Thematic Article

The patterns of the dropout of doctoral students

Fruzsina Szigeti[1]

Abstract

Compared to the trends of the OECD countries, the proportion of graduated higher educational students is low in Hungary, especially in the doctoral education; however, the need for doctoral education has been increased due to the expansion in the past two and half decades. According to the report of the European Committee, the ratio of those having a PhD degree is 0.8 per mille among the 25- to 34-year-old Hungarian population that is not advantageous. As a causal factor, the dropout can be detected. The aim of my investigation is to detect the pattern of the dropout of the doctoral students. Who are those who quit their studies before finishing it? In which field is the ratio of graduation the lowest? I hypothesize that approximately one fifth of the students enrolled for a doctoral course quit their studies during the education. According to the educational fields, the dropout ratio is the lowest in the natural, medical, and agricultural sciences, whereas it is the highest in the arts, human, and social sciences. The basis of the current research is provided by a huge national database entitled Higher Educational Informational System, containing the data of doctoral students enrolled in the autumn semester of the school years 2010/2011 and 2014/2015.

Keywords: higher education, dropout, doctoral education

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[1] Faculty of Arts, Institute of Educational Studies and Cultural Management, University of Debrecen, Debrecen, Hungary, Email address: szigeti.fruzsina.89@gmail.com, ORCID: 0000-0003-1915-5654

Introduction

The study introduces the dropout patterns of the doctoral students based on the indicators of the Higher Educational Informational System (FIR). The investigation has a gap-filling role as only a few data are provided in the international higher educational studies concerning the PhD students (Papp & Csata, 2014); in addition, the macrolevel connection system of their dropout is usually not introduced.

In the past decades, several changes could be experienced in the life of the youth, causing a change in the era of youth (Gabor, 2004; Szigeti, 2016). According to this, they formed a unique but heterogenic social group (Csako, 2004; Szigeti, 2016), the time spent with studying is increased, students start their own life, and start family later and they enter the labor market later too (Engler, Fedor, & Markos, 2016; Szigeti, 2016). On the basis of the theory of Green (1980), a certain amount of people having a higher educational certificate do not finish studies for the reason of improving the position in the labor market due to the effect of the higher educational expansion: they start one or more new courses, conferring additional advantages for themselves. This is also proven by the approach of Becker (1964), Polonyi (2002), and Schultz (1971) who regard (lifelong) learning and education as a possibility for improving human capital.

Compared to the trends of the OECD countries, the proportion of graduated higher educational students is low in Hungary, especially in the doctoral education (OECD, 2015); however, the absolute number and ratio of graduate students increased in the past two and half decades due to the expansion (Kurath, Andrea, & Sipos, 2014), which could be detected in the academic education as well. The recovery of the PhD education introduced in Hungary by the Law of 1993 on Higher Education as the only program providing an academic degree (Veroszta, 2010) can be seen in the early 2000s; however, since 2005, the number of students enrolled for doctoral education did not reduce as drastically as in the entire higher education. Nonetheless, the European Committee reports regarding the relatively high number of participants in doctoral education that the ratio of people owning a doctoral degree is 0.8 per mille (OECD, 2015). This is not advantageous as the average of the European Union is 1.69. The Hungarian ratio is low not only compared to the developed countries (Germany: 2.65, Sweden: 2.9, and Switzerland: 3.68) but compared to the neighboring countries that are indirect international competitors such as Romania (1.4) or the Czech Republic (1.3) (Ministry of Human Capacities, n.d.). What is the background? Why is the number and ratio of the PhD degrees given by the Hungarian universities low? What kind of role can dropout have in this and what kind of predictor can the dropout of the PhD students have? To answer these questions, quantitative research methods were applied. The basis of the current research was provided by the Higher Educational Informational System (FIR), involving the data of PhD students enrolled in the autumn semester of the school years 2010/2011 and 2014/2015.

Literature

The attention was first drawn on higher educational dropout in the 1960s and became a theoretical frame of interactionist model of Tinto in the 1970s (Bocsi et al., 2018, Szigeti et al., 2018). Since that, several models were developed (e.g., Astin, 1993; Bean, 1985, 2005; OECD, 2012) which identified and assumed various causes in the background of dropout. Factors such as the psychological characteristics of the individual, the behavior of the student, the family background, sociological and social aspects, pedagogical–psychological factors, institutional structure, institutional resources, etc., can be mentioned (Bocsi et al., 2018).

The latest research regard the investigation of the mentioned topics as a kind of stagnation, slower academic success, and predictor of dropout and these are measured in the bachelor-level education having a dropout ratio of 36%–38% (Bocsi et al., 2018; Fenyves et al., 2017; Merill, 2015; Muller & Schneider, 2013; Pusztai, 2017; Pusztai & Szigeti, 2018; Szemerszki & Pusztai, 2017; Szigeti et al., 2018; Vossensteyn et al., 2015). Doctoral education has an even higher dropout ratio (Bocsi et al., 2018; Derenyi, 2015; Ministry of Human Resources, 2016; Fenyves et al., 2017; Mihaly, 2013); however, less or no attention is drawn to the identification of the reasons behind it.

According to North American estimations, the ratio of dropout from doctoral education is 40%–50% (Nettles & Millett, 2006), which is even higher in the disciplines for arts, human, and social sciences but lower in natural sciences (Elgar, 2003; Litalien & Guay, 2015; Nettles & Millett, 2006). Economists and researchers of the higher education state that students enrolling for a course in the doctoral program expect from the training as an investment that benefits such as self-fulfillment, commitment, and the income in the future will overrun the expected costs, tuition fee, the cost of publication, conference fees, degree processing charge, etc. However, when the proportion of the priorities, benefits, and investments is changed or overturned, former PhD students decide to quit the training rather than continuing it (Becker, 1962, 1964; Paulsen, 2001). Nerad and Cerny (1991) and Ott et al. (1984) suggest that no significant difference can be experienced between women and men regarding the successful acquisition of the academic degree, whereas Stiles (2003) states that women are 16% less likely to complete their training than men. The longitudinal study of Lott, Gardener, and Powers (2009) covered the STEM (Science, Technology, Engineering, Mathematics) areas; their results show that the dropout rates of women in STEM areas are not significantly different from men until the seventh year but after the seventh year, men have twice bigger chance of acquiring the degree as women.

In Hungary, the number of people received PhD since 2008 is approximately annually 1200; their proportion is about 43%–50% concerning those enrolled for the program

([Mihaly, 2013](#); [Ministry of Human Resources, 2016](#)). According to the results of Mihaly ([2013](#)), 20% of the students enrolled for the doctoral program drop out during the study period of the training, they do not graduate, and only 60% of them have a successful graduation.

The high dropout ratio of doctoral education can be partly due to the fact that not always the most talented, the most devoted, and the most committed students are selected into the doctoral education. A significant part of the talented graduate and postgraduate students and those having a good or excellent certificate usually enter the labor market in the public or private sector after finishing their studies. On this basis, it is possible that those students decide to enroll for the doctoral education that could not enter the labor market and regard doctoral education as an escape route and they would not graduate at the end. An underlying cause may be that the PhD students studying in marketable areas will be seduced by the private sector providing higher earning potential and faster career before receiving the degree. At the same time, the PhD dropout can also be caused by the failure to meet the requirements of the training and the completion, but it is also a big challenge to write the dissertation, which must be written very often after absolving and beside a regular workplace. In addition, financial difficulties, family responsibilities, and the lack of external support (spouse and employer) can play a role in quitting the PhD program ([Ampaw & Jaeger, 2012](#); [Financz, 2008](#), [2010](#); [Litalien & Guay, 2015](#); [Sadlak, 2004](#)). According to the Hungarian results of the dropout, it can be conceived considering the fields of training that students studying in the fields of natural, medical, and agricultural sciences are in the most favorable situation, whereas those studying in the fields of management and organization and government and law are in the most unfavorable situation ([Financz, 2008](#); [Gyorffy, 2015](#); [Mihaly, 2013](#)).

The Introduction of the Research

My research question is what pattern the dropout of doctoral students has; furthermore, what kind of impact can credits, passivation, institution, and the field of the education can have on the unsuccessful completion of the training. In my research, I present the results based on the Higher Education Information System, which concern only PhD students enrolled in the autumn semester of 2010/2011 and 2014/2015.[2] In the present investigation, dropped-out PhD students are those who dropped out according to the FIR database, that is students who have not finished the 3-year program and have not absolved.

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[2] In 2010 and 2014, the Act CCIV of 2011 on National Higher Education was not valid for students enrolled for the highest level postgraduate education, according to which students must collect 240 credits and the duration time is eight semesters ([Magyar Kozlony, 2015](#)). Among the participants of the investigation, the number of the required credits was 180, the duration was six semesters.

The hypotheses were related to the connection between the characteristics of the study period and to the dropout.

I hypothesize that approximately one fifth of the students enrolled for a doctoral education, provided by the selected doctoral program-providing institutions, quits the program during the study period (Financz, 2008; Mihaly, 2013) caused by the strict requirements, the lack of required credit numbers, the number of passive semesters, and the financing type of the education.

According to the academic fields, it can be presumed that the ratio is the lowest in the natural, medical, and agricultural sciences, whereas it is the highest in the arts, humanities, social sciences, management and organization, and the government and law (Elgar, 2003; Gyorffy, 2015; Nettles & Millett, 2006).

The Results of the Research

Concerning students enrolled in doctoral studies in 2010 and in 2014, the proportion of women was higher compared to that of the men which, with writing the dissertation and receiving the degree, could improve the fact that women owning a PhD degree are in minority compared to men (Freeman, 2004; Szigeti, 2016). According to the financing type, the proportion of students studying in a state-funded educational form was higher in 2014 (51.4%) compared to 2010 (40.3%) due to the extension of the funded range. Concerning the educational fields, no major changes could be experienced: most students started their PhD studies in the field of humanities and social sciences, whereas the less of them enrolled in the field of agricultural sciences, technology, and theology (Table 1). This result is not surprising since the dropout ratio is high in agricultural sciences, engineering, and theology independently of the level of training (Bocsi et al., 2018; Fenyves et al., 2017). However, students who stay in the training and reach the top of the educational hierarchy may be the most devoted ones who have to face a lower risk of dropping out.

The main aim of my research was to map out the dropout patterns of PhD students. Thus, in the first step, I measured how many percent of the enrolled PhD students did not reach the end of the training. Each student who started the PhD studies in 2010 and in 2014 had to acquire the graduation without any passive semester until the FIR database was freed in the spring semester of 2016/2017. In 2010, the proportion of those acquiring PhD graduation was higher (70.5%) than in 2014 (50.3%); however, the proportion of those who were still in the program so those who did not drop out was high in the latter school year (35%). It can be supposed that they were the ones who chose the possibility of passivation. On the basis of the two investigated years, it can be stated that approximately 18% of the enrolled PhD students did not meet the training and graduation requirements

Table 1. The basic distributions of doctoral students according to gender, financing type, and training area in 2010 and 2014 autumn

Variables		2010		2014	
		Number	%	Number	%
Gender	Male	1,201	51.9	1,046	48.0
	Female	1,111	48.0	1,131	52.0
	Total	2,312	100.0	2,177	100.0
Financing type	State-funded	931	40.3	1,120	51.4
	Fee-paying	1,378	59.7	1,057	48.6
	Total	2,309	100.0	2,177	100.0
Training area	Agricultural sciences	149	6.5	113	5.2
	Humanities	487	21.2	475	21.8
	Theology	42	1.8	26	1.2
	Technological sciences	283	12.3	240	11.0
	Arts	96	4.2	80	3.7
	Medical and health sciences	342	14.9	357	16.4
	Social sciences	477	20.7	508	23.3
	Natural sciences	424	18.4	377	17.3
	Total	2,300	100.0	2,176	100.0

Note. Source: FIR database, Educational Authority.

and did not succeed graduation (Table 2). This type of dropout already appeared at the beginning of the training period: about 43% of those enrolled in 2010 and 60% of those enrolled in 2014 decided to quit the program in the first and second semesters. According to this, the suggestion of Financz (2008) and Mihaly (2013) that approximately one fifth of the students enrolled for doctoral education quit the program was confirmed.

Various reasons can stand in the background of dropout, which can be the following according to the FIR: as a failure of registration, the pay arrears in the training, own decision of quitting the program, the failure to meet the requirements of the training, the quitting due to medical reasons, disqualification due to disciplinary decision, etc.

In the measured years, most of the students quitted their training on the basis of their own announcement. Regarding the dropout ratio, 47.3% of the students who enrolled in 2010 and 61.7% of those who started in 2014 left the program according to this form. In addition, the failure of meeting the requirements had a significant role (31.2% of students enrolled in 2010 and 17.8% of those enrolled in 2014) as well as the failure of registration

Table 2. The basic distributions of doctoral students according 2010 and 2014 autumn

	2010		2014	
	Number	%	Number	%
Graduated (absolved/certificate)	1,631	70.5	1,094	50.3
Changing training/institution	8	0.3	17	0.8
Dropped out	503	21.7	303	13.9
Other quit	4.0	0.2	2.0	0.1
Still studying	167	7.2	761	35.0
Total	2,313	100.0	2,177	100.0

Note. Source: FIR database, Educational Authority.

more times, i.e., having passive semesters more than allowed (20.3% of students enrolled in 2010 and 19.1% of students enrolled in 2014).

The failures of meeting the requirements of the program leading to dropout can be identified by mechanism examination of the credit acquisition. It is well known that students must have acquired at least 180 credits until September 2016 and it was recommended collecting 28–30 credits in each semester. Compared to this, students who dropped out collected an average of 40–50 credits during their studies, usually until the end of their third semester. According to gender, women collected more credits than men in both school years, but the difference was not significant either year ($p_{2010} = .131$; $p_{2014} = .761$). According to the financing type of the training, state-funded PhD students had a higher cumulative number of credits than fee-paying students, although the difference between these two groups was significant only in 2014 ($p = .04$). On average, state-funded students, who dropped out, collected 52 credits on average, whereas the average of fee-paying students was 47 credits.

Passivation and the number of passive semesters is also an important predictor of dropout. Almost 33% of students who dropped out had passive status for at least one semester; however, most of them (almost 31%) had this status three or more times during their training. Among students who dropped out, passivation (Has the student had a passive status: yes/no) was more typical for fee-paying students (73% in 2010 and 63.2% in 2014) compared to the state-funded students (66.6% in 2010 and 49.5% in 2014), but the difference between the two groups was not significant ($p_{2010} = .308$; $p_{2014} = .080$). When the number of passive semesters was investigated, a significant difference can be experienced between the financing types ($p_{2010} = .029$; $p_{2014} = .044$): fee-paying students had more passive semesters, two semesters on average while the average of state-funded students was only one semester. This may be explained by the fact that the most important monthly income source for state-funded PhD students comes from the active

status, which includes participation in lectures, research activities, academic conferences, (obligatory) teaching activities, etc. For them, claiming passive status is more insecure and unpredictable compared to those who are already participants of the labor market and are paying for the doctoral course. Presumably, doctoral students receiving state scholarships will only initiate passive status when they receive a specific job in the labor market and can reach a higher income than the scholarship. Regarding gender, no significant differences could be seen in the number of passive semesters between men and women ($p_{2010} = .473$; $p_{2014} = .977$).

The training field is also an indicator of dropout. The dropout of PhD students was significantly related to the training field ($p_{2010} = 0.000$; $p_{2014} = 0.005$).[3] Among the students dropped out, most of them studied in social sciences and humanities, while the lowest rate was concentrated in the field of arts and theology. Among the dropped-out students, 30.95% of them studied in social sciences and 19.5% of them in humanities. The ratio was the lowest in the field of arts (1.9%) and theology (1.45%), which was below the average (18%), although the low number of participants and distributions should not be ignored in these cases. Measuring dropout according to training fields, it was the highest in the social (25%) and engineering sciences (20%) and the lowest in natural sciences with 13% (Table 3).

According to gender, a significant difference could be detected between men and women in the training field in both years ($p = 0.000$). Men dropped out clearly from social sciences (average: 30.2%), while women from arts (average: 25.8%).

On the basis of the financing type, a significant difference could also be experienced between the training field and the dropout ratio ($p_{2010} = .000$, $p_{2014} = .000$). The fee-paying students clearly dropped out from arts (average: 21.6%) and social sciences (average: 37.3%), while the highest dropout ratio among state-funded students could be seen in medical and health sciences (24.8%) and natural sciences (mean: 25.8%).

An interesting question is what pattern the institutions create according to the dropout of PhD students. Based on the work of Hrubos (2012), the four national (Hungarian) universities, such as the University of Debrecen (UD), the Eotvos Lorand University (ELTE), the University of Pecs (PTE), and the University of Szeged (SZTE), were investigated. Regarding both years, a significant difference could be found between the higher educational institutions in dropout ($p_{2010} = 0.000$; $p_{2014} = 0.005$). Students dropped out in the highest ratio from universities that have more students and the wider attraction such as ELTE and PTE, while in the lowest ratio from UD 32.9% of PhD students learning at PTE dropped out without successful graduation, which was 29% at ELTE and 24% at SZTE.

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[3] FIR does not contain the following training areas: management and organization and government and law.

Table 3. The dropout ratios (%) of students enrolled for PhD education in 2010 and in 2014 according to the training areas until the autumn semester of the school year 2016/2017

		2010	**2014**
Agricultural science	*N*	17	15
	% Training areas	11.40%	13.30%
	% Dropped out?	3.40%	5.00%
	Adj. Res.	−3.1	−0.2
Humanities	*N*	105	54
	% Training areas	21.60%	11.40%
	% Dropped out?	21.20%	17.80%
	Adj. Res.	0	−1.8
Theology	*N*	11	2
	% Training areas	26.20%	7.70%
	% Dropped out?	2.20%	0.70%
	Adj. Res.	0.7	−0.9
Technology	*N*	77	32
	% Training areas	27.20%	13.30%
	% Dropped out?	15.60%	10.60%
	Adj. Res.	2.5	−0.3
Arts	*N*	14	3
	% Training areas	14.60%	3.80%
	% Dropped out?	2.80%	1.00%
	Adj. Res.	−1.7	−2.7
Medical and health science	*N*	69	49
	% Training areas	20.20%	13.70%
	% Dropped out?	13.90%	16.20%
	Adj. Res.	−0.7	−0.1
Human science	*N*	148	97
	% Training areas	31.00%	19.10%
	% Dropped out?	29.90%	32.00%
	Adj. Res.	5.7	3.8
Natural science	*N*	54	51
	% Training areas	12.70%	13.50%
	% Dropped out?	10.90%	16.80%
	Adj. Res.	−4.9	−0.2
Total	*N*	495	303
	% Training area	21.50%	13.90%
	% Dropped out?	100.00%	100.00%

Note. Source: FIR database, Educational Authority.

UD had the most favorable ratio as 14% of the enrolled students dropped out during 3 years of the training and 86% succeed to complete it. According to the training fields, the dropout rate was the most favorable at the UD regarding each training area[4] with an average of 12%, whereas it was the highest at PTE with 36%. A significant difference ($p = 0.000$) could be seen only in natural sciences in both years.

Summary

Higher educational dropout has an increasing relevance in education policy. According to the OECD, in countries where the proportion of the higher educational dropout is above 20%, urgent interventions are needed. Hungarian higher education can be characterized with a high dropout ratio with nearly 40%, which is the highest in the academic courses according to the level of education. Regarding doctoral education, cca. one fifth of the enrolled students in doctoral schools quit studies during the training period; furthermore, two thirds of them absolved and less than 50% of them acquires the degree (Financz, 2008; Mihaly, 2013). In the background, quitting the studies and the dropout may stand and their macrolevel correlation system is hardly studied by the researchers of the higher education. Therefore, it is necessary to carry out research related to this topic.

In my research, the main aim was to map out the dropout patterns of PhD students from a macrolevel perspective applying the Higher Education Information System based on administrative data collection. The database contains the data of PhD students enrolled in the autumn semester of 2010/2011 and 2014/2015. They studied in the 3-year course and must have absolved without any passive semesters until the freeze of the FIR database happened in the spring semester of 2016/2017. In the present investigation, dropped-out PhD students are those who dropped out according to the FIR database that is students who have not finished the 3-year program.

Examining the dropout of PhD students, first the proportion of students enrolled for a doctoral course was measured who did not absolve and so many of them dropped out. Eighteen percent of the PhD students did not meet the output requirements studied for deepening the academic knowledge of the education and more than 50% of the enrolled students, who dropped out later, quitted the course in the first and second semester. The failure to complete the course without absolving was anticipated by the number of active and passive semesters, having passive status, the number of the acquired credits, and the financing type of the course. The chance of dropout was increased by the use of passive status that had a stronger effect than the number (once or more) of the passive semesters. However, the fee-paying type also played an important role as fee-paying students had

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[4] Agricultural sciences and arts did not appear in this part of the study, since only one institution can be found in both of these fields: the previous is at UD, the latter at UP.

2.483 times bigger chance for dropout compared to their state-funded peers. The chance of dropout was significantly reduced by the number of active semesters and the number of acquired credits as well as the institution of UD and ELTE as selective, doctoral course providing institutions. No significant differences could be detected regarding the training fields and gender. However, it could be seen according to the training fields that the students of social sciences and humanities were in higher risk, whereas those studying in the field of arts and theology stood in the less disadvantaged positions. According to the training fields, the candidates of social science and technology owned the highest index, whereas those of natural sciences had the lowest index.

Overall, the macrolevel results of the research do not provide a stable base to transform the operational policy of the doctoral schools. However, they demonstrate that the identification and recognition of the PhD students' reasons for dropout is indispensable, requiring several microlevel studies through the combined investigation of the sociodemographic (gender, age, and marital status) and the sociocultural factors (father's and mother's educational level, financial status, and type of settlement), attitudes, motivations, engagement, etc.

Acknowledgements

About the Author

FSz is a PhD candidate of the Doctoral Program on Educational and Cultural Sciences (Doctoral School of Human Sciences) at the University of Debrecen. Regarding the negatively influencing factors on the demographical status of Hungary, the migration potential among PhD students stands in the focus of her research. Her aim is to discover the migration opinions of the PhD students, to create groups on this basis, and to describe their characteristics. To recognize the background and motivation of the real migration as an activity, it is necessary to recognize the (self)selection of the (potential) migrants at the beginning of the progress. The novelty of the research can be found in the mapping of connection between the migration willingness and the dimensions of the quality of life of the research group.

She is also responsible for the study concept and design, analysis and interpretation of data, statistical analysis, and study supervision.

Ethics

The study procedures were carried out in accordance with the Declaration of Helsinki. The Institutional Review Board of the Institute of Educational Studies and Cultural Management University of Debrecen approved the study.

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