Product to Process. The Reform of Doctoral Education in Europe and China. *Studies in Higher Education*, vol. 43, no 3, pp. 524–541.

Bednyi B. (2017) Novaya model aspirantury: pro et contra [A New Postgraduate School Model: Pro et Contra]. *Higher Education in Russia*, no 4, pp. 5–16.

Bednyi B., Gurbatov S., Ostapenko L. (2013) Monitoring trudoustroystva vypusknikov aspirantury [Monitoring of Employment of PhD Program Graduates]. *Vestnik of Lobachevsky University of Nizhni Novgorod,* no 5–1, pp. 12–16.

Bekova S., Gruzdev I., Dzhafarova Z., Maloshonok N., Terentev E. (2017) Portret sovremennogo rossijskogo aspirant [Portrait of a modern Russian postgraduate]. *Sovremennaya analitika obrazovaniya,* no 7(15). Moscow: National Research University Higher School of Economics.

Bourke S., Holbrook A., Lovat T., Farley P. (2004) Attrition, Completion and Completion Times of PhD Candidates. *AARE Annual Conference (Melbourne),* vol. 28. Available at: https://www.researchgate.net/profile/Sid_Bourke/publication/228719523_Attrition_Completion_and_Completion_Times_of_PhD_Candidates/links/004635212d98fcc737000000.pdf (accessed 12 January 2019).

Castelló M., Pardo M., Sala-Bubaré A., Suñe-Soler N. (2017) Why Do Students Consider Dropping Out of Doctoral Degrees? Institutional and Personal Fac-

tors. *Higher Education*, vol. 74, no 6, pp. 1053–1068. https://doi.org/10.1007/s10734–016–0106–9

Ehrenberg R., Mavros P. (1995) Do Doctoral Students' Financial Support Patterns Affect Their Times-To-Degree and Completion Probabilities? *The Journal of Human Resources*, vol. 30, no 3, pp. 581–609. doi:10.2307/146036

Erstein L. (2011) Rezultativnost deyatelnosti aspirantury i neobkhodimost razrabotki obshchey teorii nauchnogo rukovodstva [Efficiency of Post-Graduate Education and the Necessity of Development of the General Theory of Scientific Management]. *Pedagogical Education in Russia*, no 4, pp. 218–223.

Gaeta G. L., Lubrano Lavadera G., Pastore F. (2016) Much Ado about Nothing? The Wage Effect of Holding a PhD Degree but not a PhD Job Position. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2810462 (accessed 12 January 2019)

Girves J. E., Wemmerus V. (1988) Developing Models of Graduate Student Degree Progress. *The Journal of Higher Education*, vol. 59, no 2, pp. 163–189.

Haworth J. G., Bair C. R. (2000) *Learning Experiences that Make a Difference: Findings from a National Study of Doctoral Education in the Professions*. Paper presented at ASHE Annual Meeting.

Hockey J. (1991) The Social Science PhD: A Literature Review. *Studies in Higher Education*, vol. 16, no 3, pp. 319–332.

Kehm B. M. (2006) Doctoral Education in Europe and North America: A Comparative Analysis. *Wenner Gren International Series*, vol. 83, pp. 67.

Lee H., Miozzo M., Laredo P. (2010) Career Patterns and Competences of PhDs in Science and Engineering in the Knowledge Economy: The Case of Graduates from a UK Research-Based University. *Research Policy*, vol. 39, no 7, pp. 869–881.

Lipschutz S. S. (1993) Enhancing Success in Doctoral Education: From Policy to Practice. *New Directions for Institutional Research*, no. 80, pp. 69–80.

Lovitts B. E. (2001) *Leaving the Ivory Tower: The Causes and Consequences of Departure from Doctoral Study*. Lanham, MD: Rowman & Littlefield.

Mainhard T., Van der Rijst R., Van Tartwijk J., Wubbels T. (2009) A Model for the Supervisor–Doctoral Student Relationship. *Higher Education*, vol. 58, no 3, pp. 359–373.

Manathunga C., Lant P. (2006) How Do We Ensure Good PhD Student Outcomes? *Education for Chemical Engineers*, vol. 1, no 1, pp. 72–81.

Mangematin V. (2000) PhD Job Market: Professional Trajectories and Incentives during the Ph D. *Research Policy*, vol. 29, no 6, pp. 741–756.

McCabe-Martinez M.C. (1996) A Study of Perceptions of Factors that Enhanced and Impeded Progress Toward the Completion of the Doctoral Degree in Education for Hispanic Students Employed in the Public School Systems (Doctoral dissertation, Boston College, 1993). *Dissertation Abstracts International*, vol. 57, no 2900.

Nerad M. (2006) Globalization and Its Impact on Research Education: Trends and Emerging Best Practices for the Doctorate of the Future. *Quality in Postgraduate Research: Knowledge Creation in Testing Times* (eds M. Kiley, G. Mullins), Canberra: ANU, pp. 5–12.

Reznik S. (2015) Aspirantura — kak povysit eye effektivnost [The Graduate School — Ways of Improving Efficacy]. *Journal University Management: Practice and Analysis,* no 4, pp. 106–116.

Spronken-Smith R., Cameron C., Quigg R. (2018) Factors Contributing to High PhD Completion Rates: A Case Study in a Research-Intensive University in New Zealand. *Assessment & Evaluation in Higher Education*, vol. 43, no 1, pp. 94–109.

Stock W. A., Siegfried J. J. (2006) Time-to-Degree for the Economics PhD Class of 2001–2002. *American Economic Review*, vol. 96, no 2, pp. 467–474.

Van der Haert M., Arias Ortiz E., Emplit P., Halloin V., Dehon C. (2014) Are Dropout and Degree Completion in Doctoral Study Significantly Dependent on Type of Financial Support and Field of Research? *Studies in Higher Education*, vol. 39, no 10, pp. 1885–1909.

Warren J. R. (2002) Reconsidering the Relationship between Student Employment and Academic Outcomes: A New Theory and Better Data. *Youth & Society*, vol. 33, no 3, pp. 366–393.

Yudkevich M., Gorelova O. (2015) Akademicheskiy inbriding: prichiny i posledstviya [Academic Inbreeding: Causes and Consequences]. *Journal University Management: Practice and Analysis,* no 1, pp. 73–83.

Zhao C. M., Golde C. M., McCormick A.C. (2007) More than a Signature: How Advisor Choice and Advisor Behaviour Affect Doctoral Student Satisfaction. *Journal of Further and Higher Education*, vol. 31, no 3, pp. 263–281.