

CAREER PATTERNS OF DOCTORAL GRADUATES: EVIDENCE FROM ESTONIA

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Abstract. Considering the resources that countries invest in training people at doctorate level we can easily claim that PhDs are among the most invested ‘brains’ in each country. Yet what is missing from the discussion is what happens with their career after they gain their PhD. Based on two studies we reveal the job-related movements (career) of PhDs from Estonia. The results signpost a great share of heterogeneity across research fields – a diversity that has considerable effect on how universities can manage their academic workforce and their career, but also, factors that shape movements between the academic and non-academic labour market.

Keywords: career, PhD, university, academic, career tracking, academia, labour market

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1. Introduction

The number of studies that have looked at the career of PhDs in post-Soviet countries is limited. This article seeks to fill that gap. There is a large share of non-English countries, like those that regained their independence after the fall of the Soviet Union around the beginning of the 1990s. These countries had to rebuild and restructure, and even open many new academic fields. Therefore, how individuals that were connected to universities around that time literally established the basis for new faculties and research fields in general is a common experience for many in those countries. Today, these people are close to retirement. As noted by Enders and Musselin, “a greying of the academic profession” is happening to many countries around the world (2008:130). Within the next decade or so, the academic systems in the abovementioned countries will go through a remarkable transformation that greatly highlights the issue of whether there are enough academic offspring.

Furthermore, non-English countries face another challenge – the obligation to provide higher education (at least to some degree) in their native language. This

sets great barriers to the possibility of reducing the workforce shortages through international recruitment. The sustainable inflow of national PhDs is a strategic issue for these countries. Another aspect of language emerges from the critical transition period between 1991 and 2000, a period we would label ‘national romanticism’. By this label we signpost a mindset that operates on the basis of the formula “we fought hard to gain our country and national identity back – now you are eager to replace it with English at all levels!” By opening the education and research system to global competition, as in other non-English countries, Estonia had to deal with many questions related to practical issues and national identity, such as whether doctoral dissertations should be written in English, or in Estonian, what the language of instruction should be during doctoral studies, to what degree should we open English-based curricula and recruit non-Estonians, and so on. For a country and academic workforce largely with Russian and German as the second language, a shift to English was not self-evident, nor easy. In sum, romantic dreams about preserving the national identity, and what should be the instruction language in higher education formed a set of problems for doctoral studies. This is a question of the balance between a national and international focus in doctoral programs.

Post-Soviet countries have entered the global competition with great inequalities. As expressed by Kwiek (2017:665), these are countries that are desperately “wishing to catch up with more research-oriented Western European” countries. Yet, they have been forced to “run twice as fast” as their Western counterparts in order to survive the global competition.

Much of the career-related literature that builds on tracking the career of PhDs relies on English-based countries and/or countries that witness rather mature higher education and research systems: the UK (e.g. Lee et al. 2010, Raddon and Sung 2009, Park 2005), U.S., (e. g. Brass et al. 2010, Nerad 2004), Australia (e.g. Neumann and Tan 2011, Lourens et al. 2009), Germany (e.g. Evers and Sieverding 2015, Enders 2002), and the Netherlands (e.g. Waaijer 2017, Waaijer et al. 2016). That said, there is a great need for articles discussing the situation for PhD graduates from countries with a different background.

The aim of this study is to reveal the career patterns of our PhDs and signpost possible improvements for enhancing their career in the future. The article is structured as follows: first, we will provide an overview of the situation in doctoral studies in Estonia; second, we will explain the methodological framework of the empirical study and a thorough overview of the results; and finally, we will conclude by highlighting the main findings that the reader might take away from this paper.

2. Methodological framework of the study

The current study follows the interpretivist paradigm, where research is based on “the recognized necessity of attending to the reflective and intersubjective nature of human experience” (Prus 1990:356). We seek to reveal retrospective

narratives on individual career trajectories shared by our respondents and revealed by previous studies. Theory building that relies on the interpretive paradigm is inductive by nature, where “analysis, theory generation, and further data collection go hand in hand” (Gioia and Pitre 1990:588). That said, the current study has no clear line between data collection and analysis, as during the analysis of previous studies, and the interview process, they were also analysed as this allowed us to acknowledge the point where we reached thematic exhaustion in information (saturation point).

In this paper, we bind together two studies that reflect how academic career patterns have changed over the transformation period (see Figure 1). Study 1 is based on literature and document analysis and focuses on identifying what the previous studies have revealed about the situation of PhDs: Estonia in international comparison – laying out the context. That said, Study 1 will focus on the institutional level. Study 2 builds on 69 in-depth interviews with PhDs from three different years – 2000, 2005 and 2010, and provides a personalised perspective at the individual level.

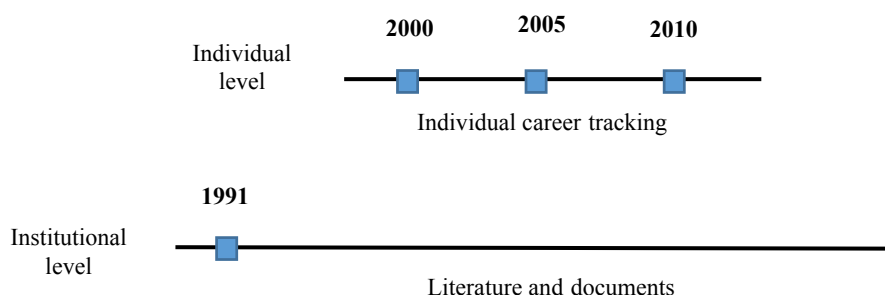


Figure 1. Study 1 (institutional level) and Study 2 (individual level).

3. What previous studies have revealed about the state of PhDs: Estonia in international comparison (Study 1)

The transition period between 1991 and 2000 brought about many rapid changes in the higher education system in most of the post-Soviet countries. We will focus on the changes related to doctoral studies. Before independence was regained in 1991, the Estonian education system followed the rules of the Soviet Union. The equivalent of a PhD was the candidate of sciences [Kandidat nauk] (Zajda 2007:22). Yet, the preparation for this degree was relatively different to the PhD we know today:

The basic requirement of candidates for the degree of CSc was to solve a relevant scientific problem in their field of research. Fields of research were established by the state, and the official classifications contained hundreds of narrowly defined disciplines. To enter CSc studies, a candidate had to pass

three examinations: the history of the Communist Party, foreign language, and the candidate's specialist field. The nominal duration of CSc studies was 3 years. To graduate from a CSc program, candidates had to pass two examinations – Marxist philosophy and foreign language – and defend their thesis (Alas and Aarna 2016:628).

The system of three degrees (bachelor, master and doctorate) was established in 1995 (Kärner et al. 2005:25). The 1990s was a decade of intensive restructuring in education. In terms of doctoral programs, the first structured doctoral study programs did not emerge before the start of the 2000s. This is sharply evident when we look at the experience and preparation of individuals who gained their doctoral degree around 2000 (see Study 2 for details) – they described the doctoral experience most often as an individual work without any courses.

According to the Ministry of Education and Research in Estonia, as of the beginning of 2018, there are 72 doctoral programs across all the universities in Estonia: six operate under public law (University of Tartu, Tallinn University of Technology, Tallinn University, Estonian University of Life Sciences, Estonian Academy of Music and Theatre, Estonian Academy of Arts) and one is a privately-owned university (Estonian Business School). Over the years, the number of curricula has fallen, with a sharp fall after the 2011/12 academic year, where around 45 curricula were closed or consolidated after the external evaluation.

As revealed in Figure 2 below, the University of Tartu serves the highest number of doctoral curricula and doctoral students. Considering its age (founded in 1632) and size (over 3,500 employees and around 13,000 students), this can be considered an expected result.

In order to set the scene for the career analysis we reveal a conceptual illustration of the background aspects that influence the future career tracks of

Table 1. Overview of doctoral curricula and students between 2006/07 and 2017/18

Academic year	Number of curricula with studying students	Number of students	Average number of students per curriculum
06/07	167	2142	12.8
07/08	166	2381	14.3
08/09	160	2465	15.4
09/10	133	2653	19.9
10/11	127	2928	23.1
11/12	82	3051	37.2
12/13	70	3044	43.5
13/14	70	2982	42.6
14/15	71	2903	40.9
15/16	71	2833	39.9
16/17	72	2635	36.6
17/18	72	2490	34.6

Source: Compiled by the authors based on data from the public database of the Estonian Ministry of Education and Research (www.haridussilm.ee).

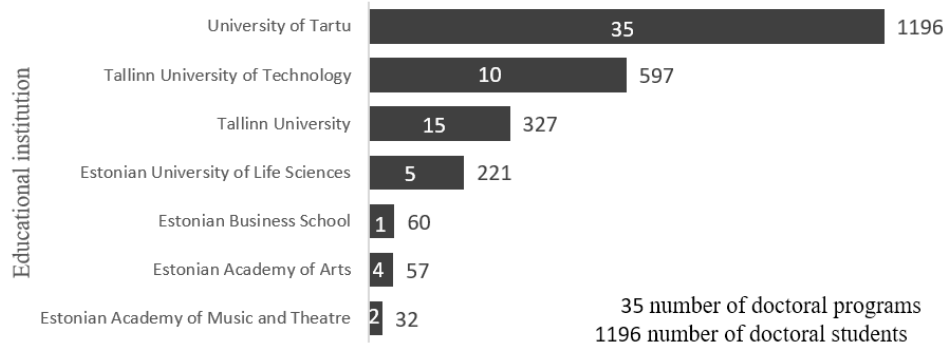


Figure 2. Number of doctoral students and curricula across Estonian universities, 2017/18.

Source: Compiled by the authors based on data from the public database of the Estonian Ministry of Education and Research (www.haridussilm.ee).

PhDs. Figure 3 is constructed on the basis of IPO (input-process-output), which reveals the background of PhDs before they entered the doctoral program (input), how many graduate within the nominal time and at what age (process) and finally, what their career paths are after graduation (output).

Input. Around 2/3 of the individuals who have gained a doctoral degree have progressed in a linear manner from master’s studies straight to doctoral studies. Similar to international trends (see Gardner 2009), Estonia has also witnessed more mature people entering doctoral education – these are individuals who have had some gap years between finishing their master’s degree and taking up doctoral studies. The reason to take note of the background of our PhDs emerges from the fact that young and linear students will probably have different expectations of doctoral studies also in regard to their future career paths. As revealed by previous studies, non-linear doctoral students are often those who work full-time in parallel with their doctoral studies (Vadi et al. 2015), and therefore the degree takes longer (Kindsiko 2013) and drop-out rates are higher (Vassil and Solvak 2012). Still, they

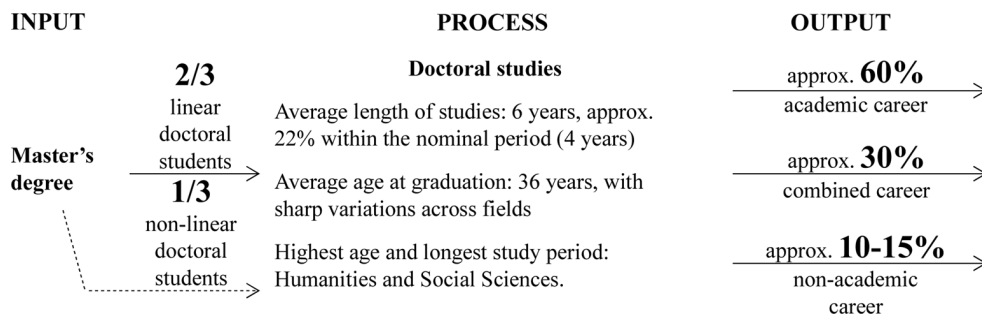


Figure 3. The IPO schema of the PhD.

Source: With additions, based on Vadi et al. 2015.

are also the cohort that tends to prefer the non-academic to the academic labour market after graduation, thereby potentially raising the value of the doctoral degree in the non-academic labour market, but also bringing new knowledge to their professional practice. In fact, the most recent study (Kindsiko et al. 2017) revealed how, especially in the natural sciences, where the majority of PhDs prefer to stay with academia, they have progressed straight from a bachelor to a master's and finally to a doctoral degree, highlighting the likelihood that they have been studying for about a decade and without any non-academic work experience. Therefore, a supply of thirty-something PhDs is being created who in terms of the non-academic labour market are latecomers. Similar findings have been highlighted by studies conducted by the OECD (see Auriol 2013). All in all, the traditional profile of the typical doctoral student has changed and continues to change. Instead of a single full-time male student in his 20s, we see more individuals who join a doctoral program at 30+, are married or in a marriage-like relationship and female (Gardner 2009:37).

Process. Completion rates are another indicator that has an effect on career paths. With slight variations, the number of PhDs per year has grown in recent years, along with an increasing share of females among the recipients – since 2010, females have outnumbered men. When assessing the share of PhD graduates annually, one must keep in mind the population of Estonia – 1.3 million (2017).

Doctoral students are expected to graduate within four years, which is the nominal period of studies in Estonia. On average, around 22% manage to graduate within the nominal period, but there are dramatic differences when we look at subject level (Kindsiko 2013:55). More specifically, in the natural sciences around 1/3 manage to finish within the nominal period and while they are relatively young

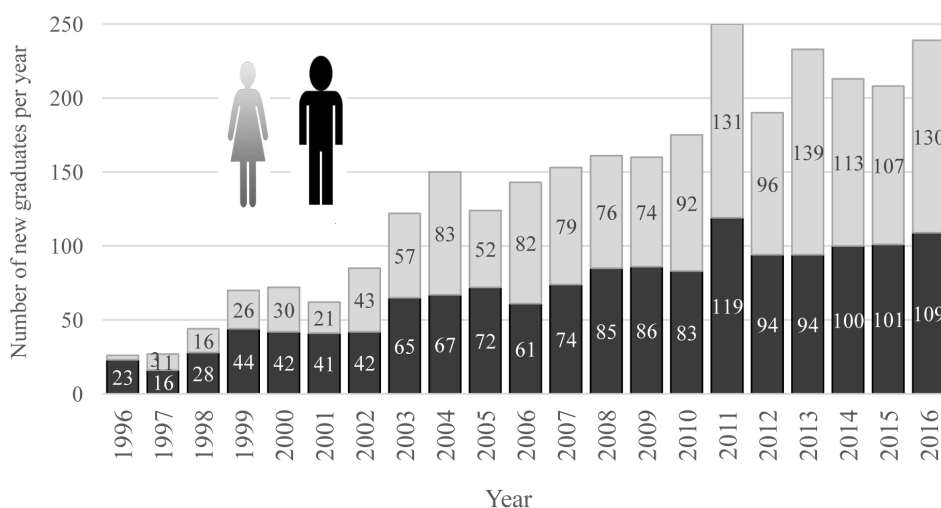


Figure 4. The number of new PhDs in Estonia, between 1996 and 2016.

Source: Kindsiko et al. (2017: 10), calculations based on data from Statistics Estonia.

(late 20s or early 30s); among graduates from the social sciences, health and medical sciences and the humanities and arts, only around 1/10 gain the degree within the nominal period, and the age at the time of graduation tends to be over 35 years (*Ibid.*). The impact of age is most of all expected to happen in the case of an academic career. Considering how a doctoral degree today is seen as a way to start of an academic career (Jairam and Kahl 2012), those who graduate in their 40s, have to compete with an international supply of rather young academics in their mid-20s and 30s (e.g. in Belgium, where graduates tend to be below 30, (see Auriol et al. 2013). This affects their flexibility for international mobility due to family responsibilities, but also the income at the start of an academic career might not be as attractive to individuals who have to support a family.

Outcomes. Previous studies on PhD graduates in Estonia have revealed that after graduation roughly 60% pursue an academic career, 30% combine academic and non-academic jobs (e.g. lawyer and lecturer), and 10% prefer a non-academic career (Vadi et al. 2015). When we zoom in on the field level there is a sharp heterogeneity across career patterns. Figure 5 below illustrates the dominant career paths of PhDs. The academic stream signposts individuals who have academic jobs after the graduation as dominant; non-academic career refers to the dominance of work outside the university; and combined career reflects individuals who are employed in both labour markets – academic and non-academic (e.g. lawyer & lecturer; medical doctor at the hospital and professor in medicine).

As can be seen, three fields reflect a relatively higher share of PhDs that pursue a combined career – Medical & Health Sciences (45%), Engineering & Technology (35%), and Social Sciences (45%). These represent fields that are profession-oriented, and thereby reflect a rather high demand for graduates from the non-academic labour market. In addition, profession-oriented fields are often fields where a remarkable share of practitioners have joined the doctoral program

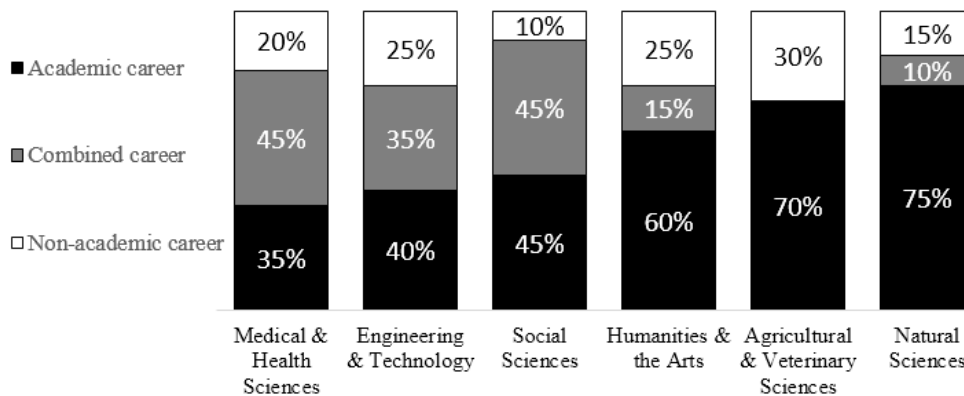


Figure 5. Dominant career patterns of PhD graduates in Estonia across the research fields set by the Frascati Manual.

Source: Kindsiko et al. (2017: 69). Notes: n=389 PhD graduates.

(Kindsiko et al. 2017; Vadi et al. 2015; Kindsiko 2013). As the practitioners tend to join the doctoral program years after graduation from the master level, this in turn has an effect on the average age when they gain their doctoral degree.

In addition to the IPO schema, we cannot forget the unique situation brought by the collapse of the Soviet Union. Re-independence (in 1991) triggered large-scale restructuring across Estonia, including higher education and the academic system in the broadest sense.

4. Individual career trajectories (Study 2)

Study 2 builds on 69 in-depth interviews with PhDs from three different years – 2000, 2005 and 2010. The study grouped PhDs according to the classification of research fields introduced by the OECD – the Frascati Manual (*Natural Sciences, Engineering and Technology, Medical and Health Sciences, Agricultural and Veterinary Sciences, Social Sciences, Humanities and the Arts*) – so as to provide international comparison. A detailed overview of the participants is given in Table 2.

The interviewees were found through purposive sampling – the aim was to guarantee that we cover graduates from all the study years (2000, 2005, and 2010), and include graduates from all the Frascati fields of science. The coverage by year varies between 13%–25%. The best coverage was achieved from the cohort in 2000 – there we managed to talk to every fourth graduate of the whole pool. This result provides high value for our study – the 2000 cohort has direct experience of the situation witnessed around the 1990s and how it has changed so far. The study applied a semi-structured interview plan with questions that urge the respondent to take a retrospective view of their career after their PhD. On average, interviews lasted approximately 40 minutes to 1 hour, and all the interviews were audio

Table 2. An overview of research participants

Number of respondents by year			Number of respondents by Frascati Field of Science											
2000 (72)* (25%)**	2005 (134)* (13%)**	2010 (189)* (17%)	1. Natural Sciences		2. Engineering & Technology		3. Medical & Health Sciences		4. Agricultural & Veterinary Sciences		5. Social Sciences		6. Humanities & the Arts	
			M	F	M	F	M	F	M	F	M	F	M	F
18	18	33	8	9	5	5	3	9	3	2	4	7	6	8
Sum: 69 (40 females, 29 males)														

Notes: * indicates the number of total graduates from the respective year (headcount); **indicates the percentage of respondents out of all the graduates from the respective year (%).

recorded and transcribed. According to Guest et al. (2006:60), achieving theoretical saturation is “the gold standard by which purposive sample sizes are determined”. In the case of interview-based qualitative studies, some authors would suggest sample sizes around 36 (Bernard 2000:178), or 12 (Guest et al. 2006:74), as probably yielding saturation. Variations in code frequency appeared already around 10 interviews, yet considering the aim of covering respondents from all six Frascati fields of science, we decided to have at least 10 interviews per field. All in all, 69 interviews conducted for this study made it possible to achieve the necessary thematic exhaustion within our data set.

The data analysis was facilitated by the qualitative research and analysis software Atlas.ti. As noted in earlier sections, the data analysis started in parallel with the data collection. First of all, we applied open coding to develop first-order themes from the data – “the process of breaking down, examining, comparing, conceptualizing, and categorizing data” (Strauss and Corbin 1990:61). In other words, the individual narratives on career trajectories revealed by our respondents were inductively broken into smaller units of information (codes). After this, axial coding followed. Axial coding is “a set of procedures whereby data are put back together in new ways after open coding” (Strauss and Corbin 1990:96). Axial coding allowed us to bring forward second order themes. Figure 6 illustrates the coding schema that was obtained from the interview data and will guide the discussion of the results in the next section.

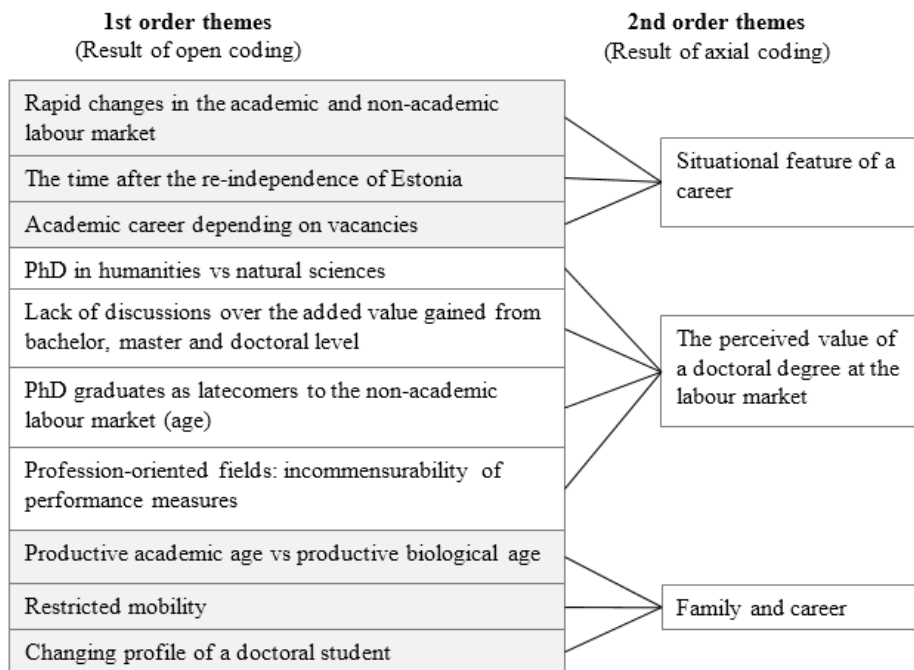


Figure 6. An overview of the coding schema.

The following sections will reveal in detail the patterns illustrated under the 2nd order themes: the situational feature of a career, the perceived value of a doctoral degree on the labour market, and family and career.

4.1. *The situational feature of a career*

As the respondents in this study reflect different graduation cohorts – 2000, 2005 and 2010 – it became sharply evident how the era the doctoral degree is completed in matters considerably. Among other aspects, individual career-related decision-making is largely a mix of situational aspects, such as the current state of affairs both on the academic and non-academic labour market. During the transition period from 1991 to 2000 all the post-Soviet countries in Europe had to learn and transform their higher education systems quickly and face the intense competition brought by academic capitalism (Alas and Aarna 2016). The pool of PhDs graduating in 2000 were individuals that went through the doctoral level during the first decade after Estonia regained its independence. Therefore, the country was still in the midst of rebuilding and restructuring both in terms of the academic and non-academic labour market. After the collapse of the Soviet Union, as in other post-Soviet states, Estonia witnessed a boom in the private market. As expressed by one informant, *“It was around 1997, the time when everybody who was able to work, they got good jobs because the world [emerging capitalism] was expanding rapidly”* (RP10, male, 2000). The situation just 15 years later is vastly different. PhDs who graduated around 2000 state how the situation for the today’s graduates is incredibly hard – both in terms of finding a respectable job on the academic or the non-academic labour market. In the first case, the problem lies in the lack of vacancies, in the second case the challenge is to break the “PhDs are only good for an academic career” mentality. Figure 7 below presents reflections from both eras, thus presenting evidence of the role of the situational features of career.

In summary, even a decade or two can reflect dramatically sharp differences in what a career will be like. Therefore, the following is an apt statement, “the 60-year-old is not only 25 years older than the 35-year-old but was also born in a different era when values and opportunities may have been significantly different” (Stephan and Levin 2015:58).

The situation around the first decade after Estonia regained independence (1991):

“The time around the independence of Estonia – the [labour] market was so open that you could make a rapid career everywhere.” (RP26, male, 2005)

“I believe at that time [end of the 1990s and beginning of the 2000s] young people had plenty of opportunities. It was basically an empty canvas.” (RP13, male, 2000)

“During that time [end of 1990s and start of 2000s] you did not have so many PhDs, so the competition was lower.” (RP2, male, 2000)

“I defended [a PhD] in 2000, in 2001 I gained an associate professorship. Since 2003 I have been a full professor.” (RP8, female, 2000)

“I was able to apply for associate professorship right after gaining the PhD.” (RP33, female, 2005)

The situation (in many fields in academia) today, 15–20 years later:
 “I can see it happening in our fields – we have a generation gap [in 2017]. And from one moment the natural [academic] pyramid will fall apart.” (RP13, male, 2000)
 “Talented young researchers left the field a few decades ago already, because there just are not enough vacancies.” (RP61, female, 2010)
 “After the defence [in 2005] I was on maternity leave for a few years. So, I was very lucky to gain the position of senior Research Fellow very soon. [...] I have been in that position since then, and I feel like there is no higher place to move. [...] I feel that it is not easy or even possible.” (RP29, female, 2005)
 “The system today only values mature researchers – young people have really limited possibilities [in terms of career].” (RP17, female, 2000)
 “We really need more grants for junior academics. [...] So that they would not give up. It tends to be really hard to stand out amongst all these older researchers out there.” (RP20, female, 2005)
 “Now [in 2017] if you wanted to have new professors, all the possible candidates have left the field for the private sector or elsewhere [because of the long wait].” (RP24, female, 2005)
 “The situation for junior researchers today is harsh, much more than it used to be.” (RP2, male, 2000)
 “At the moment it would be hard to recommend an academic career to my young colleagues because even an ‘Olympic medal’ in your field does not guarantee you a secure position in the university.” (RP5, male, 2000)
Memo
After the collapse of the Soviet Union, there were rapid changes both on the academic and non-academic labour markets. You cannot grow an academic pyramid overnight. Especially in the case of academic units in a non-English country where it is impossible to simply substitute all the missing people using international recruitment – public universities in particular have to maintain curricula taught in the national language.

Figure 7. Interview extracts that illustrate the perceived situational features of an academic career from re-independence to now.

Note: RP = respondent; All the interview extracts have been translated from Estonian into English.

4.2. The perceived value of the doctoral degree

Globally, a PhD is considered an essential ticket (not necessarily sufficient) to an academic career, yet the non-academic market reveals a different picture. Respondents even provide evidence of cases where a person with a PhD will leave it out of his or her CV when applying for a job in the non-academic labour market because they have experienced being excluded for being over-qualified.

“Here [in a non-academic organisation] we also have people with PhDs, and they do not put it on their business cards. I was inspired by my Norwegian colleague who was also female and I thought ‘Wow, you have the courage to put your PhD on your business card!’ So I did too. I have even had some male colleagues [verbally] attacking me for this – why do you include this?”. (RP60, female, 2010)
 “...something has gone really wrong when a manager himself is afraid to hire people that might be smarter than he is.” (RP60, female, 2010)
 “I believe that in society in general people do not know what having a PhD implies... [what could he or she do in the non-academic labour market]” (RP6, female, 2000)
 “...an average Estonian person does not know what stands behind a PhD.” (RP7, female, 2000)
 “A PhD in natural sciences is somewhat more highly valued than the same in the humanities.” (RP10, male, 2000)

“The way the society values [a PhD in] the natural sciences, this is totally different [compared to the humanities].” (RP33, female, 2005)

Memo

The value of a person with a PhD is tied to academia. In academia it is seen as the start of a career; yet a 30 something person with a degree could turn out to be a latecomer in the eyes of the non-academic labour market.

Figure 8. Interview extracts that illustrate the perceived value of the doctoral degree.

Furthermore, there seems to be a perceived difference in how society values a person with a PhD in the natural sciences compared to a person with a PhD in the humanities. In fact, throughout the interviews even within the academic system itself, a PhD in the natural sciences is somewhat given priority over the humanities – this being a perception expressed both by natural scientists, and people from the humanities. Another important aspect regarding the value and possible career choices with a PhD relate to the age and background of the person. Research fields differ remarkably when we look at how old our graduates are at the time they gain their PhD (see Figure 9 below).

Without previous experience in the non-academic labour market (linear PhD student), at the time of graduation a person in his or her mid-30s is a latecomer in the eyes of the industry. He or she is competing with candidates of the same age, perhaps even with only a bachelor degree, but with 10–15 years of practical experience (having worked in industry). This can be considered a remarkable mismatch between the two labour markets. In the case of an academic career, the new reality is that ‘the younger generation’ is comprised of PhDs in their mid-30s or early 40s, but in the non-academic labour market this generation is already seen as rather mature and in some fields even ‘old’ (e.g. ICT and start-ups).

Another theme that emerged from the data highlights the mismatch of the performance measures used in the two labour markets (academic vs non-academic), and the challenges faced by profession-oriented fields. Figure 10 illustrates the following analysis.

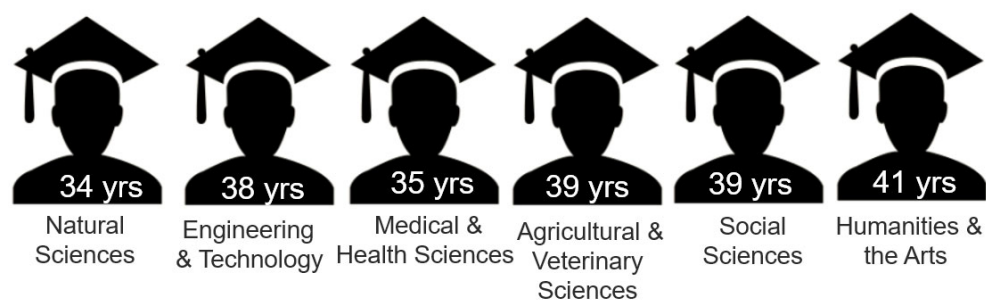


Figure 9. An average age at the time of graduation, by field.

Note: average from three years – 2000, 2005 and 2010.

“...when I graduated, I had a chance to continue as a researcher. But I felt that I did not want this non-stop justification of being good – in research you have to have articles all the time.” (RP21, female, 2005)

“Now you just have to produce these articles, and it sometimes feels like.../.../...you have all these publications, but no one reads them.” (RP43, female, 2010)

“In order to work in a certain position [in academia] you need to have a specific number of publications. I guess that is the main criteria today.../.../ As a rule it tends to be so that moving between the business sector and academia is rather difficult. (RP49, male, 2010)

“...when you step out [of academia], there is no way back. Today, the competition is so intense – getting back in is very, very difficult. If not to say impossible. (RP13, male, 2000)

“I am a doctor, I cure people. Yet, when it is time to prove what my value is as an academic – they only look at the publications. When you have none – you are a rather meaningless person. Then again, I have saved so many lives.... [...] In our field the situation is so that we struggle to have professors. We do not have people pursuing an academic career – they prefer to be in the operating room, being a doctor. [...] You either are a doctor or an academic. It used to be so that the professor was also the most experienced surgeon. Top of the tops. Yet in many countries the situation is so that those who are professors, do not cure people anymore. Patients are rather afraid when they hear that a professor will do their operation – professors are not practitioners, they spend time behind the computer screen [writing publications]. (RP28, male, 2005)

Memo

Differences in the measure of performance in and outside academia have a severe threat of causing one-way traffic – you are either in our out. Furthermore, especially in the case of academic measures, it is not recommended to have longer gaps [e.g. maternity leave] in your publication cycle. The incommensurability hits the most profession-oriented fields (e.g. medicine, law, economics, etc.), as here, the work of a practitioner might be more rewarding, both in terms of challenges and income. The movements from industry to academia were much more common during the 1990s and up to the middle of the 2000s. People in their mid 30s and early 40s could still start a career in academia. That said, earlier cohorts of graduates (e.g. 2000 and 2005) admit how today the situation is different – the system proposed linear movement from studies to becoming a non-stop publishing academic.

Figure 10. Interview extracts that illustrate the differences in appraising performance.

Finally, those respondents who consider or have moved out of academia expressed a critical note on the appraisals set by the academic system. The publication-centred appraisal does not support an atypical career path, including movements between industry and academia. This claim is also supported by previous studies, as they revealed that universities have set in “systems of recognition and reward disadvantaging members of faculty” who took a different path (Blackmore and Kandiko 2011:131). Such a mismatch between appraisals has difficulty coping with the new reality. Profession-oriented fields represent fields like law, economics and medicine that are highly valued by the non-academic labour market, both in terms of an attractive job and career progression, but also, in terms of income (see Figure 11). As revealed by our respondents from the profession-oriented fields, if they had to choose, there is a clear tendency to go to the non-academic labour market. For the profession-oriented academic fields this can result in severe shortages in the future academic workforce. The strongest illustration of the claim stems from medicine, where doctors are more inclined to follow their profession than adopt academic roles. Even if they would like to

contribute to teaching or research in academia, they face the pressure to publish at the highest levels, and the work in the hospital is not equally valued.

“In our field [medicine] it is hard to draw a sharp line between academia and industry [as a great share of PhDs work for the university hospital].” (RP4, female, 2000)

“In medicine, globally it is so that doctors want to do less academic research.[...] As a researcher you have to accept a lower standard of living and income. It is obvious that medical doctors [in hospitals] earn more.” (RP28, male, 2005)

“Our biggest challenge [in academia] is that doctors do not want to come here [to teach and do research at the university], because well, they get a higher income from the hospital.” (RP4, female, 2000)

“I am a lawyer. In fact, as a lawyer in the non-academic labour market I could earn much more, and perhaps with less effort too. [...] Salaries at lower levels [right after gaining PhD] are seriously small. It is very difficult for us [in academia]. People are not able to cope on such money, especially when you compare the incomes your colleagues outside gain.” (RP8, female, 2000)

Memo

The interviews reveal how profession-related fields offer evidence of the growing share of non-academic careers. Even when practitioners choose to continue cooperating with academia on a part-time basis, they tend to choose the combination with teaching, not research. Therefore, combinations like lawyer-lecturer, medical doctor-assistant professor, etc. are more common. Therefore, it seems to be easier to mix the work of a practitioner with teaching than with research.

Figure 11. Interview extracts covering the challenge of an academic career in profession-oriented fields.

4.3. Family and career

Following the same stream of thought, the age of the graduate also signposts issues regarding the probable situation in the life of the PhD graduate. In other words, how does family life fit with the chosen career track? Throughout the earlier sections of the analysis, age seems to interact with much of the career-related decision-making. Previous studies (especially exploring academic career) highlight how the potential of internationally acknowledged success will be determined by the age of 40 (Baruch and Hall 2004; Stephan and Levin 2015). Consequently, we similarly see the most productive biological and work decade being the thirties. In the Estonian case (recall Figure 8), a large share of PhDs gain their degree between 35 and 40. They might therefore be too late in arriving on the international academic labour market. Taking the doctoral degree as a mere starting-point, they need to compete with PhDs without families that are highly mobile and have the time to work 24/7 for relatively low wages for the first years of their academic career.

Figure 12 illustrates the dominant stream of thought expressed by both females and males – breaks in your career are not good especially in an academic career. They tend to result in slower progression in an academic career. Especially in the case of an academic career where international mobility is highly expected, individuals with small children have difficulty fulfilling such a criteria.

“Today they [in academia] overvalue going abroad, which might sound logical and understandable. Then again, such an ideal projection of an academic does not fit with family life.” (RP57, female, 2010)

“I was already married and with small children. It [going abroad] was not even under consideration.” (RP2, male 2000)

“I believe that at one moment my life was determined by two men – my supervisor and my husband.” (RP4, female, 2000)

“...having children is a huge stop in an academic career.” (RP36, female 2010)

“In addition to the research role I also have the role of being a father. At one point this small human being is at a certain age when you have to decide what will he/she be – a Canadian or an Estonian.” (RP38, male, 2010)

“I had small children, so I needed to do this [doctoral studies] while working – so that I could keep my income. /.../ Today, doctoral students with family have no chance to take part in doctoral studies without sacrificing the quality of life for their family. In other words, returning the apartment and the car to the bank [as they have been leased].” (RP58, male, 2010)

Memo
The influence of family is a topic that was touched upon in most of the 69 interviews. It concerns mobility issues – will you move abroad with the whole family? Will your partner find a job? What happens to his/her career? Interestingly, having children and moving when children are small is not seen as a huge problem among the newer graduates [2005 and 2010]. It becomes a breaking point when children are ready to go to school – then the parents will have to decide. Another core topic related to the workflow – spending 24/7 at work is not possible, nor wanted by people with families. Lastly, the issues related to a secure income – research positions tend to depend on grants, which might last 1-4 years, but then what?

Figure 12. Verbatim extracts that illustrate the perceived limitations or pressures brought by life – trying to fit family life with a career.

The respondents also indicated the impact of their family in regard to choosing between an academic and a non-academic career. As an academic career tends to be lower paid in the earlier years, and is tied to short-term contracts, fresh PhDs might prefer the non-academic labour market. Therefore, responsibilities towards family also establish the requirement of financial security.

5. Conclusions

We will conclude our findings by providing evidence of the interplay between institutional (Study 1) and individual level (Study 2) factors. We claim that these levels are never sharply apart, but rather tightly interconnected. Institutional level factors (e.g. opportunities brought by the transition period in the 1990s, both on the non-academic and academic labour market) mix with individual ones (e.g. the age of the individual at the time of graduation supplemented by the (non) pressure of obligations towards family).

The present article has shown how existing studies on the career of PhDs tend to pay too little attention to the nation-level influences affecting career choices. At best, they reflect impacts introduced by global changes within the academic system (see Parker and Jary 1995, and Kolsaker 2008), but rarely touch upon the

situation at the national level (e.g. the transformation from Soviet to capitalist system), and how it impacts the behaviour of PhDs on both academic and non-academic labour markets (see Kwiek 2015). The current study helped to fill the mentioned gap by showing the differences in the career related patterns of PhDs from different eras. The importance of paying attention to the perceived situational features should not be ignored for various reasons. As an academic career has a very long and demanding preparation time, tracking the career of PhDs from different cohorts is an excellent way of highlighting possible structural problem spots in the system. As we saw from the career patterns here, PhDs from different cohorts are served with radically different career-related opportunities. In some cases, it is the era that for some creates an empty canvas and very quick career progression, whereas others from a different cohort face a great lack of open positions and are forced to find alternative career routes outside the desired academic system.

Another important point for consideration, especially for top academic managers, is the need to acknowledge field-specific differences. As age at time of graduation varies dramatically (around 40 in the humanities and early 30s in the natural sciences), this might set considerable barriers to non-academic career prospects, especially when an individual has no prior non-academic work experience. The starting age in the academic system and the academic labour market tends to be rather high compared to the non-academic market; therefore, these two labour markets are at odds with each other. Consequently, for some fields (e.g. humanities), an academic career might be the only feasible choice. It seems to be easier in the case of profession-oriented fields, where the demand for high level specialists (value of a PhD) is greater, the non-academic labour market can drain the pool of possible academics. This was sharply evident in the case of medicine, law, economics, ICT, etc. In summary, in order to plan ahead for the sustainability of the 'academic ladder' or 'the academic pyramid', academic institutions should pay close attention to field-specific variations. We provide support to the claim that the universal academic career pattern seems to be fading away.

Although the study is based on a rich longitudinal dataset, we cannot ignore the fact that it reflects the case of a single country. We see how there is a valuable research gap to be filled by cross-country studies focusing on similar research problems across many post-Soviet countries. In addition, our fieldwork dataset – interviews with three cohorts of PhDs – ends with the cohort from 2010. There is reason to believe that today we could also start to reflect on the cohort from 2015. It is quite likely that their career patterns are somewhat different from the previous cohorts. That said, career-tracking should be a continuous activity conducted centrally at the government level, or by the individual higher education institutions. Sadly, in most countries, the potential input for smart (educational and research related) policy making is severely undervalued at both levels.

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