
**THE ECONOMICS OF HIGHER EDUCATION:
CAREER PATHS, LEISURE ACTIVITIES, PERSONALITY TRAITS,
AND ACADEMIC OUTCOMES**

Der Fakultät für Wirtschaftswissenschaften der Universität Paderborn
zur Erlangung des akademischen Grades Doktor der Wirtschaftswissenschaften

- Doctor rerum politicarum -
vorgelegte kumulative Dissertation

von

Laura Urgelles, M.A.

geboren am 5. Februar 1987 in Salzgitter

2022

Erstgutachter: Prof. Dr. Bernd Frick

Zweitgutachter: Prof. Dr. Martin Schneider

VORWORT

An dieser Stelle möchte ich die Gelegenheit nutzen, mich bei all denjenigen zu bedanken, die mich während meines Promotionsprojekts begleitet und mit ihrer Unterstützung maßgeblich zu diesem für mich so wichtigen Erfolg beigetragen haben.

Allen voran möchte ich meinem Doktorvater Prof. Dr. Bernd Frick für die optimale Betreuung, sein Vertrauen und seine Geduld danken. Seine zahlreichen Ideen für Forschungsprojekte und die ansteckende Begeisterung für die Empirie haben mich immer motiviert. Ebenso geht mein Dank an meinen Zweitgutachter, Prof. Dr. Martin Schneider, der auch lehrstuhlübergreifend ansprechbar war und während der Netzwerktreffen mit konstruktiven Anregungen zur Weiterentwicklung einzelner Projekte beigesteuert hat. Bei Prof. Dr. Kirsten Thommes und Prof. Dr. Burkhard Hehenkamp bedanke ich mich für ihre Bereitschaft, als Promotionskommissionsmitglieder mitzuwirken.

Ein großer Dank gebührt meinen ehemaligen Kolleg*innen Dr. Anica Rose, Ilka Tanneberg, Liana Bomm, Dr. Dirk Semmelroth, Dr. Daniel Kaimann und Patrizia Fanasch. Eure hilfreichen Anregungen und die gemeinsamen Teilnahmen an den lehrstuhlinternalen Doktoranden-seminaren haben dazu beigetragen, dass ich gerne auf meine Promotionszeit zurückblicken werde. Mein besonderer Dank gilt meiner Co-Autorin Charlotte Kräft für die wunderbare Zusammenarbeit und die zahllosen bereichernden Diskussionen und Gespräche, die oft über das Fachliche hinaus gingen. Bei meinen ehemaligen Kolleginnen aus der Anfangszeit, Dr. Julia Rötze-Keuper, Isabel Disse und Hürrem Özcamlıca-Becker, möchte ich mich für die gemeinsamen „Schreibtage“ bedanken. Ich kann mich wirklich glücklich schätzen, dass mich viele Freundschaften auch über den Lebensabschnitt der Dissertation hinaus noch begleiten werden.

Abschließend danke ich meiner Familie für die bedingungslose Unterstützung. Der größte Dank geht an meinen Mann, Miguel, der mir in sämtlichen Hoch- und Tiefphasen der Promotion immer mit Liebe und Vertrauen empathisch zur Seite stand. Bei meiner Tochter Clara bedanke ich mich dafür, dass sie durch ihre Lebensfreude einen Ausgleich für mich geschaffen hat.

Vielen Dank Euch allen!

Laura Urgelles

Bielefeld im Februar 2022

TABLE OF CONTENTS

1	INTRODUCTION.....	1
1.1	Theoretical Positioning of the Dissertation	1
1.2	Research Goals and Research Questions	2
2	STUDIES OF THE DISSERTATION	4
2.1	The effect of leisure activities on academic performance	5
2.2	Academic performance and salary expectations of competitive and recreational athletes vs. inactive students	6
2.3	Program specific effects of a semester abroad on the likelihood of pursuing a PhD	7
2.4	The role of student personality in salary expectations and subject choice	7
3	CONCLUSION.....	9
3.1	Summary of the Findings.....	9
3.2	Limitations	11
3.3	Overarching Theoretical Contribution.....	11
3.4	Practical Implications	13
4	REFERENCES.....	16

1 INTRODUCTION

1.1 THEORETICAL POSITIONING OF THE DISSERTATION

The idea that the knowledge, skills and abilities of people constitute a form of capital was developed by Adam Smith who included human capital in the calculation of national wealth. The knowledge that this capital contributes to economic growth, is now widely accepted (Becker, 1992b; Schultz, 1961). At the company level, human capital explains variations in performance (Barney, 1992b). At the individual level, different human capital skill sets explain part of the variance in salaries (Becker, 1992b). In order to increase their human capital, utility maximizing individuals invest into their skills, for example through an education. Thus, an early established human capital function relates the years of schooling to wages (Becker & Chiswick, 1966). Mincer (1974) built on this work and developed an empirical approach for the analysis of human capital variables (e.g., schooling, work experience) and their relation to earnings. The resulting function is one of the most applied empirical approaches in empirical economics (Lemieux, 2006).

With the aim to uncover the components of the human capital function, different research addresses the sources of human capital, the returns to human capital as well as insufficiencies of the theory (e.g., pay inequalities for equally educated individuals). According to Acemoglu and Autor (2012) there are four different sources of human capital: innate ability, schooling, schooling quality, and training. Innate abilities are capabilities an individual is endowed with, for example hereditary parts of the IQ or personality traits. However, research on personality traits and salary remains scarce. Bowles et al. (2001) name two main problems with the analysis of personality traits in a human capital context which may have caused researchers to refrain from this topic. First, “conventional economic theory provides little guidance in terms of which personality or behavioral traits may influence earnings, and there is little reason to expect that any given trait will have the same effect across different jobs.” (p. 157). Second, traits tend to be endogenous as they can be a cause and consequence of labor market success. An early work by Jencks (1979) shows that personality traits (e.g., industriousness, perseverance, and leadership) significantly influence different measures of labor market success (controlling for standard human capital variables).

Becker (1964) and several researchers afterwards have shown that additional years of schooling are related to an increase in earnings. Heckman (2000) criticizes this view and

names one of the blind spots for education-related policy makers is the failure to recognize that “learning is a lifetime affair and that much learning takes place outside of schools.” (p. 5). It should be in the interest for societies and businesses to learn about individual human capital investment decisions, what motivates individuals to invest in certain skills and whether non-educational skills may still be productivity-enhancing. Researchers have addressed the importance of leisure activities for human capital skill formation (e.g., Cabane et al., 2016; Pfeifer & Cornelißen, 2010). As many skills are formed during infancy and early years of formal education, researchers have focused on human capital formation based on pupil data. Skill formation during childhood, however, is mainly in the hands of parents. Investment in higher education may constitute more independent, individual decisions.

Gaining knowledge of the determinants of earnings and the different sources of human capital is in the interest of society, companies and individuals because “this capital is in substantial part a product of deliberate investment, [...] its growth may well be the most distinctive feature of the economic system.” (Schultz, 1961, p. 1).

1.2 RESEARCH GOALS AND RESEARCH QUESTIONS

The comprehensive goal of this dissertation is to apply economic theory and econometric methods to different facets of student life in order to contribute to the knowledge on how educational decisions and investments in different activities and skills are connected to educational outcome variables. Broadly, this dissertation addresses two main areas within human capital theory, the sources of human capital and the outcome of human capital endowments and investments. Specifically, I analyze three different sources of human capital: (i) the innate ability, (ii) the skills acquired during an education and (iii) the skills acquired through non-academic activities and their relation to the academic outcome (e.g., study duration, grades), the career path and salary expectations.

There are different ways to explain the relation between the participation in leisure activities and educational outcome. First, the participation in recreational activities may be a balance to studying. Through its recreational nature it may increase students’ well-being or motivation and lead to higher educational attainment. Fricke et al. (2018) take this view in their aim to analyze the effect of sports participation on educational attainment. They find that physical activity positively influences educational outcome (e.g., grades). Another approach, based on human capital theory is to consider the returns of the time invested. The effect of the involvement in leisure activities could go in the following two directions: First, the time

Introduction

spent on leisure activities comes at the expense of the time spent studying and, thus, negatively affects educational outcome (Stinebrickner & Stinebrickner, 2008). Second, the time spent on “good” leisure activities (e.g., sports, music, participation in the student government or political groups) may crowd out time for “bad” activities that would negatively affect grades (e.g., watching TV, partying). Several papers show a positive relation between athletic participation on academic outcome (e.g., Fricke et al., 2018). Yet, the relation between academic outcome and other leisure activities, such as music, have not been studied at the university level. The first research question addresses this research gap: **How does the investment in different leisure activities affect academic outcome?**

The second focus of this dissertation is based on the previous argument that students’ knowledge acquisition goes beyond what is taught in the classes of the regular curriculum (Becker, 1992a; Heckman, 2000). The participation in leisure activities constitutes an extra-curricular investment in skills. The involvement in different kinds of leisure activities may foster different social skills, which in turn may help during classes and have an importance for future employers. Leisure activities such as the involvement in team sports or playing an instrument may increase an individual’s social skills (e.g., team work, industriousness, or stamina) and thus time spent on certain leisure activities will extend an individuals’ human capital. Since an increase in human capital leads to an increase in earnings (Becker, 1964), we suppose that individuals who invest more time in “good” leisure activities expect a salary premium.

A different theoretical approach builds on signaling theory (Spence, 1973). According to signaling theory, the acquisition of knowledge does not lead to a higher level of productivity but is a signal of productivity to future employers. Thus, signaling theory conceptualizes knowledge and skills as signals to employers (Spence, 1973). Signals are most effective if they stand for something that is not really measurable. Therefore, when trying to prove their ability to work in a team, or their degree of perseverance, students may rely on the participation in (team) sports or the years of practicing an instrument.

Both theoretical approaches point into the direction of a positive relation between the involvement in leisure activities and salary expectations. As the participation in sports is the leisure activity with highest participation rates, we focus on students’ sports participation and the relation to the expected salary. It is possible that a high intensity of the investment may be negative, as it leads to an unbalanced human capital skill set. From a signaling theory

perspective it may signal strong preferences for leisure as opposed to increased hours spent on formal education or work. The next aim of this dissertation addresses this problem. We analyze different athlete types' educational attainment and salary expectations: **How are investments in sports and labor market expectations related?**

Another activity which is important to student life but which does not clearly constitute an extracurricular activity, is time spent abroad. From a human capital theory perspective going abroad is an investment in a specific skill set (e.g., language skills, cultural knowledge). Similar to the way athletic involvement may influence educational attainment (Fricke et al., 2018), it is possible that a semester abroad is a comparable mechanism, influencing educational attainment. While the amount of German students going abroad has increased since the introduction of the Erasmus scholarship in 1987, little research exists on the relation between a stay abroad and educational attainment. The third research aim of this dissertation is to shed light on the relation between international experience and educational attainment: **How does a semester abroad affect educational attainment?**

While extracurricular activities and the organization of the educational path are measures students take to invest in their skill sets, there are other skills that they are endowed with (Becker, 1992a). Personality traits fall into the category of innate ability. Several issues regarding the empirical analysis of personality traits in human capital functions have kept researchers from addressing the topic. First, the subjective nature of the scales which has only recently received acceptance in scholarly labor and economics research. Second, the potential threat to response rates due to the length of the personality trait scales. Yet, Heckman et al. (2006) show that personality and intelligence are determinants for levels of schooling and the type of occupation. Attempts to analyze the relation between personality traits, subject choice and salary expectations are therefore important contributions to existing research. The last aim of this dissertation is to analyze differences in students' personality traits and their relation to the expected salary: **How are personality traits and the expected salary related?**

2 STUDIES OF THE DISSERTATION

The present dissertation consists of four separate projects which aim to answer the previously derived research questions. The four studies have either been published in peer-reviewed journals or are being prepared for submission to peer-reviewed journals.

2.1 THE EFFECT OF LEISURE ACTIVITIES ON ACADEMIC PERFORMANCE

Publication details: Working Paper No 88: 2022-02, Working Papers Dissertations from Paderborn University, Faculty of Business Administration and Economics.

Link: <https://econpapers.repec.org/paper/pdndispap/88.htm>

The first study in this dissertation is entitled ‘The effect of leisure activities on academic performance’ and is a joint project with Bernd Frick. We presented this work at different scientific conferences. For example, in 2016 we presented the initial analyses at the *Conference on Personnel Economics: Research Findings and Study Programmes* in Mallorca and the *Workshop on Leisure Time Activities, Education and Economic Performance* in Tübingen. In 2017 we presented the work in Hamburg at the *19. Workshop Hochschulmanagement* (19. Workshop on Higher Education Management). The project addresses the first research question of this dissertation concerning students’ investments in leisure activities and the effect on academic outcome. Specifically, we focus on the participation in music and sport and the effect on the average grade. Existing findings on the students’ athletic participation are almost exclusively limited to U.S. American studies. A recent study shows that the participation in on-campus physical activity improves grades for college freshmen at a Swiss University (Fricke et al., 2018). Less research is available on the involvement in music or arts as extracurricular activity. For pupils who practice musical instruments researchers find an increase in cognitive skills, improved grades and higher educational attainments (Cabane et al., 2016; Hille & Schupp, 2015; Yang, 2015). One of the few papers focusing on college students reveals a positive relation between musical participation and college entrance probability (Elpus, 2013). We build on existing research by analyzing the effects of sports participation, arts and musical participation of German university students. We analyze the Student Survey data (“*Studierendensurvey*”) which in spite of being cross-sectional includes highly detailed information on the study situation for German students in different years starting as early as the 1980s and including 25 different institutions of higher education. As the participation in leisure activities is endogenous, we apply an instrumental variables (IV) approach with a two-stage least squares (2SLS) estimator. We use the contact to other students outside the own subject as well as students’ decision to work during the semester break as instruments. The IV regression provides support for the positive impact of musical participation on the average grade for female students and the pooled sample. The

effects are insignificant for male students. We do not find robust results for the participation in sports.

2.2 ACADEMIC PERFORMANCE AND SALARY EXPECTATIONS OF COMPETITIVE AND RECREATIONAL ATHLETES VS. INACTIVE STUDENTS

Publication details: Working Paper No 89: 2022-02, Working Papers Dissertations from Paderborn University, Faculty of Business Administration and Economics.

Link: <https://econpapers.repec.org/paper/pdndispap/89.htm>

The second study builds on the findings resulting from the first paper, and analyzes different types of sport participation in particular. It is entitled ‘Academic performance and salary expectations of competitive and recreational athletes vs. inactive students’. It is a joint project with Bernd Frick. In 2017 we presented this paper at the *9th ESEA European Conference on Sport Economics* in Paderborn. The research objective was to find out whether different athlete types’ academic performance varies. In addition, we aimed to find out whether salary expectations vary with the different types of athletic involvements. Previous studies based on high school pupil data show that the involvement in sports is beneficial for the grade but only to a certain degree. That is, during the high season of sport, athletes’ grades deteriorate (Schultz, 2017). At the college and university level, most studies find a positive relation between athletic participation and grades (Fricke et al., 2018). Labor economists have identified numerous positive effects of athletic participation, including a higher salary for athletes (Kuhn & Weinberger, 2005; Lechner & Downward, 2017) and former athletes (Ewing, 2007). We conducted an own survey among German university and college students during the summer semester 2016 and obtained a data set with information on sports participation for 4,592 students. Based on this information we group our participants in three athlete types: inactive students (IS), recreational athletes (RA) and competitive athletes (CA). We analyze three equations in a system of seemingly unrelated regression (SUR) with a three-stage least square estimator. Our (alternative) dependent variables are the current average grade, the number of semesters needed to acquire the degree, and the salary expectations. We find that CA expect a significantly higher salary than their inactive peers. CA tend to study longer until they achieve their degrees. We also find that the higher the weekly hours spent on sports, the lower is the student’s grade. The higher the amount of hours spent studying however, the better the grade and the faster the student achieves the degree.

2.3 PROGRAM SPECIFIC EFFECTS OF A SEMESTER ABROAD ON THE LIKELIHOOD OF PURSUING A PhD

Publication details: Urgelles, L. (2021). Program specific effects of a semester abroad on the likelihood of pursuing a PhD. *Higher Education Studies* 11(2), p. 155-165. DOI: 10.5539/hes.v11n2p155.

The third study ‘Program specific effects of a semester abroad on the likelihood of pursuing a PhD’ contains a single-authored paper. The study has been published in the peer-reviewed journal *Higher Education Studies* (Urgelles, 2021). In this study I analyze the impact of a semester abroad during university studies on a students’ likelihood of pursuing a PhD. I use a sample of 65,926 German university students and analyze the program specific subsamples. Propensity Score Matching (PSM) reveals that business students who go abroad during their studies have higher intentions to pursue a PhD than their non-mobile peers. The findings are robust across matching estimators. In addition, I find positive and significant effects for culture and social studies students. The effects for medical and law students are insignificant. When splitting the sample at the median grade, I find that a semester abroad has a significant, positive impact on below median grade natural sciences students’ PhD decision. For engineering students there is a positive and significant effect of a semester abroad only for above median performers. The matching method allows me to infer causality and thus I build on existing findings concerning the existence of a positive correlation between mobility and the intention to pursue a PhD.

2.4 THE ROLE OF STUDENT PERSONALITY IN SALARY EXPECTATIONS AND SUBJECT CHOICE

Publication details: Kräfft, C. & Urgelles, L. (2021). The Role of Student Personality in Salary Expectations and Subject Choice. *College Student Journal*, 55(4), 399-412.

The 4th study addresses the personality traits as a source of human capital and the relation to expected salary. It is titled: ‘The role of student personality in salary expectations and subject choice’ and is a joint project with Charlotte Kräfft. The paper is published in the *College Student Journal* (2021). In this project, we dissect students’ personalities on the subject-specific level. We analyze the relation between personality traits, the selection into university subjects and salary expectations. Our analysis is based on the data we generated in 2016, we also used in the first study. We apply a Heckman Selection Correction Model in order to

Studies of the Dissertation

correct the selection effect of students with certain (innate) abilities or motivations into Business and Economics studies. Our findings show that while personality traits are determinants of the students' subject choice, they do not significantly correlate with their salary expectations.

3 CONCLUSION

This dissertation provides an economic analysis of different sources and outcomes of human capital, with a particular focus on higher education students. Based on secondary data and an own survey among German students, the study makes contributions by examining extra-curricular activities, curricular activities, and innate ability as sources of human capital and their relation to academic outcomes and students' educational paths.

3.1 SUMMARY OF THE FINDINGS

To answer the first research question (How does investment in different leisure activities affect academic outcome?), Chapter 2 identified gender-based and leisure activity-specific effects on academic outcome. The study revealed positive relations between most leisure activities (student associations, political and religious groups, music, sport) and the average grade. Only participation in fraternities is related to lower grades for male students. Although the OLS regression did not allow a causal inference, the contribution is substantial, as this study is the first to analyze a diverse set of extracurricular activities (such as involvement in student associations as well as political and religious groups) in the German higher education system. An IV approach confirmed the positive effect of musical participation on the average grade for female students. A major limitation in this chapter is that the data did not allow for an objective, intensity-specific distinction between involvement types. We addressed this limitation in Chapter 3 and found that the type of involvement correlates with academic outcome. CAs achieve better grades than RAs (.1 higher) and ISs (.17 higher). CAs study approximately three hours less per week than their inactive peers and RAs. As a result, CAs need one (.5) semester more than inactive (recreational) students to finish their degrees. However, previous research has shown that study duration is not a strong determinant of salary (Frick & Maihaus, 2016). Thus, athletic involvement may prolong studies, but this will most likely not affect students' professional careers negatively.

The answer to the first research question is twofold: There are “good” (e.g., music, sports, participation in religious and political groups, student administration) and “bad” (e.g., fraternity participation) leisure activities in terms of their relation to academic performance. The main contributions lie in the focus on (i) a variety of extracurricular activities, (ii) German higher education students, and (iii) the differentiation of participation types. From a

Conclusion

theoretical perspective, the findings support the argument that extracurricular activities constitute an important source of human capital.

The empirical findings in Chapter 3 help answer the second research question (How are investments in sports and labor market expectations related?). We found that salary expectations differ according to the type of athlete. CAs expect about 5% higher salaries than RAs, and ISs' salary expectations are roughly 5% lower than those of RAs. The findings are significant across gender-specific subsamples. The answer to our second research question is hence that investment in sports is positively related to labor market expectations. The fact that team sports correlate with a 5% salary expectations increase (compared to other sports and inactivity) supports the argument that athletes possess certain soft skills (e.g., team leadership, flexibility) that companies are interested in. Thus, from a human capital theory approach, pursuing a sport at a professional or competitive level may be deemed an investment in skills that are relevant to future employers. As health constitutes another form of human capital (Becker, 1964), athletes may also be considered more productive due to their physical fitness. To the best of our knowledge, the student athlete type-specific analysis of salary expectations is new and thus greatly contributes to the research field.

Chapter 4 focused on semesters abroad, which constitute a curricular source of human capital. It contains empirical evidence to answer the third research question (How does a semester abroad affect educational attainment?). The results indicate that a semester abroad increases a student's intention to pursue a PhD. However, the study highlighted important subject- and grade-specific differences. For example, business, culture, and social sciences students who go abroad during their studies have higher intentions of obtaining a PhD than their non-mobile peers. I found that a semester abroad has a significant, positive impact on weaker (i.e., with grades below the median) natural sciences students' PhD decision, whereas for engineering students, the effect of a semester abroad is positive and significant only for above-median performers. The analysis of this relation adds to existing research. In fact, to the best of my knowledge, the relation between mobility and one's intention to pursue a PhD has not been addressed. The novel approach and the resulting findings provide an important contribution to literature in the education economics domain. By analyzing subject- and grade-specific samples, I provide a deeper understanding of the mobility effects.

Chapter 5 explored a source of human capital that differs from the previously analyzed sources: innate ability. It addressed the last research question (How are personality traits and

Conclusion

expected salary related?). To address the education research-specific selection problem, we used personality traits as potential predictors for subject selection and salary expectations. A major contribution resulting from this chapter is the insight that personality traits are a determinant of subject selection but are not related to the formation of salary expectations. We found that extraverted, neurotic, and conscientious students select themselves into business and economics, while agreeable individuals select themselves into pedagogy. We confirm existing literature on the personality-specific selection of subjects. However, we contradict certain studies that have observed correlations between personality and salary, although past studies did not control for the selection-into-subjects methodologically. This study contributes to human capital theory by analyzing a part of innate ability and by revealing that it is not associated with academic outcome.

3.2 LIMITATIONS

The limitations of this work stem primarily from the data. First, the four empirical analyses were based on cross-sectional data. While both data sets are large and provide detailed answers to specific areas of student life, they cannot show changes or developments over time. By applying four different econometric methods, I aimed to analyze the data suitably and rigorously to provide precise answers to the research questions. As all data were gathered in questionnaires, a second limitation is their subjective nature: We had to rely on the respondents' thorough and honest answers to the questions; however, especially sensitive questions about salary can lead to dishonest answers. Although expectations remain a highly subjective construct, the analysis of expectations has been widely accepted, and articles relying on expectations have been published in top journals.

From a methodological perspective the lack of suitable IVs is a major limitation for two of the four present studies because it does not allow for a causal analysis of the relation.

3.3 OVERARCHING THEORETICAL CONTRIBUTION

The basic human capital paradigm is that individuals with the same schooling levels are equally productive and thus receive the same payment (Becker, 1964). This means that the degree attained should indicate the salary. Yet, practice shows that salaries differ for higher education students not only across different subjects but also within subjects. While the variance between subjects can be easily controlled for empirically (by including subject covariates), the variance for individuals within the same subjects may be more difficult to identify.

Conclusion

For example, when controlling for performance variables such as grades or the number of semesters needed to complete a degree, differences in salary expectations remain. Thus, the subject choice and performance measures do not sufficiently explain the differences in salary expectations. This dissertation demonstrates that the remaining unexplained variance in salary expectations among individuals with the same degree (as well as the same grades, etc.) can partly be explained by involvement in extracurricular activities. Therefore, extracurricular activities should be considered in wage functions in future studies concerning human capital.

The present work answers Heckman's (2000) call for a wider approach to human capital formation, which exceeds education through schooling. The finding that extracurricular activities influence academic outcome is an important contribution. In this regard, the fact that the positive influence of music is gender-specific and leads to better female academic performance adds to existing literature. It extends previously identified knowledge that musical participation is academically beneficial for children. The additional findings of a positive relation between athletic involvement and university grades support the argument that these extracurricular activities do not crowd out time spent studying and thus are not a threat to academic performance. Extracurricular activities should hence be seen as another source of human capital.

Innate ability is a typically omitted variable in existing empirical work. A methodological difficulty is that individuals with high levels of innate ability may also be more likely to select themselves in higher education and in certain subjects. At the same time, high-ability individuals will also receive higher salaries. Disentangling the relation between innate ability, schooling, and expected salary is therefore difficult. When dealing with the determinants of salary expectations, selection is an issue that must be addressed. To handle selection problems, many papers that analyze returns to school work with ability proxies in an OLS regression (e.g., Blackburn & Neumark, 1995). However, such proxies may cause the OLS estimates to be biased (in this case, upwards; Deschacht & Goeman, 2015). Part of the present work (Chapter 5) focuses on this issue by examining personality traits (as a form of innate ability) and their relation to subject choice and salary expectations under consideration of and correction for a selection effect. The finding that for higher education students, innate ability is a subject selection criterion and not a determinant of salary expectations is an im-

portant insight. We contradict certain literature that has found correlations between personality and salary. Based on our research, we can only assume that personality traits might influence salary indirectly (e.g., less agreeable individuals are tougher in negotiations).

3.4 PRACTICAL IMPLICATIONS

This dissertation serves as a basis for decision-making processes for universities, companies, and students alike. The focus on higher education students is of societal importance because they constitute a group of individuals with high and diverse human capital features. Empirical evidence for this particular group in Germany is necessary, as knowledge transfer between educational systems is hardly possible. A reason is that the education system in Germany is not comparable to other educational systems that have been researched more thoroughly (e.g., the U.S. education system). Based on the present work, universities can derive practical implications for student admissions, support during the studies, and retention after graduation.

First, in Germany, enrollment in university subjects is predominantly a state-regulated issue based on previous academic performance. At the same time, dropout rates are at 30% (Heublein & Schmelzer, 2018), which indicates the common occurrence of student–subject mismatches. Since dropouts are inefficiencies and cause a delay in degree attainment, reducing dropout rates should be a common interest of universities and students. Other performance variables, such as academic and musical interest as well as personality traits measures, could aid in identifying suitable students for specific subjects. This dissertation indicates that students select themselves into subjects based on their personality traits, although we cannot say whether this selection makes sense and leads to success. Future studies could analyze the ideal personality–subject matches.

Second, financial support for the pursuit of extracurricular activities is not as common and available in Germany as in the U.S., where scholarships are often tied to athletic and/or academic performance. Based on our findings, universities should encourage female students in particular to participate in extracurricular activities because they benefit most. This dissertation also supports the German Olympic Sports Confederation’s call to facilitate students’ alignment of their academic and athletic careers (DOSB, 2020). We add to this call the request for support for musical students. Future research could address whether musical employees continue to be more productive at work. Many companies already have fitness

Conclusion

studios or comparable programs to support employees' physical activities. Companies could extend these activities by offering musical programs.

Lastly, it is also in the interest of universities to retain good and interested students and motivate them to pursue an academic career. An important finding is that certain steps on the educational path (e.g., a semester abroad) may increase students' interest in research. It can, for example, help universities identify and support future scientists. Many universities have turned internationalization into one of their priorities. However, specific goals are seldom formulated or justified. Based on the present results, universities could argue that exchange programs help encourage junior scientists. On the basis of this study, universities could make it an objective to use exchange programs as a means of recruitment for future scientists. Universities should build on our findings by combining exchange programs with scientific projects for particularly interested students. Comparable to international MBA programs for management-affine students, there could be international (PhD preparation) programs with a focus on fostering research skills.

In addition, this dissertation provides important information for employers' recruitment processes. The transition from university to the labor market sometimes fails. A reason for this may be students' unfulfilled expectations. While these expectations can involve numerous topics (work environment, work-life balance), the expected salary could be considered as one of the most decisive factors. The present work contributes to understanding of the formation of salary expectations. Employers can learn that athletes expect a salary premium for their additional skill set. On the one hand, students may expect a salary-premium for their athletic involvement. Yet, students' athleticism may not be demanded in every job position. On the other hand, employers may not be aware of the price they are willing to pay for "soft skills" learned in extracurricular activities. Specifying a salary premium for athletes may help employers and students during salary negotiations. Additionally, companies could learn that a certain personality type is related to a specific subject. While there is still variance among students within the same subject, companies may derive a certain personality type based on the university subject. This may make extensive and costly personality tests in interviews redundant. Subsequent research could analyze whether the personalities that are selected into subjects are also successful (i.e., do students select themselves "correctly" into subjects, or should universities adapt their admissions processes to avoid mismatches and dropout rates?).

Conclusion

This dissertation analyzed different facets of student life and offers insights into educational decisions, investments in different skills, and the respective outcomes. It provides a scientific foundation for the refinement of internationalization strategies and for decisions concerning scholarships for higher education institutions. The consideration of the empirical results should help universities and companies to adapt and improve student admission or application processes.

4 REFERENCES

- Acemoglu, D., & Autor, D. (2012). *Lectures in labor economics* [PDF book]. MIT Economics. <https://economics.mit.edu/files/4689>
- Becker, G. S. (1992a). Human capital and the economy. *Proceedings of the American Philosophical Society*, 136(1), 85-92. <https://www.jstor.org/stable/986801>
- Becker, G. S. (1992b). The economic way of looking at life. *Prize Lecture*. NobelPrize.org. Nobel Media AB 2021. <https://www.nobelprize.org/prizes/economic-sciences/1992/becker/lecture/>
- Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis, with special reference to education*. University of Illinois at Urbana-Champaign's Academy for Entrepreneurial Leadership Historical Research Reference in Entrepreneurship. <https://ssrn.com/abstract=1496221>
- Becker, G.S., & Chiswick, B.R. (1966). Education and the distribution of earnings. *The American Economic Review*, 56(1), 358-369. <https://www.jstor.org/stable/1821299>
- Bowles, S., Gintis, H., & Osborne, M. (2001). The determinants of earnings: A behavioral approach. *Journal of Economic Literature*, 39(4), 1137-1176. <https://doi.org/10.1257/jel.39.4.1137>
- Cabane, C., Hille, A., & Lechner, M. (2016). Mozart or Pelé?: The effects of adolescents' participation in music and sports. *Labour Economics*, 41, 90-103. <https://doi.org/10.1016/j.labeco.2016.05.012>
- Elpus, K. (2013). Is it the music or is it selection bias?: A nationwide analysis of music and non-music students' SAT scores. *Journal of Research in Music Education*, 61(2), 175-194. <https://doi.org/10.1177/0022429413485601>
- Ewing, B. T. (2007). The labor market effects of high school athletic participation: Evidence from wage and fringe benefit differentials. *Journal of Sports Economics*, 8(3), 255-265. <https://doi.org/10.1177/1527002505279348>
- Frick, B., & Maihaus, M. (2016). The structure and determinants of expected and actual starting salaries of higher education students in Germany: Identical or different? *Education Economics*, 24(4), 374-392. <https://doi.org/10.1080/09645292.2015.1110115>
- Fricke, H., Lechner, M., & Steinmayr, A. (2018). The effects of incentives to exercise on student performance in college. *Economics of Education Review*, 66, 14-39. <https://doi.org/10.1016/j.econedurev.2018.06.009>
- Heckman, J. (2000). Policies to foster human capital. *Research in Economics*, 54, 3-56. <https://doi.org/10.1006/reec.1999.0225>
- Heckman, J. J., Stixrud, J., & Urzua, S. (2006). The effects of cognitive and noncognitive abilities on labor market outcomes and social behavior. *Journal of Labor Economics*, 24(3), 411-482. <https://doi.org/10.1086/504455>
- Heublein, U., & Schmelzer, R. (2018) Die Entwicklung der Studienabbruchquoten an den deutschen Hochschulen Berechnungen auf Basis des Absolventenjahrgangs 2016. *DZHW-Projektbericht Juli 2018*. Deutsches Zentrum für Hochschul- und Wissenschaftsforschung (DZHW). <https://idw-online.de/en/attachment-data66127.pdf>
- Hille, A., & Schupp, J. (2015). How learning a musical instrument affects the development of skills. *Economics of Education Review*, 44, 56-82. <https://doi.org/10.1016/j.econedurev.2014.10.007>
- Jencks, C. (1979). *Who gets ahead? The determinants of economic success in America*. Basic Books.
- Kräfte, C. & Urgelles, L. (2021). The Role of Student Personality in Salary Expectations and Subject Choice. *College Student Journal*, 55(4), 399-412.
- Kuhn, P., & Weinberger, C. (2005). Leadership skills and wages. *Journal of Labor Economics*, 23(3), 395-436. <https://doi.org/10.1086/430282>
- Lemieux T. (2006) *The "Mincer Equation" thirty years after schooling, experience, and earnings*. In S. Grossbard (Ed.), *Jacob Mincer: A pioneer of modern labor economics* (pp.127-145). Springer. https://doi.org/10.1007/0-387-29175-X_11

References

- Lechner, M., & Downward, P. (2017). Heterogeneous sports participation and labour market outcomes in England. *Applied Economics*, 49(4), 335–348. <https://doi.org/10.1080/00036846.2016.1197369>
- Mincer, J. (1974). *Schooling, experience and earnings*. National Bureau of Economic Research.
- Pfeifer, C., & Cornelißen, T. (2010). The impact of participation in sports on educational attainment—New evidence from Germany. *Economics of Education Review*, 29(1), 94–103. doi:10.1016/j.econedurev.2009.04.002
- Schultz, T. W. (1961). Investment in human capital. *American Economic Review*, 51(1), 1–17.
- Schultz, K. (2017). Do high school athletes get better grades during the off-season? *Journal of Sports Economics*, 18(2), 182–208. <https://doi.org/10.1177/1527002514566279>
- Spence, M. (1973). Job market signaling. *Quarterly Journal of Economics*, 87(3), 355–374. <https://doi.org/10.2307/1882010>
- Stinebrickner, R., & Stinebrickner, T.R. (2008). The causal effect of studying on academic performance. *Journal of Economic Analysis and Policy*, 8(1), 1-55. <https://doi.org/10.2202/1935-1682.1868>
- Urgelles, L. (2021). Program specific effects of a semester abroad on the likelihood of pursuing a PhD. *Higher Education Studies*, 11(2), 155–166. <https://doi.org/10.5539/hes.v11n2p155>
- Yang, P. (2015). The impact of music on educational attainment. *Journal of Cultural Economics*, 39(4), 369–396. <https://doi.org/10.1007/s10824-015-9240-y>

EIDESSTATTLICHE ERKLÄRUNG

Hiermit versichere ich, Laura Urgelles, die vorliegende Arbeit selbstständig und unter ausschließlicher Verwendung der angegebenen Literatur und Hilfsmittel erstellt zu haben. Alle Stellen, die wörtlich oder sinngemäß veröffentlichtem oder unveröffentlichtem Schrifttum entnommen sind, habe ich als solche kenntlich gemacht. Die Arbeit wurde bisher in gleicher oder ähnlicher Form keiner anderen Prüfungsbehörde vorgelegt und auch nicht veröffentlicht.

Bielefeld, 07.02.2022

Laura Urgelles