

# Economics of higher education : study choice, mobility and job preferences

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# Valorisation addendum

Valorisation concerns the transfer of scientific knowledge into something that is useable outside of academia. In that sense I summarize my findings for the interested public, most likely, but hopefully not limited to, students, companies and policy makers.

This dissertation assesses many of the choices students face within higher education. More specifically, it deals with subject choice, mobility and job preferences. For students it is interesting to learn the outcomes of their decisions. In the case of a company it is important to understand who is hired and how payment schemes can be set up more efficiently. Policy makers want to understand how their policies affect higher education and whether they are beneficial.

With regard to study choice this dissertations shows that students pick subjects according to their personality. However, no change in personality as a result of study choice could be found. In other words: We do not become who we are because of a certain subject choice, but much rather choose a subject that suits us. That said, this does not mean that personality itself needs to be stable. Other events may still have an impact.

Why is this important to the general public? The idea that certain study fields change the individuals who major in them is well spread. The most famous example is, maybe, that of economics students. In 2013 the BBC published an article with the headline "Does studying economics make you more selfish?". The argument goes that teaching concepts of economic rationality, game theory and decision making to students should affect them in a way. And it is true, economics students are different. They are not only more selfish, but, for example, also more conscientious and extrovert, while being less altruistic, risk averse or agreeable. The fact that different studies – including Chapter 3 of this dissertation – find such differences for economics students might be taken as evidence for this argument.

This reasoning, however, falls too short. Education is a matter of choice and, hence, such a correlation does not necessarily hint towards a causal effect. In Chapter 3 we do not find evidence that studying economics alters the personality. Even more, we do not find such evidence for a very broad range of subjects. The differences in personality between study fields

exist because certain types of students select themselves into them. Yes, economics students are different, but they are different right from the start.

How is this relevant beyond being interesting? Policy makers might, for example, formulate the goal to increase the share of students in science and technology or to make those subjects more appealing to female students. We know from Chapter 3 that natural sciences or mathematics and computer science on average attract introvert and non-agreeable students. Both characteristics are more present in men. From this information one can then derive the idea to design new study programs that attract different types of students. A more open teaching environment with a focus on group work might be more appealing to female students. Such programs can, thus, complement the traditional ones helping to increase the share of females as well as the absolute amount of students in these fields.

For students the findings are applicable as well. If personality were to change as a response to study choice, it would be possible to invest into it by choosing a certain major. First, the idea that education is an investment into cognitive skills is familiar. Second, different authors have stressed that non-cognitive skills have a labour market value as well. Their value might even be as large as that of cognitive skills as is suggested by a large review study. If students can alter their personality by making certain choices then such choices can be seen as an investment in non-cognitive skills. The fact that selection into subjects does not affect personality, then, means that the study choice affects the labour market value only via the accumulation of cognitive skills.

In spite of this, the argument for an investment in non-cognitive skills is still valid. In Chapter 5 the focus shifts towards international student mobility. There, it turns out that a semester abroad changes the personality of students. Students become less neurotic and gain a more inward locus of control, both non-cognitive skills that have a positive labour market value. Going abroad can be thought of as an investment in personality and this investment may carry a net present value larger than €20,000. From a student perspective it may, hence, well be rational to take on a student loan to be able to study in a different country for some time.

Additionally, companies can benefit from incorporating this information into their hiring decisions. Applying the finding means that a semester abroad is not only a potential signal that correlates with certain valued characteristics as a result of the selection at hand. It has a causal effect on non-cognitive skills and consequently employability.

This is, on a larger scale, equally important for policy makers as education holds, on top of the private return, a social return. Especially, in the context of European education systems such an assessment is vital as investments into education are, at least to a large extent, made by governments. In Anglo-Saxon countries the costs of education are usually borne by the individual making it less important for the policy makers to evaluate

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education programs.

In addition to bearing a large share of the costs of education European countries have designed programs that create incentives for young people to be mobile during education. An example here is the Erasmus program. Such programs are funded from taxes and should, hence, be evaluated carefully. While it is very conceivable that international education has a value that reaches beyond employability, Chapter 5 shows that the effect on employability is, as well, positive. From an economic perspective, international mobility thereby becomes a positive sum game. European policy makers may therefore be well advised to continue focusing their efforts on increasing student mobility.

Does that mean that international mobility is beneficial for every country? Not necessarily. A positive sum game is also present if some countries gain more than others lose. Chapter 4 creates a theoretical model of international student flows that analyses which conditions need to be met for international education to become mutually beneficial. A receiving country might lose if the costs of higher education are relatively high and most students leave again after graduation. On the contrary, if costs of primary and secondary education are relatively high and most students stay in a receiving country, than the sending country may be worse off.

Using empirically motivated parameter values chapter 4 shows that it is possible that international education is beneficial for both, receiving and sending countries. This can either occur if international education is by itself more efficient – something that has been shown to be true in Chapter 5 – or if the receiving country is simply better at educating students than the sending country. Considering the situation in Europe both scenarios are met. The first one with regard to Western European countries exchanging students on a mutual level. The second one in the case of new member states which are subject to systematic student outflows. Student mobility should not only be fostered on the European level, but also by the individual member countries.

Finally, the focus shifts towards the last topic of this dissertation: Job preferences. Knowing the employability of, for example, a certain graduate does not mean that one is able to design an efficient payment scheme. Employees do not only care about their respective wage. Instead, other job characteristics may well be equally important. To learn more about such job preferences two vignette type question – one on student jobs and one on graduate jobs – are analysed in Chapter 6. The information on compensating differentials is valuable for companies.

With regard to student jobs, the data suggests that companies need to understand the importance of flexibility. The focus of students lies on their study and a job needs to fit into their timetable. Companies that allows students to freely choose their working hours can save more than €2 in

hourly wages. Of course, such flexibility is only possible if the amount of working hours does not exceed a certain level. Students consider it optimal to work 12 to 13 hours per week. That said, traveling to the job is consuming time and reducing flexibility. Therefore, students strongly dislike commuting and companies are well advised to hire students from close by universities.

Preferences change as soon as students finish their studies and enter the labour market as graduates. The vast majority of students seeks full term employment and there flexibility becomes less important. Companies can now improve their employment attractiveness by offering increased job security as this is strongly valued by labour market entrants. In numbers, graduates are willing to give up more than €300 if offered an open-ended work contract. Offering secure jobs should, especially, be considered by companies that are located in rural areas. While different locations are subject to different levels of attractiveness, graduates generally dislike mobility. Moving to a different state requires, on average, an increase in salary of more than €300 per month. In that sense, an unattractive location may be balanced by a high degree of job security.

Next to such compensating differentials the trade-off between working-hours and wage is central. The reaction of a company to changes in demand may not only be hiring or laying off employees. For a limited time it may be optimal to simply increase or decrease the working time of its labour-force. Assuming a slight increase in working time, a company offering too little in return will fail to convince its workers to work longer hours. Moreover, a company that is offering a lot will, while being able to convince its employees, loose in terms of profitability. Therefore, a company would like to have some kind of information on the indifference curves of its work-force that allows them to adjust weekly working time and wage in a way that leaves the employees equally well off. Chapter 7 presents this kind of analysis.

Knowledge on the indifference curves of workers is, however, not only valuable to companies. Policy makers who want to introduce short-time work programs or wage regulation need information on the interplay between working hours and wage as it determines labour supply. The supply of labour is also affected through retirement, unemployment benefits or taxation. Thus, even in these policy areas the findings of Chapter 7 may be applied.

To conclude, I would like to give a concrete example on how the findings of this dissertation can be used in practice. Since the completion of my Ph.D. I have started a company together with Jan Bergerhoff – one of my co-authors. We are creating empirical models that are helping other companies to decide which candidate to hire. The findings from Chapter 3 allow us to understand what characteristics are associated with study choice. Depending on the job at hand, such characteristics may be needed or

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rather avoided. Chapter 5 improves our ability to rate exchange experiences. Thereby they become more comparable to other relevant hiring criteria like internships or grades. Finally, the technical knowledge on compensating differentials and the preferences of students taken from Chapter 6 allows us to determine whether a certain candidate is suitable to the job design at hand.