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Skills utilisation at work, the quality of the study programme and fields of study

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ABSTRACT

This paper examines the factors that may have impact on the extent to which the knowledge and skills of master's degree graduates in Norway are utilised at work, three years after graduation. The focus is on the impact of the quality of the study programme as well as the graduates' fields of study, when also taking into account other factors influencing the utilisation of skills. The analysis indicates that the quality of the study programme has an independent effect on skills utilisation at work. The analysis also shows large differences in skills utilisation according to fields of study, even among graduates who are not formally overeducated for their job. Not formally overeducated graduates in humanities and social science utilise their knowledge and skills less frequently than other similar graduates. The findings involve challenges for higher education institutions and graduates, as well as employers, to find ways that the expertise of master's degree graduates could be better exploited.

KEYWORDS

Skills utilisation; graduates; quality; fields of study

Introduction

There is a great variation in the extent to which the skills of master's degree graduates are utilised at work after graduation. It is far from certain what causes this variation. Differences by fields of study in skills utilisation may partly be caused by the fact that different labour demands exist for different types of expertise; however, it may also have other explanations. Factors could be of three types: (1) individual factors, among them human capital-related factors; (2) factors linked to the labour market and where in the labour market the graduates find jobs; and (3) institutional factors linked to characteristics of the higher education institutions or programmes. The latter may serve as indicators of the quality of the study programme. Skills mismatch is frequently examined in light of the first two factors but seldom in light of the third, which is the particular focus of attention in this paper.

The paper has an explorative character. The aim is to examine the factors that contribute to variation among master's degree graduates in the extent to which their skills are utilised at work, with an emphasis on examining indicators of the quality of the study programme, as well as the graduates' fields of study. The research questions are:

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To what extent does the quality of study programme have impacts on skills utilisation at work three years after graduation?

To what extent is there variation by fields of study in skills utilisation at work, when controlling for the individuals' human capital, the economic sector where the graduates work and indicators of the quality of the study programme?

Previous research and theoretical outline

Having the opportunity to utilise one's skills at work is crucial for most graduates (Okay-Somerville & Scholarios, 2013). While many studies examine the *effects* of skills mismatch or overeducation (Hartog, 2000; Allen & Van der Velden, 2001; Green *et al*., 2002; Dolton & Silles, 2008; Levels *et al*., 2013) this paper aims to examine *why* there is a considerable variation in the extent to which graduates have the chance to utilise their skills at work.

Skills utilisation among higher education graduates can be examined from different angles, where the most common perspective concerns (formal) overeducation. Being over-educated means having a job that requires an educational level that is below the level one has achieved. Another perspective is related to people's actual skills and whether these match the skills required at work. Lack of skills use at work is not synonymous with being (formally) overeducated. According to the heterogeneous skills theory, considerable skills variation exists within educational levels (Allen & Van der Velden, 2001; Green & McIntosh, 2007; Levels *et al*., 2013). Some researchers claim that those who are formally overeducated just lack the necessarily skills (Verhaest & Van der Velden, 2013). Here, another perspective is used. The extent to which the graduates experience that the skills they possess are actually *used* at work is examined when also taking into account whether or not they are (formally) overeducated.

One objective of this paper is to examine to what extent factors linked to the quality of the study programme have impact on skills utilisation at work. Findings of Verhaest and Van der Velden (2013) indicated that cross-country differences in overeducation five years after graduation is partly explained by the quality of the education system or programme. Their measure of quality is, as it often has to be, broad, general and indirect (based on the graduates' assessments of different aspects of the study programme). Six different aspects were assessed, among them, for example, 'The programme was generally regarded as demanding' and 'Employers are familiar with the content of the programme'. In this paper, still another measure of quality will be used. The question of measurement tools concerns, broadly speaking, the long debate on quality in higher education (Harvey & Willams, 2010a, 2010b). As pointed out by Frazer (1994), there is no single definition or way of measuring quality. As described by Harvey and Knight (1996), there are several ways of thinking about quality in higher education, one being 'quality as fitness for purpose'. Harvey and Williams (2010a) stress that the concept of quality should not be detached from purpose and context. Harvey and Knight (1996, p. 6) argued that in practice, *post hoc* investigation of student satisfaction is the most likely arbiter of fitness (for the mission-determined purpose).

Another objective of the paper is to analyse the impact of fields of study on skills utilisation at work. Despite the long tradition of examining overeducation and skills mismatch, relatively little attention has been devoted to the fact that there are large differences according to fields of study in the degree of overeducation as well as skills utilisation. Some studies have looked into this, for example Allen (2011) showed that, five years after graduation, humanities

and arts graduates in 13 European countries show a relatively low degree of skills utilisation and health and welfare graduates a high degree. Social sciences, engineering and science graduates are in the middle and with more or less the same degree of skills utilisation. Verhaest and Van der Velden (2013) examine cross-country differences in overeducation five years after graduation. One of their findings is that graduates with a generally oriented programme experience a lower likelihood to find a good match in their first job (six months after graduation); but that their ability to use overeducation as a stepping stone to get better and more qualified jobs was higher than among those who graduated from a vocationally oriented programme during a five year's period after graduation. Still, five years after graduation graduates from generally oriented fields of study have not attained qualified jobs to the same extent as those from more vocational oriented fields.

When examining the impact of the quality and fields of study on skills utilisation, other important factors have to be taken into account. These are the individual's human capital as well as factors related to the labour market. Here, one cohort of graduates, which is entering the labour market in a period with a high demand for labour in Norway, is studied. The unemployment level was low in all groups that are examined here (between 1 and 6%) (Arnesen *et al.*, 2013). Even so, many of the graduates experience that their skills are not fully utilised at work. This can vary according to economic (industrial) sector. Economic sectors vary in knowledge-intensity. The employers in different industries or economic sectors may act differently and provide different opportunities for graduates to utilise their skills. Here, it is possible to use information on the industry or economic sector to differentiate between graduates.

Data and methods

The data used in this paper are based on a Norwegian graduate survey carried out in 2013. The survey covers persons who completed a master's degree in humanities, law, social science, natural science, technology/engineering, or a higher degree in psychology during the spring semester 2010. (All the groups are labelled 'masters' in this paper.) The gross sample was compiled by Statistics Norway. The survey refers to the graduates' situation three years after graduation. Graduates from seven universities were included in the survey (comprising 77% of all graduates in the selected fields of study). The response rate was 58%. The survey was conducted as a web-survey.

The dependent variable: skills utilisation

Respondents who were employed at the time of the survey were asked this question**:** 'To what extent are your knowledge and skills utilised in your current job?' A five-point scale running from 1 = 'to a very low extent', to 5 = 'to a very high extent' constituted the response categories.

This question does not measure the graduates' concrete skills, nor the use of concrete skills. The question relates to the use of their skills in general and it was considered reasonable to interpret the answers as relating to the use of their (total) acquired knowledge and skills as master's degree graduates in different disciplines, such as, humanities and arts, social sciences, graduate engineering. This is important, because it points out a distinction between the use of the graduates' general skills and knowledge, as, for example, a graduate engineer or a social scientist, and the more specific aspects of competencies that the graduates have

Table 1. The extent to which the skills are utilised at work three years after graduation (Scale 1–5) (%).

To a very low extent	To a low extent	To some extent	To a high extent	To a very high extent	Number of observations*
2.8	4.5	25.6	36.7	30.3	1451

*The number of observations is the same as those used in the regression analyses below, i.e., employed graduates who have given response to the variables used in the regression. This also applies to the tables and figures below.

experienced that the study programme, in varying degrees, has provided. The latter will be discussed further below.

Rather few respondents indicate that their knowledge and skills are utilised to a low or very low extent, whereas 67% indicate 'to a high' or 'very high extent'. Based on the distribution in Table 1 it is logical to group the category 'to some extent' together with 'to a very low' and 'low extent'. Thus, what is examined below is the probability that the skills are utilised to a high or very high extent. The method of analysis is binary logistic regression.

Independent variables

Two sets of variables are used as explanatory independent variables in the regression: variables that refer to indicators of the *quality of the study programme*, as well as variables that refer to *fields of study*. The rest of the independent variables are considered as control variables.

As indicators of the quality of the study programme, the response to four questions concerning the extent to which the study programme had provided practical knowledge, theoretical knowledge, methodological knowledge and analytical thinking are used. All variables have values from 1 (not at all) to 5 (to a great extent). It may be argued that these variables are not only indicators of the quality of the study programme but may also be indicators of the students' learning outcome. It is, however important to note that due to the wording of the questions in the survey (that is the extent to which the programme had provided different kinds of knowledge), these variables are not measures of the graduates' skills. Further, the correlation between grades and the mentioned four variables is not high (Table 2).

These four variables are reasonable proxies for aspects of the quality of the study programme in the sense that they are indicators of what the programme has provided or contributed. This is, however, based on self-reported information and the graduates' response may have been coloured by their own experiences after graduation. Thus, the validity of these variables is not perfect. On the other hand, this is probably unavoidable in retrospective surveys. The fact that the questions about the aspects of the study programme were placed at the beginning of the questionnaire and long before the questions about the graduates' labour market situation and their work, contributes to reducing the risk that their own experiences colour the response to the questions concerning the study programmes.

The four aspects, practical knowledge, theoretical knowledge, methodological knowledge and analytical thinking, are generic characteristics and they refer to all types of study programme. Arguably, they meet the requirement of 'quality as fitness for purpose' and that quality should not be detached from purpose (Harvey & Knight, 1996, Harvey & Williams, 2010a). A common purpose for all study programmes at master's degree level is to enhance the students' theoretical and methodological knowledge and their capability of analytical thinking. It can vary, however, whether practical knowledge is a common goal for study programmes at master's degree level. It is nevertheless certainly of interest to examine the extent to which this contributes to increased chance of skills utilisation after graduation.

There are six dummy variables for the fields of study from which they graduated in 2010: humanities, law, social sciences, psychology, technology/engineering and (natural) sciences. Three of the six selected fields include study programmes that are mainly vocationally oriented (law, psychology and technology/engineering). Study programmes from the remaining fields (humanities, social science and science) are more generic fields. In the regression analysis below, the field (natural) science is used as the reference category.

In addition, a set of control variables is included, described in the following. Because the quality of the study programme can correlate with higher education institution, a dummy variable for the size of the institution is used as a control variable. This is relevant in light of an on-going public debate on restructuring of higher education institutions in Norway, where merging of institutions in order to enhance the quality of education and research (Ministry of Education and Research 2015) is one of the concerns.

As human capital-related variables, the following are included: relevant work experience prior to graduation is included as a dummy variable. Further education is also included; value 1 if the respondent has completed a postgraduate training providing at least 30 credits (one semester full time studies) subsequent to the education they completed in 2010, else value 0. In addition, controls for the grades from the study programme they graduated from in 2010 are included, with two dummy variables; A (best) and B (second best). C to E is the reference group. The grades might also be considered as a learning output, that is, the competency at the time of graduation. Here, 'grades' is treated as control variable. In accordance with the job market signalling theory (Spence, 1973) grades act as signals. Hiring is an investment decision (under uncertainty) and the employers do not know the individual's productive capabilities. Education (and grades) levels signal productivity because they certify that the person is competent. Because the grades act as signals to the employers the grades will influence the likelihood of getting a good job; that is, a job where one can utilise one's skills to a high degree.

Variables covering job characteristics are also included. The data did not include information on the respondents' occupation but did include information on whether they were overeducated for the job (see below), as well as on the economic (industrial) sector in which they were employed. Dummy variables for economic sector are included in the analyses. Economic sector was originally a categorical variable with several categories. The variable is converted into several dummy variables, which are displayed in Table 3. Also included is a dummy variable for part-time work and background variables, such as age at the time of the survey and gender.

Overeducation is also included as a control variable in the following analyses. Those categorised as overeducated have responded that their work requires a lower education level than that achieved. Previous research has indicated that educational mismatch and skills mismatch correlate only weakly (Allen & Van der Velden, 2001; Green & McIntosh, 2007; Levels *et al*., 2013). The correlation between the dummy variable for overeducation and the dependent variable is 0.335. Although a positive correlation, this is not so high that the analysis will be disturbed by endogeneity problems. Endogeneity problems refer to a possible loop of causality between the dependent variable, skills utilisation and the independent variable overeducation.

Descriptive results

Of special interest in the regressions below is the possible impact of the extent to which the study programme provided practical, theoretical and methodological knowledge and analytical thinking. Thus, it is of interest how the response to these aspects varies between the educational groups. This is further illustrated in Figure 1.

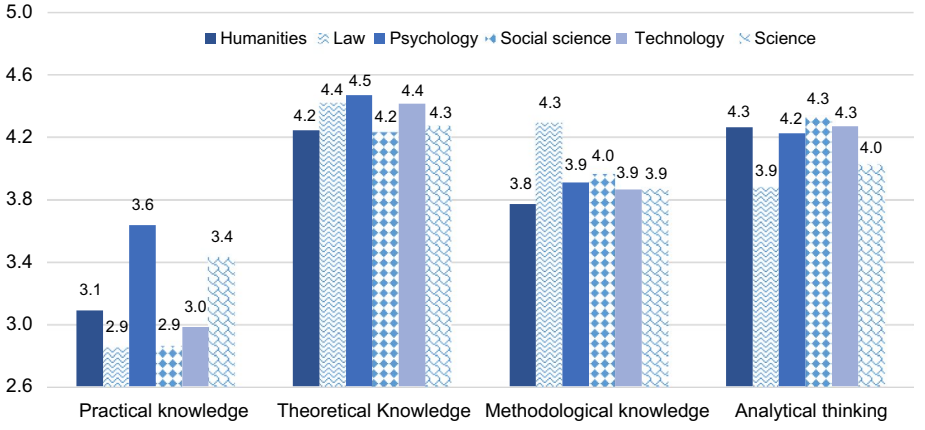

Figure 1. The extent to which the study programme provided practical, theoretical and methodological knowledge and analytical thinking, by fields of study. (Scale 1–5)

All groups of fields of study report high scores on the item 'provided theoretical knowledge'. As mentioned, all the estimates refer to the response concerning the extent to which the study programme had provided the different types of expertise. Concerning practical knowledge, those who report the highest scores are the psychologists and, next, graduates in science. Otherwise, the main difference is between graduates in law and the other graduates. Law graduates report higher scores on the item 'the study programme had provided methodological knowledge' than the other groups and, at the same time, lower scores on analytical thinking than the other groups.

The four variables used as indicators of the quality of the study programme are to some extent positively correlated (Table 2). The correlations are significant, though not very high. This means that the there is a tendency that people who (for example) indicate that the study programme has provided a high degree of methodological knowledge also indicate that it has contributed to a high degree of analytical thinking. The correlations are far from large enough that there is a risk of multicollinearity in the regressions analyses. However, when used simultaneously in the regression, one must have in mind that the effect of one of the variables is smaller than if the others were excluded and that the effect is dependent on the fact that the other variables are also controlled for.

The correlation between these four variables and grades when graduating is not high, from 0.14 to 0.19 (Table 2). These low correlations (though significant) indicate that the assessments are independent of, and not a simple reflection of, the graduates' actual abilities as measured by their grades.

Table 2. Correlations between variables measuring different aspects of what the study programme had provided and grades when graduating.

	Practical knowledge	Theoretical knowledge	Methodological knowledge	Analytical thinking	Grades
Practical knowledge	1	0.204**	0.214**	0.154**	0.158**
Theoretical Knowledge	0.204**	1	0.400**	0.353**	0.189**
Methodological knowledge	0.214**	0.400**	1	0.464**	0.144**
Analytical thinking	0.154**	0.353**	0.464**	1	0.167**
Grades	0.158**	0.189**	0.144**	0.167**	1

**Correlation is significant at the 0.01 level (2-tailed).

The mean sample values of all the independent variables used in the regression are shown in the last column of Table 3, which also shows the results of binary logistic regression.

Results of regression analyses

Binary logistic regression of the probability that knowledge and skills are utilised to a high or very high extent, controlling for all the independent variables, has been conducted (Table 3). Additional analyses using linear regression (ordinary least squares) are also conducted, where the scale is 1 (not at all) to 5 (to a very high extent). The results are to a very high degree similar and are not reported here.

Table 3. The probability of that knowledge and skills are utilised to a high or very high extent in current work and mean sample values of independent variables.

	Results of binary logistic regression, coefficients (logits) and standard errors		Mean sample values of the independent variables used in the regression
	B	S.E.	
Female	***–0.260***	0.138	0.494
Age	–0.103	0.086	31.1
Age squared	0.002	0.001	
The study programme has provided			
Practical knowledge	**0.256**	0.071	3.1
Theoretical knowledge	**0.373**	0.107	4.3
Methodological knowledge	***0.168***	0.095	3.9
Analytical thinking	–0.047	0.100	4.2
Fields of study (Natural science = Ref.)			
Humanities	–0.341	0.236	0.157
Law	**1.450**	0.291	0.122
Psychology	***0.777***	0.429	0.045
Social science	–0.226	0.202	0.196
Graduate engineering	**0.587**	0.210	0.241
Medium-sized university (small and large university = Ref.)	**0.416**	0.209	0.123
Human capital related variables			
Grades = A	**0.537**	0.213	0.175
Grades = B	**0.312**	0.147	0.529
Relevant work during study time	***0.242***	0.134	0.463
Further education	0.306	0.221	0.119
Labour market variables			
Work part time	**–0.688**	0.257	0.071
Economic sector:			
Primary and secondary industries	–0.225	0.312	0.123
Information and communication	–0.100	0.333	0.061
Trade and transport.	–0.516	0.497	0.019
Public administration and defence	–0.291	0.272	0.185
University, college, research and development	**0.727**	0.278	0.174
Finance and business services	–0.328	0.443	0.030
Professional, scientific and technical activities	0.076	0.301	0.165
Culture	0.328	0.403	0.031
Other	–0.028	0.315	0.081
Overeducated	**–1.490**	0.182	0.146
Constant	–0.668	1.744	
Nagerkerke (pseudo *R* squared)	0.288		
Number of observations	1451		

Note. Coefficients in bold type are significant at level $p < 0.05$. Coefficients in bold type and *italic* are significant at level $p < 0.1$. In additional analyses, controls for the number of months employed since graduation were included, which appeared not to be significant and thus not included in Table 3.

Three of the coefficients for the four variables serving as indicators for study programme characteristics are positive and significant (the effect of 'methodological knowledge' is however significant at level $p < 0.10$ only). The coefficient for 'analytical thinking' is insignificant, when controlling for all the other variables. The main reason is the correlation between this variable and other indicators for study programme characteristics. When considering that these features are indicators of quality of the study programme, it is interesting that, regardless of fields of study and grades, these aspects of the quality of the study programme have an impact on the graduates' utilisation of knowledge and skills at work. This is illustrated in Figure 2 below.

Likewise, after controlling for several variables there are clear differences in the utilisation of knowledge and skills between graduates from different fields of study. The overall results indicate that graduates from the vocationally oriented fields of study (law, graduate engineering and psychology) have a greater probability of utilising their knowledge and skills to a high or a very high extent at work. The results concerning fields of study are illustrated in Figure 3.

In additional analyses, different sets of independent variables have been introduced in stepwise regressions, and in different orders, to check the robustness of the explanatory variables fields of study and study programme characteristics (not reported here because of space limitations). The main conclusion of these additional analyses is that the effects of fields of study are quite robust. However, the negative effect of graduating in humanities and arts is affected by the inclusion of the variables work hours and overeducation. The reason for this is that these graduates are more frequently overeducated and more frequently work part-time. This refers to two reasons why they initially have a much lower propensity than the other graduates to use their skills and knowledge to a high or very high extent at work. Still, also after controlling for the variables work hours and overeducation, there is a significant negative effect of being a humanities graduate. This also applies to graduating in social sciences.

The effects of the extent to which the study programme provided different types of professional knowledge are also fairly robust. However, the initial effect of the item 'provided methodological knowledge' is reduced when also including controls for additional variables, particular when introducing controls for fields of study.

The chance of utilising one's skills is higher the better the grades and when the graduate has relevant work experience (Table 3). This indicates that the quality of the job is better among the best qualified, moreover, that the better-qualified graduates have a good chance of utilising their generally higher qualifications than do the relatively lower-qualified graduates. Among other results, it is clear that that those working in the university, college or research and development sector have a higher probability of utilisation of skills.

The reference group in the regression (Table 3) is male graduates. They are educated in natural science; from a small or large university, without relevant work experience during study time, with no further education (subsequent to the education they finished during spring term 2010). Further, they work full time in the health and welfare or education sector and are not formally overeducated.

Dummy variables for the seven institutions are not included in the regression because of the restricted number of respondents. In Norway, the higher education institution overlaps largely with region; and also the size of the institution overlaps to a certain extent with region. Because of limited number of observations and further, the risk of multicollinearity, both sets of variables could not be included simultaneously. In preliminary analyses, it was found that the regions where the graduates work had no significant effects. However, the

size of the institution was found to have significant effect. Graduates from small and large universities are merged in the reference group in the analysis below (as well as a very small group of graduates who did not provide the name of the university), because the initial analyses indicated that only the effect of medium-sized institutions was significant and that there was no significant difference between small and large universities.

The probability of utilising knowledge and skills to a high, or a very high, extent for different groups is estimated and illustrated (Figures 2 and 3). The purpose is to illustrate the isolated effects on skills utilisation of the central explanatory variables, which are indicators of the quality of the study programme and fields of study. The estimates are based on the coefficients in Table 3 and they refer to theoretical 'average persons' who are not formally overeducated. The respondents are assigned average values on all the other independent variables than the variables in question (study programme characteristics in Figure 2 and fields of study in Figure 3).

It is very important for the opportunity to utilise knowledge and skills at work three years after graduation that the study programme had provided a high degree of theoretical knowledge (Figure 2). Practical knowledge is also important, although the effect of this variable differentiates somewhat less between the graduates. The estimates for 'providing theoretical knowledge' are based upon the respondent's assigned average values on the 'other' items referring to what the study programme had provided. The same applies for the estimates for 'providing practical knowledge'. Here, the respondents are provided average values on all the other items than 'practical knowledge'.

When responding 'to a very high extent' on all the three variables 'provided theoretical knowledge', 'provided practical knowledge' and 'provided methodological knowledge' the chance of utilising skills and knowledge in the job is very much improved compared to when responding 'to some extent' on these three variables (88% *versus* 59%, see the last two columns of Figure 2).

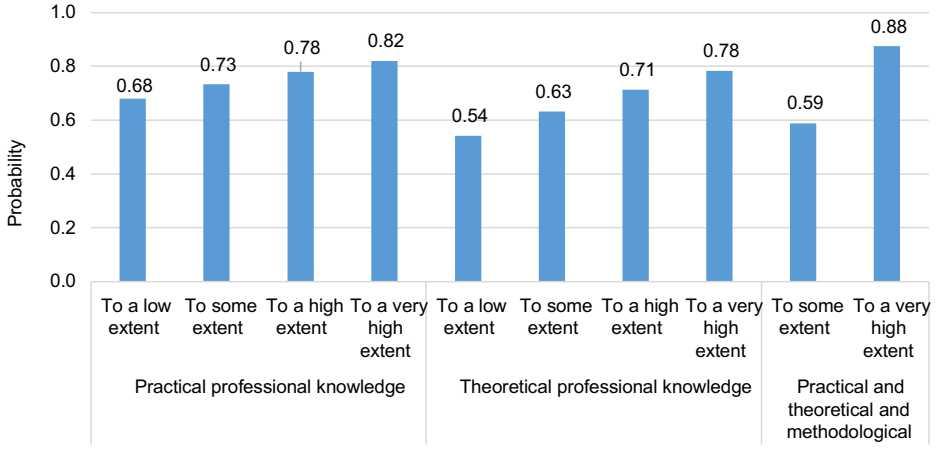

Figure 2. The probability that knowledge and skills are utilised to a high or very high extent in current work, by the extent to which the study programme provided different types of professional knowledge. Graduates who are not overeducated.

Note. The estimated probabilities that are presented in Figures 2 and 3 are calculated according to the formula: $P = e^z/(1 + e^z)$ where P is the probability that the skills are utilised to a high or very high extent and Z = the intercept plus the effects of the independent variables. ($z = B_0 + B_1X_1 + B_2X_2 \ldots$)

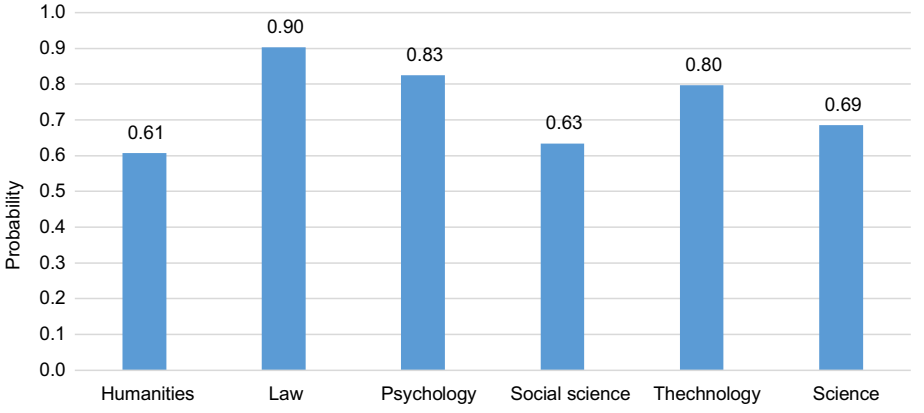

Figure 3. The probability that knowledge and skills are utilised to a high or very high extent in current work, by fields of study. Graduates who are not overeducated.

There are also clear differences in the utilisation of knowledge and skills between graduates from different fields of study (Figure 3), after controlling for several variables. Law is at the top (90%) and humanities at the bottom (61%). As mentioned, the results refer to persons who are *not* overeducated and they refer to the situation three years after graduation.

Conclusions

Several factors contribute to explaining differences in skills utilisation, for example characteristics of the study programmes, human capital variables and job characteristics. The factors that relate to study programme characteristics, that is, indicators of the quality of the study programme, should be challenging for higher education institutions. When the study programme has not provided a high degree of theoretical and practical skills the likelihood of skills utilisation at work is clearly reduced (when controlling for other relevant factors). The use of the term 'quality' in this respect is, however, debatable since we do not have an objective measure of quality. There was information on the graduates' assessments of the study programme; their assessments of the extent to which the programme provided different types of competencies. On the other hand, it is hard to find ways to avoid indirect measures of 'quality'. As discussed in the data and methods part, it is considered here that these assessments serve as reasonable proxies for aspects of quality of the study programme. These indicators have independent impacts that act in addition to the other control variables.

Graduates in humanities and the social sciences have fewer opportunities to utilise their skills at work than other groups but this does not reflect that the study programmes within these broad fields provide poorer quality professional knowledge. Rather, the results indicate that graduates in these fields, more frequently than other graduates, experience difficulty in getting a job where they can utilise their knowledge and skills, also when they are in jobs where they are not overeducated and regardless of the quality of the study programme. The analysis indicates that this also applies to master graduates in the natural sciences.

While there are large differences by fields of study it is not only discipline differences in themselves that are decisive for the results. Rather, it is the extent to which the study programme is vocationally oriented that seems to be decisive. When examining overeducation in many countries the same pattern is found by Verhaest and Van der Velden (2013); but here it is found that this pattern prevails also regardless of overeducation. Both technologists/engineers and natural scientists belong to the broader field 'science and technology'. But the analysis shows that it is those who belong to the most vocational part of this broad field who have the greatest chance of using their knowledge and skills at work, 'all other things being equal'. Psychology is part of the broader field of social sciences but it is more vocationally oriented than other programmes within the social sciences. Graduates in this vocationally oriented field have the best chances of utilising their skills at work.

The difference between the vocational and generic oriented fields is not trivial. For a university graduate master in generic fields such as humanities and social (or natural) sciences it would be natural to expect that the knowledge and skills are used in the job they hold three years after graduation; a job they probably got on the basis of their education. When this is not the case, it indicates an underuse of the graduates' capabilities, which could represent a challenge for many employers.

A limitation of this study is that the sample is not large enough for meaningful analyses per field. If the number of respondents within each field had been higher, separate analyses per disciplines could have been run to examine the effects of the different variables between disciplines. However, this study has contributed a new way to look at the quality of higher education. Further, the results indicate that the quality of education actually has significance for the variation in graduates' situation in the labour market. The study also complements studies looking at the effects of overeducation, in that it shows that there is considerable variation even among those who are *not* overeducated for the job; with regard to getting a job where one utilises one's knowledge and skills.

From other studies, it is known that institutionalised cooperation with partners in the world of work during study time, cooperation that is not the same as having appropriate gainful employment before graduation but refers to, for example, project-based interaction, increases the chance of a good labour market match after graduation (Thune & Støren, 2015). Unfortunately, there is no information on university–world-of-work collaboration during study time in the survey on which the analyses in this paper are based. Thune and Støren (2015) found among other things that graduates in the humanities have little experience with collaboration with the world of work during study compared to other groups of graduates. Evidence from this research also suggests that if study programmes within the humanities had a higher proportion of project cooperation with partners in the world of work, the labour market situation of the humanities graduates would be significantly improved. Probably, this applies as well to skills utilisation in their actual jobs.

All graduates examined here are employed, so in this (narrow) sense there is a demand for their competencies. When large parts of the employed graduates do not utilise their knowledge and skills, imbalances still exist. One of the conclusions of Okay-Somerville and Scholarios (2013), namely to emphasise employer practices and skills policies that better utilise and develop the highly skilled workforce, and also the importance of an active dialogue between employer practices and skills policies, appears to be highly relevant to this study.

The results reported in this paper also suggest that some of the problems are rooted in varying qualities of study programmes. In addition, some of the programmes could probably be more related to working life. It should be a challenge for higher education institutions and graduates as well as employers to find ways where the expertise of master's degree graduates in generic fields could be exploited better.

Disclosure statement

No potential conflict of interest was reported by the authors.

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